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Scientific Note

Oviposition rate of the fanskate *Sympterygia bonapartii* (Elasmobranchii, Rajidae) (Müller & Henle, 1841) held in captivity.

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Abstract. The oviposition rate in captive *Sympterygia bonapartii* was reported. In a year period one female laid a total of 152 egg cases at a rate of 0.4 egg cases per day and a second one laid a total of 200 egg cases at a rate of 0.5 egg cases per day.

Key words: egg cases, skate, aquarium, egg cases laying, controlled conditions

Resumen. Tasa de oviposición de la raya marmolada *Sympterygia bonapartii* (Elasmobranchii, Rajidae) (Müller & Henle, 1841) mantenida en cautiverio. Se registró la tasa de oviposición de *Symperygia bonapartii* en cautiverio. En un período de un año una hembra depositó 152 ovicápsulas a una tasa de 0.4 huevos por día y la otra depositó 200 ovicápsulas a una tasa de 0.5 huevos por día.

Palabras clave: ovicápsulas, rayas, acuario, puesta de ovicápsulas, condiciones controladas**.**

The skate genus *Sympterygia* comprises four species endemic to the temperate Atlantic and Pacific waters of South America. The smallnose fanskate *S. bonapartii* is one of the most commonly landed skate off northern Argentina and Uruguay (Massa *et al.,* 2004). This species occurs from Rio Grande do Sul State, Brazil (33° S) to Rawson City, Argentina (44° S) (Paesch & Meneses, 1999), from the intertidal to 100 m deep (Menni & Stehmann, 2000). Studies on *S. bonapartii* have focused on taxonomy (Cousseau *et al*., 2000, McEachran, 1982), reproductive biology and abundance (Mabragaña *et al*., 2002), distribution (Menni & Stehmann, 2000), size at maturity (Oddone & Velasco, 2004), incubation period and size at hatching (Jañez & Sueiro, 2007) and some aspects of trophic ecology (Barrera Oro & Maranta 1996; Paesch, 2000). However several aspects of the life-history of *S. bonapartii i.e.* fecundity are still unknown (Mabragaña *et al*., 2002). Elasmobrachs (including the skates and rays) are considered to be particularly vulnerable to over-exploitation by fisheries as a result of their K-selected life-history strategy (Camhi *et al*., 1998). Since 1994 elasmobranchs have became increasingly important in south-west Atlantic fisheries (Massa & Hozbor, 2003; Paesch & Meneses, 1999). Biological data, especially regarding reproduction of skates are needed for proper management of their fisheries (Mabragaña *et al*., 2002). Observation conducted on captive smallnose skates allowed us to report the first contribution concerning the rate of egg-laying for this species.

Two mature female *Sympterygia bonapartii* (female A: total length, *TL* 65 cm, disc width, *DW* 42 cm; female B: *TL* 65 cm, *DW* 47 cm) were caught by demersal otter trawl off Mar del Plata City, Argentina (38°09´ S; 57°33´ W) in July 2002. Specimens were maintained in a tank (1000 m^3) with constant temperature (16.5 °C), salinity (35-37), and photoperiod (12L:12D), with at least one mature male, at Temaiken Aquarium, Escobar, Province of Buenos Aires, Argentina. At the time of the first egg-laying, the females were placed in separate tanks (15 m^3) under the same conditions, as mentioned above. For the period between the capture and the beginning of this study data on egg-laying are lacking.

The number of egg cases in each tank was counted daily and the following data recorded: date,

egg-layer female and presence of yolk examined under transmitted light. The total number of egg cases laid per month per female was pooled for a 12-month period. Total length and width of 30 egg cases were recorded following Clark (1922).

The mean total length of egg cases was (mean ± SD) 77.5 ± 2.6 mm and the mean width was 45.4 ± 2.2 mm (n=30). Female A first deposited an egg case on 1 August 2005. Over a period of 12 months, 152 egg cases were deposited, giving an average rate of 0.4 egg cases per day. The time interval between each pair ranged from 2 to 12 days (mean ± SD; 5.4 ± 2.1). Parturition peaked in September and January and reached a minimum in October (Fig. 1a). Female B laid her firs egg case on 28 October 2005. Over a period of 12 months, 200 egg cases were produced, giving an average rate of 0.5 egg cases per day. The interval between subsequent laying of egg cases pairs ranged from 1 to 14 days (mean ± SD; 4.1 ± 2.4). Parturition peaked in December and the minimum in February (Fig. 1b). Duration of parturition was approximately one to three hours per pairs of egg cases. Of all egg cases laid by both females, 342 (97.2 %) contained a single embryo, 3 (0.8 %) contained two embryos (Fig. 2) and 7 (2.0 %) were empty. Egg cases that were empty or containing two embryos were always paired with an egg case with a simple embryo. The presence of more than one embryo per egg case is recorded for the first time in *S. bonapartii*. Similar cases were reported in *Leucoraja erinacea* (Mitchill, 1825) by Richards *et al*., (1963), although in *L. erinacea* the other capsule of the pair did not contain an embryo, just conversely as described in this work. In *Amblyraja radiata* (Donovan, 1808), it has been suggested that the passage of the eggs through the ostium and into the egg case in formation in the oviducal gland, could be delayed so they cannot reach the forming egg case before it fully formed and closed (Templeman, 1982). According to Mabragaña *et al*. (2002) egg case length and width for *S. bonapartii* in natural environment are 76.5 ± 3.92 mm and 48.37 ± 0.74 mm respectively. These values are similar with the data recorded in this work (length and width 77.5 ± 2.6 mm and 45.4 ± 2.2 mm, respectively). The time interval between laying egg cases of the same pair in the smallnose fanskate agrees with observations made by Luer & Gilbert (1985) in *Raja eglanteria* maintained in captivity, who observed that this interval varies from several minutes to a few hours. Mabragaña *et al*. (2002) suggested that females of *S. bonapartii* lay their egg cases in late spring (November) and the beginning of summer (December- January). However, the environment conditions in the aquaria were constant and this could have masked seasonal variations. The presence of embryos and yolk in over 90 % of the egg cases laid indicates that this species is capable of a successful reproduction in aquaria. The results of this study are the first data on oviposition rate for the genus *Sympterygia* in controlled conditions. This is an approach to estimate the fecundity of this species, but it's necessary to continue the studies simulated the environment condition.

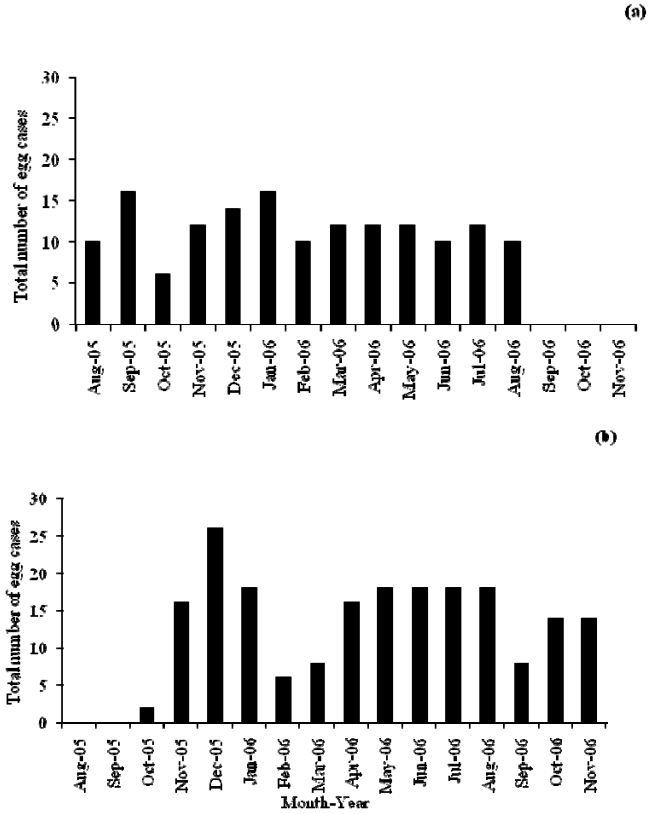

Figure 1. Egg laying frequency of female A (a) and female B (b) during a twelve- month period.

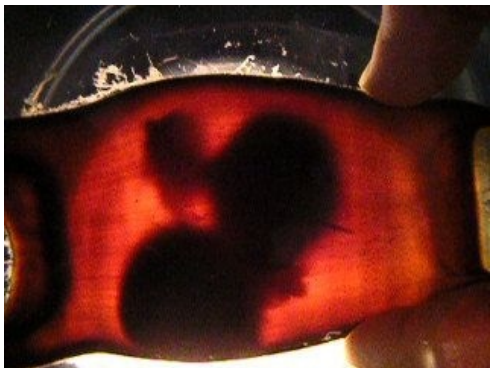

Figure 2. View of an egg case contained two embryos, observed by transmitted light.

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