NOTA CIENTÍFICA

NEW RECORDS OF THE ANTARCTIC FUR SEAL,
Arctocephalus gazella (PETTERS, 1875) (CARNIVORA: OTARIIDAE) FOR THE SOUTHERN BRAZILIAN COAST

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RESUMO

Novos registros do lobo-marinho Antárctico, Arctocephalus gazella (Petters, 1875) (Carnívora: Otariidae) para a costa sul do Brasil

Três novos registros do lobo-marinho Antárctico são reportados para a costa do Rio Grande do Sul, dez anos após sua primeira ocorrência na costa do Brasil. Uma fêmea adulta e dois machos juvenis foram encontrados mortos durante monitores sistemáticos de praia ao longo do litoral norte do Rio Grande do Sul, entre agosto e setembro de 1994. São apresentados neste trabalho dados sobre idade e dieta dos animais coletados. É difícil determinar as causas precisas da ocorrência destes espécimes nesta região e estação. Estes registros estão possivelmente relacionados a movimentos erráticos de alguns indivíduos do que a um aumento do tamanho populacional da espécie ou movimentos de dispersão natural entre os períodos reprodutivos.

The Antarctic fur seal, Arctocephalus gazella, is the only eared seal (Family Otariidae) that lives and reproduces also in islands south of the Antarctic Convergence. Their breeding populations occur mainly on islands south of this convergence and north of latitude 65°S. In the Atlantic sector of

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the Southern Ocean, colonies of this species are known from South Georgia, South Shetlands, South Orkneys, South Sandwich and Bouvet Islands (Hofmeyer et al., 1997). At the present, the population is increasing in most parts of its distribution, with a major breeding stock of about 1,600,000 animals concentrating at South Georgia (Boyd, 1993).

The Antarctic fur seal is a marine predator and the diet of males and females depends mainly on krill and associated fish (Daneri & Coria, 1992). The reproductive cycle of this species extends from October, when the first adult males come ashore to establish their harems, through April, when the last pups are weaned (Duck, 1990). During this period, extensive studies on its natural history have been conducted, including reproduction, demography, feeding ecology and behavior (e.g. Boyd & Croxall, 1992; Lunn et al., 1994). However, there is still few published information about the dispersion pattern and feeding habits of this species out of the breeding season.

This note aims to contribute to the knowledge on Antarctic fur seal during its post-breeding dispersion period, reporting new records of the species for the southern Brazilian coast.

The specimens of Antarctic fur seals were collected during systematic beach surveys carried out as part of a research program on marine mammals strandings initiated in 1991 along 270 km of beaches in the northern coast of Rio Grande do Sul (29°19'S, 49°43'W to 31°22'S, 51°02'W), southern Brazil. Voucher specimens were deposited in the scientific collection of the Grupo de Estudos de Mamíferos Aquáticos do Rio Grande do Sul (GEMARS).

The identification of the species was based on coloration pattern and especially on cranial morphology. The main diagnostic cranial features were based on dental cusp pattern: (1) no accessory cusps on upper and lower postcanines (2) extreme reduction and simplification on upper postcanine 5 and 6, where the main cusp is vestigial and “button-like” (see King, 1959 and Reppening et al., 1997).

The age was estimated by counting growth-layer groups (GLGs) present in the dentine in longitudinally sectioned canine teeth. The protocol applied was slightly modified from Schultz (1996).

In order to examine the feeding habits of the seals, the stomachs were dissected and the contents washed through a 1mm-mesh sieve. The contents were separated macroscopically in fish and mollusks. The prey species were identified by the analysis of hard structures such as skull bones of fish and cephalopod beaks. The size and the biomass of the squids were estimated using published regressions from beaks measurements (Rodhouse et al.,

1990). Since the fishes were represented only by broken bones of the skull, its size and biomass could not be calculated.

Three specimens of Antarctic fur seal were found dead, during the late winter and spring of 1994. The animals were recorded in an interval of 35 days and were represented by two males and one female. Information about the syncranial osteology of these specimen is presented in the Drehmer & Oliveira (2000).

The first animal was an adult female 127.0 cm long collected in 8 August at 30°30’S, 50°20’W (GEMARS 0189). The skull presents a 193.9 condylorbasal length and sutures totally fused, which indicates physical maturity. The tooth section exhibited 11 GLGs. The stomach of this animal was empty. Some unidentified goose barnacles (Lepas sp.) were attached to the fur.

The second was a juvenile male 121.0 cm long collected in 10 September at 30°42’S, 50°29’W (GEMARS 0199). The skull presents a 195.7 mm condylorbasal length and the tooth section exhibited 1+GLG. The stomach exhibited beaks of the Antarctic neosquid (Alluroteuthis antarcticus) and the long-finned squid (Loligo sanpaulensis) (Table 1).

<table>
<thead>
<tr>
<th>Species</th>
<th>Number</th>
<th>Mantle Leng (mm)</th>
<th>Biomass (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alluroteuthis antarcticus</td>
<td>5</td>
<td>61,2-91,8</td>
<td>18,53</td>
</tr>
<tr>
<td>Loligo sanpaulensis</td>
<td>1</td>
<td>121,7</td>
<td>48,19</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td></td>
<td>66,72</td>
</tr>
</tbody>
</table>

The third was another juvenile male 118,0 cm long collected in 11 September at 29°52’S, 50°04’W (GEMARS 0209). After the preparation of the skull, the premaxilla and the nasal bones did not remain articulated. This fact precluded the measurements of the condylorbasal length. The tooth section presented 1+ GLG. Only one cutlassfish (Trichiurus lepturus) was identified in the stomach contents.

The specimens described here represent the second documented report of Antarctic fur seal for southern Brazilian coast, 10 years after the first record of this species by Pinedo & Marmontel-Rosas (1987). These authors recorded the species based on two dead animals washed ashore (one female and other specimen of unknown sex) on September 1984, also in the Rio Grande do Sul coast.
There is little information about the occurrence of *A. gazella* in the Atlantic coast of South America. Until the moment, the species was not recorded for Uruguay. The first report concerning the presence of this species in Argentina was made by Fernández *et al.* (1998). The authors reported on 18 Antarctic fur seals to the Mar del Plata region (38°S). For the Pacific coast of South America, there are just three animals of this species in Chile (Torres *et al.* 1984). This scarcity of records suggests that the presence of *A. gazella* in the coast of South America waters is occasional. Nevertheless, it should also be considered the possibility that some Antarctic fur seal had been misidentified in the field due the external similarity with the South American fur seal (*Arctocephalus australis*). Therefore, it is important that researchers and technicians working on centers for pinniped recuperation along the southern and southeastern Brazilian coast should be aware that a third *Arctocephalus* species might be found in this area.

Certainly, it is difficult to determine the precise cause of the occurrence of the specimens from the present study in this region. The seasonal movements of *A. gazella* are still little known. It has been suggested that the Antarctic fur seal undertakes seasonal movements between the South Georgia islands to South Orkney islands, looking for food resources during the post-breeding period (Boyd *et al.*, 1998). Payne (1979) believes that the Antarctic Convergence is not the absolute boundary to the distribution of the Antarctic fur seal and suggests that there is a long-distance dispersal in reason to the marked decrease in the availability of food during winter in the Southern Ocean. The population size of *A. gazella* has been facing an increase – 9.8% per year at South Georgia islands (Boyd, 1993). This increase of the population size associated with dispersion movements helped by the cold currents could explain the occurrence of Antarctic fur seal in the southern Brazilian coast. However, after the collection of the specimens reported here no additional Antarctic fur seal was found in the study area, despite a large collection effort has been made – 93 beach surveys and 11,654 km surveyed until May 2001. Thus, it is unlikely that the increasing of population size or seasonal movements are the reason for the presence of the Antarctic fur seals in Rio Grande do Sul, and these records are probably more associated with erratic movements undertaken by some individuals.

Regarding the information on the stomach contents from the Antarctic fur seals presented here, the following considerations may be made. The squid *Loligo sanpaulensis* is distributed in the southwestern Atlantic from central Argentina to central Brazil (20°S to 42°S) (Roper *et al.*, 1984) and the fish...
Trichiurus lepturus is present in all tropical and temperate waters of the world. The squid Alliotteuthis antarcticus presents an oceanic distribution and inhabits the Atlantic and Indian sectors of the Antarctic Ocean, with the northernmost limit of its range at about the 60°S. Therefore, it is probable that A. antarcticus was ingested when the fur seal was still in waters south of the Antarctic convergence, agreeing with the knowledge that cephalopod beaks persist a prolonged time in the stomach of marine mammals (Recchia & Read, 1989).

The female analyzed by Pinedo & Marmotel-Rosas (1987) had only algae in its stomach. Nevertheless, when examining the intestinal contents of the same animal, the authors detected 21 otoliths of the fishes Menticirrhhus littoralis, Micropogonias furnieri, Cynoscion guatucupa, Macrodont ancyledon, Paralichthys brasiliensis, Pomatomus saltatrix and unidentified catfishes (family Ariidae). All these species, as well as L. sanpaulensis and T. lepturus, are very common in southern Brazilian coastal waters (Haimovici, 1997a & 1997b).

The data on the stomach contents presented here and by Pinedo & Marmotel-Rosas (1987) corroborates the information taken on autumn grounds, which demonstrate that the species feed also on fish and cephalopods (Daneri & Coria, 1992, 1993) when krill becomes scarce. The occurrence of empty stomachs and low number of preys are a common feature in the specimens of A. australis and A. tropicalis found dead in southern Brazil (Oliveira, 1996). It has been correlated with the physical debilitation of the animals or may also be a consequence of an offshore location of their usual feeding grounds (Pinedo, 1986). The comparison of results of the gastrointestinal contents of this study and those of Pinedo & Marmotel-Rosas (1987) suggests that an alternative method for a better assessment of the diet of these fur seals may be the examination of the intestinal contents.

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LITERATURE CITED


