

PRESERVATION STATUS OF THE BLUEBERRY (*VACCINIUM MYRTILLUS*) IN THE NEMIRA MOUNTAINS

Diana – Elena Maftai, Daniel – Ioan Maftai

Key words: *Blueberry, Nemira mountains, preservation, threats*

INTRODUCTION

Both the blueberry leaves and fruits are used due to their therapeutical purposes. The leaves may be harvested since late June until September, and the fruits – between July and August, even September in the shady regions. The blueberry fruits comprise antibacterial and antiseptic substances.

According to some studies, the fruits contain an equivalent dose of vegetal insulin, therefore they are recommended as an adjuvant in the treatment of diabetes. The calcium, potassium, sodium, magnesium salts, and the vitamins such as: A, C, B₁, B₂, and the proteins comprised by the blueberry fruits are a stimulant that enhances the body resistance and strengthens the immune system.

It is well known that the blueberries are recommended in the treatment of: urinary infections, indigestion, gout, gastro-intestinal infections, diabetes, diarrhoea, bronchitis, whooping cough, inflammation of the bowels, colibacillosis (an infectious disease caused by some pathogenic types of colon bacilli, characterized by diarrhoea, fever, lack of appetite), dysentery (contagious disease accompanied by abdominal pain, violent intestinal ulcerations and blood diarrhoea), typhoid fever, psoriasis (skin disease characterized by patches of abnormal skin), pharyngitis, stomatitis, hepatitis, obesity, etc. [9]

The blueberry shrubs may be found in the peak area of the Nemira mountains, covering mountain ridges such as: Farcul Mare, Nemira Mică, Nemira Mare, Șandru, Țiganca, and it spreads to the Mereni region.

The blueberry is a species characteristic to a commune interest habitat, called □Alpine and boreal shrubs□. Within this habitat, the blueberry is found together with the cranberry (*Vaccinium vitis-idaea*), and other species belonging to the *Ericaceae* family. Alongside the juniper (*Juniperus communis*), the blueberry is a key identification species for the 4060 habitat - □Alpine and boreal shrubs□, which is very important in the European context and protected by the Romanian and also by the European laws and regulations (the Habitats Directive, and the GEO no. 57/2007, completed and altered subsequently).

MATERIAL AND METHODS

In order to identify the types of habitats in which the blueberry may be found, the thorough search of the land was absolutely necessary, in order to cover the entire area.

The botanical field guides were consulted for a very precise identification of the species. The GPS coordinates were registered at the exact place in which every plant was identified.

The assessment of the preservation status was based upon some floristic field studies, considering the floristic range, the presence of rare and vulnerable species, and some environmental parameters. Those observations were made systematically on the entire research area.

The main research methods were the usual ones:

The itinerary research was a one time stage. It allowed the study of the structural characteristics, of the spread and spatial variability for the ecosystems or for the territorial ecosystem complex.

The itinerary search solved many aspects regarding the description, typification, inventory, mapping.

RESULTS AND DISCUSSIONS

In order to achieve a better results interpretation, one accomplished a thorough research and study by means of the references, together with the areas and the maps of the favourable habitats in which the blueberry may be found. This species is to be found in many regions of our country: Eastern and Southern Carpathians (more precisely, in the alpine and subalpine level), in the Western Carpathians (boreal and subalpine levels of the Trascău mountains, Muntele Mare, Scărița-Belioara, Râmeț), Apuseni, Bucegi, Buila-Vânturarița, Călimani-Gurghiu, Ceahlău, Cheile Bicazului-Hășmaș, Ciucaș, Cozia, Creasta Nemirei, Cușma, Domogled-Valea Cernei, Frumoasa, Gutâi-Creasta Cocoșului, Harghita Mădăraș, Leaota, Muntele Mare, Munții Ciucului, Munții Făgăraș, Munții Maramureșului, Munții Rodnei, Munții Țarcu, Nordul Gorjului de Est, Nordul Gorjului de Vest, Otulul Mijlociu-Cibin-Hârtibaciu, Parâng, Pădurea

Glodeasa, Penteleu, Piatra Craiului, Piatra Mare, Pietrosul Broștenilor-Cheile Zugrenilor, Postăvarul, Putna-Vrancea, Rarău-Giumalău, Râul Târgului-Argeșel-Râușor, Retezat, Semenici-Cheile Carașului, Siriu, Soveja, Târnovu Mare-Latorița, Tinovul Apa Lina-Honcșok, Trascău, Valea Cepelor [2, 3].

The blueberry was identified in several regions of the Nemira mountains: in Gura Țigăncii (o a surface larger than 10 ha), on the Nemira Mare mountain ridge (more than 10 ha), on the ridge inbetween Nemira and Pârâul Tablei (nearby Țiganca), on Țiganca mountain ridge and on the Șandru mountain ridge [1,4,5,6,7,8].

Observation point no 1
Toponym: Nemira Mică



Photo 1. The blueberry within the 4060 habitat in the Nemira mountains



Photo 2. *Vaccinium myrtillus*

Spread: On the northern mountainside of the Nemira Mică, at 1503 m in altitude, the blueberry habitat lies on a 4-5 ha area.

The state of preservation for this habitat is favourable.

The number of identified species on the sample area exceeds an average of 10-15 species. The most frequent species are: *Vaccinium gaultherioides*, *V. vitis-idaea*, *V. myrtillus*, *Juniperus sibirica*, *Campanula abietina*, *C. serrata*, *Nardus*

stricta, *Agrostis capillaris*, *Potentilla erecta* etc. The coverage rate for the small shrubs in these vegetation spots ranges between 50-55%, the one for the lichens and bryophytes up to 10%, and the surface deprived of any vegetation is of 5 % (Photo 1-2).

The current invasive species is *Deschampsia caespitosa*.

Threats: the pasturage, the tourism, the spruce seedlings that tend to generate forests.

Observation point no 2



Photo 3. *Vaccinium myrtillus*



Photo 4. *Vaccinium myrtillus*, *V. vitis-idaea*

Toponym: Vf Șandru, 1640 m altitudine
Identified habitat: 4060 □ Alpine and boreal shrubs □ (Photo 3,4)

Area: about 2 ha

List of vascular plants: *Vaccinium mirtyllus*, *V. vitis-idaea*, *Juniperus nana*, *Picea abies*, *Hypochoeris uniflora*, *Calamagrostis vilosa*, *Chamaenerion angustifolium*, *Campanula serrata*, *Molinia caerulea* etc.

Threats: burnt scree.

Observation point no 3 and 4

Toponym: the ridge inbetween Țiganca and Nemira Mare



Photo 5. Blueberry (observation point no 3)



Photo 6. Blueberry (observation point no 4)

The preservation status for this habitat is a favourable one (Photo 5, 6).

The number of identified species on the sample area exceeded an average of 10-15 species. The most common ones were: *Vaccinium gaultherioides*, *V. vitis-idaea*, *V. myrtillus*, *Juniperus sibirica*, *Campanula abietina*, *C. serrata*, *Nardus stricta*, *Agrostis capillaris*, *Potentilla erecta* etc. The coverage rate for the small shrubs in these points ranges between 50-55%, the lichens and the bryophytes up to 10%, and the area deprived of vegetation is of maximum 5 %.

The current invasive species was *Deschampsia caespitosa*.

Threats: the presence of pasturage, the rourism, the spruce seedlings that tend to generate new forests.

Observation points no 5 and 6

Toponym: Nemira Mare

The blueberry habitat lies on areas of dozens of hectares, covering almost the entire Nemira Mare mountain ridge. The preservation status is a favourable one (Photo 7, 8).

The determinant species are: *Juniperus sibirica*, *Vaccinium gaultherioides*, *Vaccinium myrtillus*, *Vaccinium vitis-idaea*.

The characteristic species are: *Campanula abietina*, *Vaccinium gaultherioides*, *Vaccinium myrtillus*, *Vaccinium vitis-idaea*, *Loiseleuria procumbens*.



Photo 7. Blueberry (observation point no 5)



Photo 8. Blueberry (observation point no 6)

Other important species: *Campanula serrata*, *Luzula luzuloides*, *Picea abies*, *Homogyne alpina*, *Soldanella hungarica ssp. major*, *Deschampsia flexuosa*, *Lycopodium selago*, *Nardus stricta*, etc.

The threats are as it follows: the pasturage, the harvesting of blueberries using the special combs.

Observation point no 7

Toponym: Țiganca

Altitude: 1563 m, N 46°13'10" and E 26°20'07"

Altitude: 1622 m N 46°13'55" and E 26°19'28"

Altitude: 1629 m N 46°13'51" and E 26°19'32"

The number of vascular species was over 40 species.

The blueberry shrubs on this mountain lie on the North-Western slope and on the peak plateau, and were visually assessed for a surface of more than 4 hectares. Regarding the vegetation coverage of the slope, the blueberry shrubs lie on more than 50% of the entire surface, *Alnus viridis* 20%, *Picea abies*

10%, *Juniperus sibirica* 10%, the bryophytes and the lichens 3-5%.

There was no trace of allochthonous species.

The average height of the vegetation ranged between 30-150 cm.

Many individuals of *Campanula serrata* were identified in this area.

It is recommended that the sheepfold passage will not reach the lower side of the shrubs.

Regulations meant to decrease the impact

First of all, the special combs use to collect blueberries should be restricted. This fact may be achieved by means of info campaigns, info pannels, flyers.

Although in the habitat of these shrubs one may forbid the pasturage by means of the management plan imposed, nevertheless the sheep pasturage is present at this level as well. In order to decrease the overpasturage, it is recommended that the pasturage areas should be established, and also the maximum number of sheep/surface unit, depending on each pasturage area and its state of decay.

In the regions in which the pasture is floristically degraded, and it also comprises invasive plant species, one recommends that the pasturage should be stopped during that current year, therefore allowing the habitat restoration. Each pasturage area should be thoroughly looked into before use. This leads to the sustainability establishment for each pasture.

CONCLUSIONS

The blueberry (*Vaccinium myrtillus*) is found together with the juniper (*Juniperus communis*). Both of them are key species for the identification of the commune interest habitat 4060 - □Alpine and boreal shrubs□. It lies on the entire peak of the Nemira mountains.

The preservation status of the blueberry is a favourable one within the regions in which the blueberry was found.

The main threat resides in the use of the specially manufactured harvest combs that alter many individuals, leading to their withering.

Other subsidiary threats are: the pasturage, the fire, the climate changes, the tourism, the litter.

In order to decrease the impact on this habitat, the harvest combs usage should be reduced. This may be accomplished by means of info campaigns, info pannels, flyers etc.

ABSTRACT

The blueberry is a shrub of the *Ericaceae* family with many therapeutical effects due to the high level of antioxydants in its fruits and leaves. In the mountains of Nemira it is spread in the subalpine area at an altitude starting with 1500 m.

REFERENCES

1. BARABAŞ VICTORIA, 1982 - Conspectul asociațiilor vegetale din Munții Nemira, Studii și Comunicări (1978-1980), pag. 53-82, Muzeul de Șt. Naturii, Bacău;
2. DONIȚĂ N., POPESCU A., PAUCA-COMĂNESCU Mihaela, MIHĂILESCU Simona, BIRIȘ I. A., 2005 - Habitatele din România, Ed. Tehnica Silvică;
3. DONIȚĂ N., POPESCU A., PAUCA-COMĂNESCU Mihaela, MIHĂILESCU Simona, BIRIȘ I.A., 2005 - Habitatele din România-modificări conform amendamentelor propuse de România și Bulgaria la Directiva Habitate 92/43/EEC, Ed. Tehnica Silvică;
4. MITITELU D., BARABAŞ N., 1969 - Contribuții la flora montană a județului Bacău, Studii și Comunicări ,pag. 125-128, Muzeul de Șt. Naturii, Bacău;
5. MITITELU D., BARABAŞ N., 1972 - Vegetația văii Troțușului, sector II Târgu Troțuș-Dărmănești, Studii și Comunicări ,pag. 159-176, Muzeul de Șt. Naturii, Bacău;
6. MITITELU D., BARABAŞ N., 1975 - Caracterizarea geobotanică a văii Troțușului, Studii și Comunicări, pag. 163-218, Muzeul de Șt. Naturii, Bacău;
7. MITITELU D., BARABAŞ N., 1978 - Flora și vegetația jud. Bacău, Studii și Comunicări ,(1976-1977), pag. 193-274, Muzeul de Șt. Naturii, Bacău ;
8. MITITELU D., BARABAŞ N., 1994 - Flora și vegetația munților Nemira, Studii și Comunicări ,pag. 29-48, Muzeul de Șt. Naturii, Bacău ;
9. TIȚĂ I., 2008- Botanică farmaceutică. Craiova, Ediția a III-a, Ed. Sitech, p. 658.

AUTHORS' ADDRESS

MAFTEI DIANA - ELENA - "Vasile Alecsandri" University of Bacău, Faculty of Science, e-mail: diana.maftei@ub.ro;

MAFTEI DANIEL - IOAN - "Ion Borcea" Natural Sciences Museum Complex of Bacău, e-mail: daniel_ioan_maftei@yahoo.com;