

EFFECTS OF PHOTOPERIOD ON GESTATION PERIOD AND SEX
FIXING IN SWORDTAIL (*Xiphophorus helleri*)

ONG CHANG HUAT

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

2003

LP
45
FASM
3
2003

cm 1460

1100024936

LP 45 FASM 3 2003



1100024936

Effects of photoperiod on gestation period and sex fixing in swordtail (Xiphophorus helleri) / Ong Chang Huat.



1100024936

PERPUSTAKAAN
KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA
(KUSTEM) cm 1460

Pengarang ONG CHANG HUAT.		No. Panggilan LP 43	
Judul EFFECTS OF PHOTOPERIOD ---		FAS 3 2003	
Tarikh	Waktu Pemulangan	Nombor Ahli	Tanda Jangan
18/07/03	10.00 am	11/11/03	4

LP
43
FASM
3
2003

**EFFECTS OF PHOTOPERIOD ON GESTATION PERIOD AND SEX FIXING IN
SWORDTAIL (*Xiphophorus helleri*)**

BY

ONG CHANG HUAT

**This project report is submitted in partial fulfillment of the requirement for the
Degree of Bachelor of Agrotechnology (Aquaculture)**

**Faculty of Agrotechnology and Food Science
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
2003**

1100024936

This project report should be cited as:

Ong, C.H. 2003. Effects of photoperiod on gestation period and sex fixing in swordtail. Undergraduate thesis, Bachelor of Agrotechnology (Aquaculture), Faculty of Agrotechnology and Food Science, Kolej Universiti Sains Dan Teknologi Malaysia, Terengganu. 36p.

No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of phonographic recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.

ACKNOWLEDGEMENTS

Without the countless helps and constructive advices of many people, this final year project thesis would not be completed in time and as it may also be a reference to others in the future. Million of thanks to my supervisors, Dr. Abol Munafi Ambok Bolong and Dr. Anuar Hassan, who fed useful information on my studies and nevertheless moral supports which helped me to overcome the difficulties in producing the reports. I am grateful to Dr. Siti Aishah, who lends me her personal digital camera willingly. I would add my gratitude to post-graduated students, Mr. Sunny Yeong Yik Sung and Mr. Ng Beng Siang for marvelous opinions on improving my weaknesses in my project. I must thank Mr. Chia Wan Leong, Director of Akuakultur Johor for sponsoring the broodstock of swordtails and he had imparted his experiences on photoperiod of swordtail wholeheartedly. There were those who were never out of my mind such as Miss Wong Su Wei, Mr. Law Kheng Boon, Mr. Hiew Kok Chong, Mr. Liew Hon Jung and Mr. Bui Minn Tam. They were dear friend who always available whenever I needed their help. Also, I would like to express my special thank to all my family member that always encourage me along the progress in finishing this thesis.

ABSTRACT

Four different photoperiod (included the control tank or ambient condition tank) were tested on gestation period in female swordtails and sex fixing on the larvae, tank A were the ambient conditioned tank, which also acted as controlled tank; tank B were conditioned with 12 hour of light and 12 hour of darkness (12L: 12D); tank C were conditioned with 24 hour of light (24L: 0D) while tank D were conditioned with 24 hour of darkness (0L: 24D).

Result of the effect of photoperiod on gestation indicates that the ambient conditioned fishes shown the shortest gestation period compare to others, its average gestation period was 30 days. For the 12L: 12D conditioned fishes, its average gestation period was 32 days, follow by the 24L:0D conditioned fishes where its average gestation period was 33 days. The longest average gestation period was the 0L: 24D conditioned fishes, which was 35 days. From the One-Way ANOVA statistical analysis, there were differences between the effects of photoperiods on gestation period in swordtail.

Result from the sex fixing experiment shown that the sex ratio of female swordtail increased from the ambient condition (55.56%), 12L: 12D condition (87.50%), 24L: 0D condition (88.24%) to 0L: 24D (95.24%). On the contrary, the sex ratio of male swordtail decreased from the ambient condition (44.44%), 12L: 12D condition (12.50%), 24L: 0D condition (11.76%) to 0L: 24D condition (4.76%).

ABSTRAK

Empat jenis tempoh cahaya (termasuk tangki kawalan atau tangki berkeadaan semulajadi) digunakan untuk mengkaji kesannya ke atas tempoh gestation pada swordtail betina dan penentuan seks pada larvae; tangki A merupakan tangki berkeadaan semulajadi, juga dikenali sebagai tangki kawalan; tangki B pula berkeadaan 12 jam bercahaya dan 12 jam gelap (12L: 12D); manakala tangki C pula berkeadaan 24 jam bercahaya (24L: 0D) serta tangki D berkeadaan 24 jam gelap (0L: 24D).

Keputusan bagi kesan tempoh cahaya ke atas tempoh gestation menunjukkan bahawa ikan di bawah keadaan semulajadi memaparkan tempoh gestation yang paling pendek berbanding dengan keadaan yang lain; tempoh gestation secara puratanya adalah 30 hari. Bagi tangki berkeadaan 12L: 12D pula, tempoh gestation puratanya adalah sebanyak 32 hari diikuti dengan tangki berkeadaan 24L: 0D dengan tempoh gestation puratanya 33 hari. Tempoh gestation secara puratanya yang paling panjang adalah tangki berkeadaan 0L: 24D, iaitu selama 35 hari. Daripada analisa ANOVA satu hala, didapati terdapat perbezaan di antara kesan tempoh cahaya ke atas tempoh gestation.

Keputusan daripada eksperimen penentuan seks menunjukkan nisbah seks swordtail betina meningkat daripada tangki berkeadaan semulajadi (55.56%), 12L: 12D (87.50%), 24L: 0D (88.24%) kepada 0L: 24D (95.24%). Sebaliknya, nisbah seks swordtail jantan berkurangan dari keadaan semulajadi (44.44%), 12L: 12D (12.50%), 24L: 0D (11.76%) kepada 0L: 24D (4.76%).