**SUPPLEMENTARY MATERIAL**

**Feeding habits of the franciscana dolphin (*Pontoporia blainvillei*) in southeastern Brazil**

Laura Busin Campos¹, Xênia Moreira Lopes² ³, Ednilson da Silva¹ and Marcos César de Oliveira Santos¹

Table S1. Regression equations used to estimate fish and cephalopods lengths and weights and their sources are shown. SL, standard length (cm) for fish; TL, total length (cm) for fish; ML, mantle length (cm) for cephalopods; W, weight (g); OL, otolith length (mm); LRL, lower rostral length (mm); URL, upper rostral length (mm). Sources: (A) Di Beneditto *et al.* (2001), (B) Lopes *et al.* (2012), (C) Bassoi (2005), (D) Bastos (1990), (E) Henning *et al.* (2018), (F) Santos (1999), (G) Reference collection of CEPSUL/IBAMA.

|  |  |  |  |
| --- | --- | --- | --- |
| **Species** | **Estimated lenght (cm)** | **Estimated weight (g)** | **Source** |
| **TELEOSTS** |  |  |  |
| *Anchoa filifera* | SL=(1,9674 x OL) + 1,0401 | W=0,2984 x OL2,4207 | A |
| *Anchoa* sp. | SL=1,831 x OL + 1,297 | W=0,244 x OL2,527 | B |
| *Anchoa tricolor* | SL=1,8311 x OL +1,2976 | W=0,2443 x OL2,5275 | B |
| *Anchoviella lepidentostole* | SL=(1,9674 x OL) + 1,0401 | W=0,2984 x OL2,4207 | A |
| *Chirocentrodon bleekerianus* | SL=(3,5713 x OL) + 0,4534 | W=0,7329 x OL2,6309 | A |
| *Ctenosciaena gracilicirrhus* | SL=1,9064 x OL - 1,3718 | W=0,0496 x OL3,5123 | A |
| *Cynoscion guatucupa* | SL=(13,799 x OL1,2007)/10 | W=0,0186 x OL3,7392 | C |
| *Cynoscion jamaicensis* | SL=1,7202 x OL - 1,1392 | W=0,0288 x OL3,4318 | A |
| *Cynoscion striatus* | SL=11,6079 x OL1,2635 | W=0,0100 x OL3,9686 | D |
| *Engraulis anchoita* | SL=(32,803 x OL1,088)/10 | W=0,1748 x OL3,4088 | C |
| *Isopisthus parvipinnis* | SL=1,8563 x OL - 0,7437 | W=0,0477 x OL3,2867 | A |
| *Larimus breviceps* | SL=1,4164 x OL - 1,1364 | W=0,0519 x OL3,0227 | A |
| *Menticirrhus* sp. | SL=(15,141 x OL1,318)/10 | W=0,0131 x OL4,4341 | C |
| *Micropogonias furnieri* | SL=(2,0304 x OL) - 2,2003 | W=0,0445 x OL3,3544 | B |
| *Mugil* sp. | SL=0,6505 x OL1,69 | W=0,00412 x OL5,16 | B |
| *Pagrus pagrus* | SL=(16,272 x OL1,2296)/10 | W=0,0669 x OL3,6755 | C |
| *Paralonchurus brasiliensis* | SL=(2,016 x OL) - 1,8970 | W=0,0195 x OL3,8099 | A |
| *Pellona harroweri* | SL=(2,9827 x OL) - 1,4489 | W=0,1224 x OL3,6914 | A |
| *Pogonias cromis* | SL=3,718 + 0,696 x ln(OL) | W=(-0,541) + 2,216 x ln(OL) | E |
| *Sardinella brasiliensis* | SL=(3,5811 x OL) + 3,6082 | W=5,3731 x e(0,71 x OL) | B |
| *Stellifer* sp. | SL=1,6064 x OL1,0947 | W=0,0813 x OL3,4157 | B |
| *Syacium* sp. | SL=(30,608 x OL1,0528)/10 | W=1,8824 x e(0,6416 x OL) | C |
| *Trachurus lathami* | TL=(20,417 x OL1,1571)/10 | W=0,0548 x OL3,5828 | C |
| *Trichiurus lepturus* | SL=(17,533 x OL)-15,885 | W=0,1042 x OL4,6079 | A |
| *Umbrina* sp. | SL=(12,517 x OL1,3266)/10 | W=0,0196 x OL4,1369 | C |
| **CEPHALOPODS** |  |  |  |
| *Doryteuthis plei* | ML=(67,431 x URL1,2908)/10 | W=8,8096 x URL2,8564 | F |
|  | ML=(64,303 x LRL1,3143)/10 | W=7,9418 x LRL2,908 |  |
| *Doryteuthis sanpaulensis* | ML=(13,546 x e(1,211 x URL))/10 | W=0,3408 x e(2,766 x URL) | E |
|  | ML=(13,173 x e(1,211 x LRL))/10 | W=0,2768 x e(2,659 x LRL) |  |
| *Lolliguncula brevis* | ML=(41,3751 x URL + 3,3180)/10 | W=6,0749 x URL2,4677 | G |
|  | ML=(42,8967 x LRL + 1,8382)/10 | W=5,9731 x LRL2,5789 |  |

Table S2. Published studies on feeding habits of franciscana dolphins, *Pontoporia blainvillei*, according to the Franciscana Management Areas (FMA) proposed by Secchi et al. (2003). The number of samples (total – N, male – M, female – F, unknown sex – U), the type of prey (Fish – F, Cephalopod – Ce, Crustacean - Cr), the main prey items quoted by species, and the source are presented.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **FMA** | **N** | **M** | **F** | **U** |  | **Type of prey** | | |  | **Main Preys** | **Source** |
|  | **F** | **Ce** | **Cr** |  |
| I | 85 | - | - | 85 |  | x | x | x |  | *Stellifer sp. A. filifera P. harroweri* | Di Beneditto and Ramos (2001) |
| 99 | - | - | 99 |  | x | x | x |  | *Stellifer sp. A. filifera P. harroweri* | Bittar and Di Beneditto (2009) |
| 18 | - | - | 18 |  | x | x | x |  | *I. parvipinnis C. bleekerianus Stellifer sp.* | Rupil *et al.* (2019) |
| II | 8 | 3 | 2 | 3 |  | x | x | x |  | *Stellifer rastrifer G. oceanicus L. brevis* | Cremer *et al.* (2012) |
| 58 | 24 | 34 | - |  | x | x |  |  | *P. harroweri D. plei P. brasiliensis* | Henning *et al.* (2018) |
| 145 | 86 | 59 | - |  | x | x | x |  | *P. harroweri I. parvipinnis D. plei* | Present study |
| III | 11 | - | - | 11 |  | x | x | x |  | *P. porosissimus T. lepturus* | Fitch and Brownell (1971) |
| - | - | - | - |  | x | x | x |  | *C. striatus P. porosissimus T. lepturus* | Brownell (1975) |
| 41 | 17 | 24 | - |  | x | x |  |  | *C. guatucupa P. porosissimus M. furnieri* | Tellechea *et al.* (2017) |
| 38 | 25 | 13 | - |  | x | x |  |  | *M. ancylodon M. furnieri A. Marinii* | Franco-Trecu *et al.* (2017) |
| I - III | 168 | - | - | 168 |  |  | x |  |  | *D. sanpaulensis* | Santos and Haimovich (2001)\* |
| IV | 110 | 59 | 39 | 12 |  | x | x | x |  | *M. furnieri C. guatucupa D. sanpaulensis* | Rodríguez *et al.* (2002) |
| 66 | 34 | 25 | - |  | x | x | x |  | *C. guatucupa D. sanpaulensis* | Paso-Viola *et al.* (2014) |
| 173 | - | - | - |  | x | x | x |  | *C. guatucupa D. sanpaulensis* | Denuncio *et al.* (2017) |

\* Focus was exclusive to cephalopods

REFERENCES

**Bassoi M** (2005) *Feeding ecology of franciscana dolphin,* Pontoporia blainvillei *(Cetacea: Pontoporidae), and oceanographic processes on the Southern Brazilian coast*. PhD thesis. Graduate School of the National Oceanography Centre, Southampton, England.

**Bastos GC** (1990) *Morfologia de otólitos de algumas species de Peciformes (Teleostei) da costa Sudeste-Sul do Brasil*. Master’s dissertation. Universidade de São Paulo, São Paulo, Brazil.

**Bittar VT and Di Beneditto APM** (2009) Diet and potential feeding overlap between *Trichiurus lepturus* (Osteichthyes: Perciformes) and *Pontoporia blainvillei* (Mammalia: Cetacea) in northern Rio de Janeiro, Brazil. *Zoologia* **26**, 374-378.

**Brownell RL** (1975) Progress Report on the Biology of the Franciscana Dolphin, *Pontoporia blainvillei*, in Uruguayan Waters. *Journal of the Fisheries Research Board of Canada* **32**, 1073-1078.

**Cremer MJ, Pinheiro PC and Simões-Lopes PC** (2012) Prey consumed by Guiana dolphin *Sotalia guianensis* (Cetacea, Delphinidae) and franciscana dolphin *Pontoporia blainvillei* (Cetacea, Pontoporiidae) in an estuarine environment in southern Brazil. *Iheringia, Série Zoologia* **102**, 131-137.

**Denuncio P, Paso-Viola MN, Machovsky-Capsuka GE *et al.*** (2017) Population variance in prey, diets and their macronutrient composition in an endangered marine predator, the Franciscana dolphin. *Journal of Sea Research***129**, 70–79.

**Di Beneditto APM and Ramos RMA** (2001) Biology and conservation of the franciscana (*Pontoporia blainvillei*) in the north of Rio de Janeiro State, Brazil. *Journal of Cetacean Research and Management* **3**, 185-192.

**Di Beneditto APM, Ramos RMA and Lima NRW** (2001) *Os golfinhos: origem, classificação, captura acidental, hábito alimentar*. Porto Alegre: Ed. Cinco Continentes.

**Fitch JE and Brownell RL** (1971) Food habits of the franciscana *Pontoporia blainvillei* (Cetacea: Platanistidae) from South America. *Bulletin of Marine Science* **21**, 626-636.

**Franco-Trecu V, Drago M, Costa P, Dimitriadis C and Passadore C** (2017) Trophic relationships in apex predators in an estuary system: A multiple-method approximation. *Journal of Experimental Marine Biology and Ecology* **486**, 230-236.

**Henning B, Carvalho BS, Pires MM, Bassoi M, Marigo J, Bertozzi C and Araújo MS** (2018) Geographical and intrapopulation variation in the diet of a threatened marine predator, *Pontoporia blainvillei* (Cetacea). *The Association for Tropical Biology and Conservation* **50**, 157–168.

**Lopes XM, Silva E, Bassoi M., Santos RA and Santos MCO** (2012) Feeding habits of Guiana dolphins, *Sotalia guianensis*, from south-eastern Brazil: new items and a knowledge review. *Journal of the Marine Biological Association of the United Kingdom* **92**, 1723-1733.

**Paso-Viola MN, Denuncio P, Negri MF, Rodríguez D, Batista R and Cappozzo HL** (2014) Diet composition of franciscana dolphin *Pontoporia blainvillei* from southern Buenos Aires, Argentina and its interaction with fisheries. *Revista de Biología Marina y Oceanografía* **49**, 393-400.

**Rodriguez D, Rivero L and Bastida R** (2002) Feeding ecology of the franciscana (*Pontoporia blainvillei*) in marine and estuarine waters of Argentina. *The Latin American Journal of Aquatic Mammals* **Special Issue 1**, 77-94.

**Rupil GM, Barbosa L, Marcondes MCC, Carvalho BM and Farro APC** (2019) Franciscana dolphin (*Pontoporia blainvillei*) diet from Northern Espírito Santo State coast, Brazil. *Revista Biotemas* **32**, 87-96.

**Santos RA** (1999) *Cefalópodes nas relações tróficas do sul do Brasil*. PhD thesis. Fundação Universidade do Rio Grande, Rio Grande, Brazil.

**Santos RA and Haimovici M** (2001) Cephalopods in the diet of marine mammals stranded or incidentally caught along southeastern and southern Brazil. *Fisheries Research* **52**, 99-112.

**Tellechea JS, Perez W, Olsson D, Lima M and Norbis W** (2017) Feeding habits of franciscana dolphins (*Pontoporia blainvillei*): Echolocation or passive listening?. *Aquatic Mammals* **43**, 440-448.