

## STUDIES ON THE FECUNDITY OF *LABEO DYOCHAILUS* FROM RIVER WESTERN RAMGANGA, UTTARAKHAND

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The study deals with the fecundity of *Labeo dyocheilus* in western Ramganga River from Uttarakhand region. The total fecundity of the fish varied from a minimum 2170 to a maximum 22,919 in the fish measuring to 10.3cm to 29.8cm, respectively.

**Keywords :** *Labeo dyocheilus*, western Ramganga, Uttarakhand.

### INTRODUCTION

The information on the fecundity is an important part of the fish biology, which is useful in several applied aspects of fishery science, including fishery management of any water bodies. Lagler *et. al.* (1967) opined that the fecundity appears to have some broad relationship to the care of environment accorded to the eggs. Many workers have worked on the fecundity and sex ratio of different fish viz. Singh *et. al.* (1982 & 1987), Pathani (1981), Agrawal *et.al.* (1988), Islam & Hossain (1990), Kumar & Siddique (1991), Bhuiyan & Parveen (1998), Dobriyal *et. al.* (2003 & 2005), Kiran & Puttaiah (2003), Kumar *et. al.* (2006), Bahuguna *et. al.* (2009 & 2010) and Verma & Shah (2011). Present study deals with the fecundity of the *Labeo dyocheilus* from Kumaun region.

### MATERIALS AND METHODS

The present work was done in western Ramganga River from Kumaun region. The geographical location of the sampling area is Latitude: 29° 53' 55" North and Longitude: 79° 21' 22" East (Map.1). A total of 18 *Labeo dyocheilus* were obtained with the help of fisherman catch at the western Ramganga River from Kumaun hills during September 2009 to August 2011. The total length (cm) and weight (g) of fishes were recorded. The gonads were removed; ovaries length and ovaries weight were measured to the nearest cm. and gm. respectively and after gross examination gonads and ovaries were preserved in 6% formalin. The fecundity of fish was recorded by gravimetric count methods and ovary weight of fish. For the total fecundity estimation, anterior, middle and posterior regions of each ovary of specimen were considered. The numbers of ova in each sample were counted under a binocular the following formula :

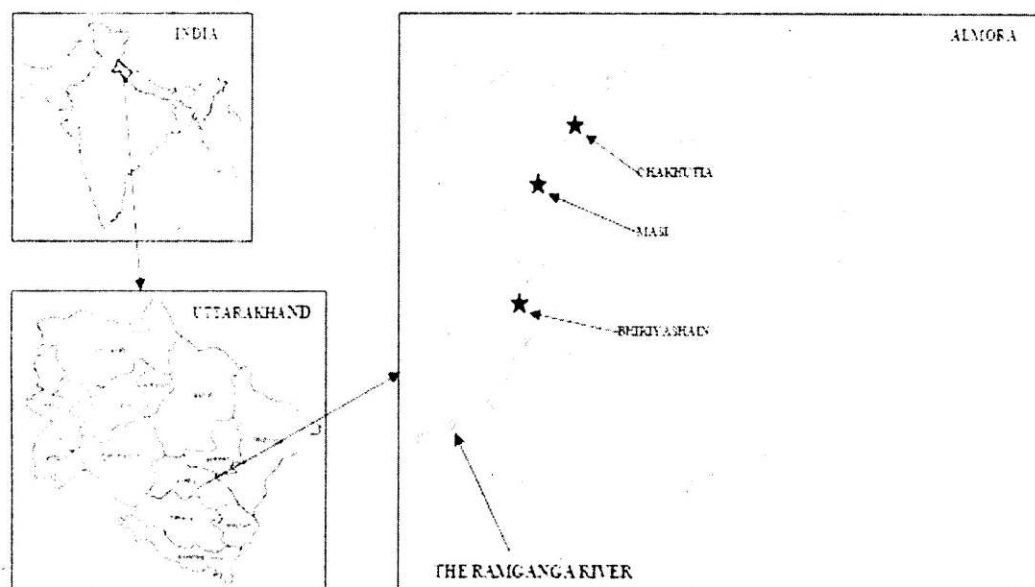
$$F = S \times OW/100.$$

Where, F = Fecundity; S = Average number of egg samples (100mg each); OW = Total weight of ovary.

### OBSERVATIONS

The different size groups of fishes showed variation in the fecundity of a teleost *Labeo dyocheilus* in the Table I. The minimum length of fish is 10.3cm and maximum length of fish 29.8cm. The total fecundity of the fish varied from a minimum 2170 to

a maximum 22919 in the fish measuring 10.3cm to 29.8cm, respectively (Fig.1). The maximum fish weight was noticed 596g during the study period while the minimum was 130g (Fig. 2). The minimum fecundity was observed 2170 in an ovary length 2.5cm and maximum fecundity was obtained 22919 in a ovary length 11.4g. (Fig. 3). The lowest fecundity was observed 2170 in a ovary weight 20.1g and highest fecundity obtained was 22919 in a ovary weight 183.91g (Fig. 4).



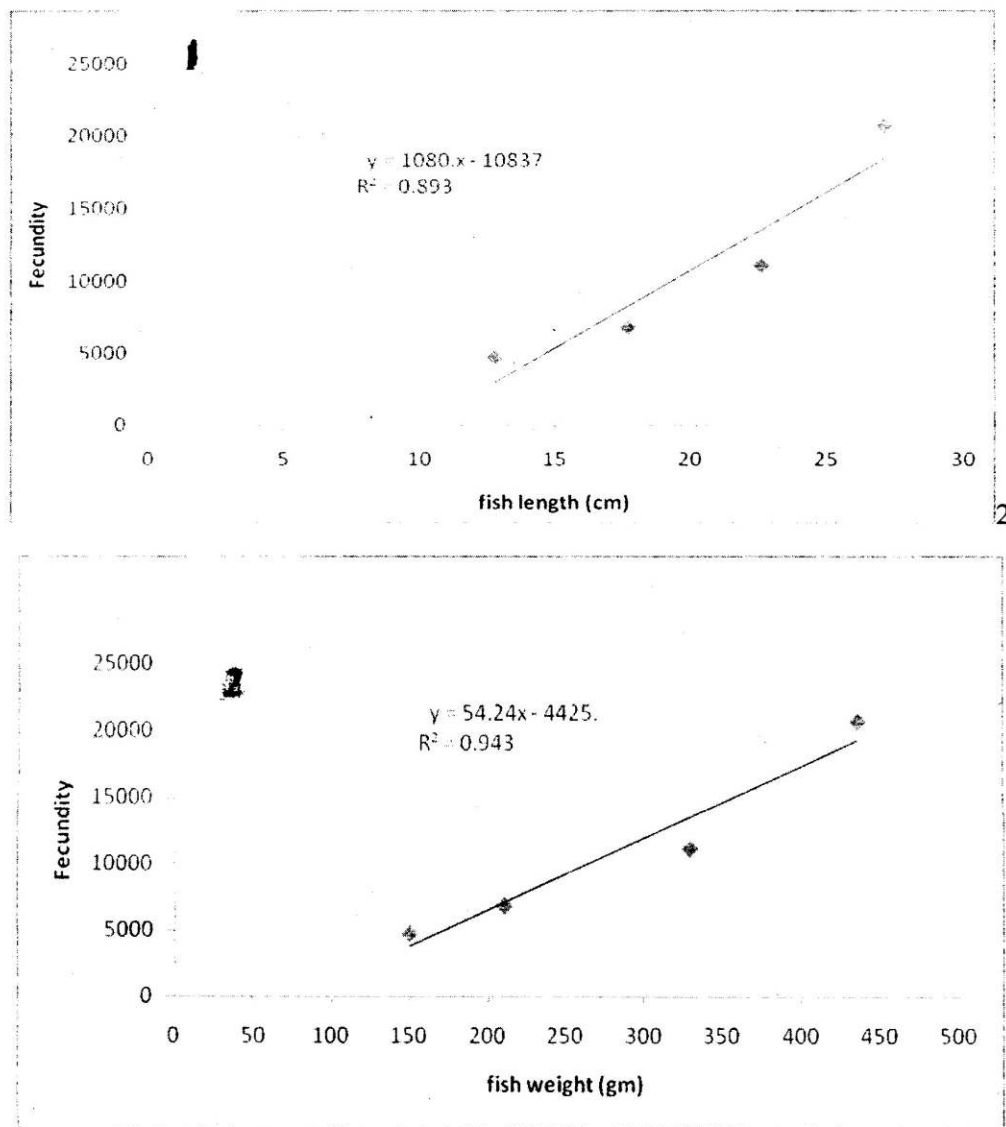
**Table I :** Summarized data of fecundity of *Labeo dyocheilus*

Class Interval	FL(cm)	FW(g)	OL(cm)	OW(g)	Fecundity
10.0-15.0	10.3-15.0 12.78±1.29	130-170 150.15±10.76	2.5-5.6 4.1±1.2	20.1-45.90 37.72±6.91	2170-6750 4717±1801
15.1-20.0	16.4 -19.6 17.70±1.10	190-240 210.56±15.68	4.7-7.9 5.8±3.7	39.80-78.75 59.15±10.24	4557-7782 6821±1075
20.1-25.0	20.5-24.7 22.6±2.45	290-375 329.18±30.86	6.3-8.7 7.5±1.1	81.17-132.7 110.70±20.78	8840-13804 11117±1901
25.1-30.0	25.6-29.8 27.15±1.42	336-596 435.54± 0.15	6.9-11.4 8.9±2.3	89.2-183.91 150.65±22.52	10999-22919 20685± 4208

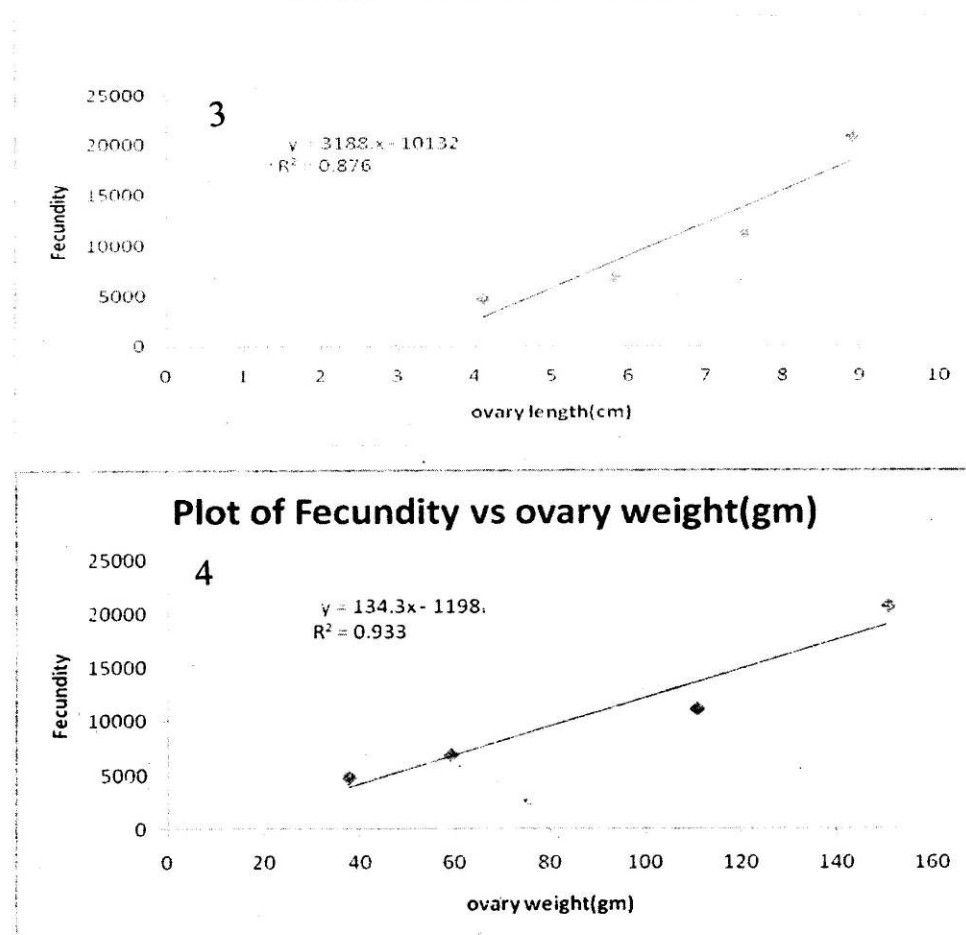
## DISCUSSION

In *Labeo dyocheilus* the breeding capacity is observed from 2170 to 22919 and increases with an increase in all the body parameters. The straight-line relationship has been observed between the fish length and breeding capacity, fish weight and breeding capacity, ovary length and breeding capacity, ovary weight and breeding capacity. The breeding capacity was more dependent on fish body weight ( $r^2 = 0.943$ ) and ovary weight ( $r^2 = 0.933$ ) than the fish body length ( $r^2 = 0.893$ ) and ovary length ( $r^2 = 0.876$ ).

Shafi & Quddus (1974) reported the relationship between fecundity and gonad weight more the most significant than that of fecundity as well as with others body parameters in fresh water fish *Puntius stigma*. According to Sharma (1984) the breeding capacity of *G. pectinopetrus* was found to be directly proportional to the length-weight of the fish and weight to the ovary. Singh *et al.* (1982) reported the breeding capacity of *Puntius chilinoideis* is 2,097 to 3,978 in the river Nayer. Sunder (1984) observed that the fecundity of *S. langipinnis* was less or more equally related to the length and weight of fish. Vijay Kumar (1986) observed the range of fecundity from 1,800 to 12,932 in *Puntius filamentus* measuring 62mm to 112mm from vellayani lake (Trivendrum). Agarwal *et al.* (1988) noticed in *Noemacheilus montanus* that the breeding potential consistently increased with an increase body parameters and straight line relationship has been noticed in all the cases.



Figs. 1-2 : *L. dyocheilus*. 1. Relation between fecundity of fish length; 2. Fish weight.



**Figs. 3-4 : *Labeo dyocheilus*. 3. Relation between fecundity of ovary length; 4. Ovary weight.**

Narejo *et al.* (2002) found the maximum fecundity 10,980 in a fish measuring 605mm in the total length and minimum fecundity 580 was observed in fish having a total length of 245mm in *Mastacembelus armatus* (fresh water eel). Mahapatra *et al.* (2004) studied the fecundity of Zebra danio, *Brachydanio rerio* in range of 215 to 4,004 in the fish measuring 29 to 81mm from Meghalaya, North Eastern Indian. Kumar *et al.* (2006) observed low breeding potential of *Botia dayi*. Hora in a range of 2,225 to 8,840 for the fish measuring 10.1 to 14.5cm and weighing 17.72g to 38.6g. Bahuguna *et al.* (2007) reported a high breeding potential of 360 to 1,727 for an ornamental hill stream fish *Puntius conchonus* (Ham.-Buch.). The breeding capacity of *Barilius vagra* was estimated from Garhwal region in a range of 510 to 7,214 in the fish measuring 55mm to 89mm and ovary weighing from 407mg to 4260mg by Bahuguna *et al.* (2009). It is finally concluded that the good breeding capacity of *Labeo dyocheilus* for fish culture.

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