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The importance of a border: Medical, veterinary, and wild food ethnobotany of the Hutsuls living on the Romanian and Ukrainian sides of Bukovina

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ABSTRACT

Ethnopharmacological relevance: Recent studies have shown that groups sharing the same or very similar environments, but with diverse cultural backgrounds (e.g. different ethnos and/or religion) have considerably different knowledge of folk (medicinal) plant uses. Yet, it is not clear to what extent various factors (such as culture, economy, isolation, and especially social and political situations) contribute to such differences in the utilization of the same natural resources.

Aim of the study: This paper addresses the effect of border created in 1940 and subsequent separation of a single ethnic group on changes in their folk use of medicinal and wild food plants. The Hutsuls of Bukovina had been homogenous for centuries, but were separated in 1940 as a result of the formation of state borders between Romania and the former Soviet Union (now Ukraine). The aim of the study is to analyse if the belonging to this different states for 75 years have induced different changes in local plant use within communities that share a common historical legacy and environment.

Materials and methods: In depth semi-structured interviews were conducted with 42 people in May 2015. Collected data were analysed, and comparisons were made between the data gathered on the two sides of the border for different use categories: medicinal, wild food and veterinary plants, as well as other remedies. Recently collected data were also compared with historical data obtained for the region, medicinal plant folk uses in Romania and medicinal plant uses of The State Pharmacopeia of the Soviet Union.

Results: Divergences in current medicinal plant use are much greater than in the use of wild food plants. The majority of the wild food taxa, including those used for making recreational teas, are also used for medicinal purposes and hence contribute to the food-medicine continuum, representing emergency foods in the past and serving as memory markers for possible future food shortages. Compared with the historical data, considerable changes have occurred within specific medicinal applications and less in the taxa used. The influence of the Soviet State Pharmacopeia on present ethnomedicine on the Ukrainian side is minimal.

Conclusions: Hutsul herbal ethnomedicine on the Ukrainian side of the border has continued to evolve (the abandonment of some uses and the adoption of others), whereas on the Romanian side it has undergone significant erosion with a proportionally smaller adoption of new uses and the leaving behind of possibly more "traditional" uses than on the Ukrainian side. In sum, current ethnomedicinal practices of Hutsuls living on both sides of the border are more extensive than those reported in historical sources. Yet the unknown sampling method employed to collect the historical data and possible skipping of "ordinary" uses by folklorists and ethnographers does not allow for definitive conclusions to be drawn. Cross-cultural and cross-border ethnobotany represents one of the most powerful means for addressing the issue of change and variability of medicinal plant uses and heritage, and further studies in other areas of Eastern Europe and beyond need to address the trajectory proposed by the present study.

1. Introduction

Recent studies have shown that groups sharing the same or very similar environments, but with diverse cultural backgrounds

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(e.g. different ethnos and/or religion) have considerably different knowledge of folk medicinal plant uses (for the most recent examples concerning Europe see Pieroni et al. (2015), Bellia and Pieroni (2015), Quave and Pieroni (2015), Menendez-Baceta et al. (2015), Mustafa et al. (2015)). Studies conducted on the Asian side of former Soviet territories suggest that centralization of the medical system and official prohibition to practice folk medicine have caused the erosion of traditional knowledge (Mamedov et al., 2005). Kassam (2009) demonstrated significant difference in the loss of traditional ecological knowledge on the post-Soviet (Tajik) side of the Badakhshan region of the Pamir compared to the Afghan side; the region is populated by several ethnic groups that have been politically divided since the end of 19th century. Yet, it is not clear to what extent various factors (such as culture, economy, isolation, social and political situations, etc.) contribute to such differences in the utilization of the same existing natural resources.

This paper will address the effect of border creation and subsequent separation of a single ethnic group, the Hutsuls of Bukovina, on changes in the use of plants. The selected group, which had been a homogenous ethnic group for centuries, was separated in 1940 as the result of the formation of state borders. This group, therefore, provides the opportunity to establish if disparate sociocultural, economic and political conditions have induced remarkably different changes in local plant use in communities that share a historical legacy and environment, but have experienced different conditions for more than two generations.

The medical ethnobotany of Romania has been relatively well studied during the past five decades (for a review see Dragulescu (2006)) and recently the results of a number of ethnobotanical fieldwork studies among minorities in Romania have been published (Kołodziejska-Degórska, 2012; Papp et al., 2013; Pieroni et al 2012, 2014), including a very recent investigation on the use of wild edible plants and mushrooms among ethnic Ukrainians living in the Maramureş region, also inhabited by Hutsuls (Łuczaj et al., 2015).

Conversely, Ukraine is a considerably under-studied region, especially from the perspective of recent field research. Medicinal ethnography of Bukovina, however, is relatively well covered through historical sources, as there are some regional reports originating from the 19th century and later ethnomedicinal and ethnoveterinary research and analyses of archival data published in national languages, mainly Polish and Ukrainian.

However, thus far there have been only two articles published in English concerning plant use in the territory of present-day Ukraine, bordering Bukovina. One of them is a recent documentation of the current use of mushrooms, wild food and medicinal plants in Roztochya (Western Ukraine) (Stryamets et al., 2015) and the other (Kujawska et al., 2015) concerns remotely collected historical ethnographic data from the pre-WWII period covering the part of present-day Ukraine that belonged to the Polish Republic from 1818 to 1939.

Although scarce, the existing ethnographic literature concerning Bukovina allows for some diachronic comparisons regarding the use of medicinal plants. On the other hand, the well-researched legacy of Romanian ethnomedicine allows for a comparison with a neighbouring region and the possibility of identifying Romanian influences (if any) on the use of plants by Hutsuls presently living in Romania.

Within the framework of the autocratic and formalized Soviet medical system, one of the most important means of influence might have been The State Pharmacopeia of the Soviet Union/USSR (11th edition, 1990), which contains separate chapters on selected, officially accepted plants (Shikov et al., 2014). Besides the Pharmacopeia there were several other official lists (Shikov et al., 2014), and also state-wide recommendation books (for example see Hammerman et al. (1970)). During the Soviet period, the use of plants other than the officially sanctioned taxa was negatively addressed. Research on the medicinal properties of plants in Ukraine was rather intense and widespread, as was the popularization of the medicinal use of plants, especially since the end of the 1960s (Skybitska, 2014). Official popular books (meant for a wider public, but written mainly by doctors or pharmacists following strict guidelines provided by authorities) on national medicinal plants in almost every national republic and often in national languages (Kook and Vilbaste, 1962; Podymov and Suslov, 1966, to name a couple), were published during different short periods of relative freedom within the last three decades of the Soviet State. In Ukraine, the work of Nosal and Nosal (1965) was very popular and was widely sold throughout the country. Such regional books, like the one covering the Hutsuls (Boltaroviš, 1980) in which descriptions of folk uses as well as popular explanations of the context of these uses are provided, could be published only at the very end of the Soviet period. Although within the present work it is not possible to cover all possible early sources of influence, the possible effect of the Soviet Pharmacopeia should be relatively easy to track. If such an influence is present, it must be well reflected in the current use of plants on the Ukrainian side (but not on the Romanian side) of the border.

This research addresses the question as to whether there are differences between the use of plants among Hutsuls presently living in Romania and in Ukraine. If in fact there are disparities in plant use between the two groups, then what may explain these differences? Our working hypothesis is that these two groups still share a remarkable legacy in plant use, yet some differences may exist due to diverse influences of the Soviet and Romanian states, as well as to the current socio-economic situation. The results of the present study will be compared with the historical data from ethnographic sources concerning Bukovina and documented Romanian plant-use traditions. The possible influence of the Soviet Pharmacopeia on the Ukrainian side of the border will be discussed as well.

2. Methods

2.1. Ecological, geopolitical and ethnographic background

The Carpathian area is highly biodiverse with over 7500 species (including introduced species) occurring in the Carpathian Mountains and in the large lowlands extending towards the south, north and east; the vegetation of the Ukrainian Carpathians belongs to the Central European Province, being the richest in the region, and includes a number of Transylvanian and Balkan species as well as several endemic forms (Bojnanský and Fargašová, 2007). The Carpathian region occupies only about 5% of the overall territory of Ukraine, but almost 50% of all species of vascular plants are concentrated there (Kricsfalusy and Budnikov, 2007). The altitudinal zone of the studied villages (Fig. 1) is characterized by beech and spruce/pine forests. The region is also rich in mammals, including wolf, several deer species, bear and lynx.

Bukovina is a historical region in Central Europe, located in the Northern part of the Central Eastern Carpathians. From the mid-14th century the territory of Bukovina belonged to the Moldavian state, and then later, in 1774, it was occupied by the Austrian Empire, which in the mid-19th century gave it the status of a separate Austrian “crown land”. The north of this multinational province was densely inhabited by Ukrainians/Ruthenians, which were the largest (38.4%) although not the dominant ethnic group in 1910, followed by Romanians, (34.4%), Jews (12%) and Germans (9.3%); the rural populations of the first two groups were highly illiterate in 1910 (Livezeanu, 2000). After WWI control of the

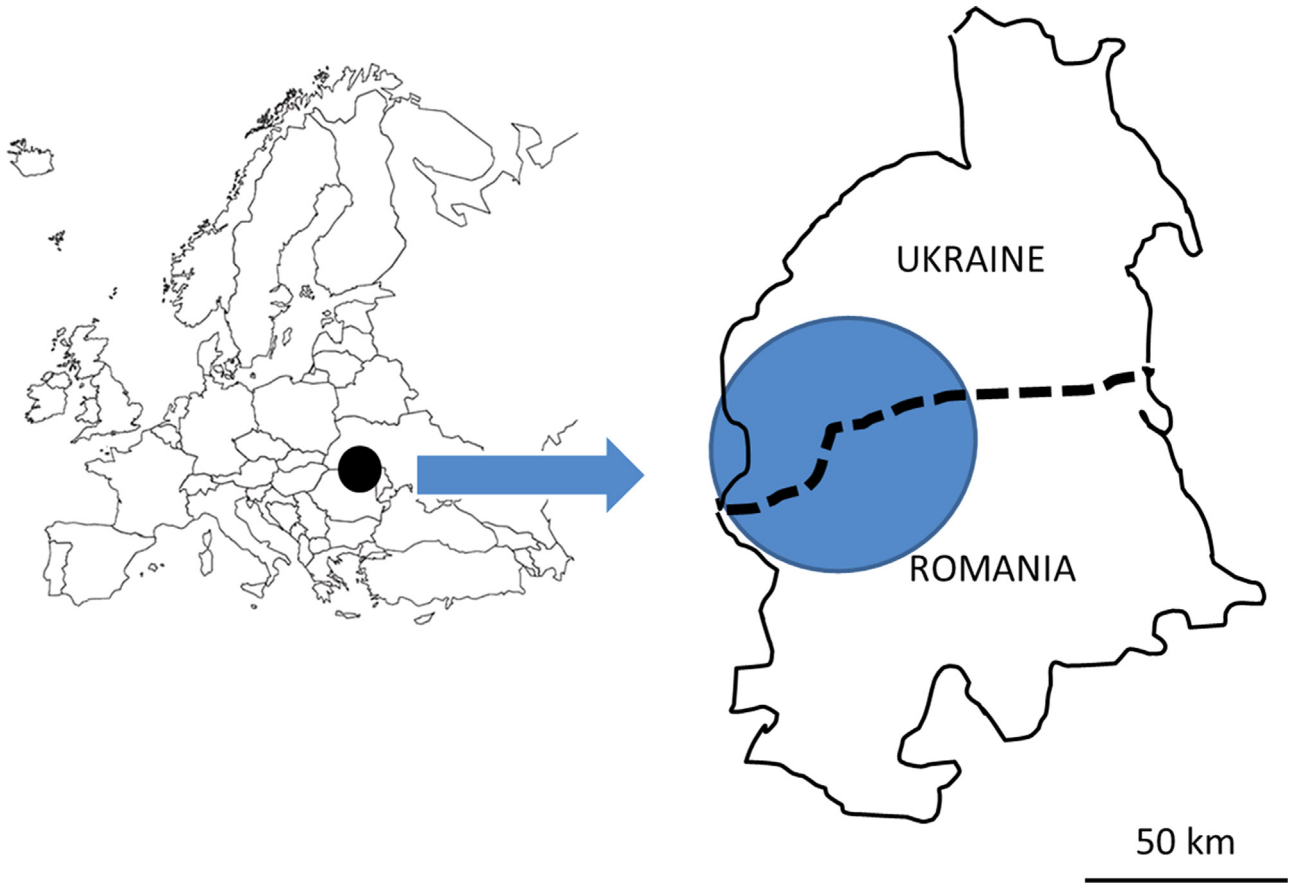

Fig. 1. The study area within Bukovina (as divided in 1940) and Europe.

territory was established by Romania, with subsequent systematic Romanianization of the region, in which schools teaching in Ukrainian were closed and substituted with a Romanian-based education system (Mihai, 2015). This might have affected the self-determination of the Ukrainians of Bukovina, as according to the 1930 Romanian census, the proportion of Romanians increased to 44.5%, whereas those reporting themselves to be Ukrainians was only 29.1%, while the percentage of Jews and Germans only decreased slightly (10.8% and 8.9% respectively); in the northern part of the region, however, Romanians made up only 32.6% of the population, with Ukrainians slightly outnumbering Romanians (Livezeanu, 2000). In 1940, the northern half of Bukovina was annexed by the Soviet Union, and at the end of WWII the border between the two parts was effectively closed. The border established at that time remains in effect even today, now representing the boundary between two independent democratic states (Ukraine and Romania). As Romania belongs to the EU and prepares to join the Schengen Area, the border now is also relatively well closed with only few passes.

The majority of inhabitants of Bukovina, who were recorded as Ukrainians in historical documents, still consider themselves Hutsuls or Ukrainian highlanders. Hutsuls are a separate ethnocultural group that for centuries inhabited the Carpathian Mountains and which are now settled mainly in Ukraine and in the northern extremity of Romania (in the areas of Bukovina and Maramureş). The origin of their ethnos and group name is highly debated (for different hypothesis see Pavliuc et al. (1989)).

2.2. Study site

Fig. 1 shows the map of the study site inhabited by Hutsuls. On both sides of the border a few villages were selected on the basis of a relatively similar elevation level (850–1162 m. a.s.l.): Sarata, Niznii Yolovets, and Verkhnii Yalovets in Ukraine; and Iedu, Bobeica, Izvoarele Sucevei, Brodina, Brodina de Jos, and Argel in Romania.

Sarata is considered the most isolated village in the Ukrainian part of the Carpathian Mountains, lacking even manageable roads. Sarata has been contracting quite drastically: in 2001 the population was registered as 93 people, whereas in spring 2015 the number of households was only eight with less than 20 inhabitants and only three of them were of local origin. Census information from 2001 indicates that 117 and 178 people lived in Niznii and Verkhnii Yalovets, respectively; however, in spring 2015 the latter had only about 45 households, with less than 100 people living there year-round. On the other side of the border, in Romania, villages in Suceava County have been more highly populated: the most densely populated has been Brodina (3200 inhabitants in 2011), followed by Argel (slightly over 1000 inhabitants) and Bobeica (appr. 700 inhabitants), Brodina de Jos (390 inhabitants) and finally Iedu with approximately 150 inhabitants.

On the Ukrainian side of the border people say they are Hutsuls or Ukrainians (which is equivalent for many of them) and that they speak Ukrainian (as the school curriculum has been taught in standardized Ukrainian since 1945). Romanian Hutsuls also regard themselves as Hutsuls, but often refer to their language as Russian (Russki), and probably perceive themselves as being part of the broader Slavic community. Children on the Romanian side are studying Ukrainian only as an optional subject, as all official schoolwork is done in Romanian. The language used by Romanian Hutsuls has been partially romanianized and this is reflected in folk plant names too, although Hutsul/Ukrainian and Romanian names were often clearly differentiated.

The region was historically considered very poor, relying mainly on products raised locally. The same tendency is still present, especially on the Ukrainian side of the border. On both sides of the border, pastoralism and home-gardening persists, and along with hunting and the gathering of wild resources (mushrooms, forest fruits, herbs), constitute the main source of subsistence for the population remaining in isolated rural areas. Due to the lack of employment in the region many young and middle-aged Hutsuls have left their villages in search of better income and were reported to be working either in towns or abroad, supporting their families left behind in the villages. However, the standard of living on the Romanian side appeared to be considerably higher, as households looked wealthier and people more positive in their words and actions as well as healthier in appearance. On the Romanian side households and landscapes have retained the traditional Hutsul exterior, quite like those in a fairy-tale, whereas the isolated villages on the Ukrainian side resemble more the typical Soviet architecture of the second part of the 20th century.

On the two sides of the border both Orthodoxy and Adventism are followed; however, on the Romanian side church and belief in the supernatural seem to play a more important role (little well-attended chapels are found here and there; church holidays are celebrated by the whole village; religion is emphasized and thus Adventists are not highly regarded by Orthodox members and vice versa; charcoal is added to water to protect against the evil eye; etc.). On the Ukrainian side religious life seems a bit half-hearted: village churches, although present, seemed abandoned and villagers confirmed that services were rare; Adventists and Orthodox Christians could marry and retain their religion in mixed marriages; moreover, when explicitly asked, Ukrainian Hutsuls replied that they do not believe in the evil eye and that it is considered only superstition.

2.3. Field study

The study took place in May 2015, during which 19 people from the Romanian side and 23 people from the Ukrainian side of Bukovina were interviewed within a two week period. People were interviewed in Ukrainian, as fist author is almost fluent in the language. In depth semi-structured interviews lasted from 0.5 to 2.5 h. The age of the interviewee ranged from 25 to 80 years, with a mean and median age of 55. All interviewees claimed they were born in the region and had lived there all their life. On the Romanian side 8 men and 11 women were interviewed, along with 9 men and 14 women on the Ukrainian side. The topic was approached through uses, not plants. Researchers were either invited into houses or, if weather permitted, interviews were conducted outside in the garden; if possible, dried plants present in the household were inspected. Furthermore, the interview was followed by a guided walk in the garden and/or the area surrounding the household during which herbarium specimens were collected. On the Romanian side two interviews were conducted in a bar (as it was more difficult to spot Ukrainian-speaking elderly within local romanianized populations).

Researchers adhered to the Code of Ethics of the International Society of Ethnobiology (ISE, 2008) and always explained the purpose of the study and obtained verbal informed consent prior to conducting the interviews.

During the first day of interviews on the Ukrainian side it was rather difficult to approach people, however later, when the villagers already knew the purpose of the visits, everyone was eager to talk. This was probably due in part to an armed conflict that was taking place in Eastern Ukraine at the time and the fact that new soldiers were being recruited from those particular villages: eight young men from Verkhnii Yalovets alone (from only 45 households) were sent to the war during the time of the field study.

Whenever possible plant voucher specimens were taken or plants identified on the basis of dried samples. As it was not yet the full vegetation season, some plants were identified on the basis of their vernacular name and full description provided by the interviewee. Collected voucher specimens were dried and identified with the help of Toomas Kukk (Curator of the Estonian University of Life Sciences herbaria), Dr Malle Leht (botanist) and Dr Kuulo Kalamees (mycologist); vouchers are deposited at the Estonian University of Life Sciences herbaria (TAA – plants; TAA(M) – fungus). Taxonomic identification, botanical nomenclature, and family assignments followed the Flora Europaea (Tutin et al., 1964), The Plant List (2013), and the Angiosperm Phylogeny Group III (Stevens, 2012). Fungi nomenclature followed the Index Fungorum (2015).

2.4. Data analysis

2.4.1. Quantification of data

The collected ethnobotanical information was entered into an Excel database. Emic categories were followed and information was structured in detailed use-reports (DUR), where the informant *i* mentions a specific use (*u*, e.g. emic disease category, food [snack, beverage, spices, soup, jam, etc.], emic veterinary alignment) of a plant part (*p*, e.g. fruits, leaves, aerial parts, flowers, etc.) prepared in a certain way (*w*, e.g. topic application of fresh plant, tea, decoction, special preparation, etc.). Informant-defined health disorder categories were employed to uncover local health problems and how they are perceived by people.

The quantification of the frequency of citation, however, ends with tallying the number of citations for every general use category (e.g. medicinal, food and veterinary) for each region as the number of informants questioned is too low for sound statistical analysis of the frequency of plant use. Later on, the authors work with the relative frequency of citation (Table 1).

For finding the most used genera and species, the Use Value Index (UVI) proposed by Prance et al. (1987) was employed, given that it is based on emic categories of use (specific treatment, food made, etc.) and is not scored on the basis of the perceived importance of use.

For historical comparisons, data on medicinal plant uses were divided into emic health disorder categories. If different parts of a particular species were used for the treatment of an emic health disorder or different preparations applied, those were all considered as one category. Attribution of one specific taxon to a disorder category was considered one Use Instance (UI), regardless of the number of people mentioning the specific use. UI was later used to compare use-specific differences and evaluate the extent of overlap between two separated regions as well as for diachronic comparisons. UI was also employed to evaluate the diversity of uses of other remedies and wild food plants.

2.4.2. Comparative analysis between Romanian and Ukrainian Hutsuls

Modern regional uses of medicinal taxa from the Romanian and Ukrainian sides of the former Bukovina were compared. Then the specific UIs within different use categories were compared for the same groups.

Jaccard Similarity Indices (JI) were calculated for all comparisons following the methodology of González-Tejero et al. (2008):

$$JI = (C/(A + B - C)) \times 100$$

Table 1
Plants and fungi used for medicinal, veterinary and food purposes (only wild plants) in the study area.

Plant taxon; family/voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food or medical use(s) (treated disease)	Used on the Romanian side of Bukovina	Used on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use
Achillea millefolium L., Asteraceae /BUK044/	W	деревій, деревей, дяревей, дяревен, тысячелистник, coada șoricelului	aerial parts	tea	recreational tea	+		*	
					cancer		+	*	
					diarrhoea	+		**	Buk, Rom
					stomach ache	+		**	Buk, Rom
					diarrhoea in cows (vet)		+	**	
					women's diseases	+		*	Rom
				gargling with tea	toothache		+	**	
			inflorescences	tea	recreational tea	+		*	
			roots	tea	toothache		+	*	
Acorus calamus L.; Acoraceae /BUK035/	C	татарка	roots	dried roots are chopped, ground and ingested raw; before taking the first bite one has to drink water to avoid vomiting	fever		+	*	Rom
				macerated in alcohol	stomach ache		+	*	Buk, Rom
Actinidia deliciosa (A.Chev.) C.F.Liang & A.R.Ferguson; Actinidiaceae	O	ківі	fruits	eaten fresh	constipation		+	*	
Aesculus hippocastanum L.; Sapindaceae	C	каштан	fruits	macerated in alcohol	rheumatic pains		+	**	Rom
Alcea rosea L.; Malvaceae	C	рожа	aerial parts	tea	to strengthen a cow after she gives birth to a calf		+	*	
Alchemilla xanthochlora Rothm.; Rosaceae	C	creț̦işoară	aerial parts	tea	recreational tea	+		*	
Allium cepa L.; Amaryllidaceae	C	цибуля	bulbs	topical application of cooked half	earache		+	*	
				topical application of fresh slices	headache		+	*	
				decoction in milk	cough	+	+	**	Rom
				tea	cough	+		**	Rom
				syrup	cough	+		**	Rom
			juice	topical application of heated drops	earache		+	*	
			skin	tea	cough	+		*	Rom
					women's diseases		+	*	Rom
				bath	haemorrhoids		+	*	
Allium sativum L.; Amaryllidaceae	C	чеснок	bulbs	mixed with water and citron, drunk for 10 days	high blood pressure		+	*	Buk, Rom
				topical application	toothache		+	**	
				topical application	earache		+	*	
Allium spp.; Amaryllidaceae	W	гречек, дикий чеснок	whole plant	fresh	seasoning for soups		+	*	
					omelette		+	*	
Alnus spp.; Betulaceae	W	вільха, ольха	cones	tea	stomach ache		+	*	Buk
					diarrhoea		+	*	Buk, Ph
					diarrhoea in cows (vet)		+	*	
Aloe spp.; Xanthorrhoeaceae	C	бодек, бодяк, вазонок, вазон	leaves	topical application	(old) wounds	+	+	*	
					fresh cuts		+	*	
					wounds in animals		+	*	
				eaten fresh with honey	stomach ache		+	*	
Anethum graveolens L.; Apiaceae	C	кроп, кріп	whole plant	fresh or dried, tea	heartache		+	*	Rom
					high blood pressure		+	*	

Table 1 (*continued*)

Plant taxon; family/voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food or medical use(s) (treated disease)	Used on the Romanian side of Bukovina	Used on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use
Arctium lappa L.; Asteraceae /BUK037/	W	лап`ях, реп`ях, лопух	leaves	topical application, fresh, but also dried for winter	headache		+	**	
					knee ache		+	*	Buk, Rom
			roots	strong infusion, washing hair	for beauty and shine		+	**	Buk, Rom
					to prevent hair loss		+	*	Buk, Rom
				tea with *Equisetum* spp. and *Elymus repens*	blood cleansing		+	*	
Armoracia spp.; Brassicaceae	W	хрін, хрен	leaves	fresh	seasoning for fermented cucumbers, tomatoes		+	*	
				topical application, fresh	aching legs	+		*	Rom
			roots	topical application, fresh	toothache		+	*	
				infused in alcohol	back pain	+		*	Rom
				fresh, grated	added to red beet salad	+		*	
Arnica montana L. Asteraceae	W	арніка, гарніка, болші золоті цісі, arnica	flowers	fresh or dried, tea	stomach ache	+		*	
					toothache	+		**	
					diabetes	+		*	
					panacea		+	**	
				alcohol infusion, topical application	rheumatic pains	+	+	***	Buk, Rom
					aching legs	+	+	**	Buk
					stomach ache	+		*	
				washed with diluted alcohol infusion	headache		+	*	
				fresh or dried, in a bath	rheumatic pains	+	+	**	Rom
					panacea		+	**	
Aronia melanocarpa (Michx.) Elliott; Rosaceae	C	рябина чорна, горобина чорна	fruits	eaten fresh	high blood pressure		+	*	
				tea	heartache		+	*	
Artemisia absinthium L.; Asteraceae /BUK026/	W	полен, пелен, полн	aerial parts	tea	appetizer	+	+	**	Buk, Ph
					fever		+	*	Rom
					heartache		+	*	
					stomach ache		+	*	Buk, Rom
				tea, drunk on empty stomach	internal parasites		+	**	Buk
				infused in alcohol	internal parasites		+	*	
					appetizer		+	*	
Atropa belladonna L.; Solanaceae /BUK008/	W	матриган	roots	infused in alcohol	rheumatic pains		+	*	
					back pain		+	*	Rom
Avena sativa L.; Poaceae	C	овес	grains	bath	haemorrhoids		+	*	
Beta vulgaris L.; Amaranthaceae	C	бурак, білий буряк, бурак червоний	roots	fresh, chopped	headache		+	*	
				soup	constipation		+	*	
Betula pendula Roth; Betulaceae	W	береза, mesteacan	sap	fresh	kidney problems	+	+	**	Rom
					kidney stones	+		*	Rom
					kidney cleansing	+		*	Rom
					diabetes		+	*	Rom
					drink		+	*	
				fermented	drink		+	*	Buk
			leaves	bath	rheumatic pains	+		**	Rom
					kidney problems	+		**	Rom
Brassica oleracea L.; Brassicaceae	C	капуста	leaves	fresh, topical application	headache		+	*	Rom
					varix	+		**	Rom

				fermented, fed	internal parasites in animals		+	*	
Boletus spp.; Boletaceae	W	білий гриб	sporophores	infused in hot water, topical external application on throat	angina		+	*	
				infused in hot water, gargling	very sore throat		+	*	
Calendula officinalis L.; Asteraceae	C	календула, крокіс, filimirca, galbenela, galben	flowers	tea	women's diseases		+	**	Rom
				tea, applied in drops	eye inflammation		+	*	
					earache		+	*	
					kidney problems	+		*	
					cold	+		*	
					cancer		+	**	
				boiled in fat, applied topically	bruises	+		*	Rom, Ph
Callisia fragrans (Lindl.) Woodson; Commelinaceae	C	базонок, овозонок, золотий вус	leaves	boiled for 12 h in oil, applied topically	burn wounds		+	*	
				infused in vodka, taken as drops	stomach ache		+	*	
Capsella bursa-pastoris (L.) Medik.; Brassicaceae /BUK028/	W	романеца	aerial parts	tea	constipation	+		*	
					women's diseases	+		*	
				bath	back pain		+	*	
Carum carvi L.; Apiaceae	W	тмін, кмін, хміль, хмель, chimion	seeds	tea	diarrhoea	+		**	Rom
					stomach ache	+	+	***	Buk, Rom, pH
					diarrhoea in cows (vet)		+	*	Buk
					recreational tea		+	*	
				fresh or dried, food seasoning	lactofermented cucumbers	+		*	
					sauerkraut		+	*	Buk
					taste additive to curds		+	*	
Centaurea jacea L.; Asteraceae /BUK045/	W	ţentoria	flowers	tea	cough		+	*	
Chelidonium majus L.; Papaveraceae /BUK018/	W	чістотіл, чістотел, rostopasca	aerial parts	tea	cancer		+	*	
					kidney problems	+		*	
					haemorrhoids		+	*	
					blood cleansing		+	*	Rom
				additive to other teas	stomach ache		+	*	
			juice	topical application	clavus, warts		+	*	Buk, Rom, Ph
					skin diseases		+	*	Buk, Rom, Ph
					wounds		+	*	Rom, Ph
Chenopodium album L.; Amaranthaceae /BUK005/	W	натена, лобода	aerial parts, leaves	fresh	boiled and eaten with sour cream	+	+	**	Buk
					added to soups		+	*	Buk
Chenopodium bonus-henricus L.; Amaranthaceae /BUK024/	W	натена, gidove salo, гидове сало	aerial parts, leaves	tea	kidney problems	+		*	
				fresh	boiled and eaten with sour cream		+	*	Buk
Citrus limon (L.) Osbeck; Rutaceae	O	цітрон	fruits	tea	high blood pressure		+	*	
Coriandrum sativum L.; Apiaceae	C	коленда, коліандра	seeds, aerial parts	tea	headache		+	*	
			seeds	tea	fever		+	**	
Crocus heuffelianus Herb.; Iridaceae	W	первоцвіт, брендуші	flowers	alcohol infusion, topical application	rheumatic pains		+	*	
Cucurbita spp.; Cucurbitaceae	C	гарбуз	fruits	eaten cooked	kidney problems		+	*	Rom
Daphne mezereum L.; Thymelaeaceae /BUK009/	W	вовчелиця	fruits, bark	alcohol infusion, topical application	rheumatic pains		+	*	
Daucus carota L.; Apiaceae	C	морква	roots	eaten fresh or cooked	diarrhoea	+		**	Rom
					constipation		+	*	

Table 1 (*continued*)

Plant taxon; family/voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food or medical use(s) (treated disease)	Used on the Romanian side of Bukovina	Used on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use
Elaphomyces spp.; Elaphomycetaceae /BUK046/	W	дикі барабулі	tubers	alcohol infusion, topical application	toothache		+	**	
				alcohol infusion, 50 ml taken on empty stomach	appetizer		+	**	
Elymus repens (L.) Gould; Poaceae	W	перій	roots	tea with *Equisetum* spp. and *Arctium lappa*	blood cleansing		+	**	
Epilobium angustifolium L.; Onagraceae /BUK001/	W	іван-чай	inflorescences	fresh, dried	recreational tea		+	*	
Equisetum spp. (*Equisetum arvense* L./BUK038/ and/or *Equisetum sylvaticum* L./BUK014/); Equisetaceae	W	хвощ, coada calului	aerial parts	tea	kidney problems	+		*	Buk, Rom, Ph
					urinating problems	+		*	Buk, Rom, Ph
					stomach ache	+		**	Rom
				tea with *Elymus repens* and *Arctium lappa*	blood cleansing		+	**	Rom
Fragaria vesca L.; Rosaceae /BUK023/	W	ягоди, ягідняк, ягода лісова, земляника	fruits	eaten fresh	as snacks	+	+	***	
					with fresh cream	+	+	**	
					heart problems	+		*	
				topical application with cream	eczema		+	*	Rom
			aerial parts	tea	recreational tea		+	**	
					heart problems		+	*	
					panacea		+	*	
Gentiana lutea L.; Gentianaceae ?	W	джиндира, джиндир, черлиц звичайний	roots	tea	diabetes		+	*	
					stomach ache		+	**	Buk, Rom
					potency problems		+	**	
					gastric ulcer		+	*	Rom
Humulus lupulus L.; Cannabaceae	C	хемей, хміль	hops	tea	high blood pressure		+	*	
Hypericum spp.; Hypericaceae (*H. perforatum* L., *H. tetrapterum* Fr./ BUK040/)	W	пожарніца, зверобой	aerial parts, flowers	tea	stomach ache	+	+	***	Buk, Rom, Ph
					women's diseases	+	+	**	Buk
					diarrhoea	+	+	**	Rom
					diarrhoea in cows (vet)		+	*	Buk
					kidney problems	+		*	Rom
					headache	+		*	
					recreational tea		+	**	
			inflorescences	macerated in oil	burn wounds	+	+	*	Rom, Ph, Ph
					wounds	+		*	Rom
Juglans regia L.; Juglandaceae	W	горіх, грецький горіх	oil pressed from fruits	drops, topical application	earache		+	**	
			unripe fruits	covered with equal amount of sugar for a week, drained and mixed with equal amount of spirit; drunk in small amounts	diarrhoea		+	*	Buk, Rom

Juniperus communis L.; Cupressaceae /BUK016/	W	ялівець, смерка, желівець, женепен, ienupar	twigs	tea	asthma	+		*	Rom
				infusion, given to drink	for strengthening a cow after it gives birth to a calf		+	*	
				infusion, topical application	wounds		+	*	
				steam of decoction inhaled	cough		+	*	Rom
				bath with infusion	rheumatic pains		+	*	Rom
				bath with infusion	skin problems		+	*	
				bath for foot	asthma	+		*	Rom
			young galbules, young shoots	syrup, made with sugar or honey, just macerated, not boiled	dressing for desserts		+	*	
Lamium album L.; Lamiaceae /BUK030/	W	двудомна кропива, глухо крапиве, urzica morta	aerial parts	tea	heart problems		+	*	
					recreational tea	+		*	
Laserpitium krapffii Crantz; Apiaceae ?	W	зміевон	roots	water infusion	panacea		+	**	Buk
					body cleansing		+	*	
Laurus nobilis L.; Lauraceae	O	лавровий лист	leaves	water infusion	earache		+	*	
Levisticum officinale W.D.J.Koch; Apiaceae /BUK028/	C	любесток, леустайн	aerial parts	infusion	washing hair		+	**	
					wounds		+	**	
Lilium candidum L., Liliaceae	C	бела лілія	flowers	fresh, infusion in alcohol topical application	wounds		+	**	Buk, Rom
					cuts		+	*	Buk, Rom
					cuts in animals (vet)		+	*	
					festering wounds		+	**	Rom
			leaves	fresh	wounds		+	*	Rom
Linum usitatissimum L.; Linaceae	C	лен	seeds	infusion with cold water, ingested	stomach ache	+	+	*	Buk, Ph
					stomach problems in cows (vet)		+	**	
					given to a cow after it has given birth (vet)		+	**	
					loss of appetite		+	*	
				compress of water infusion	eye inflammation		+	*	
Malus spp.; Rosaceae	C	яблуко, zibrinka or зібрінка, яблоко	flowers	tea	recreational tea	+		*	
				infusion, washed with	wounds	+		*	
			fruits	fermented, sour apples from old varieties were covered with water and left to ferment for several weeks	cold	+		*	Rom
					fever	+		*	Rom
					source of C-vitamin	+		*	
			juice	fresh	cold	+		*	Rom
					fever	+		*	Rom
					source of C-vitamin	+		*	
			acid made of over fermented juice	topical application of a compress	headache	+		**	

Table 1 (*continued*)

Plant taxon; family/voucher specimen code/	Status	Recorded local name(s)	Used part(s)	Preparation	Recorded food or medical use(s) (treated disease)	Used on the Romanian side of Bukovina	Used on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use
Matricaria chamomilla L.; Asteraceae /BUK039/	W	романіца, романец, романяк, ромашка, руманец польовій, muşaţel	flowers, aerial parts	tea	recreational tea	+	+	**	Buk
					washing face		+	*	
					constipation	+	+	***	Buk
					given to small children as prophylactics		+	**	Buk, Rom
					inflammation		+	*	Buk, Rom, Ph
					stomach ache	+	+	**	Buk, Rom, Ph
					sore throat		+	*	Buk, Rom, Ph
					panacea	+		**	
					weakness	+		*	
				infusion, used externally	eye inflammation	+	+	**	Buk, Rom, Ph
					wounds	+		**	Buk, Rom, Ph
					toothache	+		**	Buk, Ph
					sty in the eye		+	*	Rom
					washing hair		+	*	
				tea and salt, washed with compress of water infusion	festering wounds		+	*	Rom, Ph
					eye inflammation	+	+	**	Buk, Rom, Ph
Melissa officinalis L.; Lamiaceae	C	меліса	aerial parts	tea	heart ache		+	*	
					high blood pressure		+	*	
Mentha spicata L.; Lamiaceae ?	W	мята, польова	aerial parts	tea	heart problems		+	**	
					insomnia		+	**	
					nervous disorders		+	*	
Mentha spp.; Lamiaceae	C	мята кромрлева, menta, кроплівкаб мята	aerial parts	tea	recreational tea	+	+	**	Buk
					stomach ache	+		*	Buk, Rom, Ph
					cough	+		*	Rom
					diarrhoea	+		**	Buk, Rom
					heart diseases		+	*	Rom
					low blood pressure		+	*	
					sedative		+	*	Buk, Rom
Origanum vulgare L.; Lamiaceae	W	материнка, чорна материнка, польовий чебрекб, sovor romaniaşki	aerial parts	tea	recreational tea		+	**	Buk
					seasoning for food	+	+	*	
					seasoning for soups		+	*	
					women's diseases	+	+	***	Buk
					stomach ache	+	+	**	Rom
					cold		+	*	Rom
					diarrhoea	+		*	Rom
					headache	+		*	
					cough		+	**	Rom, Ph
Oxalis acetosella L.; Oxalidaceae	W	заяций квасок	leaves	fresh	snack		+	**	
Paeonia spp.; Paeoniaceae	C	півон червоній	flower petals	tea	sedative		+	*	
Pastinaca sativa L.; Apiaceae	C	пастеняк	aerial parts	tea	kidney problems		+	*	

Persicaria bistorta (L.) Samp.; Polygonaceae	W	кривезіля	roots	tea	stomach ache		+	*	Rom
				infused in alcohol	stomach ache		+	*	Rom
Petroselinum crispum (Mill.) Fuss; Apiaceae	C	петрушка, patrunjel	aerial parts	tea	panacea	+		*	
					constipation		+	*	
Phaseolus vulgaris L.; Fabaceae	C	фасуля	leftovers after harvesting	tea	diabetes		+	*	
Picea abies (L.) H.Karst.; Pinaceae /BUK010/	W	ялка, ель, smerka, moguri	young cones, shoots, female flowers	syrup	seasoning for desserts	+	+	***	
					healthy beverage	+		*	
					cough	+	+	**	Rom
					bronchitis		+	**	Rom
					stomach ache	+		*	
					heart problems	+		*	
			resin	topical application	rheumatic pains	+		**	Rom, Ph
Pinus sylvestris L.; Pinaceae	W	сосна	twigs	steam of decoction inhaled	cough		+	**	Rom
Plantago lanceolata L.; Plantaginaceae /BUK34/	W	тягунб дикий подорожнік	leaves	fresh, topic application	wounds		+	*	Rom
					festering wounds		+	*	Rom
					cuts		+	*	Rom
				tea	sore throat		+	*	
					cough		+	*	Rom
					expectorant		+	*	Rom
Plantago major L.; Plantaginaceae /BUK012/	W	подорожнік, подорожняк, подбі, pentrobubi	leaves	fresh, topical application	wounds	+	+	***	Buk, Rom
					festering wounds		+	**	Buk, Rom
					cuts	+	+	*	Buk, Rom
					headache		+	*	
				tea	stomach ache	+	+	*	Rom
					recreational tea		+	**	
					sore throat		+	*	
					cough	+	+	**	Rom, Ph
					expectorant		+	*	Buk, Rom, Ph
					headache		+	*	
					kidney problems	+		*	
					asthma		+	*	Rom
				tea with *Polygonum aviculare*	kidney problems		+	*	
				infused in alcohol	wounds	+		*	Rom
				fresh	boiled and eaten with sour cream		+	*	
Polygonum aviculare L.; Polygonaceae	W	спореш	aerial parts	tea with *Plantago major*	kidney problems		+	*	Rom, Ph
Potentilla × *collina* Wibel; Rosaceae /BUK033/	W	калган	roots	infused in alcohol	women's diseases		+	*	Rom
					stomach ache		+	*	Buk, Rom
					panacea		+	*	Buk
Primula veris L.; Primulaceae /BUK019/	W	первоцвіт, кукола, петрочаі, ciuboțica cucului	inflorescences	tea	recreational tea		+	*	
					heart diseases	+		**	
					insomnia	+		*	
				tea with *Tussilago farfara*	heart diseases		+	*	
Prunus avium (L.) L.; Rosaceae	C	черешня	fruits with stones	tea	kidney problems	+		*	Rom
			stems	tea	kidney problems	+		**	Rom
			flowers	tea	liver problems		+	**	
			fruits	infused in alcohol	rumination problems in cows (vet)		+	*	

Table 1 (*continued*)

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Prunus cerasus L.; Rosaceae	C	вішня	unripe fruits	fresh	added to soups to add acidity	+		**	
Quercus robur L., *Q. rubra* L./BUK002/; Fagaceae	C	дуб	bark	tea	toothache		+	*	Buk
					diarrhoea in cows (vet)	+		*	Buk
			leaves	fresh	added to lactofermented cucumbers		+	*	
Raphanus raphanistrum subsp. sativus (L.) Domin; Brassicaceae	C	чорна редька	juice	pressed fresh	sore throat		+	*	Rom
Rheum rhaponticum L.; Polygonaceae	C	ревень	stems	fresh	jam		+	*	
Ribes nigrum L.; Grossulariaceae	C	черні яверниціб, смурі черні, черна смородина	fruits	fresh	high blood pressure	+	+	**	
					women's diseases	+		*	
				jam	high blood pressure		+	**	
			leaves	tea	recreational tea		+	*	
					added to lactofermented cucumbers		+	**	
Rosa spp.; Rosaceae /BUK004/	W, C	шипшина, свербегуска, trandafir di paduri, trandafir	fruits	tea	recreational tea		+	*	
					asthma	+		*	Rom
					heart problems		+	*	
			flower petals	tea	recreational tea	+		*	
			flowers	tea	recreational tea	+		**	
					marmalade	+		**	
			roots	tea	diarrhoea		+	*	Rom
			twigs	steam of decoction inhaled	cough		+	**	Rom
Rubus fructicosus L. and *Rubus caesius* L.; Rosaceae	W	ожена	fruits	tea	cancer		+	*	
				tea made from jam	cancer		+	*	
			twigs	tea	wounds		+	*	
Rubus idaeus L.; Rosaceae /BUK022/	W	маленяк, малена, малина	twigs	tea	recreational tea	+	+	***	Buk
					fever		+	*	Buk, Rom
					cold		+	*	Buk, Rom
					erysipelas		+	*	
			fruits	fresh	eaten	+	+	***	
				jam	for food		+	*	Buk
				juice	drink		+	**	
					fever		+	**	Buk, Rom
					headache		+	*	
					cough		+	*	Buk, Rom
					cold		+	**	Buk, Rom
					erysipelas		+	*	
					low blood pressure		+	*	
				juice compress put on forehead	headache		+	*	
				wine	drink		+	*	
				wine compress put on forehead	headache		+	*	Rom
			fruit leftovers after pressing juice	tea	fever		+	*	Rom

Rumex acetosa L./BUK042/ and *Rumex thyrsiflorus* Fingerh./BUK027/; Polygonaceae	W	квасок, щавель, кваснея	leaves	fresh, dried	soup	+	+	***	
					salad		+	*	
Rumex spp. (*Rumex patientia* L./BUK041/ and *Rumex confertus* Willd./BUK042/; Polygonaceae	W	шіва, штебвл, щевла, слезь	leaves	fresh	soup		+	**	
				soup	source of C-vitamin		+	**	
				golubtsi	stuffed rolls	+		**	
			roots	tea	diarrhoea in cows (vet)	+		*	
			inflorescences	tea	diarrhoea		+	**	Rom
Sambucus nigra L.; Adoxaceae	W	чорна бузина, бузина, сок, бзина біла	flowers	tea	cough (expectorant)		+	*	Buk, Rom
				lemonade made with sugar and lemon	drink	+		**	
			twigs	spread on the floor	leg weakness in animals		+	*	
			fruits	beer	drink	+		*	
Secale cereale L.; Poaceae	C	toroţo de secoara	bran of the grain	fermented with water	lacto-fermented and the resulting liquid added to soups as a sour seasoning	+		**	
Solanum tuberosum L.; Solanaceae	C	картошка, картофля, барабуля	tubers	chopped, topical application	headache	+	+	**	Buk, Rom
					eye problems		+	*	
					sore throat	+		**	
					haemorrhoids		+	**	
			unpeeled tubers	steam of decoction inhaled	cough		+	**	
				bath in infusion	women's diseases		+	*	
			eyes	alcohol infusion	rheumatic pains		+	**	
			flowers	alcohol infusion	rheumatic pains		+	**	
Sorbus aucuparia L.; Rosaceae	W	рябина червона, горобина червона, красна рябіна	fruits	fermented	kvass (fermented drink)		+	*	Buk
					low blood pressure		+	*	Rom
				tea	stomach ache		+	*	
				tea	high blood pressure		+	*	Rom
Symphytum officinale L./BUK029/ or *Symphytum carpaticum*; Boraginaceae	W, C	живокіст, гаюс, iarba lutatin	roots	chopped, topical application	rheumatic pains	+	+	**	Rom
					bruises		+	*	Rom
					swollen areas		+	*	Buk, Rom
				chopped with sheep butter, topical application	rheumatic pains		+	*	Rom
					bruises		+	*	Rom
				infused in alcohol	varix	+		**	
			flowers	bath in infusion	rheumatic pains		+	*	Rom
Syringa vulgaris L.; Oleaceae /BUK007/	C	сирень	flowers	infused in alcohol	rheumatic pains		+	**	Rom
			flower buds	infused in alcohol	heart diseases		+	*	
Tanacetum balsamita L.; Asteraceae	C	кануфер	leaves	topic application	festering wounds		+	*	Buk, Rom
			aerial parts	fresh or soaked in hot water	old wounds		+	*	Buk, Rom
					furuncles		+	*	Rom
Taraxacum campylodes G.E.Haglund; Asteraceae	W	кулебаба, молоць, кульбаба, popadia	flowers	soaked in water, flowers filtered out and remaining water boiled with sugar into syrup (also called honey)	food seasoning	+	+	***	
				fresh	salad	+	+	*	
				fresh	snack		+	*	
				eaten fresh	cough	+		*	
			leaves	fresh	salad	+	+	**	
					soups	+		*	
Thymus serpyllum L.; Lamiaceae	W	чебрець, чебрек польовий,	aerial parts	tea	cough		+	***	Buk, Rom,

Table 1 (*continued*)

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/BUK036/		cimbru, cembrişor							Ph
					cold	+	+	*	
					insomnia	+		*	
					sore throat	+		*	
					stomach ache	+		*	Rom
					prophylactic of diseases	+		*	
					recreational tea	+		*	Buk
				fresh, dried	seasoning for soups	+	+	***	
Tilia cordata Mill. and *Tilia platyphyllos* Scop.; Malvaceae	W	ліпа, теі, лепа	inflorescences	tea	recreational tea	+	+	**	Buk
					fever		+	*	Buk, Rom, Ph
					nervous disorders	+		*	Rom
					sedative	+		*	Rom
					headache	+		*	
					tiredness	+		*	
					cold		+	*	
					stomach ache	+		*	Rom
					insomnia	+		**	Rom
					constipation		+	*	
Triticum spp.; Poaceae	C	пшеніц, toroţo de grau	bran of the grain	fermented with water	acid for soups	+		**	
Tussilago farfara L.; Asteraceae /BUK021/	W	мать і мачеха, подбій, подбел	leaves	scaled	stuffed rolls	+	+	***	
				tea	cough		+	*	Buk, Rom, Ph
			flowers	infused in alcohol	rheumatic pains		+	*	Rom
				tea	cough		+	*	Buk, Rom, Ph
					bronchitis		+	*	Buk, Rom, Ph
				tea with *Primula veris*	heart diseases		+	*	
Urtica dioica L.; Urticaceae /BUK017/	W	кропєва, кропива	leaves, young aerial parts	fresh, dried	soup	+	+	***	Buk
					recreational tea	+	+	**	
				fresh, boiled	salad with sour cream, garlic and fried flour	+		*	Buk
				water infusion	washing hair to restore shine		+	**	
					washing hair to prevent hair loss	+		*	
					eye problems	+		*	Buk
				tea	blood cleansing	+		*	Rom, Ph
					stomach ache	+		*	
					diabetes	+		*	
					panacea	+		*	
					blood circulation	+		*	Rom, Ph
					high blood pressure	+		*	
					fever		+	*	
				juice	blood cleansing	+		**	Rom, Ph
					liver cleansing	+		**	
				bath in infusion	rheumatic pains	+		*	Buk, Rom
				infused in alcohol, topical application	rheumatic pains	+		*	Rom

Vaccinium myrtillus L.; Ericaceae /BUK015/	W	афени, чорници, черника, афеняк	fruits	fresh	jam	+	+	***	
					compote	+	+	**	
					eye problems	+	+	***	Rom
					stomach ache	+	+	***	Buk, Rom
					diarrhoea	+	+	**	Buk, Rom
				dried	recreational tea		+	*	
					diarrhoea	+	+	**	Buk, Rom, Ph
					diabetes		+	*	Rom
				in vodka	stomach ache	+	+	*	Buk, Rom
					diarrhoea		+	*	Buk, Rom, Ph
			aerial parts	tea	recreational tea		+	**	
					eye problems	+	+	***	Rom
					stomach ache		+	***	Rom
					diabetes		+	**	Rom
					nervous disorders		+	*	
					diarrhoea in cows (vet)		+	**	
					blood cleansing	+		*	
			leaves	tea	stomach ache	+		*	Rom
					diabetes	+		*	Rom
Vaccinium vitis-idaea L.; Ericaceae /BUK013/	W	брусніка, брусниця, го-годзи, гогодзняк	fruits	fresh	jam		+	*	Buk
					juice		+	*	
					diarrhoea		+	*	Buk, Rom
					source of C-vitamin	+		*	
				juice, fresh and processed	high blood pressure		+	*	
					kidney problems		+	*	Buk, Rom
					high blood pressure		+	**	
				dried, tea	recreational tea		+	*	
			aerial parts	tea	kidney problems		+	**	
					high blood pressure		+	**	
					diabetes	+	+	**	
					heart problems	+	+	**	
					cold	+		*	
					fever	+		*	
					multiple pains	+		*	
Valeriana officinalis L.; Caprifoliaceae	W	валерянка	aerial parts	tea	heart ache		+	*	Buk
Veratrum lobelianum Berhn.; Melanthiaceae	W	черемиця	aerial parts	infusion, washing	lice		+	*	
				infusion, given to drink	cow parasites		+	*	Buk
Viburnum opulus L.; Adoxaceae /BUK032/	W	калена	fruits	juice	high blood pressure		+	**	Buk, Ph
					cough		+	*	Buk, Rom
			inflorescences	tea	cough	+		*	Rom
					cold	+		*	
					recreational tea	+		*	
Vitis spp.; Vitaceae	C	виноград	fruits	fermented into acid, topical application	headache	+		**	
Zea mays L.; Poaceae	C	кукуруза, porumb	grains	flour heated, topical application	earache		+	*	
					sore throat		+	*	
			stigma	tea	kidney problems		+	*	Buk, Rom

W – wild taxa, C – cultivated taxa, O – taxa acquired outside the local environment. Names are recorded in Romanian (Latin alphabet) and Ukrainian (Cyrillic alphabet). Frequency of citation:* cited by up to 3 respondents,**4–8 respondents,*** at least 9 respondents. Listed illnesses refer to emic categories. Buk – same or similar uses in historical data collected among Hutsuls in Bukovina, Rom – same or similar uses in the Romanian ethnobotanical literature, Ph – uses corresponding to the State Pharmacopeia of the USSR (Shikov et al., 2014); (?): identification only hypothezied via the folk name and description.

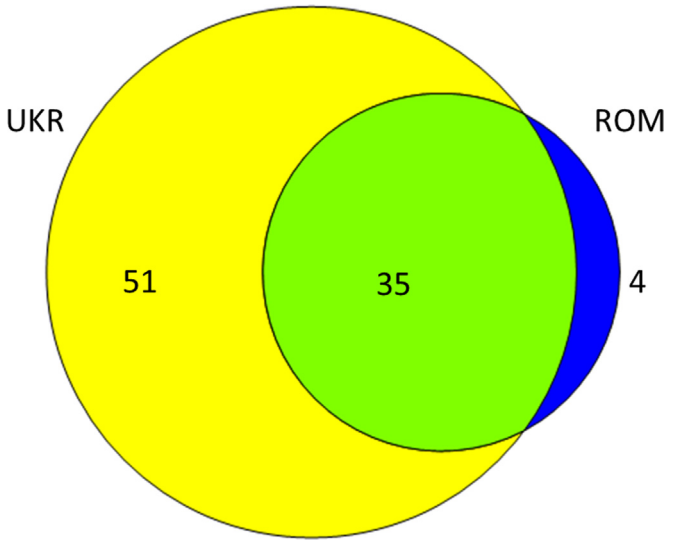

Fig. 2. Overlap between the medicinal plant taxa recorded in Romanian Bukovina (ROM) and Ukrainian Bukovina (UKR).

where A is the number of species in sample A, B is the number of species in sample B and C is the number of species common to A and B.

2.4.3. Comparison with historical sources on the ethnobotany of Hutsuls, uses recorded in Romania and the State Pharmacopeia of the USSR

To evaluate the changes in use, the taxa currently used on both sides of the border were compared with the taxa claimed to have been historically used in Bukovina. Historical data on the use of all categories were extracted from two main sources written in Ukrainian (Boltaroviš, 1980; Arsenich et al. 1987), which themselves relied on historical ethnographic reports in Ukrainian and Polish (Wajgiel, 1887; Kolberg, 1888; Majewski, 1892; Mroczko, 1897; Schnaider, 1900; Shuhevitš, 1908; Onišuk, 1909; Schnajder, 1912; Zaklinskii, 1918; Moszynski, 1934; Harasymcszuk and Tabor, 1937), as well as studies conducted during the Soviet period (Pizov, 1970; Mandybura, 1978) and manuscript data from ethnographic archives; also one source written in German (Hoelzl, 1861). A separate Excel database for historical uses was created, incorporating all UIs described in the literature sources. Taxonomic identifications were based on Latin and folk botanical names provided simultaneously in the publications; botanical nomenclature and family assignments were matched with those used for unification of the nomenclature for field data.

The same or very similar uses were recorded in Table 1. As wild food uses were only briefly addressed in one source (Arsenich et al., 1987), and the region is historically poorly researched in terms of wild food plants, overlap of food uses with historical sources was not considered for thorough analysis. Instead, based on the abovementioned literary sources, overlap analysis was conducted only for medicinal uses. However, even for medicinal uses the results are more illustrative than definitive, as historical data are very unevenly collected and may contain some biased information.

To identify the most utilised plant taxa and remedies as well as the most frequently treated health disorders, and to understand the overlap on a taxa and health disorder level, 3D scatter plots were designed in R (R Development Core Team, 2012).

The comparison with data on Romanian medical ethnobotany was conducted based on Dragulescu (2006), which incorporates many dozens of field ethnobotanical studies carried out in Romania during the last century. As for the historical herbal medicine of Hutsuls, the same or similar uses known among Romanians were recorded in Table 1. As the territory of Romania is considerably larger than Bukovina, the UIs that did not overlap with the ones recorded during the present fieldwork were not analysed further.

For comparison with the last edition of The State Pharmacopeia of the USSR (1990) an overview of the plant monographs contained within it complied by Shikov et al. (2014) was consulted and overlap detected. However, as the Pharmacopeia provides only the pharmacological group of plants, and not emic disease categories, such comparison can only be very indirect, guided by the author's knowledge of diseases and treatment options. All theoretically possible influences of the Pharmacopeia were noted in Table 1.

Similar analyses were conducted for other remedies.

3. Results and discussion

Table 1 presents all covered domains of plant use: wild food, recreational teas, medicinal and ethnoveterinary plants. Altogether, 101 vascular plant and 2 fungi taxa belonging to 49 families were utilised, of them 57 were wild, 41 cultivated, two found both wild and cultivated and three obtained from outside the local environment.

The top five most represented families (with the highest total of used taxa) were: Rosaceae (11), Asteraceae (10), Apiaceae (8), Polygonaceae (6) and Lamiaceae (6). The five most utilised families (with the highest total of UVI) were: Asteraceae (70), Rosaceae (59), Ericaceae (34), Lamiaceae (31), and Plantaginaceae (20).

There were eight taxa with a UVI value of at least ten, including *Vaccinium myrtillus* (19), *Rubus idaeus* (17), *Urtica dioica* (17), *Matricaria chamomilla* (16), *Vaccinium vitis-idaea* (15), *Plantago major* (14), *Tilia* spp. (10) and *Arnica montana* (10), which can probably be considered marker plants for wild food and medicinal ethnobotany of Hutsuls.

3.1. Medicinal plant uses

3.1.1. Modern use of medicinal plants on different sides of the border

Altogether, the folk medicinal use of 88 vascular plant taxa and two fungi was recorded, corresponding to 277 UIs. Of the 1054 DURs of medicinally utilised plants, 342 were reported from Romania and 712 from Ukraine. The number of used plant taxa was considerably smaller in Romania (39 taxa) compared to that in Ukraine (84 vascular plant and 2 fungi taxa) (Fig. 2). The difference in use instances is much more pronounced, as only 33 out of the

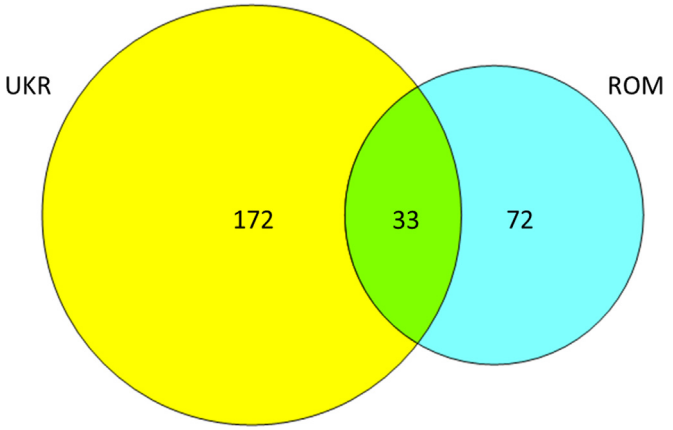

Fig. 3. Overlap between the medicinal plant reports recorded in Romanian Bukovina (ROM) and Ukrainian Bukovina (UKR).

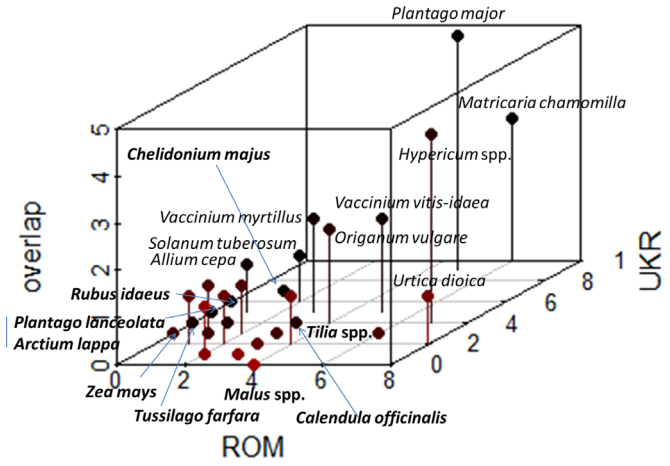

Fig. 4. 3D Scatter plot of medicinal plant taxa recorded in Romanian (ROM) and Ukrainian (UKR) Bukovina (most divergent taxa in bold).

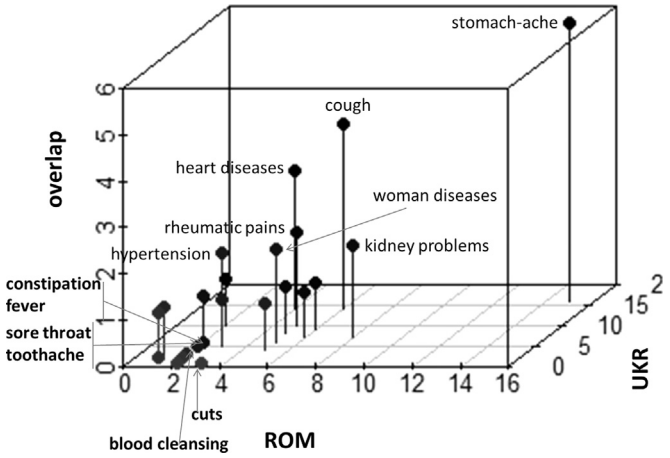

Fig. 5. 3D Scatter plot of the recorded health disorders treated with medicinal plants in Romanian (ROM) and Ukrainian (UKR) Bukovina (most divergent ones in bold).

total 277 UIs overlap (Fig. 3).

Fig. 4 highlights the taxa with the highest overlap in use diversity as well as those used only on one side of the border. The taxa with greater use overlap were generally also more diversely utilised. Of the 41 most diversely used taxa, those having at least one overlapping use constitute about 44% of the outlined taxa, while the taxa used on both sides of the border without significant overlap in application constitute about 32%. Among the 26 most treated health disorders none is treated solely on one side of the border (Fig. 5).

The general attitude towards plants was positive on both sides of the border, yet for many modern chronic and acute health disorders (such as problems with internal organs, diabetes, high or low blood pressure, trauma and severe wounds) people claimed to seek help from medical doctors and use medicines sold in pharmacies; more explicitly so on the Romanian side.

The spiritual or magic value of the medicinal plants was addressed only very briefly and with a kind of superstition-like attitude on the Ukrainian side of the border ("old people have said, but I don't believe in that, as it is only superstition"). Yet on the Romanian side, belief in plant magic was strong, although not very widespread, and not considered as superstition, but a part of everyday religious life.

3.1.2. Comparison with historical use among Hutsuls of Bukovina

Fig. 6 shows considerable overlap in the taxa used by Hutsuls now and in the past. Overlap on the use level is proportionally

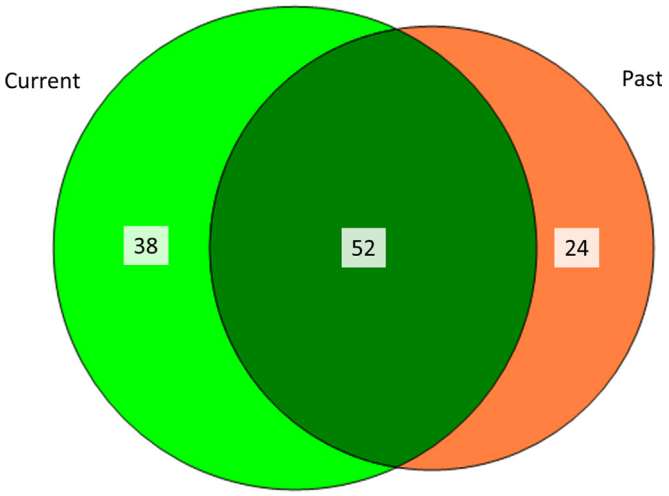

Fig. 6. Overlap between the recorded medicinal plant taxa currently used (present study) and those used in the past (historical data).

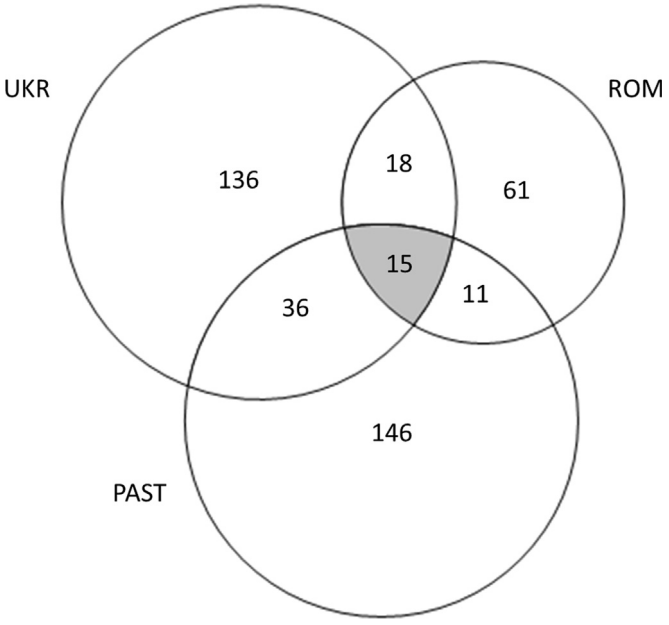

Fig. 7. Overlap among the medicinal plant reports recorded in Romanian Bukovina (ROM), those recorded in the Ukrainian Bukovina (UKR), and those recorded in the past (PAST).

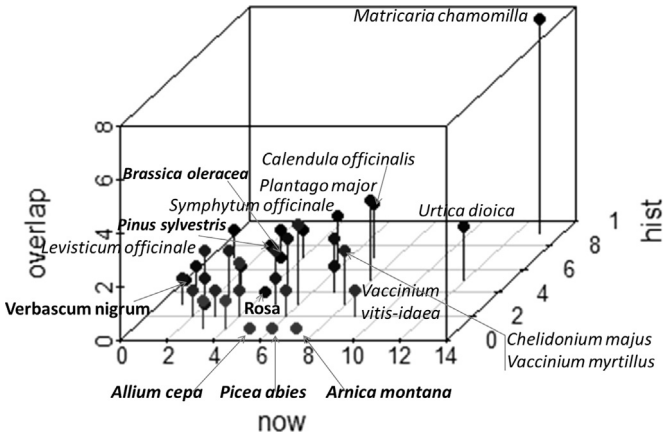

Fig. 8. 3D Scatter plot of the medicinal plant taxa used in the past (hist) and currently (now) (most divergent taxa in bold).

smaller and unevenly distributed between Romanian and Ukrainian sides (Fig. 7). Of the 52 continuously used taxa, 12 had considerable overlap with modern uses (Fig. 8). Of the 24 taxa used only historically, six [*Verbascum nigrum* L. (Scrophulariaceae), *Salvia officinalis* L. (Lamiaceae), *Ruta graveolens* L. (Rutaceae), *Hyoscyamus niger* L. (Solanaceae), *Fraxinus excelsior* L. (Oleaceae), and *Cannabis sativa* L. (Cannabaceae)] have been used to treat or prevent at least three different health disorders. Among the abandoned taxa are also other now less common but historically widespread "old garden" ornamental plants like *Althea officinalis* L. (Malvaceae) and *Inula helenium* L. (Asteraceae). Some of these plants were used to treat now less-encountered diseases [such as *Viola tricolor* L. (Violaceae) and *Bidens tripartita* L. (Asteraceae) to treat scrofula]. Among the 38 taxa used only nowadays, only six taxa [*Sorbus aucuparia*, *Rumex* spp. (*Rumex patientia* or *Rumex confertus*), *Prunus avium*, *Mentha spicata*, *Malus* spp., and *Capsella bursa-pastoris*] had diverse uses.

There were only 15 use instances of the diverse use of ten plants utilised now and in the past. Six of them (*Matricaria chamomilla* to treat constipation and stomach ache, *Plantago major* for cuts and wounds, and *Vaccinium myrtillus* to treat diarrhoea and stomach ache) had already been recorded at the end of 19th and beginning of the 20th centuries. Long-lasting and widespread uses have proven effectiveness and are widely available. Additionally, on the Romanian side 11 historical use instances were still prevalent, although not recorded on the Ukrainian side. Of these, six use instances (*Achillea millefolium* to alleviate diarrhoea and stomach ache, *Matricaria chamomilla* to treat toothaches and wounds, *Artemisia absinthium* as an appetizer and *Mentha* spp. to treat diarrhoea) were quite widespread, but none of them had a very early origin. On the Ukrainian side only seven (*Artemisia absinthium* to cure internal parasites, *Viburnum opulus* to treat high blood pressure, *Arctium lappa* for washing hair, *Gentiana lutea* to alleviate stomach ache, *Lilium candidum* to treat wounds, *Matricaria chamomilla* given to small children as prophylactics of childhood diseases, *Thymus serpyllum* to treat cough) of the 36 overlapping historical use instances were widespread and two of them (uses of *Matricaria chamomilla* and *Plantago major*) originated during the 19th century. The majority of older uses, originating at the end of the 19th and beginning of the 20th centuries, were not encountered, however, during the present research.

The comparison of health disorder categories treated nowadays and in the past shows considerable overlap in uses for treating stomach ache, cough, diarrhoea, wounds and rheumatic pains, all widespread and continuous. Yet there are numerous health disorders that were treated in the past but are now less common or have more effective remedies in academic medicine (such as boils, childhood diseases and lung diseases). In addition, there are some "modern diseases" (like blood cleansing, diabetes, earache) that are treated quite diversely now but were not treated in the past (Fig. 9).

3.1.3. Comparison with the medicinal plant use heritage of neighbours

About half of all use instances (137) have the same or similar uses in Romanian ethnopharmacopeia. Of these, 59 use instances have been also reported in Hutsul historical use. This included 23 use instances of 14 taxa now mostly widespread, with six use instances reported by nine or more people (*Arnica montana* to alleviate rheumatic pains, *Carum carvi, Hypericum perforatum* and *Vaccinium myrtillus* to treat stomach ache, *Plantago major* for wounds and *Thymus serpyllum* to treat cough – all internationally well-known uses). The rest, not addressed in the historical sources describing Hutsul ethnomedicine, can be divided into three groups:

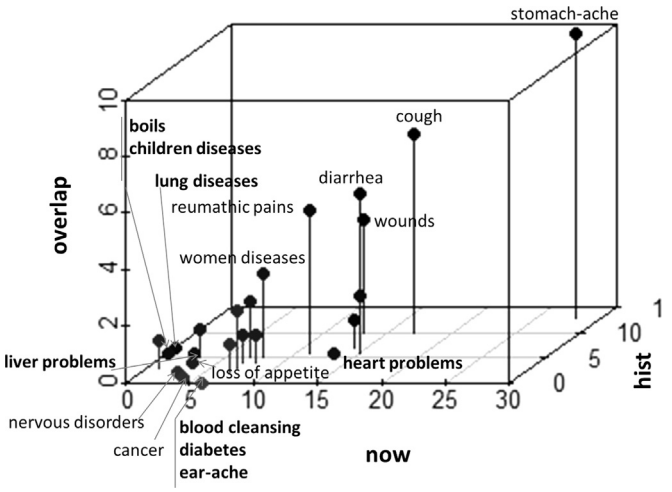

Fig. 9. 3D scatter plot of recorded health disorders treated with plants in the past (hist) and currently (now) (most divergent ones in bold).

a) Novel uses shared by Romanian and Ukrainian Hutsuls: 10 use instances, one of them, the use of *Vaccinium myrtillus* to treat eye problems, was mentioned by 19 people, and six more (*Allium cepa, Plantago major* and *Picea abies* to relieve cough; *Betula pendula* to treat kidney problems; *Hypericum* spp. to cure diarrhoea; and *Origanum vulgare* to alleviate stomach ache) were reported by more than 4 people.
b) Uses known among Romanian Hutsuls only: 25 use instances, among them only seven (*Carum carvi* and *Daucus carota* to cure diarrhoea, *Tilia* spp. to treat sleep disorders, *Betula pendula* and *Picea abies* to alleviate rheumatic pains, *Equisetum* spp. to relieve stomach ache and *Brassica oleracea* to treat varix) were relatively widespread.
c) Uses known among Ukrainian Hutsuls only: 43 use instances, ten of which [for example, *Rumex* spp. (*Rumex patientia*) or *Rumex confertus*) to cure diarrhoea, *Pinus sylvestris*, *Origanum vulgare* and *Rosa* spp. to treat cough, *Aesculus hippocastanum* and *Syringa vulgaris* to alleviate rheumatic pains] were widespread.

The majority of the abovementioned uses, which are internationally well known, may be of quite recent origin and could have been introduced into both Ukraine and Romania by different means, including popular herbals, but could also have already been present in Hutsul ethnomedicine earlier, just not covered by previous research.

3.1.4. Comparison with the State Pharmacopeia of the USSR

The suggestions given in the State Pharmacopeia already overlapped greatly with the historical ethnopharmacopeia of Hutsuls: altogether there were 25 suggestions, covering a wide range of uses, such as the expectorant properties of *Tussilago farfara*, *Thymus serpyllum* and *Plantago major*, the bitterness of *Artemisia absinthium*, and the haemostatic and anti-inflammatory properties of *Achillea millefolium*. Of these, eight suggested therapeutic properties were not detected during the present field research [for instance, the anti-inflammatory properties of *Salvia officinalis* L. (Lamiaceae), the bitterness of *Centaurium* spp. (Gentianaceae), the cardiotonic properties of *Convallaria majalis* L. (Liliaceae), and *Althea officinalis* L. (Liliaceae) as an expectorant].

Seven novel uses that may have been potentially influenced by the State Pharmacopeia include, for example, the haemostatic properties of *Urtica dioica*, the diuretic properties of *Equisetum* spp., the antiseptic properties of *Hypericum* spp., and the antiseptic and anti-inflammatory properties of *Calendula officinalis*; however,

they are quite evenly divided between Romanian (four indications) and Ukrainian (three indications) sides.

The influence of the State Pharmacopeia, if at all present, was certainly not direct, mediated by doctors, media and few popular books on ethnomedicine; yet the number of new use incidents possibly affected by the Pharmacopeia is relatively low and, in proportion to the number of use instances, even greater on Romanian side. Hence, if the Soviet Pharmacopeia had influenced the use of medicinal plants, it was rather to support the persistence of traditional (historical) uses, although not always successfully.

3.1.5. Possibly neoteric uses of medicinal plants

On the Romanian side of the border 36 possibly neoteric UIs were documented, six of them (*Vitis* spp. and *Malus* spp. to alleviate headache, *Solanum tuberosum* to relieve sore throat, *Symphytum* spp. to treat varix, *Arnica montana* to alleviate toothache and *Urtica dioica* for liver cleansing) were reported by more than four respondents. Of the eight UIs shared between Romanian and Ukrainian sides of the border, four were mentioned by more than four respondents (*Primula veris* and *Vaccinium vitis-idaea* to treat heart diseases, *Ribes nigrum* to reduce high blood pressure and *Vaccinium myrtillus* to treat diabetes).

The Ukrainian side of the border contributed a greater number (93) of possibly neoteric use instances, with 18 of them mentioned by more than four people. Some of them are used to treat health disorders that have always been present and may solely represent omissions from historical sources, such as fever (locally cultivated *Coriandrum sativum*), toothache (*Achillea millefolium* and *Allium sativum*), headache (*Arctium lappa*), earache (*Juglans regia*), kidney problems (*Vaccinium vitis-idaea*) or common Soviet-time home-medicines like vapour of *Solanum tuberosum* to relieve cough, haemorrhoids and rheumatic pains, as observed by the first author during her childhood spent in Ukraine, Russia and Estonia in 1980s–1990s. Also for example the use of common garden plants with diverse international traditional use, like *Levisticum officinale* for washing wounds and hair. Almost certainly, the use of *Elaphomyces* spp. to alleviate tooth ache and as an appetizer was likewise simply not addressed in historical sources as this underground fungus has been known in Europe as a pharmaceutical plant since the 19th century (see for example Dietrich (1837)). The most probable examples of neoteric uses are the use of *Calendula officinalis* to treat cancer and *Gentiana lutea* to treat potency problems. There may be more neoteric knowledge among the use incidents listed by less than four interviewees, yet even among those, only a few "modern" diseases were reported (like the treatment of diabetes or high blood pressure).

Comparing numerical results of the historical and modern data, the number of used plant taxa has slightly increased, yet the number of use instances has remained almost the same on the Ukrainian side of the border, while it has reduced almost two-fold on the Romanian side of the border. Some authors have reported the revival of traditional ecological knowledge after the collapse of the Soviet Union (Sezik et al 2004, Egamberdieva et al 2013); however, there are no comparative data from the immediate post-Soviet years in Bukovina for this region to say whether the greater use of plants is the result of revival within last 25 years or this process has lasted for longer. Given the already discovered gaps in historical research and that within the framework of this research it is not possible to evaluate the influence of popular herbals on the change of ethnomedical knowledge, it is reasonable to assume that the influence of new (Post-Soviet) print and other media is not very widespread. Still, to provide a more educated answer to this question future research comparing present knowledge and suggestions provided in recently published herbals and promoted by different types of media is needed.

3.2. Other medicinal remedies

Other remedies constitute everything else used for healing besides the plant and fungi taxa that were identified at least on the family level. The number of other remedies used is relatively high (54), yet the majority of them are utilised only for one or two use instances (Table 2). Of the 189 UIs, 63 were recorded in Romania and 126 in Ukraine.

Only nine use instances of seven other remedies were recorded as utilised on both sides of the border: egg albumen applied on burns, women's breast milk to alleviate eye ache, sugar eaten to treat heart ache, salt to relieve sore throat and toothache, oil to cure constipation, liquid left after making cruds to alleviate rheumatic pains and chaff to treat cold and rheumatic pains. All these remedies, except the first two, also represent the most diversely used remedies. The diseases treated with other remedies are all widespread and also widely treated with plants.

A quite considerable proportion of the currently recorded use instances (21) have been described in historical sources. Twelve remedies were used to treat 13 health disorders: fats of different wild and domestic animals (badger, bear, dog, and pig), sheep and cow butter, other milk products, honey, salt and chaff were used mainly internally for treating mostly respiratory diseases. The other 34 historically used instances that were not recorded during the present survey included many external uses of different animal fats and skins, the meat of fish and animals (bear), apiarian and milk products used to alleviate rheumatic pains, skin diseases and wounds; although some were also ingested to treat cold or stomach diseases. One completely abandoned remedy is the ingestion of petroleum which was eaten with sugar and honey to cure cough, sore throat and internal parasites and applied externally to treat lung diseases.

It seems that the uses of other remedies have derived from the specific resources available in the household and can vary greatly depending on the currently widespread resources. These remedies complement the use of medicinal plants, often being utilised concurrently or in parallel with them, to speed up the healing process.

3.3. Wild food plant uses

The use of wild plants for food among Hutsuls has been relatively restricted: 71 use instances for 40 taxa from 23 families. Of these, the five having the highest food use variations were largely plants bearing wild fruits, including *Rubus idaeus* (5 different food uses), *Vaccinium myrtillus* (4), *Rosa* spp. (4), internationally well-known food seasoning-herb *Carum carvi* (4), but also a weed *Taraxacum campylodes* (5). Altogether 382 use records of food uses were reported, 162 in Romania and 220 on the Ukrainian side. Fig. 10 depicts the overlap of use instances of all wild plants eaten.

The most common purpose of use was recreational tea with 22 taxa utilised: five of them (*Matricaria chamomilla*, *Mentha* spp., *Tilia* spp., *Rubus idaeus* and *Urtica dioica*) were used in both communities, while two-thirds of the rest were used only in Ukraine and the remaining one-third in Romania only. Other shared uses include seasonings for various foods, mainly soups (*Thymus serpyllum*, *Picea abies, Origanum vulgare*, *Allium* spp.), and fruit snacks. A variety of soups of *Rumex* spp. (*Rumex acetosa* and *Rumex thyrsiflorus*) and *Urtica dioica* were seasonally made almost in every household, making it the most extensively distributed use, while the soup of *Taraxacum campylodes* was peculiar to Romania. More overlapping uses of wild food include some spring-time foods: the use of the leaves of *Tussilago farfara* for making stuffed rolls and *Chenopodium album* boiled and eaten with sour-cream. Of the three taxa used for making salads only *Taraxacum campylodes* was utilised cross-border. Although only mentioned a few times in

Table 2
Other domestic folk remedies used for medicinal and veterinary purposes in the study area.

Remedy	Recorded local name(s)	Preparation	Recorded food or medical use(s) (treated disease)	Use recorded on the Romanian side of Bukovina	Use recorded on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use recorded in past folkloric studies in Bukovina
aftershave	одеколон	dripped on a cloth and applied externally to ear	ear ache		+	*	
apple vinegar	асід яблочий	topical application	skin diseases		+	*	
banuş	banuş	maize flour boiled with cream; while worm topically applied on chest	cough	+		*	
		maize flour boiled with cream; while worm topically applied on throat	sore throat	+		*	
beer	пево	drunk	when a woman lacks milk for breastfeeding	+		*	
black pepper	перец черний	applied to tooth cavity	toothache	+		*	
blue stone	сений камен	applied to tooth	toothache	+		*	
bone marrow of deer	костевой мозг від оленя	macerated in alcohol; topical application on chest	cold		+	*	
broken hay, chaff	діфин, дренно сіно, дрен, трен	added to hot bath water, bathed in or placed beneath the bath	rheumatic pains	+	+	*	
			cold	+	+	*	yes
			headache	+		*	
			haemorrhoids		+	*	
butter of cow	масло коровье	drunk hot with cow's milk or vodka	cough		+	*	yes
		applied hot on forehead	headache	+		*	yes
		mixed with honey and applied on bruises	bruise	+		*	
butter from sheep milk	масло овечие	applied hot on hands	hand ache	+		*	
		topical application with Arctium lappa leaves or cloth or film	headache		+	**	yes
chicken stomachs	желудці кур	dried, grounded and eaten	stomach ache		+	*	
cloth (warm)	тепла тканина	topical application	ear ache	+		*	
coffee	кава	drunk	low blood pressure		+	*	
dog meat	собачатина	cooked and eaten	tuberculosis (mild form)		+	*	
egg albumen	білок яйця	instantly applied on burns	(severe) burns	+	+	**	
fat from badger	жир барсука	eaten	tuberculosis		+	*	yes
		added to tea, drunk	sore throat		+	*	yes
			cough		+	*	yes
		mixed with vodka; rubbed on chest	cold		+	*	yes
fat from bear	жир медведя	eaten	tuberculosis		+	*	yes
		mixed with vodka; rubbed on chest	cold		+	*	yes
fat from dog	жир собачий	eaten	tuberculosis		+	*	yes
		mixed with vodka; rubbed on chest	cold		+	*	yes
fat from fox	жир лисиці	dropped into nose, one drop in each nostril	tuberculosis		+	*	
fat from pork	сало свиньи	topical application	toothache		+	*	
		fresh pork applied externally to throat	angina		+	*	yes
		added to tea, drunk	sore throat		+	*	yes
			cough		+	*	
		boiled in milk, applied externally to throat	sore throat		+	*	
fat from pork (salted)	солонина	applied externally	sore throat	+		*	
fat from sheep	жир овечій	added to bath water	haemorrhoids		+	*	
			rheumatic foot ache		+	*	
flour	мука	hot flour applied to ear	earache		+	*	
		hot flour applied to throat	sore throat		+	*	
fresh sheep wool	сира вовна	heated, applied to aching limbs	rheumatic ache		+	*	
green spirit	спірт зелений	given to drink	diarrhoea in cows (vet)	+		*	

honey	мед	eaten	stomach ache	+		*	
			heart ache	+		*	
			sore throat		+	*	yes
		mixed with cow butter and applied to bruises	bruise	+		*	
hot coal	вуголь горячий	wood heated, hot coal put into cold water and incantation read, count backwards from nine	against evil eye	+		*	
incense	ладан	blessed in church, burned at home	to protect from diseases	+		*	
iodine	йод	gargling	sore throat		+	**	
liquid left after making cruds	жентеца, чер,жур	heated up and used for bathing	foot or hand ache	+	+	*	yes
			to strengthen repaired broken bones		+	*	
		drunk fresh	good for liver		+	*	
		given to drink	given to calves to make them strong (vet)	+	+	*	
linen cloth	трубка з лену	linen cloth is packed into a pipe, put into ear and lit on fire at the other end	ear ache	+		*	
milk of cow	молоко коровье	in eye	eye ache	+		*	yes
		sitting in hot bath	haemorrhoids	+		*	
milk of women	жіоче молоко	dropped into eye	eye ache	+	+	**	
moss in the forest	pedicuța	topical application	burns	+		**	
needles of conifers	фоя	tea	bronchitis	+		*	
oil	олея	given to calves	during weaning to make them stronger (vet)	+		*	
		drunk	constipation	+	+	**	
		internal	rumination problems in cows (vet)		+	*	
		topical application	burns		+	*	
pig stomach lining	оболочка желудка свиньи	fresh pig stomach lining applied to throat with cloth	sore throat		+	**	
pinewood oil	терпентин	left to evaporate in a room (or on a pillow)	cough		+	**	
propolis	прополис	fresh or heated, topical application	burn wound		+	*	
rice	orez	decoction	diarrhoea		+	*	
salt	сіль, соль	topical application	burns		+	*	
		gargling	toothache		+	*	
		heated and applied externally	sore throat	+		**	yes
		gargling	sore throat		+	**	yes
		heated salt applied externally to tooth	toothache	+		*	
soda (sodium bicarbonate)	сода	gargling	sore throat		+	**	
		gargling	toothache		+	*	
		gargling with tea	sore throat		+	*	
sheep wool	вовна вівці	unwashed sheep wool is applied on sore areas	rheumatic pain	+		*	
		hot water is added to fresh sheep wool in the bucket; ill person sits on the bucket, so that water evaporates along with wool vapour	haemorrhoids	+		*	
sour cream	сметана	topical application	burns (minor)		+	*	
sour milk	гуслінка, кисляк, квасне молоко	topical application	burn wounds		+	*	yes
		topical application	headache		+	*	
		topical application on chest and forehead	fever	+		*	
		eaten	constipation		+	*	yes
			stomach ache		+	*	yes
spirit	спірт	topical application	hand and leg aches	+		*	
sugar	сахар, цукор	drunk with water	heart ache	+	+	*	
		eaten	low blood pressure		+	*	
tea (a lot of)	много чаю	drunk	constipation	+		*	
urine	моча	topical application	large wounds in cattle (vet)		+	*	

Table 2 (*continued*)

Remedy	Recorded local name(s)	Preparation	Recorded food or medical use(s) (treated disease)	Use recorded on the Romanian side of Bukovina	Use recorded on the Ukrainian side of Bukovina	Frequency of citation	Same or similar use recorded in past folkloric studies in Bukovina
water	вода	clyster	constipation		+	*	
water and sugar	вода та цукор	ingested	constipation	+		*	
water with high salt concentration	дуже солена вода	gargling	toothache		+	*	
			sore throat		+	*	
waxed cloth or cloth left over from ornamenting eggs	трубочка с воском, писанка	waxed cloth is packed into a pipe, put into ear and lit on fire at the other end	earache		+	**	
white stone, burned in fire and put in water	вапно, вапняк	specific calcium-rich white stones are burned in fire and put in water to cool down; broken up and given to chickens	for better egg laying (vet)		+	*	
wine	вино	given to drink	diarrhoea (vet)	+		*	
vodka	горілка	given to drink	rumination problems in cows (vet)		+	*	
		topical application	tooth ache		+	**	
			headache		+	*	
			sore throat		+	*	
vodka with oil	горілка та олея	mixed and given to cows	rumination problems in cows (vet)		+	*	
vodka with salt	горілка з сіло	mixed and drunk	diarrhoea		+	*	
vodka with salt and pepper	горілка, сіль, перец	all mixed together, drunk about 50 ml at a time	diarrhoea		+	*	

Frequency of citation:* cited by up to 3 respondents;**4–8 respondents; listed illnesses refer to emic categories.

Fig. 10. Overlap between the wild food plant reports recorded in Romanian Bukovina (ROM) and Ukrainian Bukovina (UKR).

Romania, the making of syrup (honey) from the flowers of *Taraxacum campylodes* was widespread in Ukraine. The wide popularity of *Taraxacum campylodes* in Eastern Europe is probably due to intense propaganda regarding its use in women magazines during the 1980s (see also Łuczaj et al. (2012)). The fermenting of the bran of *Triticum* spp. and *Secale cereale* to obtain acid for making local sour soup was also peculiar to Romania. On the Ukrainian side of the border the acidity of soup was not an important culinary issue.

It is remarkable to underline the use of cooked *Plantago major* leaves in the highest Hutsul mountain villages of Ukraine and their consumption with sour cream, as a single vegetable, what in Europe in largely unknown, since *Plantago* species are generally sporadically used in boiled mixtures only (Łuczaj et al., 2012, and references therein). This may be seen as a result of an extreme adaptation to elevated Carpathian environment, where the winters are very snowy and long-lasting.

Differences in the taxa used for seasoning were notable, but not essential from the perspective of survival: *Carum carvi* was used on Romanian side only for seasoning lactofermented cucumbers, whereas on Ukrainian side it was added to sauerkraut; the three remaining seasonings for lactofermented cucumbers (*Quercus robur*, *Ribes nigrum* and *Armoracia* spp.) were recorded only on the Ukrainian side of the border.

Of the 16 use instances mentioned in the clearly incomplete available historical sources only six (*Chenopodium album* boiled and eaten with sour cream, recreational teas of *Matricaria chamomilla*, *Mentha* spp., *Rubus idaeus* and *Tilia* spp., and the soup of *Urtica dioica*) are widespread and used on both sides of the border.

The relatively high overlap of wild food use instances for both regions, together with the existing historical data, indicate a high resilience of this specific segment of plant use.

3.3.1. Comparison of overlaps in uses

A comparison of overlaps in uses found in the three domains (Table 3) indicates that divergences in current medicinal plant use are much greater than in the use of wild food plants. A similar

Table 3
Comparison of Jaccard Similarity Indexes for different use domains.

	Taxa/remedies	Use instances
Medicinal plants	63.64	11.91
Non-plant medicinal remedies	22.22	10
Wild food plants	42.5	26.76

tendency was found by Quave and Pieroni (2015) when comparing two different ethnos sharing the same ecological niche; their argument, that wild food plants may have represented emergency foods in the past, may also be valid for this comparison. The majority of the wild food taxa, including those used for making recreational teas, are also used for medicinal purposes and hence contribute to the food-medicine continuum, representing emergency foods in the past and serving as memory markers for possible future food shortages.

3.4. Ethnoveterinary uses

Only 35 ethnoveterinary DUR of plant use were provided, two of them from Romania and 33 from Ukraine. Among other remedies, the proportion is similar: of the 15 ethnoveterinary DUR 3 were from Romanian and 12 from the Ukrainian side of the border. The majority of ethnoveterinary uses were mentioned by just a few people, as academic veterinary care has been well developed in both countries for quite some time and only a high level of isolation keeps ethnoveterinary practice somewhat alive on the Ukrainian side of the border, whereas on the Romanian side interviewees quickly referred to veterinary doctors. On both sides of the border several people responded that animals heal themselves without assistance, finding the needed plants, and if that does not help, then a veterinary doctor is consulted.

Altogether 16 vascular plant taxa and seven other remedies have been utilised, mainly given to animals in the form of tea or an infusion or fresh (but also fermented). The majority of the treated aliments were related to digestion (diarrhoea or rumination problems) and largely the same plants were utilised as for human aliments. The most popular ethnoveterinary treatment was *Linum usitatissimum*, given to cows for strengthening after giving birth to calves or to treat stomach problems. Among the other remedies vodka and oil were the most popular. Of the 17 recorded use instances of plants only four had also been recorded historically (use of infusions made from the seeds of *Carum carvi*, the aerial parts of *Hypericum perforatum*, or the bark of *Quercus* spp. to cure diarrhoea in cows and an infusion made from the aerial parts *Veratrum lobelianum* to treat internal parasites in cows). However, historical uses include 15 more use incidents not reflected in current ethnoveterinary practices. The majority of these uses covered (mostly cow udder) wounds [*Symphytum* spp. *Rumex confertus*, *Pinus sylvestris* and *Lycopodium* spp. (Lycopodiaceae)] and a variety of internal parasites (*Cannabis sativa*, *Beta vulgaris*, and *Alnus* spp).

In the present rural life of Hutsuls ethnoveterinary medicine constitutes a very limited domain still practiced to some extent only in very isolated villages in Ukraine where the services of learned veterinarians may be arriving quite late.

4. Conclusion

Although considerable changes have occurred within specific medicinal applications and less in the taxa used, Hutsul herbal ethnomedicine on the Ukrainian side of the border seems to have continued to evolve (abandoning some uses and adopting others), whereas on the Romanian side it has undergone significant erosion with a proportionally smaller adoption of new uses and the leaving behind of more traditional uses than on the Ukrainian side. In sum, current ethnomedicinal practices of Hutsuls living on both sides of the border are more extensive than those recorded in historical sources. Yet the spatial method employed to collect the historical data and possible skipping of “ordinary” uses by folklorists and ethnographers does not allow definitive conclusions to be drawn. The influence of the Soviet State Pharmacopeia on present-day ethnomedicine on the Ukrainian side is minimal and even proportionally smaller than the overlap with the uses on the Romanian side of the border, indicating that the uses may also have been acquired from elsewhere. The factors influencing the more diverse medicinal plant use are unfavourable economic conditions and the relative isolation of researched Ukrainian Hutsuls compared to Romanian Hutsuls. More research is needed to evaluate the influence of popular herbals published within the last 70 years on the evolution of current medicinal plant use and to understand the criteria by which new specific plant uses are accepted into ethnomedicinal use.

On the other hand, as recently pointed out by Quave and Pieroni (2015) in NE Albania, wild food plant uses seem to be more convergent than medicinal plant uses among contiguous ethnic groups or, as in this case, the same community separated by the formation of a state border decades ago. This could be due to the fact that this reserve of natural resources may have represented one of the pillars of food security in times of scarcity and therefore influences of the “dominant cultures” (Soviet and Romanian) may have been mitigated by this.

Cross-cultural and cross-border ethnobotany represents, however, one of the most powerful means for addressing the issue of change and variability of medicinal plant uses and heritage, and further studies in other areas of Eastern Europe need to address the trajectory proposed by the present study.

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