

RESEARCH ARTICLE

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Types of natural habitats in Shebenik – Jabllanica national parkERMELINDA GJETA¹, ALBANA ZOTAJ², ALFRED MULLAJ³, PEÇI NAQELLARI¹, BLERINA PUPULEKU¹¹Department of Biology, Faculty of Natural Sciences, A. Xhuvani University, Elbasan, Albania.²GEOMATICS & Register Unit at National Territorial Planning Agency, Tirana, Albania.³Research Centre for Flora and Fauna, Faculty of Natural Sciences, Tirana University, Albania.**Abstract**

The Shebenik – Jabllanica National Park was proclaimed by Albanian Government with special Decision nr. 640 of May, 21st 2008 as “Protected Area” of the second Category. This area lies in north-east of Librazhdi town, and is situated at the bordering area among Albania and Macedonia, with surface 33 927,66 ha and altitude that vary from 300 m a.s.l. to 2244 m a.s.l. The Park is of a great interest from the point of nature conservation being home of extremely valuable natural habitats, flora and wildlife fauna as well. In this article are described some of the National Park habitats types which belong to the determinations and codes of Directive 92/43/EEC and is presented their spatial coverage by mapping, using geographical information software.

Key words: type of natural habitats, habitat map, flora, plant communities, vegetation.

1. Introduction

Based on the Albanian Constitution, article 100 and articles 4, point 1, letter”, 6 and 13, of the Law nr. 8906, date 6.6.2002, “For the Protected Areas”, amended with proposal of Ministry of Environment, Forestry and Water Administration, the Albanian Government with special Decision of May, 21st 2008 proclaimed the “National Park” Shebenik-Jabllanica with surface 33 927,66 ha. Being situated at the bordering area among Albania and Macedonia, in the north-eastern part of the Librazhd District, the new National Park of Shebenik – Jabllanica is presenting an important point at the entire system of the European Green Belts, being home of extremely valuable natural habitats, flora and wildlife fauna as well. There are at least 14 glacial lakes, and the elevations in the park vary from 300 m to over 2200 m at the Peak of Shebenik Mountain. Two rivers flow and multiple smaller water sources flow through the park's area including the Qarrishte River and Bushtrice. The park area is home to a number of different rare and endemic species of plants, animals and fungi. The Park is divided in four areas; central area, with a surface of 14 046 hectares. It is determined as a high level of values area for the nature, biodiversity, and the content of flora and fauna. That's because, the zone is right protected at the first level of protection. It makes it a quiet and not damageable area. The second area is determined as a

zone of constant use. With a surface of 5 253 hectares, it includes forest all habitats, meadows almost virgin and natural, around the central area. In this way this second zone has the function of protection of the important first area. In the second zone is allowed the economic activity for divided seasons, (meadows, medicinal plants, forest fruits, etc.), which do not damage the ecologic integrity of the ecosystem. All this activity can be exercised only with the permission of the authorities of Park. In this area, can be executed the second level of protection. The recreative area has a surface of 2 209 hectares, and it is important for the tourist and natural values. This third zone, gives a lot of landscapes, wonderful panoramas and places to make a brake, to walk, to organize picnics. In this zone are included even the meadows of Letëm, Fushë Studë and Steblevë. The level of protection executed is the third one. The fourth area with a surface of 12420 ha, can be used for tourist and archaeological activities, with the permission of authorities, and the economic activities of agricultural and cultural can be exercised too. In this area are included also the inhabited area of different pictures villages.

2. Material and methods

This study is based on collected data during several field expeditions and surveys done by the authors on 2010 – 2011 in the studied area. Botany nomenclature follows the Flora e Shqipërisë

(Albanian Flora) [3], [5], [6], [7] and Flora Europaea [9]. Other necessary information is provided by using: Udhëheqës fushor i florës së Shqipërisë (A field guide for Albanian Flora) [10], Libri i Kuq (Albanian Red Book) [8]. The habitat types and their spatial distribution correspond to the terms and definitions in the Directive 92/43/EEC (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora), were mapped using Geographical Information Software (GIS) and information about each habitat type was recorded in a GIS database [1], [2]. The analyses of existing data are concentrated at the 1: 50.000 scale map. As primary data source for mapping was used the digital imagery. The analyzed data include Corine Land Cover map, topographic map, orthophotos (taken from Informal Building Legalization Imagery) which were clipped to match the boundaries and geo-referenced. Any point on the orthophoto is referenced to its actual latitude/longitude (its actual location on the earth). Data are in uniform projection (UTM 34N, WGS84 datum). The horizontal planar unit is meters. Also a field work was necessary to describe, define and verify the habitat types and their map too, providing the exact location by using GPS, taking field photos, etc. The delineation of the habitats location is realized by using ArcGis 9.3.1 editing functions and also these elements: tone, size, shape, texture, pattern, shadow, geographic location, association [4].

3. Results and discussion

A list of all habitat types and their spatial coverage in the Shebenik-Jabllanica “Natural Park” (figure 6), are given below.

3140 Hard oligo-meso-trophic waters with benthic vegetation of Chara spp.

The area is home to at least 14 glacial lakes, the highest of which are around 1900 meters. The lakes were formed in the last ice age by huge glaciers gouging out depressions which were later filled by melt water and rain. They vary considerably in their size, depth and nutrient status. Lake shores are stony, gravel or sandy. Some have a long tradition of recreational use, access and facilities, while others are valued for their tranquil and relatively undisturbed atmosphere. Generally, the lakes are characterised by cool, pure, clear water, freezing over during the winter, with a poor to moderate nutrient status. They provide habitat for a restricted range of plants and animals, including some rare crustaceans specifically

adapted to nutrient-poor environments. In some places the fringing plant communities are dominated by *Phragmites australis* and *Typha angustifolia*. Other common species found around the lakes are: *Juncus effusus*, *Eleocharis acicularis*, *Cyperus fuscus*, *C. flavescens*, *Centaureum pulchellum* accompanied by water loving shrubs such as *Salix alba*, *Tamarix parviflora*, etc., typical of the fresh water wetlands.

4060 Alpine and Boreal heaths

Sub-alpine vegetation of dwarf shrubs (figure 1) extends higher than the upper boundaries of beech in altitude of 1.800 to 2.000 m.a.s.l. It consists of cold resisting shrubs, chamaephytes and perennial herbs forming a dense and compact layer just 0.30 to 0.50m high. The most frequent elements are the dwarfish semi-shrubs of *Juniperus communis* ssp. *nana*, *Vaccinium myrtillus*, *Erica herbacea*, *Daphne oleoides* etc. Between them grow different cold resistant grasses, as *Potentilla erecta*, *Plantago lanceolata*, *Veronica* sp., *Anthemis arvensis*, *Luzula* sp., *Trifolium* sp., *Koeleria splendens*, *Molinia coerulea*, *Marrubium vulgare*, *Prunella laciniata*, *Stipa* sp., *Sesleria comosa*, *Phleum alpinum*, *Agrostis rupestris*, *Alopecurus gerardii*, *Festuca paniculata*, *Arabis alpina*, *Nardus stricta*, *Anthoxanthum odoratum*, etc.



Figure 1: Alpine and boreal heaths (*E. herbacea*)



Figure 2: Stable xerothermophilous formations

5110 *Stable xerothermophilous formations with Buxus sempervirens on rock slopes*

This type of habitat (figure 2), shrubby evergreen formations dominated by *Buxus sempervirens*, has a relatively broad distribution in Park area and is considered one of the most degraded vegetation formations (advanced stages of degradation of mixed oak forests) in the country as well as within the Park area. Within the Park area this habitat is represented by a very fragmented and species-poor habitat. These shrubby evergreen formations less than 1 m tall, situated close to the rural areas are degraded and consequently support a reduced biodiversity compared to mixed oak forests. The degradation is caused by human activity (grazing and cuttings) and the low nutrient conditions of the underlying bedrock. Often they are dominated by *Buxus sempervirens* and *Juniperus oxycedrus*. Other species with high occurrence in this habitat type are: *Pyrus amygdaliformis*, *Quercus pubescens*, *Fraxinus ornus*, *Cotinus coggygria*, *Carpinus orientalis*, *Sesleria coerulans*, *Lotus corniculatus*, *Clinopodium vulgare*, *Aegilops geniculata*.

92A0 *Salix alba and Populus alba galleries*

Habitat confined along two rivers flow and multiple smaller water sources flow through the park's area including the Qarrishte River and Bushtice River, both of which are 22 km long. The riparian woodlands are largely dominated by *Alnus glutinosa*, *Salix alba*, *Populus alba* colonising poorly stabilised alluvial deposits. In these habitats they can form species-rich communities with the accompanying flora, including *Salix elaeagnos*, *Populus nigra*, *Hedera helix*, *Ranunculus ficaria*, *Helleborus odorus*, *Arum italicum*, *Brachypodium sylvaticum*, *Dactylis glomerata*. These habitats also support a range of mosses, lichens and ferns, often dominated by *Pteridium aquilinum*.

925A *Hop-hornbeam, oriental hornbeam and mixed thermophilous forest*

This habitat type is found in large surfaces of the study area from 600 m to ca. 1,300 m.a.s.l. Forests, which are generally less than 3 m in height and less than 10 years old dominate much of surface of this habitat type. Generally this formation is dominated by *Carpinus orientalis*, in almost all zones of

these formations. Other species with high level of participation in these shrublands are *Corylus avellana*, *Acer platanoides*, *Colutea arborescens*, *Cornus mas*,

Cotinus coggygria, *Crataegus monogyna*, *Fraxinus ornus*, *Juniperus oxycedrus*, *Ostrya carpinifolia*, *Phillyrea sp.*, *Quercus cerris*, *Q. pubescens*, *Rubus ulmifolius*, *Paliurus spina-christi*, *Cercis siliquastrum*, *Cornus sanguinea*, *Teucrium polium*, etc.

Among the herbaceous plants are found: *Anemone apennina*, *Asparagus acutifolius*, *Brachypodium pinnatum*, *Clinopodium vulgare*, *Luzula forsteri*, *Prunella vulgaris*, *Ruscus aculeatus*, *Satureja montana*, *Symphytum bulbosum*, etc. This type of forest is used by the local population for securing the fire woods and for the livestock maintenance. This shrubby formation represents degraded stage of former forests with *Quercus sp.* The woods and forests of the oak zone at the area are, unfortunately, rarely in good condition. Woodcutting and severe grazing have left mostly heavily degraded woods and a predominant shrubland in large parts of the area. Small parts of the natural forest is mainly dominated by *Q. cerris*, associated by *Q. pubescens* or *Q. frainetto*. On dry and stony sites *Q. trojana* dominates.

9130 *Asperulo-Fagetum beech forests*

The beech zone at the Shebenik- Jabllanica Park extends to elevations from 1,200 to 1,900 m. These forests are dominated by *Fagus sylvatica*, but often feature occasional *Abies alba* (figure 3). There are some stands of pure or almost pure forest dominated by *F. sylvatica* within the central eastern study area. The shrub layer is dominated by *Fraxinus ornus*, *Corylus avellana*, and *Juniperus oxycedrus*. The ground flora of these forests are dominated by species typical of beech forests such as *Asperula odoratum*, *Agrimonia eupatoria*, *Calamintha grandiflora*, *Solidago virgaurea*, *Brachypodium sylvaticum*, *Allium ursinum* etc. In remote mountainous areas and areas with very steep slopes, this forest is the climax vegetation community, and indicator species of healthy climax beech forests are found in areas where it is undisturbed, such as *Geranium macrorrhizum*, *Asplenium trichomanes*, *Achillea frassii*, etc. The large area of the *F. sylvatica* forest in the study area is dominated by trees less than 6 m in height and less than 20 years old as a result of regular management of the woodlands for firewood and livestock fodder. Despite this, stands of highly valuable mature forest are present. The mixed beech and fir tree forests are restricted at the NE part of the study area and they cover regions at an altitude of 1.500 – 1.800m. The species *A. alba*, *F. sylvatica* dominate the upper part

of these forests with the fir trees surpassing the beech trees that reach 25 m in height.

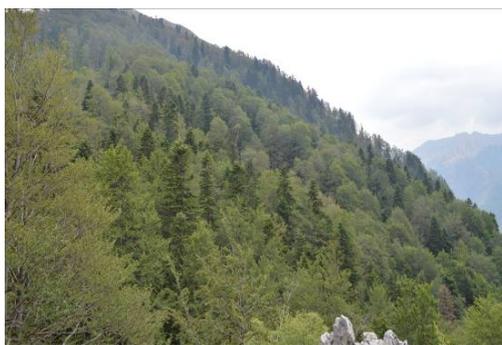


Figure 3: Forests with *F. sylvatica* and *A. alba*

62D0 Oro-Moesian acidophilous grasslands

Subalpine grasslands extend over the beech belt at an altitude of 1.500 – 2.000 m a.s.l. The most important and characteristic species of this habitat include *Juniperus communis* ssp. *nana*, *Daphne oleoides*, *Sesleria comosa*, *Phleum alpinum*, *Agrostis rupestris*, *Alopecurus gerardii*, *Festuca paniculata*, *Veratrum album*, *Potentilla erecta*. It also supports rare, endemic or endangered species such as:



Figure 4: *F. serpentini* in Shebenik mountain

Festucopsis serpentini (figure 4), *Narcissus poeticus*, *Lilium albanicum* (figure 5), *Viola dukadjinica*, *Sideritis raeseri*, etc. Depending on the exposure, water content and soil properties of the plant communities of the meadows vary from Arrhenatheretea types to communities of Festuco-Brometea. Within the region, transgressions between Sub-Mediterranean types (Meso- or Xerobrometum) and Continental types, with dominating *Stipa* species, occur. These transgressions at the border of the European beech zone seem to be most interesting from a phytogeographical point of view and for the conservation of the region's biodiversity as a whole.

6520 Mountain hay meadows

Generally, lowland natural grasslands (below 1.500 masl) are dominated by *Chrysopogon gryllus*,

accompanied by *Alyssum alyssoides*, *Bromus erectus*, *Arrhenatherum elatius*, *Trisetum flavescens*, *Centaurea jacea*, *Crepis biennis*, *Knautia arvensis*, and *Tragopogon pratensis*. This type of habitat is widespread in Park area at the altitude of 700 – 1.500 masl and in general, represents poor grasslands of low biodiversity value. Some areas of former agriculture land near the villages which were abandoned 15 - 20 years ago, now support a semi-natural assemblage of species. These areas support a less varied flora than lowland natural grasslands and are often subject to intensive grazing or mowing for livestock feed.



Figure 5: Subalpine grasslands with *L. albanicum*

82 Rocky slopes with chasmophytic vegetation

Chasmophytic vegetation consists of plant communities that colonize the cracks and fissures of rock faces. The type of plant community (individual stands are usually fragmentary) that develops is largely determined by the base-status of the rock face. Floristic variation within the habitat type is influenced by geographical location, altitude and rock type. This habitat type is widespread in the area. Although both serpentine and calcareous types are widely distributed in the Shebenik - Jabllanica area, serpentine rocks predominate and calcareous chasmophytic vegetation is of more limited overall extent. The vegetation consists of small patches of sparse plant cover on rocky outcrops and stony places with a specialized flora. The vegetation cover is very low. The erosion process is very active and the bed rock is to a great extent. Characteristic chasmophytic vascular plants include *Juniperus oxycedrus*, *Buxus sempervirens*, *Juniperus communis*, *Satureja montana*, *Euphorbia spinosa*, *Putoria calabrica*, *Micromeria graeca*, *Asplenium trichomanes*, *Ceterach officinarum*, *Polystichum lonchitis*, etc.

11.3 Arable land with unmixed crops grown by low-intensity agricultural methods

Small pockets of arable lands are widespread around small settlements in all parts within the Park area. Most arable lands are on fairly poor soils. The most important crops cultivated in these areas are *Zea mays*, *Phaseolus vulgaris*, *Medicago sativa*. Weeds are a common element or constitutes in a differ scale vegetation of these cultivated areas. The participation of species: *Centaurea cyanus*, *Agrostemma githago*, *Ranunculus arvensis*, *Papaver rhoeas*, *Buglossoides arvensis*, *Legousia speculum-veneris*, *Scandix australis*, *Capsella bursa-pastoris* is more constant in winter cultivations. Nitrophilous elements as the species: *Polygonum arenarium*, *Amaranthus hybridus*, *Atriplex patula*, *Chamomilla recutita*, *Chenopodium vulvaria* mainly participate in summer cultivations.

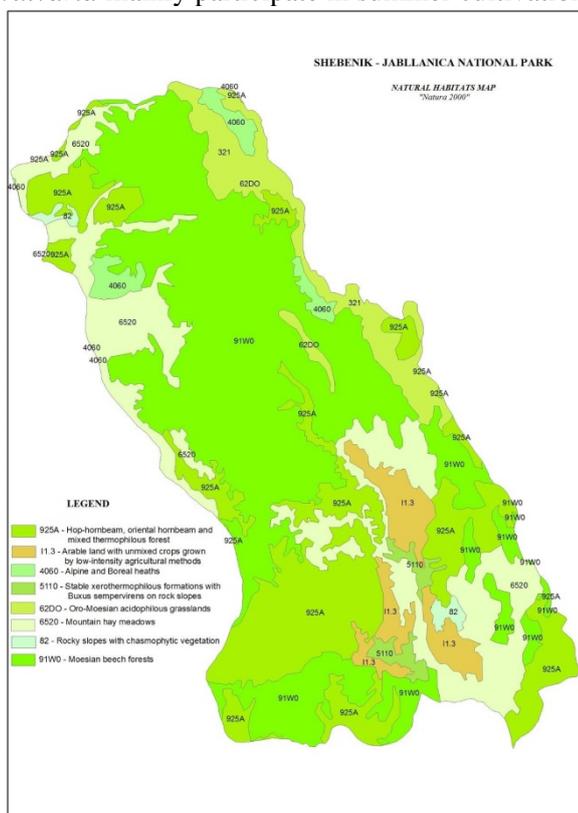


Figure 6: Habitats map of Shebenik – Jabllanica National Park

4. Conclusions

Shebenik – Jabllanica National Park is an important natural biological environment, possessing a diversity of floristic and natural habitats, which need protection and conservation for their unpriced values. With a great importance is the presence of endemic flora, rare species in these areas, as well as the different habitat types. Some of these habitats are in good conditions, while others are under the influence of the anthropogenic activity and usage. Cases of fires, cutting, overgrazing, herbs collections etc. are

the key of degradation, losses and threats for the flora and vegetations, too. The primary need is the awareness of the local residents for giving their precious contributions on the continuity of the natural existence of the biodiversity in Shebenik – Jabllanica National Park.

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