

Lichens of the middle course of the Zarafshan river basin RESEARCH WORK REPORT

1. Collection and processing of materials from lichens along the Zarafshan basin
2. Analysis of the life forms of lichens and their distribution in substrates
3. Determination of taxonomy using herbarium material collection identifiers from the areas of the middle reaches of the Zarafshan River
4. Study of the comparative morphology, biology, habitat and ecology of the lichen department
5. Preparation of articles for international and national conferences on the results of research

REPORT

The problem of conservation and sustainable use of biological diversity is one of the global problems in the modern world. This is one of the current environmental problems such as desertification, development of mountainous areas, man-made pollution, climate change and others. The first and most important step in solving the problems related to the conservation of biological diversity is a comprehensive study of the structure of the biosphere and the evolution of the plant world. Therefore, it is very important to determine the floristic composition of certain areas, to study the taxonomy, ecology, geographical distribution, formation and genesis of flora.

Despite the important role of these unique symbiotic organisms in biogeocenoses and their specific processes, more than 4,500 species of higher plants are distributed in Uzbekistan, but the species composition of lichens distributed in the country has not been studied. As the most sensitive constituent organisms of lichens phytocenoses, they respond quickly to air pollution and are reliable bio-indicators in monitoring the state of ecosystems.

1. Along the middle reaches of the Zarafshan river to the following areas: SamSU Botanical Garden, Samarkand district Oxalik village Oxaliksay, Oxalik village waterfall, Devsoy, Zarafshan national nature park 2-3 sections, Urgut district Tahta Karacha pass, Seven houses soyval, Omonq , Baikishlak village, the valley, the village of Jomboy district Qoraqasmoq places grandfather Soyinka, the village of Nurabad district Oqsoy, expeditions were organized and more than 400 prototype herbaria milder collected and the samples are reprocessed using the determinative species composition of the herpetic aniylandi and this work continues etirilmoyda.
2. Analytical work has been carried out on the life forms of lichens, their cross-section and distribution in substrates, and this work is ongoing.
3. The morphology and biology of the lichen department were studied.

4. According to the results of research, the article was published in 2 international, 1 national conference, 1 journal of the HAC and 1 journal of the Scopus database.

№	Name the farewell	Region	Mestonaxojdenie, mestoobitanie	Height above sea level	Coordinates
	Neofuscelia pulla (Ach.) Essl.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1255	39 ° 29'19.0" N 66 ° 51'03.2" E
	Neofuscelia loxedes (Nyl.) Essl.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1002	39 ° 29'53.0" N 66 ° 51'43.6" E
	Pleurosticta acetabulum (Neck.) Elix et Lumbsch	Samarkandskaya obl.	Oxaliksayskogo basseyna	1148	39 ° 29'19.0" N 66 ° 51'19.0" E
	Lecanora argopholis (Ach.) Ach.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1124	39 ° 29'07.0" N 66 ° 51'13.1" E
	Lecanora muralis (Schreb.) Rabenh.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1091	39 ° 29'07.0" N 66 ° 51'13.1" E

<i>Rhizoplaca chrysoleuca</i> (Sm.) Zopf.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1143	39 ° 29'18" "N 66 ° 51'18.2" E
<i>Ramalina pollinaria</i> (Westr.) Ach	Samarkandskaya obl.	Oxaliksayskogo basseyna	946	39 ° 30'01" "N 66 ° 51'43.4" E
<i>Aspicilia vagans</i> Oxner	Samarkandskaya obl.	Oxaliksayskogo basseyna	1306	39 ° 28'51" "N 66 ° 52'05.0" E
<i>Physcia tribacia</i> (Ach.) Nyl.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1128	39 ° 28'35" "N 66 ° 49'35.9" E
<i>Physcia biziana</i> (A. Massal.) Zahlbr.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1128	39 ° 28'35" "N 66 ° 49'35.9" E
<i>Xanthoria elegans</i> (Link) Th. Fr.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1715	39 ° 28'36" "N 66 ° 52'26.7" E
<i>Caloplaca tomini</i> (Savicz) Ahlner	Samarkandskaya obl.	Oxaliksayskogo basseyna	1056	39 ° 28'36" "N 66 ° 49'44.9" E
<i>Peltigera canina</i> (L.) Willd	Samarkandskaya obl.	Oxaliksayskogo basseyna	1306	39 ° 28'51" "N 66 ° 52'05.0" E
<i>Peltigera rufescens</i> (Weiss) Humb.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1255	39 ° 29'19" "N 66 ° 51'03.2" E
<i>Leptogium asiaticum</i> PM Jørg.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1768	39 ° 28'10" "N 66 ° 52'27.7" E
<i>Candelariella spraguei</i> (Tuck.) Zahlbr.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1150	39 ° 26'48" "N 66 ° 49'11.8" E
<i>Umbilicaria cinereorufescens</i> (Schaer.) Frey	Samarkandskaya obl.	Oxaliksayskogo basseyna	946	39 ° 30'01" "N 66 ° 51'43.4" E
<i>Phaeophyscia hispidulla</i> (Ach.) Essl.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1091	39 ° 29'07" "N 66 ° 51'13.1" E
<i>Dermatocarpon moulinsii</i> (Mont.) Zahlbr.	Samarkandskaya obl.	Oxaliksayskogo basseyna	1306	39 ° 28'51" "N 66 ° 52'05.0" E
<i>Dermatocarpon miniatum</i> (L.) W. Mann	Samarkandskaya obl.	Oxaliksayskogo basseyna	1306	39 ° 28'51" "N 66 ° 52'05.0" E
<i>Placidium squamulosum</i> (Ach.) Breuss	Samarkandskaya obl.	Oxaliksayskogo basseyna	1715	39 ° 28'36" "N 66 ° 52'26.7" E
<i>Lichinella confinis</i> (OF Mull.) C. Agardh	Samarkandskaya obl.	Oxaliksayskogo basseyna	1709	39 ° 28'16" "N 66 ° 52'23.7" E
<i>Lichinella nigritella</i> (Lettau) PP Moreno et Egea	Samarkandskaya obl.	Oxaliksayskogo basseyna	1709	39 ° 28'16" "N 66 ° 52'23.7" E



Ecological groups of lichens depending on their relation to the environment and external factors.

Based on the collected materials, the following scientific articles were published.

1. Norkulov MM, Islomov BS, Mukumov T.X. Features of biology and ecology, growth and development of *Cousinia* species in various ecological conditions of Uzbekistan.1. *Journal. International Journal of Advanced Research in Engineering and Technology*, 11 (11), 2020, pp. 444-452.

<http://www.iaeme.com/IJARET/issues.asp?JType=IJARET&VType=11&IType=11> .

2. MM Norkulov, FB Abdukholiqov Prospects for effective use of lichens // *Collection of materials of the Republican online scientific-practical conference "Conservation and development of biodiversity"*. Guliston 2020 y. 187-190-b.

3. D.Ya. Muminov, X.K. Khaydarov, T.X. Mukimov, M.M. Norkulov, Z.U. Djumaeva Bioecological features and practical significance of *ephedra* species in Uzbekistan.// *Namangan State University Scientific Bulletin* 2020 y. № Number 9 pages 104-110

4. Norkulov MM, Rasakhanova YZ The role of lichens in the food industry. II *International Scientific Theoretical Conference on "Food Security: National and Global Drivers"* Samarkand 2020 Pages 486-488.

5. M.M. Norqulov. Ecology of lichens of Zarafshan National Nature Park // II *International scientific-theoretical conference on "Food Security: National and Global Drivers"*. Samarkand 2020 Pages 483-486.