Ethnobotanical knowledge on edible plants used in *zelnik* pastries from Haskovo province (Southeast Bulgaria)

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Abstract. Wild edible greens constitute a valuable part of the "wild food" – an ecosystem service traditionally used worldwide. Their use as vegetable filling of pastries is one of the popular and diverse food traditions in the Balkans. Specificities of the Bulgarian *zelnik* (traditional vegetable phyllo pastry type) from Haskovo province were studied, so as to document the variety of plant taxa used in its preparation and the related traditional ecological knowledge preserved in the local communities. Twenty-four food plants (14 wild or semi-cultivated and 10 cultivated) were recorded as *zelnik* fillings. Most varied wild mixtures were reported from the Ivaylovgrad Municipality by descendants of the Anatolian Bulgarians. Their tradition for *zelnik* preparations turned out rather different from those of other ethno-confessional groups. Fast depopulation of the region and application of this knowledge only for private family use could explain the limited popularity of wider edible greens consumption among Bulgarians. Urgent documentation of the traditional ecological knowledge across Bulgaria was considered necessary, not only for the purpose of preservation of this knowledge, but also for future valorisation.

Key words: edible greens, ecosystem services, bioculture, comfort food

Introduction

Wild edible greens are a valuable source of nutrients. Traditionally, they are used in pastries, soups, salads, snacks, etc. in the cuisine of many South European and Mediterranean countries (Trichopoulou & al. 2000, Pieroni & al. 2005, Leonti & al. 2006, Pardo-de-Santayana & al. 2007, Tardío 2010, Menendez-Baceta & al. 2012, Łuczaj & al. 2012, Łuczaj & al. 2013a, Nedelcheva 2013, Pieroni & Quave 2014, Pieroni & al. 2015, Simkova & Polesny 2015, Pieroni & al. 2017, Geraci & al 2018). As part of the "wild food", usage of these taxa is considered an ecosystem service, along with wild berries, fruits, nuts, mushrooms, and game (Maes & al. 2013, Schulp & al. 2014). According to studies conducted in the last 20 years, European traditional knowledge has been overlooked and gradually disappearing, including knowledge related to identification and use of edible greens. Hence, its urgent documentation and preservation is recommend (Manios & al., 2006, Dogan 2012, D'Antuono, 2013, Pieroni & Sõukand 2017).

The varied food heritage in the Balkan countries stems from a long and closely interconnected history of the region and a very active resource and experience exchange between the different ethnic and cultural groups. It is hardly possible to draw a line between the specific national cuisines with so many border shifts in the past. The related mass migrations also contributed to the back-and-forth transfer of knowledge on plant

resources between the Mediterranean and the more temperate climatic zone of the region. Abundant assorted knowledge on the wild flora and mycota has been reported for various communities in Albania (Pieroni 2017), Bosnia (Redžić 2006), Bulgaria (Nedelcheva 2013, Ivanova & al. 2018), Croatia (Łuczaj 2013c, Łuczaj & Dolina 2014), Macedonia (Rexhepi & al. 2013), and Romania (Pieroni & al. 2015).

Pastries are one of the popular and varied food products in the Balkans. The so-called *banitsa* is the traditional phyllo pastry type prepared in Bulgaria. It can have various fillings, including plant ingredients other than cereals in the dough and/or different type of seasoning added before and after baking (Markova 2011). In many places these pastries are called *zelnik* from *zelen* or *zele* (respectively *green* and *cabbage* in Bulgarian), or have a name derived from the main plant in the filling, like *luchnik* from *luk* (*Allium cepa*, Georgiev & al. 1983) and *shtirnik* from *shtir* (*Amaranthus retroflexus*, Nedelcheva 2013). Folk songs documented in Bulgarian territories at the end of the 19th century (South and Southwest Bulgaria) show *zelnik* as a special and festive pastry prepared with plants gathered "in the gardens" (Shapkarev 1891–1894).

Ethnographical literature is quite limited about the variety of wild edible greens used by Bulgarians. Vakarelski (1977) and subsequently Georgiev & al. (1983) reported a very limited variety of wild edible greens, mainly for Northwest Bulgaria (i.e. several *Chenopodiaceae* and *Rumex* taxa and *Urtica dioica)*. On the other hand, Markova (2011) reviewed about 20 taxa of edible greens prepared in different typical ways mostly for the cuisine of Bulgarians in the poor mountain regions.

Kitanov (1953) was a pioneer in ethnobotanical studies on *divo zele* (wild greens) used for *zelnik* preparation in Southeast and Southwest Bulgaria. The author collected very concise data on 10 species, of which only four are common for both regions, namely *Convolvulus arvensis, Papaver rhoeas, P. dubium* and *Fallopia convolvulus* (Kitanov, 1953). Summarizing the ethnobotanical data from the late 19th and until the mid-20th century on wild edible plants in Bulgaria, Nedelcheva (2013) reported 17 taxa for pie preparation, mainly from *Amaranthaceae*, and a few species from *Polygonaceae*, *Campanulaceae*, etc. Further on, Dogan & Nedelcheva (2015) recorded only three taxa of edible greens (*Rumex acetosella*, *R. patientia* and *Urtica dioica*) sold in the Bulgarian markets in the Bulgaria-Turkey border regions. These differences could indicate a very rapid loss of knowledge or other non-assessed aspects of the consumption of wild edible greens in Bulgaria. Similar tendencies were reported from other parts of Europe, but without specific data on Bulgaria (Łuczaj 2010, Łuczaj & al. 2010).

The current paper presents ethnobotanical data on *zelnik* preparation and gathering of *divo zele* in Haskovo province, Southeast Bulgaria. We have attempted to assess the current state of traditional ecological knowledge (TEK) on edible plants used in pastries and its significance for the local communities.

Material and methods

Study area

The study area included 13 settlements in Haskovo province, which borders both Turkey and Greece. (Table 1).

The territory of the province is 5 543 km², represented by low mountains (the eastern part of the Rhodope Mts and Mt Sakar) and lowlands (the valleys of the three largest Bulgarian rivers: Maritsa, Tundzha and Arda). The altitudes ranges from 50 m to 859.3 m a.s.l. The climate is continental, with strong Mediterranean influence due to the short distance to the Aegean Sea, which presupposes high plant diversity, including early-spring flora.

In the past (at the turn of the 19th century), continuous war conflicts provoked migration and

Table 1. Provenance of the participants in the field study

Municipality	Settlements	Coordinates
Haskovo	Haskovo*	41.9344° N, 25.5554° E
Haskovo	Nova Nadezhda	42.0167° N, 25.7215° E
Ivaylovgrad	Belopoltsi	41.5221° N, 25.8063° E
Ivaylovgrad	Dolno Lukovo	41.3735° N, 26.0759° E
Ivaylovgrad	Huhla	41.5661° N, 26.0986° E
Ivaylovgrad	Ivaylovgrad*	41.5267° N, 26.1243° E
Ivaylovgrad	Mandritsa	41.3918° N, 26.1331° E
Ivaylovgrad	Oreshino	41.4569° N, 26.0913° E
Ivaylovgrad	Plevun	43.4170° N, 24.6067° E
Ivaylovgrad	Sviratchi	41.4787° N, 26.1158° E
Lyubimets	Lyubimets*	41.8474° N, 26.0855° E
Madzharovo	Dolni Glavanak	41.6836° N, 25.8237° E
Svilengrad	Svilengrad*	41.7655° N, 26.2019° E

*** Urban settlement.**

exchange of population between the three countries that resulted in major reshaping of the local communities. In the last 40 years, the province has lost about 100 thousand of its inhabitants, largely due to internal migration and emigration to Turkey, Greece, West Europe, and North America (Vasileva 1992, Rangelova & Vladimirova 2004, Markova 2010, Mladenov & Ilieva 2012). Presently, the region hosts a variety of ethno-confessional groups, who self-identify themselves as Orthodox Christian Bulgarians, including the local population of descendants of Anatolian Bulgarians (known under the endonym *Maloazianci*). The latter used to live in Asia Minor for about a century, during the period of the Ottoman Empire. The so-called Thracian Bulgarians immigrated after the Balkan Wars to the present-day Bulgaria (1913–1914) from Turkey and Greece. There are also Muslim Bulgarians, Turks, Roma, Albanians, etc., who reside in mostly monoethnic villages and different urban areas around the major city of Haskovo and the 10 municipal centres.

Field study

A field study was carried out in two consecutive years (2017–2018). Respondents representing 41 households were randomly selected, or recommended by local key informants. A total of 33 female and eight male respondents aged between 27 and 84 years (72% over 65 years) were polled by semi-structured interviews. More respondents were questioned about the edible greens during visits to farmer markets in the municipal centres and at the Culinary Heritage of Trakia Festival (est. 2012) organized by Ivaylovgrad Municipality that brings together local producers and folk artists from about 10 settlements (local and foreign) in the border area.

Participants were asked to share their knowledge on pastry preparation and plant-based pastry fillings, experiences and memories connected to wild greens in the local cuisine and overall usage and perception of wild and cultivated edible plants. The authors have focused on naturally occurring plants in/or near rural and urban yards/gardens, so as to assess the most accessible resources used by the local people. The ethical guidelines prescribed by the International Society of Ethnobiology were followed (ISE 2008). Image data was collected and/or reference specimens were deposited in the Herbarium of the Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences (SOM). Identification of collected plants followed the *Guide to Plants in Bulgaria* (Delipavlov & Cheshmedzhiev 2003).

Results

The recorded food plants used for *zelnik* fillings belonged to 15 families (Table 2). *Amaranthaceae* and *Brassicaceae* were the families represented by the greatest number (4) of the used taxa. One or two taxa presented the other families. Plants used in the preparation of *zelnik* could be classified into two groups: wild/semi-cultivated with 14 taxa and cultivated vegetables/grains with 10 taxa. Wild taxa were mostly ruderals that occur in the home gardens, abandoned fields and pastures, on river/road banks. In the past, local people used to gather *divo zele* for personal use very early in the spring, before the other garden and crop vegetables were ready for harvest. For convenience, senior residents prefer to tend small "wild" patches in their gardens. These wild taxa are usually allowed to grow around the vegetable and flower-beds and are distinguished from the weeds as "useful". The aboveground part of the wild plants went entirely for *zelnik,* but larger flower buds were unwanted. Thus, the use of the wild taxa was annual and gathering destroyed them.

The *zelnik* fillings prepared from the wild taxa were most varied in Ivaylovgrad Municipality and mentioned by the descendants of the Anatolian Bulgarians. They referred to *zele* and *zelnik* only when talking about phyllo pastry prepared with mixtures of wild taxa or solely with *Lactuca sativa*. Wild edible greens were gathered only in an early vegetation stage that ensures a desired taste and tenderness. The taste was not associated with any specific taxa, and memories of adventurous plucking of various plants in search of non-bitter *zele* were shared by the older participants in Ivaylovgrad region. These plants included also *Ranunculus arvensis*, an otherwise poisonous species that proved suitable for *zelnik* preparation until the start of its flowering. Modern convenience for freezing of *divo zele* mixtures for off-season use was demonstrated by one of the respondents.

A certain variety of *L. sativa*, Cherna Gyumyurdzhinska Marulya (old Bulgarian variety), was credited as most suitable for zelnik because of its coarse texture and consistency similar to the *divo zele*. Furthermore,

Table 2. Wild and cultivated taxa used as *zelnik* fillings in Haskovo province, Southeast Bulgaria

Taxa	Family	Local name	Wild/ Cultivated	Used parts	Number of settlements	Ethno-confessional group
Allium ampeloprasum L.	*Amaryllidaceae*	Praz	Cultivated	L, PS	1	B
Allium cepa L.	*Amaryllidaceae*	Luk	Cultivated	L, PS	1	AB
Anchusa sp.	*Boraginaceae*	Volovyak*	Wild	L	2	AB
Atriplex hortensis L.	*Amaranthaceae*	Loboda	Semi-cultivated	L	1	B, AB
Beta vulgaris var. *cicla* L.	*Amaranthaceae*	Mangold	Cultivated	L	1	AB
Brassica oleracea L. var. *capitata*	*Brassicaceae*	Glavesto zele	Cultivated	L	3	B, T
Calepina irregularis (Asso) Thell.	*Brassicaceae*	-	Wild	WA	1	AB
Capsella bursa-pastoris (L.) Medik.	*Brassicaceae*	Nekûtche	Wild	WA	2	AB
Cardamine hirsuta L.	*Brassicaceae*	Konsko rebro*	Wild	WA	2	AB
Chenopodium album L.	*Amaranthaceae*	Vûrshivitsa*	Wild	WA	2	B
Lactuca sativa L.	*Asteraceae*	Marulya	Cultivated	L	5	A, AB
Mentha spicata L.	*Lamiaceae*	Gyozum	Cultivated	WA	1	AB
Oryza sativa L.	*Poaceae*	Oriz	Cultivated	S	2	B, AB
Papaver dubium L.	*Papaveraceae*	Kadûnka*	Wild	WA	2	AB
Papaver rhoeas L.	*Papaveraceae*	Kadûnka*	Wild	WA	2	AB
Portulaca oleracea L.	*Portulacaceae*	Tutchenitsa	Wild	WA	3	AB
Ranunculus arvensis L.	*Ranunculaceae*	Pateshko kratche	Wild	WA	1	AB
Rumex patientia L.	*Polygonaceae*	Lapad*	Wild, Semi-cultivated	L	3	B
Solanum tuberosum L.	*Solanaceae*	Kartof	Cultivated	T	3	B
Spinacia oleracea L.	*Amaranthaceae*	Spanak	Cultivated	WA	6	A, AB, T
Stellaria media (L.) Vill.	*Caryophyllaceae*	Zhabni cherva	Wild	WA	1	AB
Triticum aestivum L.	*Poaceae*	Bulgur	Cultivated	S	2	AB
Urtica dioica L.	*Urticaceae*	Kopriva*	Wild, Semi-cultivated	L	4	B, AB

L – leaves; PS – pseudostem; S – seeds; T – tubers; WA – whole aboveground part of the plants
A – Albanians, B – Orthodox Christian Bulgarians, AB – Anatolian Bulgarians, T–Turks
*** Earlier reported taxa used in *zelnik* fillings**

L. sativa was the only *zele* for the *zelnik* of the Anatolian Bulgarians available in the local markets. It is sold both for preparation of *zelnik* and for salads, in contrast to *divo zele* that is used only for *zelnik*. Contrary to *divo zele*, *L. sativa* could not be frozen and its later foreign varieties were reported as too tender for *zelnik* preparation. The latter motivated amateur seed production of coarse-leaf *L. sativa* varieties in some remote villages. *Zelnik* with *L. sativa* appeared to be most popular among the descendants of the Anatolian Bulgarians, including the younger generation. These communities were neglecting *Atriplex hortensis* and *Rumex patientia* as food plants, regardless of the fact that both species grow within the settlements limits and are popular across Bulgaria not only for pastry fillings but also for different main dishes.

Wild species seemed to be collected only for personal use, not offered in the markets and their use was regarded as "old-fashioned" by some Anatolian Bulgarians, but this did not reflect negatively on *zelnik* as comfort food. *Chenopodium album,* consumed by non-Anatolian Bulgarians, was mentioned as a hunger food option in war time and its consumption presently was not favoured with the explanation that "there is no need to eat it now".

Semi-cultivated species (*Atriplex hortensis, Rumex patientia*) tend to claim places in the gardens usually close to the yard limits. *Urtica dioica* was considered either wild or semi-cultivated, as some of the respondents tend it in small patches, similarly to *Rumex patientia*. All these plants were reported each as plant ingredients of the pastry filling. Some taxa were mentioned in *banitsa*-making and could be regarded as Eastern fasting food, or could be combined with cheeses, eggs or potatoes. In such cases, *zelnik* was used only as denomination of *banitsa,* with fermented *Brassica oleracea* var. *capitata* leaves. It is prepared as Christmas fasting food and part of Christmas

Eve festive food in Haskovo and Svilengrad municipalities by the Orthodox Christian Bulgarians, as well as by Turks in Ivaylovgrad Municipality. Other types of *banitsa* with different fillings had no specific denominations. A festive *zelnik* with fermented cabbage is made by a more sophisticated technique of phyllo rolling and hand-stretching of the pastry sheets. This type of *zelnik* was not recorded for the Anatolian Bulgarians, who appeared surprised by the idea of such a product, in spite of the shared living territory. *Zelnik* of the Anatolian Bulgarians could also be regarded as fasting food, without cheese and/or eggs and prepared in the simplest possible way – as a layered type pastry.

Another ethnic discrepancy included *Portulaca oleraceae* used in pastries by the Anatolian Bulgarians, while the Turks used to prepare only salads from it. Furthermore, the Anatolian Bulgarians reported using the young shoots of *Pistacia terebinthus* in salads.

Other cultivated edible greens (*Beta vulgaris* var. *cicla* and *Spinacia oleracea*) were used either in mixtures, or alone, while the *Allium* species (*A. ampeloprasum* and *A. cepa*) were only combined with wild taxa in the *zelnik* of the Anatolian Bulgarians.

Rice and grits (bulgur) were occasionally added to the green fillings as voluminizing additives and to absorb some liquid in the filling.

Discussion

Out of the10 taxa of wild greens mentioned by the participants as pastry filling, only half were published earlier for Bulgaria (Kitanov, 1953, Nedelcheva 2013). All of them, except *Chenopodium album,* were reported by Anatolian Bulgarians. Possibly, their knowledge had "travelled" and was upgraded during their migrations to and from Asia Minor in the 18–20th century. There were partial similarities with the species composition (i.e. *Anchusa* sp., *Mentha* sp., *Papaver* sp. *Stellaria media*, *Urtica* sp.) of the wild edible greens traditionally used in pastries in the same part of the Aegean Turkey (for review see Dogan 2012). The Slavic origin of most local names implied that this TEK was not borrowed under Greek and/or Turkish influence and demonstrated further its resilience and authenticity. Similar evidence was reported for another Slavic diaspora in Southeast Italy residing there since the 14th century (di Tizio & al. 2012). Lack of recognition of the popular semi-cultivated species from the genera *Rumex* and *Atriplex,* known as pastry fillings across Bulgaria, also distinguished clearly the *zelnik* tradition of the Anatolian Bulgarians. This further contributes to the many other biocultural specificities of the Anatolian Bulgarians that differentiate them as a group (Nikolchovska 1993). On a larger scale, the *Allium* species were not mentioned by any of the participants as a single-ingredient filling for *banitsa* or other pastries, although they were described as typical for Bulgarians in North Bulgaria (Georgiev & al. 1983).

Setting off specific patches in the gardens for wild and semi-cultivated species showed that wild edible greens are valued. Thus, such availability of *zele* was regarded as an important change in the transition to limited number of garden-kept species and/or "sheltering" of wild plant diversity in home gardens. Preparation of *zelnik* with lettuce (*Lactuca sativa*) could be mentioned as a sign of such transition, as its cultivation and market availability makes it more convenient for use, especially in urban settlements.

Wild taxa listed in the present study were not object of marketing nor of another type of supply, which confirms the scarcity of fresh wild edible greens in the Bulgarian markets, as compared to Turkish markets across the border region (Dogan & Nedelcheva (2015). In this sense, traditional information on the use of wild edibles has been preserved in "micro pockets" of knowledge (sensu Barthel & al. 2014), though unavailable for wider public. Hence, Bulgarian markets could not be used as a reliable reference for consumption of edible greens, in contrast to other studies that rely on this approach for probing local TEK (Dogan 2013, Łuczaj & al. 2013c).

During the 1944–1989 period, all Bulgarian food operators in retail trade and catering were trained and controlled in preparation of a specific range of dishes and products, according to the *General Recipe Book for Public Catering* published by the Bulgarian Ministry of Interior Trade and Services (1981). Thereafter, gradual disappearance of artisan food has contributed to fading out of traditional knowledge on wild edible plants in Bulgaria. Similar tendencies were reported for other European countries, for instance, Belarus and Poland, but it is difficult to claim that Bulgarians were or have become "herbophobes" like the other countries (Łuczaj 2010, Łuczaj & al. 2013b). On the other hand, in comparison to some Mediterranean countries, the use of wild greens for

pastries in Bulgaria seems quite limited and largely unknown (Leonti & al. 2006, Ghirardini & al. 2007, Tardío 2010, Dogan 2012, Luczaj & al. 2012, Dolina & Łuczaj 2014). Within the limits of the present study area, TEK related to wild vegetables rather leaned to the Mediterranean "herbophilia". However, major interventions in the rural livelihoods during the 1944–1989 period have contributed to the current eating habits and food market behaviour of Bulgarians. Discouragement of private entrepreneurship before 1989 and shyness of offering food on the farmers' markets thereafter have cast some light on the closed private consumption of collected and/or in-home produced plant food (Rose & Tikhomirov 1993, Kaneff 2002). Still, broadening the research to western and northern parts of the country would allow creation of an overall state pattern.

The future of knowledge on collection and usage of wild plant resources seems vague, owing to the deficiency of knowledge transfer between the generations and migration to larger cities and abroad. Nevertheless, different modes of promotion by cultural festivals, fairs, etc. and encouragement of entrepreneurship in food production, marketing and/or tourism based on such specific traditions could prove beneficial for the local economy and overall positive perception of the region.

Conclusions

The recorded data on wild edible greens (*divo zele*) used locally in Southeast Bulgaria for preparation of traditional pastries have shown that the associated knowledge is quite limited to the local communities and even to certain people. Traditions preserved by the Anatolian Bulgarians have shown a greater variety of utilized wild species that should be studied further. Restriction of knowledge only for private family use could explain the limited popularity of the *divo zele* diversity, leading to the overall assumptions that Bulgarians refrain from consumption of wild edible greens and focus more on medicinal plants, wild berries and mushrooms collection. This would require further urgent research and documentation of TEK in Bulgaria, not only for its preservation, but also for future valorisation of the production of specialty food, development of the cultural capacity of the regions and creation of touristic attractions.

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