

The occurrence of bottlenose dolphins (*Tursiops truncatus*) in the biological reserve of Atol das Rocas in north-eastern Brazil

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The present work describes sightings of two groups of *Tursiops truncatus*, one with six and one with fifteen individuals, including four specimens identified by photograph and video, besides personal communications and records by other researchers. The presence of calves in the observed groups and the constant tactile interaction among the individuals suggest they may be using the area for socialization purposes. All the observations were taken on the north-western portion of the atoll which is the most sheltered throughout the year. The sightings of *T. truncatus* in the REBIO Atol das Rocas contribute to the knowledge about this species in Brazilian oceanic waters and highlight the importance of this area for the conservation of cetaceans.

INTRODUCTION

Scientists around the world have been arguing the existence of two ecotypes, coastal and oceanic, for the bottlenose dolphin (*Tursiops truncatus* Montagu, 1821) (Ross, 1977; Walker, 1981; Kenney, 1990; Waerebeek et al., 1990; Mead & Potter, 1995; Anchante et al., 2002). In Brazil most of the data relating to *T. truncatus* come from the study of coastal populations, although the species has been recorded in oceanic waters (Dalla Rosa, 1998; Sampaio & Reis, 1998; Cremer et al., 2002; Silva et al., 2002). Simões-Lopes (1996) identified, based on sightings around the Arvoredo Island (Santa Catarina, Brazil), a form of *T. truncatus* which is different from that usually encountered in the region and which he suggested is oceanic. Barreto (2000) described two forms, based on cranial morphology, along the Atlantic coast of South America, one occurring to the north and one to the south of Santa Catarina (27°30'S), Brazil. The northern form shows, probably due to the physiographic characteristics of its environment, two ecotypes, coastal and oceanic, but the southern form, in contrast to other parts of the world, only shows the coastal ecotype.

More recently, studies were initiated in the oceanic waters of the São Pedro and São Paulo archipelago (00°56'N 29°22'W), with emphasis on photo-identification, which suggests that the individuals observed show a great degree of site fidelity (Caon & Ott, 2000, 2004).

On Atol das Rocas (03°50'S 33°49'W), the only atoll in the southern Atlantic ocean, there was only one registered occurrence of *T. truncatus* (Skaf & Secchi, 1994); however, sightings of this species in the shallow waters which surround the atoll have become frequent in the last few years (M.B. Silva, personal observation).

The present work describes sightings of two groups of *T. truncatus*, in addition to the personal communications and records of sightings kept by other researchers in the area of the REBIO Atol das Rocas, suggesting the possible use of sheltered areas as socialization and resting grounds, with the aim of contributing to the knowledge of this species in Brazilian oceanic waters.

MATERIALS AND METHODS

Atol das Rocas is located 144 nautical miles east-north-east off the Rio Grande do Norte State; it constitutes the only atoll in the southern Atlantic Ocean and, due to its biological significance, has been declared a Biological Reserve (Reserva Biológica—REBIO)

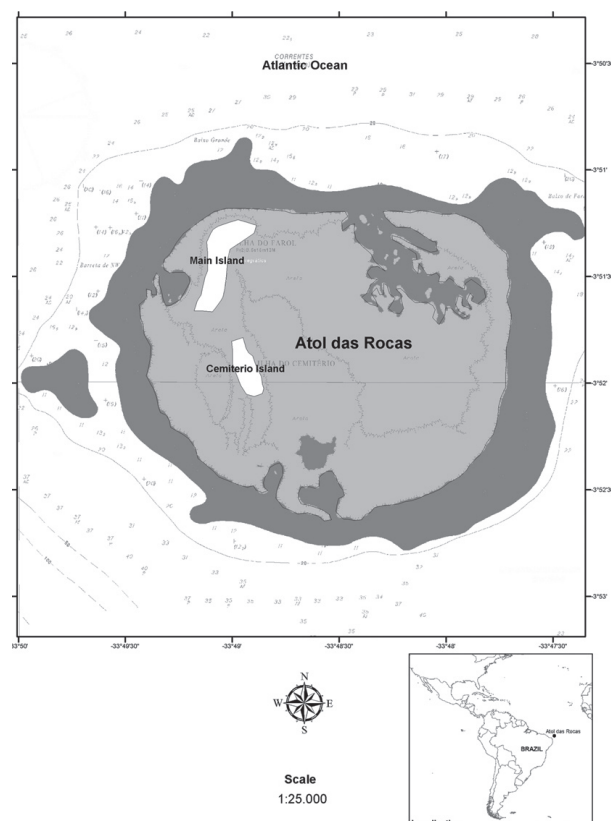


Figure 1. Atol das Rocas Biological Reserve, north-eastern Brazil.

by the Instituto Brasileiro de Meio Ambiente e Recursos Naturais Renováveis (IBAMA). The REBIO encompasses an area of 360 km², including the atoll and surrounding waters to the 1000 m isobath (Sales, 1991) (Figure 1).

The area surrounding the atoll, to the 100 m isobath, was monitored for two days, totalling 18 hours of sampling effort. The observations of bottlenose dolphins (*Tursiops truncatus*) were made on board the research vessel 'Lady Ariana' (80 feet trawler) and from a 12 feet rigid-hulled inflatable boat ('Zodiac').

The researchers performed free-diving to observe the underwater behaviour of the dolphins, to capture images for individual identification and to verify if the animals were vocalizing, since no bioacoustic equipment was available at the time.

The animals were photographed and filmed using a digital camera Nikon D70 and a Sony VX2100 with Gates® underwater housing.

In addition, personal communications supplied by the researchers working at the biological reserve were incorporated into this study.

RESULTS

Two sightings were made in the proximity of the atoll (Table 1). The first group was observed on 27 October 2004, three nautical miles from the atoll and was composed of six individuals: three adults, one juvenile and two calves. The dolphins, including the calves, approached the research vessel and remained surfing the waves created by the vessel (bowriding) for approximately five minutes. One of the individuals showed a white marking on the anterior base of its dorsal fin. One of the calves remained close to this individual the whole time.

Table 1. Records and observations of *Tursiops truncatus* in Atol das Rocas.

Date	Time of sighting	Group Size	Number of calves	Latitude	Longitude	Depth (m)	Reference
October 1993	–	3	1	03°45'	33°37'	15	Skaf & Secchi, 1994
December 2003	Morning	3	–	–	–	50	G. Maurutto, personal communication
January 2004	Morning	11	1	03°51'	33°49'	20 to 30	G. Maurutto, personal communication
27 October 2004	0735 h	6	2	03°50'45"	33°39'35"	40	Current study
28 October 2004	1530 h	15	1	03°51'49"	33°49'55"	20 to 30	Current study

The second group was sighted on 28 October 2004 on the outer reef. This group was composed by fifteen individuals, including one calf, and was approximately 100 m away from the reef. The depth at that location was between 20 and 30 m approximately. Underwater images were taken to aid the identification of individuals (video-identification). Furthermore, three individuals were identified through photographs of the dorsal fin. One individual was video-identified by a circular scar on its left side, on the tail peduncle, near the caudal fin.

The animals vocalized and kept constant tactile interaction throughout the duration of the observations. The exhalation of air bubbles through the respiratory orifice associated with other behaviours was frequent and is also interpreted by some authors as a social signal (Herzing, 1996).

In 2003 three adult individuals were sighted approximately 1000 m away from the reef. The animals were observed for some minutes until the arrival of an oceanic white tip shark (*Carcharhinus longimanus* Poey, 1821), causing their dispersion (G. Maurutto, personal communication). In January 2004, a group of at least eleven individuals, including one calf, was sighted on the north-western portion of the atoll, in front of the lighthouse, at 20 to 30 m depth, 100 m away from the reef ring (G. Maurutto, personal communication).

DISCUSSION

Despite the existence, to this date, of only one published record in this area (Skaf & Secchi, 1994), *Tursiops truncatus* seem to be frequent in the study area. The rangers at the REBIO Atol das Rocas make year-round observations of bottlenose dolphins on the outer shallow waters of the atoll (M.B. Silva, personal observation).

These frequent reports, in conjunction with the results of this study, suggest the occurrence of a *T. truncatus* population which frequently utilizes the shallow waters surrounding the atoll.

Further efforts on the photo- and video-identification of the dolphins frequenting the atoll might shed some light on this question as well as verify the degree of fidelity of some individuals to the area. Foraging behaviour was not observed and the great intensity of tactile interactions, in addition

to the presence of calves, indicate the animals may be using this shallow area surrounding the atoll for socialization and protection against predators such as *C. longimanus*.

All the records described here concentrated on the north-western portion of the atoll, which is leeward most of the year (Kikuchi & Leão, 1997) and therefore most sheltered.

A group with fifty individuals of *T. truncatus*, including sub-adults and calves, was observed on the Fernando de Noronha arquipelago in March 2004 in agonistic interaction with spinner dolphins, *Stenella longirostris* Gray 1828 (Silva Jr & Silva, 2004). Spinner dolphins utilize the shallow waters of the Bay of Dolphins in Fernando de Noronha for rest and breeding (Castello & Barcellos, 1986; Lodi & Fiore, 1987; Silva Jr, 1996); it is possible that the oceanic form of *T. truncatus* seeks the oceanic islands of north-eastern Brazil for the same purpose. In spite of the proximity between the Fernando de Noronha arquipelago and Atol das Rocas (148 km) it is not possible to infer that the dolphins observed in both areas belong to the same population, even though bottlenose dolphins have been known to dislocate from short distances (20–65 km) in the Gulf of California (Ballance, 1992) to long distances (1340 km) between San Diego and Monterey Bay (Wells et al., 1990). Future comparisons between photo- and video-identified individuals of both areas may clarify this question.

The present study verified the presence of bottlenose dolphins in Atol das Rocas. These animals possibly use the area for resting and socializing. This finding highlights the importance of the protection and maintenance of the Atol das Rocas Biological Reserve.

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