

**EFFECT OF PHOTOPERIOD ON THE GROWTH
PATTERN, BREEDING PERFORMANCE AND
COLORATION OF PLATY FISH
(*XIPHOPHORUS MACULATUS*)**

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Roll No.: 0119/05

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**A thesis submitted in the partial fulfillment of the requirements for the degree of
Master of Science in Fisheries Resource Management**



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Chattogram-4225, Bangladesh

June, 2020

Authorization

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Farhana Islam Shawon

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This is to certify that we have examined the above Master's thesis and have found that is complete and satisfactory in all respects, and that all revisions required by the thesis examination committee have been made

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LIST OF ACRONYMS USED

Abbreviation	Elaboration
g	Gram
mg	Milligram
SGR	Specific growth rate
cm	Centimeter
L	Light
D	Dark
LED	Light-emitting diode
W	Weight
V	Volume
Abs	Absorbance rate
G	Gram
SD	Standard deviation
nm	Nanometer
h	Hour
lm / W	Lumens per watt

ABSTRACT

Differences in photoperiod can induce a variety of responses in relation to food intake and growth, behavior, stress, survival rate, reproduction, coloration and other physiological factors in platy. This study was conducted to find outgrowth performance and reproduction rate, visual coloration and carotenoid content of platy using different photoperiods. The experiment had 4 treatments (T₁= 12hrs L (Light): 12hrs D (Dark), T₂=0hrs D: 24hrs L, T₃=7 days 24hrs D: 7 days 12hrs D and 12hrs L, T₄=7days 24hrs D: 7 days 24hrs L). Each setup with three replicates, 8 larvae were taken in one, such that a total 96 larvae were reared in 12 glass aquariums for 5 months. The results showed that weight of fish was significantly higher under T₂ (0.3587 ± 0.009^a g), length was under T₂ (2.4 ± 0.000^a cm) and SGR was under T₂ (0.299 ± 0.049^a) in comparison with other treatments. The highest survival rate 87.5% was obtained under T₁ and T₂ and the lowest values was detected for T₃ (70.33%). The best reproductive performance was achieved under T₂ (113 maturation days). The color enhancement observation suggested that the carotenoid content was highest under T₂ (0.00526 mg/g) and lowest under T₃ (0.00368 mg/g). 95.24% fish became colorful in setup T₂ which was the highest value among four treatments. There was strong interaction between photoperiod and growth performance, photoperiod and coloration in platy fish ($P < 0.05$). The study suggested that extended light period could promote growth and ensure reproductive success of ornamental platy fish.

Key words: Ornamental fish culture, Platy fish, Photoperiod, Growth performance, Coloration