Analysis of the Flora of the Vedensky Biological Reserve

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Abstract. The natural flora of the Vedensky biological reserve (Chechen Republic) has been studied, including 1543 species of vascular plants from 545 genera and 119 families. 12 large families (Asteraceae, Poaceae, Fabaceae, Lamiaceae, Brassicaceae, Rosaceae, Apiaceae, Caryophyllaceae, Boraginaceae, Scrophulariaceae, Ranunculaceae, Rubiaceae) including 492 species, and 20 large genera (Astragalus, Rosa, Orobanche, Medicago, Carex, Trifolium, Hieracium, Vicia, Allium, Stipa, Geranium, Festuca, Veronica, Artemisia, Viola, Poa, Centaurea, Euphorbia, Galium, Orchis) uniting 166 species are specified. By the dominant large families, the flora belongs to the Mediterranean type, and by the set of families of the headspectrum part and the prevailing geo-elements, it is Caucasian-Palaearctic one. Among the 7 florocoenotypes represented here, the rocky-talus and shrub-fringe ones prevail with significant participation of the meadow florocoenotype. More than half of the flora (54.53 %) is occupied by hemicryptophytes, and half as much as they – by terophytes (26.79 %); phanerophytes (9.2 %), cryptophytes (7.14 %), and hamephites (2.34 %) are less common. Herbaceous plants make up 88.46 %, trees and shrubs - 9.20 %, and subshrubs and dwarf shrubs - 2.34 % of the flora.
The flora is rich in resource-useful species: 157 food, 288 fodder, 178 medicinal, 120 poisonous, 202 melliferous, 314 decorative, and 81 industrial plants.

1. Introduction
Vedensky biological reserve was arranged in the mountainous and high-mountainous part of the Vedensky region of the Chechen Republic in 1963. Its area is 43.7 thousand hectares, including 18 thousand hectares of forest hunting grounds, 20 thousand hectares of subalpine and alpine meadows, and 5.7 thousand hectares of stone mounds and talus. Here, stone mounds alternate with alpine meadows; aurochs and snowcocks can be seen; below, closer to the forest border, bezoar goats and chukars live; the Caucasian black grouse nests in the birch forests in the rhododendron thickets.
Part of the reserve is located on the lands of the Vedensky, Shatoysky, and Sharoyisky forestries. The forests are rich in nut-bearing and wild-fruit plants, berries, mushrooms, and wild garlic; medicinal and melliferous plants are widespread. Within the reserve borders, there are 6 settlements: Makazhoy, Khoi, Nokhchi-Keloy, Kiri, Butti, and Kenkhi villages.
Borders: the northern border – from the Dutsu-Khota village to the east along the lower forest margin, excluding the Selmentauzen and Makhkety villages, up to the Elistanzhi village; the eastern border – from the Elistanzhi village through the former Ziverkhi village to Lake Kezenov-Am; the southern border – from Lake Kezenoy-Am along the border with the Republic of Dagestan to the
Chadari River; the western border – from the border with the Republic of Dagestan along the Chadari River to its confluence with the Sharo-Argun River, to the Sharo-Argun village, and further from the Sharo-Argun village along the southern cuts of compartments 87, 99, and 98 of the Vedensky forestry through the former Nuy village to the Dutsu-Hota village.

The main reserve tasks protection, preservation, and reproduction of rare, relict, and endangered plant species, including Taxus baccata, Acer laetum, Malus Orientalis, Pyrus caucasica, Sorbus aucuparia, Betula raddeana, Mespilus germanica, Viburnum opulus, Viburnum lantana, Hippophae rhamnoides, Sambucus nigra, Euonymus latifolius, Acer pseudoplatanus, Prunus avium, Prunus padus, Rhododendron luteum, Juniperus oblonga Bieb, Rosehip species, Ribes biebersteinii, Periploca graeca, Rubus buschii, Ribes uva-crispa, Primula macrocalyx, Primula woronowii, Convallaria transcaucasica, Allium ursinum (wild garlic), Asarum ibericum, Asplenium scolopendrium, Violaceae species, Tamus communis (Adam's root), Cicerbita macrophylla, Betonica officinalis, Polygonatum species, Actaea spicata, Lavatera thuhngiaca, Campanulaceae rocky species, Hablitzia tamnoides, Helleborus caucasica, entaria bulbifera, Dentaria quinquefolia, Pachyphragma macrophyllum, Sanicula europea, etc., and protection of the natural landscape.

A part of the Argun state historical, architectural, and natural museum-reserve is located on the Vedensky reserve territory.

Figure 1

In general, an idea of the degree of studying the Eastern Caucasus vegetation cover, including the Vedensky reserve can be got from the materials included in the major summaries and generalizations for the Caucasus. The opinion about the originality, wealth, and antiquity of its flora and vegetation is confirmed by many researchers [1-7]. Regarding the Eastern Caucasus as an independent unit (large rank) in floristic, florogenetic, and botanical-geographical zoning was confirmed in some works [1, 8-11]. Despite this, some areas, including the territory under consideration, were far from being fully studied in terms of botany, although professional botanists and experts in related fields of knowledge
were engaged in studying their flora, starting from F.S. Bayern, who excursed in the Shatoy fortification and the Keysky gorge area in 1860-61, and N.K. Seydlitz [12-14], who made a trip to the upper reaches of the Argun.

2. Research material and methods
The natural flora of the Vedensky reserve has been studied. The research material was field observations and herbarium collections collected by the authors during expeditionary studies in 2010-2019. Flora was studied by a traversing and field survey. The studies covered all the associations of natural vegetation, typical for the research area. In total, about 2,500 herbarium specimens were collected, identified, and mounted.

A comprehensive analysis of flora and its resource potential has been performed.

Geographic analysis is based on a spectrum of geographical flora elements. The system of geographical flora elements is based on the scheme proposed by A.L. Ivanov [15, 16] when analyzing the flora of the Central Ciscaucasia.

Five main biomorphs (phanerophytes, hamephites, hemicryptophytes, cryptophytes, and theophytes) were identified in the flora of the research area according to the K. Raunkier system [17].

3. Results and their discussion
An analysis of the flora of a natural area is a source of information about the state of floristic complexes, their structure, and specifics, which allows identifying the individual features of the flora and comparing its parameters with that of other nearby and remote areas. The standard floristic analysis includes systematic, ecological, biomorphological, and geographical ones. Part of it is also an analysis of endemism and relictness, which allows determining the individual peculiarities of the flora.

The analysis is based on a complete list of the studied flora species. Its results are data on the position of the flora of the studied area in the system of floristic division of the land, its phytoceno-ecological and chorological composition, biomorphological characteristics, the degree of saturation with endemics and relics, and the genetic relationships of autochthonous euendemics and subendemics. These data create the basis for drawing up a list of plants to be protected and justifying the allocation of specially protected natural areas. Also, the analysis identifies species promising for economic use.

In modern comparative floristry, the flora analysis occupies one of the leading places. The fundamentals of the floristic analysis were developed by many researchers ([18-30], and others), who analyzed the flora of various areas in not only the Caucasus but also other Eurasian regions. The theoretical significance of the flora analysis is determined by its results that are the basis for many fundamental aspects of floristry, of which one of the most important is the issue of global and regional florogenesis. The regional flora analysis data allow correcting the florogenesis models of the larger area, of which the studied local flora is a part.

Our analysis is aimed at identifying and comparatively assessing the systematic, geographical, ecological, and other indicators characterizing the flora. Such a multifaceted analysis based on an annotated systematic list will allow determining not only the numerical shares of taxa but also some other quantitative and qualitative parameters of the flora studied.

The list of the Vedensky reserve flora includes 1,543 species of vascular plants belonging to 545 genera and 119 families. An insignificant number of ferns (7 species of 4 families) and gymnosperms (5 species of 3 families) were detected, accounting for 0.69 and 0.96 percent of the total number of species, respectively. The remaining 1,531 species (or 92 % of the total number of species) are classified as flowering plants.

The leading families (Table 1) comprise 492 species of 235 genera, which is, respectively, 67.58 and 67.72 % of their total number. A comparison of the systematic structure of the studied flora at the level of the leading families with those for individual floras of the Mediterranean and Circumboreal floristic regions reveals several interesting features. Noteworthy is the fact that the first three families are similar to those of the Mediterranean flora. The difference here is in the position of Poaceae and...
Fabaceae families in the spectrum.

The analysis of digital material (Table 1) ranked by the number of species in the families of the head part of the flora spectrum has shown that the first three ones are Asteraceae, Poaceae, and Fabaceae typical of Mediterranean flora.

| Table 1. Large Families of the Vedensky Reserve Flora. |
|-----------------|-----------------|-----------------|-----------------|
| Family          | Number of Species | Number of Genera | S/G |
|-----------------|-------------------|------------------|------|
| Asteraceae      | 97                | 39               | 2.49 |
| Poaceae         | 82                | 45               | 1.82 |
| Fabaceae        | 57                | 14               | 4.07 |
| Lamiaeeae       | 40                | 27               | 1.48 |
| Brassicaceae    | 40                | 21               | 1.90 |
| Rosaceae        | 38                | 18               | 2.10 |
| Apiaceae        | 38                | 26               | 1.46 |
| Caryophyllaceae | 33                | 17               | 1.94 |
| Boraginaceae    | 18                | 9                | 2.00 |
| Scrophulariaceae| 18                | 5                | 3.60 |
| Ranunculaceae   | 16                | 9                | 1.78 |
| Rubiaceae       | 15                | 5                | 3.00 |
| Total:          | 492               | 235              | 67.72|

Moreover, in different parts of the Mediterranean region, the position of Poaceae and Fabaceae in the spectrum may change: in the western and semi-desert and desert areas, Fabaceae occupies the second place, and in the areas adjacent to the Circumboreal region, this family gives way to Poaceae. The Lamiaeeae, Brassicaceae, and Apiaceae families usually occupy the next three positions in the Mediterranean flora spectra. In our case, in terms of the number of species, Rosaceae is almost on a par with the families of the second three. This circumstance deserves attention in that the studied flora in its formation has experienced a pronounced impact of boreal flora. This is additionally evidenced by the somewhat lower ranks of Caryophyllaceae and Scrophulariaceae.

Thus, by the characteristics determined in the analysis of the ranks of large families, at its floristic core, the reserve flora can be related to the Mediterranean type. By the set of families of the head spectrum part, it may quite definitely be considered Caucasian since A.A. Grossheim has assigned almost all of these families (except for Rubiaceae) to the leading group in the all-Caucasian spectrum [3].

The largest genera (with 6 or more species) of the reserve flora are given in Table 2. This group of genera comprises in total 166 species (22.78% of the total number of species) or more than 1/5 of the species composition. Noteworthy is that in these spectra, genera occur that do not belong to the above-mentioned families of the head spectrum part. E.g., Carex, Allium, Saxifraga, Orobanche, Geranium, and others. In general, these are taxa common in the flora of the Caucasus and its certain regions. However, as to be expected, the overwhelming majority of these genera belong to multispecies families making up the leading group. As for genera not included in Table 5, we can indicate that 10 of the rest of the total spectrum genera comprise 5 species each. These are genera such as Chenopodium, Potentilla, Lathyrus, Alyssum, Rumex, Salvia, Stachys, Verbascum Myosotis, and Carduus. As can be seen, this group of genera (except for Chenopodium and Rumex) also belongs to the families of the head spectrum part.
### Table 2. The Largest Genera Spectrum of the Vedensky Reserve.

| Item No. | Genus       | Number of Species | %   | Item No. | Genus | Number of Species | %   |
|---------|-------------|-------------------|-----|----------|-------|-------------------|-----|
| 1       | Astragalus  | 15                | 2.06| 11       | Rosa  | 8                 | 1.10|
| 2       | Orobanche   | 12                | 1.65| 12       | Medicago | 7               | 0.96|
| 3       | Carex       | 12                | 1.65| 13       | Trifolium | 6               | 0.82|
| 4       | Hieracium   | 11                | 1.51| 14       | Vicia  | 6                 | 0.82|
| 5       | Allium      | 10                | 1.37| 15       | Stipa  | 6                 | 0.82|
| 6       | Geranium    | 9                 | 1.24| 16       | Festuca | 6               | 0.82|
| 7       | Veronica    | 9                 | 1.24| 17       | Artemisia | 6             | 0.82|
| 8       | Viola       | 9                 | 1.24| 18       | Poa    | 6                 | 0.82|
| 9       | Centaurea   | 8                 | 1.10| 19       | Euphorbia | 6            | 0.82|
| 10      | Galium      | 8                 | 1.10| 20       | Orchis | 6                 | 0.82|
|         | Total       |                   |     |          |        | 166              | 22.78|

There are 51 genera with 3–4 species each, comprising 164 species, i.e. 22.53 % of the total species composition of the flora studied. 82 genera with 2 species each comprise the same number of species. The largest group is formed by 184 single-species genera. But the latter include species deserving attention and very interesting from the florogenesis point of view such as *Albovia tripartita*, *Ceratoides papposa* (*Krascheninnikovia ceratoides*), *Celtis glabrata*, and *Crambe grandiflora*, *Fritillaria caucasica*, *Iris notha*, etc.

When performing the geographical analysis of the flora, we have followed the principle of identifying geographical elements, which is important in determining the flora specifics and the history of its formation. This analysis can be a basic point in the zoological assessment of rare and endangered plant species. In this regard, geographic analysis is an important component in vegetation studies. The modern geographical distribution of plants on Earth is the result of a centuries-old dynamic process, the tendency of which at each time interval is subject to change depending on the specific natural and climatic situation. In other words, the geographical distribution of vegetation cover elements takes place not only in space but also subject to transformation in time, i.e. the configuration of the current taxon range directly depends on its history. To ecologically characterize a species, it is important to know its range – the area within which it is distributed.

The system of geo-elements, specifying the absolute number of species of a particular geo-element and its percentage is given in Table 3, and Figure 1 shows the share of geo-types. When analyzing the numerical tabular and diagram data, it can be noted that approximately 1/3 (249 species or 34.20 %) of the list composition belong to boreal geo-elements. It follows that in its development, the studied flora experienced a strong impact from northern floras. Among the boreal elements, Caucasian species occupy the first place (92 species or 12.64 %), which are approximately equally represented by the Common Caucasian and Eucaucasian species (6.04 and 6.59 %, respectively). Ancient Mediterranean elements occupy the second place in the spectrum of geo-elements (201 species or 27.61 %). Further downward are the general Holarctic (173 species - 23.76 %), binding (92 species - 12.64 %), pluriregional (11 species - 1.51 %), and adventive (2 species - 0.28 %) ones.
Table 3. Quantitative and Percentage Share of Geo-Elements

| Item No. | Geo-Types and Geo-Elements | Representation of Geo-Elements |
|----------|-----------------------------|--------------------------------|
|          |                             | Number | %   |
| 1. PLURIREGIONAL |                             | 31     | 2.01 |
| 1        | Pluriregional               | 31     | 2.01 |
| 2.       |                             | C361   | 23.4 |
| 2        | Holarctic                   | 114    | 7.39 |
| 3        | Palaearctic                 | 247    | 16.01|
| 3.       |                             | 716    | 46.4 |
| 4        | Panboreal                   | 24     | 1.55 |
| 5        | Euro-Siberian               | 70     | 4.54 |
| 6        | Euro-Caucasian              | 61     | 3.95 |
| 7        | European                    | 78     | 5.06 |
| 8        | Caucasian                   | 434    | 28.13|
| 9        | *Common Caucasian*          | 182    | 11.795|
| 10       | *Eucaucasian*               | 188    | 12.19|
| 11       | *East Caucasian*            | 21     | 1.36 |
| 12       | *Dagestanian*               | 41     | 2.66 |
| 13       | *Transcaucasian-Dagestanian*| 2      | 0.13 |
| 14       | Euxinian                    | 15     | 0.97 |
| 15       | Pontic-South Siberian       | 25     | 1.62 |
| 16       | Pontic                      | 9      | 0.58 |
| 4.       |                             | A256   | 16.59|
| 17       | Common Ancient Mediterranean| 63     | 4.08 |
| 18       | Ancient Western Mediterranean| 33    | 2.14 |
| 19       | Mediterranean               | 20     | 1.30 |
| 20       | Ancient Eastern Mediterranean| 63    | 4.08 |
| 21       | Iranian-Turanian            | 21     | 1.36 |
| 22       | Armenian-Iranian            | 52     | 3.37 |
| 23       | Turanian                    | 4      | 0.26 |
| 5.       |                             | B161   | 10.43|
| 24       | Sub-Mediterranean           | 21     | 1.36 |
| 25       | Sub-Caucasian               | 111    | 7.19 |
| 26       | Sub-Pontic                  | 12     | 0.777|
| 27       | Sub-Turanian                | 17     | 1.10 |
| 6.       |                             | A18    | 1.17 |
| 28       | Adventive                   | 18     | 1.17 |
| TOTAL:    |                             | 1,543  | 100 %|

1 Geo-Types are put in bold
When arranging all geo-elements in descending order of the species number, a ranked row is built (Table 4), indicating that there are 1.7 times more Caucasian species than Palaearctic ones, which occupy the second place. Considering the significant predominance of Caucasian geo-elements (434), the second place occupied by Palaearctic species (247), a significant number of Sub-Caucasian (111) ones, and the presence of Euro-Caucasian representatives (61), in terms of the composition of dominant geo-elements the studied flora can be called Caucasian-Palaearctic, combining in total 853 species, which is 55.28% of the species composition.

Table 4. The Ranks of Geo-Elements in the Vedensky Reserve Flora.

| Item No. | Geo-Element                  | Number of Species | Item No. | Geo-Element                  | Number of Species |
|----------|------------------------------|-------------------|----------|------------------------------|-------------------|
| 1        | Caucasian                    | 434               | 13       | Pontic-South Siberian        | 25                |
| 2        | Palaearctic                  | 247               | 14       | Panboreal                    | 24                |
| 3        | Holarctic                    | 114               | 15       | Sub-Mediterranean            | 21                |
| 4        | Sub-Caucasian                | 111               | 16       | Iranian-Turanian             | 21                |
| 5        | European                     | 78                | 17       | Mediterranean                | 20                |
| 6        | Euro-Siberian                | 70                | 18       | Adventive                    | 18                |
| 7        | Common Mediterranean         | 63                | 19       | Sub-Turanian                 | 17                |
| 8        | Ancient Mediterranean        | 63                | 20       | Euxinian                     | 15                |
| 9        | Euro-Caucasian               | 61                | 21       | Sub-Pontic                   | 12                |
| 10       | Armenian-Iranian             | 52                | 22       | Pontic                       | 9                 |
| 11       | Ancient Western Mediterranean| 33                | 23       | Turanian                     | 4                 |
| 12       | Pluriregional                | 31                |          |                              |                   |
|          | The total number of species  | 1,357             |          |                              | 186               |
|          | Total reserve flora species  | 1,543             |          |                              |                   |

Figure 2. The Spectrum of the Vedensky Reserve Flora Geo-Types.
The ecological component of the reserve flora species is represented by seven florocoenotypes: forest, shrub-fringe, rocky-talus, meadow, steppe, wetland, and synanthropic. Florocoenotypic spectra are given in Table 5.

Table 5. Share of Florocoenotypes (in absolute numbers and % of the total number of species).

| Item No. | Florocoenotype     | Number of Species | of % |
|----------|--------------------|-------------------|------|
| 1        | Forest             | 239               | 17.00|
| 2        | Shrub-fringe       | 400               | 30.12|
| 3        | Rocky-talus        | 410               | 30.87|
| 4        | Meadow             | 321               | 24.17|
| 5        | Steppe             | 164               | 12.35|
| 6        | Wetland            | 133               | 10.02|
| 7        | Synanthropic       | 341               | 25.68|

When analyzing the numerical composition and share of flora florocoenotypes, the leading position of the rocky-talus florocoenotype should be noted, which is quite natural. On the one hand, the saturation of the studied flora with species constituting a given florocoenotype indicates the presence of favorable habitat conditions for the rocky-talus ecology species at the current stage of geomorphological development of the area. On the other hand, the assumption about the existence of paleoecological conditions similar to current ones in the historical past is appropriate since the species of different geographic origin, forming a rocky-talus florocoenotype, could not simultaneously penetrate to the area of the flora studied. The second place is occupied by the shrub-fringe florocoenotype, which is also associated with the specifics of the natural and climatic conditions favorable for the formation of Shiblyak phytocenoses.

In Table 5 spectra, the high percentage of the synanthropic florocoenotype draws attention, the absolute and relative participation of which is higher than that of the meadow one. About every fourth species belongs to the synanthropic florocoenotype, which indicates a significant anthropogenic transformation of the natural flora and vegetation. When summarizing the Table 5 data, it can be said that at its natural florocoenotic core, the flora is rocky-talus and shrub-fringe with significant participation of the meadow florocoenotype.

The structure of flora life forms reflects the nature of plant adaptation to a set of environmental conditions in a certain physical-geographical area. Therefore, its analysis serves as a reliable tool for understanding the ecological parameters of various habitats of a specific area [31].

K. Raunkiaer's system is based on climatically determined morphophysiological aspects of the plant’s vegetative body evolution. The initial position of this scholar in the classification of life forms is the certitude that any biomorph (regardless of the taxonomic position of the species) is the result of a more or less-continued evolution against a certain climatic background. In the morphological structure of the plant, this is expressed as a change in the altitude position of the reproductive buds from the soil surface. In physiological terms, adaptation to climatic conditions is expressed in the specific response of the plant body during the dormant season. In other words, the spectrum of Raunkiaer's life forms reflects the general specifics of the climatic conditions, in which the flora has been formed and exists.

Modern concepts of vegetation are based on defining it as a complete set of plants, their associations, and complexes in a certain area [32, 33]. This set of plants can be considered in different aspects: taxonomic (grouping individuals by species and other taxa), phytocenotic (grouping individuals into phytocenoses and associations), ecobiomorphic (grouping individuals by life forms), etc. In this regard, the problem of biomorphological analysis of life forms is relevant to identify the degree of their correspondence to the complex of current conditions of certain habitats. Along with directly comparing the spatial and temporal characteristics of life forms with the spatial distribution of
various environmental factors and their temporal (seasonal) dynamics, a statistical analysis of the distribution of the main life forms and their most significant features in various natural zones, regions, and habitats may be useful in solving this problem [20]. In mountainous areas, the uneven distribution of life forms along the altitudinal belts grows significantly due to the increase in the ecological contrast of habitats due to edaphic factors, the slope exposure, as well as the gradient of conditions determined by the hypsometric level.

Analysis of the biomorph spectrum according to the Raunkiaer’s system reveals the general dependence of the life form composition and share on the regional climate, which gives reason to call climates by the names of the main life form groups: ‘climate of phanerophytes’, ‘climate of hamephites’, ‘climate of hemicyryptophytes’, etc. Along with the classification of life forms, K. Raunkiaer developed a technique for the statistical analysis of the life form distribution. The biomorph spectra built by him indicate that changes in the life form composition obey latitudinal-zonal and altitudinal-zonal patterns.

When arranging the life forms of plants in a decreasing sequence of their participation in the flora studied, the following ranked series is obtained: Hk - Tr - Ph - Kr - Ch. The share of life forms is clearly illustrated by the diagram in Fig. 2, which shows the domination of hemicryptophytes in the spectra. They make up more than half of the species. The second and third places are occupied by therophytes and phanerophytes, respectively. Herbaceous plants make up the overwhelming majority of the Vedensky reserve flora species. In percentage terms, they account for 88.46%. There are only 67 species of trees and shrubs (9.20%). Subshrubs and dwarf shrubs are the smallest life form. Their share is only 2.34%.

![Figure 3. The Share of Life Forms in the Vedensky Reserve Flora.](image)

The analysis of the biomorphological structure of flora from the florocoenotypic perspective is of particular interest. Some regularities can be traced in the dynamics of changes in the share of life forms along the altitudinal belts.

In terms of the share of individual groups in the biomorphological spectrum, the thorny shrub and weedy florocoenotypes are, respectively, the most and the least close to the reserve flora ones. In all cases (except for the weedy florocoenotype), hemicryptophytes occupy the first place. In the behavior of other life forms in the context of florocoenotypes, in general, peculiar tendencies are manifested.
4. Conclusion
The Vedensky reserve flora comprises 1,543 species of vascular plants belonging to 545 genera and 119 families.

By the features revealed in the rank analysis of large families, at its floristic core, it can be related to a Mediterranean type, and by the set of families of the head spectrum part, it can definitely be considered the Caucasian flora.

At its natural phytocoenotypic core, it belongs to forest and shrub-fringe florocoenotypes with significant participation of the rocky-talus one.

The share of life forms in the reserve flora allows considering it transitional between the temperate and arid types with some predominance of the first one, which is a consequence of the Late Pliocene and Quaternary transformations of the climatic regime.

The rank analysis of the species composition of the Vedensky reserve flora by geographical types of ranges gives the following series: Boreal - Ancient Mediterranean - Common Holarctic - Binding - Pluriregional - Adventive.

The Vedensky reserve flora includes 157 food, 288 fodder, 178 medicinal, 120 poisonous, 202 melliforous, 314 decorative, and 81 industrial plants.

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