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## ARE BORDERS MORE IMPORTANT THAN GEOGRAPHICAL DISTANCE? THE WILD FOOD ETHNOBOTANY OF THE BOYKOS AND ITS OVERLAP WITH THAT OF THE BUKOVINIAN HUTSULS IN WESTERN UKRAINE

Andrea Pieroni<sup>1</sup> and Renata Sõukand<sup>2\*</sup>

*Few ethnobiological studies have thus far addressed the effect of diverse social, economic, and political variables that may influence the dynamics of folk plant knowledge. The aim of this work was to better understand the legacy of plant use in the post-Soviet context—particularly in Western Ukraine—by documenting the use of wild plants for food among Boykos living in Transcarpathia and comparing the findings with the results of a previous study conducted among their close neighbors, Bukovinian Hutsuls, living on the other side of the mountains. We documented the use of 35 taxa belonging to 20 families, mostly represented by Rosaceae species. The most popular taxa were *Vaccinium* sp. and *Carum carvi*, while the most popular emic food domain was represented by recreational teas, i.e., teas that are not drunk with the aim to obtain a precise therapeutic activity. The main finding, however, was that the difference between the wild food ethnobotany of the Boykos and Hutsuls was far more restricted than the ethnobotanical disparity that was recorded between Bukovinian Hutsuls living on the two sides of the state border (created seven decades ago) between Ukraine and Romania. This outcome may have important implications in ethnobiology, confirming the possible “homogenizing” effect played by the Communist period in the former Soviet Union, possibly due to Soviet agrarian reforms, obligations to work in collective farms (kolkhozes), and the considerable lessening of serendipitous contact with the natural environment.*

**Keywords:** *ethnobotany, wild food plants, Transcarpathia, Ukraine, Boykos*

### Introduction

Few ethnobiological studies have thus far addressed the effect of diverse social, economic, and political variables that may shape folk plant knowledge systems, such as ethnicity (Pieroni and Quave 2005), religion (Bellia and Pieroni 2015; Pieroni et al. 2011), geo-politics (i.e., changes to state borders; Pieroni et al. 2017; Sõukand and Pieroni 2016), age (Bortolotto et al. 2015; Gurven et al. 2006), gender (Guimbo et al. 2011), and socio-economic conditions (Stryamets et al. 2015).

The wild food domain is of particular interest in ethnobiology, as it is often perceived as a security reserve for human survival during times of famine, underpins a fairly homogenous distribution of folk knowledge (especially in comparison to other plant use domains, such as the medicinal one [Sõukand et al. 2017]), and is more evenly shared between different ethnic groups inhabiting the

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same ecological niche (Quave and Pieroni 2015). Moreover, this is the domain in which folk knowledge is mainly acquired in childhood and “new” uses are rather uncommon and easier to detect and separate from the rest of the individual’s practical knowledge (Kalle and Sõukand 2016). Therefore, the comparison of wild plant uses specifically concerning the food domain can represent the ideal arena for assessing the influence of factors potentially affecting local ecological knowledge (LEK).

In a recent ethnobotanical study conducted among the Bukovinian Hutsuls of Ukraine and Romania, we found that state borders established 75 years earlier proved to be effective separators of wild-food-related LEK into divergent trajectories (Sõukand and Pieroni 2016). In the current study, we wanted to assess if this border effect is more or less important than geographical distance and ethnic differences within the same cultural area (mountainous Western Ukraine). Our intention was to select a study site within a bird’s eye distance of 100 km from the previous study site (Western Bukovina)—where people with a different ethnic background live—to get some geographical distance, but retain more or less similar flora. Boyko villages provide a good case study, as they are historically perceived as different sub-ethnic groups of Ukrainians (see Pavliuc et al. 1989; Rabi-Karpynska 1989). The contacts between Boyko and Bukovinian Hutsul villages were, and continue to be, rather limited due to the difficulties in crossing mountain passes (about 200 km or seven hours by car across the Carpathian Mountains).

Moreover, the ethnobotany of wild food plants in Ukraine is still very poorly studied, being limited to only two fieldwork-based publications (Sõukand and Pieroni 2016; Styramets et al. 2015) and two studies based on archival sources (Kujawska et al. 2015; Łuczaj 2008; both reflecting remotely collected questionnaires from the nineteenth century prior to WWII).

Given the fact that ethnicity, and in particular language, are normally considered crucial variables affecting LEK (Maffi 2005; Pieroni and Quave 2005), our starting hypothesis was that the difference in folk plant uses between two mountain ethnic groups living within the same state borders (in our case Boykos and Bukovinian Hutsuls living in the Carpathians within the borders of present-day Ukraine/former Soviet Union) should be greater than the corresponding difference between communities belonging to the same ethnic group and living on different sides of state borders (in our case Carpathian Hutsuls living on the Ukrainian and Romanian sides of Western Bukovina) due to the combination of a greater geographical distance and different ethnic background.

Therefore, the primary aim of this work was to understand the legacy of plant-use in the post-Soviet context and particularly in mountainous Western Ukraine. The specific objectives of the study were: a) to document the use of wild plants for food among Boykos living in the Carpathians of Western Ukraine (the region is also called Transcarpathia); and b) to compare these data with the results obtained in our previous study (Sõukand and Pieroni 2016) conducted among their close neighbors, Hutsuls, living on the other side of the Ukrainian Carpathians.

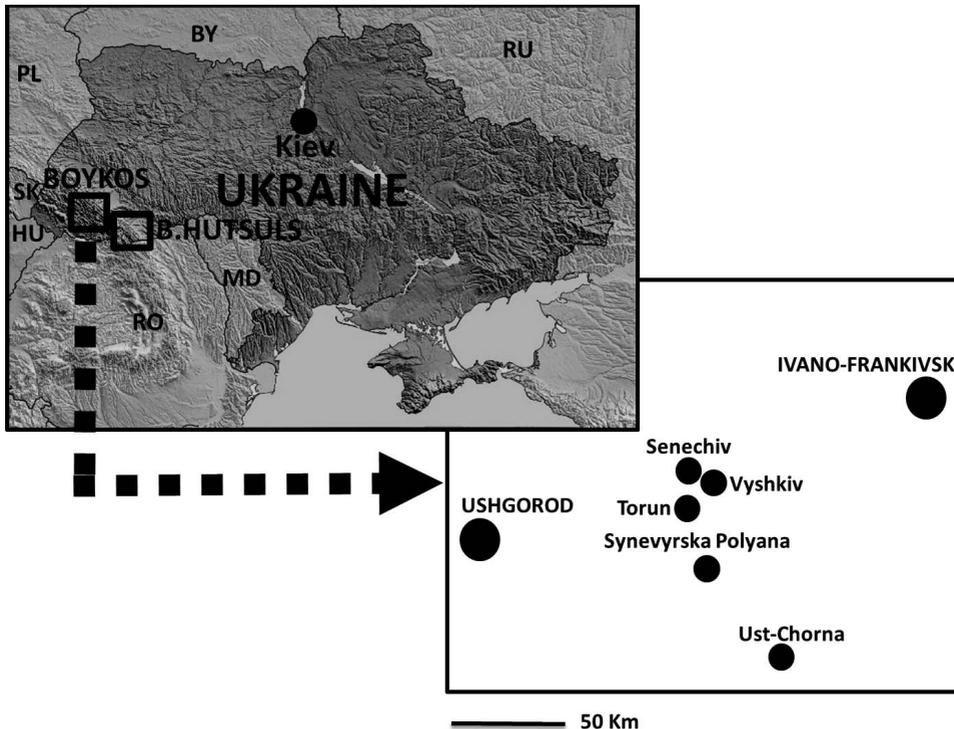


Figure 1. Boyko and Hutsul study areas in Western Ukraine and visited villages.

## Methods

### The Study Area

Figure 1 shows the study area in the Ukrainian Carpathians (Transcarpathia) and the five visited villages: Vyshkiv (803 masl), Senechiv (846 masl), Torun (607 masl), Synevyrska Polyana (790 masl), and Ust-Chorna (536 masl). Each of the five villages has a permanent population between 500 and 1,000 inhabitants who mainly define themselves as mountain Ukrainians, but historically have been defined by the endonym of Boykos (Rabii-Karpynska 1989). They primarily belong to the Ukrainian Greek Catholic Church, although some are Orthodox Christians. They speak Rusyn (also called Carpatho-Rusyn or Ruthenian), an Eastern Slavic language, which, although it boasts approximately 600,000 speakers in Western Ukraine, is treated by Ukrainian linguists as a dialect of Ukrainian (Lewis et al. 2016).

### Field Study

The field study was conducted in the late spring of 2016; the sampling was conducted by identifying study participants mainly among mid-aged and elderly individuals who retain some folk knowledge concerning plants. Semi-structured interviews were conducted with 22 local residents (7 men and 15 women, with a

mean age of 66.5 years), born between 1928 and 1989. One of the study participants was a descendant of an ancient German speaking diaspora living in the village of Ust-Chorna (in German: Königsfeld), who moved into the area in 1815 from Salzkammergut (Austria). Study participants were asked about traditional plant uses in the food and herbal domains. Specifically, local name(s) of each reported taxon, the plant part(s) used, and in-depth details about their food manipulation/preparation, as well as possible medicinal perceptions, were recorded. Study participants were asked to report current uses considered “traditional” (i.e., considered part of their perceived cultural heritage), as well as uses they could recall from their childhood, which may no longer be exploited. The main focus of the study was on wild plants, but unusual uses of cultivated plants were also recorded when mentioned by interviewees. Interviews were conducted by Sõukand in the Ukrainian language and by Pieroni in the German language (for the Austrian diaspora), as all participants were fluent in both Rusyn and standard Ukrainian.

Informed consent from all participants was verbally obtained prior to conducting interviews and ethical guidelines prescribed by the International Society of Ethnobiology (ISE 2008) were followed. During the interviews, informants were always asked to show the reported plants (fresh, dried, or preserved). For historical uses, or in other cases when plants were no longer available, the taxon was identified by local name, accompanied by detailed morphological descriptions of the plant and its habitat. Voucher specimens were collected during previous fieldwork conducted in the neighboring Bukovina area (Sõukand and Pieroni 2016). Taxonomic identification followed *Flora Europaea* (Tutin et al. 1964), while botanical nomenclature and family assignments followed The Plant List database (The Plant List 2013) and the Angiosperm Phylogeny Group IV (Stevens 2015), respectively. Local plant names were transcribed following the rules of standard Ukrainian and using the Cyrillic alphabet.

We compared the results to those obtained in our previous study (Sõukand and Pieroni 2016), in which we considered Bukovinian Hutsuls living on either side of the border: Hutsuls presently living in Ukraine (hereafter UA Hutsuls) and Hutsuls currently living in Romania (hereafter RO Hutsuls). Bukovina is located in the northern part of the central eastern Carpathians and has been divided between Ukraine and Romania since the 1940s. Hutsuls, or Ukrainian highlanders, are an ethno-cultural group living in Bukovina, which neighbors the region traditionally inhabited by the Boykos. The elevation level of the villages on the Hutsul side of the mountains was slightly higher (850–1162 masl) than those of the Boykos and included three villages in Ukraine (Sarata, Niznii Yolovets, and Verkhonii Yalovets) and seven villages in Romania (Iedu, Bobeica, Izvoarele Sucevei, Brodina, Brodina de Jos, and Argel) (Figure 1).

Our previous study (Sõukand and Pieroni 2016), with which the present results were compared, included 23 people from the Ukrainian side and 19 people from the Romanian side of Bukovina. In that study interviews were conducted in late Spring 2015, one year before the interviews conducted with the Boykos. The age of the interviewees ranged from 25 to 80 years, with a mean and median age of 55. The gender distribution was very similar to the current study:

9 men and 14 women on the Ukrainian side and 8 men and 11 women on the Romanian side of the border. See Sõukand and Pieroni (2016) for detailed information.

### Data Analysis

The collected ethnobotanical information was entered into an Excel database. Emic categories were followed and information was structured in detailed use-reports (DUR), reflecting the use in an emic food category (i.e., snack, beverage, condiment, soup, jam, recreational tea [i.e., teas that are not drunk with the aim to obtain a precise therapeutic activity] [sensu Sõukand et al. 2013], etc.) of a plant part (e.g., fruits, leaves, aerial parts, flowers, etc.) processed and prepared in a certain way (e.g., fresh or dried plant, special preparation [boiled, fried], etc.) and multiplied by the number of people mentioning such a use. For comparative purposes, we defined use instances (UI) which, in the context of this study, signify the detailed use-report, regardless of the number of people mentioning such a detailed use.

Current food uses of taxa recorded among the Boykos and Hutsuls living on the Ukrainian side of Bukovina (Sõukand and Pieroni 2016) were compared. Jaccard Similarity Indices (JI) were calculated for used taxa and UI following the methodology of González-Tejero et al. (2008):  $JI = (C / (A + B - C)) \times 100$ , where A is the number of taxa/UI in sample A, B is the number of taxa/UI in sample B, and C is the number of taxa/UI common to A and B.

### Results and Discussion

In the wild food domain, Boykos used 35 taxa (including four cultivated taxa with uncommon uses) from 20 plant families (Table 1), of which the most well-represented were Rosaceae (eight taxa), followed by Asteraceae, Lamiaceae, and Ericaceae (three taxa each). Only three taxa showed a wide variety of food uses: raspberry (*Rubus idaeus*; mainly fruits), and caraway (*Carum carvi*), which were both used in seven different emic food categories, followed by another forest fruit, bilberry (*Vaccinium myrtillus*), used in six different emic food categories. All remaining taxa used in more than two different emic food domains were fruit-bearing plants (lingonberry [*Vaccinium vitis-idaea*], *Vitis* spp., *Rosa* spp., *Rubus fruticosus*, and *Fragaria vesca*).

The most popular plant use, shared by more than 40% of the informants, was jam made from the fruits of *Vaccinium myrtillus*. Two other food uses—sorrel (*Rumex acetosa*) and nettle (*Urtica dioica*), both for preparing green *borscht*—were mentioned by more than nine study participants, but only a few people still utilized them in the kitchen. Seven more uses were claimed by more than four people: making jam from raspberries (*Rubus idaeus*) and lingonberries (*Vaccinium vitis-idaea*) and syrup from the fruits of the snowball tree (*Viburnum opulus*), snacking on wild strawberries *Fragaria vesca*, using caraway (*Carum carvi*) for

Table 1. Folk names and uses of wild food plants recorded among the Boykos in the study area (the table also includes a few cultivated food plants used in unusual ways).

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Armoracia rusticana</i> ; Brassicaceae	W	хрін, крех <sup>+</sup>	leaves, roots	fresh	seasoning for fermented cucumbers, tomatoes, sauerkraut added to red beet salad	**	*	Root is also topically applied on aching tooth
<i>Avena sativa</i> ; Poaceae	C	овес	grains	milled into flour	baked bread	(*)		Used only during times of famine
<i>Beta vulgaris</i> ; Amaranthaceae	C	буряк полосатий	roots	chopped and fermented	food	(*)		Striped beet, used in remote village in the past
<i>Betula pendula</i> ; Betulaceae	W	береза	sap	fresh fermented	drink	*	*	
			catkins	milled into flour	drink additive to bread	*	*	
<i>Carum carvi</i> ; Apiaceae	W	кмин, кмин, ким <sup>+</sup>	fruits	tea fresh or dried, food seasoning	recreational tea seasoning for lacto-fermented cucumbers and sauerkraut	(*)	*	Used during famine by Austrian diaspora
					rye bread taste additive to curds	*	[*]	Perceived as good for health, most popular tea in the past, used also to alleviate stomach ache
			aerial parts	fresh	recreational tea	*		
					condiment for soup	*		

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Chenopodium album</i> ; Amaranthaceae	W	лобода	aerial parts, leaves	fresh fried with onions	boiled and eaten in soups eaten as such	(**) (*)	**	Used by Boykos only in times of famine, now difficult to find and nobody uses it; Hutsuls boiled and ate it with sour cream.
<i>Crataegus</i> spp.; Rosaceae	W	глід	fruits	dried	recreational tea	*		
<i>Epilobium angustifolium</i> ; Onagraceae /BUK001/	W	іван-чай	aerial parts	fresh, dried	recreational tea	*	*	
<i>Fragaria vesca</i> ; Rosaceae /BUK023/	W	(лісова) суниця	fruits	fresh	as snacks recreational tea jam	** * *	**/[**]	Hutsuls also used aerial parts for recreational tea (or drunk to treat heart problems or as a panacea) and fruits as a dessert with cream (also applied to treat eczema).
<i>Hypericum perforatum</i> ; Hypericaceae /BUK040/	W	зверобій, звіробій	aerial parts	tea	recreational tea	*	**	Also used by Boykos to alleviate stomach ache. Hutsuls used massively to alleviate stomach ache, diarrhea and women's diseases, also inflorescences macerated in oil to treat (burn) wounds. Also used as medicine (tooth ache, stomach ache, sore throat) and for washing hair
<i>Matricaria chamomilla</i> ; Asteraceae /BUK039/	W	Ромашка, Камиллеан <sup>+</sup>	flowers	tea	recreational tea	*	*/[**]	Also used as medicine (tooth ache, stomach ache, sore throat) and for washing hair
<i>Mentha</i> spp.; Lamiaceae	W	мята	aerial parts	tea	recreational tea	*	**	Hutsuls used as a sedative, against heart diseases and low blood pressure

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutuls/ [RO Hutuls]	Comments
<i>Origanum vulgare</i> ; Lamiaceae	W	польовий чебрец	aerial parts	dried	seasoning for soups	*	*/[*]	Also used by Hutuls as a recreational tea and food seasoning, but also to treat cold-related and women's diseases and alleviate stomach ache
<i>Picea abies</i> ; Pinaceae /BUK010/	W	елка	young cones	fresh	recreational tea	*	*	Sugar or alcoholic maceration is also used to treat cough by Boykos. Hutuls: syrup for seasoning of desserts, to alleviate stomach ache, and to treat heart problems; and the topical application of resin for rheumatic pains. Also used to alleviate stomach ache as by Hutuls
<i>Potentilla erecta</i> ; Rosaceae /BUK033/	W	калган	roots	infused in alcohol	drink	*	*	
<i>Prunus cerasus</i> ; Rosaceae	C	вишня	leaves	fresh	added lacto-fermented cucumbers	*	*	
<i>Quercus robur</i> ; Fagaceae (BUK002/)	W, C	дуб	leaves	fresh	added to lacto-fermented cucumbers	*	*	Hutuls used tea of bark to alleviate toothache
<i>Ribes nigrum</i> ; Grossulariaceae	W	чорна смородина	fruits leaves	fresh	jam added to lacto-fermented cucumbers	*	**	Hutuls used leaves as a recreational tea and fresh fruits against high blood pressure
<i>Rosa</i> spp.; Rosaceae /BUK004/	W, C	шипшина, дика роза	fruits flower petals	tea fermented macerated in vodka dried	recreational tea wine alcoholic drink recreational tea	*	*	Hutuls used tea of fruits against heart problems, tea of roots to treat diarrhea and steam of decoction inhaled to cure cough

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Rubus fruticosus</i> ; Rosaceae	W	ожина	fruits	fermented fresh macerated in alcohol	wine jam strong alcoholic drink	* * *		Hutsuls only used tea from twigs for healing wounds and tea with fruits or jam for treating cancer
<i>Rubus idaeus</i> ; Rosaceae /BUK022/	W	малина	leaves leaves fruits	fresh tea fresh	recreational tea eaten jam juice compote syrup wine	* * ** * * *	* ***/[**] ***/[**] * **	Hutsuls made recreational tea with twigs
<i>Rumex acetosa</i> /BUK042/ and/or <i>Rumex thyrsiflorus</i> /BUK027/ ; Polygonaceae	W	квасок, щавель, щава	leaves	fresh, preserved, frozen	soup (borsh)	**(*)	***/[**]	Some people admitted making <i>Rumex</i> soup only in times of need. No one made salad like among the Hutsuls
<i>Sambucus nigra</i> ; Adoxaceae	W	бузина	flowers	fresh, dried	recreational tea syrup	*		Hutsuls used only to treat cough and in ethnoveterinary applications
<i>Sorbus aucuparia</i> ; Rosaceae	W	ржбина	fruits	boiled with sugar dried	recreational tea	*		Hutsuls used for making <i>kvas</i> , using it and the tea to reduce blood pressure and to alleviate stomach ache
<i>Stellaria media</i> ; Caryophyllaceae	W	мокрец	aerial parts	fresh	eaten	(*)		Used during extreme war-time famine in distant villages

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Taraxacum officinale</i> ; Asteraceae	W	кульбаба	flowers	soaked in water, flowers filtered out and remaining water boiled with sugar	syrup (honey)	*	***/[*]	Hutsuls also used fresh flowers and leaves in salad and fresh flowers as snacks
<i>Thymus serpyllium</i> ; <b>Lamiaceae</b> /BUK036/	W	чебрець, чебрек	leaves aerial parts	fresh dried fresh	soup recreational tea seasoning for sauerkraut	(*) *	[*] [*]	Used by the Austrian diaspora in the past UA Hutsuls used for seasoning soup and tea to treat cold-related diseases and stomach ache Hutsuls used tea to treat a variety of cold-related symptoms, as a sedative, to alleviate stomach ache and constipation
<i>Tilia cordata</i> and <i>Tilia platyphyllos</i> ; Malvaceae	W	липа	inflorescences	dried	recreational tea	*	**/[*]	Hutsuls used tea to treat a variety of cold-related symptoms, as a sedative, to alleviate stomach ache and constipation
<i>Tussilago farfara</i> ; <b>Asteraceae</b> /BUK021/	W	мати і матеча, подібій, подібел	leaves	fresh	soup	(*)		only during famine times; Hutsuls used scaled leaves for making stuffed rolls and tea from leaves and flowers to treat cough

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Urtica dioica</i> ; Urticaceae /BUK017/	W	кропева, кропива, жаліва, бременсел <sup>+</sup>	leaves, young aerial parts	fresh, dried fresh, scaled	soup salad with sour cream	*(**) *	**/[***] [*]	The majority of food uses by Boykos refer to the past (times of need), tea used to alleviate stomach ache, aerial parts are given to chickens in winter for better egg laying; Hutsuls continue to use it even now, also use the leaves as a recreational tea and to treat fever
<i>Vaccinium myrtillus</i> ; Ericaceae /BUK015/	W	афени, чорниця, чорника, чорні ягоди	fruits	fresh	jam snack compote wine alcoholic drink recreational tea	*** * * * *	**/[**] **/[**]	Used by Boykos as well as by Hutsuls to treat diarrhea and for blood/body cleansing; Hutsuls used taxa against a variety of ailments (eye diseases, stomach ache, diabetes)
<i>Vaccinium uliginosum</i> ; Ericaceae	W	голубічки	fruits	fresh	snack	*	*	Medicinal use by Boykos restricted to treat cough and high blood pressure, and as a diuretic,
<i>Vaccinium vitis-idaea</i> ; Ericaceae /BUK013/	W	камянки', червоні ягоди, брусника	fruits	fresh	jam juice recreational tea compote	** * * *	* * *	while Hutsuls used it to treat diabetes and heart problems as well.

Table 1. Continued.

Plant taxon; family /voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food use(s)	Used by Boykos	Use by UA Hutsuls/ [RO Hutsuls]	Comments
<i>Viburnum opulus</i> ; Adoxaceae /BUK032/	W	калина	fruits	frozen trees	syrup snack	**	**	Used to treat high blood pressure, cough and cold as by Hutsuls.
<i>Vitis vinifera</i> and <i>V. labrusca</i> L.; Vitaceae	C	виноград	fruits	fermented as cucumbers preserved in sugar brine fresh	winter preserve winter preserve wrap for meat rolls additive to lacto-fermented cucumbers	*	*	Hutsuls only made acid of grapes for treating headache.

W: wild taxa; C: cultivated taxa; folk names are reported using the rules of standard Ukrainian (Cyrillic alphabet) or standard German (°) (the latter for the folk names recorded among the Austrian diaspora living in Ust-Chorna). Frequency of citation: \* low (cited by up to 3 respondents), \*\* medium (4–8 respondents), \*\*\* high (at least 9 respondents); in brackets () are reported the frequency of citation of those plant uses that were recalled from the past. The taxa and plant uses not recorded among the Hutsuls are reported in **bold**.

making tea, and the leaves and roots of horse-radish (*Armoracia* spp.) as an additive to lacto-fermented cucumbers (*Cucumis sativus*). The aerial parts of fat-hen (*Chenopodium album*), used for preparing green *borscht*, were also mentioned by more than four people, but all of them referred to it as a famine-time use.

The most popular emic food category in which wild plants were represented was that of tea (with 19 used taxa). It was followed by the categories of “snacks” and additives to lacto-fermented cucumbers (in both cases six taxa were recorded), while the category including jams and syrups numbered five taxa and wine was made out of four taxa. Today (green) *borscht* soup is occasionally made from two taxa, with the past use of two additional taxa remaining only as memories.

### Most Uncommon Recorded Food Uses

Past food trends which exist in rare instances in modern times, and were possibly related to famine, include the lacto-fermentation of red beet (*Beta vulgaris*), using powdered birch wood (*Betula pendula*) for baking bread, adding coltsfoot leaves (*Tussilago farfara*) in soups, the addition of lacto-fermented grapes (*Vitis* spp.) or nettle leaves (*Urtica dioica*) in salads, and snacking on fresh bog bilberries (*Vaccinium uliginosum*). All of these food trends deserve thorough nutraceutical investigation, especially given the proven toxicity of coltsfoot and bog bilberries. For example, the use of coltsfoot in soups could have potentially toxic side effects (i.e., liver damage from Pyrrolizidine alkaloids). However, fresh bog bilberries are eaten and even made into jam and compote in Estonia (Kalle and Sõukand 2016) and Belarus (Sõukand et al. 2017).

The use of birch catkins as a substitute for bread flour seems to be the most recent record of such use; the records from Estonia about the remembered use of milled fresh catkins and birch sawdust in times of extreme famine date to the first half of the nineteenth century (Kalle and Sõukand 2012). The use of powdered birch wood and bark in baking bread was widely recorded in nineteenth-century Eastern Europe by the famous Italian Swiss-Polish economic botanist Adam Maurizio (1862–1942; for several years Professor at the Polytechnic University of Lviv, Ukraine) (Maurizio 1927), as well as in Northern Europe (Svanberg 2012). The lacto-fermentation of grapes and red beets represent archaic food utilizations, which confirms the immense role played by fermentation in traditional Eastern European cuisine (see also Sõukand et al. 2015). Red beets are, in fact, the main ingredient of the well-known Eastern European *borscht* soup, which, due to its name, may have originated from lacto-fermented aerial parts of cow parsnip (*Heracleum sphondylium*; which has the same name as the soup in Eastern Slavic languages [Maurizio 1927]). In this soup, parsley may have been later substituted by fermented acidic small-leaved-*Rumex* species (green *borscht*) and, probably even later, by fermented (cultivated) red beets. Nowadays, in the study area, *borscht* is never prepared by lacto-fermenting red beets, but rather by simply using fresh or stored beets.

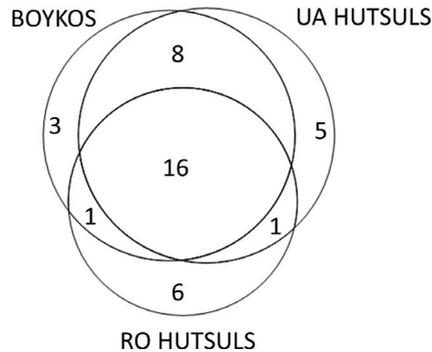


Figure 2. Comparison of the number of wild taxa quoted in the current study with those quoted in the Hutsul study (Söukand and Pieroni 2016).

### Boyko vs. Hutsul Wild Food Ethnobotany

A very similar pattern of plant use between Boykos and Ukrainian Hutsuls is indicated: the 220 DUR from Boykos equaled exactly the number of DUR from the Hutsuls' side of the mountains; there were also a comparable number of interviewees between the two groups (22 Boykos and 23 Hutsuls). The number of the currently used wild taxa was also quite similar: 28 by Boykos and 30 by Hutsuls (Figure 2). However, the number of current use instances of wild taxa differed more: Boykos had 63, while Hutsuls had 51 different use instances (Figure 3). Differences with the Romanian Hutsuls were more pronounced: the number of DUR from the Romanian side of the border was significantly lower (162), as were the number of used taxa (24) and use instances (36). Some of these differences may be due to the slightly smaller number of interviewees (19); however, proportional differences between results are greater than between the number of people interviewed.

A comparison of Jaccard Similarity Indices (Table 2) shows high diversity between the three groups, yet the indices between Boykos and Ukrainian Hutsuls

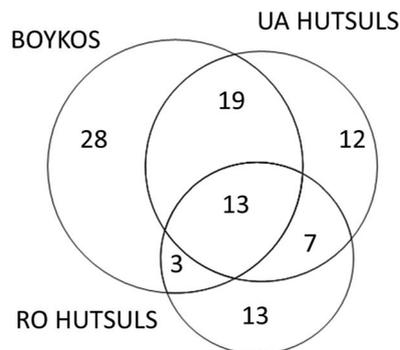


Figure 3. Comparison of use instances of the wild taxa recorded in the current study with those recorded in the Hutsul study (Söukand and Pieroni 2016).

Table 2. Jaccard Similarity Indices for the wild food ethnobotany of the considered groups.

Compared groups	$J_{I_{\text{taxa}}}$	$J_{I_{\text{UI}}}$
Boykos and UA Hutsuls	68.57	39.02
UA and RO Hutsuls	42.50	26.76
Boykos and RO Hutsuls	47.22	19.28

are remarkably higher than those obtained for the two groups of Hutsuls divided for 75 years by state borders (Söukand and Pieroni 2016) or between Boykos and Romanian Hutsuls. On the basis of these results, we can hypothesize that seven decades of separation of one ethnos (together with being exposed to different influences) changes the relatively static local knowledge on the use of plants considerably more than about a seven hour car-drive within the same country and a slightly different ethnographic history.

### Qualitative Comparison of the Folk Food Uses Recorded among Boykos and Hutsuls and Possible Reasons for the Differences

Some specific uses, not considered in the quantitative comparisons, were remembered by our elderly female informant originating from the Austrian diaspora, who was born in the region and survived times of post-war famine. She recalled the use of milled catkins of birch tree (*Betula pendula*) as an additive to bread flour and the use of the leaves of horse-radish (*Armoracia rusticana*) for making soup in times of need. In addition, she recalled eating some kind of gall/cecidia growing on plum (*Prunus domestica*) trees, calling them “vovkunyy”:

Those were plums without seeds, oblong, light green; they appeared before blooming in-between the leaves, so one could see them from afar. As kids we ate them under the trees. They were only present during this time of great hunger, 1945-1946; after that, I've never seen them again. I think that God helped us, kids, to survive. (Austrian diaspora, Ust-Chorna, May 25, 2016)

When asked if they use wild taxa now, she replied that they ate them too often during times of need and do not really want to any more.

Seven taxa were used for food by UA Hutsuls, but not by Boykos, of which six were wild: the whole plant of wild garlic (*Allium* spp.) was used for seasoning soups and fried in omelets; the aerial parts of fat hen (*Chenopodium bonus-henricus*) were boiled and eaten with sour cream; young galbula and young shoots of *Juniperus communis* were made into syrup with sugar or honey through cold maceration for dressing desserts; the leaves of *Oxalis acetosella* were snacked on; the leaves of the large plantain (*Plantago major*) were cooked and consumed with sour cream and made into tea; and the flowers of *Primula veris* were made into tea.

Among the four wild taxa not documented for UA Hutsuls, but occurring among Boykos, we found six novel folk uses: the fresh aerial parts of chickweed (*Stellaria media*) was eaten during extreme war-time famine in a remote village; the food use of bilberries (*Vaccinium uliginosum*) fruits as a snack; the roots of

*Potentilla erecta* to add flavor to home-made vodka for recreational consumption (while Hutsuls used such a beverage only for its known healing property); the fruits of *Crataegus* spp. for making tea; and the flowers of *Sambucus nigra* for preparing syrups and teas (RO Hutsuls used flowers of the latter species to prepare a carbonated, lemonade-like fermented drink and UA Hutsuls used it only to treat cough and in the ethnoveterinary domain).

In addition, we recorded four fairly uncommon food uses, including: fermenting striped beet (*Beta vulgaris*) and baking bread made from oat (*Avena sativa*) flour—these two were mentioned by our interviewees in relation to times of famine only and they were never prepared and consumed later; seasoning lacto-fermented cucumbers with sour cherry leaves (*Prunus cerasus*), which is a quite widespread plant use within the post-Soviet realm (see for example Kalle and Sõukand [2016] and Sõukand et al. [2017]); and further unusual preparations of grape leaves and fruits.

Relevant differences between the folk uses of wild plants cited by the two ethnic communities can mainly be found within the utilizations mentioned by fewer than four people. A few differences were observed at the plant part level only: for example, Hutsuls prepare a tea from the twigs of raspberry bush, whereas Boykos use only the leaves. Some taxa presented more diverse uses among Boykos, including caraway, which was only used by Hutsuls for preparing tea, while Boykos used it in a variety of ways for food seasoning and also as a tea. An opposite example is represented by dandelion (*Taraxacum officinale*), which was used by Hutsuls in salads, as a snack, and, more regularly, for making so-called “dandelion honey,” whereas only a few Boykos used it to prepare the latter and not in any other way.

Still, the majority of the differences are minor and do not really contribute to major differences in the wild food plant-centered daily cuisine. But when it comes to the need to alleviate hunger, the differences are in fact quite remarkable. Namely, two of the plants that contributed to hunger alleviation (i.e., they were used for making soups), were still in use among Hutsuls, but were mainly only remembered among Boykos. One 66-year-old woman commented:

For me nothing grows on its own, I grow everything; yes, nettle grows, but no-one uses it; fat hen is only given to piglets. (Boyko, Torun, May 28, 2016)

A younger woman (54 years old) in another village commented:

Now there has been such progress, maybe earlier our ancestors ate all kind of roots, but now, thank God, potatoes grow [and give us food].

Greens are not that important, meat is important, so the pig has to put his feet in the pot. (Boyko, Seneciv, May 27, 2016)

Even sorrel, which for both Boykos and Hutsuls seems to have been an important vegetable ingredient for soups, was used only in the past among one-third of those Boykos who claimed to use it.

The abandonment of hunger-related plants and uses among Boykos may also have been due to better access to towns and, hence, fresh greens in the winter. The researched Boyko villages have, in fact, a much better connection to cities than the studied Bukovinian Hutsul villages, which are located in remote

mountainous areas and includes Sarata, considered the most remote village in the whole of Ukraine. The remoteness might also have played its role in the degree of strictness of collectivization and the need to contribute to work in the collective farms (*kolkhozes*), which we did not encounter in such an explicit way among Hutsuls, where the collectivization process has possibly been more difficult to organize and implement.

While Hutsuls did not emphasize the constant need to work for the *kolkhoz*, and hence the lack of time for gathering of plants, several Boykos stressed that they did not have time to forage due to the hard collective work that had to be done. One 70-year-old woman said:

We were working all the time, so our food was too monotonous and we had a saying to describe the absence of diversity: manna porridge, turnip porridge; turnip porridge, manna porridge. (Boyko, Torun, May 28, 2016)

Her 27-year-old daughter shared this sentiment:

I learned mushroom foraging on my own, when I was herding cows. Parents never had time to teach me such things. (Boyko, Torun, May 28, 2016)

Yet both mother and daughter named 14 overlapping use instances of wild food plants they practice now, which is a relatively high number (with a mean of about ten use instances per person).

As in-depth historical comparison of wild food plant uses is not possible, due to very episodic reports of wild food plants in the past in the study area (Sŏukand and Pieroni 2016), comparing food plant changes, precisely and diachronically, within this part of Ukraine is unfeasible.

The domain of wild food plants was rather neglected in the popular literature during the Soviet period and might have been influenced mainly through very occasional popularization of the medicinal use of plants published during brief periods of relative freedom in the 1960s (such as Nosal and Nosal 1965). These publications could have contributed to the perception of the healthiness of some plants and also the use of tea with an underlying issue of wellbeing. Regional books, like the one covering the Hutsuls and Boykos (Boltaroviř 1980), in which descriptions of historical medicinal uses, as well as popular explanations of the context of these uses, were provided, could be published only at the very end of the Soviet era, possibly contributing to the revitalization of specific traditional ecological knowledge. There could also be a few causal influences through women's magazines and newspapers, which is most likely the main avenue for popularization of dandelion "honey"; but to evaluate their influence was far beyond the scope and framework of the current study.

A higher degree of collectivization, and thus reduced access to nature, as well as better access to alternative supplies, would suggest a lesser use of wild food plants by Boykos; however, Boykos had about 20% more use instances than Ukrainian Hutsuls, while using two taxa less. As a result, and because the majority of differences were borne by just a few people and there were some similar uses between Boykos and Romanian Hutsuls, another possible interpretation of the results remains: as in the case of Belarus, where within a very small territory (max.

10 km radius on plain land) numerous *fragmented* uses of wild plants occur (Sõukand et al. 2017), our observations in the study site may represent the remains of a former, shared, larger spectrum of wild food plants, now only vaguely remembered and thus quite divergent within a relatively short distance.

### Conclusions

In the study area of mountainous Western Ukraine, differences among diverse Ukrainian ethnic groups, who also live far from each other, seem to be less relevant than differences created by 75-year-old state borders within one single ethnic group (Bukovinian Hutsuls), who formerly lived side by side.

This finding has important implications in ethnobiology. Although our sample was not large, and we considered only folk food plant uses, our findings support a possible “homogenizing” effect played by the Communist period in the former Soviet Union, as well as other possible differences in the permanence of LEK between the territories of the former Soviet Union and Romania, possibly due to Soviet agrarian reforms, obligations to work in *kolkhozes*, and the considerable lessening of serendipitous contact with nature. During several fieldwork projects in regions once belonging to the Soviet Union, we observed pervasive “standardization” of LEK of medicinal plants, which may be hypothesized as occurring particularly between the main urban centers and the rural and mountainous peripheries. This may be explained by the diffusion of a few published works of popular literature concerning medicinal plants available during the Soviet period and the large number of publications after the fall of the “Empire” (cf. Kołodziejska-Degórska 2016). What we observed in this study concerns instead the wild food plant domain, in which the possible effect of popular printed media could not be that easily postulated. Therefore, more in-depth comparative studies involving a greater number of research sites within the Post-Soviet/Socialist areas are needed to better understand the mechanisms behind the current findings.

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