

**DOMESTIFIKASI IKAN BETOK *Anabas testudineus* MELALUI  
PEMIJAHAN DI WADAH BUDIDAYA**

**CLIMBING PERCH, *Anabas testudineus* DOMESTICATION  
THROUGH SPAWNING**

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**ABSTRAK**

Penelitian ini dimaksudkan sebagai upaya domestikasi Ikan Betok melalui pemijahan dalam wadah budidaya. Penelitian ini dilakukan di Laboratorium Basah Program Studi Budidaya Perairan Universitas Lambung Mangkurat . Tiga poin utama dalam mendukung keberhasilan pemijahan ikan, yaitu : perkembangan gonad , ovulasi dan pemijahan . Tentu perkembangan panjat bertengger gonad ikan terjadi pada awal musim kemarau puncak musim dan di awal musim hujan atau saat musim hujan , pemijahan terjadi . Keadaan alami ini mencoba untuk diadopsi dalam budidaya kontainer , dengan fashting selama 1 , 2 dan 3 hari dengan tingkat air , 10 , 15 dan 20 cm . Hasilnya adalah waktu yang laten dari 11,7 jam sampai 39 jam , fekunditas antara 5310-7376 butir , diameter telur 0,5 hingga 0,8 mm , tingkat fertilisasi antara 88,2-93,2 persen dan tingkat menetas antara 87 , 0-91,6 persen .

Keywords : peternakan , domestikasi , ikan betok

**ABSTRACT**

The study is intended as an attempt domestication through climbing perch spawning in the container cultivation. The research was conducted at the Laboratory of Wetlands Program University Faculty of Fisheries Aquaculture Lambung Mangkurat. Three main points in support of the spawning success of fish, namely: gonadal development, ovulation and spawning. Naturally development climbing perch fish gonads occurred in the early dry season to peak season and at the beginning of the rainy season or during the rainy season, spawning occurred. This natural state is trying to be adopted in the cultivation of container, with fashting for 1, 2 and 3 days with water levels, 10, 15 and 20 cm. The result is a latent time of 11.7 hours to 39 hours, fecundity between 5310 to 7376 grains, egg diameter 0.5 to 0.8 mm, the degree of fertilization between 88.2 to 93.2 percent and the degree of hatching between 87, 0 to 91.6 percent.

Keywords: breeding, domestication, climbing perch

## INTRODUCTION

Freshwater fisheries potential in Kalimantan is quite high. Local fish is quite favored by the people of South Kalimantan. Kalimantan in particular is climbing perch, *Anabas testudineus* Bloch which in Banjar area called "iwak papuyu". This fish is favored by the people because the taste is good and tasty meat besides fish this climbing perch have economic value (Linga, 1985). Based on research Slamet (2009) fish in the swamp climbing perch monotonous meat taste better than the fish climbing perch of rain-fed bogs and tidal.

The existence of this fish climbing perch not always be maintained in nature, because any time the number of fish can be reduced and even disappear due to the use of natural resources counterproductive. Besides the existence of this fish is seasonal, at certain seasons abundant production in nature, whereas in other seasons the fish is hard to come by, so the price is relatively expensive (Anonymous, 2009)

Meeting the needs of just relying on the catch in the wild, contributing greatly to the increased size of fish caught. In the dry season

which is the peak fishing climbing perch trapped in the "beje" is an unfavorable condition for the sustainability of the resource. This is caused by fish caught in the "beje" in the status of development of gonad maturation (Bijaksana, 2010).

Natural fish trapped in the "beje" is at the reproductive stage of development so that it becomes interesting to do an assessment of the condition. Efforts to do is manipulation fasting or gratification and the water level settings. Reproduction of fish is under the control of the hypothalamic-pituitary-gonadal. There are three factors involved in the reproduction of fish, namely: environmental signals, the hormonal system and reproductive organs (Zairin, 2003). Bijaksana (2009) states that fish caught in the "beje" at the peak of the dry season, 90% in the development of reproductive status. Also explained that during the period trapped in the "beje" fish without feed (fasting) and convert the weight of his body to support the development of the gonads. Furthermore, Bijaksana (2010) added that the manipulation of water level changes can be a trigger in the development of gonadal maturation.

Fish in meeting the energy needs of the body will use food reserves consecutive protein, fat and carbohydrates. Fish caught in the "beje" can be interpreted as a fish that is fast but requires energy to support the development of gonadal maturation. The study Kim et al (1992) in Bijaksana (2010) suggested that the increase in enzyme activity during fasting fish due to the energy needs of fish would be met through a revamp of the amino acids in the body (endogenous). The other thing is also stated that the fish have the ability to use amino acids as an energy source during fasting. Feeding fish or chicken feed on the host fish for 1 month before spawning give different results compared fecundity very real in the fasted fish (Bijaksana *et al* 2009). This is an indication that when the feed formulation on broodstock fish will become less profitable spawning, one of the conditions that can be raised is the amount of fat or a narrow channel urogital. But the quality of feed needed during early reproductive development (Bijaksana, 2010). The study is intended as an attempt domestication through *Anabas testudineus* spawning in the container cultivation.

## MATERIALS AND METHODS

The research was conducted at the Laboratory of Wetlands Program University Faculty of Fisheries Aquaculture University of Lambung Mangkurat Banjarbaru Stomach. On the whole preparation period until the completion of research takes  $\pm$  30 days.

Spawning container holding a fish tank with a size 60 cm x 40 cm x 30 cm with a total of 27 different high water, which is 10 cm, 15 cm and 20 cm. The design used in this study was Complete Randomized Design (CRD) factorial with two factors, namely A and factor B, factor D which consists of A1, A2, A3, and factor B consisted of B1, B2, B3, with 3 replicates so obtained 27 experimental units.

Parent selection is performed to see the parent of gonads mature, and then carried on the parent ovaprim injection at a dose of 0.1 ml / fish or 30 ui / tail, which had previously been done ovaprim dilution and injection solution with a ratio of 1:4 (0.2 ml ovaprim + 0.8 ml injection solution). Ovaprim dose in a bottle is a 1500 ui. To calculate ovaprim dose can be calculated by the formula:  $m1 \cdot V1 = m2 \cdot V2$ . Thus,  $1500 \text{ (ui)} \cdot 0.2 \text{ (ml)} = m2$ .

1 (ml). To find the value of  $m_2$ ,  $m_2 = 1500 \cdot 0.2 / 1 = 300$  ui. As for the comparison of the male and female parent, which is 2:1. 1 times as many injections made on the dorsum of the left or right. After the spawning and the eggs hatch into larvae until the age of 2 days, then all larvae transferred into an aquarium filled with pond water that has already done fertilization.

## **RESULTS AND DISCUSSION**

### ***Latent time***

Time after injection until the occurrence of ovulation of fish referred to as the latent spawning.

Here are the results of the latent time. The table above shows that the range of latency time (latency time) the average is 11, 7 hours to 39 hours. The highest latency time is in the treatment A3B3 (39 hours), followed by treatment A2B1 (30 hours), treatment of a2b2 (28 hours), treatment A1B1 (22 hours), treatment A3B3 (20 hours), treatment A1B3 (19.4 hours) , A1B2 treatment (19 hours), treatment A3B1 (13.4), and the lowest found in the treatment A2B3 (11.7 hours).

At the moment there is a parent spawners spawning on day 2 after injection (> 24 hours). This occurs because of a lack of uniformity in the gonadal maturity of each treatment and error handling procedures in the process of acclimatization of the parent post transfortasi so that the parent experiencing stress, resulting in differences in latency time (latency time) spawning in each treatment.

Latency time in different fish species can be different. Even when latent the same fish species can be different. Latency time depends on the maturity level of the end of the gonad, the parent of incubation temperature, environmental conditions and physiological state of fish. Therefore, the determination of the latency time will be different from one another. According to Lam (1985) who injected stimulating hormone in fish that will serve to stimulate the pituitary spawning to release gonadotropin, gonadotrofin generated will be accelerated toward the gonad and oocyte maturation in female fish and maturation of spermatozoa in the male fish.

### **Fecundity**

According Fujaya (2004), fecundity is one phase that plays an important role to establish the population dynamics. Fecundity can be estimated from the number of juveniles produced.

Lilliefors test of normality for the fecundity of fish eggs climbing perch Lmaks value obtained is smaller than the value  $L_{table}$  so,  $H_0$  received the normal means of data spread. Furthermore, the homogeneity test Bartlett obtained data  $X^2$  calculated value is smaller than  $X^2$  table, so  $H_0$  received a mean range of the data homogeneous.

Based on the analysis of variance (ANOVA) treatment  $F_{hit}$  values obtained are smaller than  $F_{tab}$  (0.05) and  $F_{tab}$  (0.01) which means that the treatment was not significantly different. This suggests that domestication efforts through the "gratification" and "high water level" in the cultivation of container obtained fecundity is not significantly different. Of treatment given the gonadal development, ovulation and spawning may take place optimally.

### **Diameter of Egg**

Eggs produced by the parent fish varied in size. Egg size can be

seen by calculating the diameter of the egg.

Data can be viewed on the mean diameter of eggs in each treatment, which is 0.5 mm to 0.8 mm. Thus there is no real difference between the treatment or in other words fasting treatment and the water levels did not significantly affect fish eggs climbing perch diameter.

According to Effendi (1997), generally increase the weight of female fish gonads during gonadal ripe stage can reach 10-25% of body weight and 5-10% in male fish. Further argued that the increased level of gonad maturity, the greater the diameter of the egg. Further explained that at the time of the process vitellogenesis, yolk granules increase in number and size of oocytes resulting volume will be even greater.

According Sukendi (2001), an egg that has a larger diameter removed during the process of spawning and egg along with it having a smaller diameter will continue to grow out on the next spawning. But if good conditions, eggs kecilpun be issued following a large egg to come out.

### **Fertilization**

Based on the analysis of variance obtained value treatment  $F_{hit}$  smaller than  $F_{tab}$  (0.05) and  $F_{tabel}$  (0.01) which means that the treatment was not significantly different. Thus there is no real difference between treatments.

Greatly influenced by the degree of fertilization water quality, especially the temperature at the aquarium so that fertilization can take place either in accordance with the time. Another thing also be affected by genetic background and maturity of the fertilized egg that the sperm's ability.

The high percentage of fertility showed that male sperm has the ability to fertilize an egg. Fertilization success is dependent on the quality and quantity of sperm (Yustina et al, 2003).

Nurman (1998) states, fertilization is a process of encounter between sperm and an egg cell. The process of fertilization in the egg cell is strongly influenced by the quality of eggs, sperm quality and speed of sperm to move spontaneously so as to fit into the hole in the egg micropyle. Comparison of the number of male parent also affect the level of

fertilization of the egg. This does not mean the greater number of males that produce sperm stem the higher levels of fertilization, but the male parent is sufficient to produce the quantity of sperm to fertilize an egg. According Satyarani (2008), fish eggs released by the irregular shape, having entered the water will be rounded and expands in quick time. The water goes into it between Chorin (egg shell) and the contents of the egg to form a space called the perivitella. Sperm will enter into the nucleus to fertilize an egg and the egg nucleus will be covered in a short time, the duration of the closure depends on the type of fish from one to several minutes.

### **Egg Hatchability**

Bartlet homogeneity test based on the data obtained  $X^2$  calculated value is smaller than  $X^2$  table, so  $H_0$  received a mean range of the data homogeneous. Furthermore, the Lilliefors normality test  $L_{hit}$  max value obtained is smaller than the value  $L_{tab}$  so,  $H_0$  received the normal means of data spread.

Based on the analysis of variance obtained value treatment  $F_{hitung}$  smaller than  $F_{tab}$  (0.05) and

F<sub>tab</sub> (0.01) which means that the treatment was not significantly different. Thus there is no real difference between the treatment or in other words Pemberokan treatment and the water levels did not significantly affect egg hatchability climbing perch.

Based on the hatching rate in all treatments showed that most eggs do not hatch suspected in the death of the embryo development. Anonymous (2003), egg hatching rate *Anabas testudineus* Bloch in normal conditions can reach 95%. Furthermore, according to Wibowo (1998) in the Muhammad, *et al* (2001), the range of fish hatching rate ranged from 85.87 to 87.03% ovaprim injected with hormones.

The low level of hatching eggs by Pavlov and Moksness (1994) in the Rukmini (2004), sperm quality is poor can lead to failure of spermatozoa fused into the egg cell nucleus, so that eggs - eggs do not divide the blastocyst stage after fertilization and embryo death before hatching, and

according to Huet (1972) in the Santosa (1997), which affects the low hatching rate is the influence of internal factors, namely the slow development of the embryo due to a lack of motile sperm because it is too watery seminal of Milt (sperm). Besides the low hatching rate can also be caused by poor environmental conditions, giving rise to attacks of bacteria and fungi that are visible from the condition of the egg white, milk (Varada and Pandian, 1990 in Wardiawati, 2003).

## CONCLUSIONS

### *Conclusion*

Betok fish domestication efforts can be made through breeding is carried out within the container cultivation for magnification is then performed with artificial feed formulation.

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