



**OFFICE, PRINCIPAL GOVERNMENT TULSI COLLEGE, ANUPPUR**

**Affiliated to Awadhesh Pratap Singh University Rewa (MP)**

Registered Under Section 2 (F) & 12 (B) of UGC Act

**E-mail: [hegtcdano@mp.gov.in](mailto:hegtcdano@mp.gov.in)**

**9893076404**



**International Journal of Advanced  
Science and Research**

Indexed Journal, Refereed Journal, Peer Reviewed Journal

ISSN: 2455-4227, Impact Factor: RJIF 5.12

*Publication Certificate*

This certificate confirms that "Shaily Agrawal" has published article titled "Ecological survey on chaetophorales of two ponds (Old & New) at Shahdol (M.P.), India".

Details of Published Article as follow:

Volume : 5  
Issue : 2  
Year : 2020  
Page Number : 01-03  
Certificate No. : 5-3-15  
Date : 25-03-2020



Regards  
International Journal of Advanced Science and Research  
[www.allsciencejournal.com](http://www.allsciencejournal.com)  
Email: [ijasr.research@gmail.com](mailto:ijasr.research@gmail.com)  
Ph: 9999688931

**PRINCIPAL**  
Govt. Tulsi College Anuppur  
Distt. Anuppur (M.P.)



OFFICE, PRINCIPAL GOVERNMENT TULSI COLLEGE, ANUPPUR

Affiliated to Awadhesh Pratap Singh University Rewa (MP)

Registered Under Section 2 (F) & 12 (B) of UGC Act

E-mail: [hegtcmano@mp.gov.in](mailto:hegtcmano@mp.gov.in)

9893076404



## European Journal of Biotechnology and Bioscience

Indexed Journal, Refereed Journal, Peer Reviewed Journal

ISSN: 2321-9122, Impact Factor: RJIF 5.44

### *Publication Certificate*

This certificate confirms that "Shaily Agrawal" has published article titled "Studies on physicochemical status of two ponds at shahdol district (M.P.)".

Details of Published Article as follow:

Volume : 8  
Issue : 2  
Year : 2020  
Page Number : 35-38  
Certificate No. : 8-3-22  
Date : 21-02-2020



Regards  
European Journal of Biotechnology and Bioscience  
[www.biosciencejournals.com](http://www.biosciencejournals.com)  
Email: [bio.manuscript@gmail.com](mailto:bio.manuscript@gmail.com)  
Ph.: 9999888931

PRINCIPAL  
Govt. Tulsi College Anuppur  
Distt. Anuppur (M.P.)



Studies on physicochemical status of two ponds at shahdol district (M.P.)

Shaily Agrawal

Research Scholar (Botany) A.P.S. University, Rewa, Madhya Pradesh, India

Abstract

Physicochemical characteristics of two ponds at Shahdol were studied for a period of one year in 2018-19. The investigation was focused on the determination of water quality parameters such as temperature, pH, DO, alkalinity, nitrite, nitrate and other factors showing that the water quality of these ponds. However it was negatively correlated with phosphate and ammonical nitrogen. Maximum concentrations of reactive silica was noted during rainy Season in both the water bodies.

Keywords: Physico-chemical; ponds, water quality, Shahdol district.

1. Introduction

An ecosystem has two major components, abiotic and biotic which are interdependent. The chief abiotic factors are light, temperature pH, DO and basic inorganic and organic compounds. The biotic factors comprise flora and fauna along with aquatic microbes. Since, both these components mutually influence and interact with each other, a thorough understanding of an ecosystem is not possible without analysing these factors.

In India, several studies have been made to understand the physicochemical properties of lakes, reservoirs and ponds (Jain *et al.* 1996, Mohanraj *et al.* 2000, Sah *et al.* 2000)<sup>[1-3]</sup>. However, much information is needed especially with reference to specific water bodies of small dimensions. George (1961, 1962)<sup>[4-5]</sup> has studied the physicochemical characteristics of shallow ponds at Delhi. In the present investigation an attempt has been made to assess the variation in physico-chemical parameters of two ponds (Old & New) at Shahdol district (M.P.).

Materials and methods

The Shahdol district lies in the north-east part of Madhya Pradesh extending from 29°39'28" and 24°16'13" North latitude and from 80°32'56" to 82°12'21" East longitude approximately. The region lies in the heart of the country. The district is surrounded by Sone river and Rewa district in North, Mandla in South, Surguja and Bilaspur in East and Umaria and Katni in the West. It is situated 489 meter above the sea surface.

Monthly collections of water samples were made between 9.0 A.M. and 11.0 A.M. during the period from July 2018 to January 2019. Detailed ecological observations were made on these ponds from the time of accumulation of rain water i.e., from July to the period till the fishes were taken out from the ponds. The physicochemical analysis of the water samples was done as per-standard procedures given by APHA (1998)<sup>[6]</sup>.

Results and discussion

The physicochemical parameters and their monthly fluctuations are presented in Tables 1 and 2.

Table 1: Physicochemical analysis of water samples of New pond.

S.No.	Parameters	Summer season	Rainy season	Winter season
1.	Water temperature (°C)	24.58	26.74	19.56
2.	Secchi transparency (cm.)	30.60	35.06	74.08
3.	Conductivity (µmhos/cm.)	391.61	178.48	250.30
4.	TDS (mg/l)	134.64	125.86	114.26
5.	pH	8.12	7.70	8.17
6.	Free CO <sub>2</sub> (Mg/l)	1.08	1.20	1.77
7.	Total CO <sub>2</sub> (Mg/l)	114.34	106.31	99.00
8.	Total Alkalinity (Mg/L)	143.08	114.10	137.29
9.	Dissolved O <sub>2</sub> (Mg/L)	7.65	7.55	8.67
10.	Chloride (Mg/l)	50.80	31.52	35.08
11.	Total Hardness (Mg/l)	194.15	120.64	161.22
12.	Sodium content (Mg/l)	7.38	4.71	5.37
13.	Potassium (Mg/l)	2.04	1.39	1.81
14.	Nitrates (Mg/l)	0.083	0.033	0.041
15.	Phosphate (Mg/l)	0.04	0.05	0.03
16.	Sulphate (Mg/l)	1.60	0.49	1.32
17.	Reactive silica (Mg/l)	2.16	2.55	2.27

PRINCIPAL  
Govt. Tulsi College Anuppur  
Distt. Anuppur (M.P.) 35



Science and Research
Received: 24-02-2020; Accepted: 12-03-2020; Published: 25-03-2020
www.allsciencejournal.com
Volume 5; Issue 2; 2020; Page No. 01-03



Ecological survey on chaetophorales of two ponds (Old & New) at Shahdol (M.P.), India

Shaily Agrawal

Research Scholar (Botany) A.P.S. University, Rewa, Madhya Pradesh, India

Abstract
Physico chemical studies of two ponds (Old & New) water at Shahdol showed that Chaetophorales were nearly absent in pure water. Stigeoclonium nanum flourished well solely in impure water and appeared as biological indicator of pollution. Stigeoclonium farctum and Pseudulvella americana var. indica were found in each impure and fewer impure ponds indicating they were pollution tolerant. Their variety declined within the impure pool. This prototist happens profusely in fresh water being connected to some stratum ideally to submerged plant elements exhibiting a jellylike macroscopic growth

Keywords: ecological, chaetophorales, polluted water, fresh water ponds

Introduction
Chaetophorean algae are heterotrichous in habit frequently bearing terminal or lateral hair-like projections. In their growth both the erect and prostrate portions of the plant are well developed (e.g., Stigeoclonium) or with an erect portion and feebly developed prostrate portion.

They are with thin to gelatinous walls, usually uninucleate bearing a single more or less dissected plate-like or ring-like chaetophore with pyrenoids. Asexual reproduction is by yellowish or quadriflagellate zoospores and sexual reproduction isogamous.

Studies on the ecology of Chaetophorales inhabiting Indian waters in aquatic surroundings are scanty. (Lund, 1965; Prasad, 1981; Ramaswamy and Somasekhar, 1982; Prasad and Singh, 1982; and Sahai et al., 1985) [1, 2]. An attempt was made to study the ecology of all the members of Chaetophorales besides their morphology and taxonomy and the observations are reported in the present study.

Materials and Methods

Shahdol district lies in the north-east part of Madhya Pradesh extending from 29°39'28" and 24°16'13" North latitude and from 80°32'56" to 82°12'21" East longitude longitudinally. The region lies in the heart of the country. Shahdol district is surrounded by Sone river and Rewa district in the South, Surguja and Bilaspur in East and Mandla in the West. It is situated 489 meter above sea level.

The presence of Chaetophorales members in two fresh water ponds of Shahdol is studied. Old pond is more polluted than new pond with reference to their ecology. The ponds differ in their water chemistry, because they attain different

types of effluents pond one received rain water, sewage canal water and run off from agricultural fields. New Pond received rain water, domestic effluent and discharge from small industries.

Water and algal samples were collected at monthly intervals from ponds. Water sample were kept in sterilised plastic containers and B.O.D. bottles. Chara, Hydrilla, Ceratophyllum and grasses were picked for collection of Chaetophorales. Water was analysed for Water temperature, Secchi transparency, Conductivity, TDS, pH, Free CO2, Total CO2, Total Alkalinity, Dissolved O2, Chloride, Total Hardness, Sodium content, Potassium, Nitrates, Phosphate, Sulphate and Reactive silica. Identification was done mainly according to Nurul Islam (1963) [6], APHA (1964) [7], Tupa (1974) [8], Cox and Bold (1974) [9].

Results and Discussion

20 taxa of Chaetophorales belonging to 8 genera were collected during the present study (table 1). These were Aphanochaete, Chaetophora, Chaetosphaeridium, Coleochaete, Epibolium, Leptosiropsis, Pseudulvella and Stigeoclonium. In Old pond, which was more polluted blue green algae Merismopedia and Microcystis were dominant. In this pond, 3 green algae Stigeoclonium nanum, Stigeoclonium farctum and Pseudulvella americana var. indica were able to grow during September to November. Stigeoclonium nanum was collected during May to June. Comparison of physico chemical values of ponds showed that in New pond, calcium, magnesium, carbonates, chlorides, total alkalinity and total organic matter were significantly high, but dissolved oxygen was quite low (table 2).

Table 1: Comparison of Chaetophorean population at Old & New Ponds.

Table with 4 columns: S. No., Chaetophorean taxa, Old Pond, New Pond. Rows list 6 taxa: 1. Aphanochaete magna (P, A), 2. Aphanochaete repens (P, A), 3. Chaetophaeridium pringsheimii (P, A), 4. Chaetophora attenuata (P, A), 5. Chaetophora elegans (P, A), 6. Chaetophora pisiformis var. hamata (P, A).

PRINCIPAL
Govt. Tulsi College Anuppur
Distt. Anuppur (M.P.)