

RESEARCH ARTICLE

Gonado-Somatic Index of *Gerres oblongus* (Cuvier) from Mithbav estuary, Sindhudurg district, Maharashtra, India

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Manuscript details:	ABSTRACT
<p>Received: 03.09.2015 Revised : 12.11.2015 Accepted: 10.12.2015 Published : 30.12.2015</p> <p>Editor: Dr. Arvind Chavhan</p> <p>Cite this article as: Yeragi SS and Yeragi SG (2015) Gonado-Somatic Index of <i>Gerres oblongus</i> (cuvier) from Mithbav estuary, Sindhudurg district, Maharashtra, India. <i>International J. of Life Sciences</i>, 3(4): 375-378.</p> <p>Copyright: © 2015 Author(s), This is an open access article under the terms of the Creative Commons Attribution- Non-Commercial - No Derives License, which permits use and distribution in any medium, provided the original work is properly cited, the use is non-commercial and no modifications or adaptations are made.</p>	<p>Gonado-Somatic Index (GSI) of <i>Gerres oblongus</i> (Cuvier) ranged from 0.3 to 1.6 in male and 0.8 to 3.9 in female and seen high peak in the month of June-July in both the sexes. During the present investigation the higher values of GSI were observed from May to July which ranges between 0.9 to 1.4 in the first year and 1.1 to 1.6 in second year for males and 1.9 to 3.8 in the first and 2.4 to 3.9 in the second year for females. Therefore, it was noticed that the fish spawned once in a year with one spawning peak in the month of June-July as indicated by the Gonado-Somatic Index values.</p> <p>Keywords: GSI, Mithbav, <i>Gerres oblongus</i></p> <p>INTRODUCTION</p> <p><i>Gerrres oblongus</i> (Cuvier) are commonly seen on shallow sand flats of Mithbav estuary (L.16° 20' N.L. 17° 25'). They are usually seen in small schools. This species gets large and is more slender when adult compared to other silver bellies in the area. This type of body structure enhances the fishermen to take out the entangled fish easily through the mesh of nets. They are available throughout the year of standard length ranged between 5 to 7cm (SL). The caudal fin is very much forked with long lobes. It has greatly expandable mouth. They are bottom as well as column feeders. They are shallow water species. The standard fishing size wise ranging between 4 to 5.5 cm.</p> <p>Reproductive cycle is the significant stages in the life span of a fish, which in combination with others ensures the continuation of the species. It is directly co-related with the fishery management. The availability of favorable condition in an aquatic environment enhance the life cycle of the fish to recruit more fish population. This species is commercially very much important to fulfil the basic</p>

economic need of the coastal people. It is but natural to understand their spawning time to avoid over fishing for the particular period. It helps to assess the reproductive potential of a population. The present study was under taken of *G.oblongus*, which is a near shore species which penetrate into estuaries to a considerable distance.

MATERIAL AND METHOD:

The live fish samples were collected from Mithbav estuary fortnight for the period of two years. The specimens were brought to the local laboratory and removing the surface moisture with blotting paper, each fish was measured for its total length to the nearest 1mm and weighed to the nearest 0.01gm. Fish were cut open to find out their sex and maturity stages and noticed together with colour, length, and weight of the gonads. The gonads were dissected out and preserved in 4% formaldehyde for further investigation. The fluctuation in the weight of the gonad in relation to weight of the fish was studied to indicate the spawning of the fish, was stanced to indicate the spawning of the fish. The weight of the individual fish was recorded. The gonads were removed carefully and noticed their weight.

The GSI was calculated by using the formula.

$$\text{GSI} = \frac{\text{Weight of the Gonad}}{\text{Weight of the fish}} \times 100$$



Fig. 1: *Gerres oblongus* (Cuvier)

RESULTS

To find out the approximately the time of fully matured and spawning period to avoid the fishing in an aquatic environment is always essential to control the fluctuation of fishery. This study will definitely focused toward the awareness of coastal people. The Gonado Somatic Index of male and female *Gerres oblongus* was calculated for different months from Jan.2011 to Dec.2012 as shown in Fig. 2 & 3.

Table 1: Mean Gonado-Somatic Index of males and females of *Gerres oblongus* for the period of two year (2011-2012).

Months 2011	Males	Females	Months 2012	Males	Females
January	0.5	0.8	January	0.6	1.1
February	0.6	0.9	February	0.6	0.13
March	0.7	1.2	March	0.8	1.4
April	0.8	1.7	April	0.9	1.9
May	0.9	1.9	May	1.1	2.04
June	1.3	2.9	June	1.5	3.1
July	0.14	3.8	July	1.6	3.9
August	0.3	1.2	August	0.4	1.4
September	0.4	1.3	September	0.5	1.6
October	0.4	0.8	October	0.5	0.9
November	0.5	0.9	November	0.6	1.1
December	0.5	1.1	December	0.7	1.2

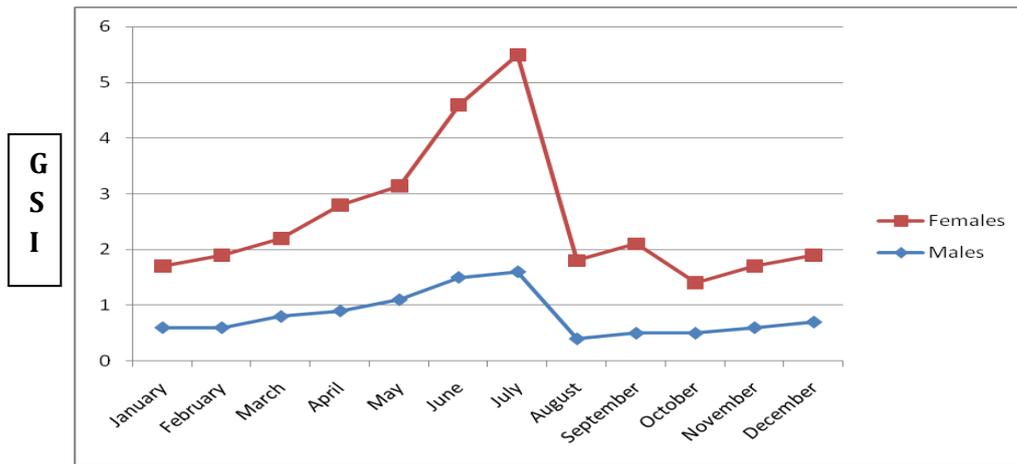


Fig.2. Month wise Trend in the GSI of G.oblongus (Jan 2011 Dec.2011)

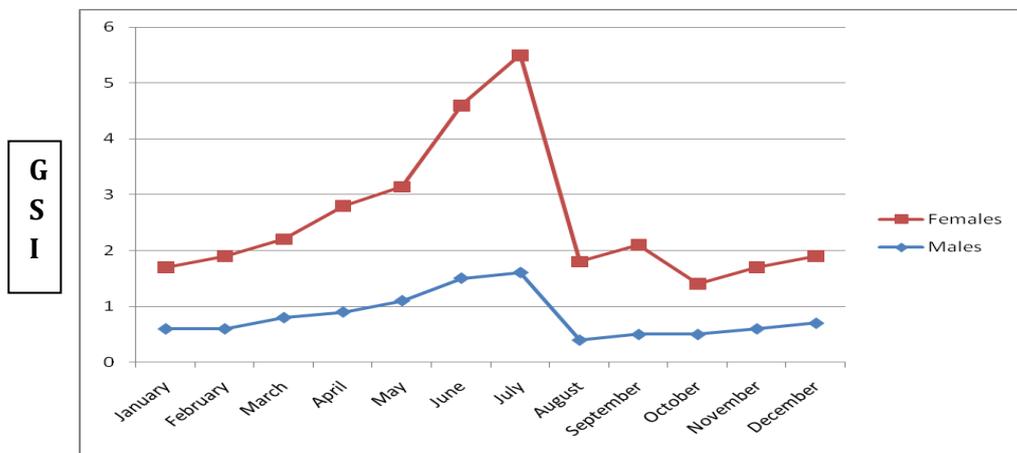


Fig.3 : Month wise in GSI of G.oblongus (Jan 2012-Dec 2012)

It is seen from the table values that the sexual maturity in both male and female run side by side. The weight of the fish was increasing along with the development of gonads. As the gametogenesis begins by releasing sex hormones. The weight of both the gonads and fish increased gradually. The highest weight was found in male 1.4 in July 2011 compare to 3.8 in female. The GSI values of both males and females were increased gradually from April to reach a peak during July in both the years of observation. July is considered as the peak spawning period due to sharp fall of GSI values from 1.4 to 0.3 for males and from 3.8 to 1.2 for females during 2011.

On the basis of GSI the annual cycle of reproduction of *G.oblongus* can be divided into

three phases. Pre-spawning period ranging between April to July, characterized by high GSI values, spawning period August to September characterized by sharp decrease in the weight of the gonad and post spawning period October to February characterized by gradually increase in the weight of the gonads. After spawning the females can regain the loss of energy by active feeding. The intensity of feeding in female was observed more than males. At maturity the abdomen bellies of females were seen in swollen condition while in males by slight applied pressure to abdomen released out seminal fluid quickly. It is also seen that pre-spawning time the general weight increasing rapidly due to the huge numbers of gametes.

CONCLUSION

The GSI period is known to be reliable index of the breeding season in this fish. The maximum values of GSI denote attainment of peak maturity of gonads while the minimum GSI values indicate peak spawning. The lowest value GSI of both the sexes were seen in August which seems to be the peak spawning month of *G.oblongus*. An increase of GSI values is an indication of the post-spawning period, when the spawned out individuals recover, and their gonads start the process of gametogenesis under the sex hormones secreted by pituitary gland. After spawning, the females were found in active mode of feeding to restore the used energy in the development of ovaries. Cultivation of *G.oblongus* is likely to be profitable because of the consumer demand. The females were significantly larger than males (Yeragi 1999).

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