

Statistical Data Analysis (ANOVA) of *Circumonchobothrium shindei* collected from Indapur, Palasdev and Bhigwan backwater sites of Ujani Reservoir, Maharashtra State, India.

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ABSTRACT :

In the present study the Statistical Analysis of *Circumonchobothrium shindei* collected from freshwater fish *Mastacembelus armatus* (Lacepede) from Indapur, Palasdev and Bhigwan backwater sites of Ujani Reservoir, Maharashtra State, India was done. This work is an attempt to bring out the different aspect of anatomy of infection of freshwater fish *Mastacembelus armatus* (Lacepede) by the adult cestode *Circumonchobothrium shindei*. The Analysis is used to examine whether there are any statistically notable variations between the averages of three or more independent groups.

KEYWORDS :

Statistical Analysis, ANOVA, *Circumonchobothriumshindei*, freshwater fish ,*Mastacembelus armatus*, Indapur, Palasdev, Bhigwan, backwater sites, Ujani Reservoir.

I. INTRODUCTION :

ANOVA i.e, Analysis of variance or statistical data analysis is a study of accumulation of statistical models and their related evaluation methods (such as the "variation" among and between groups) used in a sample to analyse the differences among group means. A statistician and evolutionary biologist Ronald Fisher was developed ANOVA . ANOVA, in its easy appearance, gives statistical tests of whether two or more population means are equal, and therefore generalize the *t*-test beyond two means. The analysis of variance can be used as an examination tool to explain observations. The Analysis of variance i.e, ANOVA is used to examine whether

there are any statistically notable variations between the averages of three or more independent groups.(Gupta and Kapoor,1994).

This work is an attempt to bring out the different aspect of anatomy of infection of freshwater fish *Mastacembelus armatus* (Lacepede) by the adult cestode *Circumonchobothrium shindei*. The Analysis is used to examine whether there are any statistically notable variations between the averages of three or more independent groups.

Keeping in view, the importance of these aquarious cestode parasites, present investigation was undertaken to study the Statistical data analysis(ANOVA). Less work has been done on cestodes parasites of fishes from Ujani reservoir, M.S. India. Therefore, the current study, are supposed to be helpful for future research on these piscean cestodes in this region.

II. MATERIAL AND METHOD :

Monthwise cestode parasites belonging to genus *Circumonchobothrium* collected from different locations i.e. Indapur, Palasdev and Bhigwan, backwater sites of Ujani reservoir during January 2015 to December 2016 are recorded.

The statistical data analysis such as Average, Standard Deviation (SD), F ratio, P- value and Degree of freedom (df) are calculated by using following formulae by using SPSS Software (Statistical Package for Social Studies Software):-

Average:-

$$\text{Avg} = \frac{\text{Total sum of all the numbers}}{\text{Number of items in the set}}$$

Standard Deviation (SD):-

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

Where,

S = Standard Deviation

Σ = Sum of

x = Each value in the data set

\bar{X} = Average of all values in the data set

n = Number of value in the data set

F – ratio :-

$$F = \frac{\text{MS bet}^n}{\text{MS within}}$$

Where,

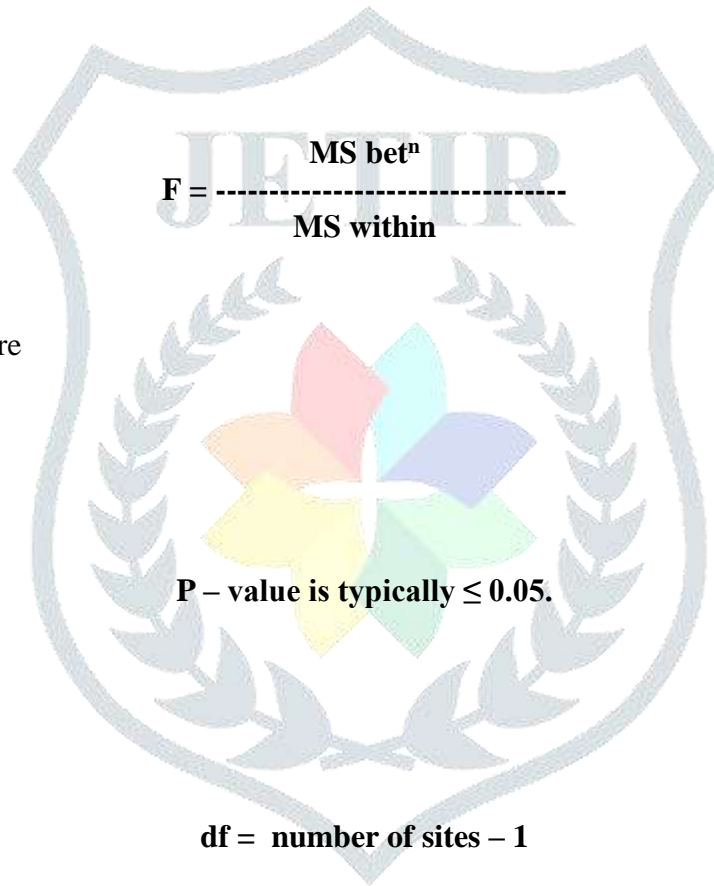
MS = Mean of sum of square

P – value :-

P – value is typically ≤ 0.05 .

Degree of Freedom :-

df = number of sites – 1



III. RESULTS AND DISCUSSION :

Table: Monthwise cestode parasite *Circumonchobothrium* species collected from Indapur, Palasdev and Bhigwan sites.

Location →	Indapur	Palasdev	Bhigwan
Duration ↓			
Janu 15	09	08	11
Febr15	10	09	13
March 15	11	10	15
April 15	14	10	18
May 15	16	11	20
June 15	02	03	05
July 15	00	01	02
August 15	02	01	02
Septe 15	04	01	08
Octo 15	05	03	10
Nove 15	08	07	12
Dece 15	08	09	12
Janu 16	10	08	14
Febr 16	11	08	13
March 16	11	08	14
April 16	12	10	12
May 16	19	17	20
June 16	02	02	18
July 16	00	01	10
August 16	04	04	08
Septe 16	04	04	06
Octo 16	07	06	06
Nove 16	08	06	10
Dece 16	08	09	11
Total	185	156	270

Comparative Average and Standard Deviation of *Circumoncobothrium shindei* at Indapur, Palasdev and Bhigwan sites.

Place	Indapur	Palasdev	Bhigwan
Average	7.71	6.50	11.25
SD	4.96	4.03	4.99

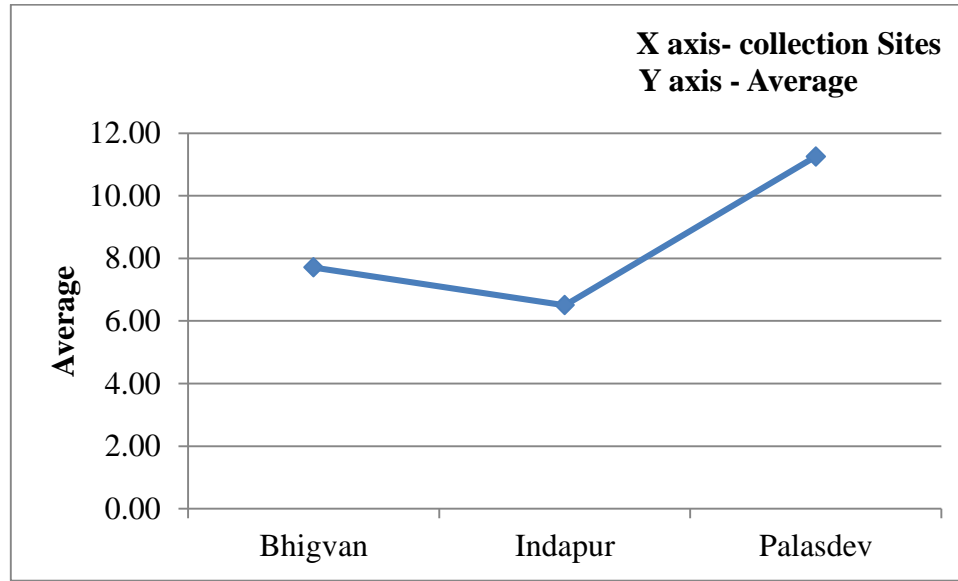
Analysis of Variance (ANOVA) of <i>Circumoncobothrium shindei</i>				
<i>Source</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	F-ratio
Between-treatments	292.52	2	146.26	$F = 6.67$
Within-treatments	1511.45	69	21.90	
Total	1803.98	71		

Where,

SS = Sum of square

MS = Mean of Sum of square

df = Degrees of freedom

Graphical illustration of *Circumoncobothrium shindei* from Indapur, Palasdev and Bhigwan sites.

From Graph, it is revealed that maximum number of *Circumoncobothriumshindei* is found at palasdev site and minimum at Indapur site.

Statistical analysis shows that, statistically significant difference is observed in the occurrence of *Circumoncobothriumshindei* ($p < 0.05$). Maximum number of *Circumoncobothriumshindei* is found at palasdev site and minimum at Indapur site.

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V REFERENCES :

Gupta S. C. and Kapoor V. K. (1994): Fundamentals of Applied Statistics, Sultan Chand and Sons publishers (3): 1- 616.

SPSS Software (2017) : Statistical Package for Social Studies were used for Analysis of Variance (ANOVA).