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The ecological preference of fish as small fish may prefer artificial lights unlike other animals

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Abstract

As we know that most wise animals prefer to stay in natural light conditions for their peace, health and survival, however, exceptional species are fishes. Experiments on small fishes found that fish may prefer micro ecological environments with illuminated artificial lights.

Keywords: Micro ecological conditions, Light and dark, Ecological preference, Fish habitats, Statistical significance.

1. Introduction

Ecological preference and swimming behaviour of small fishes (Table 1, Fig 1 Fig 2) are studied in a scientific experiment and it is revealed that fish may prefer more light. Experiment is done during the pre-summer season on small fishes (Gold fish, *Puntius* etc.) and found species prefer to swim in brighter side of the water body than the water bodies of the darker micro ecological environment. Experiment is conducted on a small cemented tank with distinct light and dark environments. Tropical water having water qualities (Table 2) is mentioned. Two micro ecological habitat zones were offered for the small fishes. It is made that the water area is divided into two partitions viz. brighter side under open sun and on remaining half of the was shady or dark. Fish swimming behaviour of experimented five small fishes of fisheries importance is observed and found that the species prefers to swim in brighter side of the micro ecology. In a separate study functional relationship is established the fact that there always exists a vertical movement of fish and prawn in the river under the influence of moon (Das *et al.* 2009) for the fish catch during the night hours.

2. Materials and Method

Ecological record is made and statistical analysis t-test is performed using MICROSTAT software, the null hypothesis was made such that there were no preferences of swimming patterns of fishes under brighter and darker ecological conditions viz swimming patterns remains equally the same. However statistical test (t- test) found that swimming of fishes under two environments differ significantly (PROB. = .000E+001). Such small fish prefers to swim in brighter side of the micro ecological condition. Obvious correlation coefficient between the two environments of light and dark is found negatively unity.

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Table 1: Recording of small fishes (5) their swimming behaviour and its database

Instances	Light	Dark	Instances	Light	Dark
1	4	1	31	5	0
2	3	2	32	5	0
3	4	1	33	4	1
4	3	2	34	5	0
5	5	0	35	4	1
6	4	1	36	5	0
7	3	2	37	4	1
8	4	1	38	5	0
9	3	2	39	5	0
10	5	0	40	4	1
11	4	1	41	4	1
12	3	2	42	5	0
13	3	2	43	4	1
14	4	1	44	5	0
15	5	0	45	3	2
16	4	1	46	4	1
17	4	1	47	2	3
18	5	0	48	5	0
19	3	2	49	4	1
20	4	1	50	5	0
21	5	0	51	4	1
22	5	0	52	3	2
23	4	1	53	4	1
24	4	1	54	5	0
25	5	0	55	4	1
26	4	1	56	5	0
27	3	2	57	5	0
28	5	0	58	4	1
29	4	1	59	3	2
30	4	1	60	5	0

Fish count is made on sixty instances in light and dark ecological environments and data is analysed.

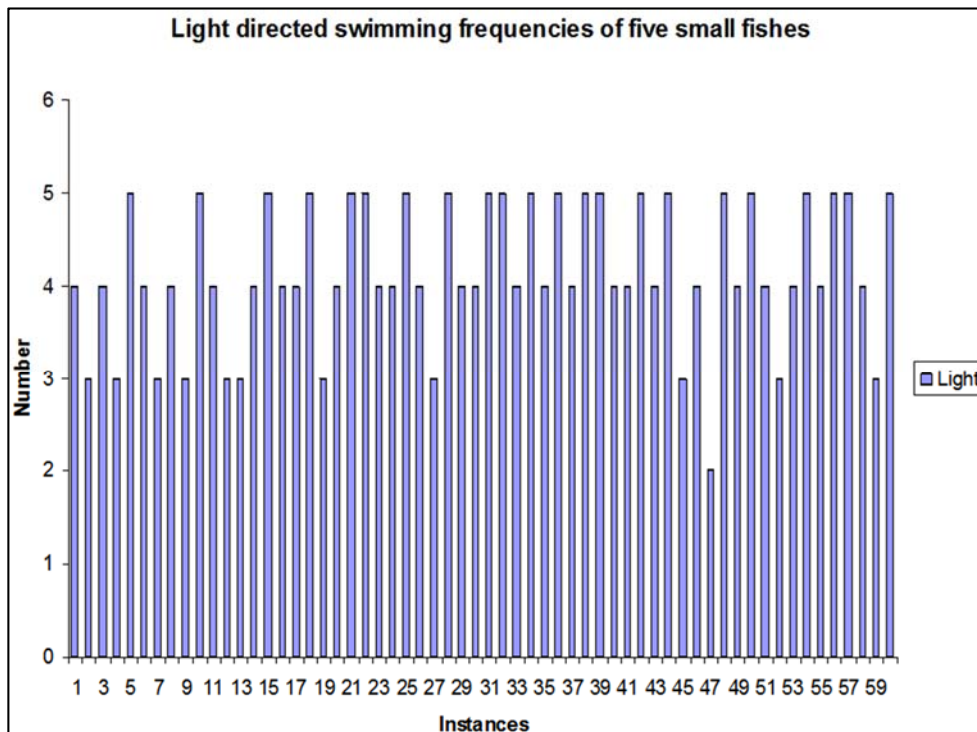


Fig 1: Light directed micro ecological preferences of small fish

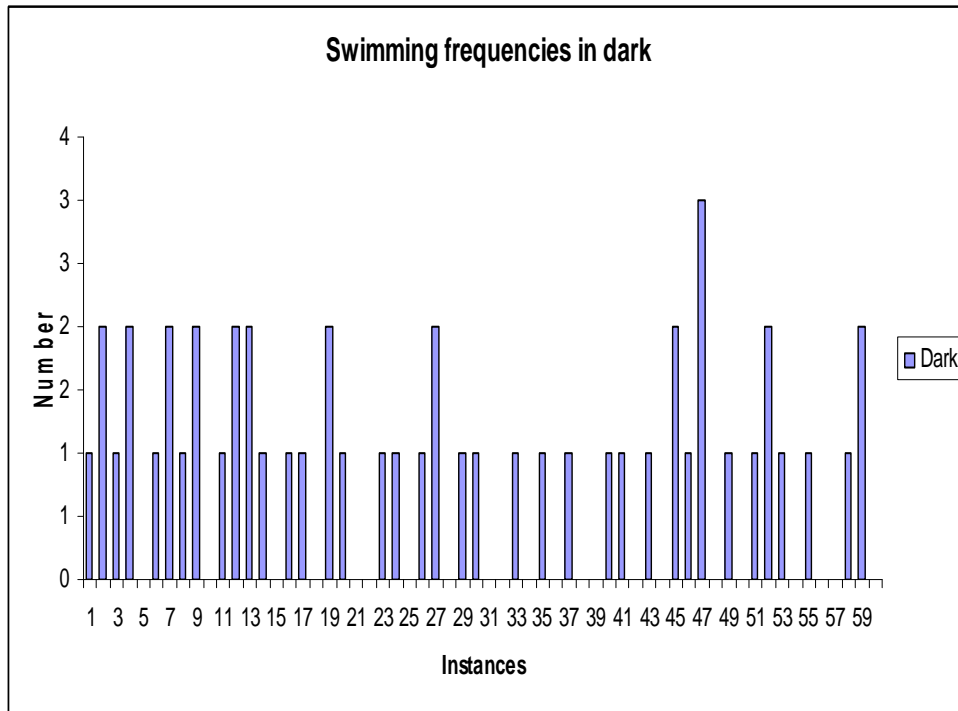


Fig 2: Ecological un-preferences of small fishes in darkness.

Table 2: Ecological condition for both the micro ecological conditions except the differential light intensities.

pH	Neutral
Depth	2 ft
Free CO ₂	Medium
Water temperature (C)	28-30
Hardness	Medium
BOD	Medium

3. Conclusions

Importance of this research is to study the swimming behaviour of fish and their ecological preferences. However, practical

importance remains in fish catch and netting practices, fishermen may prefer in brighter side.

----- HYPOTHESIS TESTS FOR MEANS -----

HEADER DATA FOR: C:SMALLF LABEL:
NUMBER OF CASES: 60 NUMBER OF VARIABLES: 2

DIFFERENCE BETWEEN MEANS: PAIRED OBSERVATIONS

HEADER DATA FOR: C:SMALLF LABEL:
NUMBER OF CASES: 60 NUMBER OF VARIABLES: 2

HYPOTHESIZED DIFF. = .0000
MEAN = 3.3000
STD. DEV. = 1.5547
STD. ERROR = .2007
N = 60 (CASES = 1 TO 60)

T = 16.4420 (D.F. = 59) GROUP 1: Light
GROUP 2: Dark

PROB. = .000E+00

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: C:SMALLF LABEL:
NUMBER OF CASES: 60 NUMBER OF VARIABLES: 2

VARIABLE: 1. Light

	CUMULATIVE...			
====CLASS LIMITS====		FREQUENCY	PERCENT	FREQUENCY	PERCENT
1.00 <	2.00	0	.00	0	.00
2.00 <	3.00	1	1.67	1	1.67
3.00 <	4.00	11	18.33	12	20.00
4.00 <	5.00	26	43.33	38	63.33
5.00 <	6.00	22	36.67	60	100.00
TOTAL		60	100.00		

====CLASS LIMITS====	FREQUENCY
1.00 < 2.00	0
2.00 < 3.00	1 =
3.00 < 4.00	11 =====
4.00 < 5.00	26 =====
5.00 < 6.00	22 =====

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: C:SMALLF LABEL:
 NUMBER OF CASES: 60 NUMBER OF VARIABLES: 2

VARIABLE: 2. Dark

	CUMULATIVE...			
====CLASS LIMITS====		FREQUENCY	PERCENT	FREQUENCY	PERCENT
1.00 <	2.00	26	68.42	26	68.42
2.00 <	3.00	11	28.95	37	97.37
3.00 <	4.00	1	2.63	38	100.00
TOTAL		38	100.00		

22 CASES WERE OUTSIDE SPECIFIED CLASS LIMITS

====CLASS LIMITS====	FREQUENCY
1.00 < 2.00	26 =====
2.00 < 3.00	11 =====
3.00 < 4.00	1 =

----- FREQUENCY DISTRIBUTIONS -----

HEADER DATA FOR: C:SMALLF LABEL:
 NUMBER OF CASES: 60 NUMBER OF VARIABLES: 2

VARIABLE: 2. Dark

	CUMULATIVE...			
====CLASS LIMITS====		FREQUENCY	PERCENT	FREQUENCY	PERCENT
1.00 <	2.00	26	68.42	26	68.42
2.00 <	3.00	11	28.95	37	97.37
3.00 <	4.00	1	2.63	38	100.00
TOTAL		38	100.00		

22 CASES WERE OUTSIDE SPECIFIED CLASS LIMITS

=====CLASS LIMITS=====		FREQUENCY
1.00 <	2.00	26 =====
2.00 <	3.00	11 =====
3.00 <	4.00	1

Although present research communication provide an initial idea, future scope is for fish run and other than small fishes in capture fisheries importance.

4. Acknowledgement

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5. Reference

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