Cover Page

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A PRELIMINARY STUDY ON THE ALGAL DIVERSITY OF LEBHOR POND NEAR TALOD TOWN

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Abstract

Freshwater algae are found growing under water in streams, ponds and rivers. Algae are aquatic, simple, plant-like autotrophs. Many are single-celled, while others grow in filaments. Talod taluka of Sabarkantha district in Gujarat is well known for large number of ponds. The information about algal flora is not completed surrounding Talod Town and it is not proper studied by any researchers. This study has been undertaken to investigated the diversity of algae in freshwater pond and physico-chemical parameters of Lebhor pond located near Talod Town in Talod taluka of Sabarkantha district in North Gujarat. Sample collection was done in month of December, 2020. Pond under investigation showed rich algal diversity and the water parameters showed in slight variation. The importance of algae that produce oxygen, Cyanobacteria are able to fix nitrogen from the atmosphere, help to 'purify' water and the basis of most aquatic food webs. The present study revealed 34 algal taxa belonging to different four classes such as blue green algae (Myxophyceae or Cyanophyceae-06 genera), green algae (Chlorophyceae-14 genera), stoneworts algae (Charophyceae-02 genera) and diatoms (Bacillariophyceae-12 genera).

Keywords: Pond, Algal Diversity, Physico-Chemical Parameters.

Introduction

"Water is Essence, Beneficial, Medicinal and the elixir of life and abounds on earth!" The distribution, density and diversity of algae in any aquatic ecosystem are the result or interactions of various factors influencing the system. Algae cannot survive without water. Though water is required of algal life have accepted in its environment and habitat. The distribution of algae at different level depends upon light and turbidity. Blooms generally develop on the surface of water and they can develop in any season. This indicates that any physico-chemical factors may become prime one to develop blooms on water surface. Algae are highly diverse group of organisms that have important functions in aquatic habitat. They are an evolutionary diverse group of photo-autotrophs, with chlorophyll-a. Desmids are grows abundantly in water habitat. Ponds are small fresh water ecosystems. Lebhor pond was selected for the present study. According to Welch (1952) "ponds are very shallow bodies of quite standing water in which extensive occupancy by higher aquatic plant is a common characteristic". This study was an attempt to know the algal diversity of such an important aquatic ecosystem namely Lebhor pond near Talod Town. The micro algal population was enormous in ponds. Algae, the principle primary producers, are photosynthetic thallophytes, usually microscopic, unicellular and multi cellular organisms which perform the maximum quantum of photosynthetic activity than any other living organisms in this world. Many forms spread throughout the water body and cause turbidity of water and algal blooms. The appearance of algae is most probably seasonal. The aquatic life may vary according to water parameters. Those properties can be physical, chemical or biological. Occasionally this pond was polluted by discharge of domestic sewage, industrial effluents, agricultural run-off etc.

Study Area

The study on algal diversity of fresh water bodies was not proper conducted in the North Gujarat. The Sabarkantha district is located the North Eastern part of Gujarat State. The total area of district is 7,390 sq.km. and geographically lies between 23.03 to 24.42 Northen latitudes and 71.03 to 73.39 Eastern longitudes. The study site location is Lebhor pond in Mahiyal village in Talod taluka of Sabarkantha district. The Lebhor pond geographically lies between N23 19'53.76" to N23 20'19.68" Northen latitudes and E72 57'14.4" to E72 56'48.48" Eastern latitudes.

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Figure No-1: Study area showing surveyed Lebhor pond near Talod Town.

Methodology

Algal collection analysis: Freshwater algae samples were collected in airtight bottles and polythene bags in the Month of December 2020. After collecting the samples were brought to the laboratory and observed under microscope. The remaining samples were further preserved in 4% formaldehyde solution. Identification of algae done with the help of authors, Dr. Kalipada biswas, Edward G. Bellinger and David C. Sigee(2010). Classification system followed by Fritsch (1961).

Analysis of Physico-Chemical Parameters: The water sample was collected from Lebhor lake. Two litters of water were collected for further study of physico-chemical parameters. The sample was brought to the laboratory for analysis of various physico-chemical analysis and then few important physico-chemical parameters were studied. Parameters like, pH at 25ºc, Total dissolved solid (TDS) in mg/l, Electrical conductivity (EC) in µS/cm, Turbidlity in NTU, Sulphate in mg/l, Nitrate in mg/l and Fluoride in mg/l were checked by Winkler's method. Total hardness in mg/l, Calcium in mg/l, Magnesium in mg/l, Chloride mg/l and Total Alkalinity mg/l were measured and checked by Titration standard procedure.

Results and discussion

Table-1: Diversity of Algal genera in fresh water of Lebhor pond.

Class:	Family:	Genus:
Myxophyceae	Oscillatoriaceae	Oscillatoria sp.
		Lyngbya sp.
		Spirulina sp.
	Nostocaceae	Anabaena sp.
	Microcoleaceae	Microcoleus sp.
	Choococcaceae	Choococcus sp.
Chlorophyceae	Zygnemataceae	Spiyrogyra sp.
		Zygnema sp.
	Oedogoniaceae	Oedogonium sp.
	Desmidiaceae	Desmidium sp.
		Cosmarium sp.
	Chetophoraceae	Chaetophora sp.
	Ulothrichaceae	Ulothrix sp.
	Tetrasporaceae	Tetraspora sp.
	Scenedesmaceae	Scendesmus sp.
	Hydrodictyaceae	Sorastrum sp.
		Pediastrum sp.
	Chlorellaceae	Chlorella sp.
	Closteriaceae	Closterium sp.
	Selenastraceae	Monoraphidium sp.

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Charophyceae	Characeae	Chara sp.
		Nitella sp.
Bacillariophyceae	Amphipleuraceae	Amphipleura sp.
	Achnanthaceae	Achnanthes sp.
	Tabellariaceae	Diatoma sp.
	Bacillariaceae	Nitzchia sp.
	Pinnulariaceae	Caloneis sp.
	Cymbellaceae	Cymbella sp.
	Gomphonemataceae	Gomphonema sp.
	Naviculaceae	Navicula sp.
	Fraggilariaceae	Fragilaria sp.
		Asterionella sp.
		Synedra sp.
	Melosiraceae	Melosira sp.

Observation

Table no. 1 revels the four major class present Myxophyceae, Clorophyceae, Charophyceae and Bacillariophyceae. Myxophyceae having four familys and six Genus e.g; ocillatoriaceae, Nostocaceae, Microcoleaceae, Chroococcaceae and Oscillatoria, Lyngbya, Spirulina, Microcoleus, Anabaena, Chroococcus. Chlorophyceae having eleven familys and fourteen Genus e.g; Zygnemataceae, Oedogoniaceae, Desmidiaceae, Chetophoraceae, Ulothrichaceae, Tetrasporaceae, Scendesmaceae, Hydrodictyaceae, Chlorellaceae, Closteriaceae, Slenastraceae and Spirogyra, Zygnema, Oedogonium, Desmidium, Cosmarium, Chatophora, Ulothrix, Tetraspora, Scendesmus, Sorastrum, Pediastrum, Chlorella, Closterium and Monoraphidium. Charophyceae having one family and two genus; Charales in Chara and Nitella. Bacillariophyceae having ten family and twelve Genus e.g; Amphipleuraceae, Achanthaceae, Tabellariaceae, Bacillariaceae, Pinnulariaceae, Cymbellaceae, Gomphonemataceae, Naviculaceae, Fraggilariaceae and Melosiraceae and Amphipleura, Achanthes, Diatoma, Nitzchia, Chaloneis, Cymbella, Gomphonema, Naviculla, Fragilaria, Asterionella, Synedra and melosira.

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Figure no-2: Microphotography of Algae

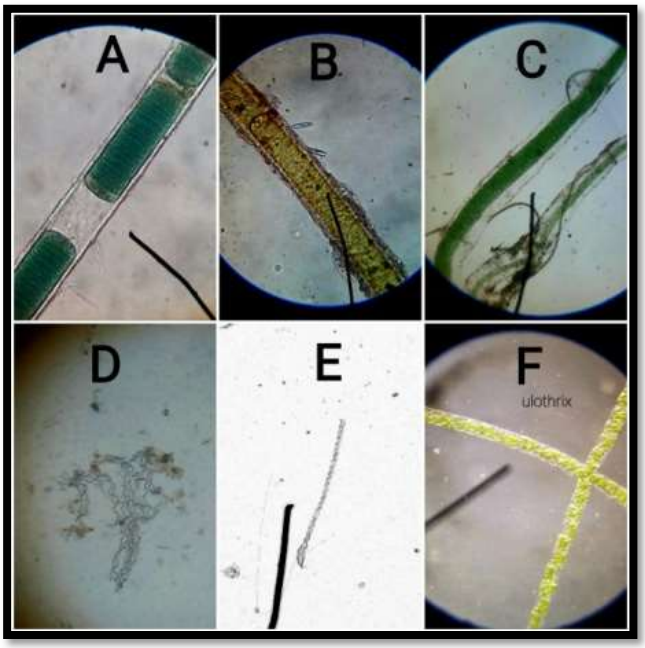
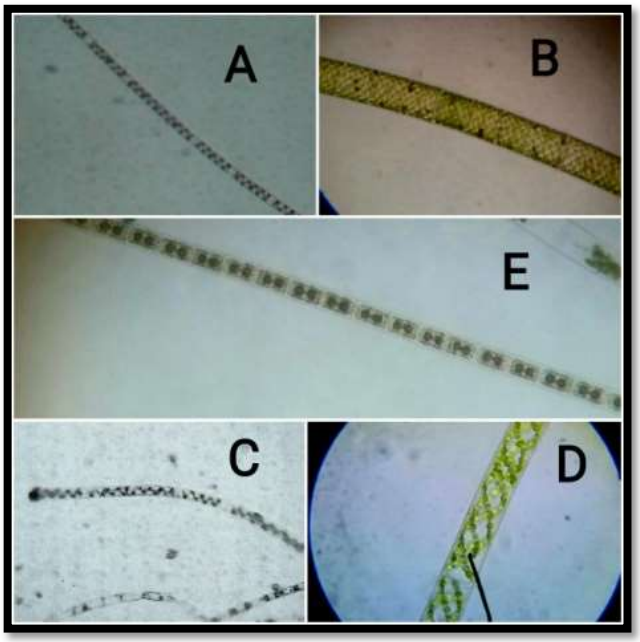


Plate:1



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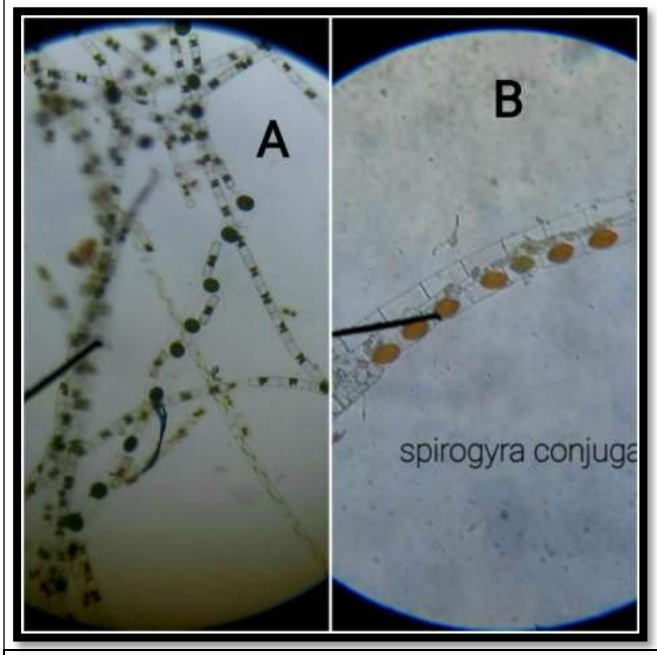

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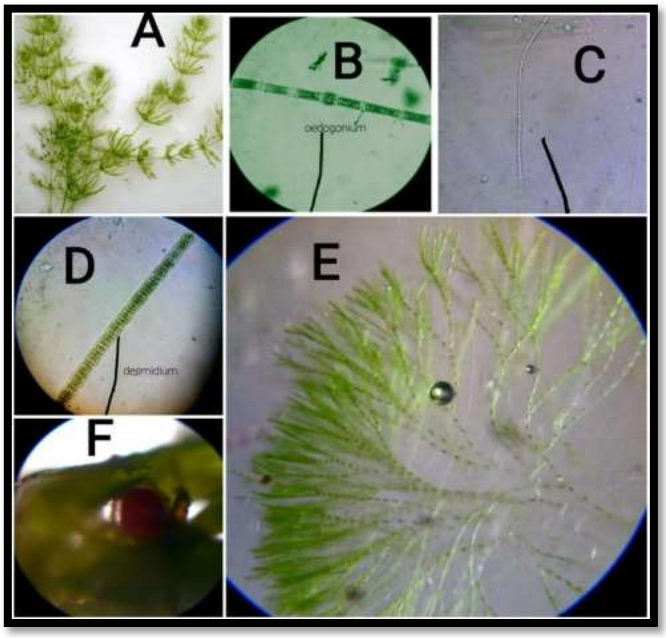

Plate:4

Plate-1	A: Oscillatoria sp; B: Lyngbya sp; C: Microcoleus sp; D and E: Spirulina sp; F: Ulothrix sp.
Plate-2	A , B, C and D : Spirogyra and E: Zygnema sp.
Plate-3	A : Zygnema conjugation and B: Spirogyra conjugation.
Plate-4	A: Nitella sp; B: Oedogonium sp; C: Anabaena sp; D: Desmidium sp; E: Chetophora sp; F: Chara sp.

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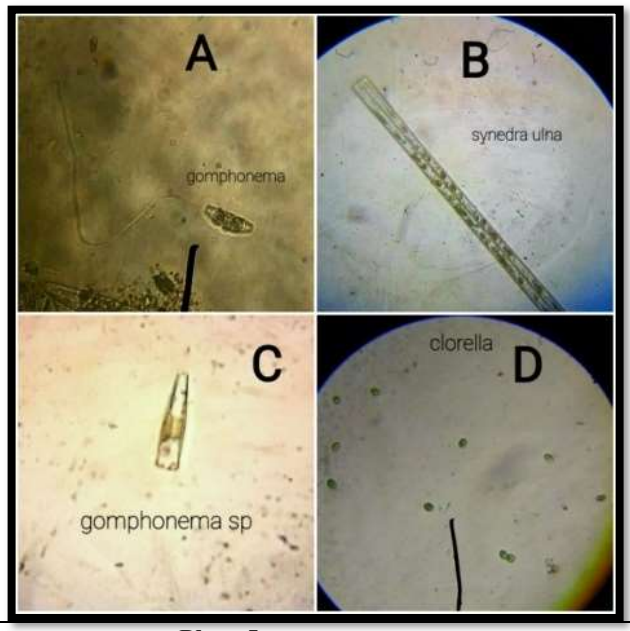

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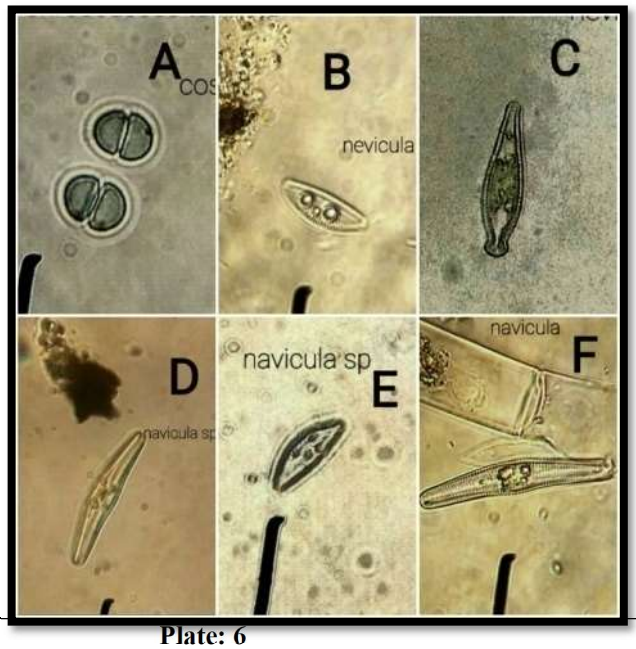

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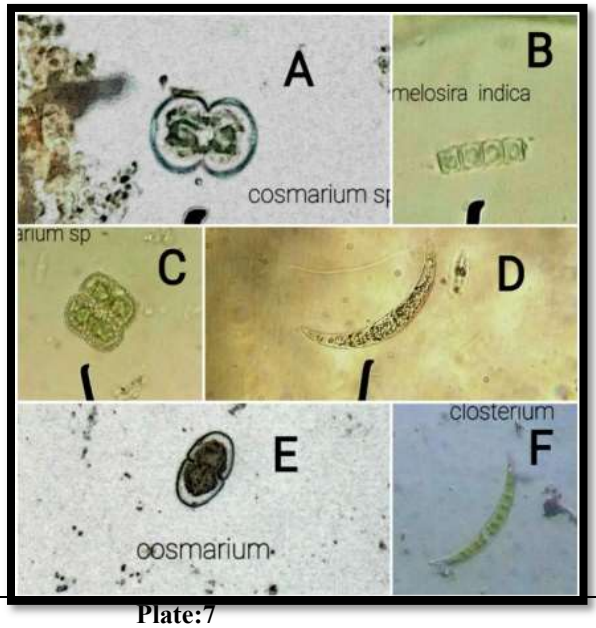

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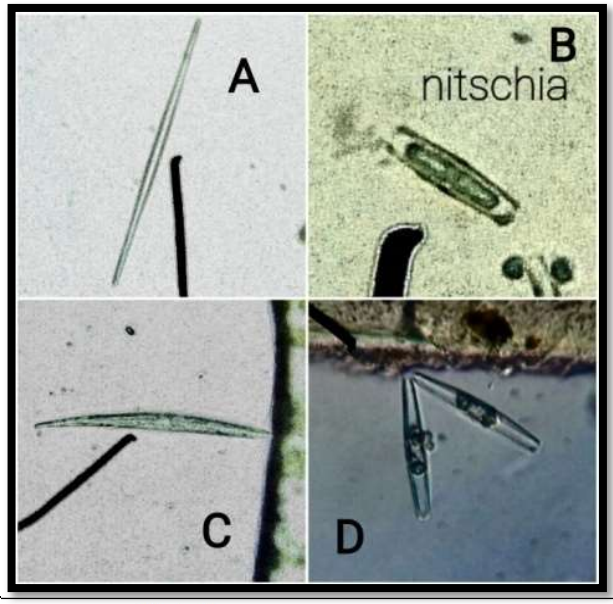

Plate:8

Plate-5	A and C: Gomphonema sp; B: Synedra sp; D: Clorella sp.
Plate-6	A: Chroococcus sp; B, C, D, E and F: Navicula sp.
Plate-7	A, C and E: Cosmerium sp; B: Melosira sp; D and F: Closterium sp.
Plate-8	A and C: Synedra sp; B and D: Nitschia sp.

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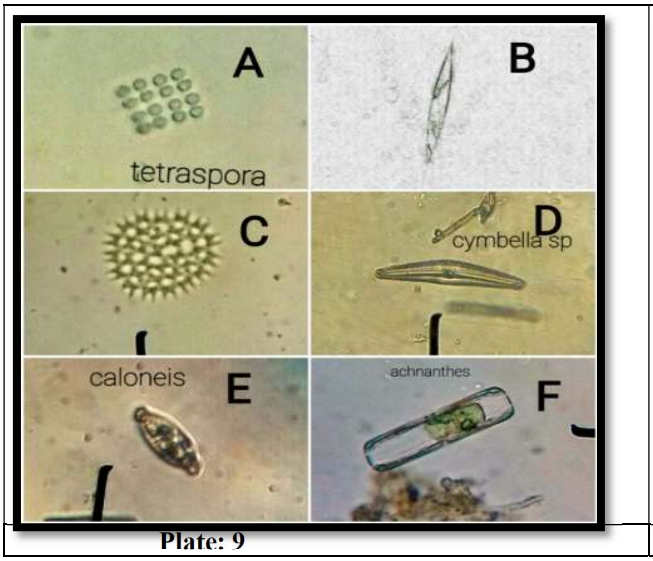

Plate: 9

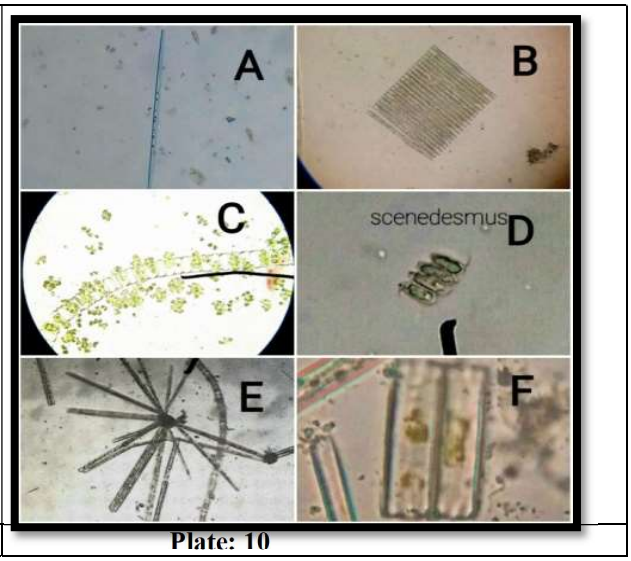

Plate: 10

Plate-9	A: Tetraspora sp; B: Monoraphidium sp; C: Pediastrum sp; D: Cymbella sp; E: Caloneis sp; F: Achnanthes sp.
Plate-10	A: Amphipleura sp; B; Fragilaria sp; C: Sorastrum sp; D: Scenedesmus sp; E: Asterionella sp; F: Diatoma sp.

Classification and morphology

1.	Class	Family	Genus
	Myxophyceae	Oscillatoriaceae	Oscillatoria
Description	Plant masss forming expanded thin gelatinous expansions;filaments single; sheath diffluent ; unbranched ; generally blue-green ; trichomes straight or slightly spiral trichomes.(Plate 1: A).		

2.	Class	Family	Genus
	Myxophyceae	Oscillatoriaceae	Lyngbya
Description	Trichomes of Lyngbya are a single row of cells enclosed in a firm sheath. Trichomes may be solitary or form a coiled. The sheaths may be come Yellowish-brown through staining with chemical in the water. Lyngbya can produce a range of toxins in water. (Plate 1: B).		

3.	Class	Family	Genus
	Myxophyceae	Microcoleaceae	Microcoleus
Description	Plant mass composed of wide cylindrical, tube like gelatinous homogeneous sheath in which is embedded a bunch of spirally and tightly interwoven many trichomes. (Plate 1: C)		

4.	Class	Family	Genus
	Myxophyceae	Spirulinaceae	Spirulina
Description	Trichomes from a regularly spirally-coiled cylinder in which the individual cells may be difficult to distinguish. Spirulina is widespread in both freshwaters and brackish environments. As shown above Plate: 1 D and E Spirulina sp. are different because D is Colonial form and E is Single coiled form. (Plate : 1 D and E).		

5.	Class	Family	Genus
	Clorophyaceae	Ulothrichaceae	Ulothrix
Description	Ulothrix species are composed of unbranched filaments. The cells are cylindrical either longer or shorter than broad, depending upon the species. (Plate 1: F).		

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6.	Class	Family	Genus
	Chlorophyaceae	Zygnemataceae	Zygnema
Description	Filamentous unbranched thallus, cells longer than broad. Chloroplast in pair of two, definitely star shaped (stellate) per each cell. The filaments form a yellow –green to bright green in colour and are free floating. (Plate 2 : E). Conjugating tubes appear between filaments. (Plate 3 : A)		

7.	Class	Family	Genus
	Chlorophyaceae	Zygnemataceae	Spirogyra
Description	Thallus filamentous unbranched without any base apex differentiation. Cells longer than broad. Free floating. Chloroplast parietal,of many spiral bands with several pyrenoids. As shown above plate 2: A, B, C and D Spirogyra sp. Are differs from on the arrangement of its chloroplast. (Plate 2: A, B, C and D). Conjugating tubes appear between filaments. (Plate 3: B).		

8.	Class	Family	Genus
	Chlorophyaceae	Oedogoniaceae	Oedogonium
Description	Thallus filamentous unbranched and attached to substratum with the help of holdfast. Cells cylindrical, longer than broad and enlarged towards the anterior end. Chloroplast with parietal reticulum and numerous pyrenoids. Presence of ring like scars. (Plate 4: B)		

9.	Class	Family	Genus
	Myxophyceae	Nostocaceae	Anabaena
Description	Trichomes are fairly easy to recognise and are of uniform width throughout with a layer of amorphous and frequently inconspicuous mucilage on their surface. The filaments may be straight, curved or coiled depending upon the species.Sometimes in short chain like series.(Plate 4: C)		

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10.	Class	Family	Genus
	Clorophyceae	Desmidiaceae	Desmidium
Description	Filamentous desmid. Cells wider than long and are constricted in the middle or with slight median notch. Semi cells transversely sub-rectangular, lateral margins obliquely truncate. Filaments easily broken into individual cells.(Plate 4: D)		

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11.	Class	Family	Genus
	Chlorophyaceae	Chaetophoraceae	Chetophora
Description	Filaments with a firm mucilage surrounding having a definite shape. Often forming macroscopic attached masses. Filaments are frequently attached stones or submerged aquatic plants.Branching more common towards filament apex.(Plate 4: E)		

12.	Class	Family	Genus
	Charophyceae	Charales	Chara
Description	Plants coarse to touch, frequently encrusted with lime.(common name Stonewort).Members of the Charophyceae are essentially branched filaments with a main axis of large elongate cells and a whorl of smaller cells forming the branches at each node. (Plate 4: F)		

.13.	Class	Family	Genus
	Charophyceae	Charales	Nitella
Description	Plant not coarse to touch, usually deep green in colour, not encrusted with lime. (plate 4: A)		

.

14.	Class	Family	Genus
	Chlorophyceae	Chlorellaceae	Chlorella
Description	Chlorella cells are spherical to subspherical with a single parietal chloroplast which nearly fills the cell. A single pyrenoid is present. Common in nutrient-rich waters but easily overlooked because of their small size. (Plate 5 : D).		

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15.	Class	Family	Genus
	Bacillariophyceae	Gomphonemataceae	Gomphonema
Description	Gomphonema cells are heteropolar in valve view but cuneate in girdle view some species are only slightly heteropolar. There is a single stigma in clear central area. A single H-shaped chloroplast is present with a central pyrenoid. Plate A and C Gomphonema sp. Are differs from on the arrengment of its chloroplast and shape. (Plate 5: A and C)		
16.	Class	Family	Genus
	Bacillariophyceae	Fragilariaceae	Synedra
Description	Cells elongate and narrow,no true raphe present on either valve, may be attached to a surface by a mucilaginous pad. Two elongate chloroplasts. Isopolar with apices gently narrowing. As shown above Plate 8: A and C are differs rom on the shape and arrangement of its chloroplast.(Plate 5 : B) and (Plate 8: A and C)		

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17.	Class	Family	Genus
	Myxophyceae	Chroococcaceae	Chroococcus
Description	Cells nearly spherical. Chroococcus usually forms small groups of cells which can either be free floating or attached. After division daughter cells occur in group of 2-4-8 in a gelatinous sheath which is often homogenous with the surrounding mucilage but may be lamellate in some species Chroococcus. (Plate 6:A)		

18.	Class	Family	Genus
	Bacillariophyceae	Naviculaceae	Navicula
Description	The Navicula species have lanceolate valves with a narrow axial area flanked by fine striae which are slightly radiate the centre but parallel towards the cell apices. Cells are often very motile.One H-shaped chloroplast. As shown above Plate 6: B, C, D, E and F are differs from on the shape and arrangement of its chloroplast.(Plate 6: B, C, D, E and F)		
19.	Class	Family	Genus
	Chlorophyceae	Closteriaceae	Closterium
Description	Cells elongate and tapering towards the ends. The outline may be bow-shaped, sickle-shaped or more or less straight. The cells are divided into two halves but there is no median constriction. There are several prominent pyrenoids along each chloroplast. As shown above Plate 7: D and E are differs on the shape and arrangement of its chloroplast (Plate 7: D and E)		

20.	Class	Family	Genus
	Chlorophyceae	Desmidiaceae	Cosmarium
Description	This is the largest desmid genus and is very widespread. The cells are normally rounded, divided into semicells with a narrow groove or isthmus in the centre between the two halves. The semicells in some species have an angular, polygonal appearance. As shown above Plate 7: A,C and E are differs on the size and arrangement of its chloroplast. (Plate 7: A, C and E)		

21.	Class	Family	Genus
	Bacillariophyceae	Melosiraceae	Melosira
Description	Cells of Melosira do not have distinctive markings on their surface. They are rectangular or ovoid in shape with relatively thin walls or rectangular with quite thick walls.(Plate 7: B)		

22.	Class	Family	Genus
	Chlorophyceae	Tetrasporaceae	Tetraspora
Description	Tetraspora forms large irregular gelatinous colonies that can be visible to the naked eye. The cells are in groups of 2 or 4 within the mucilage. Common in the plankton, in shallow waters, ponds and ditches or associated with submerged macrophytes. (Plate 9: A)		

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23.	Class	Family	Genus
	Chlorophyceae	Selenastraceae	Monoraphidium
Description	Monoraphidium has needle- or sickle- shaped cells and does not form colonies. Single chloroplast almost filling cell. A pyrenoid may be present. Abundant in the plankton of eutrophic lakes.(Plate 9:B)		

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24.	Class	Family	Genus
	Chlorophyceae	Hydrodictyaceae	Pediastrum
Description	Colonies are found to be flat circular plates of 16-32-64 cells. Inner cells four cornered with a small lens-shaped perforation in front and another at the back. Marginal cells usually longer than broad and ending in short spines. (Plate 9:C)		

	Class	Family	Genus
25.	Bacillariophyceae	Bacillariaceae	Nitzschia
Description	Nitzschia is a large genus whose cells may be elliptical, narrow linear, spindle shaped or sigmoid in valve view. cells are solitary and may be benthic or planktonic. A very common and widespread genus found in a variety of water types. As shown above Plate 8: B and D are differs from on the shape and arrangement of its chloroplast.(Plate 8:B and D)		

26.	Class	Family	Genus
	Bacillariophyceae	Cymbellaceae	Cymbella
Description	Cymbella cells have a convex dorsal magin and a straight, concave or slightly convex ventral margin. The raphe is nearly central with outer ends turned upwards towards the dorsal margin and the central ends turned downwards towords the ventral margin.(Plate 9:D)		

27.	Class	Family	Genus
	Bacillariophyceae	Pinnulariaceae	Caloneis
Description	Two chloroplasts present, one either side of the long axis, Central raphe terminals straight or bent the same way. Clear marginal lines present. Cells with broad rostrate apices. The raphe ends are either straight or both bent to the same side.(Plate 9:E)		

28.	Class	Family	Genus
	Bacillariophyceae	Achnanthaceae	Achnanthes
Description	Cells with raphe clearly visible on one valve. Other valve with pseudoraphe. Cells rectangular to elliptic in valve view and bent in girdle view. Single plate-like chloroplast.(Plate 9:F)		

29.	Class	Family	Genus
	Chlorophyceae	Scenedesmaceae	Scendesmus
Description	Cells roughly cylindrical and usally more than 2 times long as broad. Colonies of usually single, but sometimes double rows of 4-16 cells that are joined along the long axis. It is especially found in eutrophic and hypertrophic waters.(Plate 10 :D)		

30.	Class	Family	Genus
	Bacillariophyceae	Tabellariaceae	Diatoma
Description	Cells linear to lanceolate with bluntly rounded apices. Cells apices are rounded and somewhat blunt. Cells usually closely attached to one another to form a chain or ribbon. Found in lakes and ponds, frequently in the littoral zone.(Plate 10: F)		

Cover Page

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31.	Class	Family	Genus
	Bacillariophyceae	Amphipleuraceae	Amphipleura
Description	Amphipleura can be widespread but it is not a very common. Found on silt and sediments, sometimes mixed with filamentous algae. More often reported from alkaline waters.(Plate 10:A)		

32.	Class	Family	Genus
	Bacillariophyceae	Fragilariaceae	Fragilaria
Description	Thallus filamentous. Cells with numerous intercalary bands and rectangular cells joined by their valve faces to form a ribbon-like chain, Rectangular in girdle view. Elongate with finely punctate striations in the cells.(Plate 10:B)		

33.	Class	Family	Genus
	Bacillariophyceae	Fragilariaceae	Asterionella
Description	Asterionella frustules are long, straight and narrow. The narrow central part of the frustules does have fine transverse striae but these are difficult to see. Large growths of Asterionella can cause problems of filter clogging in water treatment works supplied by lakes.(Plate 10: E)		

34.	Class	Family	Genus
	Chlorophyceae	Hydrodictyaceae	Sorastrum
Description	Cells with finger-like or spike-like processes extending outwards. Cells kidney-shaped and joined to each other by a mucilaginous protrubance so as to form a radiating colony. Sorastrum is related Pediastrum byt the cells form a more spherical colony. Chloroplast parietal with a pyrenoid. (Plate 10: C)		

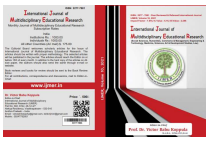
Table-2: Physico-Chemical Prameters of Water Sample

No:	Parameter:	Acceptable:
1	pH	8.26
2	TDS Mg/l	212
3	EC µS/cm	328
4	Turbidity NTU	0.81
5	Sulphate Mg/l	67.6
6	Nitrate Mg/l	5.68
7	Floride Mg/l	0.15
8	Total hardness Mg/l	120
9	Total alkalinity Mg/l	160
10	Calcium Mg/l	24.04
11	Magnesium Mg/l	23.31

Physico- chemical parameters of all the water bodies (Table 2) Lebhor pond was close to normal range such as pH was 8.26, Conductivity 328 µs/cm, Nitrate 5.68 mg/L, Sulphate 67.6 mg/L, TDS 212 mg/L, Tutbility 0.81 NTU, Total hardness 120 mg/L, Calcium 24.04 mg/L, Floride 0.15 mg/L, Megnesium 23.31 mg/L and Total alkalinity 160 mg/L. which supported the growth of green algae, and some blue green algae (Table 1). The alkaline pH supported the growth of blue green algae. Higher value of pH attributes the higher growth rate of blue green algal population which utilized CO2 through the photosynthesis. conductivity (328 µs/cm) nitrate (5.68 mg/L) and sulphate (67.6 mg/L) led to alkalinity of the water in turn support excessive blue green algal growth.

Conclusion

The present study provides an insight into the distribution, diversity and ecology of algae in the Lebhor pond. Mainly consist of four major classes Myxophyceae, Chlorophyceae, Charophyceae and Bacillariophyceae. The occurrence of green algae is relatively greater than blue green algae and diatoms. A total thirty-four algal taxa documented in this work. In this research work having Myxophyceae class total four families and six genus are mentioned. A class Clorophyceae having eleven families and fourteen genus and Charophyceae class having one family and two genus as well as the Bacillariophyceae class having ten families and twelve genus are present.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As a result, In Myxophyceae class, the oscillatoriaceae family having more genus(four). Two genus from the chlorophyceae in Zygnemataceae, Desmidiaceae and Hydrodictyaceae families and three genus are found in the fraggilariaceae from Bacillariophyceae class. In this way, it is evident that the rich diversity of algal flora can be seen.

References

- Edward G., Bellinger and David C. Sigee, (2010): "Fresh water Algae- Identification and use as Bioindicators", Willey-Blackwell, ISBN: 978-0-470-05814-5.
- Fritsch F. E., (1961): "The structure and reproduction of the algae", Vol.11. Cambridge University Press, Cambridl Pradesh, India) 1. Physico-chemical complexes. Advances in Limnology, pp. 107-112.
- Fritsch F. E., (1965) "The structure and reproduction of the Algae, the process of conjugation", pp. 323-329.
- Kalipada biswas, (1929): "Records of the Botanical survey of India", Vol: XV, Part-1.
- Kalipada biswas, (1929): "Papers on Malayan Aquatic Biology, Journal of the federated malay states Museums", Vol: X in parts 3 and 4, pp. 404-435, July, 1929.
- Kalipada biswas, (1929): "Algal flora of the Chilka lake, Asiatic society of Bengal", Vol: XI, No: 5, pp. 165-198.
- Kalipada biswas, (1934): "Observation on algal collections from khasia and Jaintia Hills, Asam, India", Sonderbdruck Band 74.1934.
- Kalipada biswas, (1934): "Common fresh and brackish water Algal flora of India and Burma", Vol: XV, part – II.
- Neha srivastava, Suseela M. R., Kiran toppo and Rubina Lawrence, (2018): "Fresh water algal diversity of central india", International journal of research and Devlopment in pharmacy and life science, pp.3039-3049, July 2018.
- Prescott G. W., (1969): "The algae", a review India and Otto Koeltz science publishers, Koenigstein, W. Germany.
- Priyanka Sharma and Nillma Bhardwaj, (2017): "Algal biodiversity in some water bodies of Kota, Rajsthan India", International research journal of biological sciences. Vol: 6, no.9, pp. 7-14. Issue: Sep-2017.
- Rthawa Sunil D. and Patel V. A. (2020): "Study on algal biodiversity in and around Patan (Northan Gujarat) India", International journal of multidisciplinary educational research. Vol. 9, pp. 128-137, March 2020.
- Sreeja P., Anusree K. P. and Shubha A. (2018): "A preliminary study on the algal Diversity of selected Indigeous pond in kannur, Kerala, India", ISSN: 2319-7064., vol. 8, pp. 1285-1289, Issue 8, Aug 2019.
- Vashishta, B. R., A.K. Sinha and V. P. Singh, (2007): "For degree students", part-I (2007), pp. 26-68.
- Welch P. S., (1952): "Limnology", Mc Graw Hill Book, New York.