J. Mar. Biol. Ass. U.K. (2007), **87**, 253–254
Printed in the United Kingdom
doi: 10.1017/S0025315407053647

Stomach contents of the marine tucuxi dolphin (*Sotalia guianensis*) from Rio de Janeiro, south-eastern Brazil

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Along the central coast of Rio de Janeiro State (22°25'S–23°00'S), south-eastern Brazil, the marine tucuxi dolphin (*Sotalia guianensis*) feeds on neritic prey that are distributed through the water column and are abundant all year round. The most frequently found species were the teleost fish *Trichiurus lepturus*, *Cynoscion guatucupa*, *Isopisthus parvipinnis* and *Porichthys porossisimus*. Fish species were more important than cephalopod species in the diet of the marine tucuxi. Back calculations of prey sizes indicated that they feed mainly on young specimens. The present study provided additional information on the feeding habits of the marine tucuxi dolphin.

The tucuxi dolphin (genus *Sotalia*, Gray 1866; Cetacea, Delphinidae) is distributed along the coasts of central and South America, including the basins of the Amazon and Orinoco rivers (Borobia et al., 1991). The marine tucuxi dolphin (*S. guianensis*) inhabits coastal and estuarine waters from Honduras (14°N) to southern Brazil (27°S) (Da Silva & Best, 1996). Despite its continuous occurrence along the distributional range, there are few studies reporting on its feeding habits (Borobia & Barros, 1989; Santos et al., 2002; Di Beneditto & Ramos, 2004). This note presents new information about the feeding habits of the marine tucuxi dolphin in south-eastern Brazil, where this species is one of the most vulnerable cetaceans due to its coastal habitat and involvement in gill-net fisheries.

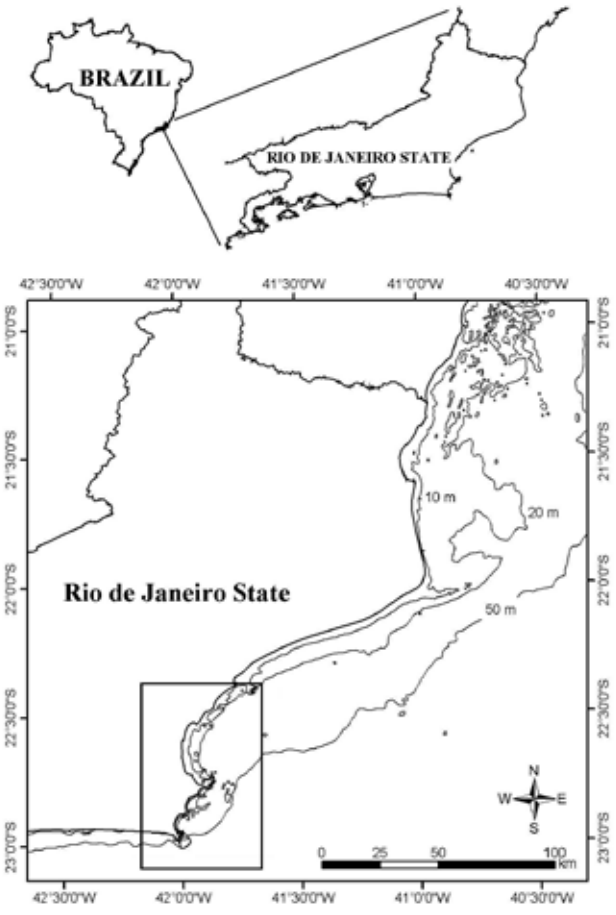

Figure 1. Rio de Janeiro State, south-eastern Brazil, indicating the study area.

During regular beach surveys along the central coast of Rio de Janeiro State (22°25'S–23°00'S) (Figure 1) between 1999 and 2005, we recorded 29 carcasses of the marine tucuxi dolphins and collected the stomach contents from ten specimens to investigate their feeding habits (Table 1). Teleosts otoliths, fish bones and squid beaks were used to identify, quantify and estimate the length and weight of the prey species. For each stomach, the maximum number of either left or right otoliths and upper or lower beaks, was used as an indication of the total number of fish and squid prey items, respectively. The index of relative importance (IRI) (Pinkas et al., 1971) was calculated to determine the representative prey species. Teleosts and cephalopods were considered as independent prey in order to reduce under- or over-estimation of their importance.

At least 17 fish species (128 individuals and 8200.1 g) and two squid species (five individuals and 559.6 g) were identified in the stomach contents (Table 2). These species live in coastal habitats and are abundant all year round in the study area (Haimovici et al., 1989; Di Beneditto & Lima, 2003). In general, they have low commercial value or are considered as by-catch in the local fisheries (Di Beneditto et al., 1998).

Table 1. *Biological data on the marine tucuxi specimens stranded along the central coast of Rio de Janeiro State, south-eastern Brazil.*

Field code	Collection date	Total length (cm)	Sex
GEMM 021	20 July 2001	190.0	Male
GEMM 034	23 August 2002	153.0	Female
GEMM 038	05 November 2002	178.0	–
GEMM 039	09 November 2002	191.0	Female
GEMM 041	23 November 2002	167.0	Male
GEMM 048	05 November 2003	182.0	Male
GEMM 050	05 November 2003	186.0	Female
GEMM 065	02 September 2004	173.0	Female
GEMM 076	11 December 2004	160.0	–
GEMM 087	03 September 2005	184.0	Male

GEMM, Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos.

Table 2. *Food items recovered from the marine tucuxi stomachs from the central coast of Rio de Janeiro State, south-eastern Brazil.*

	FO (%)	FN (%)	Biomass (%)	Density per stomach (N) Mean ±SD	Size (cm) Mean ±SD	Biomass per stomach (g) Mean ±SD	IRI
Teleosts							
Trichiurus lepturus[1]	60.0	26.6	61.7	5.7 ±4.4	59.7 ±19.7	843.6 ±724.7	5268.0
Cynoscion guatucupa[1]	50.0	7.8	13.3	2.0 ±0.9	21.3 ±5.7	217.8 ±210.0	1055.0
Isopisthus parvipinnis[2]	60.0	30.5	11.3	6.5 ±5.2	11.7 ±5.0	149.9 ±174.9	708.5
Porichthys porosissimus[1]	30.0	9.4	4.0	4.0 ±4.2	13.7 ±2.2	109.7 ±125.7	402.2
Micropogonis furnieri[1]	20.0	4.7	1.0	3.0 ±1.0	11.5 ±0.8	40.9 ±13.6	114.0
Conodon nobilis[2]	10.0	7.0	3.1	9.0	9.3 ±3.3	257.2	101.0
Cynoscion virescens[2]	20.0	2.3	0.6	1.5 ±0.5	10.3 ±0.5	22.5 ±5.7	58.0
Ctenosciaena gracilicirrhus[2]	20.0	1.6	0.1	1.0 ±0.0	5.9 ±1.3	5.8 ±2.5	34.0
Ariosoma opisthophthalma[1]	20.0	1.6	0.3	1.0 ±0.0	24.0 ±5.9	14.1 ±10.5	32.3
Paralonchurus brasiliensis[2]	20.0	1.6	0.2	1.0 ±0.0	7.1 ±3.3	7.8 ±6.0	32.2
Macrodon ancylodon[2]	10.0	1.6	1.2	2.0	14.4 ±4.2	100.3	28.0
Cynoscion jamaicensis[2]	10.0	1.6	2.2	2.0	16.8 ±1.0	179.2	18.2
Menticirrhus americanus[2]	10.0	0.8	0.6	1.0	14.2	51.4	14.0
Orthopristis rubber[2]	10.0	0.8	0.3	1.0	9.7	20.7	11.0
Lycengraulis grossidens[2]	10.0	0.8	0.2	1.0	10.1	14.1	10.0
Stellifer rastrifer[2]	10.0	0.8	0.02	1.0	3.6	1.8	8.2
Anchoa filifera[2]	10.0	0.8	0.01	1.0	7.3	5.0	8.1
Cephalopods							
Loligo plei[3]	20.0	60.0	97.9	1.5 ±0.5	26.8 ±3.1	273.9 ±133.8	3158.0
Loligo sanpaulensis[3]	10.0	40.0	2.1	2.0	5.0 ±0.6	6.0 ±0.8	421.0

1, total length; 2, standard length; 3, mantle length; FO, frequency of occurrence; FN, frequency of number; SD, standard deviation; IRI, index of relative importance: [(%FN + %Biomass) ×%FO].

The recovered fish species were pelagic, demersal or pelagic-demersal (*Trichiurus lepturus*), while squid can be considered semipelagic. These features indicate that the marine tucuxi dolphins capture their prey through the water column.

Along the central coast of Rio de Janeiro State, the marine tucuxi dolphin is primary piscivorous, feeding preferentially on *Trichiurus lepturus*, *Cynoscion guatucupa*, *Isopisthus parvipinnis* and *Porichthys porossisimus*, which constituted 74.3% of all identifiable fish species in the stomachs (Table 2). Back calculations of teleost lengths indicate that marine tucuxi feed mainly on young specimens (Table 2).

The cephalopods *Loligo sanpaulensis* and *Loligo plei*, family Loliginidae, were recorded in two stomachs (Table 2). *Loligo sanpaulensis* was less important than the latter. On the whole, cephalopods represented only 6.4% of the biomass recorded in the stomach contents.

Between 1987 and 2002, Di Beneditto & Ramos (2004) investigated the diet of the marine tucuxi dolphin in specimens collected close to the northern limit of the present study area. These authors analysed 77 stomachs' contents and obtained similar results to the present study. This may reflect the distributional range and abundance of the prey species along the Rio de Janeiro State coast.

Santos et al. (2002) analysed the stomach contents of 16 marine tucuxi dolphin specimens stranded along the estuarine area of the São Paulo State (24°50'S–25°10'S) and also verified that fish were more representative than cephalopods. However, these authors recorded the sciaenid fish (mainly *Paralonchurus brasiliensis* and *Stellifer rastrifer*) as the more important prey species. Differences in the marine tucuxi dolphin feeding habits between the northern Rio de Janeiro State and São Paulo State are probably related to the environment features and, consequently, to the prey species occurrence and abundance.

The present study provides additional information about the feeding habits of *Sotalia guianensis* in south-eastern Brazil. Continuous beach surveys and incidental capture monitoring are desirable for a broader study on the marine tucuxi dolphin feeding habits along its distributional range.

We thank the staff of the Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos – GEMM-Lagos, who helped the marine tucuxi dolphin carcasses collection. A.P. Di Beneditto was supported by Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq no. 300322/03-8). This manuscript is a contribution of the Projeto de Monitoramento de Aves e Mamíferos Marinhos na Bacia da Campos/CENPES/PETROBRAS & ENSP/FIOCRUZ and the Graduate Programme of Ecology and Natural Resources/UENF.

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Submitted 7 March 2006. Accepted 31 May 2006.