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RESEARCH ARTICLE

Essay on the prospects for the use of decorative perennials of the spontaneous flora of the local landscape Feofaniya

Raisa Matiashuk *, Liubov Gubar, Inna Pirko **

Institute for evolutionary ecology, National Academy of Sciences of Ukraine, Lebedeva str. 37, 03143 Kiev, Ukraine; * raisakiev2015@gmail.com, ** pirkoinna@ukr.net

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Abstract

The taxonomic and ecological structure of an artificial set of species of spontaneous flora of the local landscape Feofaniya, distinguished by decorative features, is presented. Decorative perennials, with the exception of aquatic and coastal ones, number 147 species. They are considered taking into account the adaptive characteristics, as a potentially basic component of the regional assortment of ornamental plants for landscaping. In terms of taxonomic composition, the species belong to 100 genera from 38 families. A significant part of perennials is rare in ornamental gardening. Among the studied perennials, the rare fraction includes 13 species with international (four species), state (seven species), or regional (six species) conservation status. According to the results of bioecological analysis, the predominance of mesophytic (76 %), heliophytic (44 %), mesotrophic (82 %), and neutrophilic (65 %) species is shown. When considering the ecological affiliation, the studied species are united into 15 principal ecomorphological groups. The use of plants represented in such groups as the main assortment in the landscaping of the corresponding ecotopes is a prerequisite for the stability and durability of such artificial communities as flower arrangements. The proposed assortment ensures the creation of modern low-cost flower arrangements, as well as the preservation of the biodiversity of the local flora by expanding the cultigen range of these species.

Keywords: local landscape Feofaniya, natural resources, rare species, ecomorphs, ecological groups

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Introduction

The use of ornamental plants of spontaneous flora in landscaping of settlements is always relevant. However, their presence in regional assortments is rather low, compared to alien species and cultural forms that represent up to 2/3 of the assortments (Griffiths, 1994; Catalog, 1997; Mashkovska, 2015). An even greater imbalance is observed

in practical gardening, where cultural forms are the main part of the assortment and are represented mainly by cultigens. Such plants have an undeniable aesthetic advantage, but are characterized by a relatively low viability, which necessitates their cultivation on a sufficiently high and costly agricultural background. In turn, the introduction of alien natural species also has its negative consequences – uncontrolled spread sometimes leads to their invasion into anthropogenic transformed and even natural phytocoenoses (Burda et al., 2015; Pergl et al., 2016; Protopopova & Shevera, 2019; Gubar & Konyakin, 2020). As a result, the balance of local fauna trophic chains of which are connected with herbaceous plants can be disturbed (Wilde et al,. 2015; Anderson et al., 2021). Therefore, increasing interest of scientists to the investigation of local floras is expedient and justified.

The scientific significance of attracting natural species to culture is also growing taking into account the possibility of preserving highly valuable species within the cultigenic area (Antonyuk et al., 1982; Cherevchenko et al., 1999; Gritsenko, 2012) or by artificial reproduction and further reintroducing into places of its natural distribution.

Modern trends in landscape design, which are based on naturalness, also increase attention to such plants. Their main goal is to create sustainable long-term low-cost plant compositions that actively perform ecological and aesthetic functions, or to design phytocoenoses that are as close as possible to natural. For example, in many countries, some of the usual lawns have been replaced by mauritanian and meadow ones (Kühn, 2006; Bretzel et al., 2016) with using a mixture of seeds, including local species, with bioecological characteristics of the territory of introduction (taking into account phytocoenotic features, plant height, color spectrum, etc.). In recent decades, interest has increased not only regarding the species of spontaneous flora, but also regarding the use of spontaneous vegetation itself, formed in urban ecosystems (Kühn, 2006; Del Tredici, 2010; Pop Boancă et al., 2011). Such plant communities are recommended to be used with their natural structure or with a slightly corrected species composition. Some researchers consider spontaneous vegetation as an important component of urban green space diversity, which is essential for the sustainable development of urban ecosystems (Del Tredici, 2014; Guo et al., 2018). The dominance of alien species in urban landscaping, in their opinion, decreases the functional stability of such ecosystems. Therefore, spontaneous species adapted to environmental conditions should be properly used and conserved.

Thus, attracting ornamental species of local flora for the needs of regional gardening is expedient and relevant. In this regard, the purpose of this study was to isolate from the spontaneous flora of the local landscape Feofaniya the species that have certain decorative value and, basing on the analysis of bioecological characteristics, to assess the prospects of their introduction. Such data can be useful for the needs of landscaping in the park zone of the local landscape Feofaniya, using plants of the regional gene pool (local populations) as an initial material.

Material and methods

The territory of the local landscape Feofaniya includes the park of the same name. This park is a monument of the landscape gardening art of national importance, which is also an object of the natural reserve fund of Ukraine.

Herbaceous perennials of the spontaneous flora of the local landscape Feofaniya were selected as the material for the study because these plants are the most prospective for the formation of longstanding landscaping objects with low resource investments.

The term 'spontaneous flora' used in this research means a set of aboriginal and adventive species occurring on a particular territory spontaneously, without human intervention (Palmer, 1930). Species names and their taxonomic affiliation are provided following the database World Flora Online (2021).

Ecomorphs of the studied species were delimited relating to four main ecological factors (soil moisture, light, trophic characteristic and acidity of soil) following published data (Didukh, 2000–2010, 2011).

The local landscape Feofaniya, considering physical geography zonality, is located in the Kyiv elevated forest-steppe. Considering

geobotanical zonality, it is located in the Podolsk-Srednioprydniprovsk sub-province. Here are dominated deciduous forests attributed to the association *Galeobdoloni lutei-Carpinetum* Shevchyk et al. 1996 emend Onyshchenko et Sidenko 2002, including its three subassociations – *caricetosum pilosae*, *lamietosum maculati*, and *poetosum*. Small areas in the local landscape are occupied by vegetation classes *Robinietea* Jurko ex Sofron 1980, *Salicetea purpureae* Moor 1958, and *Alnetea glutinosae* Br.-Bl. et R. Tx. 1943 (Goncharenko et al., 2013; Dubyna et al., 2019).

Results and discussion

During compilation of the basic regional assortment of ornamental crops, their evolutionary adaptation, acclimatization, or a high degree of adaptation to natural and climatic conditions, which in general characterizes the species of spontaneous flora, are taking into account. Among them, 147 species were identified belonging to 100 genera from 38 families. All this species differ in degree of decorativeness, have been used for a long time or are offered to use in ornamental gardening. Some of them can be found in botanical collections of many Ukrainian institutions and abroad (Catalog, 1997; Mashkovska, 2015), in various objects of ornamental gardening and landscaping, but, in general, their assortment is insignificant. For example, at the end of 2019, the collection of perennial floral and ornamental plants of Feofania Park was represented by 144 taxa, including 117 cultivars, three forms, five selection samples and only 23 natural species (Radchenko et al., 2019). Moreover, in culture, such species propagate mainly vegetatively, what leads to formation of clones within the cultivated area. Such a depletion of the species gene pool, which in cultural conditions is often represented by a single genotype, results in the vulnerability of used plants and limits their adaptive potential. Such reduced adaptive potential is significantly lower than in the natural populations natural of the species. Therefore, there is a need to attract new genetic material directly from natural populations and to develop new reproduction approaches for such species under cultivation.

We also considered *Crocus heuffelianus* Herb and *Galanthus plicatus* M. Bieb. with other representatives of the spontaneous flora. These two species are represented by experimental artificial plantations outside the park area where they grow in the natural phytocenoses. Similar plantations of other species (*Erythronium dens-canis* L., *Gymnospermium odessanum* (DC.) Takht., and *Scilla siberica* Haw.) were also found in the local landscape. But during long-term observations it was noted that *C. heuffelianus* and *G. plicatus* have a tendency to intensive reproduction and spontaneous dispersion.

The rest of the decorative species of spontaneous flora belong to the so-called group of 'rare ornamental perennials'. Among them are species occurring in the ornamental gardening rarely. Such plants (e.g., *Actaea spicata* L., *Gagea minima* (L.) Ker Gawl., *Isopyrum thalictroides* L., *Pilosella officinarum* Vaill., *Potentilla incana* P. Gaertn., B. Mey. et Scherb., *Ranunculus auricomus* L., *Verbascum nigrum* L., and *Viola reichenbachiana* Jord. ex Boreau) are almost not cultivated even within their natural distribution ranges.

In the local landscape Feofaniya, among the ornamental plants, the most represented are the families Lamiaceae Martinov (17 species), Poaceae Barnhart (13 species), Asteraceae Bercht. et J. Presl (11 species), Fabaceae Lindl. (11 species), Ranunculaceae Juss (11 species), Violaceae Batsch (eight species), and Rosaceae Juss. (seven species). Species of the last two families, as well as of Asparagaceae Juss., Caryophyllaceae Juss., Iridaceae Juss., and Liliaceae Juss. are not numerous, but all of them have a high decorative value. Most of mentioned above families are typical for ornamental gardening in temperate regions (Catalog, 1997; Mashkovska, 2015).

Two adventive ornamental species (*Asclepias syriaca* L. and *Solidago canadensis* L.) found in the spontaneous flora of the local landscape Feofaniya were recognized as invasive (Burda et al., 2015; Gubar & Konyakin, 2020). The source of the invasion is ornamental gardening, so their further use in culture is not desirable.

Among other decorative perennials, 13 species have international, state or regional sozological status (Table 1) and are subject to special protection (Vinichenko, 2006; Didukh, 2009; Andrienko & Peregrym, 2012; Radchenko et al., 2019; Convention, 2021; IUCN Red

Table 1. Decorative perennial species in the spontaneous flora of the local landscape Feofaniya subjected to protection.

Species	Sozological lists (status)
Allium ursinum L.	RBU (unvalued)
Cephalanthera longifolia (L.) Fritsch	RBU (rare), CITES
Corydalis cava (L.) Schweigg. et Koerte.	RRL – Kyiv region
Crocus heuffelianus Herb.	RBU (unvalued)
Dryopteris austriaca (Jacq.) Woyn. ex Schinz et Thell.	RRL – Kyiv region
Galanthus nivalis L.	IUCN (near threatened), RBU (vulnerable), CITES
Galanthus plicatus M. Bieb.	ERL (vulnerable), RBU (vulnerable), CITES
Gymnocarpium dryopteris (L.) Newman	RRL – Kyiv region
Isopyrum thalictroides L.	RRL – Kyiv region
Lilium martagon L.	RBU (unvalued)
Neottia nidus-avis (L.) Rich.	RBU (unvalued), CITES
Primula veris L.	RRL – Kyiv region
Scilla bifolia L.	RRL – Kyiv region

Note. **IUCN** – the IUCN Red List of Threatened Species; **ERL** – European Red List of Globally Threatened Animals and Plants; **CITES** – Convention on International Trade in Endangered Species of Wild Fauna and Flora; **RBU** – Red Book of Ukraine; **RRL** – regional red lists.

List, 2021). Some species (*Allium ursinum* L., *Galanthus nivalis* L., *G. plicatus* M. Bieb., and *Scilla bifolia* L.) present in the collections of many botanical institutions. They also are quite common in the ornamental gardening. At the same time, such rare species as *Cephalanthera longifolia* (L.) Fritsch and *Neottia nidus-avis* (L.) Rich. are not cultivated in Ukraine due to their complex developmental biology (Vakhrameeva et al., 1996; Loya & Gaponenko, 2009). Despite difficulties, the cultivation of such species in specialized botanical institutions is necessary to not only preserve the genetic material of rare species *ex situ*, but also for research, scientific, educational and exhibition purposes. This also relates such species as *Polygonatum multiflorum* (L.) All., *Majanthemum bifolium* (L.) F.W. Schmidt, *Viola mirabilis* L., and *Paris quadrifolia* L., which are not protected, but rapidly disappear under increased anthropogenic load and in a result of disturbance of natural habitats (Goncharenko, 2013). In addition, many species undergoes more and more active and constant uncontrolled collection and destruction. Therefore, cultivation is one of the options for their *ex situ* conservation at the specialized institutions (e.g., botanical gardens) that can reduce the pressure on their natural populations (Gritsenko, 2012).

For successful introduction, it is necessary to conduct comprehensive investigation of different characteristics, primarily bioecological, which determines the environmental confinement of the species and determine their viability and stability. The ecological analysis of decorative perennials was carried out in relation to four factors (Table 2). Regarding soil moisture, the studied species were subdivided on two groups – mesophilic and xerophilic (Didukh, 2011). Mesophilic group is epresented by 76% of investigated species (83 species of mesophytes, and 28 species of xeromesophytes). Xerophilic group is represented by 24% species adapted to arid conditions (five species of mesoxerophytes, and 31 species of xerophytes, including three succulents). The local landscape Feofaniya has mesophilic conditions in relation to soil moisture (Radchenko et al., 2019). This makes possible to consider studied species as suitable for further introduction into local culture.

In relation to light, the species were divided into four groups: sciophytes, heliophytes, sciogeliophytes, and helioscyophytes (Didukh, 2011). The last two groups included plants

Table 2. Ecological groups of decorative perennials in the spontaneous flora of the local landscape Feofaniya.

Group Nr	Environmental factors			
	soil moisture	light	soil trophic properties	soil acidity
	Ecological groups			
I	mesophyte	heliosciophyte	mesotrophic	neutrophyte
	Agrostis stolonifera L.		*Carex spicata* Huds	
	Ajuga reptans L.		*Convallaria majalis* L.	
	Brachypodium sylvaticum (Huds.) P. Beauv.		*Pteridium aquilinum* (L.) Kuhn	
	Carex digitata L.		*Teucrium chamaedrys* L.	
II	mesophyte	sciophyte	mesotrophic	acidophyte
	Athyrium filix-femina (L.) Roth.		*Gymnocarpium dryopteris* (L.) Newman	
	Carex sylvatica Huds.		*Lamium galeobdolon* (L.) L.	
	Cephalanthera longifolia (L.) Fritsch		*Lamium maculatum* L.	
	Chrysosplenium alternifolium L.		*Maianthemum bifolium* (L.) F.W. Schmidt	
	Corydalis intermedia (L.) Merat		*Neottia nidus-avis* (L.) Rich.	
	Cystopteris fragilis (L.) Bernh.		*Paris quadrifolia* L.	
	Dryopteris austriaca (Jacq.) Woyn ex Schinz et Thell.		*Primula veris* L.	
	Dryopteris carthusiana (Vill.) H.P. Fuchs		*Pulmonaria angustifolia* L.	
	Dryopteris filix-mas (L.) Schott.		*Pulmonaria obscura* Dumort.	
	Galanthus nivalis L.		*Vinca minor* L.	
	Galanthus plicatus M. Bieb.		*Viola mirabilis* L.	
	Galium odoratum (L.) Scop.		*Viola reichenbachiana* Jord. ex Boreau	
III	mesophyte	sciophyte	eutrophic	acidophyte
	Actaea spicata L.		*Ficaria verna* Huds.	
	Allium ursinum L.		*Isopyrum thalictroides* L.	
	Cardamine bulbifera (L.) Crantz		*Lilium martagon* L.	
	Cardamine quinquefolia (M.Bieb.) Schmalh.		*Sanicula europaea* L.	
	Corydalis cava (L.) Schweigg. et Koerte.			
IV	mesophyte	heliophyte	eutrophic	acidophyte
	Allium angulosum L.		*Molinia caerulea* (L.) Moench	
	Geum rivale L.			
V	mesophyte	heliophyte	eutrophic	neutrophyte
	Alopecurus pratensis L.		*Lythrum salicaria* L.	
	Dactylis glomerata L.		*Mentha × piperita* L.	
VI	mesophyte	heliophyte	mesotrophic	neutrophyte
	Althaea officinalis L.		*Phlox paniculata* L.	
	Deschampsia caespitosa (L.) P. Beauv.		*Persicaria amphibia* (L.) Delarbre.	
	Eupatorium cannabinum L.		*Potentilla anserina* L.	
	Euphorbia cyparissias L.		*Solidago virgaurea* L.	
	Euphorbia semivillosa (Prokh.) Krylov		*Veronica austriaca* L.	

Table 2. Continued.

Group Nr	Environmental factors			
	soil moisture	light	soil trophic properties	soil acidity
	Ecological groups			
VI	mesophyte	heliophyte	mesotrophic	neutrophyte
	Geranium pratense L.		*Veronica chamaedrys* L.	
	Fragaria viridis Duchesne		*Veronica longifolia* L.	
	Lysimachia punctata L.		*Veronica officinalis* L.	
	Lysimachia vulgaris L.		*Veronica prostrata* L.	
	Lupinus polyphyllus Lindl.			
VII	mesophyte	scioheliophyte	mesotrophic	neutrophyte
	Anemone ranunculoides L.		*Gagea minima* (L.) Ker Gawl.	
	Campanula bononiensis L.		*Geranium palustre* L.	
	Campanula glomerata L.		*Melissa officinalis* L.	
	Campanula rapunculoides L.		*Ranunculus acris* L.	
	Coreopsis auriculata L.		*Ranunculus auricomus* L.	
	Corydalis solida (L.) Clairv.		*Ranunculus repens* L.	
	Fragaria vesca L.		*Scilla bifolia* L.	
	Gagea lutea (L.) Ker Gawl.		*Thalictrum minus* L.	
VIII	mesoxerophyte	scioheliophyte	mesotrophic	neutrophyte
	Artemisia pontica L.		*Origanum vulgare* L.	
	Filipendula vulgaris Moench		*Viola hirta* L.	
IX	xeromesophyte	sciophyte	mesotrophic	neutrophyte
	Asarum europaeum L.		*Polygonatum odoratum* (Mill.) Druce	
	Glechoma hederaceae L.		*Stellaria holostea* L.	
	Lysimachia nummularia L.		*Symphytum officinale* L.	
	Milium effusum L.		*Viola suavis* M. Bieb.	
	Polygonatum multiflorum (L.) All.			
X	xeromesophyte	scioheliophyte	mesotrophic	neutrophyte
	Inula helenium L.		*Trifolium medium* L.	
	Campanula persicifolia L.		*Prunella vulgaris* L.	
	Silene viscaria (L.) Jess.		*Phlomoides tuberosa* (L.) Moench	
	Lathyrus vernus (L.) Bernh.		*Viola odorata* L.	
	Lotus corniculatus L.			
XI	xeromesophyte	heliophyte	mesotrophic	neutrophyte
	Crocus heuffelianus Herb.		*Medicago sativa* L.	
	Geranium sanguineum L.		*Potentilla erecta* (L.) Raeusch.	
	Iris pseudacorus L.		*Securigera varia* (L.) Lassen	
	Lathyrus tuberosus L.		*Tanacetum vulgare* L.	
	Lavatera thuringiaca L.		*Trifolium alpestre* L.	
	Medicago falcata L.			

Table 2. Continued.

Group Nr	Environmental factors			
	soil moisture	light	soil trophic properties	soil acidity
	Ecological groups			
XII	xerophyte	scioheliophyte	mesotrophic	neutrophyte
	Clematis recta L.		*Melica nutans* L.	
	Lathyrus niger (L.) Bernh.			
XIII	xerophyte	heliophyte	mesotrophic	neutrophyte
	Achillea millefolium L.		*Linaria vulgaris* Mill.	
	Achillea nobilis L.		*Potentilla incana* P. Gaertn., B. Mey. et Scherb.	
	Agropyron cristatum (L.) Gaertn.		*Ranunculus illyricus* L.	
	Ajuga genevensis L.		*Salvia pratensis* L.	
	Artemisia austriaca Jacq.		*Salvia verticillata* L.	
	Calamagrostis epigejos (L.) Roth		*Saponaria officinalis* L.	
	Epilobium angustifolium L.		*Stachys officinalis* (L.) Trevis	
	Festuca valesiaca Schleich. ex Gaudin		*Verbascum nigrum* L.	
	Koeleria pyramidata (Lam.) P. Beauv.			
XIV	xerophyte	heliophyte	oligotrophic	neutrophyte
	Eryngium planum L.		*Onobrychis viciifolia* Scop.	
	Euphorbia seguieriana Neck.		*Pilosella officinarum* Vaill.	
	Helichrysum arenarium (L.) Moench		*Thymus pulegioides* L. subsp. *pannonicus* (All.) Kerguelen	
	Nepeta cataria L.		*Thymus serpyllum* L.	
XV	succulent	heliophyte	oligotrophic	neutrophyte
	Sedum maximum (L.) Suter		*Sedum acre* L.	
	Sedum telephium L.			

that are constantly or periodically able to tolerate unusual light intensity. The group of obligate shade-loving plants (sciophytes) in the local landscape Feofaniya consists of 42 species (29%). The group of shade-loving plants tolerating penumbra conditions (helioscyophytes) consists of eight species (5%). The group of light-loving plants that, however, are sufficiently adapted to slightly shaded conditions (scioheliophytes) consists of 32 species (22%). The group of true light-loving plants (heliophytes) consists of 65 species (44%). Although forest and ruderal plant communities mainly represent the territory of the Feofaniya, the most of studied species are heliophilic and occur in open areas.

In relation to soil fertility, only 16 species (11%) grow exclusively on sufficiently organic-rich soils and 11 (7%) are more adapted to poor soils. Most of the studied species (120 species, 82%) have a wide adaptation range and can be cultivated in different trophic conditions. Most of mesotrophic plants (96 species, 65%) are also not demanding on soil acidity, which can vary from slightly acidic to slightly alkaline. The rest of mesotrophic plants (24 species) and many eutrophic plants (12 species) are adapted exactly to acidic soils. Such acidic soils are mainly represented by gray forest and soddy podzolic soils of the Right-Bank Forest-Steppe of Ukraine.

Thus, the studied species represented by a wide range of ecomorphs. Among this diversity, 15 principal ecological groups of decorative perennials were delimited (Table 2). These delimited groups can be applied for creation of landscaping objects and can serve a basic assortment fitting certain environmental

conditions. However, the number of species in some ecological groups is very low. Completion of these small groups is required and possible in two ways – by infusion of new introduced species with similar ecological preferences, or by merging the certain ecological groups into clusters regarding the determinant ecological factor. For example, in cultural conditions, light often is a key determinant, while other factors usually can be artificially adjusted by moistening, fertilization, acidification, etc. The second most important factor is soil moisture, which can be improved under culture conditions only for species of the mesophilic group. Hence, combination of mesophytes and xerophytes within the same composition is impractical, because in any case one of the groups will appear in unfavorable conditions. Instead of this, sciophilic mesophytes (I–III), heliophilic mesophytes (IV–VI), or heliophilic xerophytes (XIII–XIV) can be combined and thrive (Table 2).

Performed analysis is only the first, initial stage in the study of the using prospects of ornamental plants of spontaneous flora. It does not cover the whole spectrum of environmental factors, the use of which will lead to a strong fragmentation of the defined groups. The investigated factors are the most important and usually are determine adaptation potential for plants.

The provided data can also be used in the selection of assortment for modeling artificial decorative phytocoenoses. At the same time, it is necessary to take into account the natural phytocenotic relationships of the studied species. Also it is crucial to experiment with species that are not phylogenetically close, but united by a set of ecological characteristics into the mentioned groups and their clusters. In particular, for the modeling of nemoral forest phytocoenoses, species of II, III, and IX groups can be used, for nemoral forest edge – species of I, VII, VIII, and X groups, for meadow – species of V, VI, and XI groups, for steppe – species of XIII and XIV groups.

Conclusions

It was found that spontaneous flora of the local landscape Feofaniya comprises 147 plant species, characterized by various decorative features. This complex includes species that are floristically rare species or are rare in ornamental gardening, and, in the same time, are promising for implementation in landscaping. The predominance of mesophytic (they comprises 76 % from the total number of investigated species), heliophytic (44 %), mesotrophic (82 %), and neutrophilic (65 %) species has been shown.

According to the complex of environmental factors, decorative species were combined into 15 principal ecomorphological groups, which can be recommended as a basic assortment for the formation of long-term sustainable compositions in appropriate environmental conditions. At the same time, for an optimal compositional solution, further analysis of their phenorhythmical, phenological, habitual, and coloristic spectra is required.

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Окреслення перспектив використання декоративних багаторічників спонтанної флори урочища Феофанія

Раїса Матяшук *, Любов Губарь, Інна Пірко **

Інститут еволюційної екології НАН України, вул. акад. Лебедєва, 37, Київ, 03143, Україна; * raisakiev2015@gmail.com, ** pirkoinna@ukr.net

Представлено таксономічну та екологічну структура штучної сукупності видів спонтанної флори урочища Феофанія, виділеної за декоративними ознаками. Декоративні багаторічники, за винятком водних та прибережних, нараховують 147 видів. Їх розглянуто, з урахуванням адаптаційних характеристик, як потенційно базову складову регіонального асортименту квітниково-декоративних рослин для озеленення. За таксономічним складом види належать до 100 родів з 38 родин. Значна частка багаторічників є малопоширеною у декоративному садівництві. Серед досліджуваних багаторічників раритетна фракція нараховує 13 видів, що мають міжнародний (чотири види), державний (сім видів), або регіональний (шість видів) охоронний статус. За результатами біоекологічного аналізу показано переважання мезофільних (76 %), геліофільних (44 %), мезотрофних (82 %) та нейтрофільних (65 %) груп. При розгляді екологічної приналежності досліджувані види об'єднанні у 15 елементарних екоморфологічних груп. Використання представлених у таких групах рослин у якості основного асортименту в озелененні відповідних екотопів є необхідною умовою стійкості та довговічності штучних угруповань якими є квітникові композиції. Запропонований асортимент здатний забезпечити створення сучасних маловитратних квіткових композицій і збереження біорізноманіття місцевої флори за рахунок розширення культигенного ареалу цих видів.

Ключові слова: урочище Феофанія, природні ресурси, раритетні види, екоморфи, екологічні групи