Variation in the Plankton Abundance in the rain water at SGNP(Boy's)I/College, Dehradun Uttarakhand.

Author's name: Dr.Vandana Khanduri

Lect. Biology

SGNP Boy's Inter College

vandanakhanduri392@gmail.com

ABSTRACT

Microorganisms were studied in the premises of Guru Nanak Vidyalaya in rainwater during the rainy season. We found many microorganisms in the rainwater collected.

Plankton are a collection of tiny organisms that live in a water, for eg.pond, river etc.

It is a free floting organisms, it includes plant and animal that float along at the mercy of the sea's tides and currents.

It comes from the Greek meaning "drifter" or "wanderer." There are two types of plankton, free floting plants-called phytoplankton, and weak-swimming animals--called zooplankton.

Key-word: SGNP (Boy's)I/C, microorganism, plankton, phytoplankton, zooplankton etc.

INTRODUCTION

Rainwater microorganisms are defined as microorganisms living in the environment according to their habitate. A microorganism (or microorganism) is any microscopic living organism or virus that is so small that it cannot be seen by the human eye without magnification. Microorganisms are very diverse.

They can be single-celled or multicellular and include bacteria, archaea, viruses and most protozoa, as well as some fungi, algae and animals, such as rotifers and copepods. Many macroscopic animals and plants have microjuvenile stages. Some microbiologists also classify viruses as microorganisms, but others consider them inanimate.

Shri Guru Nanak Boy's Inter College in Dehradun, Uttarakhand is located near the bell tower. The microorganisms are studied in the collected rainwater in the premises. Many microorganisms are found in the collected rainwater.

Every year during the rainy season, rainwater accumulates in places in the school premises. When this water collected I and the kids in my school were keen to see these microorganisms because I have also been a researcher, so kids keep arousing the passion of researcher through experiments.

AIMS OF THE STUDY

The main objective of testing the collected rainwater was to create an interest in science and research among the children, as well as to inspire them to learn about the microbial or flooding world, so that the children would have knowledge of their ecosystem.

Planktons play a very important role in the aquatic ecosystem, they serve as food for water organisms. The phytoplankton traps solar energy and prepare food for the ecosystem by photosynthesis.

The objective of study area as follow:

To study the variety of planktons in the study area.

To study the seasonal variation in plankton diversity.

Study area

Sri Guru Nanak Boy's Inter College is located in Chukkhuwala near Ghantaghar in Dehradun Uttarakhand.

School was established in 1936. It is managed by the Pvt. Aided. It is located in Urban area, RAIPUR block of DEHRADUN district of Uttarakhand.

MATERIAL AND METHODS

Method of Collection

Dropper

The students of the school and I took the rainwater collected from the school premises as samples.Collection of sample, using dropper.

Method of preservation

With the help of a dropper, we took a sample of rainwater and first preserved it in 5% formalin in the biology lab of SGNP Boy's Inter College, so that we could study the sample properly.

RESULT

In the month of July to August 2022 and 2023, many microorganisms were studied in the school premises through microscope in which we saw many microorganisms. Among these microorganisms, we saw plants and animals floating in rainwater under a microscope Some of which are examples that we identified: *Amoeba, Paramecium, Euglina, larval stage of insect, Spirogyra , Centropyxis, Cosmarium etc.*

DISCUSSION

In 2022 and 2023, It was observed that fewer Plankton species were found in 2023 than in 2022.

In 2022, more species of Cosmarium, Euglena and Spirogyra were observed.

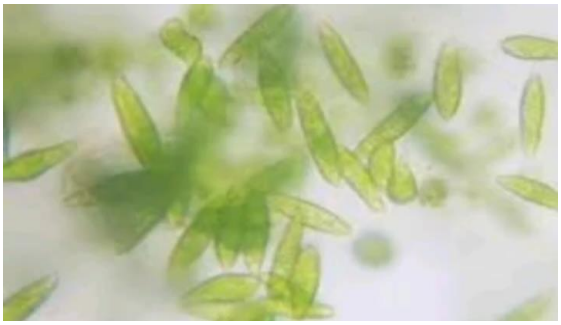
Table: 1.

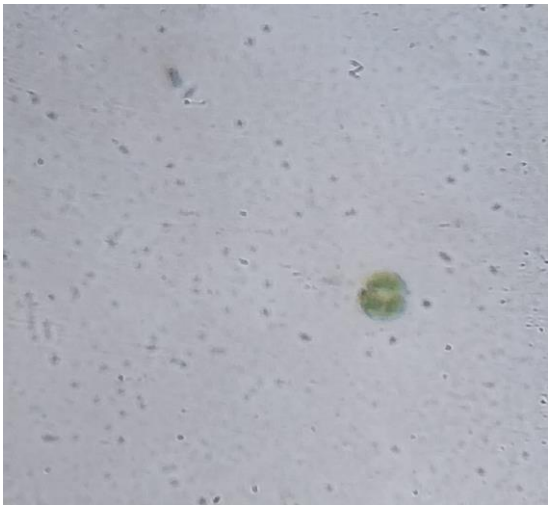
variation of plankton diversity in rain water-2022 & 2023

SN.	Taxon	Taxon-2022	Taxon-2023
1	Spirogyra	dominant	dominant
2	Cosmarium	dominant	recessive
3	Euglena	dominant	recessive
4	Amoeba	dominant	recessive
5	Paramesium	dominant	recessive
6	Larvae stage	dominant	dominant
7	Centropyxis	dominant	recessive

Pictures of Research- work

picture shot by mobile





CONCLUSION

The aquatic environment is an area that is controlled by changes in factors such as light, heat, humidity and pollution of various wastes in the water body. The results of this study indicated the plankton status, after which the level of rich nutrient and zooplankton abundance in stored rainwater during the rainy season increased in 2022, but decreased in 2023.

The study provides the role of phytoplankton and zooplanktons as bioindicators in detecting the health and trophic status of aquatic bodies. Some species withstand the extreme conditions and survive well in the polluted environment indicating high tolerance level while sensitive species were absent representing their low tolerance.

ACKNOWLEDGEMENT

Special thanks and gratitude to Hon'ble Jasbir Marwah Ji, Manager of Shri Guru Nanak Boy's Inter College and Principal Sardar Avatar Singh Chawla Ji for encouraging the children and me in the school premises and allowing us to do the experimental work.

REFERENCES

Karmakar S (2021) Phytoplankton and Zooplankton Diversity and Water Quality Assessment of Three Ponds in Hooghly District (West Bengal,India). Research Square 1-15.

Jonnalagadda SB, Mhere G (2001) Water quality of the Odzi River in the eastern highlands of Zimbabwe. Water Res 35: 2371-2376.

Ravikumar P, Venkatesharaju K, Prakash KL, Somashekar RK (2011) Geochemistry of groundwater and groundwater prospects evaluation, Anekal Taluk, Bangalore urban district, Karnataka, India. Environ Monit Assess 179: 93-112.

Ajma HI, Anis AMA (2016). Zooplankton Composition and Abundance as Indicators of Eutrophication in Two Small Man-made Lakes. Trop Life Sci Res 27: 31-38.

Dhar J, Baghel RS, Sharma AK (2012) Role of instant nutrient replenishment on plankton dynamics with diffusion in a closed system: a pattern formation. Applied Mathematics and Computation 218: 8925-8936.

Elayaraj B, Selvaraju M (2015) Dynamics of micro algae in relation to water quality parameters of Pasupatheswarar Temple Pond, Annamalai Nagar, Tamil Nadu. International Letter of Natural Sciences 46: 1-7.

Malik N, Biswas AK, Raju CB (2013) Plankton as an indicator of heavy metal pollution in a freshwater reservoir of Madhya Pradesh, India. Bull Environ Contam Toxicol 90: 725-729.

Hulyal SB, Kaliwal BB (2008) Water quality assessment of Almatti Reservoir of Bijapur (Karnataka State, India) with special reference to zooplankton. Environ Monit Assess 139: 299-306.

Kudari VA, Kanamadi RD (2008) Impact of changed trophic status on the zooplankton composition in six water bodies of Dharwad district, Karnataka state (South India). Environ Monit Assess 144: 301-313.

Singh D, Deepak PK (2002) Water quality of Maheshra lake in Gorakhpur district. Malaysian Applied Biology 31: 27-30.

APHA (1998) Standard methods for the examination of water and waste. 20th Editions. American Public Health Association, Washington D. C.