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Singing the nature - ethnobotanical knowledge in Bulgarian folk songs

Canto con la naturaleza: conocimiento etnobotánico en canciones populares búlgaras

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Abstract

Background: Bulgarian poetic folklore reflects an agrarian culture deeply connected with land and nature. However, traditional ecological knowledge (TEK) transmitted through Bulgarian folklore is scarcely assessed.

Questions: What are the dimensions of the TEK related to plant diversity (native and introduced) that appear in Bulgarian folk songs and what is their potential as transmitters of TEK?

Data description: The lyrics of 10,113 Bulgarian folk songs were excerpted from major academic collections and a set of unpublished songs.

Study site and dates: Current study covers songs that have been documented since mid-19th century onwards in the present and former Bulgarian territories and in areas that have been inhabited by ethnic Bulgarians abroad.

Methods: Common plant names and descriptions of plants and landscapes were used to detect botanical affiliations of the denoted plants. We focused on frequencies of plant representations and their functions associated with cultural, agricultural and food-processing practices.

Results: A total of 146 plant taxa from 109 genera were mentioned in 47.3 % of the studied songs. Over 60 % of the most frequently mentioned taxa were archaeophytes while neophytes were represented by seven taxa, denoting everyday and spiritual importance of nature.

Conclusions: Bulgarian folk songs presented wide range of nature-related information typically reported for ethnic groups outside Europe. Quantification of TEK preserved in documented poetic folklore and further assessment of performance of nature-rich folklore would allow development additional tools for evaluation of cultural significance of species, landscapes and ecosystems as well as for development of educational and inspirational materials.

Keywords: Balkans, ecosystem services, folklore, symbolic plants.

Resumen

Antecedentes: El folclore poético búlgaro refleja una cultura agraria profundamente conectada con la tierra y la naturaleza. Sin embargo, el conocimiento ecológico tradicional (TEK) transmitido a través del folclore búlgaro es incipiente.

Preguntas: ¿Cuáles son las dimensiones del TEK relacionadas con la diversidad de plantas (nativas e introducidas) que aparecen en las canciones populares búlgaras y cuál es su potencial como transmisores de TEK?

Descripción de datos: La letra de 10,113 canciones populares búlgaras se extrajo de las principales colecciones académicas y de una serie de canciones inéditas.

Lugar de estudio y fechas: Se estudiaron canciones documentadas desde mediados del siglo XIX en los territorios búlgaros actuales y anteriores y áreas habitadas por búlgaros en el extranjero.

Métodos: Se utilizaron nombres comunes y descripciones de plantas y paisajes para detectar afiliaciones botánicas. Nos centramos en las frecuencias y sus funciones asociadas con las prácticas culturales, agrícolas y de procesamiento de alimentos.

Resultados: 146 taxones de 109 géneros se mencionaron en 47.3 % de los cantos estudiados. Más del 60 % de los taxones registrados eran arqueófitos y siete taxones fueron neófitos, lo que denota la importancia cotidiana y espiritual de la naturaleza.

Conclusiones: Las canciones populares búlgaras presentaron mucha información de la naturaleza sobre los grupos étnicos fuera de Europa. El TEK del folclore documentado y la evaluación del folclore rico en naturaleza permitirá el desarrollo de herramientas para evaluar la importancia cultural de las especies, los paisajes y los ecosistemas, así como para el desarrollo de materiales educativos inspiradores.

Palabras clave: Balcanes, servicios ecosistémicos, folclore, plantas simbólicas.

Culture plays an essential role for shaping and explaining human-nature interrelations, hence it is a reservoir of traditional ecological knowledge (TEK) that has been transferred over the generations. Preserved folklore heritage was found to contribute to the current insights in nature conservation and education (Mac Coitir 2016, Pandey & Pandey 2016, Dudareva & Goeva 2017, Schirpke *et al.* 2018). Additionally, the representation of folk traditions is a popular trend that appeals to broader public and attracts interest to folklore festivals and events in Europe and beyond (Ganeva-Raycheva 2013, Wilks & Quinn 2016, Chen & Tao 2017, Lange 2018). Still, the continous devaluation, arrested diachronic (from adults to youngsters) and synchronic (among same age performers) transmission have hindered the natural transfer of traditional knowledge in industrialized contexts (Quave *et al.* 2012, Hernández-Morcillo *et al.* 2014, Shukla *et al.* 2017). In the more-and-more urbanizing societies worldwide the traditional ways of handing down of knowledge is rather questionable. On the other hand, the access to knowledge that is foreign to certain community, availability of scientific-based data and modern opportunities of sharing information allow further development and even co-creation of nature-related knowledge based on traditions (Leonti 2011, Hernándes-Morcillo *et al.* 2014, Díaz *et al.* 2018). New dynamic realities demand diverse approaches to educational and awareness interventions that could contribute to sustainability learning (Kim *et al.* 2017, Burton & Riley 2018, Ramet *et al.* 2018, Benyei *et al.* 2020). Thus, sourcing of reliable, scientifically sound data for the development of such tools would rely, probably inevitably, on the alredy documented TEK and modern transmission options like social media and live streaming.

Over the recent years, the reassessment of historical data sources has revealed preserved pockets of TEK that provide valuable information for its persistence, erosion and transformation (Nedelcheva *et al.* 2011, Svanberg *et al.* 2011, Dénes *et al.* 2012, Kalle & Sõukand 2012, Svanberg & Łuczaj 2014, Kujawska *et al.* 2017). However, medicinal plants and healing practices have remained the main focus and little attention has given to arts, rituals and beliefs as a source of ethnobotanical knowledge (Thiselton-Dyer 1889, Watts 2007, Łuczaj 2009, 2012, Mekbib 2009, Nedelcheva & Dogan 2011, Benítez *et al.* 2018, Tolstaia 2018, Ahmed *et al.* 2019). Historical ethnobotany explores mostly written sources but very few of these include preserved cultural heritage (Silva *et al.* 2014, Herrero & Cardaño 2015).

Bulgarian musical heritage has attracted considerable attention throughout the years and for many people around the world it is the first gateway to Bulgarian culture. The transformations in function and performance and even the political contextualization of Bulgarian folk songs after the World War II were thoroughly researched (Kaufman 2001, Kaufman & Peycheva 2004, Peycheva 2015, Rice 2017). However, the TEK preserved in various forms of the Bulgarian folklore remains unexplored from biological perspective. Older ethnographic studies (Iliev 1892, 1893, 1919, Stranski 1929) discussed briefly the symbolism and, partially, the semantic role of several plant species mentioned in the Bulgarian folklore, but did not discuss their representation in the different folklore forms. Ginchev (1890) recorded over 125 plants and plant products used in folk medicine making reference to some folk songs as a proof of the authenticity of the collected knowledge. Later ethnobotanists working in Bulgaria focused predominantly on TEK on medicinal and wild edible plants but mainly through field studies (Stranski 1929, Kitanov 1953, Stoyanov & Kitanov 1960, Petkov 1986, Ivancheva & Stantcheva 2000, Nedelcheva & Dogan 2011, Nedelcheva 2013). Recent reports showed shrinkage of TEK on a global scale and Bulgaria is not an exception (Nedelcheva & Dogan 2011, Georgiev 2013, Aswani *et al.* 2018).

Several ethnographic compendium works described the strong organic link of Bulgarians with nature that is reflected in folk songs, legends, fairy tales, riddles, sayings (Georgiev 1976, Vakarelski 1977, Georgieva 1993, Georgiev 2013). Nevertheless, current assessments and mapping of (cultural) ecosystem services in the country have provided contraversing evidences about the overall scores for cultural heritage (from very high for the Black Sea Coast to lowest for the Central Balkan Mts., both popular recreational sites and included in Natura 2000 network) that were attributed also to the "missing perception and understanding of the importance of ecosystems as a whole" (Vladimirov & Petrova 2017, Nedkov *et al.* 2018, Gocheva *et al.* 2019).

The objective of the current study was to explore the diversity of wild and cultivated plants that appear in Bulgarian folk songs and to reveal the link between their biological characteristics and the role they play in the traditional songs. The study focuses on an important, yet unconsidered facet of folk songs - the poetic representation of native and non-native plant diversity and the potential of folk songs as carriers of TEK in the broader context of folklore as a systemic culture.

Materials and methods

Bulgaria is located in the centre of the Balkan Peninsula, in South-East Europe, on an area of 110,879 km^2. The country is in the transitional zone between temperate and Mediterranean climatic zones. Bulgaria is topologically diverse with altitudes ranging from sea level to nearly 3,000 m. Bulgarian vascular flora comprises 3,840 species of Spermatophytes and 60 fern species, affiliated to 886 genera and 153 families (Biserkov *et al*. 2015). About 51.2 % of the territory is being cultivated, 42.67 % is covered with forests, and 4.9 % are urban areas (Adams & Lükewille 2010).

Present study covers folk songs documented in the current Bulgarian territory and in areas of present-day Greece, Romania, Turkey, North Macedonia, Moldova, and Ukraine inhabited by ethnic Bulgarians. Lyrics were excerpted in electronic searchable format (MS Access database) from major academic collections published from the mid-19th century onwards: Arnaudov *et al.* (1961-1963 - *Balgarsko narodno tvorchestvo* in 12 volumes), Kaloyanov (1986), Kaloyanov (1992), Mollov (2006-2017). The Sakar region (South-East Bulgaria, bordering with Turkey) was under-represented in the publications mentioned above, thus we used also a set of unpublished songs, gathered in the 1980s in Sakar Mt. and stored in the archive of the Institute of Ethnology and Folklore Studies at the Ethnographic Museum at the Bulgarian Academy of Sciences. A total of 10,113 lyrics were searched in order to identify mentions of common plant names in different Bulgarian dialects. Common plant names and descriptions of plants and landscapes were used to detect and discern, when possible, the botanical affiliations of the denoted plants. We used glossaries and botanical lists of Bulgarian plant common names from the late 19th and early 20th centuries (Kozarov 1925, Urumov 1926, Gerov 1895-1904, Ahtarov *et al.* 1939). We have taken into account only the mentioning of the species, regardless of form or derivative. Mentions of plant-related parts, products or items with no reference to species were not considered. Plant denominations were related at least to the genus rank, and, when common name and/or details mentioned in the lyrics allowed it, to the species rank and even to certain crop varieties and landraces. The Plant List (2013) was used as taxonomic references for currently accepted scientific names. Euro+MedPlantBase (2011) was used as reference for origin and distribution of the taxa found in the lyrics. The data on habitat/landscape depictions and/or ecosystem services were evaluated through their direct and secondary descriptions and by the mentioning of characteristic species. Information about agricultural/horticultural practices and food production was recorded, if present.

Functional-semantic analysis of plant diversity in songs related to rituals and everyday life was performed in order to understand the place of plants in the system of folklore knowledge. The roles of plants and their utilitarian and/or cultural functions were asserted in the context of the ritual or other cultural practices described in the songs.

Results

Plant-denoting references were recorded in nearly half of the surveyed song lyrics (47.3 %, 4,788). Often more than one plant was mentioned within a single song and in a quarter of the researched songs (1,200) more than three plant taxa were present. A total of 146 plant taxa from 109 genera, and 55 families were identified (Figures 1, 2, Appendix 1).

Native flora was presented with 93 taxa, followed by 40 archaeophytes and 7 neophytes. The majority of the mentioned plants were wild (83 taxa), 53 were cultivated (crops and/or garden) plants and 11 were either wild or cultivated native ornamental and fruit-bearing plants (*i.e*., peony, iris, strawberry, cherry plums, etc.). At family level Rosaceae was most frequently mentioned with 1,093 citations of 16 taxa (Figure 1, Table 1). Members of Rosaceae were found nearly 1.5 and 4-times more frequently than those of Poaceae and Vitaceae families. The high incidence of references to Poaceae (757) was mainly attributable to *Triticum* sp. (263), the major food crop in the region, followed by *Secale cereale* (199), *Oryza sativa* (105), *Panicum miliaceum* (86), *Hordeum vulgare* (55), *Avena sativa* (28) and *Zea mays* (16). Grape vines (279 mentions) were mentioned both in narratives involving agricultural and forest habitats.

Only 15 common names remained unresolved (NOID) due to the absence of clues to the plant features or habitat characteristics in the song lyrics. For instance, ruzha, which is known as a reference to a variety of large red or yellow ornamental flowers like roses, popies, Mexican marigolds. The *Tagetes* species (*T. recta* and *T. patula*) are known under a variety of collective names in Bulgarian - funda, turta, kamshitsa, kadiyka, karshikapka, zhalta ruzha (yellow ruzha), however, only kamshitsa and *ruzha* were found mentioned in the songs.

Plants in the folk songs were described sparingly, focusing more on the interrelation between humans and nature, cultural and social aspects of human life than on

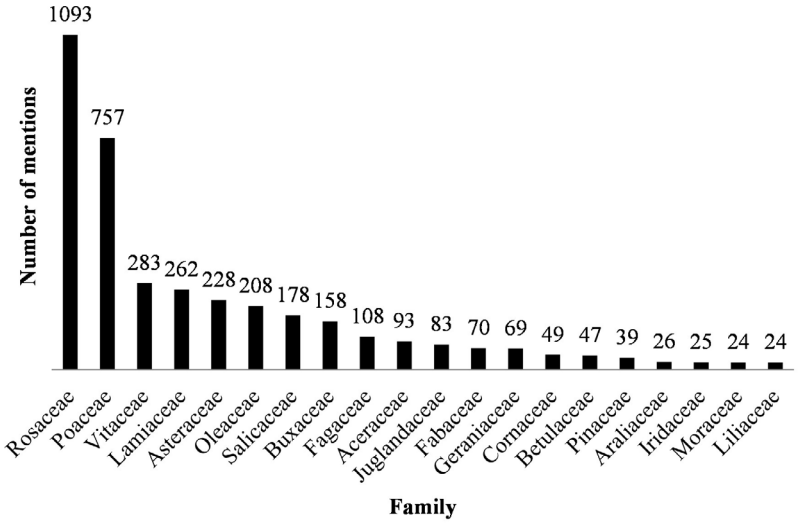

Figure 1. The 20 plant families with the highest incidence of taxa references in Bulgarian folk songs.

intentional addressing the biology and/or morphology of certain species. Most of the plant-related mentions conveyed a symbolic meaning (*e.g.*, cosmic order, heterogeneity of landscape, Arbor mundi - posessing features both of evergreen conifer and orchard tree), but they also cast a set of images (*e.g.*, a beautiful maiden - *Abies alba*, *Populus* sp., a handsome lad - *Pinus* sp., *Acer* sp.) or featured depictions of different aspects of rural livelihood (*e.g.*, tending gardens, harvesting fields, hanging a cradle on a tree, etc.). Symbolic functions of plants were related to true-to-fact information about the species: *e.g.*, *Vitis vinifera* and *Hedera helix* with their climbing habit were consistently found to represent relations among two persons that often overcome the distance between the worlds of the living and the dead; phenological stages of plants as a metaphor for year seasons - flowering of Chrysanthemums signifying autumn; flowering of almond and sour cherry trees signifying beginning of the spring.

The plants (trees, shrubs, vines, herbs and grasses) were elements of the narrative scenery or were personified as interlocutors or protagonists, sometimes replacing the human characters in the story. In the song lyrics with the highest number of plant references seven plants were personified as protagonists (the bride, her interlocutor, the groom, etc.) and another three complemented the scenery of the post-wedding rituals, *i.e.*, reffering to the colour of the drinks, the flower-shaped tables and the guest placement along the table looking similar to the alternate flower arrangement along the stem:

- Заспала ли си, ***черешо***?*
- Не съм заспала, ***ягодо***,
чакам си либе ***трандафил***;
той е отишел на гости
у кума, у ***босилека***,
у кумичката ***камшичка****,*
да едът, холан, да пият.
Та що им беше софрата:
синята ***сифа****- софрата,*
*а червената (сифа**)- четата;*
червен им ***божур****- виното,*
желтото ***лале****- ракия.*
Комар им с гайда свиреше,
Теменужката *играе,*
Сминчеца *й са смееше:*
-Теменужке ле мъninка,
къко са леко подфърляш!
Теменужката говори:
“Ти си и голям и висок,
додe та слънце огрее,
като та слънце препече -
никой та векe не бере!

“Are you already asleep, ***Sweet cherry****?”*
“No, I am not asleep, ***Strawberry****!*
I’m waiting for my sweetheart – the ***Rose****.*
He went to visit
His best man, the ***Basil***
And his wife the ***Marigold****.*

To eat and drink together.
What was happening there?
*The blue **Sifa**** *was the table*
*The red **Sifas**** *were the company.*
*The red **Peony** – their wine*
*The yellow **Tulip** – their brandy*
A Mosquito was playing on a bagpipe
*The **Violet** was dancing*
*The **Sminchec**** *was jesting on her:*
*"Hey little **Violet**,*
You are throwing yourself lightly!"
*The **Violet** was answering:*
"You are large and tall.
When the sun scorches you
No one wants to pluck you anymore!

* Plant names are highlighted in bold font. This folk song is from Yambol region, documented in 1911 by Bulgarian diaspora in Russian Empire (currently Ukraine). English translation - authors' free translation from Bulgarian):

** - NOID (Sifa - *Convolvulus tricolor* L. or *Mirabilis jalapa* L.*;* Sminchec – *Xeranthemum annuum* L., *Antennaria dioica* (L.) Gaertn. or *Helichrysum arenarium* (L.) Moench).

Separate plant parts (leaves, branches, fruits, flowers) were mostly used figuratively (similes and metaphors). Figurative connotations in the song lyrics pointed out a variety of plant morpho-physiological traits. For example, basil convex sepals were used to describe eyelids, pine and fir trunks - slender human body (male and female, respectively, corresponding to the grammatical gender of the Bulgarian common names). The allegorical plant depictions were detailed, demonstrating a very close observation of the natural world, for instance, giving stinging nettle to someone as an expressiom of resentment to them or shedding of apple blossom petals over a young maiden as a symbol of her stepping into adulthood. Metaphorical references to colours, i.e. olives or cherries instead of black (eyes), apples instead of red (cheeks), violet instead of blue (sky) were also widely employed. Additional examples could be found as Supplementary material (S1).

Irrespective of the higher taxonomic diversity of wild plants in folk songs, crops were mentioned twice more frequently (32 and 68 %, respectively). Over 60 % of the most frequently mentioned taxa (over 100 mentions) were crop archaeophytes, led by apple, wheat, grape vine, rye, and sour cherry. They were referenced as food or as symbolic/ritual plants, while sweet basil and boxwood - only as ritual ones. Locally-grown crops (indigenous and archaeophytes) were rendered in greater detail (concerning references to species) with a more diverse range of functionalities while foreign species were cited only as imported products. Black pepper and coffee plant were described poorly and/or falsely, *e.g*., black pepper was imagined as an arable crop.

Various grain crops mentioned in the folk songs illustrated very well the broad spectrum of plant-human interactions. Grains were in the foundation of rural landscape images portraying seasonality of the peasant livelihoods, wealth and prosperity as a result of bountiful harvests. They also symbolised fertility, well-being and abundance, indicating heavy work on the field and stock-breeding. For example, wheat was represented as a precious crop anticipating harvest (incl. cultivated by Christian saints or by God himself), common food and feed plant, ritual grains spilled in front of wedding processions as a charm of fertility and last but not least as a commodity traded at varying prices. This latter representation reflected the economic situation at the time when songs were created. However, a clear perception of disparity can be observed with regard to grain crops - *T. aestivum*, *Z. mays* and *O. sativa* (both as food and feed) were associated with wealth and even luxury, while *Hordeum vulgare*, *Avena sativa* and *Panicum miliaceum* were mentioned as crops or food indicative of poverty and low social status. *Avena sativa* was even further denounced by being excluded from ritual food in several mythic songs.

While grains were main descriptors of the agricultural open fields, trees and shrubs from Rosaceae family occupied more intimate close space near the home, in the garden/orchard and rarely represented noticeable places in the wild (*e.g*., solitary *Prunus avium* trees in forest habitats). Rosaceae taxa were found valued both for the nutritive qualities of their fruits and for the ritual and/or symbolic connotations of the whole plant and/or parts of it (Table 1). In the current study we found examples referring to plant ecology, morphology and biology, phenological cycles of the representatives of this family. The beauty, fecundity and elegance of Rosaceae trees, along with the alluring sweet taste and crispiness of the cultivated and wild fruits, were mentioned in a variety of utilitarian situations (as eating/snacking, orchard tending or harvesting) and/or figurative meanings (literary figures for marital-sexual symbols, courtship, etc.).

Food plants, apart from Rosaceae and Poaceae, were far less represented in the Bulgarian folk songs. Legumes and leafy vegetables were linked to mythical creatures and Biblical narratives (*Cicer arietinum*, *Allium* sp.), ritual food

Table 1. Functions of the Rosaceae taxa in Bulgarian folk songs.

Taxon	Part mentioned	Function	Number of mentions
Crataegus monogyna Jacq.	tree, fruit	timber, food plant, landscape element	11
Cydonia oblonga Mill.	tree, fruit	fruit crop, comparative (woman)	109
Fragaria sp.	fruit	food plant, comparative (woman)	3
Malus domestica Borkh.	tree, flower, fruit	fruit crop, comparative (woman, red-skin color)	295
Malus sylvestris (L.) Mill.	tree	symbolic (Arbor mundi)	3
Prunus armeniaca L.	fruit	comparative (woman)	1
Prunus avium (L.) L.	tree, flower, fruit	fruit crop, symbolic (Arbor mundi), comparative (woman, dark-eye color)	211
Prunus cerasus L.	tree, flower, fruit	fruit crop, symbolic (Arbor mundi), comparative (woman, dark-eye color)	155
Prunus domestica L.	tree, fruit	food plant, landscape element	3
Prunus dulcis (Mill.) D. A. Webb	tree, kernel	fruit crop, comparative (eye form)	5
Prunus spinosa L.	shrub	honey-bearing plant, ritual plant, magic plant, landscape element	6
Pyrus communis L.	tree, flower, fruit	fruit crop, symbolic (Arbor mundi), landscape element	61
Rosa canina L.	shrub, fruit	food plant, landscape element	2
Rosa sp.	shrub, flower	ornamental, landscape element	165
Rubus caesius L.	fruit, thorny stem	comparative (dark color, woman), obstacle on a road	19
Rubus idaeus L.	fruit	food plant, comparative (woman)	39

preparation (*Phaseolus vulgaris*, *Urtica dioica*, *Vicia faba*) and, rarely, to everyday scenarios (*Lens culinaris*, *Rumex acetosa*, *Allium cepa*, *Allium sativum*). Vegetables originating from the Americas were mentioned metaphorically, in storylines not related to food, or were mentioned as luxury goods. *Capsicum annuum*, *Solanum lycopersicon* and *Solanum tuberosum* were cited 9, 1 and 0 times, respectively. Interestingly, folk songs did not reflect a broad range of wild edible plants that were historically and/or currently known from Bulgaria (Nedelcheva 2013, Ivanova *et al.* 2018a, b). Wild edible plants were represented only by two edible greens (*Urtica dioica* and *Rumex acetosa*) and few wild berries (raspberry, strawberry, dewberry).

One of the leading positions of Lamiaceae was due mostly to one species - *Ocimum basilicum* (256 mentions), an archaeophyte, with an unknown time frame of its introduction in the Balkans. The major traditional use of this species in Bulgaria, as an indispensable part of decorations for burial and memorial rites, does not surface in the lyrics of folk songs, most likely because such rituals were never accompanied by singing. *Ocimum basilicum*, portrayed in Bulgarian folk sogs, had mainly symbolic roles in ritual/religious or romantic storylines. Sweet basil was associated with and attributed to the Christian God, and the Ruler on Earth. In the folk songs the fragrance of sweet basil was considered ‘the scent of the Christian

soul' contrasted to 'the aroma of the Muslim soul', which 'smelled of boiled/dry elder' (*Sambucus ebulus*), presenting these plants as cultural markers. Basil was also a principal element of the *kitka* (nosegay), which both maidens and lads wore as a symbolic decoration. Thus, *O. basilicum* dominated among ornamental plants, especially in rituals and in mythical/religious scenes described in the folk songs, and that are common for other Balkan and Mediterranean countries as well (Simoons 1998, Pieroni *et al.* 2012). Sweet basil alone or with other ornamental species was often accompanied by descriptions of gardening practices, *e.g*., garden creation and tending, flower care and picking, which exhausted the concept of a home garden as rendered in Bulgarian poetic folklore. Last but not least, a specific use of sweet basil in Bulgarian folk songs was for its function as an insect repellent.

Although Lamiaceae is one of the families richest in species in Bulgaria, and many of its representatives had been well known as traditionally-used medicinal, aromatic and spice plants among Bulgarians (Ivancheva & Stantcheva 2000), only *Satureja*, *Thymus* and *Melissa* were mentioned in folk songs alongside *O. basilicum.* It is worth mentioning that aromatic plants (*e.g*., *O. basilicum*, *Thymus* sp., *Geranium macrorrhizum)* were found to exhibit special verbal abilities, *i.e*., they appear as talkative protagonists, which implies an intrinsic perception of the plants' volatiles as a communication tool.

The members of Asteraceae family were appreciated for various reasons. The genus *Artemisia* occured most frequently (202 mentions). *Artemisia* species were present as an element of landscapes (sceneries) (*i.e*., ruderalization of abandoned fields and gardens), but they were also described as medicinal and magical plants. The symbolic, ritual and decorative significance of *Artemisia* is evidenced by its presence as a regular element of a maiden's *kitka* together with other plants. This was specifically valid for the songs from Northeastern Bulgaria where *Artemisia* was frequently mentioned as remarkable for the local landscape which corresponds to the steppic vegetation typical for that part of the country. *Helichrysum arenarium* (zhult smil or smin) was also identified as part of the kitka for its highly valued yellow colour, which symbolises the sun. *Tanacetum vulgare* was mentioned rarely (10) with a reference to its magical, decorative and protective functions. It was believed to ward off evil forces and ill-meant intentions and therefore was grown near the front gate to guard the house. This practice still persists in rural gardens around Bulgaria (Stareva 2016). Other ornamental Asteraceae plants referred to in songs were introduced taxa like *Chrysanthemum indicum*, *Dahlia* sp., *Tanacetum balsamita* and *Tagetes* sp. The latter, together with other Neotropical plants (*Zea mays, Capsicum annum*, *Dahlia* sp., *Phaseolus vulgaris* and *Solanum lycopersicum*), was highly praised, and related mostly to festive occasions.

In terms of generalized plant-related mentions, forests (730 mentions) and agricultural landscapes (*i.e*., field - 605, meadows - 383) appeared similarly valued and revered: the former appear in heroic and haydushki (rebel) songs and the latter are present mainly in ritual and labour/everyday songs. The overarching image of the forest (mostly in mountains) as a shelter ensuring protection against enemies is central to haydushki (rebel) songs. These eventful and mostly historical storylines were emotionally charged with the heroism of the battles prior the Liberation from Ottoman rule (1878) and of the subsequent wars at the beginning of the 20th century. Hence, folk songs organically combined specific details of everyday life with features of the surrounding environment.

In the songs in relation to working activities (*e.g*., agriculture, trade, household activities, etc.), family-livelihood, historical events and rebel life, tree species are used as references to timber, shelter, clues to water sources, shadow and comfort. Forests, however, considered in their metaphorical projection, give strength to the rebels and reinforce their illegal status, especially in the haydushki (rebel) songs, where a forest stands for the unknown, the distant, the wild and menacing.

Discussion

Malus domestica, *Triticum aestivum* and *Vitis vinifera* were most mentioned in the studied songs being common crops and food plants at the times Bulgarian folk songs were created. The manner in which these three species are being praised could be easily explained with the predominantly agrarian livelihoods in the Pre-modern era, as well as with the similarities related to pre-Christian and Christian symbolism and major crops in this part of Europe. The apple, wheat and grape vine were frequently cited in the folklore of other European cultures, however, comparative studies are limited (Iliev 1892, Georgiev 1976, Kolosova 2005, Seskauskaite & Gliwa 2010, Herrero & Cardaño 2015, Vukmanović 2016, Samardžija 2017). In such sense we could recognize these crops as cultural keystone species, according to the concept of Garibaldi & Turner (2004), of European, however, historical importance. The apple along with fifteen other wild and cultivated Rosaceae species appear in Bulgarian folk songs

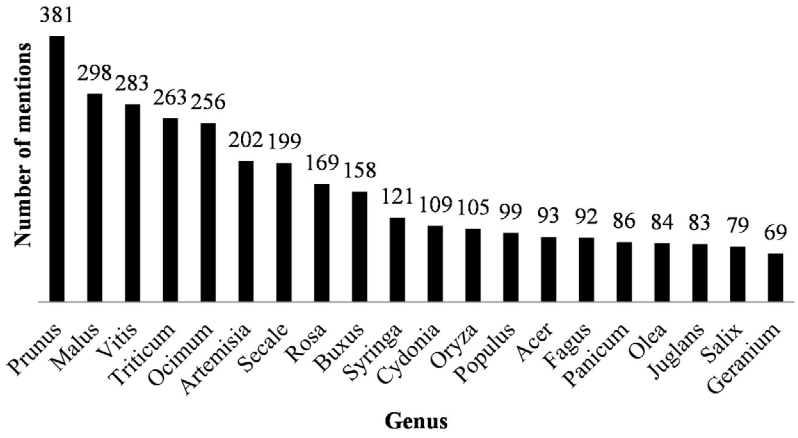

Figure 2. The 20 most prevalent plant genera in Bulgarian folk songs.

in variety of meanings and functions and is involved in a broad range of (still) popular social and cultural contexts in Bulgaria (Georgieva 1993, Baeva 2012). However, only essential-oil bearing *Rosa damascena* Mill. is viewed as hallmark plant of Bulgaria due to the influencial role of the country in rose oil production worldwide in the last two centuries (Widrlechner 1981, Kovacheva *et al.* 2010). Multi-purpose and modern applications of the "Bulgarian rose" and high manual work input related to its cultivation were also found to contribute to the process of its heritization (Loulanski & Loulanski 2014). Latter is not valid for *Triticum aestivum*, recently produced industrially in highly mechanized manner. Interestingly, when lyrics of the 100 nation-wide favorite Bulgarian folk songs are considered (Bulgarian National radio 2015) the apple still holds the first place of the most frequently mentioned plant species followed by the sweet cherry (data not shown). Hence, a careful collation of ethnographic and recent anthropological sources dealing with nature perception (incl. the animal world, landscapes) is needed before putting certain plant species in the centre point for any industrialized society, if practical at all.

Clearly socio-economic factors played important role in selection of plants cited in Bulgarian folk songs but positive and inspiring emotions were contributing to the "cultural filter" that delineated their appraisal. Allusions to the symbolic role of the grape vine as a spiritual mediator, due to its climbing habit, appear as often as references on the purely utilitarian importance of grape vine as a crop, details of its cultivation and processing practices, including the tools and vessels employed. The frequent reference to vineyards (242) and to wine and spirits production and consumption (1,171) also points to the spread and significance of this crop among Bulgarians, which still permeates local traditions nowadays (Rashkova 2013, Vukov 2013). In contrast, indications for the substantial role of Bulgaria in rice production in Southeastern Europe from 15th till 20th century were not found in the studied songs. The severe infectious diseases outbreaks (mainly malaria) and poor working environment related to rice cultivation were brought as explanation why rice, as a crop, remained unreflected in the Bulgarian culture (Schoeller 2020).

The introduction of American crops was also involved in most positive fashion. While plant-based food was described sparsingly and rooted to the pre-Columbian plant diversity, known to Bulgarians, neophytes like corn, peppers as well as some ornamentals (*Tagetes* sp., *Dahlia* sp.) were presented as symbolic plants in religious-themed and marital songs. *Capsicum annuum*, utilized widely even nowadays in various Bulgarian rituals, was most frequently mentioned (Georgieva 1993). Typically red colored *C. annuum* fruits were cited in wedding ritual songs. However, we also found *C. annuum* mentioned as red pepper powder in lyrics describing a practice of its forging with grinded red tiles. The later was related to a curious belief about how forging this precious spice is calling down plague (Georgieva 1993). Yellow-colored ornamentals and corn brought from the Americas were found to share sun-related symbolisim ascribed to archeophytes like *Triticum* sp. and *Calendula officinalis*. Especially, yellow-orange *Tagetes* sp. flowers were highly valued in some Bulgarian ritual practices as they symbolize human with blond/ginger hair or with hat. In contrast to American traditions that associate marigolds with death (Neher 1968) in Bulgarian

folk songs marigolds express the lively, youthful energy of a child or young woman.

The very accurate plant representation and considerable richness of wild and cultivated taxa found in Bulgarian folk song infers their potential for development of educational and inspirational materials focused on nature and sustainability. The number of taxa we recorded in Bulgarian folk songs (146) was nearly twice the number of taxa previously registered in the Bulgarian folklore (including songs, fairy tales, legends and sayings) (Iliev 1892, 1893, 1919). Hence, it is probable that other Bulgarian folklore forms may contain undocumented TEK that has been overlooked by anthropological/ethnographical studies. The plant references in the currently studied Bulgarian folk songs were about three times more than those reported by Herrero & Cardaño (2015) from a territory similar in size in South Europe (Castilla y León, Spain), implying a stronger sensitivity and affiliation of Bulgarians to nature also known as biophilia (Wilson 1984). Similar pervasive connection with nature was usually reported for ethnic groups outside Europe or was relyed through non-poetic folklore forms (Balehegn 2016, Molnár 2017). Strong involvement with nature and especialy plants presented in Bulgarian folk songs showed that Bulgarians perceived their natural environment vividly and in great detail. Thus, current failiures in effective implementation of nature protection legislation in the country should be sought more in political decisions and other factors rather in misperception of Bulgarians about ecosystems (Gocheva *et al.* 2019).

Bulgarian folk songs are frequently performed on various occasions, such as concerts and festivals held locally and abroad. They are presented also by foreigners, thus gaining wider publicity over a range of media outlets. Hence, performance frequencies of folk songs rich in nature related information, like Bulgarian, would be prospective indicator for assesment of cultural ecosystem services simiraly to crowdsoursed imagery (Luck *et al.* 2009, Gliozzo *et al.* 2016, Oteros-Rozas *et al.* 2018). Yet, further testing of the relevance of such approach is needed. Detailed interpretation (textual/contextual) of their lyrics would assist the transfer of TEK preserved in (Bulgarian) folklore and would enlarge its audiences. Combined with captivating vocal and instrumental performances these texts could be powerful tool to educate and inspire modern audiences.

The innate plant-human connection was represented not only in the images of certain plants but also of those of forests and mountains, which had become notorious both as landscape elements and as shelter for the hayduti (rebels) against the Ottoman rulers in the Late Middle Ages and Premodernity. Mountains and forests were frequently praised in the Revival poetry and eventually acquired a political (state) connotation. Some of these patriotic (folk) songs have retained their significance and are often performed in a romantic and/or political agenda, similarly to the pre-Liberation period at the end of the 19th century. This emotional bondage of Bulgarians with forests/mountains might explain the intensity and extent of civil protests against the destruction of forests for the construction of ski and sea resorts near to and within protected areas (incl. UNESCO Heritage site Pirin National Park – one of the mountains most often extolled in folk songs relevant to plant/nature habitats), which had triggered notable grassroots environmental initiatives like forthenature.org. The organised rallies pressing for environmental justice are inevitably accompanied by nature-praising (folk) songs. A famous exponent of this trend is the ballad named "Hubava si, moya goro!" (You are beautiful, my forest), a song from 1875 based on a lyrical text by the famous Bulgarian poet Lyuben Karavelov, but later on was folklorised. Nowadays, it is the anthem of Bulgarian environmentalist movements. The song compares the freshness of the forest with man's youth and exhibits a degree of love, respect and veneration for the forest, similar to those expressed in the Bulgarian folk songs analysed in this paper. It culminates in

'*Whoever casts a look upon you, lives in sorrow ever-after,*
Craving in vain to breathe his last breath under your shadows.
And as for the one called to abandon you,
He won't be able to forget you for the rest of his life.'

(authors' free translation from Bulgarian).

The powerful stewardship ethics encompassed in this song resonates with the philosophy of many environmental justice movements worldwide and the related protest songs that indigenous peoples use to voice their protests against environmental desecration on their territories (Ramnarine 2009, Lin 2011, Baranovitch 2015). In their despair and pain, caused by the destruction of their beloved lands, environmental protesters search for strength and support in the roots of their musical heritage which speaks not only about the beauty of the land, but also about place-based and culturally-relevant meanings of environmental issues.

In conclusion assessment of TEK in folk songs, tales, legends, etc. and comparative intercultural studies are needed not only to preserve ethnobotanical data. Further documentation and digitalization of folklore would allow

future exploration and comparative studies would contribute to elaboration of new options to transmmit valuable knowledge locally and globally in the frame of the growing cultural homogenization. Bulgarian folk songs presented wide range of nature-related information that reflected profound connection between plants and humans. Thus, further explorations are needed to rectify reliable and quantifiable data from previously documented poetic folklore so to be used for assessment of cultural significance of species, landscapes and ecosystems.

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Supplementary material

Supplementary material S1, examples of Bulgarian folk songs presenting various plant taxa. Plant common names in bold font. Supplemental data for this article can be accessed here: https://doi.org/10.17129/botsci.2672

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Appendix 1. Plant taxa mentioned in Bulgarian folk songs.

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Aceraceae	*Acer sp.*	Maple	w	i	1	1		1	3	5	12	70	93
Adoxaceae	*Viburnum opulus* L.	Guelder rose	w	i	2								2
Adoxaceae	*Sambucus ebulus* L.	European elder	w	i							2	10	12
Amaranthaceae	*Galanthus* sp.	Snowdrop	c/w	i								2	2
Amaranthaceae	*Celosia argentea* L.	Plumed cockscomb	c	a	4				2	1	7	1	15
Amaryllidaceae	*Allium* sp.	Allium	c/w	i			1			1	2		4
Amaryllidaceae	*Allium sativum* L.	Garlic	c	a					1				1
Amaryllidaceae	*Allium cepa* L.	Onion	c	a	1								1
Apiaceae	*Conium maculatum* L.	Hemlock	w	i				1				1	2
Apocynaceae	*Vinca* sp.	Periwinkle	c/w	i							1	2	3
Aquifoliaceae	*Ilex aquifolium* L.	Common holly	w	i							1		1
Araliaceae	*Hedera helix* L.	Common ivy	w	i	1					2	5	18	26
Asparagaceae	*Hyacinthus orientalis* L.	Common hyacinth	c	a	3							12	15
Asteraceae	*Zinnia elegans* L.	Common zinnia	c	a	1								1
Asteraceae	*Tussilago farfara* L.	Coltsfoot	w	i						1			1
Asteraceae	*Tanacetum vulgare* L.	Common tansy	w	i	1				2	5	1	1	10
Asteraceae	*Tanacetum balsamita* L.	Costmary	c	a						1	2		3
Asteraceae	*Tagetes* sp.	Marigold	c	n		1				1			2
Asteraceae	*Helichrysum arenarium* (L.) Moench	Dwarf everlast	w	i							1		1
Asteraceae	*Dahlia* sp.	Dahlia	c	n					1				1
Asteraceae	*Cirsium arvense* (L.) Scop.	Creeping thistle	w	i							1		1
Asteraceae	*Chrysanthemum indicum* L.	Indian chrysanthemum	c	a					1				1
Asteraceae	*Calendula officinalis* L.	Common marigold	c	a					1		3	1	5
Asteraceae	*Artemisia* sp.	Mugwort	w	i	2		1		1	1	4	189	198

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Asteraceae	*Artemisia campestris* L.	Field mugwort	w	i					1			2	3
Asteraceae	*Artemisia alba* Turra	White mugwort	w	i							1		1
Betulaceae	*Corylus avellana* L.	Common hazel	w	i	1					1	1	34	37
Betulaceae	*Carpinus* sp.	Hornbeam	w	i		1						1	2
Betulaceae	*Betula pendula* Roth	Silver birch	w	i								2	2
Betulaceae	*Alnus glutinosa* (L.) Gaertn.	Common alder	w	i					1	2	2	1	6
Boraginaceae	*Symphytum officinale* L.	Common comfrey	w	i	1								1
Buxaceae	*Buxus sempervirens* L.	Common box/ boxwood	c	a	1	2	1		2	3	11	138	158
Cannabaceae	*Cannabis sativa* L.	Hemp	c	a			1				2	4	7
Caryophyllaceae	*Dianthus* sp.	Carnation	c	i/a				1				12	13
Caryophyllaceae	*Dianthus caryophyllus* L.	Carnation	c	a	2			1		1	2		6
Cornaceae	*Cornus mas* L.	European cornel	w	i	3			1	2		3	40	49
Cucurbitaceae	*Cucurbita* sp.	Pumpkin	c	a							1		1
Cucurbitaceae	*Citrullus lanatus* (Thunb.) Matsum. & Nakai	Watermelon	c	a	1								1
Dipsacaceae	*Dipsacus laciniatus* L.	Cutleaf teasel	w	i						1			1
Ericaceae	*Erica arborea* L.	Tree heather	w	i					1				1
Fabaceae	*Vicia faba* L.	Faba bean	c	a					1				1
Fabaceae	*Trifolium* sp.	Clover	w	i	1		1		7	1	3	31	44
Fabaceae	*Trifolium pratense* L.	Red clover	w	i						1			1
Fabaceae	*Spartium scoparium/ junceum* L./L.	Common broom/ Spanish broom	w	i					1			1	2
Fabaceae	*Robinia pseudoacacia* L.	Black locust	w	n						2		1	3
Fabaceae	*Phaseolus vulgaris* L.	Common bean	c	n					1				1
Fabaceae	*Melilotus* sp.	Melilot	w	i						6			6
Fabaceae	*Melilotus officinalis* (L.) Pall.	Yellow sweet clover	w	i						2		2	4
Fabaceae	*Melilotus albus* Medik.	Honey clover	w	i						1			1
Fabaceae	*Lens culinaris* Medik.	Lentil	c	a	1						2		3

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Fabaceae	*Lathyrus tuberosus/vernus* L./(L.) Bernh.	Tuberous pea/ spring vetchling	w	i							1		1
Fabaceae	*Lathyrus sylvestris* L.	Narrow-leaved everlasting-pea	w	i						1			1
Fabaceae	*Cicer arietinum* L.	Chickpea	c	a	1					1			2
Fagaceae	*Quercus* sp.	Oak	w	i	3					2	2	7	14
Fagaceae	*Quercus petraea* (Matt.) Liebl.	Sessile oak	w	i							1		1
Fagaceae	*Quercus cerris* L.	Turkey oak	w	i					1				1
Fagaceae	*Fagus sylvatica* L.	European beech	w	i	3	3		2		2	1	81	92
Gentianaceae	*Gentiana* sp.	Gentian	w	i	1					3		5	9
Gentianaceae	*Gentiana pneumonanthe* L.	Marsh gentian	w	i				1		4		1	6
Gentianaceae	*Gentiana lutea* L.	Great yellow gentian	w	i						1			1
Geraniaceae	*Geranium macrorrhizum* L.	Bigroot geranium	c/w	i					1	6	9	53	69
Iridaceae	*Iris* sp.	Iris	c/w	i	1				1	1	4		7
Iridaceae	*Iris* × *germanica* L.	German iris	c	a	1						2	12	15
Iridaceae	*Crocus* sp.	Saffron	w	i	1						1	1	3
Juglandaceae	*Juglans regia* L.	Common walnut	c	i	4	1		1	8	2	5	62	83
Lamiaceae	*Thymus* sp.	Thyme	w	i							1		1
Lamiaceae	*Satureja* sp.	Savory	w	i						1		2	3
Lamiaceae	*Satureja hortensis* L.	Winter savory	c	a							1		1
Lamiaceae	*Ocimum basilicum* L.	Sweet basil	c	a	14	1	1	3	9	7	36	185	256
Lamiaceae	*Melissa officinalis* L.	Lemon balm	w	i						1			1
Lauraceae	*Laurus nobilis* L.	Bay tree	c	i	1	2		1	2	1		1	8
Liliaceae	*Tulipa* sp.	Tulip	c/w	i/a	3	1					1	15	20
Liliaceae	*Ruscus aculeatus* L.	Butcher's-broom	w	i						1			1
Liliaceae	*Lilium candidum* L.	Madonna lily	c	a					1			2	3
Linaceae	*Linum usitatissimum* L.	Common flax	c	a					2		2		4
Lythraceae	*Punica granatum* L.	Pomegranate	c	a				1		1	1		3

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Malvaceae	*Gossypium* sp.	Cotton	c	a	2				1				3
Melanthiaceae	*Veratrum* sp.	False hellebore	w	i							1		1
Moraceae	*Morus* sp.	Mulberry	c	a						1		21	22
Moraceae	*Morus alba* L.	White mulberry	c	a					1				1
Moraceae	*Ficus carica* L.	Common fig	c/w	i				1					1
Oleaceae	*Syringa vulgaris* L.	Common lilac	c/w	i	6				1	1	5	108	121
Oleaceae	*Olea europaea* L.	Olive	c	i	1	1				1	1	80	84
Oleaceae	*Fraxinus ornus* L.	Manna ash	w	i	1								1
Oleaceae	*Fraxinus excelsior* L.	Common ash	w	i							2		2
Paeoniaceae	*Paeonia* sp.	Peony	c/w	i/a					2			15	17
Paeoniaceae	*Paeonia peregrina* Mill.	Balkan peony	w	i	2				1				3
Papaveraceae	*Papaver* sp.	Poppy	w	i							1		1
Papaveraceae	*Papaver rhoeas* L.	Common poppy	w	i					1				1
Pedaliaceae	*Sesamum indicum* L.	Sesame	c	a				1					1
Pinaceae	*Pinus* sp.	Pine	w	i	3				1	6	4		14
Pinaceae	*Abies alba* Mill.	European silver fir	w	i	4	3			1	7	10		25
Piperaceae	*Piper nigrum* L.	Black pepper	ip		1			1					2
Platanaceae	*Platanus orientalis* L.	Old World sycamore	w	i					1			1	2
Poaceae	*Zea mays* L.	Corn	c	n		1		1	2		1	11	16
Poaceae	*Triticum* sp.	Wheat	c	a	6	9	4	8	23	11	31	171	263
Poaceae	*Stipa* sp.	Feather grass	w	i							1	4	5
Poaceae	*Secale cereale* L.	Rye	c	a	1		1				4	193	199
Poaceae	*Panicum miliaceum* L.	Common millet	c	a	5			3	7	2	7	62	86
Poaceae	*Oryza sativa* L.	Rice	c	a	3	4		3		3	1	91	105
Poaceae	*Hordeum vulgare* L.	Barley	c	a	2				3			50	55
Poaceae	*Avena sativa* L.	Oat	c	i						1	2	25	28
Polygonaceae	*Rumex acetosa* L.	Common sorrel	w	i							1		1

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Polygonaceae	*Polygonum aviculare* L.	Common knotgrass	w	i					1				1
Primulaceae	*Primula* sp.	Primrose	w	i	1					1		16	18
Ranunculaceae	*Trollius europaeus* L.	Globeflower	w	i	1								1
Ranunculaceae	*Anemone sylvestris* L.	Snowdrop anemone	w	i	1								1
Rhamnaceae	*Paliurus spina-cristi* Mill.	Jerusalem thorn	w	i								1	1
Rosaceae	*Rubus idaeus* L.	Raspberry	c/w	i				1			1	37	39
Rosaceae	*Rubus caesius* L.	European dewberry	w	i	2						2	15	19
Rosaceae	*Rosa* sp.	Rose	c/w	i	11	4		1	4	3	7	135	165
Rosaceae	*Rosa canina* L.	Dog rose	w	i					1	1		1	3
Rosaceae	*Rosa* × *damascena* f. *trigintipetala* (Dieck) R.Keller	Damask rose	c	a	1								1
Rosaceae	*Pyrus* sp.	Pear	w	i				1		1	1		3
Rosaceae	*Pyrus communis* L.	European pear	c/w	i	4				3		1	53	61
Rosaceae	*Prunus spinosa L.*	Blackthorn	w	i						1	1	4	6
Rosaceae	*Prunus dulcis* (Mill.) D. A. Webb	Almond	c	a					1		1	3	5
Rosaceae	*Prunus domestica* L.	Plum	c	a						1	2		3
Rosaceae	*Prunus cerasus* L.	Sour cherry	c	a	2				2		1	150	155
Rosaceae	*Prunus avium* (L.) L.	Sweet cherry	c/w	i	5	1		1	2	2	6	194	211
Rosaceae	*Prunus armeniaca* L.	Apricot	c	a	1								1
Rosaceae	*Malus sylvestris* (L.) Mill.	European crab apple	w	i					2		1		3
Rosaceae	*Malus domestica* Borkh.	Apple	c	a	13	3	2	1	2	5	9	260	295
Rosaceae	*Fragaria* sp.	Strawberry	c/w	i	1			1				1	3
Rosaceae	*Cydonia oblonga* Mill.	Quince	c	a					2	2	8	97	109
Rosaceae	*Crataegus monogyna* Jacq.	Common hawthorn	w	i	1				1		1	8	11
Rubiaceae	*Rubia tinctorum* L.	Common madder	w	i	1								1
Rubiaceae	*Galium verum* L.	Lady's bedstraw	w	i					1				1

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family livelihood	Haydushki (rebel)	Heroic	Historical	Labour	Mythic	Ritual	Msc.	
Rubiaceae	*Coffea arabica* L.	Arabian coffee	ip		1								1
Rutaceae	*Dictamnus albus* L.	Burning bush	w	i	1						1	1	3
Rutaceae	*Citrus sinensis* (L.) Osbeck	Orange	ip		1						1	1	3
Rutaceae	*Citrus limon* (L.) Osbeck	Lemon	c	a	1							2	3
Salicaceae	*Salix* sp.	Willow	w	i	2			1		2	2	71	78
Salicaceae	*Salix alba* L.	White willow	w	i					1				1
Salicaceae	*Populus tremula* L.	Common aspen	w	i	1					1	4	43	49
Salicaceae	*Populus* sp.	Poplar	w	i	5					1	2	42	50
Scrophulariaceae	*Verbascum phlomoides* L.	Orange mullein	w	i							1		1
Solanaceae	*Solanum melongena* L.	Eggplant	c	a								1	1
Solanaceae	*Solanum lycopersicum* L.	Tomato	c	n								1	1
Solanaceae	*Capsicum annum* L.	Chilli/pepper	c	n							1	8	9
Tropaeolaceae	*Tropaeolum majus* L.	Garden nasturtium	c	i						1		6	7
Urticaceae	*Urtica dioica* L.	Stinging nettle	w	i	1				1			8	10
Violaceae	*Viola* sp.	Violet	w	i	1				1	1	2	7	12
Vitaceae	*Vitis vinifera* cv. Karagevrek	Grapevine cv. Karagevrek	c	i							2		2
Vitaceae	*Vitis vinifera* cv. Kadan parmak	Grapevine cv. Kadan parmak	c	i							2		2
Vitaceae	*Vitis vinifera* L.	Grapevine	c/w	i	4		1		3	10	13	248	279
NOID	NOID	Breshnel	w								1		1
NOID	NOID	Gergevo tsvete	w								1		1
NOID	NOID	Gorotsvet	w						1	1		1	3
NOID	NOID	Keferichno darvo					1						1
NOID	NOID	Kifire			1								1
NOID	NOID	Kuma	w							1			1
NOID	NOID	Ovtcharska perenuga	w									1	1
NOID	NOID	Gorchiv lapad	w							1			1

Family	Taxon	Common name	Setting	Origin	Song type								Total
					Family liveli-hood	Haydu-shki (rebel)	Heroic	Histo-rical	Labour	Mythic	Ritual	Msc.	
NOID	NOID	Ruzha	c/w		3	1			1	1		3	9
NOID	NOID	Ruzha zhulta	c/w								1		1
NOID	NOID	Sifa	c		1							1	2
NOID	NOID	Smilna kitka	w				1						1
NOID	NOID	Sminchec	w		1								1
NOID	NOID	Sminova kitka	w								1		1
NOID	NOID	Vidrovo durvo			1								1
				Grand total	167	40	16	39	129	144	287	3,255	4,077

Setting: in cultivation/crop (c); wild (w); imported food product (ip)

Origin: indigenous species (i); archaeophyte (a); neophyte (n)