SHORT COMMUNICATION

ON THE FEEDING HABIT OF THE GUIANA DOLPHIN

*SOTALIA GUIANENSIS* (VAN BÉNEDÈN, 1864) (MAMMALIA: CETARTIODACTYLA: DELPHINIDAE) IN SOUTHEASTERN BRAZIL (~220S): HAS THERE BEEN ANY CHANGE IN MORE THAN TWO DECADES?

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Ana Paula Madeira Di Beneditto 1, Clara da Cruz Vidart Badia 2 & Salvatore Siciliano 3

1 Universidade Estadual do Norte Fluminense, Laboratório de Ciências Ambientais, Av. Alberto Lamego 2.000, 28013-620, Campos dos Goytacazes, RJ, Brazil
2 Universidade Federal de Ouro Preto, Laboratório de Ecologia Evolutiva de Insetos de Dossel e Sucessão Natural, 35400-000, Ouro Preto, MG, Brazil
3 Instituto Oswaldo Cruz/Fiocruz, Pavilhão Mourisco - sala 122, Av. Brasil 4.365, 21040-360, Rio de Janeiro, RJ & Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos, Brazil

1 anadibeneditto@gmail.com (corresponding author), 2 clarabadia.cb@gmail.com, 3 gemmlagos@gmail.com

Abstract: Along the north and central coast of Rio de Janeiro State (22°25’–23°00’S), southeastern Brazil, the Guiana Dolphin *Sotalia guianensis* forages on neritic prey, mainly fish. From the analysis of the dolphin’s stomach contents and the identification of partially digested prey, it was verified that the most frequent prey species were young specimens of *Trichiurus lepturus*. Comparing our results with previous studies on the feeding habits of Guiana Dolphin in the same region, we noticed the maintenance of its feeding preferences during more than two decades, indicating little or no change in the use of prey by this top predator.

Keywords: Atlantic Ocean, Brazil, feeding habits, piscivory, *Sotalia guianensis*.

The Guiana Dolphin *Sotalia guianensis* (van Bénedèn, 1864) is a coastal delphinid species distributed along central and South America. This species inhabits coastal and estuarine waters from Honduras (~14°N) to southern Brazil (~27°S) (da Silva & Best 1996), and is one of the most vulnerable dolphins along the southwestern Atlantic Ocean due to incidental interactions with artisanal fisheries (Barreto et al. 2010), and is categorized as a Data Deficient species (IUCN 2015).

The Guiana Dolphin is mainly piscivorous, being an opportunistic predator or having some food preferences. At least 70 fish species from 25 families are consumed by this dolphin along its distribution (Rosas et al. 2010). In southeastern Brazil, around 22°S, the feeding habit of this dolphin was previously described by Di Beneditto & Ramos (2004), whose study analyzed 77 dolphins collected from 1987 to 1998, and by Di Beneditto & Siciliano (2007), in which 10 dolphins obtained from
2001 to 2005 were analyzed. The present study provides supplementary information on the feeding habits of the Guiana Dolphin (Image 1) in this region, discussing possible, if any, changes in its feeding preference in more than two decades (1987–2011).

**METHODS**

Regular beach surveys were conducted along the north and central coast of Rio de Janeiro State (22°25’S–23°00’S) (Fig. 1), in 2010 and 2011, resulting in seven carcasses of Guiana Dolphins picked up for dissection, in various stages of decomposition, namely stages 2 to 4 (Geraci & Lounsbury 2005). We evaluated their stomach contents to investigate their feeding habits (Table 1). The recovered items, otoliths and supraccipital bones (in the case of Trichiurus lepturus), were dry preserved and used to identify, quantify, and estimate the length and weight of the fish prey species, according to Di Benedetto et al. (2001). For

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**Figure 1.** Stranding areas of the Guiana Dolphin specimens in the north and central coast of Rio de Janeiro State, southeastern Brazil.
each stomach, the maximum number of otoliths (left or right) or supraoccipital bones was used to indicate the total number of fish ingested. The Index of Relative Importance: \(\text{IRI} = \left[ \left( \%\text{NF} + \%\text{BF} \right) \times \%\text{OF} \right] \), proposed by Pinkas et al. (1971), determined the representativeness of each fish species, considering NF as numeric frequency, BF as biomass frequency, and OF as occurrence frequency.

After the stomach contents analysis, the recovered items were discarded. The dolphins’ carcasses are deposited in the cetaceans collection of the Grupo de Estudos de Mamíferos Marinhos da Região dos Lagos.

**RESULTS AND DISCUSSION**

Eight fish species (105 individuals and 10,945.5g) were identified in the stomach contents of the seven evaluated specimens (Table 2). The number of fish species per stomach varied from one to four. Back calculations of fish lengths indicate that the dolphin preyed mainly upon juvenile individuals (Table 2). These eight-fish species inhabit neritic waters and are abundant all year round in the study region (Di Beneditto & Lima 2003). In general, the prey species have low commercial value or are considered by-catch in the local artisanal fisheries (Di Beneditto et al. 1998).

The prey species are demersal (Sciaenidae family species, *Porichthys porosissimus* and *Ariosoma opisthophthalma*) or pelagic-demersal (*T. lepturus*), indicating that the Guiana Dolphin captures their prey along the water column. Previous studies described 36 prey species, among fish and squids, in stomach contents of the Guiana Dolphins along the study region (Di Beneditto & Ramos 2004; Di Beneditto & Siciliano 2007). The results of the present study (Table 2) together with these previous studies point to *T. lepturus* as the main prey species, with IRI around 5,000, which is three or five times greater than the IRI of the second most consumed species. Additionally, Di Benedetto et al. (2011) and Kehrig et al. (2013) verified by mercury concentration and nitrogen stable isotope \(^{15}\text{N}\) analysis that *T. lepturus* is the most assimilated prey in Guiana Dolphin diet, corroborating the local importance of this fish as a food resource to this predator. Santos et al. (2002) analyzed the stomach content of 16 Guiana Dolphin specimens stranded along the São Paulo State (~25\(^\circ\)S), also in south-eastern Brazil; however, those authors recorded fish from Sciaenidae family as the most important prey species. Differences in the Guiana Dolphin feeding habits along its distributional range are probably related to the local features, as salinity, river discharges and interspecific relationships, reflecting in prey occurrence and abundance. Additionally, temporal variation among the studies and differences in sampling

<table>
<thead>
<tr>
<th>Date</th>
<th>Area</th>
<th>Total length (cm)</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.viii.2010</td>
<td>Manguinhos</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>27.viii.2010</td>
<td>Manguinhos</td>
<td>190.0</td>
<td>Female</td>
</tr>
<tr>
<td>29.ix.2010</td>
<td>Quissamã</td>
<td>180.0</td>
<td>Male</td>
</tr>
<tr>
<td>21.xi.2010</td>
<td>Quissamã</td>
<td>187.0</td>
<td>-</td>
</tr>
<tr>
<td>06.i.2011</td>
<td>Quissamã</td>
<td>195.0</td>
<td>Female</td>
</tr>
<tr>
<td>28.i.2011</td>
<td>Rasa</td>
<td>195.0</td>
<td>-</td>
</tr>
<tr>
<td>14.i.2011</td>
<td>Itiquari</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Table 2.** Fish species found in the Guiana Dolphin *Sotalia guianensis* stomachs in the north and central coast of Rio de Janeiro State, southeastern Brazil.

<table>
<thead>
<tr>
<th>Teleosts</th>
<th>NF (%)</th>
<th>BF (%)</th>
<th>OF (%)</th>
<th>IRI</th>
<th>Density (n) per stomach</th>
<th>Size (cm)</th>
<th>Biomass per stomach (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Trichiurus lepturus</em> ^1^</td>
<td>39.1</td>
<td>57.8</td>
<td>57.1</td>
<td>5532.9</td>
<td>10 ± 12</td>
<td>64.2 ± 15.2</td>
<td>154.4 ± 174.8</td>
</tr>
<tr>
<td><em>Porichthys porosissimus</em> ^1^</td>
<td>27.6</td>
<td>17.1</td>
<td>42.8</td>
<td>1913.2</td>
<td>10 ± 9</td>
<td>18.0 ± 3.0</td>
<td>64.4 ± 31.0</td>
</tr>
<tr>
<td><em>Cynoscion jamaicensis</em> ^1^</td>
<td>17.1</td>
<td>13.1</td>
<td>28.6</td>
<td>863.7</td>
<td>9 ± 8</td>
<td>15.8 ± 2.5</td>
<td>79.8 ± 28.7</td>
</tr>
<tr>
<td><em>Isopisthus parvipinnis</em> ^1^</td>
<td>8.6</td>
<td>4.1</td>
<td>42.8</td>
<td>543.6</td>
<td>3 ± 2</td>
<td>11.3 ± 5.6</td>
<td>49.9 ± 101.9</td>
</tr>
<tr>
<td><em>Ariosoma opisthophthalma</em> ^1^</td>
<td>4.8</td>
<td>4.0</td>
<td>14.3</td>
<td>125.8</td>
<td>5</td>
<td>47.3 ± 9.7</td>
<td>87.7 ± 70.6</td>
</tr>
<tr>
<td><em>Menticirrhus americanus</em> ^1^</td>
<td>0.9</td>
<td>3.5</td>
<td>14.3</td>
<td>62.9</td>
<td>1</td>
<td>25.9</td>
<td>378.1</td>
</tr>
<tr>
<td><em>Cynoscion guatucupa</em> ^1^</td>
<td>0.9</td>
<td>0.4</td>
<td>14.3</td>
<td>18.6</td>
<td>1</td>
<td>17.0</td>
<td>47.2</td>
</tr>
<tr>
<td><em>Larimus breviceps</em> ^1^</td>
<td>0.9</td>
<td>0.02</td>
<td>14.3</td>
<td>13.2</td>
<td>1</td>
<td>3.8</td>
<td>2.3</td>
</tr>
</tbody>
</table>

^1^ - total length; 2 - standard length; NF - numeric frequency; BF - biomass frequency; OF - occurrence frequency; SD - standard deviation; IRI - Index of Relative Importance: \(\left[ \left( \%\text{NF} + \%\text{BF} \right) \times \%\text{OF} \right] \).
methods may also explain the different results.

**CONCLUSION**

The present study provides supplementary information on the feeding habits of the Guiana Dolphin in southeastern Brazil. It confirms this dolphin as primarily piscivorous, feeding preferentially on *T. lepturus*, along the north and central coast of Rio de Janeiro State. The presence of this prey species as the main food item for Guiana Dolphins in more than two decades indicates the massive and regular abundance of this resource along the study area. Thus, we can conclude that little or nothing has changed in the feeding habit of the Guiana Dolphin during this period, and the prey availability does not compromise the presence of this species in the region. We bring attention to the significance of the present information and its consideration in future evaluation of the status and strategies for the conservation of the Guiana Dolphin.

**REFERENCES**


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**Article**

Flora richness as an indicator of desert habitat quality in Kuwait
-- Yahya Al-Shehabi & Kevin Murphy, Pp. 9777–9785

**Communications**

Distribution of *Cryptopotamon anacoluthon* (Kemp, 1918) (Crustacea: Brachyura: Potamidae), a freshwater crab endemic to Hong Kong
-- David John Stanton, Michael Robertson Leven & Tommy Chung Hong Hui, Pp. 9786–9794

Moths of the family Limacodidae Duponchel, 1845 (Lepidoptera: Zygaenoidea) from Bhutan with six new generic and 12 new species records
-- Jatishwor Singh Irungbam, Meenakshi Singh Chib & Alexey V. Solovyev, Pp. 9795–9813

Odonates of Coimbatore District, Tamil Nadu, India
-- M. Suhirtha Muhil & P. Pramod, Pp. 9814–9828

Twenty-three new records of mantodea (Insecta) from some states of India
-- Tushar Kanti Mukherjee, Geetha Iyer & Parbati Chatterjee, Pp. 9829–9839

**Short Communications**

On the feeding habit of the Guiana Dolphin *Sotalia guianensis* (van Bénedèn, 1864) (Mammalia: Cetartiodactyla: Delphinidae) in southeastern Brazil (~220S): has there been any change in more than two decades?
-- Ana Paula Madeira Di Benedetto, Clara da Cruz Vidart Badia & Salvatore Siciliano, Pp. 9840–9843

Additions to the scorpion fauna (Arachnida: Scorpiones) of Kerala, India, with an illustrated key to the genera
-- K. Aswathi & P.M. Sureshan, Pp. 9844–9850

Additions to the flora of Coimbatore hills, Tamil Nadu, India

Diversity of two families Libellulidae and Coenagrionidae (Odonata) in Regional Institute of Education Campus, Bhubaneswar, Odisha, India
-- Priyamvada Pandey & Animesh Kumar Mohapatra, Pp. 9851–9857

A report on occurrence of aphidophagous predators of *Aphis odinae* (van der Goot) (Hemiptera: Aphididae) in cashew ecosystem from Goa, India
-- Ramasamy Maruthadurai & Narendra Pratap Singh, Pp. 9858–9861

A new critical habitat for conservation of the White-bellied Heron *Ardea insignis* Hume, 1878 (Aves: Ardeidae) from Bhutan
-- Karma Wangdi, Tashi Dhendup & Tsethup Tshering, Pp. 9862–9863

First report of the parasitoid wasp *Piestopleura* Förster (Hymenoptera: Platygastroidea: Platygastridae) from India
-- Kamalanathan Veenakumari, Peter Neerup Buhl, Anandhan Rameshkumar & Prashanth Mohanraj, Pp. 9864–9865

A century later the Manipur Argus *Callerebia suroia* Tytler, 1914 (Lepidoptera: Nymphalidae: Satyrinae) recorded in its type locality in Manipur, India
-- Jatishwor Singh Irungbam, Harmenn Huidrom & Baleshwor Singh Soibam, Pp. 9866–9869

First record of the predatory stinkbug *Eocanthecona concinna* (Walker, 1867) (Pentatomidae: Asopinae) from India
-- Sadashiv Hanumant Waghmare & Sunil Madhukar Gaikwad, Pp. 9870–9873

New records of Aplousobranch ascidians to Indian waters from Andaman Islands