

Comments on the southern range of the spinner dolphin (*Stenella longirostris*) in the Western South Atlantic

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Spinner dolphins, *Stenella longirostris*, are found in tropical, subtropical and, less frequently, warm temperate waters (Leatherwood & Reeves, 1983), but very little is still known about their distribution in the South Atlantic Ocean.

Perrin *et al.* (1991) were the first to record the presence of this species in the Western South Atlantic, off Rio de Janeiro (23°S, 43°W). In 1986-87, groups of up to 200 spinner dolphins have been sighted near the northern coast of São Paulo State, Brazil (23°39'-24°00'S, 44°08'-44°51'W), (Daniel *et al.*, 1992). Our observation, reported here, of a herd of spinner dolphins off Paraná State (25°35'S), extends the known range of *Stenella longirostris* some 180 km farther south.

Information about sightings of cetaceans was obtained from August 1987 to August 1991 during nine cruises aboard tuna longlining vessels. These vessels operate regularly seaward of the southern Brazil slope (between 26° and 35°S) from March to November. Oceanographic and atmospheric data were gathered and, photographs of cetaceans were taken whenever possible. Sighting positions were obtained from satellite navigation equipment. During the last of the nine cruises (7-25 August 1991), a herd of approximately 30 spinner dolphins, composed of only adults and subadults judged by their relatively large body size, was seen near the vessel. The vessel was travelling at a speed of 10 knots and steering for 325° magnetic. Weather conditions were good, and the dolphins kept bow-riding (Fig. 1) and swimming beside the boat for almost thirty minutes. The sighting position (25°35'S, 44°19'W) and the surface water temperature (22.5°C) indicated that the group was just inside the Brazil Current as defined by Brandini (1988) and Signorini *et al.* (1989) (Fig. 2).

Perrin (1975) described three races of spinner dolphins in the eastern tropical Pacific. These were later separated into two subspecies (*S. l. centro-americana* and *S. l. orientalis*) and one 'hybrid' form. This last form results from the overlapping distribution of *S. l. orientalis* and *S. l. longirostris* (West and Southwest Pacific form) (Perrin *et al.*, 1991).

In the Southwest Atlantic, one population is known to concentrate around Fernando de Noronha Island on a regular basis (Castello & Barcellos, 1986; Lodi & Fiori, 1987; Silva & Silva, 1992). Daniel *et al.* (1992) observed groups from one to about 200 spinner dolphins throughout the year between Vitória and Anchieta Islands. Groups were larger during the warmer months. These authors believe that the waters near some islands off northern coast of São Paulo State are sheltered and have plenty of food for this species. Castello & Pinedo (1986) registered the presence of *S. longirostris* North of Paraíba State (5°S), northeastern Brazil.

Spinner dolphins have not been recorded in waters of Uruguay and Argentina even though several research groups have regularly searched for stranded marine mammals at and south of the confluence of the Brazil and Malvinas currents (Pinedo, 1982, 1986—coast of Rio Grande do Sul, Brazil; Ximenez *et al.*, 1972 and Crespo *et al.*, 1986—Uruguay, and Lichter, 1992—Argentina). Crespo *et al.* (1992) reported an unconfirmed sighting of *Stenella cf. longirostris* off Peninsula Valdes, Argentina (42°S).

Our confirmed observation of *S. longirostris* as far south as Paraná State (25°35'S) leads us to suggest that, in the Southwest Atlantic, the movements of spinner dolphins southward may be

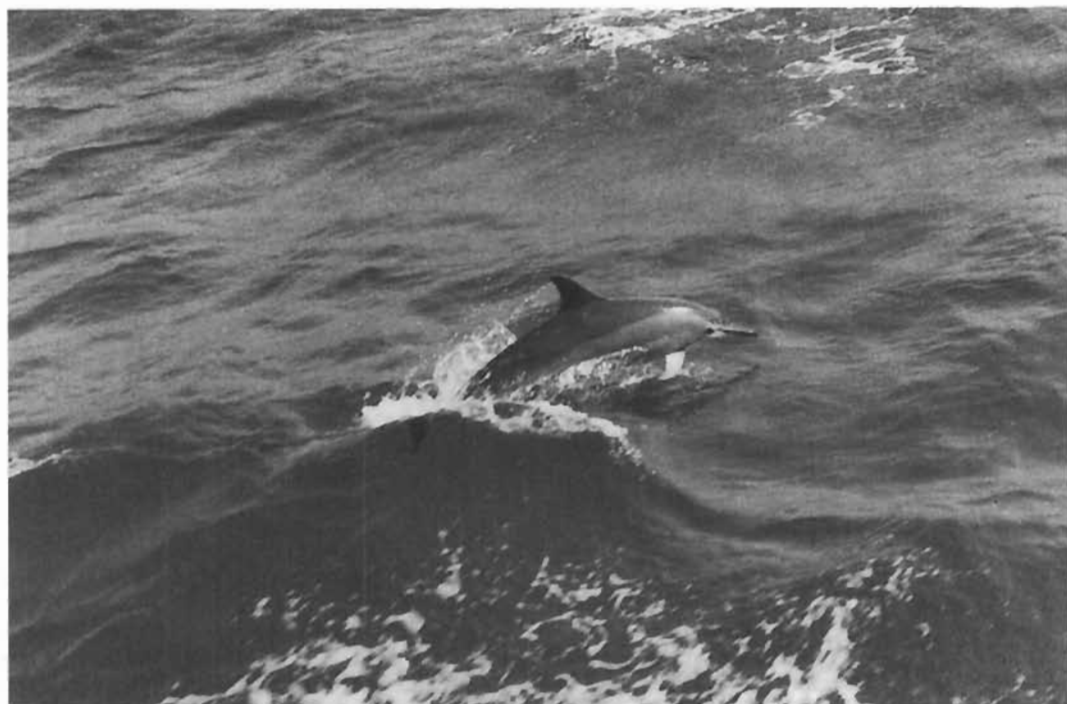


Figure 1. One spinner dolphin (*Stenella longirostris*) of the sighted herd, swimming in the bow of the tuna longline vessel at 25°35'S–44°19'W.

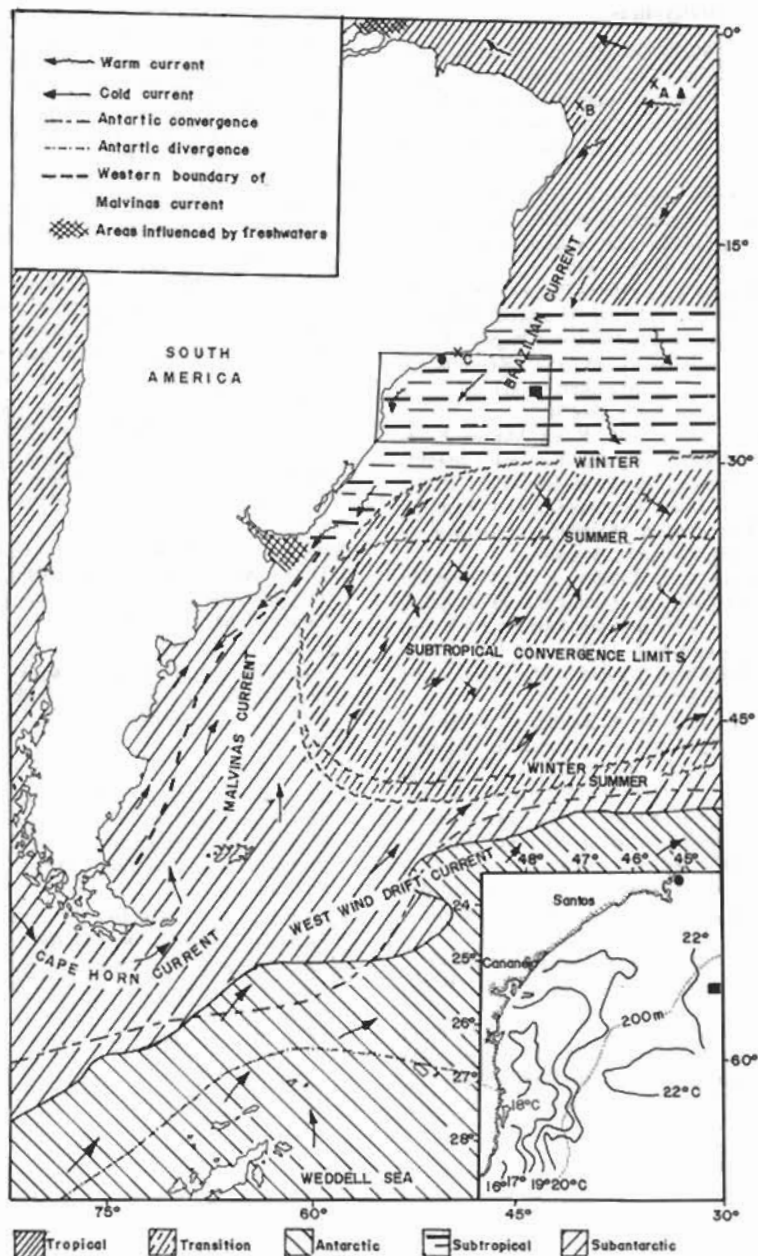
influenced by the warm Brazil Current. During summer this current reaches its maximum range and brings warmer waters to southern Brazil, Uruguay and Argentina (Gordon & Greengrove, 1986; Stramma, 1989). If our hypothesis that spinner dolphins associated with the Brazil Current is true, their total range could extend seasonally into subtropical and temperate waters of the Southwest Atlantic, including, at least in some occasions, Uruguayan and northern Argentine waters.

Spinner dolphins undertake long-term movements in the eastern tropical Pacific, presumably in response to changing availability of prey (Perrin *et al.*, 1979). Some families of epipelagic fishes and squids that are preyed upon by yellowfin tuna, *Thunnus albacares*, and dolphins, *Stenella* spp. (i.e. the fishes Exocoetidae, Myctophidae, Gonomastidae, Melamphaidae, Bregmacerotidae, Gempylidae, Trachipteridae and Stromateidae and the squids Ommastrephidae, Enoploteuthidae, Onychoteuthidae) in that region (Perrin *et al.*, 1979) are also found commonly in the stomachs of tunas, *Thunnus* spp. and tuna-like fishes (*Xiphias gladius*, *Tetrapturus albidus*, *Istiophorus albicans* and *Coryphaena hippurus*) in the Southwest Atlantic (Zavala-Camin, 1987). If spinner dolphins in the

southwestern Atlantic present the same displacement patterns and feeding behavior of their relatives from the Pacific and as these dolphins were swimming northward, we can speculate that groups of *S. longirostris* may reach at least as far south as the western limit of the subtropical convergence (27°S—in austral winter) in order to feed in the same feeding grounds of tuna and tuna-like fishes, using the influence of the Brazil Current (temperature) to disperse themselves away from more tropical regions, without incurring great heat losses and thus, minimizing energetic expenditure.

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- ▲ - FERNANDO DE NORONHA ISLAND: Place of occurrence of *Stenella longirostris* seen there.
 ● - Previous southernmost record of the species (Daniel et al. 1992).
 ■ - New southernmost record of spinner dolphin in Southwest Atlantic.
 X_A - Lodi, pers. communication.
 X_B - Castello and Pinedo 1985
 X_C - Perrin et al. 1981

Figure 2. Main water masses of Southwest Atlantic (adapted from Boltovskoy, 1961), and the records of *Stenella longirostris* in the Brazilian territory.

References

- Boltovskoy, E. (1981) Masas de água em Atlântico Sudoccidental. Páginas 227–237 in D. Boltovskoy, ed. Atlas del zooplankton del Atlántico Sudoccidental y métodos de trabajo con el zooplankton marino. Instituto Nacional de Investigación y Desarrollo Pesquero, Mar del Plata, Argentina.
- Brandini, F. P. (1988) Composição e distribuição do fitoplâncton na região Sudeste do Brasil e suas relações com as massas de água (Operação Sudeste-julho/agosto 1982). *Ciência e Cultura* **40**, 334–341.
- Castello, H. P. & Barcellos, L. (1986) Primer registro del delfín rotador *Stenella longirostris* (Cetacea, Delphinidae) para la Isla Fernando de Noronha. Páginas 56–70 in H. P. Castello, ed. Actas de la 1ª Reunión de Trabajos de Expertos en Mamíferos Acuáticos de América del Sur. Buenos Aires, Argentina.
- Crespo, E., Reyes, L., García, N., Koen Alonso, K. & Dans, S. (1992) Revisión biogeográfica de los mamíferos marinos presentes en las costas del norte y centro de Patagonia. Página 19 in Resúmenes de la 5ª Reunión de Trabajos de Expertos en Mamíferos Acuáticos de América del Sur. Buenos Aires, Argentina.
- Crespo, E., Pérez-Macri, G. & Praderi, R. (1986) Estado actual de la población de franciscana (*Pontoporia blainvillei*) en las costas Uruguayas. Páginas 92–105 in H. P. Castello, ed. Actas de la 1ª Reunión de Trabajos de Expertos en Mamíferos Acuáticos de América del Sur. Buenos Aires, Argentina.
- Daniel, M. C., Fioretti, M. M. & Rocha, A. R. (1992) Ocorrência de *Stenella longirostris* (Cetacea: Delphinidae) na região de Ubatuba, litoral norte do Estado de São Paulo. Páginas 20–22 in J., A. Oporto, L. M. Breiva y R. Praderi, ed. Anales de la 3ª Reunión de Trabajos de Especialistas en Mamíferos Acuáticos de América del Sur. Montevideo, Uruguay.
- Gordon, L. A. & Greengrove, C. L. (1986) Geostrophic circulation of the Brazil–Falkland confluence. *Deep Sea Research* **33**, 573–585.
- Leatherwood, S. & Reeves, R. R. (1983) The Sierra Club Handbook of Whales and Dolphins. Sierra Club Book, San Francisco, CA.
- Lichter, A. A. (1992) Huellas en la arena, sombras en el mar. Los mamíferos marinos de la Argentina y la Antártida. Terra Nova, Buenos Aires, Argentina.
- Lodi, L. & Fiori, B. (1987) Observações sobre o comportamento do golfinho rotador, *Stenella longirostris*, (Cetacea, Delphinidae) na ilha de Fernando de Noronha, Brasil. Páginas 60–68 in S. Siciliano e B. Fiori, ed. Anais da 2ª Reunión de Trabalhos de Especialistas em Mamíferos Aquáticos da América do Sul. Rio de Janeiro, Brasil.
- Perrin, W. F. (1975) Distribution and differentiation of populations of dolphins of the genus *Stenella* in the eastern tropical Pacific. *J. Fish. Res. Bd. of Can.* **32**, 1059–1067.
- Perrin, W. F., Akin, P. A. & Kashiwada, J. V. (1991) Geographic variations in the external morphology of spinner dolphin *Stenella longirostris* in the eastern Pacific and implication. *Fish. Bull.* **89**, 411–428.
- Perrin, W. F., Evans, W. E. & Holts, D. B. (1979) Movements of pelagic dolphins (*Stenella* spp.) in the eastern tropical Pacific as indicated by results of tagging with summary of tagging operations, 1967–76. NOAA Technical Report SSRF-737 National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, CA.
- Perrin, W. F., Mitchell, E. D., Mead, J. G., Caldwell, D. K. & Van Bree, J. H. (1981) *Stenella clymene*, a rediscovered tropical dolphin of the Atlantic. *J. Mammal.* **62**, 583–598.
- Signorini, S. R., de Miranda, L. B., Evans, D. L., Stevenson, M. R. & Inostroza, V. H. M. (1989) Corrente do Brasil: estrutura térmica entre 19° e 25°S e circulação geostrofica. *Boletim Instituto Oceanográfico* **37**, 33–49.
- Silva, Jr, J. M. & Silva, F. L. (1992) Estudo e preservação do golfinho rotador *Stenella longirostris* (Gray, 1928) no Arquipélago de Fernando de Noronha, Brasil. Página 64 in Resúmenes de la 5ª Reunión de Trabajos de Expertos en Mamíferos Acuáticos de América del Sur. Buenos Aires, Argentina.
- Stramma, L. (1989) The Brazil Current transport south of 23°S. *Deep Sea Res.* **36**, 639–646.
- Zavala-Camin, L. A. (1987) Ocorrência de peixes, cefalópodes e crustáceos em estômagos de atuns e espécies afins, capturadas com espinhel no Brasil (23°S–34°S) 1972–1985. *Boletim do Instituto de Pesca* **14**, 93–102.