

**THE DIVERSITY OF CULTIVATED PLANTS IN THE GARDENS
FROM EZERETS, BULGARIA**

Nagodă Eugenia^{1*}, Hovaneț Marilena-Viorica², Urziceanu Mihaela³

¹ University of Bucharest, "D. Brandza" Botanic Garden, Șos. Cotroceni 32, 060114, Bucharest

² University of Medicine and Pharmacy "Carol Davila", Faculty of Pharmacy, 020956, Bucharest

³ University of Bucharest, Faculty of Biology, Intr. Portocalelor, 1-3, 060110, Bucharest

*Correspondence author. E-mail: eugenia.nagoda@bio.unibuc.ro

Keywords: *ornamental, alimentară, Ezerets, plant diversity*

ABSTRACT

This paper explores plant diversity in home gardens from Ezerets, Bulgaria, with a focus on species richness and their ornamental and food uses. A total of 189 taxa, distributed across 70 botanical families, were identified in various types of gardens. Most plants (129 taxa, 68.25%) are used for ornamental purposes, while 40 taxa (21.16%) have both ornamental and edible uses, and 20 taxa are grown solely for food. The study highlights the role of home gardens in preserving biodiversity and maintaining traditional practices. Ezerets' proximity to Romania also offers a foundation for comparing local gardening practices with those in nearby Romanian regions.

INTRODUCTION

Traditional home gardens typically feature a multilayered arrangement that brings various plant species in a temporal and/or spatial succession, managed sustainably over decades or even century (Soemarwoto 1987, Christanty 1990, Kumar & Nair 2004, Smith et al. 2006, Kehlenbeck et al 2007). Home gardens, though small, are highly diverse ecological niches characterized by structural complexity and multifunctionality, which enable them to provide numerous benefits to ecosystems and people. These complex microenvironments traditionally integrated within larger ecosystems, have been described as sustainable and diverse niches shaped by a close interaction between nature and human culture (Gliessman 1990, Eyzaguirre & Linares 2004, Galluzzi et al. 2010).

It is widely recognized that home gardens have multiple functions. They contribute to providing food, proper nutrition, medicine, and other useful products. Additionally, they fulfill social and cultural needs, preserving traditional knowledge and practices. They also offer various ecosystem services, helping to mitigate the effect of climate change and supporting sustainable livelihoods (Polegri & Negri 2010, Galhena et al. 2014, Clarke et al. 2014, Ortiz-Sanchez et al. 2015, Cruz & Struik 2015, Setiani et al. 2022, Sileshi et al. 2022).

Studies on home gardens from different regions have recorded notable richness of species and diversity. A key feature of these gardens is the high diversity of species with immediate practical use for the household (Hoogerbrugge & Fresco 1993).

A home garden in Bulgaria is an integrated system that includes different elements in its small area (the family house, a kitchen garden, a mixed garden, an ornamental garden, a vault for shade, a greenhouse, nurseries, etc). A garden is typically located on the land near a residence, around the home, often delimited from its surrounding by hedges, stone fences, or other barriers, arranged in the front and back yard, proportioned according to the position of the house and the size of the street-facing part of the yard (Ivanova et al. 2021).

One distinct area that could be found in every countryside property is the garden, as most people strive to grow some of their own produce. This reflects “the adaptation of farming or horticultural practices as a significant lifestyle component” (Wilbur 2013). Growing food remains essential for daily life, with the focus not on the quantity of food produced, but on the quality and the ability to control the entire process—from seed to table. This includes planting the crop, tending to and watering the plants, and finally harvesting and preparing the food (Koleva 2014, Stancheva 2016). Regardless of how much of the yard is allocated for this purpose, nearly all villagers engage in gardening to some extent. This practice is an integral part of rural life, allowing them to grow and prepare their own healthy and delicious food (Pileva et al. 2023).

The aim of this study is to provide an inventory and analysis of the plant diversity, focusing on cultivated plants, in Ezerets, an area that has been under-researched from this perspective. Data on the cultivated plants in this area are sporadic and are typically reported in studies focusing on other topics. The importance of gardens near homes has received limited attention (Hoogerbrugge & Fresco 1993, Galluzzi et al. 2010, Nedelcheva 2012, Zahariev et al. 2015, Stancheva et al. 2016, Boycheva & Kosev 2017, Ivanova et al. 2021, Korpelainen 2023, Pileva et al. 2023).

Given Ezerets' proximity to the Romanian border and the Black Sea region, future research could explore potential cultural and agricultural connections between the gardens in Ezerets and those in Romanian communities along the Black Sea coast. The geographical closeness suggests shared cultural influences and agricultural practices that may have shaped the composition and use of plant species in both regions.

MATERIAL AND METHODS

Study area:

Ezerets is a village in Shabla Municipality, Dobrich Province, northeastern Bulgaria, located within the geographical region of Southern Dobruja. It is bounded on the east by the Black Sea, on the south by Varna Province, on the west by Shumen and Silistra provinces, and on the north by Romania (BNSI, 2010).

The area is predominantly flat, with an altitude of 40 meters, and is intersected by several ravines that lead to Durankulak Lake and Shabla Lake. The climate is temperate-continental, influenced by the proximity of the Black Sea. It is characterized by cool spring, hot and sunny summer, warm autumn and cold winter. Bulgaria lies in a transitional region between temperate and Mediterranean climatic zones. Average temperatures vary between -7° and 3°C in winter and 10° – 25°C in summer with a noticeable warming and drying trend since the late 20th century. Annual precipitation range between 450mm and 1100 mm, with drought periods typically occurring at the end of summer (Bocheva et al. 2017).

The region is characterized by typical steppe vegetation, dominated by grasses of various heights.

Ezerets is a popular tourist destination, offering guesthouses, a hotel with a restaurant and a private zoo, a grocery store with a café, and an official campsite located right next to the beach (Pileva et al. 2023). Though, it is a small village, offers remarkable recreational opportunities. Its great pride is the pristine beach located about 2 km from the village, where visitors can enjoy unspoiled nature and an exceptionally wide, sandy shoreline. The surrounding coastal area features a rich variety of landscapes, including large sandy beaches, expansive sand dunes, striking high limestone cliffs, as well as coastal fresh/brackish lakes and wetlands. The region is home to several firth lakes, including Durankulak, Ezerets, and Shabla, all of which are protected sites under the Natura 2000 network and are significant bird habitats and Ramsar Wetland areas. Shabla-Ezerets Lake was designated as a Protected Site (IUCN Category VI) in 1995 (Stancheva et al. 2016).

The area offers excellent conditions for hunting, fishing, eco and rural tourism. One of the village's main advantages is its cozy atmosphere and the ecologically clean, beautiful nature that surrounds it.

With a population of around 135 people, the village is seeing a trend of growth, as many young people from larger cities are buying houses and plots in the area (Pileva et al. 2023). Since the late 1990s and early 2000s, there has been a rediscovery of "rural values" and an increasing appreciation for rural tourism (Berg et al. 1982, Hosszú 2009, Pileva et al. 2023).

In this village, some houses are abandoned and the vegetation has covered the whole space, and others have been transformed into accommodation units/guesthouses where the gardens are always well maintained and developed. Some houses were only partially transformed into guesthouses, with owners still living here permanently. In these cases, alongside ornamental gardens, the residents also cultivate vegetable gardens for personal use, for their guests, or even for selling some of the produce.

Material:

During 2023 and 2024 in June-August period, we inventoried cultivated and subsponaneous plant species found particularly in home gardens, but also in adjacent areas, streets and green spaces or parks. The list of plants is presented in alphabetical order. For each taxon, the following data were recorded and analyzed: botanical family, origin, life form and uses (see Table 1). The nomenclature of species follows to Plants of the World Online database (POWO 2024). Abbreviations used in Table 1: Origin: Afr – Africa; Am – America; As – Asia; Eu – Europe; N – North; S – South; Cosm – Cosmopolite. Life form: Ch – Chamaephyte; G – Geophyte; H – Hemicryptophyte; PhLi – Liana; Ph – Phanerophyte; T – Therophyte. Use: Orn – ornamental; Alim – alimentar.

RESULTS AND DISCUSSIONS

During our study, we identified 189 taxa in the gardens of houses, hotels, guesthouses, as well as in green spaces near houses and streets (see Table 1). The identified taxa are distributed across 70 botanical families. Among these families, the most well-represented are Asteraceae (24 taxa - 12.69%), Rosaceae (18 taxa - 9.52%), Lamiaceae (13 taxa - 6.87%), Apiaceae (7 taxa), Solanaceae (7 taxa), Cucurbitaceae (6 taxa), Fabaceae (5 taxa), and Malvaceae (5 taxa) (Figure 1). The

remaining 62 families are represented by 4 taxa (4 families), 3 taxa (9 families), by 2 taxa (12 families) or only one taxon (37 families).

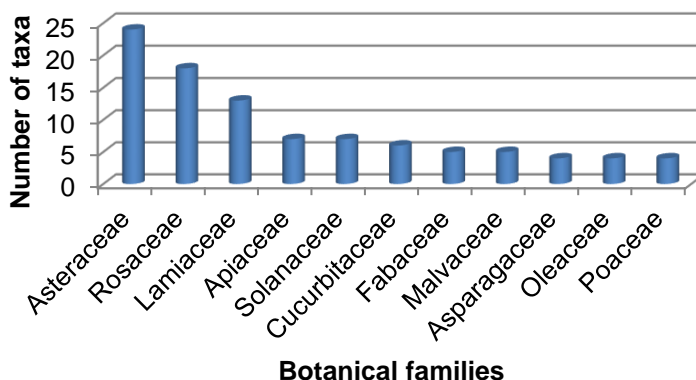


Figure 1. Botanical families distribution in Ezerets

The genus richest in taxonomic species cultivated in the home gardens of Ezerets is *Prunus*, with 7 species. The rest of the genera are represented by four species (*Salvia*), by three species (*Hibiscus*, *Solanum*, *Cucurbita*), by two species (18 genera) or by a single species (140 genera).

Regarding the use of plants, (129 taxa – 68.25%) have an ornamental role, 40 taxa (21.16 %) are used for both ornamental and edible purpose, and only 20 taxa are cultivated only food use. The presence of a gardening center in Ezerets can contribute to the existence of such a large number of ornamental plants. This center deals all year round with production and trade of seedlings, young plants (annual and perennial), garden ornamental trees, shrubs and flowers, and offer a peat mixtures, humus soil mixtures and fertilizers for different plantings and conditions. Also, this garden center offers services such as the design and construction of gardens, maintenance of gardens and landscaped area, landscaping and maintenance of commercial establishments.

Ornamental plants typically bordered food-growing plots and yard pathways, or were set in narrow strips or patches close to the house and along the fences, freeing the major portions of the home garden for cultivation of mainly annual edible plants, medicinal plants and spices, and occasionally fodder for animals (Ivanova et al. 2021). Gardens with ornamental species of plants are present in almost all inhabited houses in Ezerets, but around hotels and guesthouses they are better developed and richer in species to ensure a pleasant environment for tourists.

The plants in gardens are sometimes obtained by the owners from seeds saved from previous years or from others purchased from special stores. In other cases, the plants are already purchased developed. Additionally, small greenhouses, cold frames, low tunnels, or nurseries are used, to obtain mature plants starting from seeds (or other initial parts like bulbs, rhizomes) where where all the necessary operations are carried out (soil preparation, ensuring an optimal temperature, necessary watering, treatments against diseases and pests, transplanting to the final location). Some of the species that can be obtained locally include: *Coreopsis grandiflora*, *Coreopsis tinctoria*, *Cosmos bipinnatus*, *Dahlia*

coccinea, *Dahlia pinnata*, *Echinacea angustifolia*, *Echinacea purpurea*, *Gaillardia pulchella*, *Tagetes erecta*, *Tithonia rotundifolia*, *Zinnia elegans*, *Impatiens walleriana*, *Canna indica*, *Cerastium tomentosum*, *Lilium candidum*, *Oenothera speciosa* and others. Additionally, some edible plants are also obtained through these methods, continuing a tradition perpetuated year after year (plants like tomato, pepper, eggplants, beans, pumpkins, melons, cucumber and other). By spending work and leisure time in home gardens, families and communities actively preserve actively ethnobotanical knowledge (Eyzaguirre & Linares 2004).

Some ornamental species are planted in pots of different sizes and positioned around the houses, in front of the entrances, at the windows, on the terraces and in other places in the garden, bringing more beauty, fragrance and colour (Figure 2). For example: *Hippeastrum vittatum*, *Nerium oleander*, *Trachycarpus fortunei*, *Tradescantia zebrina*, *Pelargonium radens*, *Pelargonium zonale*, *Hibiscus x rosa-sinensis*, *Lantana camara* and others. In addition, some ornamental woody species delight the eye: *Cotinus coggygia*, *Rhus typhina*, *Euonymus japonicus*, *Juniperus communis*, *Thuja occidentalis*, *Albizia julibrissin*, *Erythrostemon gilliesii*, *Spartium junceum*, *Lavandula angustifolia*, *Lagerstroemia indica*, *Syringa vulgaris*, *Acer palmatum* and many types of roses (of different shape, sizes and colours). Sometimes vines such as: *Campsis radicans* (yellow, orange or red), *Wisteria sinensis*, *Clematis viticella*, *Fallopia aubertii*, and *Hedera helix* cover the fences in abundance, providing a great ornamental role through their flowers or leaves. On a fence of a single house we identified *Passiflora caerulea* with flowers and later with mature fruit. Also, in many gardens, a very good lawn is maintained, which is irrigated periodically, thus enhancing the beauty of the gardens.

Vitis vinifera vines are often planted in rows or trained on pergolas, frequently covering entrances to homes or yards, providing both shade and a cooling effect by reducing local temperatures. This practice is commonly combined with the cultivation of various vegetables, enhancing the garden's functionality (Figure 3).

The analysis of life span shows a predominance of perennials, with 150 species (79.36%), while annuals are represented by only 39 species (20.63%). Among the perennials, phanerophytes (79 taxa) dominate, followed by hemicryptophytes (35 taxa), geophytes (23 taxa), chamaephytes (10 taxa), and lianas (3 taxa). The high number of phanerophytes (woody plants) is consistent with rural traditions of using woody species not only for ornamental purposes but also for dietary supplements, as suggested by Mitchell & Hanstad (2004). Almost every garden contains species such as: *Ficus carica*, *Cydonia oblonga*, *Malus domestica*, *Prunus armeniaca*, *Prunus avium*, *Prunus domestica*, *Prunus persica*, *Pyrus communis*. The following species are found in smaller numbers, but they contribute to the great diversity of edible woody species of this area: *Corylus avellana* (Figure 4a), *Crataegus germanica* (Figure 4b), *Diospyros kaki* (Figure 4c), *Castanea sativa*, *Laurus nobilis*, *Punica granatum*, *Tilia tomentosa*, *Morus nigra*, *Ziziphus jujuba*, *Prunus amygdalus*, *Prunus mahaleb*. However, there was a marked presence of certain edible plants growing spontaneously, and these plants were tolerated based on their use value: *Prunus cerasifera*, *Morus alba*, *Morus nigra*, *Juglans regia*. Fruits like strawberries, blackberries, raspberries, currants (Figure 4d) are also spread throughout the gardens.

The geographic origin of the species observed in Ezerets reveals an interesting mix of native and non-native species, with a substantial number of plants originating from Asia (55 taxa) and the Mediterranean (53 taxa). This mix supports

the agro-biodiversity seen in the villages, consistent with the findings of Kumar et al. (2004), Salako et al. (2004) and Hodgkin (2001), who emphasize the importance of home gardens in preserving diverse genetic material within small spaces. The North American taxa (39 species) and the contribution of species from South America and Europe also reflect a dynamic horticultural practice in Ezerets.



Figure 2. Ornamental species in the gardens of Ezerets: a. *Campsis radicans* on fences; b. mixed ornamental group: *Hemerocallis fulva*, *Coreopsis grandiflora*, *Spartium junceum*; c. mixed ornamental group: *Lavandula angustifolia*, *Ficus carica*, *Cotinus coggygria*



Figure 3. *Vitis vinifera* vines arranged in rows and on pergolas, alongside various cultivated vegetables.



Figure 4. Woody plants cultivated for their fruits in Ezeretz: a. *Corylus avellana*; b. *Crataegus germanica*; c. *Diospyros kaki*; d. *Ribes rubrum*

Home gardens can often maintain many more local cultivars of some crops than might be found in larger scale production systems or can maintain specific types that are not grown on a larger scale (onion, garlic, pepper, tomato, eggplant, beans). Often, people save their own seed or planting material over long periods or shorter periods of time, contributing to a perpetuation of some traditional varieties of vegetables. Thus, one of the important functions that home gardens perform is to keep knowledge of varieties and uses of diversity alive from generation to generation.

The gardens of Ezerets are not just a testament to horticultural skill but also contribute to the conservation of genetic diversity and the preservation of local knowledge. The gardens in Ezerets reflect a balanced integration of ornamental and food-producing plants, showcasing the village's commitment to sustainable living and cultural preservation. By cultivating both aesthetic and practical plant species, the residents of Ezerets maintain a rich diversity of flora that serves ecological, economic, and cultural functions.

CONCLUSIONS

This study highlights the role of home gardens in preserving biodiversity and maintaining traditional practices. Given Ezerets' proximity to Romania, it offers a basis for comparing local gardening practices with those in nearby Romanian regions. Such comparisons could reveal historical and cultural connections between the two areas, shedding light on the botanical and cultural exchanges that have influenced both regions.

REFERENCES

- Berg L.V.D., Drewett R., Klaasen L.H., Rossi A., Vijverberg C.H. 1982. Urban Europe: A study of growth and decline. The Costs of Urban Growth (curb) Project, 1.
- Bocheva L., Trifonova L., Marinova T., Malcheva K. 2017. Climate profile of Bulgaria in the period 1988–2016 and brief climatic assessment of 2017. *Bulg. J. Meteorol. Hydrol.* 22, 2–15.
- Boycheva P., Kosev K. 2017. Ethnobotany of medicinal plants used in some parts of the Northern Black Sea coast region (Bulgaria). In:

Annuaire de l'Université de Sofia "St. Kliment Ohridski" Faculte de Biologie 2017, volume 102, livre 4, pp. 233-247.

Bulgarian National Statistical Institute - Bulgarian provinces and municipalities in 2009 Archived November 13, 2010, at the Wayback Machine.

Calvet-Mir L., Gomez-Baggethun E., Reyes-Garcia V. 2012. Beyond food production: Ecosystem services provided by home gardens. A case study in Vall Fosca, Catalan Pyrenees, Northeastern Spain. *Ecol. Econ.* 2012, 74, 153–160.

Christanty L. 1990. Home gardens in tropical Asia, with special reference to Indonesia. In: Landauer K., Brazil M. (eds) *Tropical home gardens*. The United Nations University, Tokyo, Japan, pp 9-20.

Clarke L.W., Li L., Jenerette G.D., Yu Z. 2014. Drivers of plant biodiversity and ecosystem service production in home gardens across the Beijing Municipality of China. *Urban Ecosyst.* 2014, 17, 741–760.

Cruz-Garcia G.S., Struik P.C. 2015. Spatial and seasonal diversity of wild food plants in home gardens of northeast Thailand. *Econ. Bot.* 2015, 69, 99–113.

Eyzaguirre P., Linares O. 2004. Introduction. In: Eyzaguirre P., Linares O. (eds) *Home gardens and agrobiodiversity*. Smithsonian Books, Washington, pp 1–28.

Galhena D.H., Freed R., Maredia K.M. 2013. Home gardens: A promising approach to enhance household food security and wellbeing. *Agric. Food Secur.* 2013, 2, 8.

Galluzzi G., Eyzaguirre P., Negri V. 2010. Home gardens: neglected hotspots of agro-biodiversity and cultural diversity. *Biodiversity and conservation*, 19, 3635-3654.

Gliessman S.R. 1990. Integrating trees into agriculture: the home garden agro-ecosystem as an example of agro-forestry in the tropics. In: Gliessman S.R. (ed) *Agroecology: researching the ecological basis for sustainable agriculture*. Springer-Verlag, New York, pp 160–168.

Hodgkin T. 2001. Home gardens and the maintenance of genetic diversity. In: Watson J.W., Eyzaguirre P.B. (eds) *Proceedings of the second international home garden workshop*. Bioversity international, Rome, Italy, pp 14–18.

Hoogerbrugge I., Fresco L.O. 1993. Homegarden systems: agricultural characteristics and challenges. *International Institute for Environment and Development* (No. 39).

Hosszú S. 2009. *Counterurbanization: A Literature Study*. Danish Institute of Rural Research and Development, IFUL. Working Paper, 6.

Ivanova T., Bosseva Y., Chervenkov M., Dimitrova D. 2021. Enough to feed ourselves!—Food plants in Bulgarian rural home gardens. *Plants*, 10(11), 2520.

Kehlenbeck K., Arifin H.S., Maass B.L. 2007. Plant diversity in homegardens in a socio-economic and agro-ecological context. Stability of tropical rainforest margins: linking ecological, economic and social constraints of land use and conservation, 295-317.

Koleva G. 2014. For and Against Migration from the City to the Village. In: Koleva, G. (Ed.). *The Long Travel towards the Village*. Troyan: Alya, 159 – 171.

Korpelainen H. 2023. The Role of Home Gardens in Promoting Biodiversity and Food Security. *Plants* 2023, 12, 2473.

Kumar B.M., Nair P.K.R. 2004. The enigma of tropical homegardens. In *New Vistas in Agroforestry*. *Advances in Agroforestry*; Nair P.K.R., Rao M.R., Buck L.E., Eds.; Springer: Dordrecht, The Netherlands. Volume 1, pp. 135–152.

- Mitchell R., Hanstad T. 2004. Small homegarden plots and sustainable livelihoods for the poor. *FAO LSP WP*, 11.
- Nedelcheva A. 2012. Medicinal plants from an old Bulgarian medical book. *Journal of Medicinal Plants Research* Vol. 6(12), pp. 2324-2339.
- Ortíz-Sánchez A., Monroy-Ortiz C., Romero-Manzanares A., Luna-Cavazos M., Castillo-España P. 2015. Multipurpose functions of home gardens for family subsistence. *Botanical Sciences*, 93(4), 791-806.
- Pileva D., Periklieva V., Markov I., Zhechkova N., 2023. Moving to the Village. *Aspects of Contemporary Urban-Rural Migration in Bulgaria*. Paradigma Publishing House, Sofia.
- Polegri L., Negri V. 2010. Molecular markers for promoting agro-biodiversity conservation: a case study from Italy how cowpea landraces were saved from extinction. *Genetic Resource Crop* 57:867- 880.
- POWO 2024. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.plantsoftheworldonline.org/>. Accessed 21 August 2024.
- Salako V.K., Fandohan B., Kassa, B., Assogbadjo A.E., Idohou A.F.R., Gbedomon R.C., Chakeredza S., Dulloo M.E., Glele Kakaï R. 2014. Home gardens: An assessment of their biodiversity and potential contribution to conservation of threatened species and crop wild relatives in Benin. *Genet. Resour. Crop Evol.* 61, 313–330.
- Setiani S., Setiawan E., Huang W.-C. 2022. Taneyan Lanjang shared home gardens and sustainable rural livelihoods of ethnic Madurese in Madura Island, Indonesia. *Sustainability* 2022, 14, 5960.
- Sileshi M., Sieber S., Friedrichs K., Rybak C., Feyisa B.W., Lana M.A. 2022. Adoption and impact of kitchen garden on food and nutritional security of farming households in Tanzania. *Ecol. Food Nutr.* 2022, 61, 651–668.
- Smith R.M., Thompson K., Hodgson J.G., Warren P.H., Gaston K.J. 2006. Urban domestic gardens (IX): composition and richness of the vascular plant flora, and implications for native biodiversity. *Biological conservation*, 129(3), 312-322.
- Soemarwoto O. 1987. Homegardens: a traditional agroforestry system with a promising future. In: Stepler H.A., Nair P.K.R. (eds): *Agroforestry: a decade of development*. International Council for Research in Agroforestry (ICRAF), Nairobi, Kenya, p 157-170.
- Stancheva A. 2016. *Eco-Movements in Post-Socialist Bulgaria. Cultural Practices and Civic Engagement*. PhD Dissertation, IEFSEM–BAS.
- Stancheva M., Stanchev H., Peev P., Anfuso G., Williams A.T. 2016. Coastal protected areas and historical sites in North Bulgaria—Challenges, mismanagement and future perspectives. *Ocean & coastal management*, 130, 340-354.
- Wilbur A. 2013. Growing a Radical Ruralism: Back-to-the-Land as Practice and Ideal. – *Geography Compass*, 7 (2), 149 – 160.
- Zahariev D., Boycheva P., Kosev K. 2015. Review on the medicinal plants of the North Black Sea Coast (Bulgaria), *Annual of Sofia University, Faculty of Biology, Book 2 – Botany, Vol. 99*, pp. 115-134.

List of taxa inventoried in Ezerets

Table 1

No.	Taxon	Family	Origin	Life form	Use
1	<i>Abies alba</i> Mill.	Pinaceae	Eur	Ph	orn
2	<i>Acer palmatum</i> Thunb.	Sapindaceae	As	Ph	orn
3	<i>Albizia julibrissin</i> Durazz.	Fabaceae	As	Ph	orn
4	<i>Alcea rosea</i> L.	Malvaceae	As	H	orn
5	<i>Allium cepa</i> L.	Amaryllidaceae	As	G	alim
6	<i>Allium sativum</i> L.	Amaryllidaceae	As	G	alim
7	<i>Alstroemeria pelegrina</i> L.	Alstroemeriaceae	AmS	G	orn
8	<i>Amaranthus cruentus</i> L.	Amaranthaceae	AmN	T	orn
9	<i>Anethum graveolens</i> L.	Apiaceae	As, Afr	T	alim
10	<i>Antirrhinum majus</i> L.	Plantaginaceae	Eur	T	orn
11	<i>Apium graveolens</i> L.	Apiaceae	Eur, As, Afr	H	alim
12	<i>Aquilegia chrysantha</i> A.Gray	Ranunculaceae	AmN	T	orn
13	<i>Aquilegia vulgaris</i> L.	Ranunculaceae	Eur	T	orn
14	<i>Armoracia rusticana</i> G. Gaertn., B.Mey. & Scherb.	Brassicaceae	Eur, As	H(G)	alim
15	<i>Artemisia absinthium</i> L.	Asteraceae	Eur, As, Afr	H	orn
16	<i>Arundo donax</i> L.	Poaceae	As	G	orn
17	<i>Asparagus officinalis</i> L.	Asparagaceae	Eur, As	G	orn
18	<i>Aucuba japonica</i> Thunb.	Garryaceae	As	Ph	orn
19	<i>Begonia grandis</i> Dryand.	Begoniaceae	As	G	orn
20	<i>Bellis perennis</i> L.	Asteraceae	Eur, As, Afr	H	orn
21	<i>Berberis aquifolium</i> Pursh	Berberidaceae	AmN	Ph	orn
22	<i>Bergenia crassifolia</i> (L.) Fritsch	Saxifragaceae	As	H	orn
23	<i>Beta vulgaris</i> L.	Amaranthaceae	Eur, As, AmS	H	alim
24	<i>Betula pendula</i> Roth	Betulaceae	Cosm	Ph	orn
25	<i>Bryonia alba</i> L.	Cucurbitaceae	Eur, As	H	orn
26	<i>Buddleja davidii</i> Franch.	Scrophulariaceae	As	Ph	orn
27	<i>Calendula officinalis</i> L.	Asteraceae	Eur	T	orn
28	<i>Campanula pyramidalis</i> L.	Campanulaceae	Eur	H	orn
29	<i>Campsis radicans</i> (L.) Bureau	Bignoniaceae	AmN	PhLi	orn
30	<i>Canna indica</i> L.	Cannaceae	AmN, AmS	G	orn
31	<i>Capsicum annum</i> L.	Solanaceae	AmN, AmS	T	orn, alim
32	<i>Caryopteris x clandonensis</i> A.Simmonds	Lamiaceae	As	Ph	orn
33	<i>Castanea sativa</i> Mill.	Fagaceae	As	Ph	orn, alim
34	<i>Catalpa bignonioides</i> Walter	Bignoniaceae	AmN	Ph	orn
35	<i>Centaurea cyanus</i> L.	Asteraceae	Eur, As	T	orn
36	<i>Cerastium tomentosum</i> L.	Caryophyllaceae	Eur	Ch	orn
37	<i>Citrus x limon</i> (L.) Osbeck	Rutaceae	As	Ph	orn
38	<i>Clematis viticella</i> L.	Ranunculaceae	Eur, As	PhLi	orn
39	<i>Convallaria majalis</i> L.	Asparagaceae	Eur, As	G	orn
40	<i>Coreopsis grandiflora</i> Hogg ex Sweet	Asteraceae	AmN	T	orn
41	<i>Coreopsis tinctoria</i> Nutt.	Asteraceae	AmN	T	orn
42	<i>Coriandrum sativum</i> L.	Apiaceae	As	T	alim
43	<i>Corylus avellana</i> L.	Betulaceae	Eur, As	Ph	orn

No.	Taxon	Family	Origin	Life form	Use
44	<i>Cosmos bipinnatus</i> Cav.	Asteraceae	AmN	T	orn
45	<i>Cotinus coggygia</i> Scop.	Anacardiaceae	Eur, As	Ph	orn
46	<i>Crataegus germanica</i> (L.) Kuntze	Rosaceae	As	Ph	orn, alim
47	<i>Crataegus monogyna</i> Jacq.	Rosaceae	Eur, As, Afr	Ph	orn, alim
48	<i>Cucumis melo</i> L.	Cucurbitaceae	As, Afr, Austr	T	alim
49	<i>Cucumis sativus</i> L.	Cucurbitaceae	As	T	alim
50	<i>Cucurbita maxima</i> Duchesne	Cucurbitaceae	AmS	T	alim, orn
51	<i>Cucurbita moschata</i> Duchesne	Cucurbitaceae	AmN	T	alim
52	<i>Cucurbita pepo</i> L.	Cucurbitaceae	AmN	T	alim
53	<i>Cydonia oblonga</i> Mill.	Rosaceae	As	Ph	alim
54	<i>Dahlia coccinea</i> Cav.	Asteraceae	AmN	G	orn
55	<i>Dahlia pinnata</i> Cav.	Asteraceae	AmN	G	orn
56	<i>Daucus carota</i> L.	Apiaceae	Eur, As, Afr	H	alim
57	<i>Delosperma cooperi</i> (Hook.f.) L.Bolus	Aizoaceae	Afr	H	orn
58	<i>Dianthus caryophyllus</i> L.	Caryophyllaceae	Eur	H	orn
59	<i>Diospyros kaki</i> Thunb.	Ebenaceae	As	Ph	alim, orn
60	<i>Echinacea angustifolia</i> DC.	Asteraceae	AmN	G	orn
61	<i>Echinacea purpurea</i> (L.) Moench	Asteraceae	AmN	G	orn
62	<i>Erysimum x cheiri</i> (L.) Crantz	Brassicaceae	Eur	Ch	orn
63	<i>Erythrostemon gilliesii</i> (Hook.) Klotzsch	Fabaceae	AmS	Ph	orn
64	<i>Euonymus japonicus</i> Thunb.	Celastraceae	As	Ph	orn
65	<i>Fallopia aubertii</i> (L.Henry) Holub	Polygonaceae	As	PhLi	orn
66	<i>Ficus carica</i> L.	Moraceae	Eur, As	Ph	orn, alim
67	<i>Foeniculum vulgare</i> Mill.	Apiaceae	Eur, As, Afr	H	alim
68	<i>Fragaria x ananassa</i> (Duchesne ex Weston) Duchesne ex Rozier	Rosaceae	AmN, AmS	H	alim
69	<i>Fritillaria imperialis</i> L.	Liliaceae	As	G	orn
70	<i>Gaillardia x grandiflora</i> Van Houtte	Asteraceae	AmN	T	orn
71	<i>Gaillardia pulchella</i> Foug.	Asteraceae	AmN	T	orn
72	<i>Gazania x splendens</i> Hend. & Andr.Hend.	Asteraceae	Afr	H	orn
73	<i>Geranium macrorrhizum</i> L.	Geraniaceae	Eur, As	H	orn
74	<i>Gladiolus communis</i> L.	Iridaceae	Eur, As, Afr	G	orn
75	<i>Hedera helix</i> L.	Araliaceae	Eur, As	PhLi	orn
76	<i>Helianthus annuus</i> L.	Asteraceae	AmN	T	orn, alim
77	<i>Helianthus tuberosus</i> L.	Asteraceae	AmN	H	orn, alim
78	<i>Hemerocallis fulva</i> (L.) L.	Asphodelaceae	As	H	orn
79	<i>Heuchera micrantha</i> Douglas	Saxifragaceae	AmN	G	orn
80	<i>Hibiscus x rosa-sinensis</i> L.	Malvaceae	As	Ph	orn

No.	Taxon	Family	Origin	Life form	Use
81	<i>Hibiscus moscheutos</i> L.	Malvaceae	AmN	Ph	orn
82	<i>Hibiscus syriacus</i> L.	Malvaceae	As	Ph	orn
83	<i>Hippeastrum vittatum</i> (L'Hér.) Herb.	Amaryllidaceae	AmS	G	orn
84	<i>Hydrangea arborescens</i> L.	Hydrangeaceae	AmN	Ph	orn
85	<i>Hydrangea macrophylla</i> (Thunb.) Ser.	Hydrangeaceae	As	Ph	orn
86	<i>Impatiens walleriana</i> Hook.f.	Balsaminaceae	As	T	orn
87	<i>Ipomoea purpurea</i> (L.) Roth	Convolvulaceae	AmN	Li	orn
88	<i>Iris x germanica</i> L.	Iridaceae	Eur	G	orn
89	<i>Jacobaea maritima</i> (L.) Pelser & Meijden	Asteraceae	Eur, As, Afr	Ch	orn
90	<i>Jasminum officinale</i> L.	Oleaceae	As	Ph	orn
91	<i>Juglans regia</i> L.	Juglandaceae	As	Ph	orn, alim
92	<i>Juniperus chinensis</i> L.	Cupressaceae	As	Ph	orn
93	<i>Juniperus communis</i> L.	Cupressaceae	Cosm	Ph	orn
94	<i>Kerria japonica</i> (L.) DC.	Rosaceae	As	Ph	orn
95	<i>Lactuca sativa</i> L.	Asteraceae	As	T	alim
96	<i>Lagerstroemia indica</i> L.	Lythraceae	As	Ph	orn
97	<i>Lantana camara</i> L.	Verbenaceae	AmN, AmS	Ph	orn
98	<i>Laurus nobilis</i> L.	Lauraceae	Eur, As, Afr	Ph	orn, alim
99	<i>Lavandula angustifolia</i> Mill.	Lamiaceae	Eur	Ph	orn
100	<i>Leucanthemum vulgare</i> Lam.	Asteraceae	Eur, As	H	orn
101	<i>Levisticum officinale</i> W.D.J.Koch	Apiaceae	As	H	alim
102	<i>Ligustrum vulgare</i> L.	Oleaceae	Eur, As, Afr	Ph	orn
103	<i>Lilium candidum</i> L.	Liliaceae	As	G	orn
104	<i>Lilium regale</i> E.H.Wilson	Liliaceae	As	G	orn
105	<i>Lonicera japonica</i> Thunb.	Caprifoliaceae	As	Li	orn
106	<i>Magnolia grandiflora</i> L.	Magnoliaceae	AmN	Ph	orn
107	<i>Malus domestica</i> (Suckow) Borkh.	Rosaceae	As	Ph	orn, alim
108	<i>Melissa officinalis</i> L.	Lamiaceae	Eur, As, Afr	H	orn, alim
109	<i>Mentha x piperita</i> L.	Lamiaceae	Eur, As	H	orn, alim
110	<i>Mentha spicata</i> L.	Lamiaceae	Eur, As	H	alim, orn
111	<i>Mirabilis jalapa</i> L.	Nyctaginaceae	AmN	H	orn
112	<i>Miscanthus sinensis</i> Andersson	Poaceae	As	G	orn
113	<i>Morus alba</i> L.	Moraceae	As	Ph	orn, alim
114	<i>Morus nigra</i> L.	Moraceae	As	Ph	orn, alim
115	<i>Musa acuminata</i> Colla	Musaceae	As	G	orn
116	<i>Nassella tenuissima</i> (Trin.) Barkworth	Poaceae	AmN, AmS	H	orn
117	<i>Nerium oleander</i> L.	Apocynaceae	Eur, As, Afr	Ph	orn
118	<i>Nicotiana glauca</i> Link & Otto	Solanaceae	AmS	T	orn
119	<i>Nigella damascena</i> L.	Ranunculaceae	Eur, As, Afr	T	orn

No.	Taxon	Family	Origin	Life form	Use
120	<i>Ocimum basilicum</i> L.	Lamiaceae	As, Austr	T	orn, alim
121	<i>Oenothera biennis</i> L.	Onagraceae	AmN	H	orn
122	<i>Oenothera speciosa</i> Nutt.	Onagraceae	AmN	T	orn
123	<i>Olea europaea</i> L.	Oleaceae	Eur, As, Afr	Ph	orn
124	<i>Opuntia humifusa</i> (Raf.) Raf.	Cactaceae	AmN	Ch	orn
125	<i>Paeonia peregrina</i> Mill.	Paeoniaceae	Eur	H(G)	orn
126	<i>Passiflora caerulea</i> L.	Passifloraceae	AmS	Li	orn
127	<i>Paulownia tomentosa</i> (Thunb.) Steud.	Paulowniaceae	As	Ph	orn
128	<i>Pelargonium radens</i> H.E.Moore	Geraniaceae	Afr	Ch	orn
129	<i>Pelargonium zonale</i> (L.) L'Hér.	Geraniaceae	Afr	Ch	orn
130	<i>Petrosedum ochroleucum</i> (Chaix) Niederle	Crassulaceae	Eur, As	Ch	orn
131	<i>Petroselinum crispum</i> (Mill.) Fuss	Apiaceae	Eur, Afr	H	alim
132	<i>Petunia integrifolia</i> (Hook.) Schinz & Thell.	Solanaceae	AmS	T	orn
133	<i>Phaseolus vulgaris</i> L.	Fabaceae	AmN, AmS	T	alim
134	<i>Phedimus spurius</i> (M.Bieb.) 't Hart	Crassulaceae	As	Ch	orn
135	<i>Philadelphus coronarius</i> L.	Hydrangeaceae	As	Ph	orn
136	<i>Phlox paniculata</i> L.	Polemoniaceae	AmN	H	orn
137	<i>Physalis peruviana</i> L.	Solanaceae	AmS	T	orn
138	<i>Picea pungens</i> Engelm.	Pinaceae	AmN	Ph	orn
139	<i>Pinus sylvestris</i> L.	Pinaceae	Eur, As	Ph	orn
140	<i>Portulaca grandiflora</i> Hook.	Portulacaceae	AmS	T	orn
141	<i>Prunus amygdalus</i> Batsch	Rosaceae	As	Ph	orn, alim
142	<i>Prunus armeniaca</i> L.	Rosaceae	As	Ph	orn, alim
143	<i>Prunus avium</i> (L.) L.	Rosaceae	Eur, As, Afr	Ph	orn, alim
144	<i>Prunus cerasifera</i> Ehrh.	Rosaceae	Eur, As	Ph	orn, alim
145	<i>Prunus domestica</i> L.	Rosaceae	As	Ph	orn, alim
146	<i>Prunus mahaleb</i> L.	Rosaceae	Eur, As	Ph	orn, alim
147	<i>Prunus persica</i> (L.) Batsch	Rosaceae	As	Ph	orn, alim
148	<i>Punica granatum</i> L.	Lythraceae	As	Ph	orn, alim
149	<i>Pyrus communis</i> L.	Rosaceae	Eur, As	Ph	orn, alim
150	<i>Rhus typhina</i> L.	Anacardiaceae	AmN	Ph	orn
151	<i>Ribes rubrum</i> L.	Grossulariaceae	Eur	Ph	orn, alim
152	<i>Rosa</i> sp.	Rosaceae	Cosm	Ph	orn, alim

No.	Taxon	Family	Origin	Life form	Use
153	<i>Rubus fruticosus</i> L.	Rosaceae	Eur	Ph	orn, alim
154	<i>Rubus idaeus</i> L.	Rosaceae	Eur, As, AmN	Ph	orn, alim
155	<i>Salix caprea</i> L.	Salicaceae	Eur, As	Ph	orn
156	<i>Salvia officinalis</i> L.	Lamiaceae	Eur	H	orn, alim
157	<i>Salvia rosmarinus</i> Spenn.	Lamiaceae	Eur, As, Afr	Ph	orn, alim
158	<i>Salvia sclarea</i> L.	Lamiaceae	Eur, As, Afr	H	orn
159	<i>Salvia splendens</i> Sellow ex Nees	Lamiaceae	AmS	T	orn
160	<i>Sambucus nigra</i> L.	Viburnaceae	Eur, As	Ph	orn
161	<i>Santolina chamaecyparissus</i> L.	Asteraceae	Eur	Ph	orn
162	<i>Saponaria officinalis</i> L.	Caryophyllaceae	Eur, As	H	orn
163	<i>Satureja hortensis</i> L.	Lamiaceae	Eur, As	T	orn, alim
164	<i>Sedum album</i> L.	Crassulaceae	Eur, As	Ch	orn
165	<i>Solanum lycopersicum</i> L.	Solanaceae	AmS	T	orn, alim
166	<i>Solanum melongena</i> L.	Solanaceae	As	T	orn, alim
167	<i>Solanum tuberosum</i> L.	Solanaceae	AmS	G	orn, alim
168	<i>Spartium junceum</i> L.	Fabaceae	Eur, As	Ph	orn
169	<i>Spiraea japonica</i> L.f.	Rosaceae	As	Ph	orn
170	<i>Stachys byzantina</i> K.Koch	Lamiaceae	As	H	orn
171	<i>Syringa vulgaris</i> L.	Oleaceae	Eur	Ph	orn
172	<i>Tagetes erecta</i> L.	Asteraceae	AmN	T	orn
173	<i>Tamarix gallica</i> L.	Tamaricaceae	Eur, Afr	Ph	orn
174	<i>Thuja occidentalis</i> L.	Cupressaceae	AmN	Ph	orn
175	<i>Tilia tomentosa</i> Moench	Malvaceae	Eur, As	Ph	orn, alim
176	<i>Tithonia rotundifolia</i> (Mill.) S.F.Blake	Asteraceae	AmN	T	orn
177	<i>Trachycarpus fortunei</i> (Hook.) H.Wendl.	Arecaceae	As	Ph	orn
178	<i>Tradescantia virginiana</i> L.	Commelinaceae	AmN	H	orn
179	<i>Tradescantia zebrina</i> Bosse	Commelinaceae	AmN, AmS	H	orn
180	<i>Vinca major</i> L.	Apocynaceae	Eur, As	Ch	orn
181	<i>Vitex agnus-castus</i> L.	Lamiaceae	Eur, As, Afr	Ph	orn
182	<i>Vitis vinifera</i> L.	Vitaceae	Eur, As	PhLi	orn, alim
183	<i>Wisteria sinensis</i> (Sims) DC.	Fabaceae	As	PhLi	orn
184	<i>Yucca filamentosa</i> L.	Asparagaceae	AmN	G	orn
185	<i>Yucca gloriosa</i> L.	Asparagaceae	AmN	Ph	orn
186	<i>Zea mays</i> L.	Poaceae	AmN	T	alim
187	<i>Zinnia elegans</i> Jacq.	Asteraceae	AmN	T	orn
188	<i>Zinnia haageana</i> Regel	Asteraceae	AmN	T	orn
189	<i>Ziziphus jujuba</i> Mill.	Rhamnaceae	As	Ph	orn, alim