

Janata Shikshan Sanstha's
Kisan Veer Mahavidyalaya, Wai
Department of Zoology

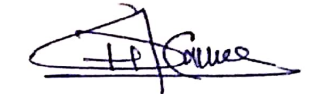
Class: B.Sc. Part-III

Project List 2023-2034

Sr. No.	Roll No.	Name of Student	Name of Projects
1	40	SHINDE AKSHADA GORAKHANATH	Body mass index (B.M.I).
2	48	KAMBLE RONIT SANTOSH	Aquatic insect biodiversity: Importance and their conservation.
3	49	CHIKANE OMKAR SANJAY	Avifauna around college campus.
4	53	KAYANGUDE SAKSHI UMESH	Evaluation of physico-chemical parameters of river Krishna in District Satara, Maharashtra, India.
5	65	WALGE SANIYA JAVED	Impact of pesticide toxicity in aquatic environment.
6	78	BHILARE JYOTI RAJENDRA	Estimation of Haemoglobin.

Dr. Mrs. A. S. Shewale

Co-ordinator



Dr. H. D. Kanase

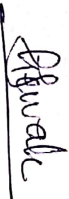
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Kisan Veer Mahavidyalaya
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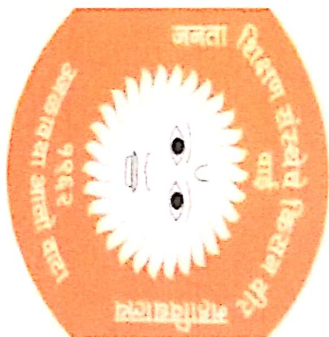


Dr. H. D. Kanase

Head
DEPARTMENT OF ZOOLOGY
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JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI



CERTIFICATE

Department of Zoology

This is to certify that **Miss. Saniya Javed Walge** of **B.Sc. III** has completed the report of the field work on **"Impact of Pesticide Toxicity in Aquatic Environment"** of Department of Zoology subject satisfactory under the guidance of Dr. Mrs. Shewale Ashwini Satish during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.


Guide

Dr. Shewale A.S.


Head,
Department of Zoology

Department of Zoology

Dr. Kanase H. D.


Head,
Department of Zoology

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHA VIDYALAYA, WAI



CERTIFICATE

Department of Zoology

This is to certify that **Miss. Shinde Akshada Gorakhanath** of **B.Sc. III** has completed the report of the field work on **“BODY MASS INDEX”** of Department of Zoology subject satisfactory under the guidance of Dr. Mrs. Shewale Ashwini Satish during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

Dr. Shewale
20/12/24
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Dr. Shewale A.S.

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JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI



CERTIFICATE

Department of Zoology

This is to certify that **Miss. Kayangude Sakshi Umesh of B.Sc. III** has completed the report of the field work on "**EVALUATION OF PHYSICO-CHEMICAL PARAMETERS OF RIVER KRISHNA IN DISTRICTSATARA, MAHARASHTRA, INDIA.**" of Department of Zoology subject satisfactory under the guidance of **Dr. Mrs. Shewale Ashwini Satish** during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

Dr. Shewale A.S.
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Dr. Kanase H.D.
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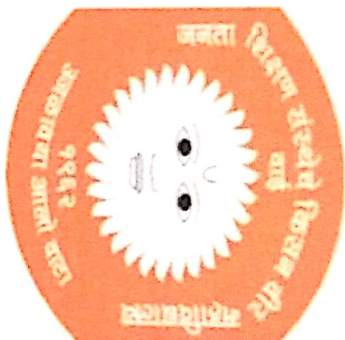
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This is to certify that **Mr. Chikane Omkar Sanjay** of **B.Sc. III** has completed the report of the field work on "**Avifauna** around **college campus**" of Department of Zoology subject satisfactory under the guidance of **Dr. Mrs. Shewale Ashwini Satish** M.Sc., B.Ed., Ph.D. during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

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CERTIFICATE

Department of Zoology

This is to certify that Miss. **Jyoti Rajendra Bhilare** of **B.Sc. III** has completed the report of the field work on **"ESTIMATION OF HAEMOGLOBIN"** of Department of Zoology subject satisfactory under the guidance of **Dr. Mrs. Shewale Ashwini Satish** during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

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Ashwini Satish
11/11/24

H. Kanase
Head,
Department of Zoology
Dr. Kanase H. D.

JANATA SHIKSHAN SANSTHA'S

**KISAN VEER MAHA VIDYALAYA,
WAI**



CERTIFICATE

Department of Zoology

This is to certify that *Mr. Kamble Ronit Santosh* of **B.Sc. III** has completed the report of the field work on **“Aquatic Insect Biodiversity : Importance and their Conservation”** of Department of Zoology subject satisfactory under the guidance of Dr. Mrs. Shewale Ashwini Satish during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

Shewale
Guide

Dr. Shewale A.S.

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Shewale

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Dr. Kanase H. D.

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JANATA SHIKSHAN SANSTHA'S
**KISAN VEER
MAHAVIDHYALAYA, WAI**



TITLE OF PROJECT

**EVALUATION OF PHYSICO-CHEMICAL
PARAMETERS OF RIVER KRISHNA IN DISTRICT
SATARA, MAHARASHTRA, INDIA.**

CLASS – B. Sc. III

Submitted by

Sr. No.	Name of Student	Roll No.	Exam Seat No.
1	Kayangude Sakshi Umesh	53	41837

UNDER THE GUIDANCE OF

Dr. Mrs. Shewale Ashwini Satish

M.Sc., B.Ed., Ph.D.

2023 – 2024



JANATA SHIKSHAN SANSTHA'S
KISAN VEER MAHAVIDYALAYA, WAI



CERTIFICATE

Department of Zoology

This is to certify that **Miss. Kayangude Sakshi Umesh** of **B.Sc. III** has completed the report of the field work on "**EVALUATION OF PHYSICO-CHEMICAL PARAMETERS OF RIVER KRISHNA IN DISTRICTSATARA, MAHARASHTRA, INDIA.**" of Department of Zoology subject satisfactory under the guidance of **Dr. Mrs. Shewale Ashwini Satish** during the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

Dr. Shewale A.S.
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Dr. Shewale A.S.

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4-3-24

H. D. Kanase
Head,

Department of Zoology

Dr. Kanase H. D.



DECLARATION

I hereby declare that the project work entitled
“**EVALUATION OF PHYSICO-CHEMICAL PARAMETERS OF RIVER
KRISHNA IN DISTRICT SATARA, MAHARASHTRA, INDIA.**” is the
original work carried out by me at the Department of Zoology
of Kisan Veer Mahavidyalaya, Wai. This project has not been
carried out previously by any agency/person. So I have selected
this project for field work.

Place: Wai

Date: 04/03/2024

Researcher

Kayanyule Sakshi Umesh



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1

EVALUATION OF PHYSICO-CHEMICAL PARAMETERS
OF RIVER KRISHNA IN DISTRICT SATARA,
MAHARASHTRA, INDIA.

ABSCTACT

Satara district has a rich network of rivers and rivers provide us water for drinking and agricultural purposes. The present investigation deals with the physico-chemical parameters of Krishna river to investigate the quality of river water. The physico-chemical parameters of Krishna river such as pH, temperature, hardness, total dissolved solids, phosphate, nitrate, chloride, alkalinity, DO, CO₂ were observed and analyzed from August 2023 to January 2024 at every month. The physicochemical parameters of river Krishna such as pH, temperature, nitrate, hardness, chloride, TDS are within permissible limit of WHO and parameters such as alkalinity, phosphate, DO, CO₂ are exceeded the recommended limit of WHO.

Keywords: Physico-chemical, Krishna River, Wai, Water Quality.

INTRODUCTION

Rivers provide us water, transportation and a means of disposal whereas it is natural ecosystem most intensely used by humans. The characters of rivers changes from its source to mouth. Each section of a river is unique in several aspects and calls upon for an investigation (Goel and Autade,1995). Satara district (Maharashtra-India) has a rich network of rivers. The main rivers of Satara district are Koyana and Krishna. The Krishna is one of the third largest sacred rivers of southern India. The Krishna river has its origin in Mahabaleshwar. Krishna water is mainly used for drinking and agricultural purpose while it is also used for industrial purposes.

These industries include cement, fertilizers, iron, alcoholic product, vegetable oil, dye-chem. Industries and sugarcane industries which are also situated in the close vicinity of the Krishna river. The waste water from towns and industrial effluents from M.I.D.C's and sugarcane industries get entered in the Krishna river. Krishna river run through Satara tahsil. Remarkable contributions are made in the field of limnology, hydrobiology and environmental quality of lotic aquatic environment by Iyengar (1939), Gonzalves and Joshi (1946), Chacko and Krishnamurthy (1954), Rao (1955), Das and Srivastava (1956), Ahmed (1966), Khan and Quayyam (1966).

MATERIALS AND METHODS

The physico-chemical parameters of river Krishna was studied for 06 months, from August 2023 to January 2024. The water samples of river Krishna at sampling station Wai were collected in the Morning Hours between 9.00 a.m. to 12.00 noon throughout the study period. Two litre polythene (stoppered) cans were used for collection of water samples. The water samples were immediately brought into laboratory for the analysis of physico-chemical parameters. Some of the parameters such as pH and temperature were recorded at time of sample collection by using thermometer and standard pH meter, whereas the other parameters such as Hardness, TDS, Phosphate, Nitrate, Chloride, Alkalinity, DO, CO₂ were estimated by using standard methods described by APHA (1985), Trivedy and Goel (1986), Kodarkar (2006).

OBJECTIVES

1. To assess the existing river quality.
2. To know the physical, chemical and biological status of water resources.
3. To identify the change in water quality parameters in temporary and spatial scale.
4. To obtain reliable and useful data .
5. To assess the impact of human activities on Water quality and its suitability.
6. To determine the quality of water in its natural state .
7. To keep under observation the sources and pathways of pollutants/contamination .

RESULT AND DISCUSSION

Monthly variations in physico-chemical parameters of river Krishna at sampling station Wai from August 2023 to January 2024 were recorded in Table No.1

OBSERVATIONS

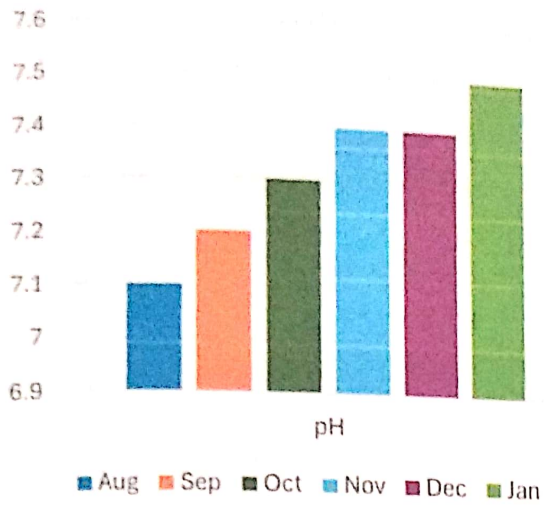
Observations on Physico-chemical parameters of the water in Krishna River.

Table No.1: Monthly variations in Physico-chemical parameters of the Krishna River at sampling station –Wai (Year 2023-24).

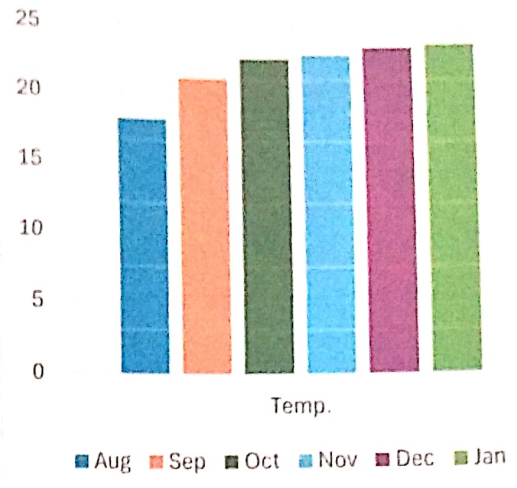
Physico-chemical Parameters	Months						Mean and Std. Deviation
	Aug	Sept	Oct	Nov	Dec	Jan	
pH	7.10	7.20	7.30	7.40	7.40	7.50	7.31 ± 7.46
Temperature (°C)	18.20	21.20	22.70	23.00	23.00	23.80	22.08 ± 24.19
Hardness (ppm)	132.00	185.00	215.00	220.00	240.00	245.00	206.16 ± 248.28
Total Dissolved Solids (gm/lit)	0.20	0.25	0.28	0.33	0.33	0.34	0.2883 ± 0.34
DO ₂ (ppm)	5.80	5.00	5.20	5.90	6.10	6.40	5.733 ± 6.26
CO ₂ (ppm)	9.20	11.00	12.90	15.40	17.80	19.00	13.26 ± 16.68

In present investigation pH of river Krishna was highest 7.50 in the month of Aug and lowest 7.10 in the month of Jan. Medera *et. al.* reported that the pH of natural water ranges from 6.5-8.5. The water temperature of river Krishna ranges 23.00°C (Aug) to 18.20°C (Jan). The fluctuations in water temperature may be due to influence of season

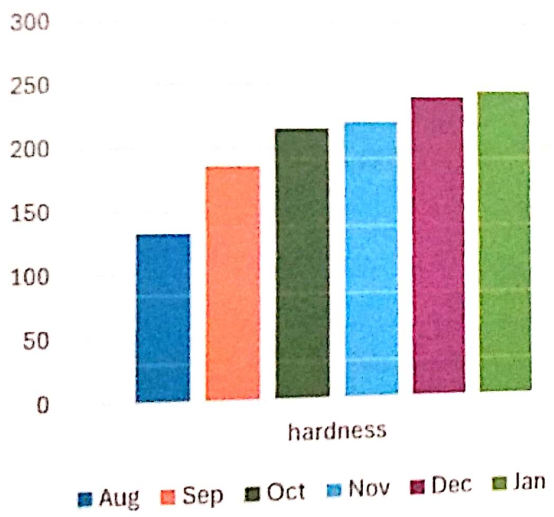
pH



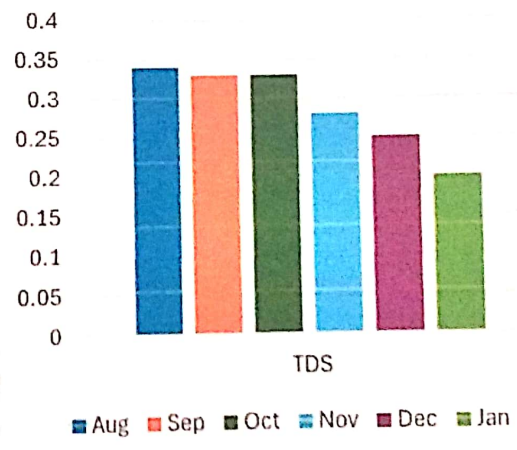
Temperature



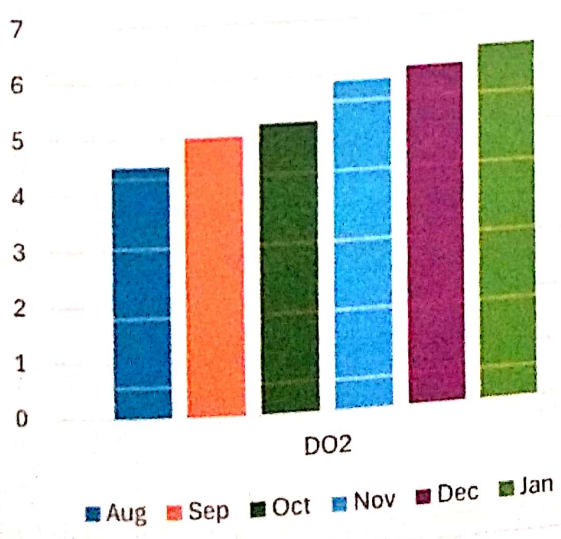
Hardness



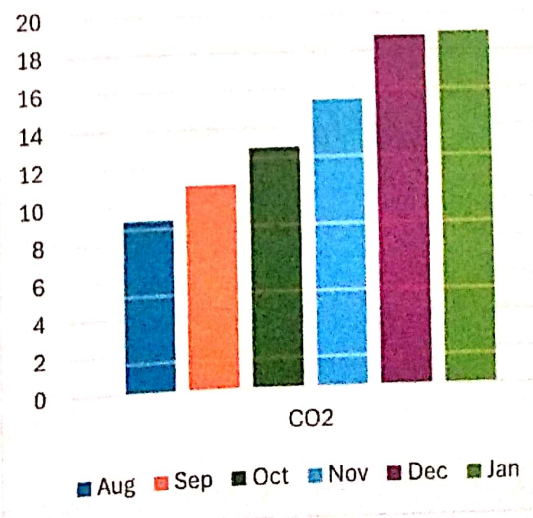
Total Dissolved Solids (TDS)



Dissolved Oxygen (DO2)



Carbondioxide



In present investigation pH of river Krishna was highest 7.50 in the month of Aug and lowest 7.10 in the month of Jan. Medera *et. al.* reported that the pH of natural water ranges from 6.5-8.5. The water temperature of river Krishna ranges 23.00°C (Aug) to 18.20°C (Jan). The fluctuations in water temperature may be due to influence of season and different timing of collection (Jayaraman *et. al.*, 2003). In present study hardness of river Krishna was highest 245.00 mg/l in Aug and lowest 132.00 mg/l in Jan. Total hardness was high during summer than monsoon and winter reported by Hujare (2008). The maximum TDS value of river Krishna was 0.34 gm/l in Aug and minimum 0.20 gm/l in Jan. Increase in value TDS indicated pollution by extraneous sources (Kataria *et. al.* 1996). The phosphate content in river Krishna was found to be 7.40 mg/l in Aug and 5.60 mg/l in Jan. Similar observation has been reported by Kamal *et. al.* (2007) in their study on Mouri river.

The level of nitrate in river Krishna was maximum 21.50 mg/l in Jan and minimum 11.20 mg/l in Aug. The higher limit of chloride in river Krishna was 41.00 mg/l in Aug and 20.20 mg/l in Jan. Higher concentration of chlorides indicates higher degree of organic pollution. (Munawar, 1970). The maximum alkalinity value of river Krishna was recorded in the month of Aug 237.00 mg/l and minimum in the month of November 210.00 mg/l. Das and Pandey (1978) reported that high alkalinity indicates pollution. In this study DO of Krishna river was highest 6.40 mg/l in Aug and lowest 5.00 mg/l in Dec. DO indicate the quality of water and organic pollution in the water body (Wetzel and Likens, 2006). CO₂ of river Krishna was 19.00 mg/l in Aug and 9.20 mg/l in Jan. When the organic matter content of sewage in water was higher then it reduces oxygen content of water (Ragothaman and Trivedy, 2002).

CONCLUSION

The various physico-chemical parameters studied on Krishna river at sampling station Wai shows seasonal variations. The physicochemical parameters of river Krishna such as pH, temperature, nitrate, hardness, chloride, TDS are fall within a permissible limit of WHO and parameters such as alkalinity, phosphate, DO, CO₂ are exceeded the recommended limit of WHO.

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