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\*e-mail: [altashev@mail.ru](mailto:altashev@mail.ru)**PLANT SPECIES OF BULGARIAN FLORA INCLUDED  
IN THE CITES CONVENTION**

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was finally agreed in Washington DC, on March 3 1973. It was ratified by the Parliament of Bulgaria in 1991 and published in 1992. The study presents characteristics of the systematic structure and ecological and biological characteristics of Bulgarian flora plants, included in Appendix II of the Convention. According to the Convention, 77 species belonging to 29 genera and 4 families of Bulgarian flora are protected. The intraspecific diversity includes 18 subspecies, varieties and two forms. The plants are classified according to biological types, life form and floristic elements following Walter. Also, information on the distribution of these species in Bulgaria and their ecological groups are presented. The conservation importance of the species is analyzed in the national and international context. Full systematic list of the species of Bulgarian flora, protected by Appendix II of the CITES is presented.

**Key words:** Bulgaria, flora, CITES.

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\*e-mail: [altashev@mail.ru](mailto:altashev@mail.ru)**CITES конвенциясына енгізілген  
болгар флорасы өсімдіктерінің түрлері**

Құрып кету қаупі төнген жабайы фауна мен флора түрлерімен халықаралық сауда туралы Конвенция (CITES) 1973 жылы 3 наурызда Вашингтонда келісілген болатын. Қазіргі уақытта Конвенцияға 175 ел қосылды. Ол 1991 жылы Болгария Парламентімен ратификацияланды және 1992 жылы жарық көрді. Осы зерттеудің мақсаты конвенцияға II Қосымшаға енгізілген Болгар флорасы өсімдіктерінің жүйелі құрылымы мен экологиялық-биологиялық сипаттамаларын талдау болып табылады. II қосымша қазіргі уақытта жойылып кету қаупі төніп тұрған, бірақ осындай болуы мүмкін түрлерді қамтиды және олардың халықаралық саудасы шамадан тыс пайдалануды болдырмау үшін қатаң бақыланады. Конвенцияға сәйкес Болгарияда жергілікті флораның 29 туысы мен 4 тұқымдасына жататын 77 түрі қорғалады. Ішкі алуантүрлілікке 18 тұрасты, сорт және екі форма кіреді. Уолтер бойынша өсімдіктер биологиялық типтерге, тіршілік формаларына және флористикалық элементтерге жіктеледі. Мақалада сондай-ақ, бұл түрлердің Болгария елінде таралуы және олардың экологиялық топтары туралы ақпарат қарастырылған. Түрді сақтаудың маңыздылығы ұлттық және халықаралық контексте талданады. II CITES қосымшасымен қорғалатын Болгар елінің флорасы түрлерінің толық жүйелі тізімі ұсынылған.

**Түйін сөздер:** Болгария, флора, CITES.

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\*e-mail: [altashev@mail.ru](mailto:altashev@mail.ru)**Виды растений болгарской флоры, включенные  
в конвенцию CITES**

Конвенция о международной торговле видами дикой фауны и флоры, находящимися под угрозой исчезновения (CITES), была окончательно согласована в Вашингтоне 3 марта 1973 года. В настоящее время к Конвенции присоединились 175 стран. Она была ратифицирована парламентом Болгарии в 1991 году и опубликована в 1992 году. Целью настоящего исследования является анализ систематической структуры и эколого-биологических характеристик растений болгарской флоры, включенных в Приложение II к Конвенции. Приложение II включает виды, которым в настоящее время не угрожает исчезновение, но которые могут стать таковыми, и международная торговля ими строго контролируется во избежание чрезмерной эксплуатации. В соответствии с Конвенцией в Болгарии охраняются 77 видов, принадлежащих к 29 родам и 4

семействам местной флоры. Внутривидовое разнообразие включает 18 подвигов, разновидностей и две формы. По Уолтеру, растения классифицируются по биологическим типам, жизненным формам и флористическим элементам. Также представлена информация о распространении этих видов в Болгарии и их экологических группах. Важность сохранения вида анализируется в национальном и международном контексте. Представлен полный систематический список видов болгарской флоры, охраняемых Приложением II CITES.

**Ключевые слова:** Болгария, флора, CITES.

## Introduction

The aim of this study was to analyze the systematic structure, ecological and biological features and conservation significance of the species of Bulgarian flora (at the national and international level), which are included in the Convention on International Trade in Endangered Species of Flora and Fauna (1973). The Convention, better known as CITES (also known as the Washington Convention), is an international wildlife conservation agreement that aims to prevent the extinction of plant and animal species due to trade. It was signed in Washington in 1973 and came into force on July 1, 1975. Currently, 175 countries have joined the Convention. One of them is Bulgaria, for which the Convention came into force on April 16, 1991, when it was ratified by the Parliament of the Republic of Bulgaria. A basic principle of the Convention is the control of trade with endangered species of plants and animals by introducing a particular system of permits issued by the relevant authorities in the member states of the Convention.

The Convention subjects are more than 33,000 species of plants and animals, included in 3 annexes depending on their degree of endangerment and, accordingly, the need for protection. Endangered species are included in Annex I – international trade is allowed only in exceptional cases and requires the issuance of import and export permits. Annex II includes species that are not currently threatened with extinction but could become so and international trade with them is strictly controlled to prevent over-exploitation. Annex III includes species protected by at least one of the countries that have asked other CITES participants for assistance in controlling trade with these species – international trade is only possible with an appropriate CITES document proving the origin of the specimen. Species of the Bulgarian flora are included only in Annex II of the Convention.

## Materials and Methods

The nomenclature of species were identified according to GBIF (2001), Euro+Med PlantBase

(2006), The PlantList (2013) and POWO (2020). In determining the national nature conservation status of the plant species of Bulgarian flora protected by the CITES the following resources were used: Velchev (1984), Petrova & Vladimirov (2010), Peev (2015) and national legislation documents related to the protection of plant species: Biodiversity Act (2002) and its amendment (2007). The determination of the international status of the analyzed species was developed based on the IUCN Red List of Threatened Plants (Walter & Gillett, 1998), the List of Rare Threatened and Endemic Plants in Europe (Lucas 1983), European Red List of vascular plants (Bilz et al. 2011), Bern Convention (1973) and Council Directive 92/43/EEC of May 21, 1992, on the conservation of natural habitats and of wild fauna and flora (1992). It is the last document that became the basis for establishing the pan-European ecological network NATURA 2000. The phylogeographic affinity of the species was determined according to Assyov and Petrova (2012). Ecological groups of the analyzed species were determined according to Flora NR of Bulgaria (Jordanov 1964; 1970; Kozhuharov 1982; 1992; Delipavlov ed. 2011). Medicinal plants were classified according to Medicinal Plants Act (2000) and Tashev & Dimitrova (2019).

## Results and Discussion

Based on a critical analysis of the latest data on the flora of Bulgaria, mainly related to the specification of the list of all members of the family Orchidaceae in it, we found that under the protection of the Convention are 77 species of 29 genera and 4 families. Taxa at the subspecies level are represented by 18 subspecies, 11 varieties and 2 forms (Jordanov 1964).

The family Amaryllidaceae is represented by 2 genera, 3 species, 2 subspecies and 2 varieties: *Galanthus elwesii* Hook. f. (syn. *G. maximus* Velen., *G. nivalis* auct. bulg.), *G. elwesii* ssp. *elwesii*, *G. elwesii* ssp. *minor*, *G. nivalis* var. *gracilis*, *G. nivalis* var. *maximus*; *Sternbergia colchiciflora* Waldst. & Kit. (syn. *Oporanthus colchiciflorus*).

The family Orchidaceae is represented by 25 genera, 71 species, 14 subspecies, 7 varieties and 2 forms: *Anacamptis pyramidalis* (L.) Rich. (syn. *Orchis pyramidalis*); *Cephalanthera damasonium* (Mill.) Druce (syn. *C. alba*, *C. pallens*, *Epipactis alba*); *C. epipactoides* Fisch. & C. A. Mey.; *C. longifolia* (L.) Fritsch (syn. *C. ensifolia*, *Serapias helleborine* ssp. *longifolia*); *C. rubra* (L.) Rich. (syn. *Serapias rubra*); *Coeloglossum viride* (L.) Hartm. (syn. *Satyrium viride*), *C. viride* ssp. *bracteatum*; *Corallorhiza trifida* Chatel (syn. *C. innata*, *Ophrys corallorhiza*); *Cypripedium calceolus* L.; *Dactylorhiza baumanniana* Hölz. & Künkele; *D. cordigera* (Fries) Sóo (syn. *Orchis cordigera*, *O. latifolia* auct.), *D. cordigera* ssp. *cordigera*, *D. cordigera* ssp. *bosniaca*; *D. incarnata* (L.) Sóo (syn. *Orchis incarnata*, *O. angustifolia*), *D. incarnata* var. *incarnata*, *D. incarnata* var. *janevii*; *D. kalopisii* E. Nelson; *D. pindica* B. & E. Willing; *D. maculata* (L.) Soo ssp. *transsilvanica* (Schur) Soó; *D. romana* (Sebast. & Mauri) Sóo (syn. *Orchis romana*, *O. pseudosambucina*); *D. saccifera* (Brongn.) Sóo (syn. *Orchis maculata* ssp. *macrostachis*); *D. sambucina* (L.) Sóo (syn. *Orchis sambucina*); *Epipactis atrorubens* (Hoffm.) Besser; *E. gracilis* P. & H. Baumann; *E. greuteri* H. Baumann & Künkele; *E. helleborine* (L.) Crantz (syn. *E. latifolia*, *Serapias helleborine*), *E. helleborine* spp. *helleborine*, *E. helleborine* ssp. *viridiflora*, *E. helleborine* var. *obricularis* (syn. *E. obricularis*); *E. leptochila* (Godfery) Godfery; *E. microphylla* (Ehrh.) Sw (syn. *Helleborine microphylla*, *Serapias microphylla*), *E. microphylla* f. *nuda*; *E. palustris* (L.) Crantz (syn. *Helleborine palustris*, *Serapias helleborine* ssp. *palustris*); *E. persica* (Soo) Nannf.; *E. pontica* Taubenheim; *E. purpurata* Sm.; *E. spiridonovii* J. Devillers-Tershuren & P. Devillers; *Epipogium aphyllum* Sw. (syn. *E. gmelini*); *Goodyera repens* (L.) R.Br. (syn. *Satyrium repens*, *Epipactis repens*); *Gymnadenia conopsea* (L.) R.Br. (syn. *G. conopsea*, *Orchis conopsea*, *Satyrium conopseum*), *G. conopsea* var. *conopsea* (syn. *G. conopsea* var. *typus*); *G. densiflora* (Wahlenb.) A. Dietr. (syn. *G. conopsea* var. *densiflora*); *G. frivaldii* Hampe ex Griseb. (syn. *G. frivaldskyana*); *Hammarbya paludosa* (L.) Kuntze (syn. *Malaxis paludosa*); *Herminium monorchis* (L.) R.Br. (syn. *Ophrys monorchis*); *Himantoglossum jankae* Somlyay, Kreutz & Ovari (syn. *Himantoglossum caprinum* auct. pl., non (M. Bieb.) Spreng. (Molnar et al. 2012); *H. hircinum* auct. non (L.) Spreng., *Satyrium hircinum*, *Loroglossum hircinum*); *Limodorum abortivum* (L.) Schwarz (syn. *Orchis abortivum*, *Ionorchis abortiva*); *Liparis loeselii* (L.) Rich. (syn. *Ophrys loeselii*, *Sturmia loeselii*); *Listera cordata* (L.) R.Br. (syn.

*Ophrys cordata*, *Diphryllum cordatum*); *L. ovata* (L.) R.Br. (syn. *Ophrys ovata*, *Diphryllum ovatum*); *Neottia nidus-avis* (L.) Rich. (syn. *Ophrys nidus-avis*); *Nigritella nigra* (L.) Rehb. f. (syn. *N. angustifolia*, *Gymnadenia nigra*); *Ophrys apifera* Huds., *O. apifera* f. *flavescens* Rosb.; *O. cornuta* Steven (syn. *O. bicornis*, *O. oestrifera* M. B. var. *cornuta*); *O. insectifera* L., *O. mammosa* Desf. (syn. *O. aranifera* ssp. *mammosa*); *O. reinholdii* Spruner ex Fleishm.; *Neotinea tridentata* (Scop.) R.M.Bateman, Pridgeon & M.W.Chase.; *Orchis commutata* Torado; *O. coriophora* L., *O. coriophora* ssp. *coriophora*, *O. coriophora* ssp. *fragrans*, (syn. *O. fragrans*); *O. elegans* Heuff.; *O. lactea* Poir.; *O. laxiflora* Lam. s. str. (syn. *O. palustris* auct.), *O. laxiflora* ssp. *laxiflora*, *O. laxiflora* ssp. *elegans* (syn. *O. elegans*); *O. mascula* L. s. str., *O. mascula* ssp. *signifera* (syn. *O. speciosa*), *O. mascula* ssp. *mascula*, *O. militaris* L. (syn. *O. rivini*); *O. morio* ssp. *picta* (syn. *O. pictus*), *O. morio* var. *škorpili*, (syn. *O. škorpili*); *O. ovalis* F. W. Schmidt ex Mayer; *O. pallens* L. (syn. *O. sulphurea*); *O. papilionacea* L. (syn. *O. expansa*), *O. papilionacea* var. *parviflora*; *O. pinetorum* Boiss. & Kotschy; *O. provincialis* Balb.; *O. purpurea* Huds. (syn. *O. fusca*); *O. simia* Lam (syn. *O. tephrosanthos*), *O. simia* var. *laxiflora* Boiss.; *O. spitzelii* Saut. ex Koch; *O. tridentata* Scop. (syn. *O. taurica*), *O. tridentata* ssp. *tridentata*, *O. tridentata* ssp. *lactea* (syn. *O. lactea*); *O. ustulata* L. (syn. *O. amoena*); *Platanthera bifolia* (L.) Rich. (syn. *P. solstitialis*, *Orchis bifolia*); *P. chlorantha* (Custer) Rehb. (syn. *P. montana*, *Orchis chlorantha*); *Pseudorchis albida* (L.) A. & D.Love. (syn. *Gymnadenia albida*, *Satyrium albidum*, *Perstylus albidus*); *Serapias vomeracea* (Burm.) Briq. (syn. *S. longipetala*, *Orchis vomeracea*, *S. vomeracea* var. *stenopetala*); *Spiranthes spiralis* (L.) Chevall. (syn. *S. autumnalis*, *Ophrys spiralis*); *Traunsteinera globosa* (L.) Rehb. (syn. *Orchis globosa*, *Nigritella globosa*).

Family Primulaceae is represented by 1 genus, 2 species, 2 subspecies and 2 varieties: *Cyclamen coum* Mill., *C. coum* ssp. *coum*, *C. coum* ssp. *coum* f. *coum*; *C. hederifolium* Aiton (syn. *C. neapolitanum* Ten.), *C. hederifolium* var. *hederifolium albiflorum*, *C. hederifolium* var. *hederifolium hederifolium*.

The family Ranunculaceae is represented by 1 genus and 1 species: *Adonis vernalis* L.

The vertical distribution of the analyzed species is as follows: 1.) from sea level to 500 m a.s.l. there are 7 species; 2.) up to 1000 m a.s.l. – 18 species; 3.) in the range 0–1500 m a.s.l. – 21 species; 4.) 0–2000 m a.s.l. – 9 species; 5.) 0–2500 m a.s.l. – 2 species; 6.) 500–1500 m a.s.l. – 8 species; 7.) from 500–2000 m a.s.l. – 2 species; 8.) from 500–2500 m a.s.l. –

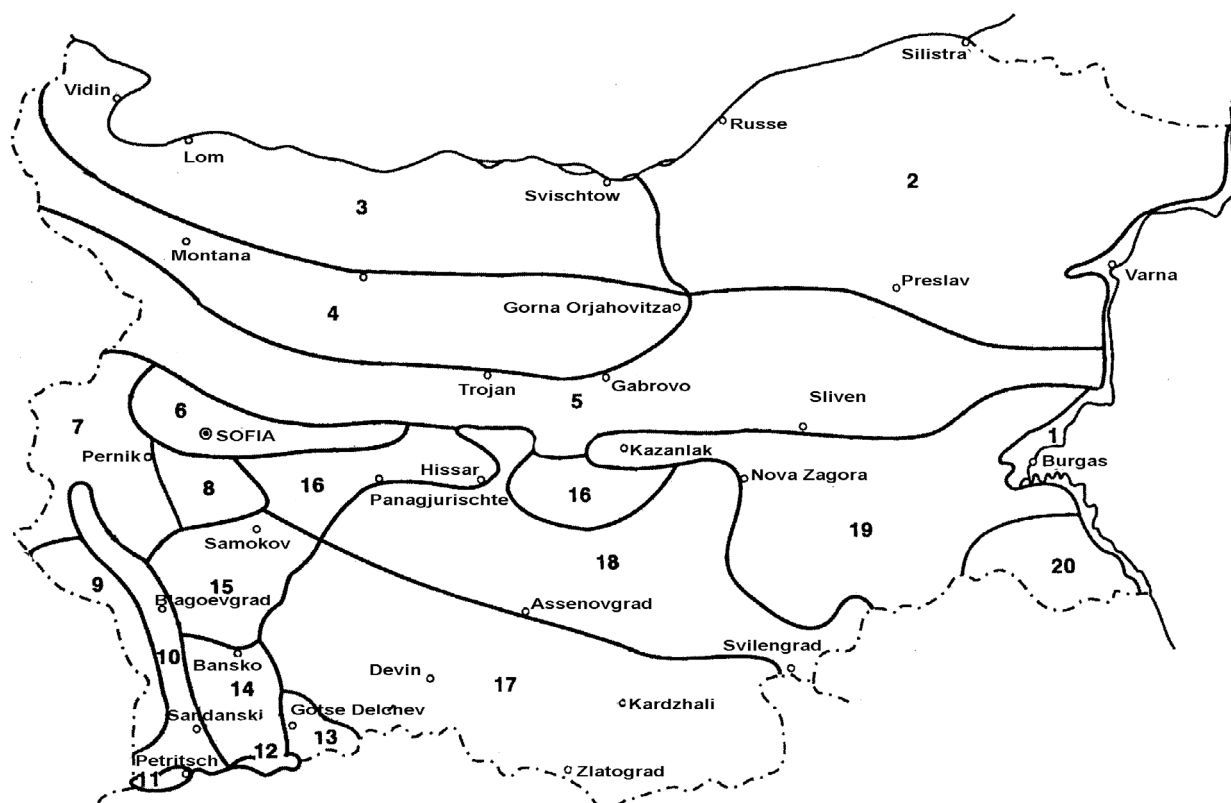
3 species; 9.) from 1000–2000 m a.s.l. – 3 species; 10.) from 1000–2500 m a.s.l. – 2 species; 10.) from 1000–2925 m a.s.l. – 2 species (Assyov & Petrova 2012).

According to their phytogeographical classification of Walter adapted for Bulgaria's conditions, the species can be referred to the following several main groups of floral elements (Assyov & Petrova 2012). The group of sub-Mediterranean species (subMed) is best represented – 13 species, followed by the Euro-Asian (Eur-As) – 10 species and the European (Euro) – 9 species. Mediterranean (Med), Boreal (Boreal), Euro-Siberian (Eur-Sib) are represented by five species each. The Pontic-Mediterranean (Pont-Med) are 4 species. Balkan endemics (Bal) are also 4 species (*Dactylorhiza baumanniana*, *D. kalopisii*, *D. pindica* and *Epipactis spiridonovii*). Euro-sub-Mediterranean (Eur-subMed) group is represented by 3 species, while the Balkan-Anatolian (Bal-

Anat), Carpathian-Balkan (Carp-Bal), European-Oriental-Turanian (Eur-OT), Eastern Mediterranean (EMed), Arcto-alpine (Arct-Alp) and subboreal (subBoreal) are represented by 2 species.

The representation of the European Pontic (Eur-Pont), Mediterranean-Central Asian (Med-CAS), European-Anatolian (Eur-Anat), South European-Anatolian (SEur-Anat), Pontic (Pont), South Pontic (single) SPont) and Eastern European (EEur) is by 1 species each.

The distribution of CITES-protected species by floristic regions and subregions (Bondev 1966) (Fig. 1) is presented in Table 1. It shows that most of them are found in the floristic regions of the Rhodopes (63 species), Stara Planina (58 species), Rila (46 species) and Vitosha region (43 species), and the poorest are the regions Thracian lowland (30 species), Danube plain (28 species) and the valley of the Mesta river (25 species).



**Figure 1** – Floristic regions in Bulgaria (according to Bondev, 1966). Legend: 1. The Black Sea coast; 2. North-Eastern Bulgaria; 3. Danubian Plain; 4. Fore-Balkan; 5. Stara Planina Mt. (Balkan Range); 6. Sofia region; 7. Znepole region; 8. Vitosha region; 9. West Frontier Mountains; 10. Struma River Valley; 11. Belasitsa Mt.; 12. Slavyanka Mt.; 13. Mesta River Valley; 14. Pirin Mt. (Fig. 5.); 15. Rila Mt.; 16. Sredna Gora Mt.; 17. The Rhodopes; 18. Thracian Plain; 19. Tundzha Hilly Plain; 20. Strandzha Mt

The biological spectrum according to Raunkiaer (1934) of the species protected by the CITES convention from the flora of Bulgaria has the following picture: 75 species (97.4%) are cryptophytes (Cr) and only 2 species (2.6%) are hemicryptophytes (H). All 77 species are perennial herbaceous plants (Jordanov 1964).

The analysis of the habitats (groups of plant communities) in which these plants are found shows that 36 species (48.6%) inhabit forest plant communities, 44 species (59.5%) are found in

shrub-grass phytocenoses, 55 species (73.0%) inhabit grasslands, 12 species (14.9%) prefer riparian, river, lake and swamp communities, 3 species (2.7%) grow on rocky terrain and in cracks in rocks, and only 1 species (1, 3%) inhabits agroce-noses (Jordanov 1964).

Depending on the light regime, the species are distributed as follows: 49 (62.2% of the total number of species) can be attributed to the heliophytes, 25 species (33.8%) to the hemisciophytes and only 3 species (4,0%) are sciophytes (Jordanov 1964).

**Table 1** – Distribution of the species of Bulgarian flora protected by CITES by regions and sub-regions (after Bondev 1966)

Floristic region/sub-region	No species	Floristic region/sub-region	No species
Danubian Plain	28 (2)*	Pirin (northern)	43
Northeastern Bulgaria	33	Pirin (southern)	44
Fore-Balkans (western)	37	Pirin (total)	44
Fore-Balkans (eastern)	38 (1)	Slavyanka	41
Fore-Balkans (total)	39 (1)	Struma river valley (northern)	28
Balkan mountain (western)	49	Struma river valley (southern)	31
Balkan mountain (central)	53 (1)	Struma river valley (total)	31
Balkan mountain (eastern)	43 (3)	Mesta river valley	25 (1)
Balkan mountain (total)	59	Rhodopes (western)	42
Sredna gora (western)	35	Rhodopes (central)	58 (2)
Sredna gora (eastern)	29 (1)	Rhodopes (eastern)	36 (4)
Sredna gora (total)	35	Rhodopes (total)	63 (4)
Znepol region	39 (2)	Thracian lowlands	30 (2)
Western border mountain	34 (2)	Tundzha hilly plain	32 (4)
Sofia region	38 (1)	Strandzha	38 (2)
Vitosha region	43	Black Sea coast (southern)	31
Rila	46	Black Sea coast (northern)	31
Belasitca	33	Black Sea coast (total)	34

\* – the numbers in brackets indicate the number of species that need to be confirmed in the relevant floristic area (Assyov & Petrova 2012).

According to their attitude to temperature conditions, mesotherms predominate – 48 species (60.8%). Microtherms are 23 species or 31.1% of the total number of species, and only 6 species (8.1%) are thermophytes.

Regarding the requirements of the analyzed species to the moisture regime, their distribution is as follows: mesophytes predominate, which are 51 species (67.6%), 19 species or 24.3% of the total number are hygro- or hydrophytes and 7 species, 1%) are xerophytes.

According to their preferences to the bedrock's chemical reaction, 12 species (14.9%) can be attributed to calciphytes, and 3 species (1.3%) are chas-mophytes.

The number of flowering species by months is distributed as follows – 1 species blooms until November, 2 species bloom in January, September and October, in March there are 5 flowering species, in April – 33 species, in May – 55 species, June – 60 species, in July – 40 species and in August 15 species bloom.

The conservation significance of most species studied is not limited to their inclusion in CITES Appendix II. Table 2 presents a list of species and their significance for the flora of Bulgaria, the flora of Europe and the world. In the Red Data Book of the People's Republic of Bulgaria (Velchev ed. 1984) are included 15 species – 9 with the category of «rare species» (R), 4 with the category of «endangered species» (En), and 2 species with the category «extinct» (Ex) – *Liparis loeselii* and *Hammarbya paludosa*. Both species were later rediscovered – the first in the Southern Struma Valley and the second in the Middle Rhodopes (Assyov & Petrova 2012). The second edition of the Red Data Book of the Republic of Bulgaria (Peev, 2015) includes 21 species: 2 species with the category “regionally extinct” (RE) – *Liparis loeselii*, *Herminium monorchis*, 8 species with the category “critically endangered” (CR)

– *Cephalanthera epipactoides*, *Cypripedium calceolus*, *Dactylorhiza kalopissii*, *Epipactis greurys*, *Hammarbya paludosa*, *Ophrys insectifera*, *Orchis provincialis*, *O. spitzelii*, *Traunsteinera globosa*, 10 species with the category “endangered” (En) and only one “vulnerable” species (Vu) – *Himantoglossum jankae*.

The Red List of Bulgarian vascular plants (Petrova & Vladimirov 2009) includes 18 more species with the category “vulnerable” – *Anacamptis pyramidalis*, *Coeloglossum viride*, *Corallorhiza trifida*, *Dactylorhiza romana*, *Epipactis leptochila*, *E microphylla*, *Epipogium aphyllum*, *Gymnadenia frivaldii*, *Leucorchis albida*, *Limodorum abortivum*, *Listera cordata*, *Nigritella nigra*, *Ophrys cornuta*, *O. mammosa*, *Orchis laxiflora*, *O. papilionacea*, *O. ustulata*, *Spiranthes spiralis*, which are not included in the Red Data Book. (2015)

**Table 2** – Conservation significance of the species of Bulgarian flora included in Appendix II of CITES

№	Species	Flowering time, months	RDB (1984)	RDB (2015)	BA (2007)	MPA (2000)	IUCN (1998)	Eur. list (1983)	Di-rect.92/2 EU	Bern Convention (1979)
1	<i>Galanthus elwesii</i> Hook. f.	1-3	En	En	+	+	-	-	-	-
2	<i>Galanthus nivalis</i> L.	1-4	En	En	+	+	-	-	-	-
3	<i>Sternbergia colchiciflora</i> Waldst. & Kit.	9-11	-	-	-	-	-	-	-	-
4	<i>Anacamptis pyramidalis</i> (L.) Rich.	5-7	-	-	+	+	-	-	-	-
5	<i>Cephalanthera damasonium</i> (Mill.) Druce	5-7	-	-	-	-	-	-	-	-
6	<i>Cephalanthera epipactoides</i> Fisch. & C.A.Mey.	5-6	-	CR	+	-	-	-	-	-
7	<i>Cephalanthera longifolia</i> (L.) Fritsch	6-7	-	-	-	-	-	-	-	-
8	<i>Cephalanthera rubra</i> (L.) Rich.	5-7	-	-	-	-	-	-	-	-
9	<i>Coeloglossum viride</i> (L.) Hartm.	5-7	-	-	-	-	-	-	-	-
10	<i>Corallorhiza trifida</i> Chatel	6-8	-	-	-	-	-	-	-	-
11	<i>Cypripedium calceolus</i> L.	5-6	En	CR	+	-	-	V	+	+
12	<i>Dactylorhiza baumanniana</i> Holz. & Kunkele	5-7	-	-	-	-	-	-	-	-
13	<i>Dactylorhiza cordigera</i> (Fries) Soo	5-8	-	-	-	-	-	-	-	-
14	<i>Dactylorhiza incarnata</i> (L.) Soo	5-7	-	En	+	-	-	-	-	-
15	<i>Dactylorhiza kalopissii</i> E. Nelson	6-7	-	CR	+	-	R	-	+	-
16	<i>Dactylorhiza pindica</i> B. & E. Willing	5-8	-	-	-	-	-	-	-	-
17	<i>Dactylorhiza maculata</i> (L.) Soo	6	-	-	-	-	-	-	-	-
18	<i>Dactylorhiza romana</i> (Sebast. & Mauri) Soo	4-6	-	-	-	-	-	-	-	-
19	<i>Dactylorhiza saccifera</i> (Brongn.) Soo	4-8	-	-	-	-	-	-	-	-

№	Species	Flowering time, months	RDB (1984)	RDB (2015)	BA (2007)	MPA (2000)	IUCN (1998)	Eur. list (1983)	Di-rect.92/2 EU	Bern Convention (1979)
20	<i>Dactylorhiza sambucina</i> (L.) Soo	4-6	-	-	-	-	-	-	-	-
21	<i>Epipactis atrorubens</i> (Hoffm.) Besser	6-7	-	-	-	-	-	-	-	-
22	<i>Epipactis gracilis</i> P. & H. Baumann	7-8	-	-	-	-	-	-	-	-
23	<i>Epipactis greuteri</i> H. Baumann & Kunkele	5-6	-	-	+	-	-	-	-	-
24	<i>Epipactis helleborine</i> (L.) Crantz	5-7	-	-	-	-	-	-	-	-
25	<i>Epipactis leptochila</i> (Godfery) Godfery	5-7	-	-	+	-	-	-	-	-
26	<i>Epipactis microphylla</i> (Ehrh.) Sw	6-7	-	-	-	-	-	-	-	-
27	<i>Epipactis palustris</i> (L.) Crantz	6-7	-	En	+	-	-	-	-	-
28	<i>Epipactis persica</i> (Soo) Nannf.	5-7	-	-	-	-	-	-	-	-
29	<i>Epipactis pontica</i> Taubenheim	5-7	-	-	-	-	-	-	-	-
30	<i>Epipactis purpurata</i> Sm.	5-8	-	En	+	-	-	-	-	-
31	<i>Epipactis spiridonovii</i> J. Devillers-Tershuren & P. Devillers 500 2200	6-7		-					-	
32	<i>Epipogium aphyllum</i> Sw.	7-8	-	-	+	-	-	-	-	-
33	<i>Goodyera repens</i> (L.) R.Br.	6-8	R	En	+	-	-	-	-	-
34	<i>Gymnadenia conopsea</i> (L.) R.Br.	4-7	-	-	-	+	-	-	-	-
35	<i>Gymnadenia densiflora</i> (Wahllerb.) A.Dietr.	4-7	-	-	-	-	-	-	-	-
36	<i>Gymnadenia frivaldii</i> Hampe ex Griseb.	5-8	-	-	-	-	-	-	-	-
37	<i>Hammarbya paludosa</i> (L.) Kuntze	7-8	Ex	CR	+	-	-	-	-	-
38	<i>Herminium monorchis</i> (L.) R. Br.	6-7	En	RE	+	-	-	-	-	-
39	<i>Himantoglossum jankae</i> ( <i>H. caprinum</i> (M. Bieb.) Spreng. auct)	5-8	-	VU	+	+	-	-	+	+
40	<i>Limodorum abortivum</i> (L.) Schwarz	4-5	R	-	+	-	-	-	-	-
41	<i>Liparis loeselii</i> (L.) Rich.	5-7	Ex	RE	+	-	-	V	+	+
42	<i>Listera cordata</i> (L.) R. Br.	6-7	-	-	+	-	-	-	-	-
43	<i>Listera ovata</i> (L.) R.Br.	4-6	-	-	-	-	-	-	-	-
44	<i>Neottia nidis-avis</i> (L.) Rich.	8-9	-	-	-	-	-	-	-	-
45	<i>Nigritella nigra</i> (L.) Rchb. f.	5-7	-	-	-	-	-	-	-	-
46	<i>Ophrys apifera</i> Huds.	5-6	-	En	+	-	-	-	-	-
47	<i>Ophrys cornuta</i> Steven	4-6	-	-	+	-	-	-	-	-
48	<i>Ophrys insectifera</i> L.	4-6	-	CR	+	-	-	-	-	-
49	<i>Ophrys mammosa</i> Desf.	4-6	-	-	+	-	-	-	-	-
50	<i>Ophrys reinholdii</i> Spruner ex Fleishm.	5-6	-	En	-	-	-	-	-	-
51	<i>Orchis commutata</i> Torado	3-4		-					-	
52	<i>Orchis coriophora</i> L.	4-7	-	-	-	+	-	-	-	-
53	<i>Orchis elegans</i> Heuff.	4-7	-	-	-	-	-	-	-	-
54	<i>Orchis lactea</i> Poir.	4-6	-	-	-	-	-	-	-	-

Continuation of table 2

№	Species	Flowering time, months	RDB (1984)	RDB (2015)	BA (2007)	MPA (2000)	IUCN (1998)	Eur. list (1983)	Di-rect.92/2 EU	Bern Convention (1979)
55	<i>Orchis laxiflora</i> Lam. s. str.	4-7	-	-	+	+	-	-	-	-
56	<i>Orchis mascula</i> L. s. str.	4-6	-	-	-	+	-	-	-	-
57	<i>Orchis militaris</i> L.	4-5	R	En	+	+	-	-	-	-
58	<i>Orchis morio</i> L.	4-6	-	-	-	+	-	-	-	-
59	<i>Orchis ovalis</i> F. W. Schmidt ex Mayer	4-7	-	-	-	-	-	-	-	-
60	<i>Orchis pallens</i> L.	4-6	-	-	-	+	-	-	-	-
61	<i>Orchis papilionacea</i> L.	4-5	R	-	+	+	-	-	-	-
62	<i>Orchis pinetorum</i> Boiss.& Kotschy	4-6	-	-	-	+	-	-	-	-
63	<i>Orchis provincialis</i> Balb.	4-5	R	CR	+	+	-	-	-	+
64	<i>Orchis purpurea</i> Huds.	4-6	-	-	-	+	-	-	-	-
65	<i>Orchis simia</i> Lam.	4-6	-	-	-	+	-	-	-	-
66	<i>Orchis spitzelii</i> Saut.ex Koch	4-6	-	CR	+	+	-	-	-	-
67	<i>Orchis tridentata</i> Scop.	4-6	-	-	-	+	-	-	-	-
68	<i>Orchis ustulata</i> L.	4-6	-	-	-	+	-	-	-	-
69	<i>Platanthera bifolia</i> (L.) Rich	5-7	-	-	-	+	-	-	-	-
70	<i>Platanthera chlorantha</i> (Custer) Rchb.	4-6	-	-	-	+	-	-	-	-
71	<i>Pseudorchis albida</i> (L.) A. & D. Love	5-8	-	-	-	-	-	-	-	-
72	<i>Serapias vomeracea</i> (Burm.) Briq.	4-5	R	En	+	-	-	-	-	-
73	<i>Spiranthes spiralis</i> (L.) Chevall.	8-9	R	-	+	-	-	-	-	-
74	<i>Traunsteinera globosa</i> (L.) Rchb.	5-6	R	CR	+	-	-	-	-	-
75	<i>Cyclamen coum</i> Mill.	2-4	R	-	+	+	-	-	-	+
76	<i>Cyclamen hederifolium</i> Aiton	8-10	-	-	-	+	-	-	-	-
77	<i>Adonis vernalis</i> L.	2-6	-	-	-	-	-	-	-	-
	<b>Total</b>		<b>15</b>	<b>21</b>	<b>26</b>	<b>23</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>5</b>

**Legend:**

RDB (1984) – Red Book of the P. R. Bulgaria. Vol. I. Plants: R – rare, En – endangered, Ex – extinct;

RDB (2015) – Red Data Book of the Republic of Bulgaria. Vol. 1. Plants and Fungi: RE – regional extinct, CR – critical endangered, En – endangered, VU – vulnerable;

BA (2007) – Biodiversity Act of Bulgaria – Amended;

MPA (2000) – Medicinal Plants Act;

IUCN (1998) – 1997 IUCN Red List of Threatened Plants: R – rare;

Eur. List (1983) – List of Rare Threatened and Endemic Plants in Europe: V – vulnerable;

Direct.92/2 EU – Council Directive 92/43/EEC on 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora;

Bern convention (1979) – Convention on the Conservation of European Wildlife and Natural Habitats.

In the List of Rare, Threatened and Endemic Plants in Europe are included 2 species – both with the category “vulnerable” (Lucas 1983). These are *Cypripedium calceolus* and *Liparis loeselii*. One species – *Dactylorhiza kalopisii* is included for Bulgaria in the IUCN Red List of Threatened Plants

with the category “rare” (Walter & Gillett, 1998). Strictly protected by the Bern Convention (1973) and included in Annex 2 are 5 species – 4 of family Orchidaceae (*Cypripedium calceolus*, *Himantoglossum jankae*, *Liparis loeselii*, *Orchis provincialis*) and one of family Primulaceae – *Cyclamen coum*.



In the Biodiversity Act (2002) and its amendment (2007), three appendices are related to protection of this group of plants. Appendix 2 includes species for which habitat protection is required. From the family Orchidaceae these are *Cypripedium calceolus*, *Dactylorhiza kalopissii*, *Himantoglossum jankae* and *Liparis loeselii*. The most numerous is the list in Annex 3 – 33 protected plants, the picking, collection, cutting, uprooting or damaging of which in any other way is prohibited and violators are punished. Of these, 30 species belong to the family Orchidaceae, two of the family Amaryllidaceae and 1 species of the family Primulaceae (2007).

Widespread species of the genera *Orchis* and *Dactylorhiza*, which are not strictly protected, are included in Annex 4 of the Act, and their collection for bouquets for commercial purposes (for sale) is prohibited. In the past, the tubers of a number of saleps were collected as a herb to make the salep drink. The Medicinal Plants Act (2000) has not allowed their collection for years.

The medicinal plants in Bulgaria included in the Medicinal Plants Act (2000) includes 23 species – two from the families Amaryllidaceae and Primulaceae each and 19 species from the family Orchidaceae.

Annex II to Council Directive 92/43 / EEC (1992) – including species whose conservation requires the designation of special protection zones, includes 4 plants of the family Orchidaceae – *Cypripedium calceolus*, *Dactylorhiza kalopissii*, *Himantoglossum jankae* and *Liparis loeselii*. Among the plants protected by CITES there are 13 relict species

– 5 of them are Tertiary relicts – *Cypripedium calceolus*, *Herminium monorchis*, *Limodorum abortivum*, *Serapias vomeraceae* and *Cyclamen coum* and 8 are glacial relicts – *Goodyera repens*, *Gymnadenia conopsea*, *Pseudorchis albida*, *Listera cordata*, *Nigritella nigra*, *Adonis vernalis*, *Sternbergia colchiciflora* and *Galanthus nivalis*.

### Conclusion

It can be concluded, that among the identified 77 species of the flora of Bulgaria, included in CITES Appendix II, all are perennial herbaceous plants, 75 of which are cryptophytes. Most of them inhabit grass (54 species), shrub-grass (44 species) and forest (36 species) phytocenoses at a wide range of altitudes – from sea level to 1500 m a.s.l. (62 species). Most of them are found in the floristic regions of the Rhodopes (63 species), Stara Planina (58 species) and Rila (46 species).

Among them, heliophytes, mesophytes and mesotherms predominate. Of the geoelements of the flora, those with an European component predominate (31 species), followed by those of Mediterranean origin and distribution (22 species). Most of these plants bloom in June – 60 species and in May – 55 species. Fifty-three species have additional conservation significance for the flora of Bulgaria as red-listed, protected and medicinal plants, and 6 of them are included in international conventions and documents for the protection of European and world flora. Among these plants, there are 8 glacial and 5 tertiary relicts.

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