

Fecundity on *Mystus bleekeri* (Day, 1877) from the River Padma Near Rajshahi City

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Abstract

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Mystus bleekeri is commonly known as gulsha tengra distributed in the rivers, beels and canals of Bangladesh (Rahman, 1989). The species is caught largely in the river Padma. It is the source of protein to the common people of Bangladesh.

Fecundity appears to bear some broad relationship to the care of environment accorded to the eggs (Lagler *et al.*, 1967). Knowledge about fecundity of a fish is essential for evaluating the commercial potentialities of its stock, life history, practical culture and actual management of the fishery (Lagler *et al.*, 1956; Doha and Hye, 1970).

The number of eggs contained in the ovary of a fish is termed the fecundity (Nikolsky, 1963). Fecundity varies from one species to another, depending on the environmental conditions, length, age etc. Many workers have worked on the fecundity of different fish, viz., Bhuiyan *et al.* (1993), Kuddus *et al.* (1996), Alam *et al.* (1994), Bhuiyan and Parveen (1998), Kiran and Puttaiah (2003) and Bhuiyan *et al.* (2000) and Dobriyal *et al.* (2000).

Very little information is available on the fecundity of catfish. Rao *et al.* (1999) reported the breeding biology and fecundity of *Mystus* species, Sarker *et al.* (2002) observed the fecundity and gonado-somatic index of *Mystus gulio*. In the present study, the fecundity of the catfish *Mystus bleekeri* (Day) was investigated.

Fish samples were collected fortnightly from Shaheb bazaar of Rajshahi city fish market and fish landing centers from April, 2002 to March, 2003. The samples consisted of a total of 172 gravid females. In the laboratory, the total length and standard length of the fish were measured in the nearest mm by means of a measuring board and their weights were recorded in the nearest grams by a sensitive pan balance. The gonads of fish were removed intact and placed in 5% formalin solution. The length and weight of the ovaries were also taken. Excess of water was removed from the surface of the fish as well as the ovaries with blotting paper before their weights were taken. To estimate the fecundity, gravimetric method (Hunter *et*

al., 1989) was used.

From the investigation, it is observed that the number of eggs varied from 4,652 eggs (for a fish with total length 86 mm and total weight 7.8 g) to 57,932 eggs (for a fish with total length 167 mm and total weight 54.25 g). The mean fecundity of 172 females was recorded as $23,611.688 \pm 15,427.139$ eggs for a fish with a mean total length of 125.889 ± 25.586 mm and mean body weight of 25.652 ± 15.155 g.

It was found during experiment that the fish with same size had different number of eggs in their ovaries. Environmental factors and food supply might affect the fecundity of fish (Bagenal, 1957). It is possible that the variation in fecundity of the *Mystus bleekeri* may be due to environmental conditions of the River Padma.

This type of variation was also reported by some previous workers in other fish (Doha and Hye, 1970). Different relationships were found to exist between the fecundity and various parameters. Clark (1934) reported that the fecundity of a species increases in proportion to the square of its length. Swarup (1962), Singh *et al.* (1982) reported a direct relationship between fecundity and length of fish. In the communication, also direct line was obtained with reference to fecundity and length of fish.

In the present study, it was found that the number of eggs increase linearly with the increase of body weight, body length, gonadal weight and gonadal length. All the relationships were found to be linear (t-test of all the relationships showed that the values of the regression, co-efficient 'r' were significant (Table 1). Similar results were also reported in different fish (Shafi and Quddus, 1974; Doha and Hye, 1970).

Hoque and Hossain (1993) estimated the fecundity of *Mystus vittatus* from the Rajshahi city and its surrounding, varied from 2,534 to 60,746 and the mean fecundity was $8,635 \pm 3,790.17$ eggs. Bhuiyan and Islam (1990) recorded fecundity of *Xenentodon cancila* as 1,432 with a range of 750 to 2,852 eggs. *M. bleekeri* is highly fecund fish by

Table 1. Values of regression coefficient 'b' intercept 'a' and coefficient of correlation 'r' in F/TL, F/SL, F/BD, F/TW, F/GL, F/GB and F/GW (N = 172) Equation; $y = a+bx$

Relationship					
Ordinate	Abscissa	Value of 'a'	Value of 'b'	Value of 'r'	Significance of 'r' at 5% and 1% level
Fecundity (F)	Total length (TL)	-48806.207	575.248	0.95405	Highly significant
Fecundity (F)	Standard Length (SL)	-47150.360	719.937	0.96059	"
Fecundity (F)	Body depth (BD)	-39651.042	2451.220	0.97215	"
Fecundity (F)	Total weight (TW)	-2178.386	1005.371	0.98770	"
Fecundity (F)	Gonadal length (GL)	-37382.529	1646.267	0.97321	"
Fecundity (F)	Gonadal breadth(GB)	-24742.360	3518.860	0.96966	"
Fecundity (F)	Gonadal weight (GW)	2658.905	5570.573	0.97873	"

F = Fecundity, TL = Total length, SL = Standard length, TW = Total weight, GL = Gonadal length, GW = Gonadal weight, GB = Gonadal breadth, BD = Body depth.

standard length (SL), body depth (BD), total weight (TW), gonadal length (GL), gonadal breadth (GB) and gonadal weight (GW).

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