

ПРИРОДООХРАННАЯ ЗНАЧИМОСТЬ ДЕНДРОФЛОРЫ ГОРНОГО МАССИВА ПИРИН (БОЛГАРИЯ)

А.Н. Ташев, Е.И. Цавков

Ключевые слова

дендрофлора
систематическая структура
географические элементы
флоры
природоохранная значимость
горный массив Пирин
Болгария

Аннотация. Представлена характеристика систематической и экологической структуры дендрофлоры горного карстового массива Пирин, расположенном в юго-западной части Болгарии. Проанализированы географические элементы флоры, согласно классификациям Стефанова и Вальтера, адаптированным к условиям Болгарии. Показано распределение численности древесных растений Пирина по вертикальным поясам. Показана природоохранная значимость исследуемой дендрофлоры. Представлен полный систематический список дендрофлоры, содержащий 216 видов из 87 родов и 41 семейств, информацию по их распространению по флористическим подрайонам – Северному и Южному Пирину.

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INTRODUCTION

Pirin is a part of Rila and Rhodopes massif on the Balkan Peninsula, and is situated in the southwestern part of Bulgaria, between the deep valleys of Struma and Mesta (Fig. 1.). The main orographic roof of Pirin is oriented northwest – south-southeast and is closer to the northeastern periphery of the mountain. Northern part of the mountain is separated from Rila Mountains [15] by the saddle called Predela (1140 m a.s.l.), the southern border is Paril saddle (1170 m a.s.l.) separating it from Slavyanka Mountains [12]. The mountain length is about 80 km, and width – up to 40 km, with an area of 2585 km², more than 30% of which being above 1600 m a.s.l. Pirin is the second highest mountain in Bulgaria (after Rila) and third on the Balkan Peninsula (after Olympus in Greece). Morphographically, the territory of Pirin is subdivided into three unequal parts: Northern Pirin – 74% of the total area, Central Pirin – 6,7%, and Southern Pirin – 19,3% of the total area. There are three peaks higher than 2900 m. The mountain has typical configuration with acute peaks in the north, becoming more rounded and less steep to the south.

The climate of Northern Pirin is influenced by the high altitude and its affiliation to the Continental-Mediterranean climatic zone (Bondev, 1997). Figures 2 and 3 represents climatograms for the region of the city of Bansko, situated at the foothills north of the mountain, and Vihren hut, situated below the Vihren peak, in the northern part of the mountain, at 1950 m a.s.l. According to the information of climatic station of Vihren hut, (Fig. 3), the mean annual temperature in the region is 3,5°C, maximum one is 12,2°C (August) and the minimum one is -4,7°C (January). Often penetration of wet Mediterranean air masses during the winter causes abundant rainfalls. The mean annual rainfall is about 1500 mm with maximum during the autumn-winter season and minimum during the summer. Pirin is the mountain with highest snowfall in Bulgaria – 472 cm, measured in the region of Vihren hut (1950 m a.s.l.). The July isotherm 10° for the northern slopes of Pirin passes at about 2300 m a.s.l., which determines the alpine tree line in the region (Panayotov, 2006). The relatively low annual temperature

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Ташев Александр Николаевич, канд. биол. наук, проф. кафедры дендрологии факультета лесного хозяйства, Лесотехнический университет; 1797, Болгария, София, б-р Климент Охридски 10; altashev@mail.ru; Цавков Евгений Иванович, глав. ассистент кафедры дендрологии факультета лесного хозяйства, Лесотехнический университет; tsavkov@abv.bg

amplitude is determined by the high air humidity and abundance of streams, rivers and lakes (176 lakes), as well as the strong solar radiation. The deep river glacial valleys and cirques provide conditions for isolation of populations of plant species, which leads to speciation processes. The plant cover of the mountain is subdivided in five altitudinal belts (above the belts of xerothermic oak forests typical for the valleys of Struma [10] and Mesta [13] (Nikolov et Jordanova, 2013).

The diversity and distribution of geolements and plant communities is determined by the large altitudinal range and by the two types of bedrock – marbles, mainly in the northern part, karst on the northeastern slopes and granites and crystalline schists in the central part, where there are two marble peaks – Orelek and Sveshtnik.

A large protected territory was declared in Pirin in 1962 – «Vihren» peoples' park, which

was renamed to «Pirin» in 1975 and in 1998 was re-categorized as Pirin National Park. Its territory had been continuously enlarged and is currently 40332,4 ha, which is 15,6% of the total mountain area. Also, there are four nature reserves on the territory of Pirin – Bayuvi Dupki-Dzhindzhiritza (1934 – for conservation of natural relic forests of *Pinus peuce* and *P. heldreichii*), Tisata (1949 – for conservation of *Juniperus excelsa*), Orelek (1985 – for conservation of primary beech and *P. peuce* forests) and Yulen (1994 – for conservation of forest, subalpine and alpine ecosystems). The forests cover about 40% of the Park territory and the broad-leaved occupy only 3%. The most widespread species is *Pinus mugo* – 5962 ha, followed by *Pinus peuce* – 5415,8 ha, *Picea abies* – 2379,2 ha, *Fagus sylvatica* – 1098 ha and *Pinus heldreichii* – 893,4 ha (Pirin National Park..., 2004-2013).

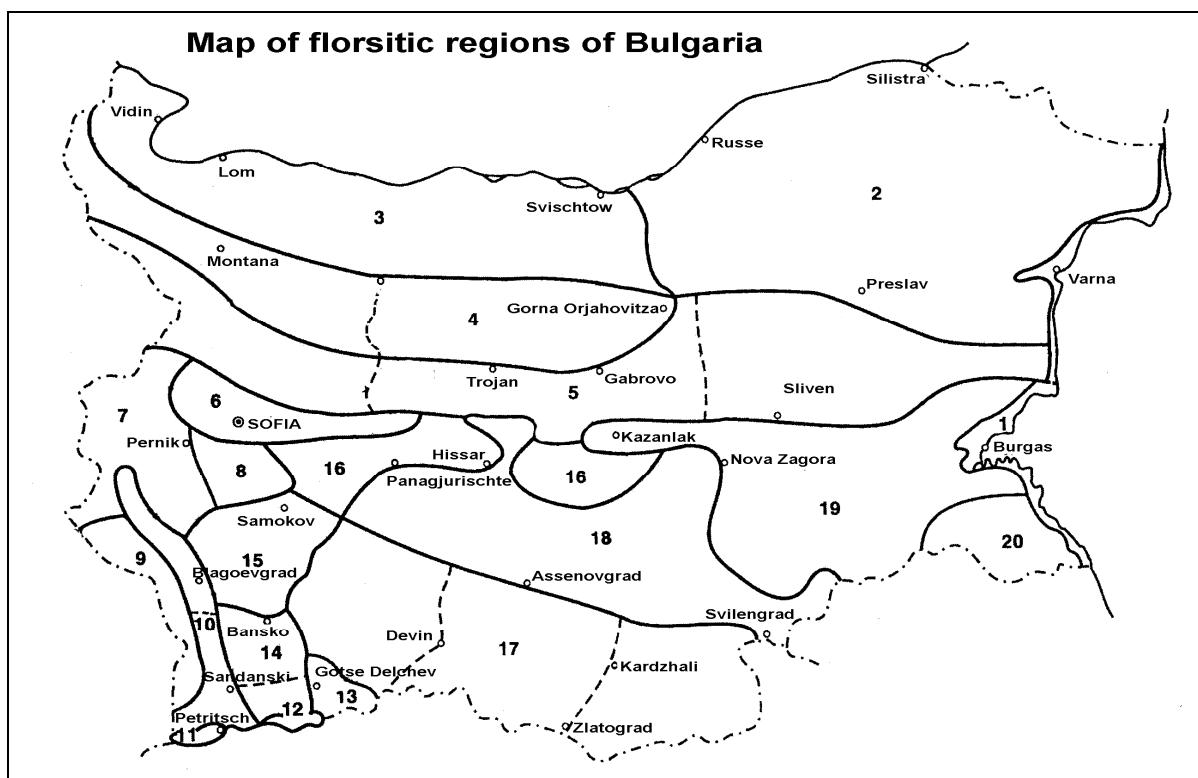


Fig. 1. Floristic regions in Bulgaria (according Bondev, 1966)

Флористические районы Болгарии (по: Бондев, 1966)

1. The Black Sea coast (North-South), 2. North-Eastern Bulgaria; 3. The Danubian Plain; 4. The Predbalkan (West - East); 5. Stara planina Mt. (The Balkan – West, Central, East); 6. Sofia region; 7. Znepole region; 8. Vitosha region; 9. West Frontier Mt.; 10. The Struma Valley (North-South); 11. The Belasitza Mt.; 12. The Slavianka Mt.; 13. The Mesta Valley; 14. **The Pirin (North-South)**; 15. The Rila Mt.; 16. Sredna Gora Mt. (West-East); 17. The Rhodopes (West, Central, East); 18. Thracian Plane; 19. The Tundja Hilly Plain; 20. The Strandzha

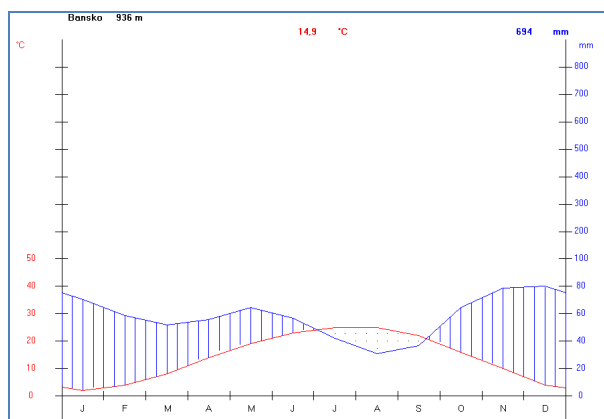


Fig. 2. Climate diagram for the region of Bansko – at the foothills of Pirin

Климатограмма района города Банско у подножья массива Пирин

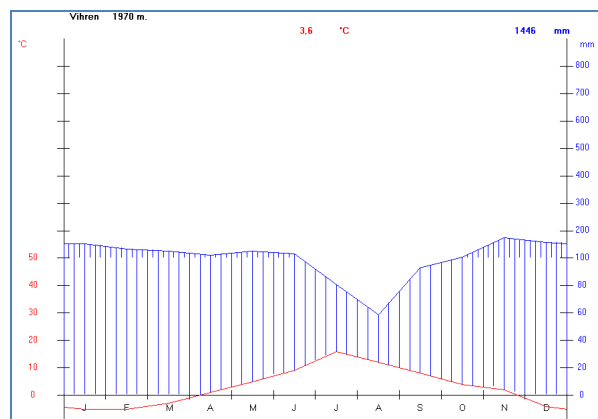


Fig. 3. Climate diagram for the region of Vihren hut – below the Vihren peak

Климатограмма района под вершиной Вихрен

Table. Distribution of the species of Bulgarian and Pirin flora and dendroflora by divisions and classes (Magnoliophyta only)

Систематическая структура флоры и дендрофлоры Болгарии и массива Пирин

Divisio	Flora		Dendroflora	
	Bulgaria	Pirin Mt.	Bulgaria	Pirin Mt.
Equisetophyta	8	6	-	--
Lycopodiophyta	8	5	-	-
Polypodiophyta	43	30	-	-
Pinophyta	19	13	19	13
Classis Liliopsida	804	413	6	2
Classis Magnoliopsida	3220	1667	407	201
Magnoliophyta Total	4024	2080	413	203
Total	4102	2134	432	216

Special studies focused on the Pirin dendroflora are not known. All the information had been gathered and presented within the framework of studies on the Pirin flora, or Bulgarian dendroflora. One of the first floristic and forestry studies was the expedition in 1897 initiated by the Bulgarian Prince Ferdinand I, with the participation of the forest inspector Konstantin Baykushev and the Austrian gardener Johann Kellerer. The plant list accompanying the report of Baykushev contain many interesting species, some of them new to science, for example, *Saxifraga ferdinadi-koburgii* (Stanev, 2012; Tsavkov, 2013). During the expedition the forest inspector K. Baykushev found a very

old individual of *Pinus heldreichii* in Banderitza valley, which is considered today as the oldest coniferous tree in Bulgaria, with a height 22 m, perimeter 7,8 m (more than 2 m in diameter) and an age more than 1300 years.

The papers reporting floristic studies in Pirin are numerous, but no summarizing information about the arboreal species was published. Kožuharov et al. (1988) describing the phanerophytic gene pool of Bulgarian flora report for Pirin 160 arboreal species. In the «Flora of Pirin» of Kitanov et Kitanov (1990) we were able to find 169 species of 83 genera and 41 families.

The main information sources for the present paper were *Conspectus of the Bulgarian vascular flora* Assyov et Petrova eds. (2012) and the developed by the authors' database for the Bulgarian dendroflora (Tashev et Tsavkov, 2008). The information was updated using publications containing new information (Kitanov et Kitanov, 1990; Tashev et al., 2013; Zhelev et Aneva, in press). The presence of *Juniperus exelsa*, *Ficus carica* and *Platanus orientalis* in the mountain, as indicated by Kitanov et Kitanov (1990) was not accepted. We consider that these species could be classified to the floristic region of Struma valley [10], characterized by lower altitudes and warmer climate with well-expressed Mediterranean influence.

The information in table shows that Pirin flora contains 52% of species, 67.7% of genera and 76.1% of the families of Bulgarian flora (Assyov et Petrova, eds., 2012).

To date the dendroflora of Pirin was not subjected to complete and detailed study. The objective of the present study was to characterize the indigenous and introduced dendroflora in the Pirin massif and to present information about the species of conservation importance.

Based on the database on the Bulgarian dendroflora developed by us (Tashev et Tsavkov, 2008) we found that the arboreal plants of the Pirin are 216 species of 87 genera and 41 families. This accounts for 5.3% of the species, 9.5% of the genera and 27.1% of the families of Bulgarian flora and 50 % of the species, 58.8% of the genera and 70% of the families of the Bulgarian dendroflora. The division Pinophyta is represented only by 13 species, and Magnoliophyta – by 203 species, of which 2 species belong to classis Liliopsida, while the remaining 201 species belong to classis Magnoliopsida. The first ten most numerous families regarding the arboreal plants include 152 species, or 71.4% of the all dendroflora of the Pirin. These are *Rosaceae* – 56 species (25.9%¹), *Fabaceae* – 27 species (12.5%), *Salicaceae* – 14 species (6.5%), *Fa-*

gaceae – 12 species (5.6%), *Pinaceae*, *Caprifoliaceae* and *Lamiaceae* – 8 species each (3.7%) etc. Sixteen families are represented by only one species. The most represented genera are *Rubus* – 18 species (8.3%), *Rosa* – 15 species (6.9%), *Quercus*, *Chamaecytisus* and *Salix* – 10 species each (4.6%), *Sorbus* and *Genista* – 7 species each (3.2%) etc. Forty six genera are represented by one species only.

SYSTEMATIC LIST OF THE SPECIES OF PIRIN DENDROFLORA

Pinophyta

Cupressaceae

Juniperus communis L. (N, S²)

J. deltoides R. P. Adams (N, S)

J. pygmaea C. Koch (S)

J. sibirica Burgsd. (N, S)

Pinaceae

Abies alba Miller (N, S)

A. borisi-regis Mattf. (N, S)

Picea abies (L.) Karst. (N, S)

Pinus heldreichii Christ (N, S)

P. mugo Turra (N, S)

P. nigra Arnold (N, S)

P. peuce Griseb. (N, S)

P. sylvestris L. (N, S)

Taxaceae

Taxus baccata L. (N, S)

Magnoliophyta

Aceraceae

Acer campestre L. (N, S)

A. hyrcanum Fisch. et C.A. Mey. (N, S)

A. negundo L. (N, S)

A. platanoides L. (N)

A. pseudoplatanus L. (N, S)

A. tataricum L. (N, S)

Anacardiaceae

Cotinus coggygria Scop. (N, S)

Pistacia terebinthus L. (N, S)

Rhus coriaria L. (N, S)

¹ The percentages are calculated regarding the number of species of Bulgarian dendroflora

² N in brackets means that the species occurs in Northern Pirin floristic subregion, and S – the species occurs in Southern Pirin floristic subregion

Aposynaceae*Vinca major* L. (N, S)**Araliaceae***Hedera helix* L. (N, S)**Berberidaceae***Berberis vulgaris* L. (N, S)**Betulaceae***Alnus glutinosa* (L.) Gaertn. (N, S)*Betula pendula* Roth (S)*Carpinus betulus* L. (N, S)*C. orientalis* Mill. (N, S)*Corylus avellana* L. (N, S)*C. colurna* L. (N, S)*Ostrya carpinifolia* Scop. (N, S)**Brassicaceae***Aurinia saxatilis* (L.) Desv. (N, S)*Iberis saxatilis* L. (N, S)*I. sempervirens* L. (N, S)*Matthiola fruticulosa* (L.) Maire (N, S)**Caprifoliaceae***Lonicera caerulea* L. (S)*L. etrusca* Santi (N, S)*L. nigra* L. (N, S)*L. xylosteum* L. (N, S)*Sambucus nigra* L. (S)*S. racemosa* L. (N, S)*Viburnum lantana* L. (N, S)*V. opulus* L. (N, S)**Celastraceae***Euonymus europaeus* L. (N, S)*Eu. latifolius* (L.) Mill. (N, S)*Eu. verrucosus* Scop. (N)**Cistaceae***Fumana arabica* (L.) Spach (N, S)*F. procumbens* (Dunal) Gren. et Godr. (N, S)*Helianthemum nummularium* (L.) Mill. (N, S)*Rhodax alpestris* (Jacq.) Fuss (S)*R. canus* (L.) Fuss (N, S)**Convolvulaceae***Convolvulus holosericeus* M. Bieb (N, S)**Cornaceae***Cornus mas* L. (N, S)*C. sanguinea* L. (N, S)**Empetraceae***Empetrum hermaphroditum* L. (N, S)**Ericaceae***Arctostaphylos uva-ursi* (L.) Spreng. (N, S)*Bruckenthalia spiculifolia* Reichenb. (N, S)*Vaccinium myrtillus* L. (N, S)*V. uliginosum* L. (N, S)*V. vitis-idaea* L. (N, S)**Fabaceae***Amorpha fruticosa* L. (N, S)*Astragalus angustifolius* Lam. (N, S)*A. gladiatus* Boiss. (N, S)*Chamaecytisus absinthioides* (Janka)

Kuzmanov (N, S)

Ch. albus (Jacquet) Rothm. (N, S)*Ch. ciliatus* (Wahlenb.) Rothm. (S)*Ch. glaber* (L.f.) Rothm. (N, S)*Ch. hirsutus* (L.) Link (N, S)*Ch. jankae* (Velen.) Rothm. (N, S)*Ch. lejocarpus* (A. Kern.) Rothm. (N)*Ch. ratibonensis* (Schaeff.) Rothm. (N, S)*Ch. rochelii* (Wierzb.) Rothm. (N, S)*Ch. supinus* (L.) Link (N, S)*Chamaespartium sagittale* (L.) Gibbs (S)*Colutea arborescens* L. (N, S)*Coronilla emerus* L. (S)*Corothismus agnipilus* (Vel.) Klask. (N, S)*C. rectipilosus* (Adam.) Skalicka (N, S)*Genista carinalis* Griseb. (N, S)*G. depressa* M. B. (N, S), *G. januensis* Viv. (N, S)*G. ovata* Waldst. et Kit. (N, S)*G. rumelica* Vel. (N, S)*G. subcapitata* Panč. (N, S)*G. tinctoria* L. (N, S)*Robinia pseudoacacia* L. (N, S)*Spartium junceum* L. (N, S)**Fagaceae***Castanea sativa* Mill. (N, S)*Fagus sylvatica* L. (N)*Quercus brachyphylla* Kotschy (N, S)*Qu. cerris* L. (S)*Qu. dalechampii* T. Ten. (N, S)*Qu. erucifolia* Steven (N, S)*Qu. frainetto* Ten. (N, S)*Qu. longipes* Steven (S)

Qu. pedunculiflora C. Koch (N, S)

Qu. polycarpa Schur (N, S)

Qu. pubescens Willd. (N, S)

Qu. virgiliana (Ten.) Ten. (N, S)

Globulariaceae

Globularia cordifolia L. (N, S)

Hypericaceae

Hypericum olympicum L. (N, S)

Juglandaceae

Juglans regia L. (N, S)

Lamiaceae

Satureja cuneifolia Ten. (N, S)

S. pilosa Velen. (N, S)

Teucrium chamaedrys L. (N, S)

T. montanum L. (N, S)

T. polium L. (N, S)

Thymus perinicus (Velen.) J alas (N, S)

T. pulegioides L. (N, S)

T. thracicus Velen. (N, S)

Loranthaceae

Arceutobium oxycedri (DC.) Bieb. (N, S)

Loranthus europaeus Jacq. (N, S)

Viscum album L. (N, S)

Oleaceae

Fraxinus ornus L. (N, S)

Jasminum fruticans L. (N, S)

Ligustrum vulgare L. (N, S)

Phillyrea latifolia L. (N, S)

Pyrolaceae

Orthilia secunda (L.) House (N, S)

Ranunculaceae

Clematis flammula L. (N, S)

C. recta L. (N, S)

C. vitalba L. (N, S)

Rhamnaceae

Frangula alnus Mill. (N, S)

F. rupestris (Scop.) Schur (N, S)

Paliurus spina-christi Mill. (N, S)

Rhamnus alpinus L. (N, S)

Rh. catharticus L. (N, S)

Rh. saxatilis Jacq. (N, S)

Rosaceae

Amelanchier ovalis Medicus (N, S)

C. integerrimus Medicus (S)

C. nebrodensis (Guss.) C. Koch (N, S)

Crataegus monogyna Jacq. (N, S)

C. orientalis Pall. ex Bieb. (N, S)

Dryas octopetala L. (N, S)

Malus dasyphylla Borkh. (S)

M. praecox (Pall.) Borkh. (N, S)

M. sylvestris Mill. (N, S)

Prunus avium L. (N, S)

P. cerasifera Ehrh. (N, S)

P. cerasus L. (N, S)

P. spinosa L. (N, S)

Pyrus amygdaliformis Vill. (N, S)

P. nivalis Jacq. (N, S)

P. pyraster Burgsd. (N, S)

Rosa agrestis Savi (N, S)

R. caesia Sm. (S)

R. canina L. (N, S)

R. corymbifera Borkh. (N, S)

R. dumalis Bechst. (N, S)

R. gallica L. (N, S)

R. glauca Pourret (N, S)

R. heckeliana Tratt. (N, S)

R. micrantha Borrer ex Sm. (N, S)

R. myriacantha DC. ex Lam. et DC. (N, S)

R. pendulina L. (N, S)

R. pulverulenta M. Bieb. (N, S)

R. tomentosa Sm. (N, S)

R. turcica Rouy (N, S)

R. vosagiaca Desportes (N, S)

Rubus anoplocladus Sudre (N, S)

R. caesius L. (N, S)

R. canescens DC. (N, S)

R. crassus J. Holuby (N, S)

R. discolor Weihe et Nees (N, S)

R. euryanthemus W. Watson (N, S)

R. glandulosus Bellardi (N, S)

R. guentheri Weihe et Nees (N, S)

R. hirtus Waldst. et Kit. (N, S)

R. idaeus L. (N, S)

R. lloydianus Genev. (N, S)

R. minutidentatus Sudre (N, S)

R. miostilus Boulay (N, S)

R. sanguineus Friv. (N, S)

R. saxatilis L. (N, S)

R. scaber Weihe et Nees (N, S)

R. serpens Weihe ex Lej. et Court. (N, S)

R. thyrsanthus Focke (N, S)

Sorbus aria (L.) Crantz (N, S)

S. aucuparia L. (N, S)
S. chamaemespilus (L.) Crantz (N, S)
S. domestica L. (N, S)
S. graeca (Spach) Kotschy (N, S)
S. torminalis (L.) Crantz (N, S)
S. umbellata (Desf.) Fritsch (N, S)

Rutaceae

Dictamnus albus L. (S)

Salicaceae

Populus alba L. (N, S)
P. canescens (Ait.) Sm. (N, S)
P. nigra L. (N, S)
P. tremula L. (N, S)
Salix alba L. (N, S)
S. caprea L. (N, S)
S. cinerea L. (N, S)
S. fragilis L. (N, S)
S. herbacea L. (S)
S. purpurea L. (N, S)
S. reticulata L. (N, S)
S. silesiaca Willd. (N, S)
S. triandra L. (N, S)
S. waldsteiniana Willd. (N)

Santalaceae

Comandra elegans (Rochel ex Reichenb.) Reichenb. f. (N, S)

Saxifragaceae

Ribes alpinum L. (N, S)
R. petraeum Wulfen (N, S)

Scrophulariaceae

Veronica kellererii Degen et Urum. (N, S)

Simaroubaceae

Ailanthus altissima (Mill.) Swingle (N, S)

Solanaceae

Solanum dulcamara L. (N, S)

Staphyleaceae

Staphylea pinnata L. (N, S)

Thymeleaceae

Daphne cneorum L. (N, S)
D. mezereum L. (N, S)
D. oleoides Schreb. (N, S)

Tiliaceae

Tilia cordata Mill. (N, S)
T. plathyphyllos Scop. (N, S)

T. tomentosa Moench (N, S)

Ulmaceae

Ulmus glabra Huds. (N)
U. minor Miller (N, S);

Liliopsida

Liliaceae

Ruscus aculeatus L. (N, S)
R. hypoglossum L. (N, S)

According to their biological type (life form) the arboreal plants in Pirin can be classified into 9 groups, five of them transitional. The groups are as follows: trees – 52 species (24.1%), trees or shrubs – 8 species (3.7%), shrubs or trees – 22 species (10.2%), shrubs – 106 species (49.1%), vines – 4 species (1.9%), semi-shrubs – 9 species (4.2%), perennial plants to semi-shrubs – 8 species (3.7%), semi-shrubs to perennial plants and – 5 species (2.3%) and shrubs to semi-shrubs – 2 species (0.9%). According to the classification of Raunkiaer (1934) 172 species (79.6%) are phanerophytes (Ph), 23 species (10.6%) are chamaephytes (Ch) and the transitional categories chamaephytes to phanerophytes (Ch-Ph) are 5 species (2.3%), hemicryptophytes to chamaephytes (H-Ch) are 7 species (3.2%) and chamaephytes to hemicryptophytes (Ch-H) are represented by 5 species (2.3%).

The phytogeographic origin of the 216 species of Pirin dendroflora was determined by means of the Walter classification adapted to the Bulgarian conditions (Assyov et al., 2012). According to this classification, the most numerous are the geo-elements with Mediterranean component of origin – 104 species (48.1%). Among them predominate sub-Mediterranean (*subMed*) – 45 species (20.8%), followed by the Euro-Mediterranean (*EurMed*) – 17 species (7.9%), Mediterranean ones (*Med*) – 15 species (6.9%) and Pontio-Mediterranean (*Pont-Med*) – 13 species (6.0%) etc. Second position keeps the group with the European component of origin – 72 species (33.3%). Among them predominate pure European ones (*Eur*) – 22 species (10.2%) followed by the Euro-Asiatic (*Eur-As*) – 18 species

(8.3%) etc. Third position keep the elements with Pontian component of origin – 22 species (10.2%). Boreal and subBoreal elements are 21 species (9.8%). The species of Balkan origin are 22 (10.2%) – 9 of them are Balkan endemics (*Bal*) and 2 of them are Bulgarian endemics (*Bul*). The adventive geo-elements (*Adv*) are only 7 species (3.2%).

According to the classification of phytogeographic elements of B. Stefanoff (1943), the arboreal plants in Pirin can be classified as follows: 110 species (50.9%) are thermophytes, mesotherms and microtherms of the Mountainous Centre, 40 species (18.5%) are mesotherms and microtherms of Sylvic-Boreal Centre. The

thermophytes of the Mediterranean, Northern Continental and Southern Continental Centres are 27, 20 and 6 species, respectively, and the species belonging to other phytogeographic centres are only 7. In the classification according species mobility, the stationary plants completely predominate – 184 species (85.2%). These species are adapted to the more conserved habitats, followed by the mobile and secondary penetrated species – 17 (7.9%) and 14 (6.5%) arboreal plants, respectively. These results indicate the predomination of the autochthonous floristic elements and point out the relatively conserved from anthropogenic pressure dendroflora of Pirin.

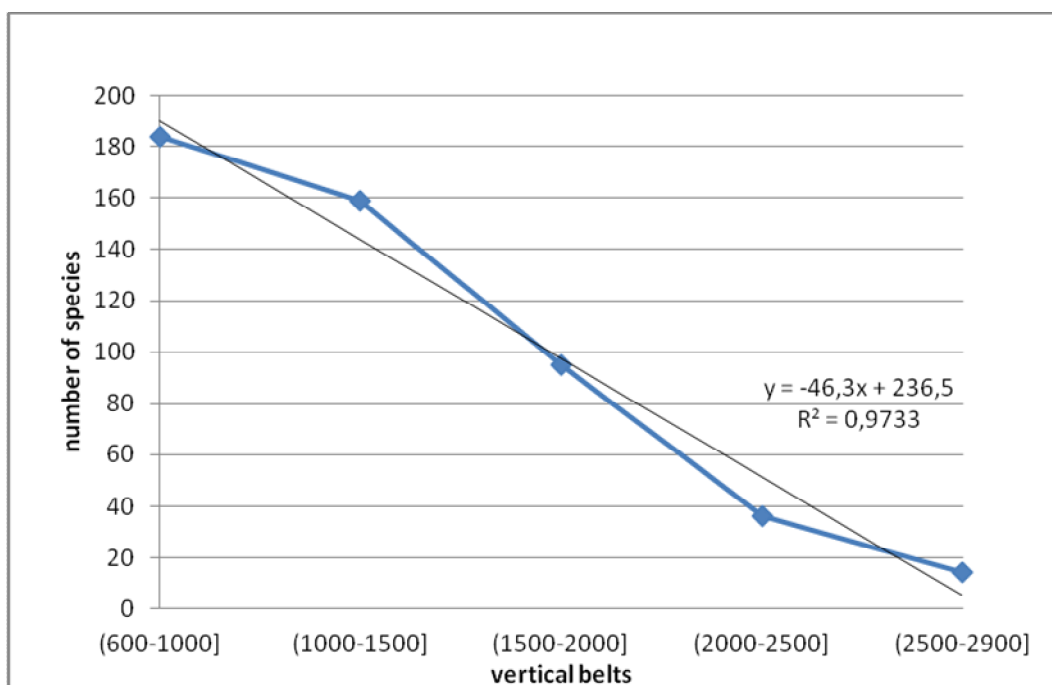


Fig. 4. Distribution of number of arboreal species by vertical belts

Распределение численности древесных растений по вертикальным поясам

The vertical distribution of the studied species on the territory of Bulgaria revealed that the species inhabiting the altitudinal range 600-1000 m a.s.l. – 183 species (84.7%), followed by the belt 1000-1500 m – 158 species, then 1500-2000 – 95 species, 2000 to 2500 m – 36 species and 2500-2900 m – 14 species altogether. Figure 4 represents the relationship between the vertical distribution of Pirin dendroflora by altitudinal belts. The empirical relationship is $y = -46.3x + 236.5$, where y is the number of species,

and x , is the altitudinal belt. Regression coefficient is $R^2=0.9733$ ($p=0.002$).

A substantial part of the Pirin's dendroflora is attributed to the species important from conservation point of view for Bulgaria and for Europe. Total 11 species (5.1%) are included in the Red Data Book of P. R. Bulgaria (Velchev, ed., 1984), of them 8 species (3.7%) with a category "rare", and 3 species (1.4%) – with a category "threatened by extinction". In the Red Data Book of R. Bulgaria (Peev, ed., 2011) are included 7 species – *Castanea sativa*, *Convolvulus*

holosericeus, *Daphne cneorum*, *Empetrum hermafroditum*, *Rhamnus alpinus* and *Thymus perinicus*” with category “endangered and *Taxus baccata* with category “critically endangered. Nine species (4.2%) are protected according to the Biodiversity Act of Bulgaria (2002), and after the amendment of the same Act (2007), 8 species became protected – *Chamaecytisus ratisbonensis*, *Convolvulus holosericeus*, *Crataegus orientalis*, *Empetrum hermafroditum*, *Iberis saxatilis*, *Rhamnus alpinus*, *Taxus baccata* L. and *Thymus perinicus*. The highest conservation value of the species of Pirin dendroflora has *Taxus baccata* – a species that had been protected in all legislation documents from 1961 to 2007. *Saturea pilosa* is included in the “List of rare, threatened and

endemic plants in Europe” (1983) with a category “rare”. *Pinus peuce* and *Thymus perinicus* are included in the “1997 IUCN Red List of Threatened Plants” (1998) with a category “rare”, too. The dendroflora of Pirin is richest in the ratio of tertiary relic species – 56, or 25.9% of all arboreal species and 4 species are glacial relic – *Empetrum hermafroditum*, *Dryas octopetala*, *Salix herbacea* and *S. reticulata*. The medicinal plants in dendroflora of Pirin are 124 (Tashev et Tsavkov, 2008) and meliferous plants are 159 (Tashev et Velinova, 2014).

The information presented above outlines the unique relic character of the dendroflora of Pirin Mountains. It is of high conservation value for the flora of Europe, too.

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CONSERVATION IMPORTANCE OF THE DENDROFLORA OF THE PIRIN MOUNTAIN (BULGARIA)

Tashev Alexander Nikolaevich

Candidate of Biology, Prof.; Department of dendrology, Faculty of Forestry, University of Forestry; 10, Kliment Ochridsky Blvd., Sofia, 1797, Bulgaria; altashev@mail.ru

Tsavkov Evgeni Ivanovich

Senior assistant; Department of dendrology, Faculty of Forestry, University of Forestry; tsavkov@abv.bg

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Abstract. The paper presents systematic and biological characteristic of dendroflora in Pirin Mountains (Southwestern Bulgaria). The systematic structure of Pirin dendroflora is interpreted in comparison to the flora of Pirin and in Bulgaria. Biological spectrum and biological types of the Pirin dendroflora is presented. The geoelement are analyzed according to the classification of Stefanoff and to the classification of Walter adapted to the Bulgarian conditions. The distribution of tree species was studied regarding their distribution in vertical belts. The conservation importance of the dendroflora for Bulgaria and Europe was discussed according to national and international documents. The full list prepared includes 216 species of 87 genera and 41 families, with indication about their distribution –in Northern and Southern Pirin, respectively.

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