

Taxonomical and Comparative Analysis of the Algoflora of the Canals of the Fergana Valley

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Abstract The results of the taxonomic and comparative analysis of the algal flora of the channels of the Ferghana Valley (Big Fergana main canal, North Fergana main canal, South Fergana main canal) revealed that the algoflora of the channels has a more complex structure. When studying the general condition of algae, 6 divisions, 13 classes, 19 orders, 34 families, 314 species and varieties of species belonging to 72 genera (218 species, 71 variations, 25 forms) were identified. Of these, Cyanophyta - 45, Chrysophyta - 4, Bacillariophyta - 229, Pyrrophyta - 8, Euglenophyta - 12, Chlorophyta - 16 species and varieties.

Keywords Identification of algoflora, Environment, Flows, Round and round shapes, Water tanks, Environment, Natural environment and algae

1. Introduction

The results of the taxonomic and comparative analysis of the algoflora of the channels of the Ferghana Valley (BFMC, NFMC, SFMC) revealed that the algoflora of the channels has a more complex structure. When studying the general condition of algae, 6 divisions, 13 classes, 19 orders, 34 families, 314 species and varieties of species belonging to 72 genera (218 species, 71 variations, 25 forms) were identified. Of these, Cyanophyta - 45, Chrysophyta - 4, Bacillariophyta - 229, Pyrrophyta - 8, Euglenophyta - 12, Chlorophyta - 16 species and varieties.

Table 1. Taxonomic analysis of canal algoflora Ferghana valley (2021-2022)

No	Divisions algae	Types and versions	Childbirth	Variatsia	Forma
1	Cyanophyta	45	32	-	13
2	Chrysophyta	4	4	-	-
3	Bacillariophyta	229	152	67	10
4	Euglenophyta	12	10	1	1
5	Pyrrophyta	8	7	-	1
6	Chlorophyta	16	13	3	-
	Total: 6	314	218	71	25

According to the taxonomic structure of the algae of the channels of the Fergana Valley, the algae Bacillariophyta - 229 are leading among the divisions of algae and account for

79.76% of the total number and species (152 species, 67 variations, 10 forms).

In the following places, Cyanophyta - 45 (32 species, 14.33%); Chlorophyta - 16 tons (5.10%); Pyrrophytes - 8 (2.55%), Euglenoids - 12 (3.82%). The number of species and varieties of Chrysophyta algae (4; 1.27%) is a minority.

When analyzing the taxonomic structure of the algae sections of the channels of the Ferghana Valley, it was found that the algae of the Basillariophyta section belong to 2 classes, 3 orders, 9 families, 229 species and genera of 35 genera.

221 species and subspecies from the class Pennatophyceae, 96.51%, and 8 species and species from the class Centrophyceae, 3.50%, were identified. Fragilariaceae (Kuetz.) Belongs to the class Pennatophyceae D.T. (43), (Table 2).

Naviculous western. (122), *Nitzschiaceae* Hass. (22 ta), *Achnanthaceae* (Kutz.) Grun. (15), families differ in species richness and number of species.

Tabellariaceae Pant (8 ta), *Sosconodiscaceae* Kutz. (8), *Surirelleceae* (Keutz.) Grun. (9), *Eunotiaceae* Kuetz. (1 ta), *Epithemiaceae* Hust. (1) the number of species and species in their families turned out to be low.

Naviculaceae West is one of the systematic units of diatoms. the leader is the family (122), which is 55.45% of the total number of species and species of this section. It is rich in the number of species of *Navicula* Bory (43), *Cymbella* Ag. (28), *Nitzschia* Hass. (16), *Gomphonema* Ag. (15), *Pinnularia* Ehr. (10), *Amphora* (Ehr.) (10) leading row. In other categories, the number of species and varieties varies from 1 to 6.

Table 2. Taxonomic analysis of algae of the division Bacillariophyta

№	Taxonomic units and their number							Types and versions
	class	order	family	genera	childbirth	variatsia	forma	
1	Centro-phyceae	Discoidales	<i>Coscinodiscaceae</i> Kuetz.	3	7	-	1	8
2	Pennato-phyceae	Araphinales	<i>Tabellariaceae</i> Pant.	2	8	-	-	8
			<i>Fragilariaceae</i> (Kuetz.) D.T.	7	23	17	1	43
		Raphinales	<i>Eunotiaceae</i> Kuetz.	1	-	1	-	1
			<i>Achnanthaceae</i> (Kuetz.) Grun.	3	11	4	-	15
			<i>Naviculaceae</i> West.	13	81	35	6	122
			<i>Epithemiaceae</i> Hust.	1	1	-	-	1
			<i>Nitzschiaceae</i> Hass.	3	15	3	1	22
			<i>Surirellaceae</i> (Kuetz.) Grun.	2	6	3	-	9
	Total:	3	9	35	152	67	10	229

Table 3. Taxonomic analysis of algae of the Cyanophyta division

№	Classes	Orders	Families	Genera	Species
1	Chroococ-cophyceae	Chroococ-cales Geitler	<i>Coccobactreaceae</i> Elenk. <i>Merismopediaceae</i> Elenk. <i>Microcystidaceae</i> Elenk. <i>Gloeocapsaceae</i> Elenk. et Hollerb.	2 1 1 1	2 1 6 3
2	Hormo-gonio-phyceae	Nostocales (Geitler) Elenk.	<i>Nostocaceae</i> Elenk. <i>Rivulariaceae</i> (Menegh) Elenk.	1 1	1 1
		Oscillato-riales Elenk.	<i>Oscillatoriaceae</i> (Kirchn.) Elenk. <i>Schizothrichaceae</i> Elenk.	5 1	30 1
	Total:	3	8	13	45

Table 4. Taxonomic analysis of algae of the division Chlorophyta

№	Classes	Orders	Families	Genera	Species
1	Chlorococcophyceae (Protococcophyceae)	Chlorococcales	<i>Oocystaceae</i> Bohlin.	<i>Chlorella</i> Beijerinck.	1
2	Ulothrich-ophyceae	Ulothrichales	<i>Ulothrichaceae</i> Kuetz.	<i>Ulothrix</i> Kuetz.	1
				<i>Chlorhormidium</i> Fott	1
				<i>Heterothrichopsis</i> Lyenger et Kanthamma	1
			<i>Schizomeridaceae</i> Smith	<i>Schizomeris</i> Kuetz.	1
			<i>Chaetophoraceae</i> (Harv.) De-Toni et Levi	<i>Draparnaldiella</i> Meyer et Scabitsch	1
3	Siphonocladophyceae	Cladophorales	<i>Cladophoraceae</i> (Hass.) Wittr em.	<i>Cladophora</i> Kuetz.	3
4	Conjugatophyceae	Zygnematales	<i>Zygnemetaceae</i> Randh.	<i>Spirogyra</i> Link.	1
		Desmidiiales			
			<i>Closteriaceae</i>	<i>Closterium</i> Nitzsch.	3
			<i>Desmidiaceae</i> Ralfs	<i>Cosmarium</i> Corda	3
	Total:	5	8	10	16

Coscinodiscaceae Kuetz from the order Discoidales from the class Centrophyceae. family *Melosira* Ag. (4 ta), *Cyclotella* Kuetz. (3) The number of species and species is the majority. *Stephanodiscus* Ehr. there was only one round

in the category.

The composition of algae characteristic of the Cyanophyta division was systematically determined, which is specific for 45 species, 13 genera, 8 families, 3 species and 2 class-specific algae. About 73.33% of the total number and species of algae of the Cyanophyta division were Hormogoniophyceae (33 species) and 26.67% were Chroococcophyceae (12 species). *Oscillatoriaceae* (Kirchn.) Elenk. according to the general species composition and number of algal species. (22) family dominated.

Oscillatoriaceae (Kirchn.) Elenk. (22), *Microcystidaceae* Elenk. (6) leads. In the remaining categories, which took the following places, the number of species and species diversity were low. (table 3).

Based on a systematic analysis of the species composition of algae of the Chlorophyta division, 16 species were identified. They are grouped into 10 categories, 8 families, 5 disciplines and 4 classes.

Among the algae of the Chlorophyta division, the number of species is dominated by Conjugatophyceae with 7 (43.75%) and Ulothrichophyceae with 5 (31.25%) (Table 4).

The next places are occupied by algae of the 1st class Chlorococcophyceae (6.25%). Only 3 (18.75%) representatives of the Siphonocladophyceae class occupy the total number of species.

Most of the species can be seen in the family Closteriaceae (3), in the rest of the families Desmidiaceae (3) and in the rest, one algae was found. In the channels of the Ferghana Valley, 8 species of algae of the Pyrrophyta division are found, belonging to 6 genera, 4 families, 4 orders, 2 classes.

Chroomonas caudata Geitt., *Cryptomonas obtorta* Conr., *Cryptomonas ovate* Ehr., *Cryptomonas rufescens* Skuja, *Woloszynskia vera* (Lind.) Thompson, *Glenodinium gymnodinium* Penard, and *Peridinium cinctum*. F. Westii (Lemm) Lef., species are common *Hypnodinium sphaericum* Klebs.

The division of Euglenophyta algae consists of 12 genera, 3 families, 1 order and 1 class, *Trachelomonas oblonga* Lemm., *Trachelomonas oblonga*. var. *truncata* Lemm., *Trachelomonas scobra* Playf., *Trachelomonas volvocina* Ehr., *Euglena pisciformis* Klebs, *Euglena variabilis* Klebs, *Phacus parvulus* Klebs, *Colacium arbuscula* Stein, *Colacium cyclopicola* (Gickl.) Wolanich et Popova, *Colacium vesiculosum* Ehr., *Astasia parvula* Skuja, *Euglenopsis vorax*. F. minor (Skuja) Popova they accounted for 1.29% (4) of the total abundance and species.

Division Chrysophyta algae 3 genera, 2 families, 2 orders, 4 species and subspecies belonging to class 1 *Chromulina Rosanoffii* Buetschli, *Chromulina freiburgensis* Dofl., *Ochromonas charkowinsis* Marv., *Synochromonas pallida* Korsch. accounted for 1.27% of the total number of species.

Thus, the results of a systematic analysis of the composition of the algal flora of the channels of the Ferghana valley show the diversity of the composition and quantity of algae.

Among them: From the section Cyanophyta - *Synechococcus elongatus* Naeg., *Dactylococcopsis raphidioides* Hansg., *Merismopedia tenuissima* Lemm. From the Chrysophyta branch - *Synochromonas pallida* Korsch. for example, a small number of species.

Table 5. Taxonomic analysis of algal divisions Chrysophyta and Pyrrophyta, Euglenophyta

Taxonomic analysis of algal divisions							
№	Classes	Orders,	Families,	childbirth	types	Var-ya, form	types and versions
Chrysophyta							
1	Chrysomonadineae	Chromulinadales	<i>Euchromulinaceae</i> Pasch.	1	2	-	2
2		Ochromonadales	<i>Euochromonadaceae</i>	2	2	-	2
	Total:	2	2	3	4	-	4
Pyrrophyta							
1	Cryptomonadineae Peridineae	Cryptomonadales	<i>Cryptomonadaceae</i> Pasch.	2	4	-	4
		Gymnodiniales	<i>Gymnodiniaceae</i> Lemm.	1	1	-	1
2		Peridiniales	<i>Peridiniaceae</i> Pauls.	2	1	-	2
		Dinococcales	<i>Dinococcaceae</i> Pasch.	1	1	-	1
	Total:	4	4	6	7	-	8
Euglenophyta							
1	Euglenophyceae	Euglenales	<i>Euglenaceae</i> Klebs <i>Colaciaceae</i> G. Smith <i>Astasiaceae</i> Klebs.	3 1 2	6 3 1	1 - 1	7 3 2
	Total:	1	3	6	10	2	12

From the department Bacillariophyta - *Melosira granulata* (Ehr.) Ralfs., *Cyclotella stelligera* Cl. Et Grun., *Stephanodiscus hantzschii* Grun., *Tetracyclus rupestris* (A.Br.) Grun., *Tabellaria flocculosa* (Roth) Kuetz., *Meridion circlee* Ag., *Diatoma elongatum* var. *tenue* (Ag.), *Diatoma hiemale* (Lyngb.) Heib., *Fragilaria atomus* Hust., *Ceratoneis arcus* (Ehr.) Kuetz., *Synedra actinastroides* Lemm., *Cocconeis disculus* var. *diminuta* (Pant.) Sheshukova, *Rhoicosphenia curvata* (Kuetz.) Grun., *Mastogloia Smithii* var. *lacustris* Grun., *Navicula cincta* (Ehr.) Kuetz., *Pinnularia fasciata* (Largest.) Hust., *Gyrosigma Scalpoides* (Rabenh.) Cl., *Amphora ovalis* var. *pediculus* Kuetz., *Cymbella parva* (W. Sm) Cl., *Gomphonema constrictum* Ehr., *Bacillaria paradox* Gmelin and others.

From the Pyrrophytic department - *Cryptomonas obtorta* Conr, *Peridinium cinctum*. F. *Westii* (Lemm) Lef. met with species such as From the department Euglenophyta - *Trachelomonas oblonga* Lemm., *Phacus parvulus* Klebs, *Euglenopsis vorax*. F. *minor* (Skuja) Popova, there were such species.

From the division Chlorophyta - *Chlorella luteoviridis* Chodat., *Ulothrix zonata* Kuetz., *Schizomeris Leiblenii* Kuetz., *Cladophora glomerata* (L) Kuetz., *Cosmarium trilobulatum* Reinsch., *Closterium Nordstedtii* (Delp), *Spirogira calospora* Cleve and meets others.

It should be noted that A. Ergashev studied the BFMC, NFMC canals from the points we studied. In addition to the studies of A. Ergashev, we studied new requirements from the canals of the Ferghana Valley from the beginning to the place of discharge of BFMC, NFMC, SFMC.

2. Conclusions

A comparative study of the flora of algae from different water bodies makes it possible to determine the order of species, as well as the development of algae under the

influence of various environmental factors. Accordingly, the algae flora of the channels of the Ferghana Valley was compared with the algae flora of various reservoirs of Central Asia and the relationships between them were identified.

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