

# REPRODUCTIVE BIOLOGY OF *SQUALUS BLAINVILLEI* (RISSO, 1826) IN THE EASTERN MEDITERRANEAN SEA

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## Abstract

A total of 491 *Squalus blainvillei* were sampled in the Eastern Mediterranean Sea during the period 2004–2009. The overall sex ratio (females:males) was 1.22:1. Females ranged from 321 to 779 mm and males ranged from 272 to 799 in total length. Total length and weight of the specimens were highly correlated ( $R^2=0.92$ ). Statistically significant differences were found between females and males in mean GSI and HSI values. Total length at 50% maturity was estimated at 565.3 mm for females and at 457.6 mm for males.

**Keywords:** Eastern Mediterranean, Fishes, Reproduction

## Introduction

Sharks are species particularly vulnerable to the overexploitation because of their k-selected life-history strategy [1]. *Squalus blainvillei* is an ovoviviparous demersal shark distributed in the whole Mediterranean down to about 700 m [2]. Studies on its systematics and biology have been mostly carried out in the Western-Central side [3, 4] while in the Eastern side the knowledge on its population characteristics is still scanty [5]. This study provides preliminary information on the reproductive biology of the longnose spurdog in the Eastern Mediterranean Sea.

## Materials and Methods

A total number of 491 *Squalus blainvillei* (269 females, 221 males, 1 hermaphrodite) was obtained from bottom trawl and bottom longline catches from December 2004 to October 2009.

Length and weight measurements were taken and sexual maturity was determined by macroscopic observation of the reproductive organs according to Stehmann [6]. Regression analysis was used to determine length-weight relationship ( $Y=aX^b$ ). Statistically significant differences, between females and males, in length and weight frequency distributions were examined with the Kolmogorov-Smirnov two-sample test. A logistic curve was fitted to the data and the total length at which 50% of individuals are sexually mature was calculated. Gonadosomatic (GSI) and hepatosomatic index (HSI) were determined for each sex. Ovarian fecundity was estimated by the number of ripe oocytes in the ovary of mature females, while uterine fecundity by the number and size of embryos occupying the oviducts.

## Results and discussion

Longnose spurdogs ranged from 272 to 799 mm in total length and from 90 to 3079 g in weight (Fig. 2). The overall sex ratio was 1.22:1 (F:M), while among the samples one hermaphrodite was found with internal male reproductive organs and no claspers. Females and males showed statistically significant differences in length and weight frequency distributions (KS test,  $P>0.05$ ).

Out of the specimens examined, 37% of females and 67% of males were sexually mature. The smallest sexually mature female was 523 mm in total length, while the smallest sexually mature male was 403 mm in total length. Mean total length at 50% maturity was estimated at 565.3 mm for females and at 457.6 mm for males [Figure 1].

Gonadosomatic indices reached higher values in females than in males ranging from 0.07 to 14.66 ( $2.05\pm 2.71$ ) in females and from 0.04 to 2.51 ( $1.07\pm 0.57$ ) in males. Hepatosomatic index reached higher values in males ranging from 4.41 to 35.78 ( $10.44\pm 3.61$ ) than in females ranging from 4.55 to 22.86 ( $11.81\pm 4.06$ ).

Three oocyte stages (ripe, maturing and immature) were identified macroscopically according to its size and colour. Out of 269 females, 44 were found with embryos ranging from 55 to 177 mm in total length. Embryos' length and yolk sac weight were negatively correlated. Both ovarian and uterine fecundity ranged between 1 and 6.

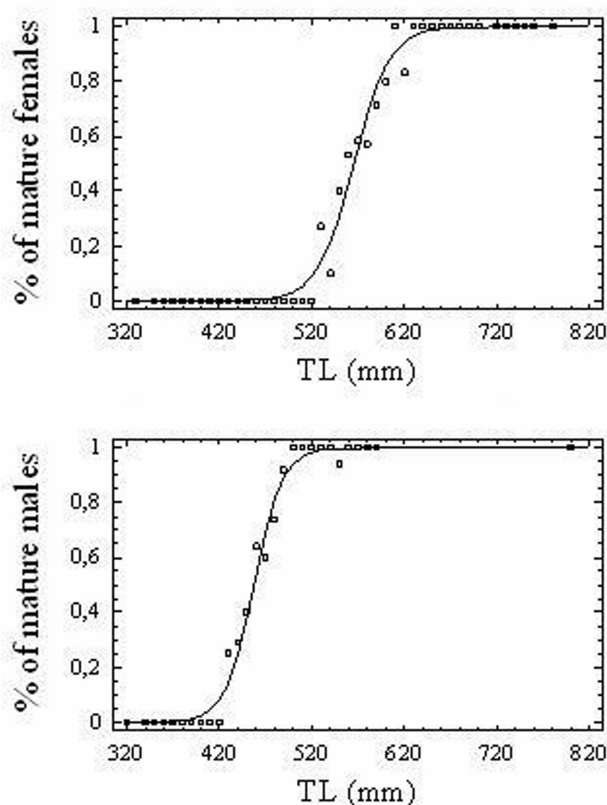


Fig. 1. Total length at 50% maturity for female and male *Squalus blainvillei*

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