

Study of some hydrological factors of Persian Gulf on annual reproductive cycle of Talal fish

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Abstract

Hydrological factors have critical roles on aquatic organisms. Talal fish is one of the important fishes in Persian Gulf that effective hydrological factors (temperature and salinity) on their annual male and female reproductive cycle (gonads morphology) were investigated in this study. Results demonstrated that with increasing of water temperature, about 29 centigrade degree in spring, maturation of gonads is completed. Thus this hydrological seasonal factor probably can help us determining the exact time of fish spawning.

Key words: Annual reproductive cycle, fish, hydrology

Introduction

Geological – ecological changes are effective on reproductive cycle of many fishes [3, 6,7]. Talal fish (*Rastrelliger kanagurta*) is one of the most valuable and dispersal fishes in the world [4] that is epipelagic and is one of the best nutrition sources for aquatics and also human [5]. Because of any study on these fish in Iran, the effect of seasonal ecological changes (temperature and salinity) on the reproductive cycle was investigated in this study. Its hope these results can be important in reproduction and fisheries of this economic fish.

Materials and methods

In the annual cycle from (July 2008- June 2009) in each month, 50 fishes randomly were collected from Iran southern Coast, region (Bandar Abbas, Ghesm and Jusk harbors). Temperature and salinity conditions also were recorded each month. Samples sent to the laboratory. Gonads morphology in male and female were observed during sexual maturation stages. Then, for all samples during the year, the ovaries and testes removed from their bodies and weighted [6,1, 2].

Results

Because of no collection of samples in 3 months of summer, our results based on evidence obtained in the 9 months of annual cycle. Ovarian and testes of Talal fish showed clear changes during the last sampling months. Macroscopic observations of the developmental stages of gonads showed that in fall and winter male and female gonads were very small, thread-like, translucent while were diagnosed testes and ovaries in the abdominal cavity was very difficult (fig 1).

But in spring, gonad male (fig 2) and female (fig 3) became very large, leaf-like and larger in

terms of weight and length so that occupied two-thirds of the body cavity. Also in these seasons, male and female sexual cells were visible with magnifying glass.

In the summer, water temperature of 33 degrees and in the winter 22 degrees was the lowest. The salinity changes did not show very clear and on average 37 ppt were measured (fig 4).

Discussion and conclusion:

According to our results the change of seasonal temperature was an effective factor on reproductive cycle of Talal fish of Persian Gulf. Macroscopic morphological investigations of immaturity and maturity stages in gonads of *R. kanagurta* were determined in this study: Immature stage were recorded during Fall and Winter season while the mature stage was recorded throughout the Spring season.

Vitael *et al.* (2008) demonstrated that in *Gadus morhua* fish from North Sea during the stages of sexual maturation, the color, size and content of gonads were changed [8]. It seems that the results of our study is like the other reports of fishes reproduction .

Fig 4 can be shown that in temperature about 29 ° C and water salinity of 37 ppt maturation stage of Talal fish from southern coast water was completed. In hot, humid coast, with increasing temperature, gonads were mature and if this temperature exceeds the appropriate limit (in summer), the sexual gland activity can not increase and helps start the next annual cycle. Salinity fluctuations with lowest seasonal changes, probably are not the main factors affecting the reproduction of Talal fish in south coast during the sampling times. Bylard & Breton (1998) recorded that cold water fishes active in the reduction of temperature and warm water fishes reproductive activity during the increase temperature [3]. Our results according to this findings support the important roles of hydrological thermal effects (in a critical range) on biological events such as reproduction. It may be that high amount of raining in spring (compare to summer with high temperature) and washing of soil minerals, prepares a better environment for growth and reproduction. These results may be useful in developing of the fisheries of this fish.



Fig1: Imature gonad in fall and winter



Fig2: Male gonad in spring



Fig3: Femal gonad in spring

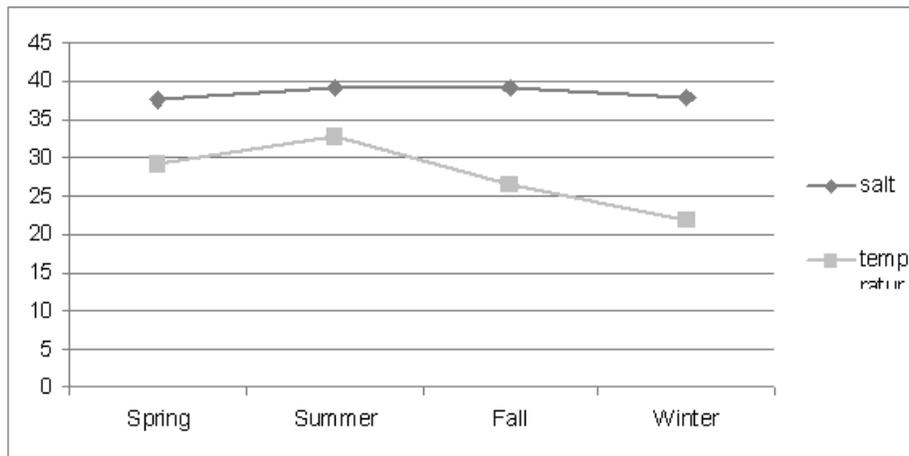


Fig 4: Water tempratur and salinity change (July2008- June2009)

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