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Effect of high temperature on production of males in siamese fighting fish (Betta splendens) population / Nor Khalilah Zainuddin.

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PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

**EFFECT OF HIGH TEMPERATURE ON PRODUCTION OF MALES IN
SIAMESE FIGHTING FISH (*Betta splendens*) POPULATION**

**By
Nor Khalilah Binti Zainuddin**

**Research Report submitted in partial fulfillment of the requirement for the degree of
Bachelor of Agrotechnology Science (Aquaculture)**

**DEPARTMENT OF FISHERIES SCIENCE AND AQUACULTURE
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU
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**FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN
UNIVERSITI MALAYSIA TERENGGANU**

**PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK ILMIAH I DAN II**

Adalah ini diakui dan disahkan bahawa laporan ilmiah bertajuk:

Effect of High Temperature on the Production of Males in *Betta splendens* Population

oleh Nor Khalilah Binti Zainuddin, No.Matrik UK13494 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Perikanan dan Akuakultur sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Agroteknologi (Akuakultur), Fakulti Agroteknologi dan Sains Makanan, Universiti Malaysia Terengganu.

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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

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ABSTRACT

In *Betta splendens*, male was more valuable than female in market. So, study was done to determine the effect of high temperature on sex ratio and the number of male on *Betta splendens*. Larvae were produced through natural breeding and exposed to two different temperatures which were 28°C and 30°C. The larvae were reared for 60 days to determine the sex ratio and number of male. Observation was done based on the morphology, sexual organ and behaviour. Result of the experiment showed that, rearing juvenile at 30°C produced higher number of males (68.59±1.20 %) compared to 28° in which the number of male to female was the same or the number of female were more (57.15%). Statistical analysis using Chi-square showed that, sex ratio of fries reared at 30°C was 2:1 ratio (male: female) compared to 28°C which was 1:1 and 1:1.5 (male: female). This study showed that, higher number of males can be produced at high temperature. Further study on *Betta splendens* exposure to high temperature should be done to determine the mechanism of sex changes in this fish. Thus, this method could be applied to the production of *Betta splendens* males in aquaculture.

ABSTRAK

Ikan laga *Betta splendens* jantan mempunyai nilai yang lebih tinggi dalam pasaran. Oleh demikian, kajian mengenai kesan suhu tinggi keatas nisbah seks dan bilangan jantan yang terhasil telah dijalankan. Larva diperolehi menerusi pembiakan secara semulajadi. dan di dedahkan pada dua suhu berlainan iaitu 28°C dan 30°C. Larva di pelihara untuk 60 hari bagi mengenalpasti nisbah seks dan bilangan jantan yang di hasilkan. Pemerhatian adalah berdasarkan morfologi, organ pembiakan dan juga perlakuan ikan tersebut. Keputusan yang di perolehi menunjukkan bahawa larva yang di pelihara pada suhu 30°C menghasilkan bilangan jantan yang lebih banyak (68.59%)berbanding suhu 28°C menghasilkan jumlah jantan dan betina yang hampir sama atau betina melebihi jantan(57.15%). Analisis statistik Chi-square menunjukkan bahawa nisbah seks larva yang di pelihara pada 30°C adalah 2:1 (jantan: betina) berbanding 28°C (1:1 dan 1:1.5). Kajian ini menunjukkan bahawa jumlah jantan yang lebih banyak dapat dihasilkan pada suhu yang lebih tinggi. Kajian lanjut terhadap ikan laga (*Betta splendens*) yang didedahkan kepada suhu tinggi hendaklah di lakukan untuk menentukan mekanisma perubahan seks yang berlaku. Seterusnya, kaedah ini, dapat aplikasikan untuk penghasilan ikan laga, *Betta splendens* jantan dalam bidang akuakultur.