Zulaykho A. Ismatova,
lecturer,
Jizzakh State Pedagogical University

Systematic Analysis of Indicator Saborbine Species of Alcohols of Sangzar River

Key words: *Sangsar River, algae, systematic analysis, indicator, Cyanophyta, Xanthopyta, Chrysophyta, Bacillariophyta, Euglenophyta, Chlorophyta.*

Annotation: *the indicator saprobic algal species of the Sangzar River have been investigated and systematized for the first time. Identified 522 algae from them, 134 indicator saprobic species and varieties that belong to 53 genera, 28 families, 17 orders, 11 classes and 6 department (Cyanophyta, Xanthopyta, Chrysophyta, Bacillariophyta, Euglenophyta, Chlorophyta).*

Since ancient times, mankind has been using natural resources for its needs and increasingly taking them from nature. This contributes to a partial change in nature. Especially, improper use of water, emissions of industrial waste leads to an increase in the pollution of the river. As a result, the species composition of aquatic flora and fauna is reduced. This poses a great threat to their development and spread and helps to reduce species and varieties. Algae that are widespread in nature are of great importance, since they are used in many branches of the national economy.

We researched 522 species and varieties in the Sangzar River and studied their distribution along the river, seasonal development, with the help of indicator saprobic algae, the degree of water pollution was revealed.

The indicator saprobic algal species of the Sangzar River have been investigated and systematized for the first time. Identified 522 algae from them, 134 indicator saprobic species and varieties that belong to 53 genera, 28 families, 17 orders, 11 classes and 6 department (Cyanophyta, Xanthopyta, Chrysophyta, Bacillariophyta, Euglenophyta, Chlorophyta) (Table 1).

The content of the indicators is about 25.67% of the total number of algal taxa discovered by us (522).

The main species among the saprobic organisms can be considered representatives of diatom algae - 93 species or 69.40% of their total content (134). Then follows the green algae - 18 species, or 13.43%, blue - green - 15 or 11.19%, euglenic - 6 or 4.48%, Xanthopyta, and Chrysophyta - 1 species or 0.75%.

Table 1

Systematic analysis of indicator saprobic species and varieties of algae of the Sangzar River

	Amount	

Department of algae	Classes	Order	Family	Births	Species	Variation	The form	Total	Percentage of total number of species
Cyanophyta	2	3	6	10	14	1	-	15	11,19 %
Rhodophyta	-	-	-	-	-	-	-	-	-
Xanthophyta	1	1	1	1	1	-	-	1	0,75 %
Chrysophyta	1	1	1	1	1	-	-	1	0,75 %
Bacillariophyta	2	4	8	26	76	16	1	93	69,40 %
Euglenophyta	1	1	1	3	6	-	-	6	4,48 %
Chlorophyta	4	7	11	12	17	1	-	18	13,43 %
Total:	11	17	28	53	114	18	1	134	100 %

Taxonomic analysis of the composition of the Sangsar indicator saprobic algae shows that 93 noted species and varieties of diatoms are united into 26 genera, 8 families, 4 orders, 2 classes (Table 2).

The class Pennatophyceae unites only 69 indicator saprobic species and varieties in the department, and Centrophyceae - 7 species *(3).*

Among the orders Raphinales includes 5 families and 22 genera. Naviculaceae West has a large number of species among the families. - 40 species and varieties. The most generous genera are: Navicula Bory. - 14, Nitzschia Hass. - 12, Cymbella Ag. - 9.

Table 2

The systematic composition of the indicator saprobic algae of the Bacillariophyta of the Sangzar River

Classes	Order	Family	Births
Centrophyceae	*Discoidales*	*Coscinodiscaceae* Kuetz.	*Melosira* Ag.
			Cyclotella Kuetz.
			Stephanodiscus Ehr.
	Solinioidales	*Soleniaceae* Schutt.	*Rhizosolenia* Ehr.
Pennatophyceae	*Araphinales* Schutt.	*Fragilariaceae* (Kuetz)D.T	*Meridion* Ag.
			Diatoma D.C.
			Fragilaria Lyngb.
			Ceratoneis Ehr.
			Synedra Ehr.
	Raphinales	*Achnanthaceae* (Kuetz) Grun.	*Cocconeis* Ehr.
			Achnanthes Bory.
			Rhoicosphenia Grun.
		Naviculaceae West.	*Stauroneis* Ehr.
			Navicula Bory.
			Pinnularia Ehr.
			Caloneis Cl.
			Gyrosigma Hass.
			Amphora Ehr.

			Cymbella Ag.
			Didymosphenia M.Schmidt.
			Gomphonema Ag.
		Epithemiaceae Hust.	*Denticula* Kuetz.
		Nitzschiaceae Hass.	*Bacillaria* Gmelin.
			Nitzschia Hass.
		Surirellaceae (Kuetz.) Grun.	*Cymatopleura* W.Sm.
			Surirella Turp.
Total: 2	4	8	26

The results of the analysis of the species composition of representatives of the Chlorophyta department found in the Sangzar River indicate that 18 indicator saprobic species and a variety of algae are combined into 12 genera belonging to 11 families, 7 orders and 4 classes *(4, 7, 8)* (Chlorococcophyceae, Ulotrichophyceae, Siphonocladophyceae, Conjuga-tophyceae) (Table 3).

The families of Ulotrichaceae Kuetz are the most numerous species of saprobity. (4), Cladophoraceae (Hass.) Cohn. (3), the rest of the family is represented by a small number - from 2 to 1 species.

Among the genera of green indicator saprobic algae are rich in species of Ulothrix Kuerz. (4), Chlorella Beijerinck. (2), Cladophora Kuetz. (2), Spirogyra Link. (2); the rest of the genera consist of 1 species.

According to the structure of representatives of the department of Cyanophyta, it can be judged that the detected species and forms of indicator saprobic algae (15) belong to 10 genera, 6 families, 3 orders and 2 classes *(1,6)* (Chroococceae and Hormogoniophyceae) (Table 4).

The Chroococceae class includes 8 species or 53.33% of the total number (15).

The family of Oscillatoriaceae (Kirchn.) Elenk is the most numerous species of saprobity. (6), Merismopediaceae Elenk. (4).

Among the genera, the largest number of species in Merismopedia (Meyen.) Elenk. emend. (4), Spirulina Turp. (2), Phormidium Kuetz. (2).

Table - 3

The systematic composition of the indicator saprobic algae of the Chlorophyta department of the Sangzar River

Classes	Order	Family	Births
Chlorococcophyceae	*Chlorococcales*	*Hudrodictyaceae* S.F.Graydumortier orth. Mut. Mohn.	*Pediastrum* Meyen.
		*Dictyosphaeria cea*e (Detoni.) G.S. West.	*Dictyosphae riu*m Naegeli.
		Oocystaceae Bohlin.	*Chlorella* Beijerinck.
		Scenedesmaceae	Scenedesmus Meyen.

Ulotrich ophyceae	*Ulotrichales*	*Ulotrichaceae* Kuetz.	Ulothrix Kuerz.
	Ulvineae	*Ulvaceae* Lamour.	*Enteromorpha* (Link.) Harvey.
		Chaetophoraceae (Harv.) De-Toni. et Levi.	*Stigeoclonium* Kuetz.
	Microsporales	*Microsporaceae* Thur.	*Microspora* Thuret.
Siphonocla dophyceae	*Cladophoralis*	*Cladophoraceae* (Hass.) Cohn.	*Rhizoclonium* Kuetz.
			Cladophora Kuetz.
Conjugato phyceae	*Zygnematales*	*Spirogyraceae* Randh.	*Spirogyra* Link.
	Desmidiales	*Desmidiaceae* Ralfs.	*Cosmarium* Corda.
Total: 4	7	11	12

To the department of Euglenophyta are 6 species of indicator saprobic algae belonging to 3 genera (Trachelomonas Ehr., Strombomonas Defl., Euglena Ehr.). Among the genera, Trachelomonas Ehr is the largest number. (4).

In the department of Xanthophyta there are only 1 species belonging to the genus Tribonema Derb. et Sol., the family Tribonemataceae Pasch., the order of Malleodendrales and the class Heterocapsophyceae *(2).* The department of Chrysophyta also has only 1 species - Chromulina Cienk *(5).*

Table 4

The systematic composition of the indicator saprobic algae of the Cyanophyta section of the Sangzar River

Classes	Order	Family	Births
Chrooco cceae	*Chroococcales*	*Coccobactreaceae*	*Synechococcus* Naeg.
			Rhabdoderma Schmidle et Laut.
		Merismopediaceae Elenk.	*Merismopedia* (Meyen.) Elenk. emend
		Microcystidaceae Elenk.	*Microcustis* (Kuetz.) Elenk.
		Gloeocapsaceae Elenk.et Hollerb.	*Gloeocapsa* (Kuetz.) Hollerb. emend.
Hormogo niophyceae	*Nostocales* (Geitl.) Elenk.	*Nostocaceae* Kuetz. emend. (Kirchner) em. Elenk.	*Nostoc* Adanson.
	Oscillatoriales Elenk.	*Oscillatoriaceae* (Kirchn.) Elenk.	*Oscillatoria* Vauch.
			Spirulina Turp.
			Phormidium Kuetz.
			Lyngbya Ag.
Total: 2	3	6	10

Thus, in the Sangzar River there are 134 species and varieties, indicator saprobic algae, leading from which are algae Bacillariophyta, followed by Chlorophyta, Cyanophyta, Euglenophyta, Xanthopyta and Chrysophyta.

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