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The growth rate of gonads in puntius kolus from the river yamuna in Agra U.P

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Abstract
In The fish Puntius Kolus (sykes) shows growth rate of gonads relationship between that length of ovary and testis of the fish. This fish was collected from River Yamuna, Keethamlake, local fish Market IST tributaries for the bioecology purpose.

Keywords: puntius kolus, bioecology, ovary, testis

Introduction

Morephology of gonads a macroscopic examination confirmed that gonads were paired**,** longitudinally flattened, located in Dorso- Postenrior, region, Attached to Coelomic wall cover by the Mesorc and Mesovarium. Testes were Filliform and Overied fairly cylindrical. The gonads joined each other at the caudal region, forming a Conmon duct opening at the uro-genital papillae, male were observed in all the stage of the reproductive cycle. Testes wer with transversal folds in the median region. The anterior border was stream lined or slightly curved in the early maturation stage and truncated in the other stage of the reproductive cycle in puntius kolus.

Ovares and testes were coverd by the albuginea tunic of conjunctive Origion by hundreds of smooth muscular cell and blood vessels. They emitted septs to the inner parts of the organ, forming lobes that were filled by the seminiferous tubules in the testis and ovarian lamellae in which oocyles in different development phases were found in the ovaries in the testis the seminiferous tubules were formed by cysts, defined by the cytoplasmic projection of sertolicell in each cyst the spermatogenic lieage cell were found in the similar development phase of the ovarian lineage cell, changing according to reproductive cycle stage.

Material and Methods

The annual cycle of maturity in the fish is of quite interest. it is evident that the first stage does not occur thoughtout the year and indicates that the immature virgins, mature in the first year and reached to ward maturing virgins in march when they are hardly six month sold. The third stage appears first time in march and ther percentage reaching maximum in June and July. The visibility (in exception) may be after july. The forth stage is notable in June with maximum number in august. The fifth stage for males appears in august and for females in September and October. This delay is probably for getting the favourable spawning grounds. After this the visibility of the last stage can be named as late spawners. This countinues till November and December.

A ratio has been derived between the size of gonads and the fish length (TL). The regression of the same has been noted by y=a + bx where a & bare constant and x is TL and y being the length of gonads. This comes out to be y=0.3175+0.2719 x for males and y=0.7375+0.2200x for females. The linearity of the regression has been tested by the analysis of variance where the 'F' is very high than the tabulated values, showing, the highly signi-ficant nature for the length of gonads. The correlation coefficient is found to be 0.9893 and 0.9795 for the testes and ovaries respectively. This again shows a high degree of correlationship,

Individually the description and tablebelw

The sexual game starts in the last weak of august and continues up to September to first weak of October (exception). The game take palace in the early morning after sunrise and is completed in the following sub stages:-

1. The male almost become 'ring like' as its head almost touches the tip of caudal fin and encircles the female.
2. Now the male enfolds the anterior portion (including) of the female. At this point the head and the caudal fin of the male touch the dorsal side of the femal. This continues for Three to Four minutes.
3. The female tunsits upside down the male make a 'Ո' shaped arch over the female, and pressesit.
4. The entire game is completed in 10 to 15 minutes and the male and female start free floating in the water after the ritual.

Table 1: Growth Rated of Gonads: Relationship between total lenth of ovary and testis of the fish Puntius kolus (sykes).

s.no	Length group of male and female in mms.	Mean length	Average length of ovary	Average length of testis of testis
1	20.1-22.8	21.5	-	5.7
2	23.1-25.8	24.5	7.1	6.9
3	26.2-28.8	27.5	9.0	8.6
4	29-31.8	30.5	10.4	10.4
5	32.1-34.8	33.5	12.2	11.6
6	35.2-37.8	36.5	14.4	13.2
7	38.1-40.8	39.5	15.6	14.9
8	41.1-43.8	42.5	17.4	16.4

9	44-46.8	45.5	19.3	-
10	47-49.8	48.5	20.8	19.3
11	50-52.8	51.5	22.3	21.1
12	53.2-55.8	54.5	24.1	25.5
13	56.1-58.8	57.5	25.8	24.4
14	59-61.8	60.5	-	25.6
15	62.1-64.8	63.5	29.4	-
16	65.1-67.8	66.5	31.0	29.1
17	68.2-70.8	-	-	-
18	71.1-73.8	72.5	-	32.6
19	74-76.8	75.5	36.2	-
20	77-79.8	78.5	38.5	-

(n=61) for testis (n=79) for ovary

In the Persent study, the gonado-somatic index is high during the period of spawning and becomes low on the onset of it and a gradual increase up to the peak and rapidly fail after it has been also shown by Tester (1940), Kesteven (1947), Clark (1934) [3], Hickling and Rutenberg (1936), Prabhu (1956), Qasim and Qayyum (1961), Chaturvedi (1976), Capoor (1983) [2] and Mathew (1987) [10]. The gonads have been tackled by Prabhu (1955). Showing a straight line relationship in length and the gonads which have also been reported in puntius kolus fishes in present study. The weight of the testis have a higher rate of increase thain in the ovaries as has been shown by Hickling (1940) Whole working on Herring.

Result

1. The gonado- somatic index shows the onset of spawning in august continuing up to September.
2. Maturity stages shows the same five stages immature virgins, maturing virgins, ripening, ripe and spent. But the first stage is sub divided in ‘immature’ and ‘Intermediate’ stages while the second in the early maturing and ‘advance maturing’ stages.
3. Protandrous condition in which male in maturing at 35.4 cms. Length and females at 38.2 cms.
4. The growth rate of gonads show that the growth of the testes in higher than the ovaries which has been confirmed statistically.

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