Latin American Journal of Aquatic Mammals

ISSN: 2236-1057 | Vol. 18 No. 2, October 2023

Incidence of a solitary bottlenose dolphin, *Tursiops truncatus*, and interactions with spinner dolphins, *Stenella longirostris*, in the Fernando de Noronha Archipelago, Brazil

Flávia Q. Weysfield[1]*, Amanda C. da Silva[1], Priscila I. A. P. de Medeiros[1], Vinícius G. S. Santana[2], José M. da Silva-Jr.[3], and Flávio J. de L. Silva[1,2,4,5]

[1]Centro Golfinho Rotador, Fernando de Noronha, Brazil
[2]Centro de Estudos e Monitoramento Ambiental – CEMAM, Areia Branca, Brazil
[3]Independent researcher, Fernando de Noronha, Brazil
[4]Universidade do Estado do Rio Grande do Norte, Departamento de Turismo, Projeto Cetáceos da Costa Branca – UERN, Natal, Brazil
[5]Programa Regional de Pós-Graduação em Desenvolvimento e Meio Ambiente – PRODEMA – Universidade Federal do Rio Grande do Norte – UFRN, Natal, Brazil

*Corresponding author: flavia@golfinhorotador.org.br

Abstract

The *Projeto Golfinho Rotador* (PGR, Spinner Dolphin Project) has systematically monitored the distribution, ecology, and behavior of cetaceans in the Fernando de Noronha Archipelago (FNA) since 1990. During this period, the presence of spinner dolphins (*Stenella longisrostris*) was recorded in 93% of the days of the year, and occasionally another nine species of cetaceans. As of November 2021, the presence of a solitary bottlenose dolphin (*Tursiops truncatus*), known as *Kai*, was observed in the FNA. This work aims to describe the frequent presence of the solitary bottlenose dolphin in the FNA, as well as the interactions between that individual and the spinner dolphins. The records were made from two land-based platforms on the main island, and by collecting information and images from collaborators, such as sailors and divers. From 10 November 2021 to 23 July 2022, between the first and last sightings, in 223 days of study and 2,210.22 h of sampling effort, 49 sightings of the bottlenose dolphin were recorded. It was an adult, offshore ecotype, of unidentified sex and apparently healthy. On days when *Kai* was sighted, the spinner dolphins stayed an average of 5.84 h in the area (SD ± 3.02), while on days without sightings the average permanence was 6.20 h (SD ± 2.65). There was no effect of the presence of *Kai* on the permanence of the spinner dolphins (Mann-Whitney, U = 1042; p = 0.678), with a predominance of neutral interactions. According to the habituation stages currently adopted, *Kai* was in stage two, in which it was already known by the local population, followed some boats, but still kept its distance from humans. The existence of legislation to protect cetaceans and the action of the PGR in the community may have helped with the non-progression of the habituation stage.

Keywords:
interspecific interaction, diversity, Delphinidae, human-animal interaction, ecotourism, dolphins

ARTICLE INFO

Manuscript type: Article

Article History
Received: 31 March 2023
Received in revised form: 08 June 2023
Accepted: 12 June 2023
Available online: 10 August 2023

Handling Editor: Miriam Marmontel

Citation:
Weysfield, F. Q., Silva, A. C., Medeiros, P. I. A. P., Santana, V. G. S., Silva-Jr, J. M., & Silva, F. J. L. (2023). Incidence of a solitary bottlenose dolphin, *Tursiops truncatus*, and interactions with spinner dolphins, *Stenella longirostris*, in the Fernando de Noronha Archipelago, Brazil. *Latin American Journal of Aquatic Mammals, 18*(2), 169-174. https://doi.org/10.5597/lajam00307

Introduction

The Projeto Golfinho Rotador (PGR, Spinner Dolphin Project) has systematically monitored the distribution, ecology and behaviour of cetaceans in the Fernando de Noronha Archipelago, (FNA; 03°50' S, 32°02' W) since 1990 (Silva-Jr, 2010; Souza et al., 2022). The FNA is the area with the highest frequency of spinner dolphins (*Stenella longirostris*, Gray, 1828) in the world,

being possible to observe them in large groups almost every day of the year (Silva-Jr, 2010). Another nine different species of cetaceans have already been recorded in the Archipelago in this period: humpback whale (*Megaptera novaeangliae*), pilot whale (*Globicephala* sp.), pantropical spotted dolphin (*Stenella attenuata*), Clymene dolphin (*S. clymene*), Atlantic spotted dolphin (*S. frontalis*), striped dolphin (*S. coeruleoalba*), Cuvier's beaked whale (*Ziphius cavirostris*), melon-headed whale (*Peponocephala electra*), and bottlenose dolphin (*Tursiops truncatus*) (Souza et al., 2022).

Spinner dolphins seek out the calm coves of Fernando de Noronha during the day to rest, reproduce, nurse, and socialize, gathering on three main areas: Baía dos Golfinhos (BG), Baía de Santo Antônio (BSA) and Entre Ilhas region (EI) (Silva-Jr., 2005; Tischer et al., 2017; Weysfield et al., 2020). While the presence of spinner dolphins is constant in the FNA and could be observed in 93% of the studied days, the presence of other species occurred occasionally, in only 5% of the study days (Souza et al., 2022). In November 2021, a solitary bottlenose dolphin began to be observed in the FNA.

The record of solitary individuals of bottlenose dolphins, usually of the coastal ecotype, is common in the scientific literature (Lockyer, 1978; Bloom, 1991; Müller & Bossley, 2002; López et al., 2008; Eisfeld et al., 2010; Nunny & Simonds, 2019; IJsseldijk et al., 2020). For Müller & Bossley (2002), the occurrence of solitary individuals of bottlenose dolphins would not necessarily be considered an abnormal event, given that the existence of solitary individuals in gregarious species is also observed in several other mammals.

This behaviour, which may be permanent or temporary, can be triggered by several factors both at the ecological level, such as food availability, habitat loss, reproductive dispersal, and fluctuations in group size; and at the individual level, such as intraspecific intrinsic variation, behavioral plasticity, and previous experience of the individual (Müller & Bossley, 2002). Unlike other animals, in many instances these dolphins direct their social behaviour toward humans, a characteristic that appears to be unique to delphinids (Müller & Bossley, 2002; Nunny & Simonds, 2019).

Wilke et al. (2005) described the socialization process of solitary dolphins in four stages: a) The lone dolphin arrives in the new area and stays there, usually in a more restricted area; human contact, when existing, is limited to follow vessels or inspect fishing gear; b) The solitary dolphin gets used to the place and its presence becomes known by the local population; it bow rides vessels more regularly and is curious about divers and bathers who may try to approach, but still maintains a certain distance; c) The solitary dolphin gets used to human presence and can interact in different ways, such as swimming together, allowing itself to be touched or towing people by its dorsal fin; d) The presence of the solitary dolphin is well known and reported by the media, and it begins to be treated as a tourist attraction, which may affect the local economy; at this stage, there may be inappropriate behaviour on the part of humans and aggressive and sexual behaviour on the part of the dolphin.

This work aims to describe the frequent presence of a solitary bottlenose dolphin in the FNA, as well as the interactions between this individual and spinner dolphins in BSA and EI of the FNA.

Material and methods

Study Site

The Fernando de Noronha Archipelago, which consists of 21 islands, islets and rocks, is located 350 km off the coast of the

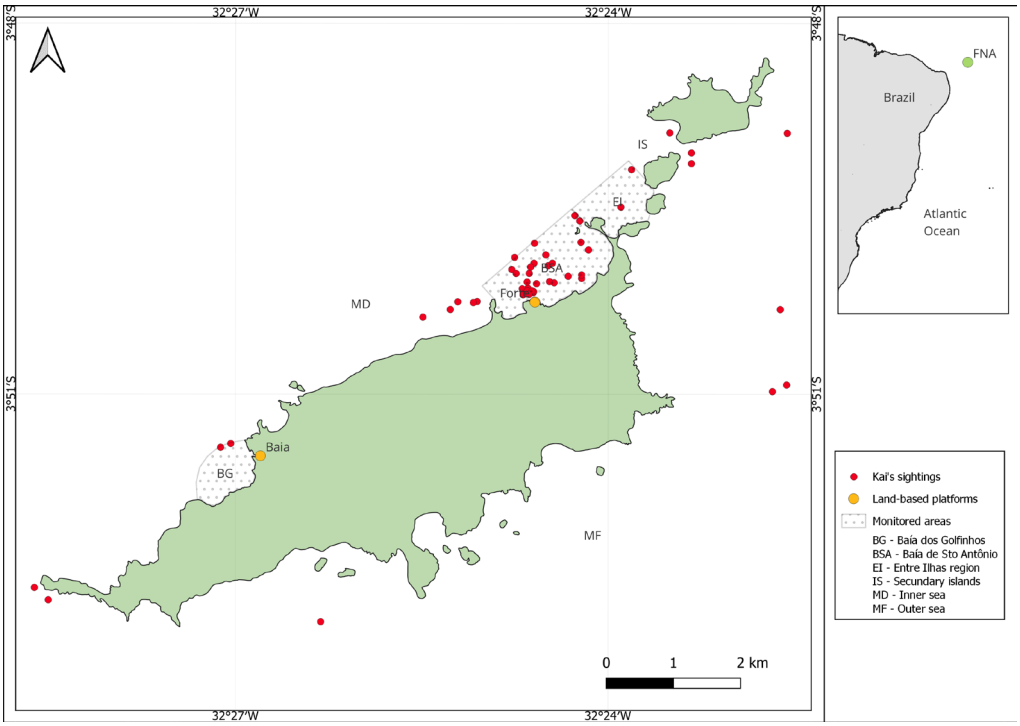

Figure 1. Solitary bottlenose dolphin (*Tursiops truncatus*) Kai's sightings in the Fernando de Noronha Archipelago and the monitored areas by land-based platforms.

state of Rio Grande do Norte, northeastern Brazil. The exposed part of the Archipelago is the remainder of the top of the cone of an extinct volcano whose base is 4,000 m deep, providing refuge and food resources for various ocean animals (Teixeira et al., 2011). It has two sides with very different characteristics: the *Mar de Fora* (Outer sea), to the windward, with rough seas, as it is exposed to the trade winds and the South Equatorial ocean current, and the *Mar de Dentro* (Inner sea), a calmer sector, to the leeward (Teixeira et al., 2011), where the BG, the BSA and the EI regions are located (Fig. 1).

Data collection and analysis

Data were collected from two land-based platforms, from 5:30 am to at least 4:00 pm: the Mirante dos Golfinhos and the Forte dos Remédios; and on boat surveys. Information was also collected by public collaborators through the Citizen

Table 1. Solitary bottlenose dolphin (*Tursiops truncatus*) sightings in the Fernando de Noronha Archipelago, Brazil.

N	Date	Location	Info Source	Bow Riding	Tyoe of Boat	Aerial Activities
1	10 November 2021	BSA	CS - boat	Yes	Catamaran	No
2	25 November 2021	BG	PGR	No	-	No
3	29 November 2021	MD	CS - boat	ND	-	No
4	1 December 2021	MD	CS - boat	Yes	ND	No
5	03 December 2021	ND	CS - boat	Yes	Monohull	No
6	13 December 2021	BSA	PGR	No	-	No
7	18 December 2021	MD	CD - boat	Yes	Catamaran	No
8	19 December 2021	BSA	CS - boat	ND	-	No
9	03 January 2022	BSA	PGR	No	-	No
10	04 January 2022	BSA	CS - boat	ND	-	No
11	18 January 2022	BSA	PGR	ND	-	No
12	09 March 2022	MF	CS - boat	Yes	Catamaran	No
13	12 March 2022	BSA	PGR	Yes	Monhull	No
14	14 March 2022	BSA	CS - boat	ND	-	No
15	15 March 2022	BSA	CS - boat	ND	-	No
16	21 March 2022	MF	CS - boat	Yes	Catamaran	No
17	18 April 2022	IS	CS - dive	No	-	No
18	08 May 2022	BSA	PGR	Yes	Monohull	No
19	09 May 2022	BSA	PGR	ND	-	No
20	14 May 2022	BSA	CS - boat	Yes	Catamaran	No
21	15 May 2022	BSA	PGR	No	-	No
22	16 May 2022	BSA	PGR	Yes	Monohull	Yes
23	17 May 2022	BG	PGR	Yes	Catamaran	No
24	19 May 2022	IS	CS - boat	yes	Catamaran	No
25	20 May 2022	MD	PGR	No	-	Yes
26	21 May 2022	BSA	PGR	No	-	No
27	21 May 2022	ND	CS - boat	Yes	Catamaran	No
28	23 May 2022	IS	CS - boat	Yes	Catamaran	No
29	23 May 2022	IS	CS - dive	ND	-	No
30	25 May 2022	MF	PGR	Yes	Monohull	No
31	26 May 2022	BSA	PGR	Yes	Cargo	No
32	27 May 2022	BSA	PGR	Yes	Catamaran	Yes
33	01 June 2022	BSA	PGR	No	-	No
34	07 June 2022	IS	CS - boat	Yes	Catamaran	No
35	09 June 2022	BSA	PGR	No	-	No
36	10 June 2022	BSA	PGR	Yes	Cargo	No
37	13 June 2022	BSA	PGR	Yes	Cargo	No
38	15 June 2022	MF	CS - boat	ND	-	No
39	20 June 2022	BSA	PGR	Yes	Cargo	Yes
40	21 June 2022	BSA	PGR	No	-	No
41	24 June 2022	BSA	PGR	Yes	Cargo	Yes
42	29 June 2022	MD	PGR	Yes	Catamaran	No
43	01 July 2022	BSA	PGR	Yes	Cargo	No
44	03 July 2022	BSA	CS - boat	No	-	No
45	04 July 2022	BSA	CS - boat	No	-	No
46	12 July 2022	IS	CS - dive	No	-	No
47	18 July 2022	BSA	PGR	No	-	No
48	22 July 2022	MF	CS - boat	ND	-	No
49	23 July 2022	MF	PGR	Yes	Monohull	No

ND - No data
BG - Baía dos Golfinhos
BSA - Baía de Santo Antônio
CS - Public collaborators through the Citizen Science program
IS - Secundary islands (including EI)
MD - Inner sea (excluding BSA)
MF - Outer Sea

Science program. From the Mirante dos Golfinhos, it is possible to observe the BG, one of the three main areas of spinner dolphin concentration in the FNA. From Forte dos Remédios, it is possible to observe the BSA and the region of secondary islands called EI, both currently considered the main resting areas for spinner dolphins in the FNA.

At the land-based plataforms and on boat surveys, the researchers recorded the date, time, place and duration of the sighting, behavior of the bottlenose dolphin, presence, permanence and behavior of spinner dolphins in relation to the bottlenose dolphin (neutral, affiliative or agonistic), presence of vessels, and when possible, recorded images in photo and video. The following questions were asked to the collaborators in the Citizen Science program information network: date, time and location of the sighting, behavior of the bottlenose dolphin, presence of spinner dolphins, and whether there were records of photo and video images.

One-zero Sampling (Altmann, 1974) was used to record behaviors, such as feeding, bow riding, and aerial activities, in order to also use data obtained from the Citizen Science program. The stage of socialization was classified according to Wilke et al. (2005). For the study of interactions between the solitary bottlenose dolphin and spinner dolphins in the BSA and EI, only sightings that occurred on monitoring days at Forte dos Remédios were considered. Data were analysed using descriptive and inferential statistics, adopting non-parametric tests (Kolmogorov–Smirnov, Shapiro-Wilk, Mann-Whitney), all with a significance level of 5%.

Results

From 10 November 2021 to 23 June 2022, between the first and last sightings, 223 days of study were carried out. The effort in the period was of 2,210.22 h, of which 1,053.56 h at Mirante dos Golfinhos, 1,113.38 h at Forte dos Remédios, and 43.28 h of boat surveys.

During the study period, 49 sightings of the solitary bottlenose dolphin were made (Fig. 1). The animal was an adult, offshore ecotype, of unidentified sex, who appeared to be in good physical condition. It could be identified by a notch on the upper third of its dorsal fin (Figs 2, 3). After a popular vote to choose the name, the dolphin became known as '*Kai*'.

Figure 2. Last sighting of *Kai*, the solitary bottlenose dolphin (*Tursiops truncatus*) in the Fernando de Noronha Archipelago (by Luiza Sampaio/ Spinner Dolphin Project).

Table 2. Solitary bottlenose dolphin (*Tursiops truncatus*) sightings in the study of interactions with spinner dolphins (*Stenella longirostris*) in the BSA and EI, Fernando de Noronha Archipelago, Brazil.

N	Date	Location	Presence spinner dolphins	Location spinner dolphins
1	10 November 2021	BSA	Yes	BSA
2	01 December 2021	MD	ND	ND
3	03 December 2021	ND	ND	ND
4	13 December 2021	BSA	Yes	BSA
5	03 January 2022	BSA	Yes	BSA
6	18 January 2022	BSA	ND	ND
7	21 March 2022	MF	ND	ND
8	09 May 2022	BSA	Yes	BSA
9	16 May 2022	BSA	Yes	BSA
10	20 May 2022	MD	No	ND
11	23 May 2022	IS	Yes	IS
12	26 May 2022	BSA	No	ND
13	27 May 2022	BSA	No	ND
14	01 June 2022	BSA	No	ND
15	07 June 2022	IS	ND	ND
16	10 June 2022	BSA	Yes	BSA
17	13 June 2022	BSA	Yes	BSA
18	15 June 2022	MF	ND	ND
19	20 June 2022	BSA	Yes	BDA
20	21 June 2022	BSA	Yes	BSA
21	24 June 2022	BSA	Yes	BSA
22	29 June 2022	MD	No	ND
23	01 July 2022	BSA	Yes	BSA
24	04 July 2022	BSA	ND	ND
25	18 July 2022	BSA	Yes	BSA

ND - No data
MD - Inner sea (excluding BSA)
BSA - Baía de Santo Antônio
MF - Outer Sea
IS - Secundary islands (including EI)

The first record, on 10 November 2021, was provided by a tour guide and fisherman in the BSA region, who reported seeing a dolphin much larger than spinner dolphins in the region and later confirmed as *T. truncatus* based on identification guides. The second sighting took place 15 days later by the PGR team, and on subsequent days cell-phone videos of the specimen were received, provided by sailors from boat tours. Of the 49 sightings, 26 were recorded by the PGR team and 23 by collaborators; of these, 20 from boats and three underwater encounters during scuba diving. *Kai* could be seen in several locations in the FNA, both in the *Mar de Dentro* and in the *Mar de Fora* (Fig. 1). In five days, *Kai* was observed performing aerial activities (AA) of leap, backleap, spyhop, tail, and headslap. Additionally, on 25 occasions *Kai* was observed riding the bow pressure waves of boats, of which 48% were catamarans (n = 12), 24% were cargo boats (n = 6), and 24% were monohulls (n = 6). In one record, it was not possible to identify the type of boat (Table 1). No feeding behaviour was observed.

Since *Kai* was already known by the local population, accompanied boats on at least half of the sightings and showed some curiosity for scuba divers, but still kept a certain distance from humans, it was categorized as "stage two" of the habituation process. On 19 May 2022, abrasions were observed on *Kai*'s back and peduncle, typical marks of collision with a boat. These markings were not observed in the previous sighting, on 17 May.

Figure 3. Solitary bottlenose dolphin (*Tursiops truncatus*) Kai's sighting during scuba diving in Fernando de Noronha Archipelago (by Maitê Baratella / Barracudas Imagens).

The wounds healed and reopened over the course of the week, until complete healing.

The presence of humpback whales close to *Kai* was observed twice, in the last two sightings, both at the southwest end of the FNA. The last record, on 23 July 2022, was made by the PGR team on a boat survey, when two humpback whales were less than 50 m from the individual, but no interaction between them was observed.

The study of interactions between the solitary bottlenose dolphin and spinner dolphins took place between 10 December 2021 and 18 July 2022, totaling 1,102.38 h of sampling effort. During the period, the bottlenose dolphin was observed 25 times (Table 2). On 11 of the 13 occasions (85%) where there were spinner dolphins in the same area, *Kai* stayed at least 50 m away from them, with neutral interaction predominating.

On one occasion, *Kai* was seen escorting a boat with spinner dolphins (affiliative interaction). Only once agonistic behaviour was observed, when *Kai* was surrounded by spinner dolphins and led away from the group. On days when *Kai* was sighted, spinner dolphins stayed an average of 5.84 h in the area (SD ± 3.02), while on days without sightings the average permanence was 6.20 h (SD ± 2.65). There was no effect of the presence of the solitary bottlenose dolphin on the permanence of spinner dolphins (Mann-Whitney, U = 1042; p = 0.678). As of 23 July 2022, *Kai* has not been sighted by the PGR team and collaborators in the FNA.

Discussion

The great mobility of *Kai* is different from most cases described in the scientific literature, in which the solitary individual has a reduced home range (Müller & Bossley, 2002; Nunny & Simonds, 2019). Although bottlenose dolphins have already been studied in other oceanic islands in northeastern Brazil, such as Atol das Rocas (03°50' S, 33°49' W), where occasional sightings were reported with group sizes ranging from 3 to 15 individuals (Baracho et al., 2008; Meirelles et al., 2016), and in the São Pedro and São Paulo Archipelago (00°56' N, 29°22' W), where there is a resident population of around 30 to 40 individuals (Meirelles et al., 2016; Oliveira et al., 2016), this is only the second report of the presence of the species in the FNA.

Affiliative, neutral and agonistic interactions have already been observed with solitary dolphins (Nunny & Simonds, 2019; Gross et al., 2020). The first and only record of bottlenose dolphin in the FNA, until then, occurred punctually, on 10 March 2004, when a group of about 50 individuals was sighted near the secondary islands. At the time, an agonistic interaction was recorded with a group of spinner dolphins that moved into the area and, when approaching the group of bottlenose dolphins, changed direction and moved away porposing (Silva-Jr & Silva, 2004). Unlike the agonistic encounter recorded in 2004, in this study we observed a predominance of neutral interaction between the two species, which may be related to the fact that the bottlenose dolphin was solitary and kept distance from spinner dolphins, most of the time, when occupying the same area.

The last two sightings of *Kai*'s took place at the southwest end of the main island, in the *Mar de Fora*, where its presence was not common. Although no interaction with humpback whales was seen at the time, interactions between the two species are common (Rossi-Santos et al., 2009; Deakos et al., 2010).

The fact that *Kai* has progressed only to stage two in socialization before his last sighting is also considered normal. According to Wilke et al. (2005), habituation can develop up to stages two or three, as well as continue its progression in another location. Nunny & Simonds (2019) also propose a fifth stage, in which the solitary dolphin returns to live with conspecifics, being able to move directly from stage two to five. However, since *Kai* was no longer sighted, it was not possible to confirm whether it returned to live in a group with individuals of the same species, changed its home range, or died. The fact that this was an offshore bottlenose dolphin may have been relevant for the non-progression of habituation stage and the individual leaving the area, since this ecotype is less used to the presence of humans and the transit of boats in its territory.

The existence of regulations in Brazil in general and in the FNA in particular, prohibiting the harassment of cetaceans (Brasil, 1987; IBAMA, 1996) and intentional diving with dolphins (ICMBio, 2017), in addition to the ongoing work of the Projeto Golfinho Rotador with tourist awareness, environmental education, and training of tourism service providers regarding cetacean protection standards, may have contributed to the non-progression of the socialization stage, even in waters widely used by swimmers and divers.

Acknowledgments

Special thanks to Projeto Golfinho Rotador team, for their efforts in data collection, to the collaborators of the Citizen Science program for the information and images provided, and to Petrobras, for its sponsorship, through the Programa Petrobras Socioambiental.

References

Altmann, J. (1974). Observational study of behavior: sampling methods. *Behaviour, 49*(3-4), 277-266. https://doi.org/10.1163/156853974X00534

Baracho, C., Cipolotti, S., Marcovaldi, E., Apolinário, M., & Silva, M. B. (2008). The occurrence of bottlenose dolphins (*Tursiops truncatus*) in the biological reserve of Atol das Rocas in north-eastern Brazil. *Marine Biodiversity Records, 1*, E75. https://doi.org/10.1017/S1755267207007920

Bloom, P. (1991). The diary of a wild, solitary, bottlenose dolphin (*Tursiops truncatus*), resident off Amble on the north Northumberland coast of England, from April 1987 to January 1991. *Aquatic Mammals, 17*(3), 103-119.

Brasil. (1987). Lei Nº 7.643, de 18 de dezembro de 1987. Proíbe a pesca de cetáceos nas águas jurisdicionais brasileiras, e dá outras providências. Diário Oficial da União, Brasília, DF, 21 dez. 1987, Seção 1 – pag 22079.

Deakos, M. H., Branstetter, B. K., Mazzuca, L., Fertl, D., & Mobley Jr, J. R. (2010). Two unusual interactions between a bottlenose dolphin (*Tursiops truncatus*) and a humpback whale (*Megaptera novaeangliae*) in Hawaiian waters. *Aquatic Mammals, 36*(2), 121-128. https://doi.org/10.1578/AM.36.2.2010.121

Eisfeld, S. M., Simmonds, M. P., & Stansfield, L. R. (2010). Behavior of a solitary sociable female bottlenose dolphin (*Tursiops truncatus*) off the coast of Kent, Southeast England. J*ournal of Applied Animal Welfare Science, 13*(1), 31-45. https://doi.org/10.1080/10888700903369263

Gross, S., Claus, P., Wohlsein, P., Kesselring, T., Lakemeyer, J., Reckendorf, A., Roller, M., Tiedmann, R., & Siebert, U. (2020). Indication of lethal interactions between a solitary bottlenose dolphin (*Tursiops truncatus*) and harbor porpoises (*Phocoena phocoena*) in the German Baltic Sea. *BMC Zoology, 5*(1), 1-9. https://doi.org/10.1186/s40850-020-00061-7

IBAMA. (1996). Portaria Nº 117, 26 de dezembro de 1996. Diário Oficial da União, Brasília, DF, 27 dez. 1996.

ICMBio (2017). Plano de Manejo da Área de Proteção Ambiental de Fernando de Noronha – Rocas – São Pedro e São Paulo. Brasília, Brazil.

IJsseldijk, L. L., van Schalkwijk, L., van den Berg, A., ten Doeschate, M. T., Everaarts, E., Keijl, G., Kuijpers, N. W., Rebolledo, E. B., Veraa, S., Kik, M. J., & Leopold, M. (2020). Fatal attraction: The death of a solitary-sociable bottlenose dolphin due to anthropogenic trauma in the Netherlands. *Lutra, 63*(1-2), 17-32.

Lockyer, C. (1978). The history and behaviour of a solitary wild, but sociable, bottlenose dolphin (*Tursiops truncatus*) on the west coast of England and Wales. *Journal of Natural History, 12*(5), 513-528.

López, B. D., Shirai, J. A. B., Prieto, A. B., & Fernández, P. M. (2008). Diving activity of a solitary wild free ranging bottlenose dolphin (*Tursiops truncatus*). J*ournal of the Marine Biological Association of the United Kingdom, 88*(6), 1153-1157. https://doi.org/10.1017/S0025315408000921

Meirelles, A. C. O., Campos, T. M., Marcondes, M. C., Groch, K. R., Souto, L. R., Maria do Socorro, S., Normande, I. C., de Oliveira Luna, F., Nascimento, L. F., Silva, F. J., & Vergara-Parente, J. E. (2016). Reports of strandings and sightings of bottlenose dolphins (*Tursiops truncatus*) in northeastern Brazil and Brazilian oceanic islands. *Latin American Journal of Aquatic Mammals, 11*(1-2), 178-190. https://doi.org/10.5597/00227

Müller, M., & Bossley, M. (2002). Solitary bottlenose dolphins in comparative perspective. *Aquatic Mammals, 28*(3), 298-307.

Nunny, L., & Simmonds, M. P. (2019). A global reassessment of solitary-sociable dolphins. *Frontiers in Veterinary Science, 5*, 331. https://doi.org/10.3389/fvets.2018.00331

Oliveira, L. R., Ott, P. H., Moreno, I. B., Tavares, M., Siciliano, S., & Bonatto, S. L. (2016). Effective population size of an offshore population of bottlenose dolphins, *Tursiops truncatus*, from the São Pedro and São Paulo Archipelago, Brazil. *Latin American Journal of Aquatic Mammals, 11*(1-2), 162-169. https://doi.org/10.5597/00225

Rossi-Santos, M. R., Santos-Neto, E., & Baracho, C. G. (2009). Interspecific cetacean interactions during the breeding season of humpback whale (*Megaptera novaeangliae*) on the north coast of Bahia State, Brazil. *Journal of the Marine Biological Association of the United Kingdom, 89*(5), 961-966. https://doi.org/10.1017/S0025315409000897

Silva Jr, J. M. & Silva, F. J. L. (2004). *Interação agonística de* Stenella longirostris *com* Stenella attenuata *e* Tursiops truncatus *no Arquipélago de Fernando de Noronha, Brasil.* [Paper presentation]. Reunión de Trabajo de Especialistas en Mamíferos Acuáticos de América del Sur. Pontifícia Universidad Católica del Ecuador, Ecuador.

Silva-Jr., J. M. (2005). Ecologia comportamental do golfinho-rotador (*Stenella longirostris*) em Fernando de Noronha. [Doctoral dissertation, Universidade Federal de Pernambuco, Brazil].

Silva-Jr., J. M. (2010). *Os Golfinhos de Noronha*. Bambu Editora e Artes Gráficas. São Paulo, Brazil.

Souza, L. G. M., Medeiros, P. I. A. P., Weysfield, F. Q., Silva, C. A. V. C., Silva, A. C., Ribeiro, A. C. M., Sampaio, L. A., Pedroso, M. L., Oliveira, C. G., Monteiro, D. G., Azevedo, V. M., Pinheiro, R., Freitas, A. R. V., Venceslau, S. R., Pereira, A. I. A., Teixeira, M. G., Silva-Jr., J. M., & Silva, F. J. L. (2022). *Quais cetáceos são encontrados em Fernando de Noronha, Brasil? Um levantamento de 31 anos de monitoramento.* [Paper presentation]. 19ª Reunião de Trabalho de Especialistas em Mamíferos Aquáticos de América do Sul. Praia do Forte, Brazil.

Teixeira, W., Cordani, U. G., Menor, E. A., Teixeira, M. G. & Linsker, R. (2011). *Arquipélago Fernando de Noronha: o paraíso do vulcão*. Terra Virgem (2). São Paulo, Brazil.

Tischer, M. C., Carli, R. C., Silva, F. J. L., & Silva-Jr., J. M. (2017). Tourism growth altering spinner dolphins' area of occupation in Fernando de Noronha Archipelago, Brazil. *Latin American Journal of Aquatic Animals, 45*(4): 807-813. https://doi.org/10.3856/vol45-issue4-fulltext-16

Weysfield, F. Q., Azevedo, V. M., Souza, L. G. M., Medeiros, P. I. A. P., Bezerra, L. M. L. S., Martins, M. A., Silva, C. P., Silva, F. J. L., & Silva-Jr., J. M. (2020). *Comportamento dos golfinhos-rotadores,* Stenella longirostris *(Gray, 1828), na baía de Santo Antônio e entre ilhas em Fernando de Noronha, PE.* [Paper presentation]. 33º Congresso Brasileiro de Zoologia, SBZ/USP/Instituto Butantan.

Wilke, M., Bossley, M. & Doak, W. (2005). Managing human interactions with solitary dolphins. *Aquatic Mammals, 31*(4), 427-433. https://doi.org/10.1578/AM.31.4.2005.427