JLSB
Journal of Life Science and Biomedicine

J. Life Sci. Biomed. 3(6): 424-427, 2013

ISSN 2251-9939

Original Article

Analysis of Artificial Reproduction Possibility in Fish "Iranociochla Hormuzensi" Through Changes in Ratios of Female Species

Gholam Reza Mahmoodi*, Amir Hoshang Bahri and Flora Mohammadi Zadeh

Islamic Azad University, Bandar Abbas Branch, Bandar Abbas, Iran
*Corresponding author's e-mail: Mahmoodi8887@hahoo.com

ABSTRACT

Iranociochla hormuzensi" Caod, 1982 is the only Iranian SKYLID species which has been found in Hormozdgan province. In this research for the first time there is possibility of studying the reproduction and sexual ratios of this salty river (Bagho) in the east of Bandar Abbas. The effects of different sexual ratios of male and female "I. Hormuzensis" have been conducted in three methods of A,B,and C with each of them are (F:M)1:1, (F:M)2:1 &(F:M)3:1 have been repeated 3 times respectively. The results show that the most richness of productivity is with the averages of 22± 1.53 and highest percentage of new-born surviving is with the average of %97.2± 1.23 belong to A grouping and the least richness of productivity with average of 6± 2.18 and the least new-born survival with average of 59.28±1.73 belong to C species.
Keywords: Artificial Reproduction, Iranocichla Hormuzensis, Sexual Ratio

INTRODUCTION

Iranian SYKLID can be found in the tropical climate of south waters. This native SYKLID have been found in the Mehran, Sarzedeh and Resol rivers waters of Hormazgan state between Charberkeh and Tangeh areas and they have been recognized by Dr. Brayen in the year 1976 and have been recorded [1]. In fact these native Iranian fish with unique and special features can be placed among the attractive imported fish which enter the aquarium and have been studied widely and biologically and also scientific elements in their reproduction and their nurture, one step has been taken forward and there has been measured in importing these rare species. Among the most progresses which have taken place in aquaculture in recent few decades, the development of induction technique in fish. This technique has permitted the growers to grow and produce species which are not growing naturally, and change the time of fish proliferation according to production cycle [2]. Some of the species are different which are due to their nature condition of breeding or environment such as water temperature or different kinds of material available in the nature, and therefore they are not able to reproduce and proliferate in capture. These conditions have been stress creating or they can prepare the condition for production. Therefore changes in the production cycle are suitable this condition will permit the growers to:

1. Obtain the fish out of their nature production season which makes the nurture time consuming or the cross production fish or other kinds of fish.
2. Causes improvement in the amount of yields in production with regard to the determined data.
3. The amount of larvae remaining according to the controlled condition of production workplace according to artificial fertilizing and eggs' incubation will increase [3]. Different parameters are effective on the sex handling and fish's fecundity such as temperature of water, feed, light, genetic traits, age, size, environmental conditions such as stress and presence of different sex which among them effects of different sex presence with different sex ratio will be researched. Therefore according to different sex ratio of proliferation of Iranian SKYLID fish has been considered because it seems that fecundity and the amount of neonatal survival in different ratio have been different which finally with knowing the results obtained from this research we obtain new and positive results and solutions in Iranian SKYLID fish proliferation.

MATERIALS AND METHODS

This research has been executed in a small workshop in Bandar Abbas with the dimension of 4*3*2.70meters and the place was lit with two fluorescent lamps 12 lux which was enough for the place and there

To cite this paper: Mahmodi, G.M., Bahri, A.H. and Mohammadi Zadeh, F. 2013. Analysis of Artificial Reproduction Possibility in Fish "Iranociochla Hormuzensi" Through Changes in Ratios of Female Species. *J. Life Sci. Biomed. 3*(6):424-427.
Journal homepage:http://jlsb.science-line.com/

was cooling instruments, and ventilation systems. 27 Nos. of grown up fish which were ready for proliferation consisting of 18 female and 9 male. According to table 1 and therefore 9 aquariums with the dimensions of 40*25*40 cm and equipment's such as central air pump (TIAL NIAO- 1003) , air stone, heater(1300 wat), filter(sandy), thermometer (Mercury), and nest were prepared. And also one aquarium with the dimensions of 40*40*120 cm as the main aquarium has been prepared which was a place for keeping the new born fish before they were introduced to the aquariums according to their sex. Two other aquariums with the dimensions of 50*40*40 cm have been introduced as the quarantine aquarium. The hygienic medicines such as anti-fungus, anti-fungal, anti-parasite and anti-chlorine for decolorizing of the water and the Aqua safe liquid for preparation of living condition of aquarium have been used. Food for the new born brood stock was consisting of dried food and living food.

Provision and choosing the brood stock:

The season for production of I.hormuzensis species was from February to the end of June. Therefore to prepare brook stock, the samples were randomly and for two months (December and January 2012) since fishing operation started in the month of December y from the salt water river (Bagho), SarKhon river branches in the east of Bandar Abbas. Since in Iranian SYKLID the females keep the eggs in their mouth therefore after hunting the female it must be checked that there is no egg in its mouth, considering the losses during transportation and also fighting for the pair, therefore 75 numbers of produced have been hunted and each produced or new born have been transported separately with one sex. To utilize the water half of the water consisted of water from the work place and the other half was water from the river were the fish was caught (Bagho) and oxygen was injected in it. When the Iranian Syklid fish were transferred to the work shop where the research was going on and transfer of the newborn into the aquarium, there was consideration for making the place with the constant temperature and constant condition. The aquarium was divided into two equal parts with a mesh frame for the Syklid be adapted to the environment before reaching the puberty and they do not fight with each other. The reason for using the mesh frame instead of glass in dividing the aquarium, is to keep the temperature of the water same in both parts of aquarium. And also since there was a chance for the fish being contaminated, therefore about 6 hours the fish were kept in the following disinfection material before transferring into aquarium [4]

1. Madeline blue with the density of one drop in every liter
2. Sterpetomicine 1% solution with density of 10 mile liter in 20 liters of water
3. Tetracycline capsule with density of half capsule in 20 liters water
4. Antifungal medicine with density of 1 drop in 5 liters of water.

The new born fish will be kept in aquarium for 2 months (60 days) and will be fed with different kinds of food and they will be reinforced for them to get used to the place during this time. After they grow and become adult and they show sexual interest, with analysis of sexual signs and knowing that they are big enough for sexual intercourse, among them some will be chosen. Statistical method used in this research is consisted of use of SPSS excel software and variance analysis ANOVA and T-test of one side [5]. During this research, temperature, liquid oxygen, PH, hardness, feeding and other factors were kept constant and their only differences were their sex treatment.

RESULTS

With studying of behavior of these fish, it could be understood that since males have to choose their female among all the other fish therefore sexual ratio should be considered and introduce to the aquarium which is a little difficult work. Since this kind of fish is fighter and stubborn, therefore some losses will occur and reproduction of Iranian SKYLID fish is difficult in the capture place. Each of the SKYLID fish usually chooses a corner as its head quarter and none of the other males have any permission to enter that area. To choose the female partner, the male gather in the center of aquarium and they become aggressive. The females absorb them and look at them and choose the best and strongest among them (it means the female will choose its husband). And therefore the female one goes to the area of male fish and stay there the male fish chosen will have pride of him and will look at the area carefully for the other fish not to enter its area. In this condition the pair should be transferred into another aquarium. In A treatment which consisted of a male and a female the fish will mate without any fighting or interference. And the male fish head part become completely red in this condition goes towards the female one after the female is ready they will start performance and turn around each other and finally they will have mouth contact. In A2 and A3 repetitions the female fish will hide from the male sexual interference and then the dancing and other kinds of acrobatic movements will start, then they will mate and have mouth contacts. In B treatment which is consisted of a male and a female fish different kinds of behaviors are seen since the male's sexual pressure has been divided between two females and then chasing will start and uses more energy for capturing both of them to attract one of them attention and after 3 days the male one will have mouth contact with both of them and showing attractive actions and the will mate both of them. In B2 and B3 repetition this act has been the same and 3 days later the movement and love making between male and female and their ordinary behavior starts. In C treatment which is consisting of one male SKYLID and three female ones the above behavior is noticed. In this case the male has the capacity to choose 3 female and still the male has tendency towards more female. The male SKYLID first goes towards the female which are ready and incase it refused the

sexual contact, the male goes towards another female and then the third one. In all 3 cases the behavior was the same and 4 days later the male was repeating the behavior and the male was leading the other 3 females' fish in the aquarium. They move around in their territory without any problems and they move their wing in a dramatic way and turns around the females and more it become sexually active, more it become red and shiny. Around the tail wing some kind of silver stain will appear. After the time reaches where the females keep the eggs in their mouth, the male will be separated and until the eggs are hatched and even after that also the females will be separated from male and when the eggs are hatched they will be transferred into newborn aquarium and analyze them . studies conducted on the results obtained show that the most fecundity of newborn and highest percentage of newborn remaining is about the treatments repetitions in sex ratio of male and female and the least fecundity of newborn and least remaining of newborn is about repetition of treatment with the ratio of 3 females and one male.

Table 1. Results obtained from production of Iranian SKYLID changes in ratio of female

Treatment name	Repetition	Sexual ratio		Total hatched larvae(SD±)	Remaining larvae after 40 days (SD±)	Percentage of remaining larvae after 40 days (SD±)
		Male	Female			
A	3 repetitions	1	1	22±1.53	21.33±1.66	%97.2±1.23
B	3 repetitions	2	1	16.33±2.30	14±1.61	%85.59±1.45
C	3 repetitions	3	1	9.66±1.33	6±2.18	%59.28±1.73

Results regarding increase in the number of female newborn on the number of newborn. Results regarding the effect of increase in the number of female newborn on percentage of larvae survival.

DISCUSSION

Considering the place where this fish lives means Hormozgan with very salty water, water being muddy, water's intensive fluctuation, flooding and specially hunters, their eggs such as " Aphanuis dispar" needs parental care for survival and therefore the females keep their eggs in their mouth until they hatch. Some times before egg laying the mouth area of the female will increase and become bigger for the eggs to be placed in the mouth [6]. This can be seen even in the samples which are kept in aquariums. The process of production is depending on the relation of male and female internal and external. Elements such as genetics, stress the amount of light and it duration which are important in production [2]. Therefore in this research the effect of changes in relation to fish reproduction Iranocichla hormuzensis is important and other factors will be neglected in the analysis. And results obtained will be analyzed and discussed in two aspects [5].

The effect of sexual ratio of harmonic system:

In these tests with increase in the newborn in ratio of male to 3 female the number of larvae produced from the maximum of 22 with an average of 21 ±1.33 reduces to 9numbers with an average of 6 ±1.33 will reduce. Considering the statistical results, we can find out the meaningful differences in the test. If we compare the above results with the "Poecilia latipinna" conducted by Geyasvand we get a similar result in the tests conducted on Maly fish with increase in the number of female newborn against the males, the number of newborn is decreased and the average of 104 in treatments with the sexual ratio of one male and one female has been changed to average of 72 in the treatments of the ratio of one male to 3 females. This result is the same as the result obtained by SCOTT in the year 2004 on MEDEKA fish, with increase in the number of female newborn, the number of newborn male decreases and the average of 730 in the treatments of ratio one male to one female with the average of 446 in the treatment of one male to 4 female. In the test conducted by Changizi on the "Cichlasoma nigrofasciatum" they found out that there is an increase in the number of newborn females in ratio of male and in the statistical analysis it can be said that if the number of male is constant, there will be a linear and logical relationship between eggs counted and the number of fish. With analysis of the numbers in table 2 and 3 and comparing the percentage of survival of Iranian SKYLID larvae 40 days after different treatments it can be noticed that with increase in the female newborn against the male, percentage of survival of the newborn will decrease that the treatment A with an average of % 97.2± 1.33 has the most percentage of survival and treatment C with average of %59.28±1.33 has the least percentage of survival. With regard to the statistical results the differences caused can be meaningful and mention that with the increase in the number of female newborn of different treatments there is a negative effect on the percentage of survival of newborn and therefore it has a direct relation with it. Results obtained from "Poecilia Latipinna" shows decrease in the percentage of newborn survival. Research conducted on the "Cichlassoma nigrofasciatum" by Changizi shows reduction in the percentage of SKYLID newborns with increase in the number of female newborn against male after 40 days the average is reduced from 99% to 73%. With study of table 2 and comparing the number of larvae hatched from Iranian SKYLID, there is a decrease in the number of newborn against increase in the males that the number of newborn with the average of 22.3 in treatment A with the ratio of one male and one female will reduce to average of 9 numbers in treatment C with the ratio of one male to 3 female. With increase in the number of females against

males due to reduction in breeding and also due to productivity of STROGENIC hormones from female cause extra pressure on the harmonic system and male fish sex. And therefore different types of Androgens will reduce and SPERMATOGENS will evolve and sperm production will face problem and therefore there will be an increase in the time spend for the newborn and reduction in their number [1]. And also the hormones will increase eventually and percentage of remaining will increase too. Increase in the males cause reduction in the duration of pregnancy.

Effect of sexual ratio with regard to stressing condition:

Wedemeyer have made a division making in the year 2000 according to the base of stress production in marine production which one of them is biological stresses which can be caused because of the other fish. One of the main answers which the fish produce in the stressing condition is activation of brain, sympathetic nerves, and chromaphine nerve and hypothalamus hypofiz pivot- internal. Which this condition causes increase in the amount of coctal Aminos and cortizol in the blood and after that the other physiologic and secondary hematologic. Changes caused reduction in the fish resistance against the pestilential elements in their growth of reproduction and immunity [3]. Regarding the sexual ratio in stressing condition the following reasons can be counted: in most species the suitable number for sexual intercourse for females is less than for males and the females usually do not accept the intercourse demand through the males and they don't like the sexual harassing by the males and the sickness transfer through them. With comparing the above obtained results from the other fish such as Moli fish by Geyasvand we reach the common results and finally the physical elements such as stress environments are mentioned as the suitable reason for these explanations on the effects of sexual ratio on the duration of pregnancy and the newborn and percentage of remained newborn. With study of table 2 and analysis of different treatments it can be said that the most contention is regarding A treatments with the sexual ratio of one male and one female with average of 22 numbers larvae hatched and the least amount of contention is regarding treatment C with the ratio of one male and 3 females with average of 9 numbers hatched [5]. Also treatments with the sexual ratio of one male and one female (A) has the highest percentage of newborn survival with average of %97.2 and treatments with the ratio of one male and 3 females (C) has the least percentage of larvae survival with average of %59/28 after 40 days.

Results obtained show that with the increase in the female newborn proportional to male, cause reduction in the number of newborn and also cause reduction in the percentage of newborn survival. Therefore considering the tests conducted and similar works such as tests conducted on the Moli fish in the different sexual ratio it can be obtained that the best sexual ratio with the highest number of newborn and highest percentage of survival with the use of sexual ratio of one male and one female of Iranian SKYLID in its reproduction.

REFERENCES

1. Hossianzadeh, S. 2001.Biology of fish reproduction, with emphasis on the fish in Iran, first edition, Nashr organization of Jehad dependent on the Jehad Daneshgahi, Tehran unit.
2. Satari, M. 2002. Ichthyology, (Explanation and physiology): Naghsh Mehr publication with cooperation of Gilan University.
3. Satary, M., Shasoni, D., Shafiee, S.H. 2003. Ichthyology, Systematic Haghshenas publication.
4. Shykhyan, M. 2003. Life of fish in equarium, Astan Ghods rezavi publication, Mashhad, p118.
5. Abdali, A. 1998. Iranian water fish, Chapavol, Tehran, nature and wild life of Iran museum.
6. Askerian, F., kosha. 2006. Physiology of fish and aquatics, (Stress) agricultural science publication, p 446.