

Arrangements for Analysis and Protection of Some Food and Economical Significance of Rare and Threatened Species in about of Absheron, Azerbaijan Republic

Ibadullayeva Sayyara, Aliyeva Shahla, Ahmedzade Sabina, Asgerova Naila, Movsumova Nuri, Mammadova Hasrat, Shiraliyeva Gulnara

Ethnobotany Lab of the Institute of Botany of the ANAS

Abstract – The article has been devoted to ethno-characteristic research of useful plants spread in the Absheron flora and ways of sustainable use of plant resources.

188 varieties belonged to 63 genera of useful and food plants and plants of economical significance in the Absheron Area have been identified by the updated methods and scientific expeditions.

Areal of the plants used on food and medicinal purposes as well as ways of sustainable use were investigated. An action plan for protection of rare and threatened varieties (16 genera; 18 varieties) has been developed.

Keywords – Food and Medicinal Plants, Rare and Threatened Species, Absheron, Azerbaijan Republic.

I. INTRODUCTION

One of the main natural resources of the Azerbaijan Republic is its rich flora. And one of the urgent problems of the biosphere study is investigation of the flora genepool. One of the leading directions in this field is study and protection of flora genepool especially rare and threatened species. At present there are 450 rare and threatened species in our flora. 30 species of them have lost, 70 species are threatened, 230 species are rare and 100 species are of areal getting less.

Recently according to the information of the scientific expeditions 20% id.est. 800 species of the Azerbaijan flora need protection currently. In other word, many rare and threatened species genepool hasn't been attracted on the pages of the Red Book of Azerbaijan issued in its time.

The majority of plant species existed in all over the world that occupy an extended area in natural area complexes in our Republic has been developed. Existence of flora elements of different sources, resulting of subjection to ancient freezing process of certain areas, as well as such reasons resulted remain of more endemic (met only in Azerbaijan) and much more relict (ancient) plants. As many of them have remained in small sites and have got a small areal their genepool urgently need protection. On the result of the economical activities without any system areals of tenth of such species are gradually getting decreased.

During last several decades the process got strengthened; not only separate plant species but even many vegetation groups were destroyed for sowig area, tillage, excessive pasture and other reasons that have resulted genepool's getting poor. All of these require a serious approach to study of the problem systematically and scientific-based.

Along with all of these, the role and significance of the uninterrupted development and biodiversity in the cultural increse and history of the Azerbaijan People are very big. That is why collection, study and pass the biodiversity to the future generation through its concervation and protection is very necessary. To extend international co-operation in the biodiversity protection field the Azerbaijan Republic has joined to the "Convention on Biological Diversity" of the UNO in 2000. Implement the undertaken obligations of the Country i.a.w.the Convention on the base of the Resolution №848 of December 21 2001 of the President of the Azerbaijan Republic a State Commission for GenRes of the BioDiversity has been created to execqute complex arrangements for preventing threat of disappearance of genetic resources of plants, animals and microorganisms. To provide co-ordination of activities on the field of plant genetic resources a National Council for Plant GenRes has been created by the Commission in 2000. National Action Plan for Environment Protection, National Programme "On the Ecologically Stable Social and Economical Development", The Law of the Azerbaijan Republic on the Natural Territories and Objects of Special Protection, National Strategy & Action Plan for Protection and Sustainable Use of BioDiversity in the Azerbaijan Republic and other state programmes are being adopted and carried out [National Investigation for BioDiversity of the Azerbaijan Republic, 2004; National Strategy and Action Plan for Protection and Sustainable Use of BioDiversity in the Azerbaijan Republic, 2006]. Proposals and recommendations provided by us in the Working Group established for higher plants have been attracted to implement all of these; high risk regions for genetic resources of plant diversity and ecosystems with ritch vegetation cover have been defined and evaluated.

This problem is also actual because influence of anthropogenic factors and global ecological changes that cause a threat to biodiversities durind the last tenth of years has more increased; biodiversity sharply began to decrease through the degradation of ecosystems; many valuable species have lost or subjected to to threat.

II. MATERIAL AND METHODS

There are various methods on the researches of flora and vegetation cover including useful plants [Grossheym, 1946; 1952; Ipatyev, 1966]. Morphological, taxonomic, floristic, geobotanical, bioecological and other methods have been comparatively used during search of these ones

[Beydeman, 1954; Ilyin, 1948; Serebryakov, 1964]. Areal and growing environment of the species have been identified by the expeditions arranged on different routines of the Absheron Region of Azerbaijan; their herbaries and seed material were collected; photographs of the plants were taken and data about their growing condition were registered; all species were analysed in comparison with floras [Conspects of the Caucasus flora, 2003-2006].

The Red List was used, new data about rare and threatened species have been acquired [Red Book of the Azerbaijan SSR, 1989; Rare and threatened species of flora of the USSR..., 1981].

III. DISCUSSION

One of the general problems of Study of the BioDiversity is ethnocharaceric analysis and protection of the useful resources of the flora. Related to it expedition routines for use of plants have been defined around the region on the following purposes: identification of areals of important food plants and plants of economical significance in the research area; acquisition of seeds and herbaria of those plants at the same time acquisition of materials concerning to the use of these plants together with the local people.

- Baku-Hovsan, Turkan, Gala and Zira Settlements;
- Baku-Garadagh-Gobustan, along the Seashore;
- Baku-Binagadi, Mehtiabad, Fatmai, Masazyr, Khyrdalan;
- Baku-Sabunchi, Zabrat, Pirshagha and Goradil;
- Baku-Bina-Mardakan, Shuvalan.

On the 1-st routine semidesert vegetation around the Gobustan State Preservation, its phytocenoses, families, genera, species and varieties were analysed in May 20 2010. Plants belonged to *Chenopodiaceae* Vent. Family: *Salsola* L., *Alhagi* Hill, *Artemisia* L. species are of preference from the vegetation point of view. *Heratsium* of the Compositae Family is met with seldom flowers. Sampls of herbarium and seed have been taken from the research area: especially fig tree, following grass-plants as: *Aegilops* L., *Teucrium* L., *Ephedra* L., *Stipa* L., *Delphinium* L., *Equisetum* L. and etc.grown on a rock. Jungles of *Lycium* L., tamarix are often met.

Nearby the Sangachal Terminal well grown *Avena* L., *Medicago caerulea* Less. ex Ledeb., jungles of licorice *Glycyrrhiza* were observed along the highways to the seaside; *Bromus* and *Poa* samples as well as *Hordeum spontaneum* were collected among the water pipelines.

On the 2-nd routine the investigation activities were carried out in Hovsan, Turkan, Gala and Zira Settlements in June 18 2010.

During the investigation search of primitive solinity and desart vegetation, "food and medicinal herbs" in the 'seashore sandy desart' located on the South-Eastern direction of the Absheron botanical and geographical region, as well as ethemer plants of semy-desart vegetation that grow in Hovsan, Turkan, Gala and Zira Settlements was carried; some works concerning to their role in vegetation cover, areal, study of bioecological features were carried out.

Representatives of the *Poaceae* Family as: *Avena*, *Hordeum leporinum* Link, *Stipa*, *Agropyron* Gaertn. and some representatives of the *Chenopodiaceae* Family as: *Atriplex* L., *Petrosimonia* Bunge.etc.as well as *Glycyrrhiza* and others have been spread around the Zira Settlement.

Agropyron, *Aegilops*, *Avena*, *Allium*, *Euphorbia* and other populations were registered nearby the olive gardens opposite to military division in the Gala Settlement and around it.

Alopecurus L., *Trifolium* L., *Aegilops*, *Euphorbia*, *Bromus* L., *Alhagi*, jungle of licorice *Glycyrrhiza* and etc. are met around the Turkan Settlement.

Representatives of the *Chenopodiaceae* Family, aromatic estragon *Achillea*, *Bifora*, *Alhagi*, *Cirsium* Hill in the Hovsan Settlement and in the surrounding it vegetation cover and jungles of *Tamarix*, *Cane* and *Carex* L. exist in the seashore marsh lands.

Generally, during the investigation the followings were observed: vegetation cover was very week; getting deseart and salination processes were intensive; negative effect of zoogenic and antropogenic factors were strong.

Afterwards, on the 3-rd routine investigation activities were carried out in the Binagadi, Mehtiabad and Fatmai Settlements as well as around the Masazyr Lake in August 3.

Various cearials as: wheat, barley *Hordeum*, *Avena* and *Medicago* populations have been registered by the road near the Binagadi Village. At the same time *Hordeum leporinum*, *Plantago*, *Convolvulus*, *Cichorium*, *Polygonum*, *Atriplex*, *Lolium* L. and others originate cenose in the territory.

Semi-desart vegetation as: estragon, *Alhagi*, endemic for Azerbaijan *Astragalus igniarius*, *Festuca*, and other plants as: *Medicago*, *Aegilops*, *Teucrium* are met in the Mehtiabad area.

Herbarium samples have been taken from a natural vegetation cover remained in a small area in the Fatmai Settlement (around the Fatmai Lake). The area is under a strong antropogenic effect. The plants originating general background are: *Eryngium campestre* L., *Achillea*, *Medicago*, *Alhagi* and cereals as: *Aegilops*, *Hordeum leporinum*, *Ecballium* A.Rich. and etc. *Cane*, *Carex*, *Peganum*, *Alopecurus*, *Aegilops* and others are met in picked state in the area.

Mainly representatives of the *Chenopodiaceae* Family and *Carex* bushes are met in the salinated lands around Masazyr Lake. Cover of grass is very week. Beyond the salinated areas cereals as: *Hordeum leporinum*, *Tamarix*, *Alhagi*, *Rosemary* and rare plants as: *Astragalus bakuensis* were registered. Species of *Astragalus igniarius* and *Aegilopus* genus are also met there. The main background consists of rosmarine bushes and *Echinops* L.

Thus 188 species belonged to 63 genera of useful food plants and plants of economical significance have been identified in the Absheron botanical and geographical region. 48 species of the food plants are cereals and legume, 30 species are fruits and grass-herbs and the rest 110 species are spicery and medicinal herbs. The main genera of wild food and other useful plants of Absheron

and species belonging to them are given in the Fig1 provided below. They are integrated in 2 big groups being food plants and other useful plants. They are used as: food

plants - cereals; legume; fruit; vegetable garden and spicery. Besides, there are also medicinal herbs that are still being used from the wild flora.

Table 1: The main genera of wild plants in about of Baku

Food plants					
Cereals		Fruit and grass plants			
<i>Avena L.</i>	14	<i>Hippophae L.</i>	1	<i>Amaranthus L.</i>	5
<i>Vicia L.</i>	10	<i>Amygdalus L.</i>	1	<i>Anabasis L.</i>	3
<i>Aegilops L.</i>	7	<i>Gerasus Juss</i>	1	<i>Rumex L.</i>	3
<i>Hordeum L.</i>	7	<i>Prunus</i>	1	<i>Malva L.</i>	2
<i>Triticum L.</i>	5	<i>Ficus L.</i>	1	<i>Morus</i>	2
<i>Pisum L.</i>	1	<i>Olea L.</i>	1	<i>Grossularia Mill.</i>	1
<i>Eleusine Gaerth.</i>	1	<i>Rosa L.</i>	1	<i>Ziziphus Mill.</i>	1
<i>Leymus Hochst</i>	1	<i>Elaeagnus L.</i>	1	<i>Mespilus L.</i>	1
<i>Panicum L.</i>	1	<i>Cydonia Mill.</i>	1	<i>Portulaca Lindl.</i>	1
<i>Secale L.</i>	1	<i>Rubus L.</i>	1	<i>Punica L.</i>	1
Total	48			Total	30
78 species					
Spicery, medicinal and aromatic plants					
<i>Astragalus L.</i>	23	<i>Carthamus L.</i>	3	<i>Rhus L.</i>	1
<i>Trifolium L.</i>	14	<i>Altheae L.</i>	3	<i>Daucus L.</i>	1
<i>Lepidium L.</i>	8	<i>Solanum L.</i>	3	<i>Foeniculum Mill.</i>	1
<i>Artemisia L.</i>	7	<i>Juniperus L.</i>	3	<i>Apium L.</i>	1
<i>Allium L.</i>	4	<i>Brassica L.</i>	2	<i>Mentha L.</i>	1
<i>Asparagus L.</i>	4	<i>Bifora Hoffm</i>	2	<i>Spinacia L.</i>	1
<i>Geranium L.</i>	4	<i>Fragaria L.</i>	2	<i>Raphanus L.</i>	1
<i>Calendula L.</i>	3	<i>Capparis L.</i>	2	<i>Falcaria L.</i>	1
<i>Carthamus L.</i>	3	<i>Beta L.</i>	1	<i>Glycyrrhiza L.</i>	1
<i>Lactuca L.</i>	3	<i>Coriandrum L.</i>	1	<i>Helichrysum L.</i>	1
<i>Ephedra L.</i>	3	<i>Salvia L.</i>	1	<i>Visnaga L.</i>	1
				Total	110

On the result of the carried out investigation it was realised that total number of the species of food plants and plants of economical significance, rare and threatened as

well as endemic and relic ones in the suburb of Baku id est.in Absheron botanical and geographical region of Azerbaijan is joined at 16 genera and 18 species.

Table 2: Rare and threatened species

No.	Species name	Acquisition area	Proposed protection arrangements
1.	<i>Avena bruhsiana</i>	Absheron: Sumgayit, Mardakan, Boyukshor, Shubani	A Preservation should be established
2.	<i>Avena ventricosa</i>	Absheron: Yasamal Valley, Pirallahi and Bulla Ilands	A Preservation should be established
3.	<i>Hordeum spontaneum</i>	Absheron, Badamdar Settle-ment (not far from the TV stella)	The population should be controlled
4.	<i>Secale sylvestre</i>	Absheron	The population should be controlled
5.	<i>Aegilops kotschy</i>	Absheron	The population should be controlled
6.	<i>Ammochloa palaestina</i>	Shuvelan - in the Absheron Peninsula	A Preservation should be established
7.	<i>Astragalus bakuensis</i>	Absheron: Mardakan, Shuvelan, Buzovna, around the Masazyr Lake	Protection of the population should be organized
8	<i>Glycyrrhiza glabra</i>	Absheron	Its preparation should be restricted
9	<i>Onobrychis cyri</i>	Absheron	Areal should be identified

10	<i>Onobrychis vaginalis</i>	Absheron	Spread should be identified
11	<i>Juglans regia</i>	Absheron	The population should be controlled
12	<i>Rhus coriaria</i>	Absheron	The population should be controlled
13	<i>Salvia tesquicola</i>	Absheron	Spread should be identified
14	<i>Calligonum aphyllum</i>	Absheron, seashore sands	Protection of the population should be organized
15	<i>Calligonum bakuense</i>	Absheron: Mardakan, Shuvelan and Gobustan Settlement	A Preservation should be established
16	<i>Ziziphus jujuba</i>	Absheron	Spread should be identified
17	<i>Beta maritima</i>	Absheron	Spread should be identified
18	<i>Apium graveolens</i>	Absheron, Caspian Seashore	Spread should be identified and protected

As it is seen from the table the representatives of the *Poaceae* Barnhart Family are on the 1-st place according to its quantity content of the rare and threatened species in the botanical & geographical areas. Representatives of the *Poaceae* Family as: *Avena brunhsiana*, *Avena ventricosa*, *Hordeum spontaneum*, *Secale sylvestre*, *Aegilops kotschyi* and etc. restricting their areals and getting rare for different reasons as well as completely lost species like *Ammochloa palestina* are also met there. This recent species was collected by the former acad. Vahid Hajiyev in its classical spread area in the Shuvelan Village of the Absheron Peninsula in 1952. The *Ammochloa palestina* has never collected since the mentioned time and nobody met it. The species was accessed (as a threatened one) into the Red Book of Azerbaijan.

As a result of excessive use and greazing of the area, use of trees like heating wood, collection of flowers and fruits and etc. along with the occurrence of changes in the genetic apparatus the representatives of the *Fabaceae* Lindl Family as: *Astragalus bakuensis*, *Glycyrrhiza glabra* and other species have restricted their areals (such case is also met in the rare and threatened species). And even some of them are threatened (such cases were observed within every family).

As a result of the research of rare and threatened species it was realized that their protection measurements were divided into 4 groups: establishment of reservations; populations control; areals identifications; and restriction of their preparation.

A special method of a measurement system development for genepool study and protection of rare species is required. We can divide those species into 5 categories according to their level of getting rare and threatened:

1. Those being under a direct threat of lost: the species are completely getting lost; there is no condition for their survival except their special protection means only; 1 species.
2. Rare species: the species are not under a direct threat of lost, they have spread in a little site and they can be lost for some reasons; 12 species.
3. The species areals of which are getting less and less: the species are shortening their life during some period of time for the antropogenic or other reasons; 12 species.

4. The species not identified current state, unknown or not enough known rare ones; 5 species.
5. Rare species remained in a small quantity, but reintroduced ones on the result of the effective measurements (for instance: extended planting prevented their threat of lost);
6. But some species can be divided into several categories.

IV. CONCLUSION

18 species belonged to 16 genera being rare and threatened for the researched area have been registered. Action plan of these species protection were divided into 4 groups: establishment of reservations; populations control; areals identifications; and restriction of their preparation.

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