

Sotalia guianensis (Costero or Guiana Dolphin)

Family: Delphinidae (Oceanic Dolphins)

Order: Cetacea (Whales and Dolphins)

Class: Mammalia (Mammals)



Fig. 1. Costero, *Sotalia guianensis*.

[<http://carnivoraforum.com/topic/9333216/1/>, downloaded 7 December 2012]

TRAITS. *Sotalia guianensis* has many common names including the costero and Guiana or estuarine dolphin. They are described as having a light grey to a rosy pink colour on their ventral side and being grey on their dorsal side (Caballero et al., 2007). The beak of the costero is long and slender and the dorsal fin is triangular, usually being hooked towards the caudal fin; the body size can range from 210-220 cm with a mass of 80 kg (Culik, 2012). As members of the Delphinidae family, costeros possess a similar sociable behaviour and they interact through physical contact and sounds (Flach et al., 2008). The *S. guianensis* are not sexually dimorphic, both sexes having the same physical features (Santos and Rosso, 2008) and the females have a reproductive cycle that is approximately 2 years long.

ECOLOGY. Costeros prefer coastlines and entrances to bays where the water is deeper and where there is usually high salinity and transparency (high preference for brackish water) (Santos and Rosso, 2007). *Sotalia guianensis* are mostly located in South and Central America along the Atlantic coast and estuarine waters (Fig. 2), they can enter rivers into fresh water. The dolphins' diet consists of over 90% fish that are on average 21.4 cm in length (Daura-Jorge et al., 2011). Since feeding is a large part of their survival, these dolphins distribution depends on the

concentration of available foods. Classified as “data deficient” by the International Union for Conservation of Nature (Secchi, 2012).

SOCIAL ORGANIZATION. Costeros are very extroverted and social creatures. The number in a group usually ranges from 2-60 individuals (Santos and Rosso, 2008). As a member of a cetacean group, costeros form close and stable bonds that can last up to 20 years (Santos and Rosso, 2008). Their socialization is not the same throughout the year; the peak of their socialization occurred steadily through winter, spring and summer, but decreased during autumn (Nery et al., 2010). They also found that different group dynamics vary in regard to socialization; the smaller groups apparently spend most of their time foraging and travelling while the larger groups spend most of their time interacting.

In an 8 year study by Cantor et al. (2012), they observed and recorded the structure of a society of *Sotalia guianensis*. The area covered was in the region of the Brazilian coast. They found 393 groups of costeros in 13,660 nautical miles. They classified individuals in a group if they were sighted within 50 m of each other (Cantor et al., 2012). They found that the social organization was one of a well-developed society with the dolphins clustering even more than they had hypothesized. The group dynamics of the costeros are likely shaped by their different habitat preferences (such as coral reefs, bays, water depth and inner-river regions). Costeros migrate based on factors such as food availability in an area. Due to this, there is a constant flow through the population, keeping it dynamic, but overall the groups stay relatively constant (Cantor et al., 2012).

ACTIVITY. The main activities that the costeros undertake include foraging/feeding, travelling, resting and socialization. These activities usually involve some form of diving, leaping and acoustic behaviour (Atem et al., 2006). The dolphins frequently partake in these activities at night which led to the conclusion that costeros can be considered nocturnal, although they still do most of their feeding during the day time (Atem et al., 2006). Diving occurs when the dolphin is performing many activities whether it is surface breathing, hunting/displacing and socializing. The areas that they use for travel and that for feeding overlap, but they rest and socialize in a totally different area (Daura-Jore et al., 2005).

FORAGING BEHAVIOUR. When the costero is hunting, they change direction suddenly to cause the surface of the water to move substantially. With this, they produce a noise that helps them locate their prey up to 100 m away. In a study done by Atem et al. (2006), they observed a large group of the dolphins swimming in a circular arrangement surrounding and eventually capturing the prey; other studies have concluded that this is a main feeding/hunting strategy in groups. Another group feeding strategy that the dolphins use, includes them forming a blockade and cornering fish by ushering them towards any fishermen’s fence traps set up (Atem and Monteiro-Filho, 2006). When hunting, the costeros can be seen leaping along with other hunting activities (Fig. 4); their belly is usually turned upwards when the leap and then they dive perpendicular in the water (Atem et al, 2006). The costeros take part in a benthic feeding behaviour called “crater feeding”, where they dive and bury into the sand and hunt for hiding organisms (Czech-Dmal et al., 2011). In general, the costeros prefer to feed mainly in a sheltered area that has low water circulation (Daura-Jorge et al., 2005). Another feeding behaviour is a “Zig Zag” pattern cooperative behaviour. This is where the dolphins cross very quickly creating waves and diverting fish to be captured. Costeros prefer to forage and feed in the morning and

resting and socializing in the afternoon; this decrease in feeding as the day progresses can be a result of diminishing availability of food (Nery et al., 2010). Costeros are like many other aquatic creatures, in that they have electroreception (sensitivity to electric fields) (Czech-Dmal et al., 2011), probably used when crater feeding on the bottom.

COMMUNICATION. Duarte de Figueiredo and Simao (2009) investigated the hypothesis that the costeros emit “sequential whistles”. The whistles serves the purpose of transmitting the location and identify the dolphin that is whistling. They found that there were 27 distinct whistles that had average frequencies of 7800 Hz. A high percentage of the whistles occur when the animals are cruising or hunting and there is a large increase in frequency when a dolphin is away from the group (Duarte de Figueiredo and Simao, 2009). The nocturnal study by Atem et al. (2006) found that underwater acoustic activity was present in the dolphins in the forms of intense sound emissions such as clicks, screams and whistles. These sounds are emitted as a part of social interaction and used to locate targets and obstacles by using directional echolocation (Atem and Monteiro-Filho, 2006).

SEXUAL BEHAVIOUR. Due the large size of the testes in the male, compared to its body mass, it has been suggested that the costeros practice a “multimale mating system” (Rosas and Montiero-Filho, 2002). Not a lot of data has been observed when it comes to costeros sexual behaviour; this is because they practice deep and or open water sexual events (Costa et al, 2012). The dolphins are said to choose estuarine waters to breed and calve (give birth) since these waters are relatively sheltered from the natural elements and predators. When they do breed, they position themselves belly to belly.

SURFACE BEHAVIOUR. At the water surface, four main activities can be observed socializing, resting, feeding and travelling (Santos and Rosso, 2007). The dolphins also participate in aerial activities such as leaps and dives which are usually done in carrying out the observed activates. Male aerial behaviour in the costeros includes leaping, tail slaps, nose outs and inverted swimming. The dolphins will leap or partially leap (Fig. 3) with $\frac{3}{4}$ of their bodies out of the water. This leaping behaviour takes place mostly in the afternoon-evening. Nose outs happens mostly in the morning and is more frequent in groups where there are calves present. Nose outs and inverted swimming seemed to be best associated with foraging and play behaviour. On the other hand, tail slaps seemed to be more related to foraging. The swimming behaviour is movement on the water surface when the dolphin moves through the water superficially for a few minutes. While it swims, the dolphin usually dives with the upper part of its head coming to the surface first. The younger dolphins usually do somersaults in which they do a 360° circle positioning their tail over their heads.

ANTIPREDATOR BEHAVIOUR. Costeros come in contact with few predators. One study observed an aggressive interaction between the costeros and *Tursiops truncatus* (bottlenose dolphin). The bottlenose dolphins cornered and behaved aggressively towards a costero calf that seemed to be the main target of attention. In the group, only 3 adult costeros intervened while the other 15 stayed at a distance and watched. The main escape behaviour of the involved costeros included high vertical breaches and swimming at a rapid rate. The calf brought more than half of its body vertically out of the water for up to 3 seconds (Wedekin et al., 2004). This behaviour was suggested to be escape behaviour in retort to the bottlenose attack. There were many adult

costeros who stayed on the outskirts and watched the interaction. The adults may not have intervened in the alteration as they did not sense that the calf was in great danger. It was unclear if the calf was a part of the group of dolphins watching or a stray that the group of adults had no social connections to (Wedekin et al., 2004).

REFERENCES

- Atem, A and. Monteiro-Filho, E. (2006): "Nocturnal Activity of the Estuarine Dolphin (*Sotalia Guianensis*) in the Region of Cananéia, São Paulo State, Brazil." *Aquatic Mammals* 32:2 236-41.
- Caballero, S., F. Trujillo, J. A. Vianna et al. (2007) "Taxonomic Status Of The Genus *Sotalia*: Species Level Ranking For "Tucuxi" (*Sotalia Fluvialis*) And "Costero" (*Sotalia Guianensis*) Dolphins." *Marine Mammal Science* 23.2 : 358-86
- Cantor, M; Wedekin, L; Gumaraes, P et al; (2012). Disentangling social networks from spatiotemporal dynamics: the temporal structure of a dolphin society. *Animal Behaviour*. 84 641-651
- Costa, M.E.B; Le Pendu, Y; Costa Neto, E.M. (2012). Behaviour of *Sotalia guianensis* and ethnoecological knowledge of artisanal fishermen from Canavieira, Bahia, Brazil. *Journal of Ethnobiology and Ethnomedicine* 2012. 8:18-37.
- Culik, Boris. (2012). "CMS: *Sotalia Guianensis*, Guiana Dolphin, Costero." CMS: *Sotalia Guianensis*, Guiana Dolphin, Costero. Convention on Migratory Species, n.d. Web. Oct. 2012. <http://www.cms.int/reports/small_cetaceans/data/S_guianensis/s_guianensis.htm>.
- Czech-Damal, N; Liebschner, A; Miersch, L; Klauer, G; Hank, F. (2011) Electroreception in the Guiana dolphin (*Sotalia guianensis*). *Proc. R. Soc.* 2012 279: 663-668
- Daura-Jorge, F. Wedekin, L and Simoes-Lopes. (2011). Feeding habits of the Guiana dolphin, *Sotalia guianensis* (Cetacea: Delphinidae), in Norte Bay, southern Brazil. *Scientia Marina* 75:1 163-169
- Duarte de Figueiredo and Simao, S. (2009). Signature whistles in wild *Sotalia guianensis*. *J. Acoustic Soc. AM.* Volume 126:3 1563-1569
- Flach, L; Flach, P; Chiarello, A. (2008). Aspects of behavioural ecology of *Sotalia guianensis* in Sepetiba Bay, southeast Brazil. *Marine Mammal Science*. 25:3 503-515
- Rosas, F and. Monteiro-Filho, E (2002). Reproduction Of The Estuarine Dolphin on The Coast Of Paraná, Southern Brazil." *Journal of Mammalogy* 83.2 507-515
- Nery, M; Simao, S; Pereira, T. (2010). Ecology and behavior of the estuarine dolphin, *Sotalia guianensis* (Cetacea: Delphinidae) in Sepetiba Bay, south eastern Brazil. *Journal of Ecology and the Natural Environment* 2:9 194-200
- Secchi, E. (2012). *Sotalia guianensis*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>.
- Santos, M and Rosso, S. (2008). Social organization of marine Tucuxi dolphins *Sotalia guianensis*, in the Cananea estuary of southeastern Brazil. *Journal of mammalogy*. 89:2 347-355
- Wedekin, L; Daura-Jorge, F; Simoes-Lopes, P. (2004). An aggressive interaction between bottlenose dolphins (*Tursiops truncatus*) and Estuarine Dolphins (*Sotalia guianensis*) in southern Brazil. *Aquatic Mammals*. Volume 30:3 391-397

Author: Danille Dunn

Posted online: 2012



Fig. 2. Distribution of *Sotalia guianensis*.

[http://www.cms.int/reports/small_cetaceans/data/S_guianensis/s_guianensis.htm,
downloaded 25 September 2012]



Fig. 3. Costero surface behaviour - partial leap.

[<http://www.atbc2008.org/news/95.htm> downloaded 18 October 2012]



Fig. 4. Leaping/breaching.

[<http://csiwhalesalive.org/newsletters/csi07204.html> downloaded 18 October 2012]



©Richard Diepstraten

Fig. 5. Feeding behaviour.

[<http://www.pbase.com/richard2051/dolfijn>, downloaded 7 December 2012]