Seasonal Propagation of Green Algae in Kara–Kyr Lake Bukhara Region

Kobilov Aziz Mukhtorovich1*, Avezova Muhayyo Hasan qizi1
1Department of Biology, Bukhara State University, Uzbekistan, Bukhara

*Corresponding Author
Kobilov Aziz Mukhtorovich

Article History
Received: 25.02.2021
Accepted: 09.03.2021
Published: 29.03.2021

Abstract: Identifying the types of microscopic algae that are prevalent in water basins and studying their importance is one of the most pressing issues awaiting solution today. In this regard, research has been conducted to observe the classification of Lake Kara-Kyr in Bukhara region and the study of the types of microscopic algae in the water, the seasonal propagation. Commonly accepted algal methods and plant identifiers were used to determine the types of microscopic algae. According to the results, a total of 41 species belonging to the Chlorophyta division were identified in Kara-Kyr Lake. The seasonal propagation of the identified species was analyzed and 35 species were recorded in spring, 38 in summer, 28 in autumn, and 11 in winter.

Keywords: collector, filtration, eutrophication, algae, invasion, microscopic, photosynthesis.

INTRODUCTION

Kara-Kyr Lake (lake system) is located in the northwest of the Bukhara oasis. Kara-Kyr Lake was formed in 1960-70 due to the accumulation of collector water. The northern collector is the main source of lake water. Water enters the lake through the northern collector at 30-40 m³/ sec, but there is no possibility of discharge. As a result of the increase in collector water in periods of winter and spring, the area of the lake reaches 26.5-27.2 thousand hectares due to the formation of small ponds Figure 1. During the hot summer days, evaporation and filtration are high, and the area of the lake is significantly reduced to 10-12 thousand hectares due to a decrease in the amount of water entering the lake to 5-10 m³/ sec. The maximum depth of the lake is 7-8 meters, the average depth is 2.0-2.5 meters, and the minimum is 0.7-1.8 meters. The maximum depth of the Kara-Kyr Lake is 5-10% of the total area, the average depth is 15-20%, and the minimum depth is 70-80% [2, 3].

Fig-1: Location of lake Karakir
RESEARCH METHODOLOGY

In order to determine the types of algae, samples were collected using the Apstein network from the water intake of the lake, near the shore, in the middle and deepest parts. Apstein net size № 76, water inlet diameter 20 cm. The collection and processing of the material was carried out according to the generally accepted method. Samples were collected, a few drops of 3% formalin were added to it, and the species were identified. XDS-3, B-380 microscope was used during the work. In determining the types of algae scattered in the lake, O. V. Anisimova, M. A. Gololobova's manual was used. The water temperature was determined on a symbolic thermometer, and the degree of clarity of the water was determined using a Sekki disk. Algological samples were taken from Kara-Kyr Lake in spring, summer, autumn and winter, the composition of the species was determined in the laboratory [1, 5, 7].

RESEARCH RESULTS

Seasonal samples were collected to identify species belonging to the Chlorophyta division of microscopic algae. During the study season, the average air temperature was 32-36 ºC, the water temperature was 24-26 ºC, and the water clarity was 3.0-3.5 m. The average value of dissolved oxygen in water is 5.26 mg/l, the saturation index is 75.1%. The rate of dissolved oxygen in water depends mainly on the intensity of photosynthesis and water aeration. Only in a strong wave does the dissolved oxygen content in water increase to 9.5-10.2 mg/l. Oxygen storage is much higher in Kara-Kyr Lake. The reason for this is the eutrophication of the lake. Where the depth of the lake is 4-5 meters, the water-soluble oxygen content is much lower at 2.5-3.0 mg/l. This is due to the abundance of organic residues at the bottom of the water and the lack or non-occurrence of circulation. Oxygen saturation of water occurs as a result of invasion, particularly due to a sharp increase in the amount of algae. High water temperature and salinity lead to a decrease in the amount of dissolved oxygen in the water [3, 4, 6].

The results of the analysis showed that 41 species and species belonging to the Chlorophyta division hit Kara-Kyr Lake. They belong to 4 classes, 8 disciplines, 12 families and 14 categories. The seasonal distribution of the identified species was analyzed and 35 species were detected in spring, 38 in summer, 28 in autumn, and 11 in winter (Figure 2).

Most representatives of the Chlorophyta division were found in the spring and summer, and the seasonal propagation varied depending on water temperature. In the spring there are Chlamydomanadas sphincola Frint et Takeda, Chlorococicum infusionum Menegh, Pediastrum boryanum (Turp) Menegh, P. simplex Meyen, P. tetras (Ehr) Ralfs, Scenedesmus acuminatus Chodat, S. acuminatus. biseriatus Reinsch, S. obliquus (Turp) Kutz, S. quadriculauda (Turp) Breb, S. quadriculauda. eualternans Proschik, S. acutiformis Schroed, Ankistrodesmus acicularis Korschik, A. angustis Bern, A. arcuatus Korschik, A. minutissimus Korschik, Oedogonium intermedium Wittz, Chlorella. vulgaris Beyer, Ch. ellipsoidea Geneck, Ch. pyrenoidosa Chick, Ulothrix zonata Kutz, U. tenerrima Kutz, U. variabilis Kutz, Cladofora fracta Kutz, Cl. glomerata (L) Kutz, Closterium diaene var. arcuata (Breb) Rahenh, C. malinvernianum DeNot, C. parvulum Nag, Cosmarium botrytis var. mediolaeva West, C. calcareum Wittz, C. granatum Breb, C. laeve var. septentrionale Will, Staurastium dispar Breb, Spirogyra calospora Cleve, Mougeotia nummuloides (Hassal) De Toni, M. parvula Hassal. With the increase in air temperature in the summer, species that did not occur in the spring months have emerged this season. A total of 38 rounds were identified during the summer. These are Chlamydomanadas sphincola Frint et Takeda, Chlorococcum infusionum Menegh, Pediastrum boryanum (Turp) Menegh, P. simplex Meyen, P. tetras (Ehr) Ralfs, Scenedesmus acuminatus Chodat, S. acuminatus. biseriatus Reinsch, S. obliquus (Turp) Kutz, S. quadriculauda (Turp) Breb, S. acutiformis Schroed, Ankistrodesmus acicularis Korschik, A. angustis Bern, A. arcuatus Korschik, A. fusiformis Corda, A. minutissimus Korschik, Oos Wittz, Chlorella. vulgaris Beyer, Ch. ellipsoidea Geneck, Ch.
The autumn there are –

- measured by the Sekki disk. This indicates a low number of green algae.

- simplex

- reum

\[ \text{Journal of Biology} \]

\[ \text{© South Asian Research Publication, Bangladesh} \]

\[ \text{Kobilov Aziz Mukhtorovich & Avezova Muhayyo Hasan qizi} \]

\[ \text{Seasonal Propagation of Green Algae in Kara–Kyr Lake Bukhara Region.} \]

\[ \text{South Asian Res J Bio Appl Biosci, 3(2), 25-27.} \]

CONCLUSION

The fact that the species and species composition of algae in the algae flora of the Black Sea varies depending on the seasons is explained by the influence of hydrochemical and hydrophysical parameters of the water.

REFERENCE

1. Anisimova, O.V., Gololobova, M. A. (2006). A short guide to the genera of algae – M., University.159.

2. Buriev, S.B., Qobilov, A.M. (2018). Algoflora of the Kara-Kyr lake of Bukhara region and biotechnology of their use in fisheries // Scientific and technical journal of science and technology development. – Bukhara, 3,14-19

3. Buriev, S. B., & Kobilov, A. M. (2019). The Region’s Aquatic Vegetation of Lake Kara-Kira Bukhara. ACADEMIA: An International Multidisciplinary Research Journal, 9, 5-11.

4. Plotnikov, G.K., Peskova T.Y.U., Shkute, A., Pupinya, A., Pupinsh, M. (2017). Collection of classic methods of hydrobiological research for utilizing in aquaculture. – M.: Daugavpils University Academic Publishing House. Saule. 282.

5. Abdukadirov, A.A., Khalilov, S.Kh. (2002). Floro - a systematic analysis of the algal flora of bioponds of the Private Enterprise "Electrokhimprom"// Biodiversity of the Western Tien Shan: protection and rational use. Tashkent: Chinar, 8-12.

6. Radchenko, I. G., Kapkov, V. I., Fedorov, V. D. (2010). A practical guide to the collection and analysis of samples of marine phytoplankton. –M.: Mordvintsev, 60.

7. Rashidov, N.E. (2007). Algoflora of collectors of Bukhara region. Doctor of Philosophy Biology Dissertation. – Tashkent, 2007, 101.

8. Buriev, S.B., Hobilov A.M. (2019). Reproduction of Chlorella vulgaris and exploit it in fishing// Journal of Biology and Ecology. –Tashkent, 2, 45-52. https://dx.doi.org/10.26739/2181-0575-2019-2-9.

Citation: Kobilov Aziz Mukhtorovich & Avezova Muhayyo Hasan qizi (2021). Seasonal Propagation of Green Algae in Kara–Kyr Lake Bukhara Region. South Asian Res J Bio Appl Biosci, 3(2), 25-27.