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The Pashtrik Mountain, a potential protected landscape area

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The Pashtrik Mountain is one of the biodiversity centres in Kosovo and in the Balkans too, but so far there has not been a proper study with the aim to designate this area as a protected area. The natural values of this area changed dramatically during the last decade, especially in terms of biodiversity. With the aim to evaluate the current situation of the biodiversity, its flora, fauna, and plant communities were investigated. Its biodiversity values were assessed based on the review of the available relevant literature sources as well as the field research conducted during the period 2012–2014. The study results show that the Pashtrik Mountain is rich in biodiversity values associated with a high diversity of ecosystems, landscape and other natural values. On the other hand, due to the lack of a protection status and appropriate biodiversity conservation programs, many of the species are threatened and some of them are critically endangered. Taking into consideration the natural values, the biodiversity and landscape of the area based on the provisions of the Law for Nature Conservation of Kosovo (Law No. 02/L-18) Pashtrik should be declared as "Protected Landscape" that belongs to the category V protected areas according to IUCN, with an area of 25,060.00 hectares. Within the proposed protected area, a territory of 282 hectares should be declared as Strict Nature Reserve (1st category of protected areas of IUCN), since it is an area inhabited by the population of the steno-endemic plant species *Cynoglossum krasniqii* T. Wrab.

Furthermore, the area needs the development of its spatial and management plan covering all aspects of vegetation, biodiversity, water, energy, waste, building and infrastructure in consultation and participation of all stakeholders, addressing related problems, such as illegal logging, constructions, transport, waste management, etc.

Key words: Pashtrik, protected landscape, biodiversity, plant communities, endemics, relict

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INTRODUCTION

The Republic of Kosovo has a territory of 10,908 km^2, which is inhabited by more than 1.8 million inhabitants, representing one of the most densely populated countries in Europe with an average population density of 166.9 of inhabitants per km^2 (ASK, 2015). The territory of Kosovo is small in size and occupies 1.66% of the Balkans area, but it is characterized by high biodiversity values and landscapes. Kosovo is very rich in terms of biodiversity and natural values, and it is characterized by diverse geomorphological, climatic, hydrological and pedological conditions, which make it a unique area in terms of scientific, cultural, educational, economic and touristic values. Sharri Mountains, Bjeshket e Nemuna Mountains and Pashtrik Mountains are the main biodiversity centres not only in Kosovo but also in Balkans. Their richness in geo-diversity and biodiversity is reported by many scientists: in the field of geology (Milovanovic, Ciric, 1968); in the field of pedology (Pavicevic et al., 1974); floristic diversity (Krasniqi, 1972, 1987; Rexhepi, Ruzic, 1985; Rexhepi, 1985, 1986a, 1986b, 1994, 2000; Mustafa, 1998; Veselaj et al., 2006; Mustafa et al., 2008 etc.) and the fauna species (Jaksic, 1999; 2003; 2007).

Aiming to conserve the biodiversity in Kosovo, until now, there are 113 declared protected areas, whereas about 100 natural other sites are proposed for protection (mainly natural monuments). Protected areas in Kosovo are categorized in 5 protected categories (following the IUCN) and cover 123,091.33 ha or 11.39% of the Kosovo territory. The network of protected areas includes 27 strict nature reserves, 2 national parks, 82 natural monuments, 1 protected landscape, and 1 forest park.

The largest area belongs to the two existing national parks: Bjeshket e Nemuna National Park with 62.488 ha (LAW No. 04/L-08) and Sharri National Park with 53.469 ha (LAW No. 04/L-087). Compared to the other Balkan countries, Kosovo has a satisfactory percentage of Nature Protected Areas. In the Balkans, the National Network of Protected Areas is ranged from 12.5% of the territory in Slovenia (Protected Areas of Slovenia in January 2015) to 2.6% of the territory of the Republic of Bosnia and Herzegovina (Đug, Dreskovic, 2012). The Pashtrik Mountain lies in a very strategic position which contributes to the biodiversity conservation of Kosovo and the Balkans, too. Geographically, Pashtrik is located between the National Parks Sharri and Bjeshket e Nemuna in Kosovo, and it joins the two parks, as well as the other cross-border protected areas with Albania, Macedonia and Montenegro. Furthermore, as a new protected area, Pashtrik will contribute to the overall agenda of the two important large-scale regional initiatives among other important trans-boundary initiatives in Europe: the European Green Belt and the Dinaric Arc Initiative.

The system of nature conservation in Kosovo is regulated by the Law on Nature Conservation (Law No. 02/L-18). Article 21 of the Law states that designation of the nature conservation in Kosovo aims to protect and maintain the biodiversity, landscapes, natural characteristics and cultural heritage, providing effective management through juridical and other means. On the other hand, in the recent decades, populations of many species declined dramatically and some other species are extinct in Kosovo because of anthropogenic activities and pressures. These are some reasons for implementing a particular research to evaluate the natural values of the Pashtrik Mountain.

The aim of this research was to evaluate the state of biodiversity with a special emphasis on endemic, relict, threatened species and plant communities, as well as to evaluate the criteria required to declare this area a potential Nature Protected Area.

MATERIALS AND METHODS

For the assessment of biodiversity values, the available relevant literature was used, as well as the field research conducted during the period 2012–2014 in the Pashtrik Mountain. Plant species were determined using local botanical literature (Demiri, 1981; Pajazitaj, 2004).

The results gathered during the field work were processed by GIS (Map Info Software) and Remote Sensing (Global Mapper and Erdas Image) technologies.

Physical-geographical position of the Pashtrik Mountain

The Pashtrik Mountain lies in the southwestern part of Kosovo, bordering Albania. The mountain stretches starting from Qafe Prushi in the north, and reaches the south up to the valley of the Drini i Bardhe in Vermica. Meanwhile in the east the boundary crosses the Drini i Bardhe River, and in the west it follows the Kosovo–Albania border. The lowest altitude is 265 m a.s.l along the Drini i Bardhe river, and the highest point is the Pashtrik Peak (1989 m a.s.l) in the border between Albania and Kosovo (Fig. 1). One-third of the Pashtrik Mountain lies in the territory of Kosovo, while two-thirds lie in the territory of Albania. In Kosovo it lies between the Sharri and Bjeshket e Nemuna Mountain massif.

In geological terms, the Pashtrik Mountain is composed of limestone rocks (especially the hilly part in the south) and serpentines (in the north) meaning that, in terms of hydrology, it is one of the most arid mountains in Kosovo with scarce water sources.

Considering the physico-geographical position, geological and pedological features, climatic conditions, especially where continental and Mediterranean climate is, the Pashtrik Mountain is rich in floristic species and vegetation as well in fauna species. In phyto-geographical aspects, the territory of Kosovo belongs to the three phyto-geographical provinces: Mesic, Pindo-Scardic and Illyrian province, therefore presents the crossing point of phyto-geographical provinces of Euro–Siberian–North American and the Mediterranean vegetative region (Kojic, Pejcinovic, 1982). In

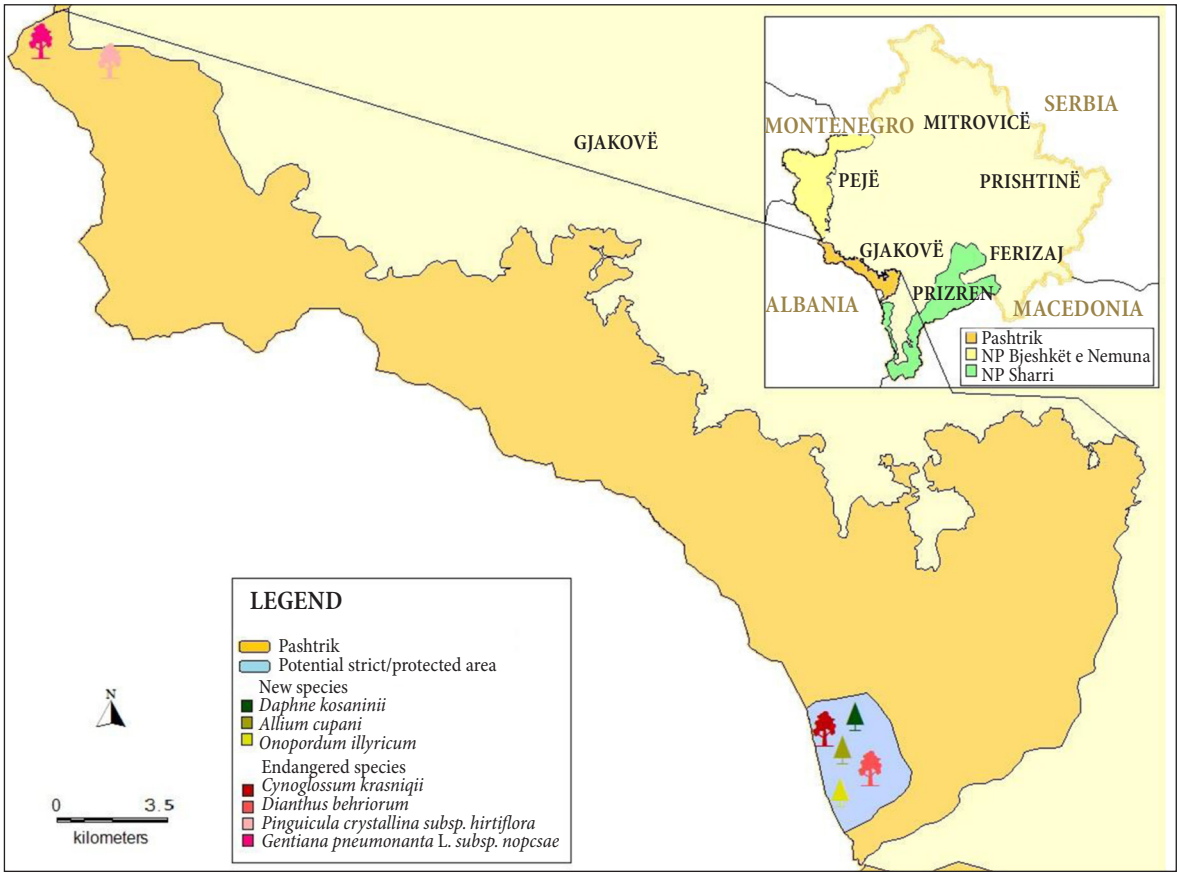

Fig. 1. Geographical position of Pashtrik

phyto-geographical terms, the Pashtrik Mountain belongs to the Pindo-Scardic Province, while influence of the elements of other provinces is also present.

RESULTS AND DISCUSSION

The Pashtrik Mountain is considered one of the richest areas in terms of biodiversity in Kosovo after the Sharri and Bjeshkët e Nemuna mountains. Important ecosystems include beech and oak forest, shrubs, meadows, and a number of endangered flora and fauna species with national and international significance. Previous biodiversity researches (Krasniqi, 1972; Rexhepi, Ruzic, 1985; Rexhepi, 1985, 1994; Wraber, 1985, 1990; Mustafa, 1999; Veselaj, 2006) and our field research (2012–2014), show the presence of more than 1,000 vascular plant species in the Pashtrik Mountain. From these 1,000 vascular plant species, 56 are Balkan endemic species, among them one steno endemic (local endemic) species (*Cynoglossum krasniqii* T. Wraber (Wraber, 1986)), 12 relict plant species and about 120 medical and aromatic plants.

Balkan endemic plant species of the Pashtrik Mountain are the following: *Acer obtusatum* Waldst. and Kit., *Achillea baldacii* Deg., *Achillea chrysocoma* Friv., *Achillea fraasii* Sch. Bip., *Achillea holosericea* Sm., *Anthyllis aurea* Welden., *Aster albanicus* Degen., *Centaurea kosaninii* Hayek, *Cephalaria pastricensis* Dorfler and Hayek, *Cerastium decalvans* Schloss. et Vuk., *Cynoglossum krasniqii* T. Wraber., *Dianthus behriorum* Bornm., *Dianthus pancici*, *Dianthus intiger* Vis., *Digitalis laevigata* Waldst. and Kit., *Dioscorea balcanica* Kosanin., *Draba scardica* (Griseb.) Degen and Dörfl., *Eryngium palmatum* Pançiç and Vis., *Erysimum pectinatum* Bory and Chaub., *Euphorbia glabriflora* Vis., *Euphorbia montenegrina* (Bald.) K. Malý., *Fritillaria graeca* Boiss et Spruner., *Forsythia europeae* Degen and Bald., *Fumana bonapartei* Maire and Petitmengin, *Genista hassertiana* Bald., *Gentiana pneumonanta* L. *subsp. nopcsae* (Jav.) T. *Halacsia sendetneri* (Boiss.) Dorfler, *Helichrysum plicatum* DC., *Helleborus multifidus* Vis., *Helleborus serbicus* Adam., *Hieracium waldsteinii* Tausch., *Jacobaea othonnae* (M. Bieb.) C. A. Mey., *Lilium albanicum* Griseb., *Linaria pleponesiaca* Boiss. Et Held., *Lunaria telekiana* Jáv., *Onobrychis montana* subsp. *scardica* (Griseb.) P. W. Ball., *Pancicia serbica* Vis., *Paramoltkia doerfleri* Westtst., *Pedicularis brachyodonta* Schloss. and Vuk., *Pedicularis hoermanniana* K. Malý, *Polygala dorfleri* Hay., *Polygonum albanicum* Jav. *Potentilla speciosa* Willd., *Potentilla visianii* Pancic., *Saxifraga fridericii* augusti ssp. *Grisebachii* Deg. Et Doerfl., *Scabiosa fumarioides* Vis. and Pancic., *Scrophularia bosniaca* G. Beck., *Sempervivum heuffelii* Schott., *Spergularia vallesia* L. ssp. *graminea* Vis., *Solenanthus scardicus* Bornm., *Stachys scardica* (Griseb.) Hayek., *Stachys serbica* Pancic., *Trifolium velenovskyi* Vandas., *Vincetoxicum huteri* Vis. and Ascherson., *Sanguisorba albanica* András. and Jáv.

Except the endemic species an important group of plants present in the Pashtrik Mountain are the relict plant species. In total, 11 relict species are recorded, of them 4 glacial relict plants species (*Arctostaphylos uva-ursi* (L.) Spreng., *Aster alpinus* L., *Dryas octopetala* L., *Gentiana lutea* L.) and 7 tertiary thermophilus relict species (*Asyneuma limonifolium* (L.) Janch., *Campanula lingulata* Waldst. and Kit., *Cotinus coggygria* Scop., *Hedera helix* L., *Ostrya carpinifolia* Scop., *Pinus heldreichii* H. Christ., *Ramonda serbica* Pancic, *Dioscorea balcanica* Kosanin).

Threatened plant species

Our research shows that the population of steno endemic species *Cynoglossum krasniqii* T. Wrab. accounts only for 35 individuals, while *Dianthus behriorum* Bornm. for 800 individuals, *Pinguicula crystallina subsp. hirtiflora* (Ten.) (Strid) for 700 individuals and *Gentiana pneumonanta* L. *subsp. nopcsae* (Jav.) T. Wraber accounts only for 150 individuals in the area.

Other plant species that can become threatened in the near future are such as: *Sanguisorba albanica* András. and Jáv., *Anthyllis aurea* Welden., *Cachrys ferulacea* Calest., *Campanula*

trichocalycina Ten., *Dianthus tristis* Velen., *Euphorbia glabriflora* Vis., *Gentiana lutea* L. Subsp. *symphyandra* Murb., *Helleborus multifidus* Vis., *Helleborus serbicus* Adam., *Petrorhagia illyrica* (Ard.) P. W. Ball and Heywood., *Prunus tenella* Batsch, *Serratula radiate* B. M. a Bieb., *Spergularia vallesia* L. ssp. graminea Vis., *Trifolium velenovskyi* Vandas., *Veratrum nigrum* L. *Daphne kosaninii* (Stoj.), *Allium cupani* Raf., *Onopordum illyricum* L. and *Paeonia officinalis* L.

In the Pashtrik Mountain there are 13 species which are globally threatened based on the IUCN criteria: *Achillea crithmifolia* Waldst. and Kit., *Carpinus betulus* L., *Carpinus orientalis* Mill., *Centaurium erythraea* Rafn., *Colchicum autumnale* L., *Coryllus collurna* L., *Corylus avellana* L., *Epilobium hirsutum* L., *Fritillaria graeca* Boiss et Spruner., *Paeonia officinalis* L., *Pinus heldreichii* H. Christ., *Ramonda serbica* Pancic. and *Tamarix tetrandra* Pall. ex M. Bieb.

New plant species for the Pashtrik Mountain

During our research, three new plant species are recorded in the Pashtrik Mountain, which to the best of our knowledge were not previously reported from this area: *Daphne kosaninii* (Stoj.), *Allium cupani* Raf. and *Onopordum illyricum* (L.).

Plant associations

According to Rexhepi (1986, 1994), in the Pashtrik Mountain 20 plant communities are recorded: *Quercetum frainetto cerris scardicum, Quercetum trojana dukagjini, Dioscoreo-carpinetum orientalis, Quercetum pubescentis cerris, Ostryo-Quercetum cerris, Colurno-Ostryetum carpinifolia, Polygalo-Forsythietum europeae, Polygalo-Gensitetum hassertianae, Astero-Juniperetum oxycedri, Teucrio-Artemisietum camphoratae, Echinaria-Convoletum altheoides, Fagetum moesiaca montanum, Abieti-Fagetum moesiaca, Inulo-Danthonietum alpinae, Centaureo-Trifolietum velenovsxky, Fagetum subalpinum, Potentillo-Anthylletum montanae* dhe *Coronillo-Arctostaphylletum uvae ursi, Erico-Quercetum petraeae serpentinicum* and *Ostryo-Fagetum.* Among the 20 plant communities, two endemic plant communities (*Polygalo-Forsythietum europeae* and *Polygalo-Gensitetum hassertianae*), also two relict plant communities (*Colurno Ostryetum carpinifolia* and *Ostryo-Fagetum*) were recorded.

In the Pashtrik Mountain, the oak forests cover the largest surface of the area. In the limestone substrate these forests go up in altitude up to about 1,000 meters a.s.l. Oak forests in the Pashtrik Mountain are composed of different plant communities: *Quercetum pubescentis-cerris* and *Quercetum cerris farnetto scardicum* stretching in the foots of mountain, extended with the community of *Quercetum trojana dukagjini*, while the upper parts of the oak forests in the southern exposition consist of the communities of *Ostryo-Quercetum cerri* and *Colurno-Ostryetum carpinifolia*. At the edge of Pashtrik, near to brooklets lies a characteristic association of *Dioscoreo-Carpinetum orientalis*. In the northwest exposition of the mountain lie beech forests and beech forests mixed with coniferous, such are plant communities of *Fagetum moesiaca montana, Fagetum subalpinum* and *Abieti-Fagetum moesiaca* (Fig. 2).

In the limestone substrate of Pashtrik a significant area is covered by herbaceous associations such as: *Artemisietum-Teucrio camphoratae* that lies at the southern exposition up to 800 m a.s.l., *Echinaria-Convoletum altheoides* that lies at the southern edge of the Drini i Bardhe River, *Trifolietum-Centaureo velenovsxky* in the southern exposition in the altitude of 800 m., *Inulo-Danthonietum alpinae, Potentillo-Anthylletum montana* and *Coronillo-Arctostaphylletum uvae ursi*, stretching above the oak and beech forests.

In the serpentine substrates of the Pashtrik Mountain, stretch endemic plant communities of *Polygalo-Forsythietum europeae, Polygalo-Gensitetum hassertianae*, *Astero-Juniperetum oxycedri*, while shrubberies are dominated by *Quercus petraea* (Mattuschka) Liebel., *Fraxinus ornus* L. and *Forsythia europaea* Degen.

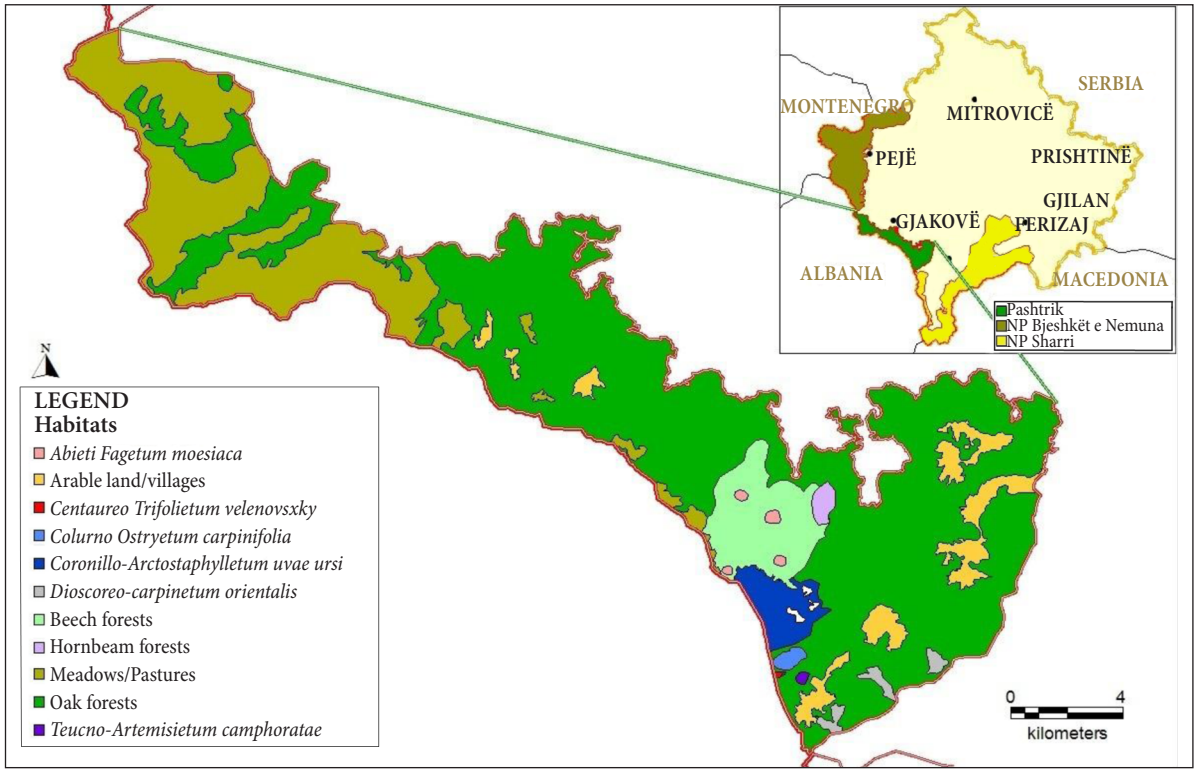

Fig. 2. Distribution of plant associations, species threatened with extinction, species that may become threatened, and new species of the Pashtrik Mountain

It should be emphasized that these plant communities and especially certain rare species as *Pinguicula crystalline subsp. hirtiflora* (Ten.) (Stride), *Gentiana pneumonanta* L. *subsp. nopcsae* (Jav.) (T. Wraber) are threatened by non-planned constructions especially in the Qafe Morina area.

Pashtrik faunistic values

The Pashtrik Mountain is rich in fauna terms, although full researches for different faunistic groups have not been done yet. The butterflies are the best known group of fauna in the Pashtrik Mountain. Our research in terms of fauna is oriented towards the assessment of butterfly in this area. The previous research (Jaksic, 1999; 2007) shows the presence of 98 butterfly species, of which 95 species are included in the European Red List of Butterflies: *Erynnis tages* (L., 1758), *Carcharodus lavatherae* (Esper, 1783), *Carcharodus floccifera* (Zeller, 1847), *Spialia phlomidis* (Herrich-Schaffer, 1845), *Spialia orbifer* (Hubner, 1823), *Pyrgus sidae* (Esper, 1784), *Pyrgus malvae* (L., 1758), *Pyrgus serratulae* (Rambur, 1839), *Pyrgus alveus* (Hubner, 1803), *Thymelicus lineola* (Ochsenheimer, 1808), *Hesperia comma* (L., 1758), *Ochlodes sylvanus* (Bremer, Grey, 1853), *Parnassius mnemosyne* (L., 1758), *Iphiclides podalirius* (L., 1758), *Papilio machaon* (L., 1758), *Leptidea sinapis* (L., 1758), *Leptidea reali* (Resissinger, 1989), *Anthocharis cardamines* (L., 1758), *Euchloe ausonia* (Hubner,1804), *Aporia crataegi* (L., 1758), *Pieris brassicae* (L., 1758), *Pieris mannii* (Mayer, 1851), *Pieris rapae* (L., 1758), *Pieris ergane* (Geyer, 1828), *Pieris napi* (L., 1758), *Colias croceus* (Fourcroy, 1785), *Colias alfacariensis* (Ribbe, 1905), *Gonepteryx rhamni* (L., 1758), *Hamearis lucina* (L., 1758), *Lycaena phlaeas* (L., 1761), *Lycaena virgaureae* (L., 1758), *Lycaena candens* (Herrich-Schaffer, 1844), *Thecla betulae* (L., 1758), *Favonius quercus* (L., 1758), *Callophrys rubi* (L., 1758), *Satyrium spini* (Denis, Schiffermuller, 1775), *Satyrium ilicis* (Esper, 1779), *Satyrium acaciae* (Fabricius, 1788), *Cupido minimus* (Fuessly, 1775), *Celastrina argiolus* (L., 1758), *Pseudophilotes vicrama* (Moore, 1865), *Scolitantides orion* (Pallas, 1771), *Glaucopsyche*

alexis (Poda, 1761), *Phengaris alcon* (Denis, Schiffermuller, 1775), *Plebeius argus* (L., 1758), *Plebeius idas* (L., 1761), *Plebeius argyrognomon* (Bergstrasser, 1779), *Aricia eumedon* (Esper, 1780), *Aricia agestis* (Denis, Schiffermuller, 1775), *Aricia anteros* (Freyer, 1838), *Polyommatus dorylas* (Denis, Schiffermuller, 1775), *Polyommatus amandus* (Schneider, 1792), *Polyommatus icarus* (Rottemburg, 1775), *Polyommatus daphnis* (Denis, Schiffermuller, 1775), *Polyommatus bellargus* (Rottemburg, 1775), *Polyommatus coridon* (Poda, 1761), *Polyommatus admetus* (Esper, 1783), *Polyommatus damon* (Denis, Schiffermuller, 1775), *Argynnis paphia* (L., 1758), *Argynnis aglaja* (L., 1758), *Argynnis adippe* (Denis, Schiffermuller, 1775), *Argynnis niobe* (L., 1758), *Issoria lathonia* (L., 1758), *Brenthis hecate* (Denis, Schiffermuller, 1775), *Boloria dia* (L., 1767), *Vanessa atalanta* (L., 1758), *Vanessa cardui* (L., 1758), *Aglais io* (L., 1758), *Aglais urticae* (L., 1758), *Nymphalis polychloros* (L., 1758), *Euphydryas aurinia* (Rottemburg, 1775), *Melitaea cinxia* (L., 1758), *Melitaea athalia* (Rottemburg, 1775), *Apatura iris* (L., 1758), *Kirinia roxelana* (Cramer, 1777), *Lasiommata megera* (L., 1767), *Lasiommata petropolitana* (Fabricius, 1787), *Lasiommata maera* (L., 1785), *Coenonympha arcania* (L., 1761), *Coenonympha pamphilus* (L., 1758), *Pyronia tithonus* (L., 1767), *Aphantopus hyperantus* (L., 1758), *Maniola jurtina* (L., 1758), *Hyponephele lycaon* (Rottemburg, 1775), *Erebia medusa* (Denis, Schiffermuller, 1775), *Erebia ottomana* (Herrich-Schaffer, 1847), *Erebia melas* (Herbst, 1796), *Erebia oeme* (Hubner, 1804), *Melanargia galathea* (L., 1758), *Melanargia larissa* (Geyer, 1828), *Satyrus ferula* (Fabricius, 1793), *Hipparchia fagi* (Scopoli, 1763), *Hipparchia syriaca* (Staudinger, 1871), *Brintesia circe* (Fabricius, 1775) and *Chazara briseis* (L., 1764). During the field research (2012–2014) in the Pashtrik Mountain, 3 species of butterflies are identified, which are described for the first time in this area: *Colias caucasica balcanica* (Rebel, 1901), *Neohiparchia fatua* (Freyer, 1844) and *Neohiparchia statilinus* (Hufnagel, 1766).

As presented, the Pashtrik Mountain is rich in plant and animal species, plant communities and it has wonderful landscapes of great value. However, during the war 1998/99 and after it, as a consequence of the anthropogenic activity, some plant and animal species are extinct, some of them critically endangered, while some others are becoming rare and endangered. More or less, the same situation is confirmed in the forest communities – a part of them is completely degraded while other areas are in the process of degradation, resulting in the changes of landscapes. Forest degradation and extinction of plant species will have many consequences in the area including extinction of many butterflies and different animals, especially mammals and bird species.

This happened as a result of direct and indirect anthropogenic impacts, such as uncontrolled forests logging, illegal movement of people from the territory of Albania and vice versa, uncontrolled collection and sale of medical and aromatic plants, and illegal constructions, especially in the Qafe Morina area.

Pashtrik has a very strategic geographic position which can contribute to the biodiversity conservation because it lies between and connects the two existing national parks in Kosovo, as well as other cross-border protected areas in Albania, Macedonia and Montenegro. It could also serve as an ecological corridor for many fauna species, especially large mammals such as *Lynx lynx* L., *Ursus arctos* L., *Canis lupus* L. etc. by linking their populations between Sharri and Bjeshket e Nemuna. Furthermore, it will contribute to the overall agenda of the two important large-scale regional initiatives among other important trans-boundary initiatives in Europe: the European Green Belt and the Dinaric Arc Initiative. By the designation of the Pashtrik as a protected area, the National System of Protected Areas in Kosovo will be extended with additional 25,060 ha or 2.26% in percentage of the territory.

CONCLUSIONS

Due to the lack of a protection status and appropriate programs for biodiversity conservation in Pashtrik, many of plant and animal

species in the area are endangered and some are already extinct. The protection status of the Pashtrik Mountain should be promulgated as soon as possible by the Kosovo Government. Taking into consideration the natural values, biodiversity and landscape diversity of the area and based on the Law for Nature Conservation in Kosovo (Law No. 02/L-18) it should be declared "Protected Landscape" that belongs to the category V of protected areas according to IUCN with an area of 25,060.00 hectares. The Protected Landscape according to IUCN (1994) is defined as "area of land, with coast or sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/or cultural value, and often with high biological diversity" which is fully in harmony with the Law for Nature Protection of Kosovo. Within the proposed protected area, an area of 282 hectares should be declared as Strict Nature Reserve (1st category of protected areas regarding IUCN), since it includes the population of the plant steno-endemic species *Cynoglossum krasniqii* T. Wrab that is present with only 35 individuals, three new plant species for Pashtrik, and a few other threatened plant species.

Furthermore, the area needs a systemic approach to the management of the natural heritage. The management should take into consideration the landscape diversity, biodiversity conservation and recreation, with the real possibility of sustainable use of resources and ecotourism development. Parallel with the designation as a protected area, it also needs to develop its spatial and management plan covering all aspects of land, forests and vegetation, biodiversity, water, energy, waste, building and infrastructure. Such management plan should also take into account the principles of sustainability, which include not only environmental but also social and economic dimensions. Its preparation should be in compliance and participation of all stakeholders, addressing related problems such as waste management, constructions in the area, illegal logging, transport issues etc.

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PAŠTRIKO KALNYNAS – POTENCIALI SAUGOMO KRAŠTOVAIZDŽIO TERITORIJA

Santrauka

Paštriko kalnynas yra vienas iš bioįvairovės centrų Kosove ir Balkanuose, tačiau iki šiol netyrinėtas kaip saugoma teritorija. Šios teritorijos gamtinės vertybės dramatiškai pasikeitė per paskutinę dekadą, ypač bioįvairovė. Tyrimo tikslas – įvertinti bioįvairovę, t. y. florą, fauną ir augalų bendrijas. Tyrimai paremti 2012–2014 m. lauko tyrimų ir literatūros šaltinių apžvalga. Nustatyta, kad Paštriko kalnynas turtingas ekosistemų ir landšafto bioįvairove. Deja, nesant apsaugos statuso ir bioįvairovės išsaugojimo programų, daugumai rūšių gresia išnykimas. Todėl Kosovo gamtinės apsaugos įstatymu (Nr. 02/L-18) Paštriko kalnynas turi būti paskelbtas saugoma teritorija, kuri priklauso V (IUCN) kategorijai (25 060 ha plotas). 282 ha teritorijos turi būti paskelbta kaip griežtai saugomas rezervatas (IUCN 1 kategorija), nes čia aptikta steno-endeminė rūšis *Cynoglossum krasniqii* T. Wrab.

Raktažodžiai: Paštrikas, saugomas landšaftas, bioįvairovė, augalų bendrijos