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Bottlenose dolphins (*Tursiops truncatus*, Montagu 1821) in central-northern coast of Rio de Janeiro State, Brazil: stranding patterns and insights into feeding habits

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Abstract. The bottlenose dolphin (*Tursiops truncatus*) may be one of the best known dolphin species worldwide, principally due to its coastal distribution in many regions. However, few studies about ecology, biology and threats have been conducted on the Brazilian coast. The aim of the present work is to analyze the stranding pattern and stomach contents of bottlenose dolphins in the central-north coast of the Rio de Janeiro State, from Saquarema to São Francisco de Itabapoana (~300km of coast line). Forty nine stranding events were recorded through regular beach surveys from 1999 to 2012 and also through access to previous published studies conducted since 1984. The strandings were distributed throughout the study area, but there was a trend of occurrence in the extreme southern and northern regions. Nine specimens showed evidence of accidental mortality in fishing nets. The strandings were more frequently recorded during autumn and winter (χ^2; $p < 0.05$). Male bottlenose dolphins stranded more often than females, showing significant differences in this relationship (χ^2; $p < 0.05$). Most stranded dolphins were classified as adults (> 230cm of body length) (χ^2; $p < 0.05$). The body length varied from 106 to 335cm. Four prey species were found in the stomach contents from the three specimens of bottlenose dolphin analyzed. The most representative prey species was the cutlassfish (*Trichiurus lepturus*). This study showed that bottlenose dolphins are frequently found dead along the Rio de Janeiro State where they feed mainly on coastal fish. Future studies need to be conducted to improve the knowledge on this poorly known cetacean in Brazil.

Resumo. O golfinho nariz-de-garrafa (*Tursiops truncatus*) talvez seja um dos cetáceos mais bem conhecidos e estudados no mundo, principalmente devido à sua restrita distribuição costeira em muitas regiões. Entretanto, existem poucos estudos sobre atividade comportamental, ecologia, biologia, ameaças e distribuição desta espécie ao longo da costa do Brasil. O presente trabalho tem como objetivo analisar os encalhes e conteúdos estomacais de exemplares de golfinho nariz-de-garrafa recolhidos de Saquarema até São Francisco de Itabapoana (~300km de linha de costa), na costa centro-norte do estado do Rio de Janeiro, Brasil. Quarenta e nove encalhes foram registrados a partir de monitoramentos regulares de praias e de estudos prévios realizados desde 1984. Os encalhes ocorreram por toda a área de estudo, mas observou-se certa tendência de encalhes nas porções norte e sul da costa centro-norte do estado. Nove golfinhos mostraram evidência de captura acidental em redes de pesca. Os encalhes foram mais frequentes durante o outono e inverno, sendo estas diferenças significativas (χ^2; $p < 0,05$). Encalhes envolvendo indivíduos machos foram mais frequentes (χ^2; $p < 0.05$). A maioria dos encalhes envolveu golfinhos classificados como adultos (> 230cm de comprimento total) (χ^2; $p < 0.05$). O comprimento total dos espécimes variou de 106 a 335cm. Quatro espécies de presas foram encontradas nos três conteúdos estomacais analisados, sendo o peixe-espada (*Trichiurus lepturus*) a mais representativa. Este estudo mostrou que o golfinho nariz-de-garrafa é comum na costa do estado do Rio de Janeiro e se alimenta principalmente de peixes costeiros. Estudos futuros são necessários para se aprimorar o estado do conhecimento desta espécie no Brasil.

Introduction

Bottlenose dolphins (*Tursiops truncatus*) are widely distributed in tropical and temperate waters around the world, including coastal and offshore environments, but also in bays, estuaries and lakes (Wells and Scott, 2009). Although commonly observed along their extensive distribution, principally in coastal areas, bottlenose dolphins remain poorly known in many regions, as along the Southwest Atlantic Ocean, where basic information is scarce. In this region the bottlenose dolphin has been observed from Pará State, northern Brazil (Siciliano *et al.*, 2008), to Tierra del Fuego, in the Argentinean coast (Bastida and Rodríguez, 2003). However, most studies about this species in Brazilian waters have been conducted in the southern region, where resident coastal populations are commonly found associated to estuaries, bays and coastal lagoons (Barreto, 2000; Fruet, 2008).

Two ecotypes have been recognized in various regions around the world: a coastal and an offshore form (Wells and Scott, 2009). These ecotypes have been distinguished by ecological, morphological and physiological features, but such differences are regionally variable (Jefferson *et al.*, 2008). There is evidence that both coastal and offshore populations inhabit the Brazilian waters (Barreto, 2000; Moreno *et al.*, 2009). In addition, there is also evidence of the occurrence of two distinct populations or species in Brazilian waters: one below and another above latitude 28°S (Barreto, 2000). These two populations seem to vary in cranial morphology, seasonal variations in distribution and they also seem to present a sympatric zone.

The studies developed in other regions of the Brazilian coast have been conducted through opportunistic sightings and strandings that could misidentify the occurrence pattern. In Rio de Janeiro (RJ) State, southeastern Brazil, previous studies have shown that the bottlenose dolphin may be a common species both in coastal and offshore waters (Siciliano *et al.*, 2006). Bottlenose dolphins in the RJ coast seem to show some residential pattern, since some individuals have been re-sighted in the region (Lodi *et al.,* 2008). The first occurrence of bottlenose dolphins on the coast of RJ was described in 1980 at Flamengo Beach (Geise and Borobia, 1988). Since then, several subsequent records have been documented and beach survey programs have been established in order to study marine mammals in the region. During cetacean transect surveys conducted off the coast of RJ, the bottlenose dolphin has been commonly sighted, sometimes in large aggregations of approximately 150 individuals. In coastal waters around Búzios in Arraial do Cabo, east coast of RJ, this cetacean has also been commonly observed (Siciliano *et al.*, 2006).

Studies about the diet of bottlenose dolphin have shown a variety of prey species, including pelagic and demersal fishes, cephalopods and crustaceans (Barros and Clarke, 2009). This species seems to exhibit variation in the feeding habits according to habitat characteristics, availability of prey species and life stage. Previous studies conducted in RJ indicate that the bottlenose dolphin feeds preferentially on coastal fish (Di Beneditto *et al.*, 2001; Melo *et al.*, 2010).

Stranding data have biological and geographical components that are essential for understanding the ecology of this poorly known species in Brazil. Therefore, the aim of the present study is to evaluate the stranding pattern of bottlenose dolphin along the central-north coast of RJ, highlighting aspects on vulnerabilities, spatial and seasonal distribution, and diet of this cetacean.

Material and Methods

Study Area

The study area is situated in the central-north coast of RJ, covering an area of about 300km of coastline, from Saquarema (south, 22°55'12"S, 42°30'37"W) to São Francisco de Itabapoana (north, 21°25'10"S, 41°00'36"W) (Figure 1). The region is under the influence of the Brazil Current that flows southward and is characterized by relatively warm surface waters (20°C) (Garcia, 1997; Castro *et al.*, 2006). The north portion of the area presents a broad continental shelf and is influenced by the discharge of sediment and water mostly from the Paraíba do Sul River (Muehe and Valentin, 1998). Because of the influence of this river, the northern and central sections of the study area generally present turbid water. The southern zone of the study area is represented by a seasonal coastal upwelling system that influences the ecological structure of the zone (Valentin, 2001). This southern zone is characterized by a narrow shelf, clear water and water temperature below 18°C under upwelling influences (spring-summer) (Campos *et al.* 1999; Valentin, 2001).

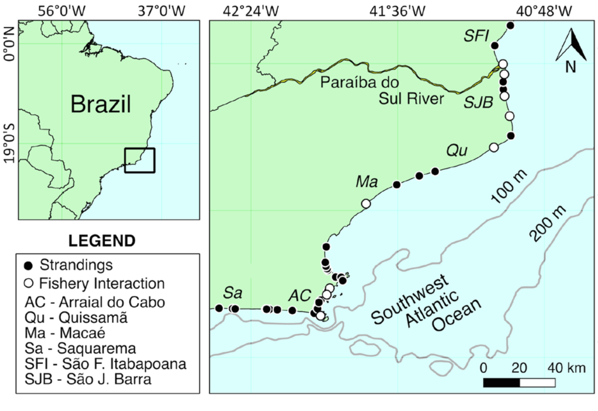

Figure 1. Map of the study area, from São Francisco de Itabapoana to Saquarema, showing the location of bottlenose dolphin strandings. The black dots represent the stranding events. The white dots represent dolphins with evidence of accidental mortality in fishing nets. Sa = Saquarema; AC = Arraial do Cabo; Ma = Macaé; Qu = Quissamã; SFI = São Francisco de Itabapoana; SJB = São João da Barra.

Table 1. Prey species found in the stomach contents of three bottlenose dolphins recovered in the central-northern coast of the Rio de Janeiro State, Brazil.

Prey Species	N	FO%	N%	Biomass (g)	Length (cm) Mean ± St. Deviation
Teleosts					
Trichiurus lepturus	39	66.7	78	95.57	71.12±16.07
Porichthys porosissimus	9	33.3	18	4.43	16.13±2.23
Chaetodipterus faber	2	33.3	4	--	--
Cephalopods					
Loligo plei	1	33.3	2	1.17	207.60

FO% = Numerical Frequency [Number prey species in one stomach / Number of all prey species found in the stomachs analyzed) x 100]; N% = Frequency of occurrence [(Number of prey specimens in one stomach / Number of prey specimens found in all stomachs) x 100]

Data Collection and Organization

From 1999 to 2012 the marine mammal research group Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos (GEMM-Lagos) regularly surveyed, at least once a month, the coast of RJ from São Francisco de Itabapoana to Saquarema (Figure 1). During these surveys, awareness campaigns were implemented in the communities along the coast in order to promote a collaboration network and improve stranding reports. In these campaigns, flyers with brief description and aim of the monitoring program were delivered to the people who work, live or visit the region of the study area. In the flyer we included an accessible telephone number in order to receive the information about stranding events of marine mammals, seabirds and marine turtles. Flyers were also fixed in strategic and authorized places along the study area, including kiosks, restaurants, lifeguard and police stations, hotels, etc. Through presentations directed to both students and the general public a telephone number or/and email address was always available to report cases of strandings. Previous published data on strandings collected before the implementation of the monitoring program were also considered for the analyses of the stranding pattern. Doubtful records of species identification were not included in this study. We only included strandings presented in scientific journals and those records that were examined by the GEMM-Lagos researchers. Data on the occurrence, such as date of events, location, gender, body length, cause of death, and age class were documented. Body length was measured (in straight line) from the tip of the lower jaw to the caudal notch and the sex was determined by accessing the genital slits of the specimens (Norris, 1961). Due to the advanced decomposition state of some carcasses, sex determination and/or body length could not always be determined. Age categories were defined based on body length information following the study conducted by Fernandez (1992): dolphins with body length less than 130cm were defined as calves; dolphins with body length equal or superior to 130cm and equal or inferior to 230cm were categorized as juveniles; specimens with body length greater than 230cm were defined as adults. A chi-square test (χ^2) for equal proportions (at $p < 0.05$) was used to test differences in stranding frequencies between age and sex categories.

To determine if there were seasonal trends in the strandings, data were categorized into four seasons: January–March (summer), April–June (autumn), July–September (winter) and October–December (spring). A chi-square test (χ^2) for equal proportions (at $p < 0.05$) was also used to test differences in stranding frequencies among seasons.

Stranding data were used as an additional tool to evaluate possible patterns related to the general distribution of the species. In this context, the location of each stranding event was converted into geographic coordinates in order to construct a spatial view of the distribution of the bottlenose dolphins using the software QGIS (version 2.6.1. Brighton). For records from unpublished data (not in the monitoring program) the coordinates were obtained using Google Earth software.

The stomach contents collected during dissection of three specimens were rinsed in a sieve to recover the undigested prey items. Fish otoliths and squid beaks recovered from these stomachs were used to identify species and to quantify prey specimens. These items were also used to calculate the weight and length of the prey specimens according to Bastos (1990).

Results and Discussion

A total of 49 specimens of bottlenose dolphin were recorded stranded along the study area from 1984 to June 2012. From the total records, 84% from the regular beach surveys represented new occurrences. The stranding events were distributed along the study area, but most records seem to be concentrated in the south and north zones of the study area (Figure 1). According to Siciliano *et al.* (2006), bottlenose

Table 2. Prey species found in the stomach contents of bottlenose dolphins collected along the central-north coast of Rio de Janeiro State, Brazil.

PREY SPECIES / DOLPHINS	*Trichiurus lepturus*	*Porichthys porosissimus*	*Conodon nobilis*	*Micropogonias furnieri*	*Raneya fluminensis*	*Pagrus pagrus*	*Diplodon argenteus*	*Orthopristis ruber*	*Dules auriga*	*Syacium* sp.	*Loligo sanpaulensis*	*Loligo plei*	*Chaetodipterus faber*	Milk Substance	Month of occurrence	Reference
237cm; ♂		●	●									●			Jun	(a)
200cm; ♂		●	●		●	●	●								Jun	(a)
184cm; ♂		●	●		●										Jun	(a)
295cm; ?	●			●				●				●			May	(a)
162cm; ♀														●	Sep	(a)
166cm; ♀														●	Oct	(a)
200cm; ♂	●	●													Mar	(b)
250cm; ♂	●														Apr	(b)
280cm; ♀													●		Mar	(b)
287cm; ♂	●														May	(c)
240cm; ♂	●														Feb	(c)
266cm; ?		●							●	●					Dec	(c)
198cm; ♀		●							●	●	●				Feb	(c)

References: Di Beneditto *et al.*, 2001 (a); Present Study (b); Melo *et al.*, 2010 (c). Total length (in cm).

dolphins are frequently observed in coastal waters of the south region, as well as in deep waters on the continental shelf. Furthermore, excluding the Guiana dolphins (*Sotalia guianensis*), that are responsible for more that 50% of all cetaceans stranded in the study area, bottlenose dolphins represent 24% of all odontocetes stranded from 1999 to 2012[1].

The narrow continental shelf of the southern zone in the study area may facilitate the access of offshore dolphins to the rich coastal upwelling waters. For example, strandings of oceanic cetaceans clearly occur more often in the southern than in the central and northern regions of the study area (*e.g.* pygmy sperm whale *Kogia breviceps,* dwarf sperm whale *K. sima,* pygmy killer whale *Feresa attenuata* and Pacific pilot whale *Globicephala macrorhynchus*)[1] (Moura *et al.*, 2010).

Nine events of strandings with evidence of interactions with fisheries (18%) were observed in this study. Six of these were reported in the northern zone of the study area and other two dolphins were found in the southern area during regular surveys (Figure 1, Table 3). The total body length of the captured dolphins varied from 166 to 250cm. Cases of incidental mortality have been reported principally in the north of the study area where passive gillnet fisheries have a negative impact on coastal dolphins (Di Beneditto, 2003; Moura *et al.*, 2009*a*). It is important to highlight that some carcasses could have stranded as a result of entanglement, but the decomposition stage of the carcasses prevented such observations.

Significant seasonal variations of strandings were observed (χ^2 = 10000, SD = 3, p < 0.05) with most strandings occurring during autumn (37.5%), followed by winter (33%) (Figure 2). Peaks in strandings occurred in June (n = 10), followed by March, July and September, six records being observed for each of these three months. In a study of strandings carried out along the Ceará State coast, northeastern Brazil, most bottlenose dolphins occurred during summer and this trend seems to be associated with a great survey effort in this season (Meirelles *et al.*, 2009).

Males stranded more frequently than females (χ^2 = 4.481, SD = 1; p < 0.05), although 55% of the recorded dolphins could not be sexed. The same trend in gender frequency was observed in CE (Meirelles *et al.*, 2009). This significant difference is probably because males are easier to identify, rather than some other gender bias that could trigger higher frequency in strandings for males.

[1]GEMM-Lagos, unpub. data

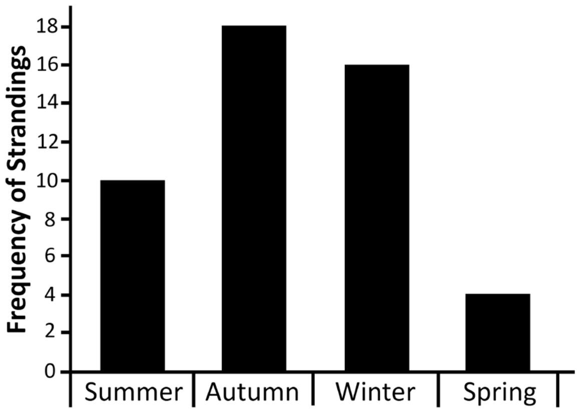

Figure 2. Number of strandings of bottlenose dolphins per season in the central-north coast of Rio de Janeiro State, Brazil, from 1984 to 2011 (n = 49).

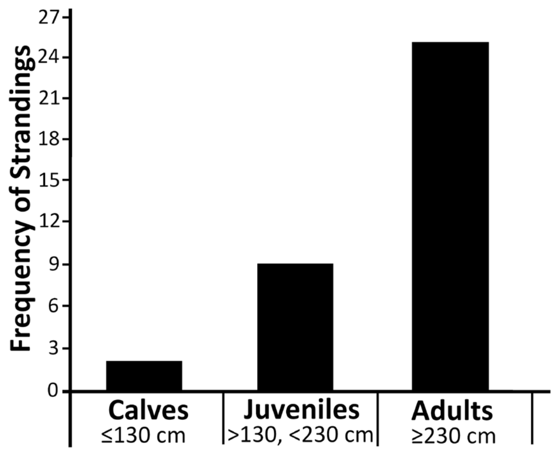

Figure 3. Number of bottlenose dolphins in age categories along the central-north coast of Rio de Janeiro State, Brazil, from 1984 to 2011 (n = 36).

In 73.5% of the stranding events, it was possible to measure the total body length. From the measured dolphins, 69.4% were classified as adults, 25% as juveniles and 5.5% were classified as calves (Figure 3). These observed differences were statistically significant ($\chi^2 = 23.167$, SD = 2, $p < 0.05$). The smallest and largest dolphins recorded in this study measured 106 (female) and 335cm (male) respectively. The low frequency of stranded calves was also observed in Rio Grande do Sul State, southern Brazil (Fruet, 2008) and in CE (Meirelles *et al.*, 2009). Mattson *et al.* (2006) also found the same trend in the Gulf of Mexico. Environmental (*e.g.* wind, sun incidence, beach declivity, currents) and biological (*e.g.* scavengers, fragile bones, and decomposition) conditions may hinder the discovery of such small carcasses, which would then lead to an underestimation of this size class (Moura *et al.*, 2009*b*). In contrast to our results, 61.3% of the dolphins found stranded in Rio Grande do Sul were classified as immature (dolphins measuring less that 297cm of total body length) (Fruet, 2008). The largest specimen recorded in our study (335cm) is slightly larger than that reported by Meirelles *et al.* (2009) in CE (310cm), but it is considerably smaller than that found by Fruet (2008) in southern Brazil (386.9cm).

Four prey species were found in the stomach contents of the three dolphins analyzed, represented by three species of fish: cutlass fish *Trichiurus lepturus,* n = 39; midshipman fish *Porichthys porosissimus*, n = 9; and Atlantic spade fish *Chaetodipterus faber*, n = 2; and one species of cephalopod (arrow squid *Loligo plei*, n = 1) (Table 1). The importance of the prey species for the diet of the three dolphins was sequentially *T. lepturus* > *P. porosissimus* > *C. faber* > *L. plei*, based on the frequency of occurrence (N%). Despite small sample sizes, the results indicate that the bottlenose dolphin was preferentially ichthyophagous, as already described in other regions of the Brazilian coast (Pinedo, 1982; Di Beneditto *et al.*, 2001; Gurjão *et al.*, 2004) and also along the coast of Florida, USA (Barros, 1993; Barros and Wells, 1998). On the other hand, studies carried out in the Gulf of Mexico have demonstrated that cephalopods are also important part of the diet for this species, though principally for offshore populations (Barros and Odell, 1990). Table 2 shows the prey species detected in stomach contents of bottlenose dolphins in the study area from previous works (Di Beneditto *et al.*, 2001; Melo *et al.*, 2010). In general, cutlass fish followed by midshipman fish and Atlantic spade fish seem to represent significant prey species. All prey species exhibit coastal habits indicating that stranded animals were feeding in coastal waters, even if they inhabited offshore areas.

A continuous monitoring program is necessary to verify the trends in the stranding patterns reported here, along with the collection of more information to better understand the ecology and vulnerabilities of the bottlenose dolphin in Brazilian waters. Lastly, future studies need to be implemented in order to elucidate the population dynamics and reevaluate the taxonomic status of this poorly known cetacean along the Brazilian coast.

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Table 3. Records of bottlenose dolphins (*Tursiops truncatus*) from the central-north coast of Rio de Janeiro State, southeastern Brazil.

Localities[1]	Latitude[2]	Longitude[2]	Date	Sex	TL (cm)[3]	Ref[4]	Code[5]
Praia do Foguete, CF	22°55'31"S	42°02'15"W	26 Jul 1984	-	-	[a]	MZUSP 19481
Farol de São Tomé, CG	22°03'22"S	41°04'28"W	Sep 1991	-	-	[b]	MN53657*
Atafona, SJB	21°37'17"S	41°00'45"W	Jun 1992	♂	184	[b]	MN53660*
Atafona, SJB	21°37'38"S	41°00'48"W	Jun 1992	♂	237	[b]	MN53658*
Macaé	22°21'46"S	41°46'21"W	Jun 1992	♂	200	[b]	MN53659*
Cabo Frio	22°53'50"S	42°01'40"W	24 May 1995	♂	287	[c]	GEMM TT 03
Farolzinho, CG	21°46'36"S	41°01'00"W	Oct 1996	♀	166	[b]	MN53661*
Armação dos Búzios	22°45'44"S	41°56'18"W	15 Feb 2000	♂	240.5	[c]	-
Praia Grande, AC	22°57'46"S	42°02'43"W	14 Jul 2000	-	-	[d]	GEMM 009
Barra de São João, CAA	22°35'50"S	41°59'21"W	03 Mar 2001	♀	280	[d]	GEMM 017
Praia da Vila, SAQ	23°02'03"S	43°29'20"W	28 Apr 2001	♂	270	[d]	GEMM 018
Praia de Carapebus, CAR	22°15'34"S	41°36'17"W	28 Feb 2004	-	-	[d]	GEMM 053
Praia do Peró, CF	22°51'44"S	41°59'08"W	16 May 2004	-	-	[d]	GEMM TT 11
Praia Seca, ARA	22°56'16"S	42°17'59"W	17 Jun 2004	-	250	[d]	GEMM 057
Praia Grande, AC	22°57'32"S	42°03'21"W	13 Jul 2004	-	160	[d]	GEMM 060
Praia de Itaúna, SAQ	22°56'08"S	42°29'12"W	04 Dec 2004	-	-	[d]	GEMM 074
Praia da Lagoa Preta, QU	22°11'14"S	41°23'43"W	2005	-	-	[d]	GEMM 243
Praia do Forte, CF	22°53'15"S	42°01'07"W	21 Mar 2005	-	-	[d]	GEMM TT 13
Praia do Foguete, CF	22°55'47"S	42°02'15"W	07 Jun 2005	-	275	[d]	GEMM TT 17
Praia do Foguete, CF	22°56'05"S	42°02'13"W	07 Jun 2005	-	286	[d]	GEMM TT 19
Praia de Manguinhos, AB	22°45'47"S	41°54'29"W	26 Jun 2005	♂	290	[d]	GEMM 081
Praia do Peró, CF	22°49'23"S	41°58'13"W	17 Dec 2005	♂	197	[d]	GEMM 094*
Figueira, AC	22°56'42"S	42°10'28"W	31 Mar 2006	♂	335	[d]	GEMM 098
Praia do Peró, CF	22°50'14"S	41°58'49"W	14 Feb 2007	-	120	[d]	GEMM TT 23
Praia de Barra Nova, SAQ	22°55'57"S	42°34'27"W	07 Mar 2007	♂	200	[d]	GEMM 120
Praia dos Anjos, AC	22°58'22"S	42°01'14"W	02 Apr 2007	♀	250	[d]	GEMM 122*
Praia Rasa, AB	22°43'29"S	41°58'49"W	23 Aug 2007	-	-	[d]	GEMM 132
Praia Rasa, AB	22°43'02"S	41°59'05"W	26 Jul 2008	-	-	[d]	GEMM 148
Praia do Foguete, CF	22°54'01"S	42°01'47"W	01 Aug 2008	-	-	[d]	GEMM TT 28
Caminho das Conchas, SJB	21°45'22"S	41°01'10"W	03 May 2010	♀	106	[d]	GEMM 190
Praia da Marinha, CF	22°42'11"S	41°59'28"W	19 May 2010	-	-	[d]	GEMM 191
Praia Seca, ARA	22°56'12"S	42°19'08"W	12 Jun 2010	-	-	[d]	GEMM 196
Praia de João Francisco, QU	22°12'40"S	41°28'55"W	16 Aug 2010	♂	205	[d]	GEMM 205
Praia do Sonho, SFI	21°30'06"S	41°04'14"W	19 Sep 2010	♀	265	[d]	GEMM 286
Iquipari, SJB	21°44'24"S	41°01'22"W	22 Sep 2010	♂	311	[d]	GEMM 291
Tatagiba, SFI	21°23'32"S	40°59'03"W	22 Sep 2010	♂	249	[d]	GEMM 292

Açu, SJB	21°52'57"S	40°59'23"W	26 Sep 2010	♂	263	[d]	GEMM 293
Praia do Salgado, AC	22°56'24"S	42°15'24"W	31 Dec 2010	♂	280	[d]	GEMM 246
Praia Seca, ARA	22°56'13"S	42°18'54"W	14 Apr 2011	♀	165	[d]	GEMM 296
Praia do Peró, CF	22°51'29"S	41°59'12"W	24 Jul 2011	♂	270	[d]	GEMM 312*
Praia da Ferradurinha, AB	22°46'55"S	41°54'00"W	02 Aug 2011	♀	269	[d]	GEMM 319
Praia do Açu, SJB	21°12'06"S	40°34'43"W	17 Jul 2011	♂	278	[d]	GEMM 307
Farol de São Tomé, CG	21°53'08"S	40°59'19"W	16 Sep 2011	-	300	[d]	GEMM 329*
Praia Rasa, AB	22°40'56"S	41°59'42"W	21 Feb 2012	-	245	[d]	GEMM 372
Praia do Sonho, SFI	21°19'31"S	40°57'44"W	06 Mar 2012	-	149	[d]	GEMM 377
São Francisco de Itabapoana	21°30'07"S	41°04'12"W	19 Mar 2012	♀	253	[d]	GEMM 380
Praia do Farol, CG	21°59'33"S	40°58'54"W	08 May 2012	♂	Adult	[d]	GEMM 384
Praia do Peró, CF	22°51'55"S	41°59'03"W	21 Jun 2012	-	280	[d]	GEMM 387

[1]Acronyms: ARA – Araruama; AB - Armação dos Búzios; AC - Arraial do Cabo; CF - Cabo Frio; CG - Campos dos Goytacazes; CAR– Carapebus; CAA - Casimiro de Abreu; QU – Quissamã; SFI - São Francisco de Itabapoana; SJB - São João da Barra; SAQ – Saquarema;
[2]Coordinates in degrees, minutes, seconds;
[3]Total Length;
[4]References: [a] Geise and Borobia, 1988; [b] Siciliano and Franco, 2005; [c] Melo *et al*., 2010; [d] This study;
[5]Code = MZUSP - Museu de Zoologia, Universidade de São Paulo (USP); MN - Museu Nacional, Universidade Federal do Rio de Janeiro (UFRJ); GEMM – Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos (GEMM-Lagos).
*Dolphins with evidence of interaction with fisheries

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