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NOTES ON THE REPRODUCTIVE BIOLOGY OF FEMALE DUSKY DOLPHINS (*LAGENORHYNCHUS OBSCURUS*) OFF THE PATAGONIAN COAST

The dusky dolphin (*Lagenorhynchus obscurus*) is one of the most common small cetacean species off the northern and central Patagonian coast. Social and feeding behavior has been studied in San Jose Gulf (Wursig and Wiirsig 1980, Wursig 1986), and the species' biology is currently being studied from fishery bycatch specimens (Crespo 1991, Dans et al. 1993).

An important trawl fishery for hake and shrimp off Patagonia incidentally catches southern sea lions (*Otaria flavescens*), dusky dolphins, and Commerson's dolphins (*Cephalorhynchus commersonii*) (Crespo et al. 1994a, 1995). The objective of this note is to present preliminary aspects of the reproductive biology from age and gonad analysis of female dusky dolphins.

Age and reproductive data were collected from 18 females, caught incidentally off northern Patagonia (between 43° and 47°S). All the specimens collected were frozen on board factory vessels at -20°C, except for two specimens (LO10 and L022) that were kept on ice in coastal vessels. Standard length of each specimen was measured to the nearest centimeter (Norris 1961). Mammary glands were examined for milk production by pressing them with the fingers. The uterine horns were examined for fetuses; sex and body length of fetuses were recorded.

Ovaries were fixed in 10% formalin or Bouin's solution and 2-mm sections taken from the cortex (Perrin et al. 1976, Marsh and Kasuya 1984). Corpora lutea (CL), corpora albicantia (CA), corpora atretica, and graafian follicles larger than 1 mm were counted and measured with calipers. Paraffin-embedded samples were sectioned (5µm) and stained with Mayer's hematoxylin and eosin for microscopic analysis.

Each female was classified according to Perrin and Donovan (1984) into the following categories: immature, CL or CA not present; mature, at least one CL or CA present. Mature females were further classified as lactating, pregnant, pregnant and lactating, or resting (neither pregnant nor lactating).

Several teeth were collected from each individual. After decalcification in 5% formic or nitric acid, hematoxylin-stained sections 16-18 µm thick were examined (Hohn 1980, Perrin and Myrick 1980, Crespo et al. 1994b). Growth layer groups (GLG) in dentine were counted assuming annual deposition.

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Field number	Date of death	Length (cm)	Age ^a (yr)	Number of corpora ^b	Reproductive condition
LO1	19/11/89	158.0	5	0 CL + 0 CA	Immature
LO2	19/11/89	157.0	4	0 CL + 0 CA	Immature
LO4	27/04/90	159.0	6	0 CL + 0 CA	Immature
LO5	01/06/90	166.5	6	—	Mature (Lactating)
LO6	01/06/90	174.0	8	0 CL + 2 CA	Mature (Resting)
LO8	10/4/92	161.0	7	1 CL + 1 CA	Mature (Pregnant)
LO9	10/4/92	174.0	11	1 CL + 2 CA	Mature (Pregnant)
LO10	08/09/92	172.0	3+	0 CL + 0 CA	Immature
LO11	10/9/92	172.0	3+	0 CL + 1 CA	Mature (Resting)
LO12	10/9/92	162.0	7+	1 CL + 0 CA	Mature (Pregnant)
LO13	10/9/92	170.0	8+	0 CL + 1 CA	Mature (Resting)
LO14	10/9/92	167.0	7+	0 CL + 0 CA	Immature
LO15	11/03/93	166.0	5	0 CL + 0 CA	Immature
LO16	11/03/93	174.0	6	1 CL + 0 CA	Mature (Pregnant)
LO17	16/03/93	166.0	4	0 CL + 0 CA	Immature
LO18	06/04/93	171.0	5	0 CL + 0 CA	Immature
LO21	02/09/93	158.0	3	0 CL + 0 CA	Immature
LO22	30/10/93	164.0	3	0 CL + 0 CA	Immature

^a The sign + means that the last layer is not completed.^b CL: corpora lutea, CA: corpora albicantia

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Age of the females in the sample ranged between 3 and 11 yr (Table 1). Eight of the 18 females were mature (44%), of which 4 were pregnant, 3 were resting, 1 was lactating and none was pregnant and lactating. The youngest sexually mature female and the oldest immature female were 6 and 7 yr old, respectively (Fig. 1). The smallest sexually mature female and the largest immature female were 161 and 172 cm long, respectively, and the mean length of adult females was 169.19 cm (Table 1). The sample size was too small to produce a valid estimate of the age at sexual maturation.

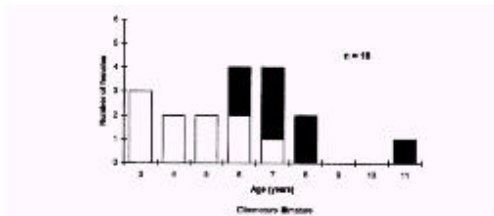


Figure 1. Age structure and reproductive categories of female dusky dolphins (*Lagenorhynchus obscurus*) incidentally caught in a trawl fishery off Argentina.

Table 2. Data on fetuses and a newborn calf of the dusky dolphin (*Lagenorhynchus obscurus*) from Argentina.

Field number	Date of death	Length (cm)	Age	Sex	Diameter of CL (mm)
LO8	04/92	11.5	fetus	male	24.45
LO9	04/92	17.5	fetus	female	25.35
LO16	04/93	20.75	fetus	?	24.96
LO12	09/92	72.5	fetus	male	23.26
LO3	24/04/90	82	newborn	male	

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All corpora were found in the left ovaries. The mean CA diameter was 7.12 mm. Hyaline connective tissue with no luteal cells and thick-walled blood vessels made up most of the structure. These CA correspond to the category of "old CA" described for *Globicephala macrorhynchus* by Marsh and Kasuya (1984).

Pregnant females had only one CL, with no accessory CL. The mean CL diameter was 24.5 mm. The CL diameters were similar in females with fetuses ranging in size from 11.5 cm to 72.5 cm (Table 2). Atretic follicles were found in almost all the ovaries. They were less than 3 mm in diameter and filled with fibrous connective tissue.

Three fetuses of less than 21 cm were found in March and April, and a 72.5-cm fetus was found in September (Table 2). A 92-cm calf was reported in November (Albornoz and Albareda 1994), and an 82-cm newborn calf was found in April. Wiirsig and Wiirsig (1980) reported calves between November and February. Several calves were seen in November and December during aerial surveys (unpublished data). Even though this evidence is sparse, it seems that the season for births extends from spring to autumn.

An estimate of annual fishery mortality is 53-197 (Crespo et al, 1995). The sample recovered from the fishery includes significantly more females than males (18 ~.r. 7; $P = 0.022$). If the sample represents the actual sex ratio taken by the fishery, and if it be assumed that the sex ratio of the population itself is not skewed, the effect on the population's ability to recover could be greater than would be the case if males and females were taken in equal numbers.

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