



Record of a pregnant bentfin devilray, *Mobula thurstoni* (Lloyd) (Elasmobranchii, Mobulidae) caught in Southwestern Brazil

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Abstract. Registro de uma fêmea grávida de raia diabo, *Mobula thurstoni* (Lloyd) (Elasmobranchii, Mobulidae) capturada no Sudeste do Brasil. The present paper reports the first occurrence of a 183 cm disc width pregnant female of *Mobula thurstoni* (Lloyd, 1908) in southwest Brazilian coast, caught by a commercial longline fishing vessel. Morphometrics and a morphological description of the male embryo are presented.

Key-word: Embryo, reproduction, mobulid, batoid, trophonemata.

Resumo. O presente trabalho reporta a primeira ocorrência de uma fêmea grávida de *Mobula thurstoni* (Lloyd, 1908), capturada por barco de pesca de espinhel na costa sudeste do Brasil. A morfometria e a descrição morfológica do embrião macho são apresentadas.

Palavras-clave: Embrião, reprodução, mobulídeo, batóideo, trofonemata.

The family Moubulidae Rafinesque, 1810, includes species poorly known in many biological aspects, such as the reproductive pattern. Devilrays, genus *Mobula*, comprise nine living species, measuring from 1 to about 4 m of disc width (DW) and represented worldwide in warm temperate and tropical seas (Notarbartolo-di-Scaria, 1987; Last & Stevens, 1994). Five species of this genus were reported in the Western Atlantic: *Mobula hypostoma* (Bancroft, 1831), Figueiredo (1977); *Mobula tarapacana* (Philippi, 1893), Notarbartolo-di-Scaria & Hillyer (1989); *Mobula rochebrunei* (Vaillant, 1879), *Mobula japonica* (Müller and Henle, 1841) and *Mobula thurstoni* (Lloyd, 1908), Gadig *et al.* (2003). Occurrence of embryos and pregnant females of *Mobula mobular* (Bonnaterre, 1788) have been reported in the region of Palermo, Italy

(Tortonese, 1957) and in the Northern Tyrrhenian Sea, Southeast of Gorgona Island (Notarbartolo-di-Scaria & Serena, 1988). Garayzar (1991) reported the presence of embryos and gravid *Mobula munkiana* Notarbartolo-di-Sciara, 1987 specimens in Bahia de La Paz, Mexico and pregnant *M hypostoma* with term embryos were reported in south and southwestern Brazilian coast (Kotas, *et al.* 2005), however no data are available for *M. thurstoni* pregnancy. An adult 1830 mm DW female specimen was accidentally caught at about 50-80 m of depth with long line and hook and landed to the fishing wharves on July, 2002 in Santos city, São Paulo State, Brazil. The specimen was donated by fishermen of the commercial longline fishing vessel "Progressão", (southwestern Brazil) and identified as *M. thurstoni* following the identification key

proposed by Notarbartolo-di-Scaria (1987) and it agrees with specimens previously studied in the same area by Gadig *et al.* (2003). These specimens shared the following characteristics: tail base dorsally depressed, prominent double curvature of anterior margin of pectoral fins, a rectangular light gray area in the nuchal region between the origins of pectoral fins and a white spot on the tip of the dorsal fin. In addition, the dorsal coloration presented a grayish color and a white triangular small area located about midway between the origin and the apex of the dorsal fins (fig. 3). The ventral region presented with coloration. The material was fixed in 10% formalin solution, and deposited in the ichthyological collection of the Núcleo de Pesquisa e Estudo em Chondrichthyes (NUPEC) on July, 2002. The female was 1830 mm DW (NUPEC 1868) and the male embryo was 340 mm DW (NUPEC1867). The morphometric protocol followed (Table I) Notarbartolo-di-Scaria (1987) and the celomatic cavity was incised by the *linea alba* to verify the

internal organs. The left *uterus* presented a dilatation and during its dissection (Figs 1-3), an embryo was visualized with the pectoral fins overlapping the dorsal region (Fig.1-2). The trophonemata and its secretion - the “uterine milk”, which nourishes the developing embryos - were observed and characterize the viviparity with matrotrophy (Fig. 2) (Hamlett & Hysell, 1998; Hamlett, 2005). The male embryo was 340 mm DW and 190 mm total length (TL). The presence of uterine trophonemata and uterine milk in the female *uterus*, the incomplete dorsal grayish pigmentation, white marks on its dorsal side, the small size of the animal, and the fact that this species is expected to give birth to young at about 850 mm DW (Notarbartolo-di-Scaria, 1987) are evidences that the embryo was in mid-term stage of development. The presence of adult males of *M. thurstoni*, with developed claspers and pelvic fins

Table I – Female and embryo measurements of *Mobula thurstoni*.

Specimen	Measurements (mm)	
	Female	Embryo
Disc width	1830	340
Disc length	1030	190
Anterior projection 1	680	144
Anterior projection 2	1057	195
Predorsal length	840	165
Dorsal fin base length	110	15
Dorsal fin height	82	14
Preloacal distance	840	165
Tail length	1200	415
1 st gill slit opening length	100	18
2 nd gill slit opening length	105	18
3 rd gill slit opening length	108	17
4 th gill slit opening length	99	17
5 th gill slit opening length	62	9
Between first gill slits	220	46
Between fifth gill slits	95	18
Rostrum to first gill slits	197	45
Rostrum to fifth gill slits	385	90
Pelvic fin length	217	37
Cephalic fin length	221	36
Cephalic fin width	71	23
Orbit height	30	10
Between antorbitals	240	67
Preoral length	75	15
Head length	232	50
Mouth width	215	45
Internarial distance	195	39
Upper toothband length	195	45
Lower toothband length	163	44



Figures 1-3. Embryo of *Mobula thurstoni*. 1, during the *uterus* dissection a fetus with the pectoral fins overlapping the dorsal region was observed. 2, the uterine trophonemata 3, embryo removed from *uterus* with incomplete dorsal pigmentation.

congested and swollen may indicate mating activity in southwest Brazilian coast (Gadig *et al.* 2003). The occurrence of a gravid female in the same region corroborates the assumption that the Brazilian southwestern coast is an important reproductive site for the species.

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