

Govt. Degree College, Hayathnagar, R.R. Dist, TS.



Field trip report of

PASUMAMULA LAKE

04-01-2020

Organized by

Department of Zoology, GDC, Hayathnagar

Submitted to

Department of Zoology

for Zoology Paper-VIII [Practical]

[Aquatic Biology]

by

Class: B.Sc, BZC III yr students

Guide Teachers 1. B. Srinivas Reddy, Asst.Prof of Zoology

2. Dr. N. Rajkumar, Asst.Prof of Zoology

STUDENTS ATTENDED THE FIELD TRIP

S.No	Roll No	Name of the Student
1	114217445508	PADAKANTI SRINU
2	203717445502	BIJILI MANEESHA
3	203717445505	DEEPIKA NAMILLAPALLI
4	203717445509	JAKKULA RAMADEVI
5	203717445510	KARIMELA DEEPA
6	203717445514	MEDAPATI SUSMITHA
7	203717445516	MIDTHAPALLY SUJATHA
8	203717445519	NOOKALA AKHIL
9	203717445521	PANNALA SWATHI
10	203717445522	P. SUMANTH KUMAR
11	203717445523	P. KRISHNAVENI
12	203717445524	PUPPALA SWAMYDAS
13	203717445527	THEEGALA ASHWINI
14	203717445529	YERRA ANIL

OBJECTIVES OF THIS FIELD TRIP

[ఈ క్షేత్ర పర్యటన ఉద్దేశ్యాలు]

1. To study the topography of the Pasumamula lake.
2. To know the structure of a fresh water ecosystem.
3. To understand the relationship of abiotic and biotic factors in the lake ecosystem.
4. To study the water temperature and its pH levels.
5. To study the trophic status of the lake.
6. To study the transparency of the water.
7. To study the chemical parameters of the water.
8. To study the producers and consumers of the lake.
9. To study the Phyto and Zooplanktons of the lake.
10. To report the trophic status of the lake.
11. To suggest the mitigating measures for eutrophication.
12. To create awareness about lake conservation.

Methodology adopted for Collection and Assessment of Physico-chemical and biological parameters of Pasumamula Lake:

- Water samples were collected at a depth of 50 cm from the surface from different sites of the Pasumamula lake using one litre polyethylene cans.
- Temperature was measured employing Mercury Thermometer with temperature measuring ranges from zero to 50 degree Celsius.
- pH of the water samples was measured using pH strips.
- Transparency of the water was assessed using Secchi disc.
- Carbonates and Bicarbonates of the water samples were measured by Titrimetric method using phenolphthalein and Methyl Orange indicators.
- Nitrates were estimated by Brucine Method.
- Sulphates and Phosphates were estimated by Colorimetric method.

Phyto and Zooplankton samples were collected by using Nylon Plankton net # 65 and were identified under Compound microscope.

SOME FACTS ABOUT PASUMAMULA LAKE

[పసుమాముల చెరువు గురించి కొన్ని విషయాలు]



1. It is a secret Lake in the heart of Hyderabad.
2. Located in Pasumamula village of Hayathnagar mandal of Ranga Reddy district in Telangana state.
3. It is a paradise for birding.
4. Earlier it was a non-polluted fresh water lake.
5. Now, it is highly eutrophicated.
6. The eutrophication is chiefly due to domestic sewage from neighbourhood areas.
7. Massive fish deaths are very common in this lake.
8. Water colour looks green and unfit for human needs.
9. Farmers are cultivating some crops utilizing this water.
10. This may lead to the biomagnification of pollutants in fish, vegetables and other crops.
11. Cattle often falling ill by drinking this water.

PRODUCERS IDENTIFIED IN THE LAKE

[పసుమాముల చెరువులోగుర్తించబడిన ఉత్పత్తిదారులు]



1. *Typha* [cattail]
2. *Pistia* [Water lettuce]
3. *Eichhornia* [Water hyacinth]
4. *Wolffia* [Duck weed]
5. *Nymphaea* [Lilly]
6. *Ipomea* [water spinach]
7. *Prosopis juliflora*
8. *Phoenix sylvestris*
9. *Pongamia pinnata*
10. *Acacia nilotica*
11. *Spirogyra*

CONSUMERS IDENTIFIED IN THE LAKE

[పసుమాముల చెరువులోగుర్తించబడిన వినియోగదారులు]



Tachybaptus [Little Grebe]



Ardeola [Pond Heron]

1. *Catla catla* [Carp]
2. *Labeo rohita* [Rohu]
3. *Cirrhina mrigala* [Mrigal]
4. *Channa striatus* [Snake headed fish]
5. *Channa gachua* [Snake headed fish]
6. *Clarius batrachus* [Cat fish]
7. *Rana tigrina* [Frog]
8. *Calotes* [Garden Lizard]
9. *Egretta Egretta* [Cattle egret]
10. *Tachybaptus* [Little greb]
11. *Ardeola* [Indian pond heron]
12. *Tropidonotus* [Water snake]
13. *Hirudinaria* [Leech]
14. *Palaemon* [Prawn]
15. *Limnea* [Great pond snail]
16. *Pila* [Apple snail]

TEMPERATURE AND pH STUDIES

[నీటి ఉష్ణోగ్రత మరియు పి. హెచ్ ల అధ్యయనం]



Water Temperature = 28°C

pH = 6.5

SECCHI DISC- TRANSPARENCY STUDY

[సెచి డిస్క్ ద్వారా నీటి పారగమ్యతను నిర్ధారించుట]



Transparency = 10 Cm

COLLECTION & STUDY OF ZOOPLANKTON

[జంతు స్థవకాల అధ్యయనం]



Zooplankton identified in Pasumamula Lake:

1. *Cyclops*
2. *Daphnia*
3. *Mysis*
4. *Philodina*
5. *Brachionus*
6. *Hydra*
7. *Keratella*
8. *Brachinus*
9. *Nauplius*

WATER SAMPLE COLLECTION

[నీటి నమూనాల సేకరణ]



Water Quality Parameters Observed:

1. Carbonates 2350 ppm
2. Bicarbonates 800 ppm
3. Nitrates 500 ppm
4. Phosphates 650 ppm
5. Sulphates 350 ppm

EUTROPHICATION IN PASUMAMULA LAKE

[పసుమాముల చెరువులో యూట్రోఫికేషన్ సమస్య]

Eutrophication or hypertrophication, is when a body of water becomes overly enriched with minerals and nutrients which induce excessive growth of algae. This process may result in oxygen depletion of the water body. One example is an "algal bloom" or great increase of phytoplankton in a water body as a response to increased levels of nutrients. Eutrophication is often induced by the discharge of nitrate or phosphate-containing detergents, fertilizers, or sewage into an aquatic system.

Causes of Eutrophication in Pasumamula Lake:

1. Domestic sewage from Hayathnagar
2. Domestic sewage from Bandlaguda
3. Domestic sewage from Kuntloor
4. Domestic sewage from Pasumamula
5. Severe encroachment of the Lake
6. Poor drainage system.
7. Scanty rainfall in catchment area
8. Lack of sewage treatment
9. Indiscriminate usage of detergents
10. Lack of environmental awareness in people.

CONCLUSIONS [ముగింపు]

Policy concerning the prevention and reduction of eutrophication can be categorized into three sectors: Technologies, Public participation and Cooperation. Non-point sources of pollution are the primary contributors to eutrophication, and their effects can be easily minimized through common agricultural practices. Reducing the amount of pollutants that reach the lake can be achieved through the protection of its forest cover, reducing the amount of erosion leaching into it. Also, through the efficient, controlled use of land using sustainable agricultural practices to minimize land degradation, the amount of soil erosion and nitrogen-based fertilizers reaching the lake can be reduced. Waste disposal technology constitutes another factor in eutrophication prevention. Because a major contributor to the nonpoint source nutrient loading of water bodies is untreated domestic sewage, it is necessary to provide treatment facilities to highly urbanized areas. The technology for safe and effective reuse of waste water from domestic and industrial sources should be a primary concern.

The role of the public is a major factor for the effective prevention of eutrophication. In order for a policy to have any effect, the public must be aware of their contribution to the problem, and ways in which they can reduce their effects. Programs instituted to promote participation in the recycling and elimination of wastes, as well as sensitization on the issue of rational water use are necessary to protect the water quality within the urbanized areas.

References:

1. Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 20th Edn., Washington D.C.
2. Methods in Environmental Analysis- Water, Soil & Air. Agrobios India, 2nd Edn., 2007.