

A Transformation of Foothills of South Uzbekistan (In The Sample of Kashkadarya Basin)

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Abstract- The changes in plant ecology in the Kashkadarya basin area in Uzbekistan have been investigated since 2012. According to the result of the investigation, the number of livestock and pasture are increasing as the population increases, as well as soil erosion, greenhouse effect and desertification. More eco-friendly and sustainable education should be implemented for conservation of ecosystem in this area.

Index Terms- pasture, degradation, Uzbekistan, plant, livestock, grazing, ecology, greenhouse effect, desertification

I. INTRODUCTION

In this paper, we share information on the ecosystem in Uzbekistan and address the issue of development and conservation in this region.

The Kashkadarya region includes of Karshi depression in southern Uzbekistan, bordered in the north by the mountains of Koratepa, Zirabulok, Ziyevuddin, in the east - by the foot of the southwestern part of the Gisar ridge [3]. As a result of the study, we analyzed a plant of mountain pastures and determined the current state of pastures in the Kashkadarya basin. The territory belongs to the temperate climatic zone. The climate is dry continental with long, hot and dry summer season; the winter season is short with mild frosts and little snow. The average annual temperature is 13° C - 14° C, the average temperature of January is 0° C - 2° C, average temperature of the July is 26° C - 28° C, the annual precipitation is 400 - 600 mm [6].

One of the leading branches of agriculture is animal husbandry, and it is important to conduct a scientific, practical study, assessment of the material source of its development - natural food (source of hay) - pasture types. This work arose in the process of implementation and the requirements of economic development, subsequently the requirements of the national economy, and is one of the urgent tasks of modern science and technology. The types of pastures - natural territorial complexes with similar climate, soil, fertility, season, when cattle and types are grazed - are determined by the edificatory types of plant families. There is a need to determine their ecological status: structure, composition, fertility, and degree of damage (degradation, transformation), types of damage factors (damage), and other quantitative and qualitative indicators. The foothill pastures of the Kashkadarya basin are one of the main bases for the development of animal husbandry, in recent years the fertility

of which is reduced under the influence of metrological factors [4]. Uzbekistan took an active part in working out the United Nation's Convention on Desertification Control and ratified it in 1995.

Scientific and practical works on the ecological study and restoration of pastures were carried out in several countries. An investigation of the pasture monitoring in New Zealand was studied by Dave Clark, Annette Litherland, Gonzalo Mata and Robert Burling-Claridge. 20% of the farmer's budget is satisfied by pastures, and to increase this indicator by 50% is the main aim. In California, 52 of plant species are grown in 4 categories. These are: 1. Pasture herbs. 2. Broad leaf pastures herbs. 3. Irrigated pasture herbs. 4. Irrigated broad leaf pasture herbs [2].

The decline in forests in the Central Asian countries has been influenced primarily by anthropogenic factors. Since 1996, 1 million hectares of forest areas have been lost. However, forests are estimated at about 28% in Uzbekistan [1].

Uzbekistan, a part of which is the Kashkadarya basin forests, is also diverse. The unique geomorphological structure and climatic conditions of the Kashkadarya basin, that the diversity of natural conditions are essential and these determine the richness of region's flora, seasonal and regional distribution are specific for the basin.

The main sources of statistical analysis of the foothill pasture of the Kashkadarya basin are the «Flora of Uzbekistan» and «The determinant of plants in Central Asia». First edition of «Flora of Uzbekistan» in 6 volumes was published in 1941-1961. 3666 species of vascular plants, belonging to 1153 genera and 125 families were included in this revision. About 500 species of cultivated and introduced species were listed in this edition as well. Since 1969-1991 a large team of former Soviet Union botanists published the «Conspectus Florae Asiae Mediae» with about 9000 species (in 10 volumes). The area of this revision includes of 5 republics (Uzbekistan, Turkmenistan, Kazakhstan, Kirgizstan and Tadzhikistan). Starting from 2012 Uzbek botanists are working on new 2 edition of «Flora of Uzbekistan» planned e-flora in the Internet. Still new species are found and described every year at this area. Nowadays there are about 4500 species naturally growing here. First edition of Red Data Book of Uzbekistan was published in 1984 with 124 species. In 2009, 4th edition was published with 321 species of vascular plants. Amount of disappeared species increased from 4 to 18.

II. MATERIAL AND METHODS

The area of research is situated in Kashkadarya basin foothills. Foothills and the lower mountain belt are characterized by ephemeral-ephemeroid and sagebrush-ephemeroid communities, formations of halophytes and gypsophytes, fragments of xerophytic shrubs (*Amygdalus spinosissima* Bunge). Large areas are covered by rained crops and fallow lands with ruderal vegetation. Tall grass communities with domination of *Elymus hispidus* (*Elytrigia trichophora*) and sparse juniper woodlands are developed in the middle mountain belt. The territory belongs to the temperate climatic zone. The climate is dry continental with long, hot and dry summer season; the winter season is short with mild frosts and little snow. Field research was performed during June 2012 until now by traditional phytosociological methods with description of plant associations, collection of herbarium and photographing of surveyed plots [5, 7].

III. RESULTS AND DISCUSSION.

The majority of sheep and goats are grazed on the desert and semi-desert natural pastures in Uzbekistan. In the Adyr pastures of

the Republic of Uzbekistan, about 3.8 million hectares of the area can not be provided for the needs of livestock.

So we researched scientific work in southern parts of Uzbekistan that situated in Kashkadarya basin and defined about 371 of plant species: trees – 13, bush and small bushes - 34, semi-bushes - 19, semi - small bushes - 15, perennials - 316, biennial - 27, and annuals - 303. The living forms of the tree mainly belong to the family of Salicaceae and Rosaceae, forming the tugai and foothill pine trees (Table-1.2).

The presence of endemic and rare species in the flora of the Kashkadarya basin indicates that they have a unique history of development and that there is a risk of loss of certain species due to anthropogenic factors. As it is known, the ecological structure of the flora is mainly dependent on the external environment and the type of soil. If environment is more complicated, the variety of plants is more viable. The analysis of the vital form of plants leads to the linkage of the problem of its historical development (genesis). In addition, the study of the ecological composition of plants reveals one aspect of its historical development.

Table-1. Leading family and species of plants in foothills in the Kashkadarya basin

№	Family	Number		%	Genus	Number	%
		genus	species				
1	Poaceae	39	63	26	Astragalus	21	31,3
2	Asteraceae	23	33	14	Gagea	8	11,9
3	Fabaceae	17	45	16	Hordeum	6	9
4	Boraginaceae	17	22	10	Bromus	6	9
5	Apiaceae	15	16	8	Artemisia	5	7,4
6	Caryophyllaceae	12	23	9	Aegilops	5	7,4
7	Lamiaceae	9	15	6	Convolvulus	4	6
8	Brassicaceae	8	9	4	Delphinium	4	6
9	Liliaceae	5	12	4	Polygonum	4	6
10	Rosaceae	5	8	3	Allium	4	6
total		150	246	100	Total	67	100

Table-2. The viable forms of plants in foothills in the Kashkadarya basin

No.	Viable forms	Number of species	%
1	Trees	7	1,9
2	Bush	14	3,8
3	Semi-bushes	7	1,9

4	Small bush	2	0,5
5	Semi small bushes	5	1,3
6	Perennials	175	47,2
7	two year old herbs	13	3,5
8	One year old herbs	142	38,3
9	One year old or two year old	6	1,6
	Total	371	100

We can see from the table, uncontrolled feeding of livestock and collection of medicinal plants without taking into account the vegetative process leads to a significant shortening of the ecological amplitude of these species. Particularly, Komarovia Korovin, which is characterized by the mono-endemic of Zarafshan mountain ranges on the border of the Zarafshan Range (The part of Kashkadarya basin) and Kitab Geological Reserve, was observed to have an increased influence of anthropogenic factors. If we do not fulfill the safeguard measures, the number of plant species would be increased in the Red Book. Also, Iris svetlanae (Vved.) F.O.Khass. is an endemic species grown on the slopes of the mountain chain in Gissar and grows from Dehkanobod to the Baysun village. There is a need to maintain the range of this species.

[1]

IV. SUGGESTION

The Aral Sea and water disputes in Central Asia are well known. However, the degradation of grasslands will be continued, caused by the development of animal husbandry. In order to prevent this, more environment and sustainable development education should be implemented.

All primary schools in Uzbekistan cover environmental issues in the subject "Surrounding World" at levels 1 and 2, and in the subject "Man and Nature" at levels 3 and 4. There are no environment courses as such in the secondary and high schools. Some environmental subjects are integrated in courses on natural sciences and on health and human life. Manuals were developed on Biodiversity, Man and Earth, Man and Air and on Water as Source of Life for levels 5 to 9 as supplementary learning materials.

However, teachers and schools are less interested in environmental and ecological changes. Before the problem

becomes more serious and difficult to reverse, it is needed to promote public awareness and education about ecosystem conservation more actively.

REFERENCES

- [1] Central Asia Atlas of Natural Resources (2010). Asian Development Bank, Manila, Philippines. - P.119.
- [2] Bartolome, J. (2016). Policy and Management. University of California Department of Environmental Science. - Pp.1-58.
- [3] Kashkadarya Region (1959). Part I. Nature, Proceedings SASU, Geographical Science, Tashkent: SASU, - P.279.
- [4] Khuzhanazarov U.(2012). Current state of the pastures of the upper zone of the Kashkadarya basin. Bulletin of Agrarian Science of Uzbekistan. No. 1–2 (47–48), - Pp.111–114.
- [5] Mirkin, B.M., Naumova, L.G. and Solomeshch, A.I. (2000). The Modern Science of Vegetation. Moscow: Logos.
- [6] Williams, M.W. & Konovalov, V.G. (2008). Central Asia Temperature and Precipitation Data. Boulder, Colorado: USA National Snow and Ice Data Center, 1879-2003.
- [7] Shomuradov H., Khuzhanazarov U., Beshko N., Akhmadaliev B., Sharipova V.(2017). A Demographic Structure of Populations of Salvia Lilacino coerulea Nevski, a Rare Species Endemic to the Western Pamir-Alay (Uzbekistan, Turkmenistan). American Journal of Plant Sciences, 8, 1411-1422.

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