

On the fecundity and sex-ratio of *Botia Dario* (Hamilton) (Cypriniformes : Cobitidae)

M. Afzal Hussain², Mst. Rehana Khatun¹ and M. Altaf Hossain¹.

¹Department of Zoology, University of Rajshahi, Rajshahi-6205, Bangladesh.

²Department of Fisheries, University of Rajshahi, Rajshahi-6205, Bangladesh.

Abstract : A total of 1183 *Botia dario* (Hamilton) samples were collected from Rajshahi (Shaheb Bazar, Binodpur Bazar, Talaimari Bazar, Kazla Bazar and Godagari) during the period from January, 2002 to August, 2003 to study the fecundity, sex-ratio, relationship between fecundity and total length, standard length, body weight, ovary length as well as ovary weight. The mean fecundity was calculated as 31833.50 ± 10313.42 with a range of 5245 to 53754 in fishes ranging in total length from 96 mm to 135 mm (mean 115.50 ± 12.11 mm) and in body weight from 14.51 g to 43.29 g (mean 29.71 ± 6.91 g). The relationship between the fecundity (F) and total length (TL), standard length (SL), body weight (BW), ovary length (OL) and ovary weight (OW) were found to be linear with the 'r' values 0.94, 0.94, 0.95, 0.92 and 0.98, respectively. The ovum diameter ranged from 0.3 to 0.72 mm and the mean diameter was calculated as 0.518 ± 0.06 mm. The male to female ratio was 1:0.61.

Key words: *Botia dario*, fecundity, sex-ratio.

Introduction

Botia dario (Hamilton) is small in size and is available in rivers, streams, ponds, lakes and inundated areas throughout Bangladesh. It is esteemed as food on account of invigorating qualities of its flesh. In spite of the above, basic information about the biological aspects of the fish is rather scanty.

Knowledge about fecundity of a fish is essential for evaluating the commercial potentialities of its stock, life history, culture and management of the fishery (Lagler, 1956; Karim & Hossain, 1972; Shafi & Mustafa, 1976; Islam & Hossain, 1984; Bhuiyan & Rahman, 1984). The present study was therefore, undertaken with a view to determine the fecundity, sex ratio, relationship between fecundity and total length, standard length, body weight, ovary length and ovary weight of *Botia dario* (Hamilton).

Materials and Methods

For the estimation of fecundity, 100 female specimens of *B. dario* were collected during the from January, 2002 to August, 2003 from Rajshahi (Shaheb Bazar, Binodpur Bazar, Talaimar Bazar, Kazla Bazar and Godagari Bazar). The total length, standard length and body weight of the fish samples were measured from the intact specimens. Then sexes of 1183 fish samples were determined by eye observation, slightly enlarged abdomen of the ripe females made it easier to distinguish them from the males. Ovaries of 100 females were dissected out and ovary length was measured and then excess moisture was removed from the ovaries before taking the weight of ovaries. Then they were preserved in 5% buffered formalin in labeled jars. Gravimetric method was used to determine the fecundity. Diameter of the ova were taken in micron with the help of ocular and stage micrometer. Diameter of 10 ova were measured at random from each of the

anterior, central and posterior regions of each lobe of the ovaries. To establish the relationship of fecundity (F) with total length (TL), standard length (SL), body weight (BW), ovary length (OL) and ovary weight (OW), the least square method was followed.

RESULTS AND DISCUSSION

Description of the ovary: The ovary of *Botia dario* was found to be bilobed, the right lobe was always larger than that of the left one at the ripe stage.

Diameter of ova: Since the ova diameter was found to be almost equal, so, it may assumed that they developed equally in all parts of the ovary and the ova matured simultaneously in both the lobes irrespective of their locations in the ovary. The ova diameter varied from 0.3 to 0.72 mm and the mean was 0.58 ± 0.24 mm. Colour of the mature ovary was bright yellow.

Fecundity: Data as collected from 100 gravid female *B. dario* show that the fecundity varied from 5245 to 53754 in fish ranging in total length from 96 mm (body weight 14.51 g) to 135 mm (body weight 43.29 g). The average number of eggs was found as 31833.50 ± 10313.42 for a fish of average total length of 115.56 ± 12.11 mm and average body weight of 29.71 ± 6.91 g. Linear relationships between fecundity and total length, standard length, body weight, ovary length as well as ovary weight were found to be highly significant (Fig. 1). The average number of eggs per gram body weight of the female was 1620. The total male to female ratio in 1183 fishes studied over a period of 20 months was 1:0.61 (Table 1). Chi-square test indicates that the male and female distribution in the natural populations was different at 1% level of significance.

The number of eggs increased linearly with the increase in length and weight of the body and gonads.

This result is in agreement with the findings of Karim & Hossain (1972), Das (1977), Kader & Talukder (1978), Islam & Hossain (1984), Hossain *et al.* (1989), Bhuiyan & Islam (1990), Parween *et al.* (1993),

Rahman *et al.* (1993), Roy & Hossain (2006). From the above findings it may be concluded that, *B. dario* is a highly fecund species.

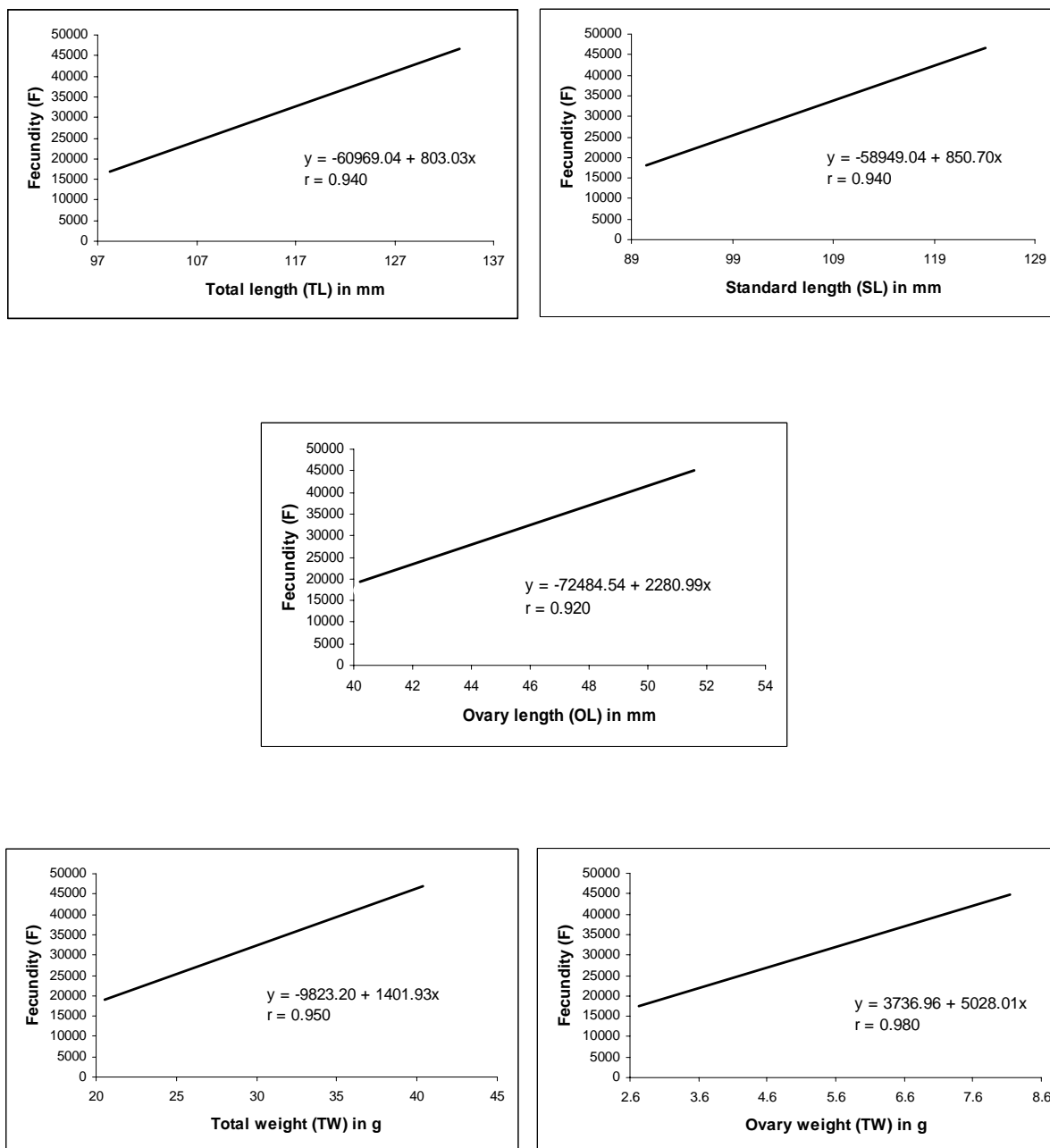


Fig. 1 Showing the relationship between Fecundity and five variables (N=100) of *Botia dario*.

Table 1. Percentages of male and female of *Botia dario* in different months.

Year	Month	Male (M)	Female (F)	M : F ratio
2002	January	38	22	1 : 0.58
	February	34	26	1 : 0.76
	March	36	24	1 : 0.67
	April	34	26	1 : 0.76
	May	42	18	1 : 0.43
	June	41	19	1 : 0.46
	July	43	17	1 : 0.39
	August	32	28	1 : 0.87
	September	37	23	1 : 0.62
	October	32	28	1 : 0.87
	November	34	26	1 : 0.76
	December	37	23	1 : 0.62
2003	January	43	17	1 : 0.39
	February	39	21	1 : 0.54
	March	38	22	1 : 0.58
	April	31	29	1 : 0.93
	May	38	22	1 : 0.58
	June	34	21	1 : 0.62
	July	32	16	1 : 0.50
	August	39	21	1 : 0.54
Total	20 months	734	449	1 : 0.61

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