



# The trauma of no-choice: Wild food ethnobotany in Yagnobi and Tajik villages, Varzob Valley, Tajikistan

Renata Sōukand · Julia Prakofjewa · Andrea Pieroni

Received: 11 October 2020 / Accepted: 29 April 2021 / Published online: 13 May 2021  
© The Author(s) 2021

**Abstract** Due to global change and the migration crisis both needing rapid attention, there has been growing debate about the drivers of change in the diet of migrants. Our study aimed to evaluate the consequences of forced resettlement on local ecological knowledge related to wild food plants among forcefully resettled Yagnobi people in Tajikistan. We conducted 49 semi-structured in-depth interviews and recorded 27 wild food taxa and five unidentified folk taxa used by Yagnobis and Tajiks in the villages surrounding Yagnob Valley (including families resettled from Yagnob Valley) in central Tajikistan. The comparison between the two considered groups showed a high level of Tajikisation among Yagnobis, both those who live alongside Tajiks as well as those living separately. The few families that still have distinct Yagnobi plant uses are the ones which were given the opportunity to

choose the spot in which to relocate and still visit the Yagnob Valley regularly. On the basis of our study, we suggest that affording a choice of where to relocate is better than no choice, as the loss of motivation also affects the use of wild food plants. Given the pressure of the possible relocation of many groups of people in the light of global change, we suggest focusing efforts on studying similar cases in order to minimize the damage caused to people by relocation. The trauma of forced relocation, even just a few kilometers away, directly or indirectly affects wild food plant use and with this the food security of the community.

**Keywords** Wild food heritage · Mobility · Internal relocation · Trauma · Local ecological knowledge · Food security

---

R. Sōukand (✉) · J. Prakofjewa  
Department of Environmental Sciences, Informatics, and Statistics, Ca' Foscari University of Venice, Via Torino 155, 30172 Mestre, Venice, Italy  
e-mail: renata.soukand@unive.it;  
renata.herba@gmail.com

A. Pieroni  
University of Gastronomic Sciences, Piazza Vittorio Emanuele II 9, 12060 Pollenzo, Cuneo, Italy

A. Pieroni  
Department of Medical Analysis, Tishk International University, Erbil, Kurdistan 44001, Iraq

## Introduction

Due to global change and the migration crisis both needing rapid attention, there has been growing debate about the drivers of change in the diet of migrants (see, for example, Kershner 2017). Home-made foods are part of national identity, and thus migrants often balance between striving to continue native traditions and needing to adapt to the new culture and environment, a phenomenon identified as resilience on cultural and ecological edges (Turner et al. 2003; Folke et al. 2010; Singh et al. 2020). The

change of cuisine among different migrant groups has recently been a much-discussed subject in ethnobiology and beyond. The majority of studies, however, addressing cultural adaptation/resilience have been conducted for relocations far from the place of origin of the researched group (Fontefrancesco et al. 2019 and references therein). Relocations within one geopolitical region (e.g. internal refugees, forceful relocation) are very rarely considered in ethnogastrometry (Pieroni and Soukand 2016; Pieroni et al. 2020), although internal migration as such is of great interest from a variety of points of view (see von Berlepsch and Rodríguez-Pose (2019) and references therein).

Yaghnobis are a small ethnic group autochthonous to present-day Tajikistan, a country which is considered at high risk of malnutrition among women and children in rural areas (Barth-Jaeggi et al. 2020). In the 1960–1970s, the Yaghnob Valley was emptied and the residents were relocated mainly to a cotton-picking area in the deserted lowlands; only some families remained in the Yaghnob Valley. The main official reason for the eviction of the Yaghnobis was that the resettlement was outside of a dangerous geodynamic zone (Gunya 2002, p. 72). But the fact that army forces and helicopters were used to relocate people puts the relocation on the very involuntary end of the migration continuum (*sensu* Erdal and Oeppen 2018). Subsequent to this displacement, change in daily customs and child labor in the cotton fields caused a state of malnutrition and an outbreak of epidemic diseases region among resettlers (Cilli et al. 2011). As reported by Loy (2013), the resettlers were forced to continue their lives amidst severe physical and psychological hardships, as workers in the cotton production. It should be noted that official sources stated that Yaghnobis were satisfied with this move and had decided to abandon the homeland of their ancestors of their own free will (Loy 2013).

After the fall of the Soviet Union some families did return and a few more visited the Yaghnob Valley in the summer months, but the number of the families currently living in the Yaghnob Valley remains small, below 50 (Paul et al. 2010; Loy 2006). The territory of the Zarafshan Range, which is bordered by the Yaghnob River, is rich in endemic species, but is now under severe stress from human activities, such as deforestation, as the local population is left to rely on itself (Rahmonov et al. 2014). While there are few

recent insights into some aspects of herbal ethnomedicine of Tajiks (for example, Keusgen et al. 2006; Kassam et al. 2010) and the Yaghnobi people (Delaini 2008, 2010, 2012, 2013), there are no available studies on the use of wild food plants in Tajikistan, and thus documentation of the current situation is also important. There are, however, recent studies on the ethnobotany of Wakhi agropastoralists and the Kyrgyz nomads of Afghanistan (Soelberg and Jäger 2016) and some insight into famine-time wild food plants (Kassam 2010) which can provide some comparison.

It is widely assumed, and has been empirically shown, that in the case of relocation traditionally used medicinal plants are often replaced with respective host country flora (Medeiros et al. 2012). The use of wild food plants is more stable and less affected by change (Quave and Pieroni 2015; Söukand and Pieroni 2016) and therefore we cannot automatically expect to observe a similar pattern. With the Yaghnobi case study we have a unique opportunity to examine the influence of forced relocation on the use of wild food plants. The aims of our study were (1) to record wild food ethnobotany of Yaghnobis and Tajiks, (2) to compare the two groups, and (3) to evaluate the consequences of forced resettlement on local ecological knowledge related to wild food plants. Our working hypothesis is that the trauma of forced resettlement leaves identifiable traces on the use of wild food plants.

## Data and methods

### The Yaghnobi people

The Yaghnobi people are autochthonous to Tajikistan and speak one of the few surviving Eastern Iranian languages. There are approximately 13,500 Yaghnobi speakers living in different communities in Tajikistan. The Yaghnob Valley, which is situated in the Pamir–Alay Mountains between the southern slopes of the Zarafshan Range and the northern slopes of the Gissar Range by the Yaghnob River, is considered their traditional homeland (Paul et al. 2010). The Yaghnob Valley, which is completely encircled by high spurs of the Hissar and Zeravshan ranges, represents in its upper part an example of an isolated peripheral area—a refugium of the ethnos and its

environment, of ancient cultural landscapes (Gunya 2002, p. 9). Contact with the outside world is quite limited. Yaghnobi villages are poor, pastoral communities that raise sheep and keep dogs as guardians and for herding animals (Panaino 2013).

The vegetation cover of the Yaghnob Valley is highly diverse and non-uniform. The large number of vegetation associations and the variegation of their distribution is a result of the diversity of external conditions (orographic, climatic, soil conditions, etc.). Furthermore, the flora composition itself is not homogeneous, being composed of several groups of species (Gunya 2002, p. 37).

The Yaghnob Valley has been studied extensively since the second half of the nineteenth century (Ujfalvy 1879; Capus 1883; Geiger 1898). It has recently been of great interest to contemporary scientists (Panaino 2013; Basello, 2008; Bencato 2015 and references therein), especially linguists, as the Yaghnobi are considered the speakers of the last surviving dialect of the Soghdian language (Paul et al. 2010). However, there are no known scientific studies on the wild foods of Yaghnobi. As Qvirist (2016) was able to isolate a very distinct microbial strain from fermented milk deriving from the Yaghnob Valley, the physical isolation this minority group had until recent times might have also created specific variations in wild food use.

### *Study area*

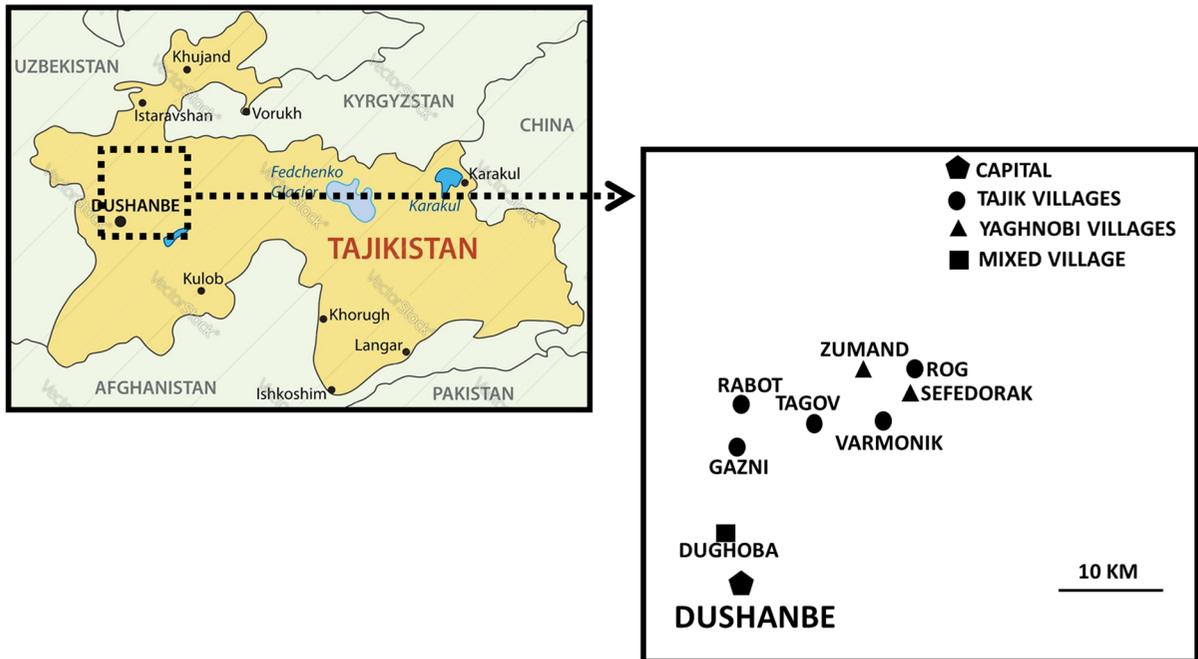
In April 2019, we visited two villages inhabited by the Yaghnobi people and five neighboring villages inhabited by Tajik-speaking people. In addition, one visited village, Dughoba, had an ethnically-mixed population. Dughoba was the village in which some Yaghnobi people resettled semi-voluntarily in the late 1960 s after having advanced warning of forced relocation in 1970 (Paul et al. 2010). While the village of Sefedorak was not affected by resettlement, Zumand had only a few households before the relocation of 1970. The study villages (Fig. 1) are located in North-West Tajikistan in the Varzob Valley, on the southern slopes of the Hissar Range of Western Pamir-Alay. The highest villages are Sefedorak (Fig. 2) and Zumand (Fig. 3) which are situated approximately 2300 m.a.s.l., while the mixed village of Dughoba is located approximately 1000 m. a.s.l. Of the Yaghnobi villages, only one, Zumand, is

highly isolated and can only be reached by four-wheel-drive vehicles when the road is fully dry, at all other times it is accessible only by walking approximately 4 km uphill.

### *Field study*

Our main goal was to visit the villages of the Yaghnob River Valley, Zumand village and Zafarobod District. Unfortunately, unfavorable weather conditions (unexpected snow in the mountains and heavy rain that closed Anzob Pass) did not allow us to visit either the Yaghnob River Valley or Zafarobod District. Therefore, we had to change our initial plan and restrict interviews to the people that we were able to reach. A portion of them lived in villages that were originally Yaghnobi (Sefedorak, Zumand), while others were now living in Dughoba after being resettled. It turned out that the inhabitants of Zumand, now a village encompassing about 100 households, were also actually resettled from the Yaghnob Valley in the 1970 s and that “there were no more than four houses before”, according to an interviewee. To understand the level of assimilation, we also interviewed Tajik people living in villages near Yaghnobi villages or in the same village (in case of Dughoba). The interviewees we refer to as Tajik include those whose original native language was Tajik and who did not identify themselves as Yaghnobis.

Using convenient sampling method, we interviewed 49 people (25 Yaghnobi and 24 Tajiks), either individually (about one third of the interviews) or in small groups. The oldest interviewees were 65 years old for the Yaghnobis and 63 for the Tajiks, while the youngest were 19 years old in both groups. The mean age was 45 years for the Yaghnobis and 43 for the Tajiks. Of the 25 Yaghnobis, 15 were men and 10 women, while the gender of the 24 Tajiks was equally distributed. Six of the Yaghnobis we interviewed were currently living in Dughoba, while five people came from two families that still visited the Yaghnob Valley in the summer. The Dughoba families were those that received early warning at the end of the 1960 s and resettled preventively to Dughoba (see also Paul et al. 2010). Five people interviewed in Zumand village were relocated there during their early childhood and had no or very little memory of the Yaghnob Valley and had never returned there.



**Fig. 1** Research site



**Fig. 2** Sefedorak village (23.04.19)

The Yaghnobis are mainly bi-lingual, also speaking Tajik, a Western Iranian language. Some men, especially those who have worked in Russia, can also speak Russian, yet Russian-speaking women are difficult to find. Among the Tajiks, the level of spoken Russian is higher and many women speak Russian. The interviewees were selected by approaching them on the street and/or asking for the most knowledgeable people in the village. The semi-structured interviews were conducted in



**Fig. 3** Zumand village is not commonly covered with the snow at the very end of April (26.04.19)

Russian by the first author, often with the help of an interpreter recruited ad hoc on a voluntary basis from the same village. The questions starting from general use of plants not deliberately cultivated for food, proceeding with more detailed food categories obtained during in-depth interviews conducted with the first three families we visited. Interviews were conducted in the participants' homes and lasted from 30 to 60 min, and they were preceded or followed, if

possible, by a field walk with the interviewee(s). A field walk was not possible in the village of Zumand as on the day of our visit it was covered with snow (Fig. 3). We asked the interviewees to list and show currently gathered and consumed wild food plants eaten fresh and used as vegetables (cooked, fried or fermented), for fillings of pies or dumplings, or as seasoning. We also asked for local plant names and details on gathering and preparation. The Code of Ethics of the International Society of Ethnobiology (ISE 2006) was rigorously followed and oral informed consent was obtained prior to interviews. Only four people refused to participate due to a lack of time or interest.

Plants were identified via the Flora of Tajikistan (Rasulova 1991), yet the nomenclature presented in the article follows The Plant List database (2013), and family assignments follow the Angiosperm Phylogeny Group (APG) IV (Stevens 2017). If the plant specimen was not available, the taxon was identified on the basis of a full description of the plant and its habitat as well as the Tajik or Russian name given by the interviewees. Different *Ferula* species were identified only at the genus level, as no specimens were available. There were 5 taxa which we were not able to identify, even at the family level, as their use was described by displaced people and samples were not available or explanations sufficient to recognize the plants. The collected voucher specimens are deposited at the Herbarium of the Department of Environmental Sciences, Informatics, and Statistics of Ca' Foscari University of Venice, Italy (UVV) bearing numbers UVV.EB.TJK01–22 for herbarium samples and UVV.EB.TJKDR01–09 for dried plant samples.

#### Data analysis

All local plant names were reported in the Latin alphabet from the perspective of an English speaker. Data was transcribed from field notebooks and classified according to taxa and emic use categories. Use Instances (UI - the emic category of use of a taxon) were employed to evaluate the food-ethnobotanical distance between the studied linguistic groups. For both taxa and UIs, Jaccard Similarity Indices (JI) were calculated following the methodology of González-Tejero et al. (2008):  $JI = (C/(A+B-C)) \times 100$ , where A represents 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. A resulting value of zero signals no similarity between the groups, while a value of one indicates that the uses recorded in two communities are completely overlapping.

We further qualitatively compared three different groups within the Yaghnobi group, evaluating the responses given in locations with different relocation experiences. The limitation of such a comparison is the low number of people in each sample, yet we did not have much choice: in Dughoba we interviewed all Yaghnobis that we were able to find, while in Zumand we had to return before dark and a second visit was not possible due to the adverse weather conditions. Therefore, the results deriving from this comparison are suggestive and should provide ideas for further investigation in this direction.

## Results and discussion

In both communities, we recorded the food use of 24 plant species, three taxa identified at the genus level, representing eight plant families and five unidentified folk taxa (Table 1). The most represented families were Apiaceae and Rosaceae (6 taxa), Polygonaceae (5 species) and Lamiaceae (4 species). We also identified one fungal taxon (*Pleurotus* sp) mentioned by our interviewees when asked about wild foods. The most popular use of mushrooms was frying them with oil after prior boiling.

Sixteen taxa were used by at least 20% of people in at least one community. The most popular of them were *Rumex* spp., *Allium rosenorum*, *Allium suworowii*, *Heracleum lehmannianum*, *Rheum maximowiczii*, *Polygonum coriarium* and *Taraxacum kok-saghyz*. The largest number of plant taxa (including those unidentified) is used for snacking (11). Of these, 8 were eaten raw with salt, (four of them, *T. kok-saghyz*, *H. lehmannianum*, *R. maximowiczii* and *Rumex* spp., by more than 10 people) and 3 simply snacked on raw. Eight taxa were used for seasoning (two of them—*Scandix pecten-veneris*, and *Galgania fragrantissima*—by more than 10 people). Seven plant taxa and the fungi species were boiled before further processing, of which only the mushroom and *Allium rosenorum* were used by more than 10 people. Particularly popular was a soup made with

**Table 1** Wild food plants used by Yaghnobi and Tajiks

Botanical name, family, and voucher specimen codes	Local names	Parts used	Traditional culinary uses
<i>Allium rosenbachianum</i> Regel, Amaryllidaceae (TJKDR06)	Katk <sup>Y!</sup>	Leaves	Boiled and dried for winter <sup>Y</sup>
<i>Allium rosenorum</i> R.M.Fritsch, Amaryllidaceae (TJK15, TJK21, TJKDR07, TJKDR09)	Saalaf <sup>Y,T</sup> , Shovesha <sup>Y!</sup> , Sialaf <sup>Y</sup> , Siolaf <sup>T</sup>	Leaves	Boiled with rice and eaten with sour milk <sup>TTT, YYY</sup> , boiled and dried for winter <sup>TT, YYY</sup>
<i>Allium suworowii</i> Regel., Amaryllidaceae*	Pioze anzur <sup>T,Y</sup>	Bulbs and aerial parts	Bulbs: soaked in salted water, which was changed every day, for 40 days, then fermented or marinated <sup>TTT, YYY</sup>  Aerial parts: seasoning, lactofermented <sup>T</sup>
<i>Angelica ternata</i> Regel & Schmalh. (TJKDR02), Apiaceae	Eshum <sup>T</sup> , Jesum <sup>T</sup> , Urushma <sup>Y</sup>	Leaves	Food seasoning <sup>TT, YY</sup>
<i>Carum carvi</i> L., Apiaceae (TJKDR05)	Koru <sup>Y!</sup>	Seeds	Seasoning <sup>Y</sup>
<i>Craetaegus</i> sp.; Asteraceae	Hirsipaja <sup>T</sup>	Flowers	Snack <sup>T</sup>
<i>Ferula</i> spp. Apiaceae	Khing <sup>Y</sup> , Rireshak <sup>Y</sup> , Servichak <sup>Y</sup>	Leaves Peeled stems Roots	Seasoning <sup>Y</sup> Snack with salt <sup>Y</sup> Boiled for a long time, eaten during famine <sup>YY</sup>
<i>Fritillaria eduardii</i> A.Regel ex Regel, Liliaceae*	Kholmon <sup>T</sup>	Bulbs	Ground, starched washed and dried, used to make porridge with milk for the breakfast <sup>TT</sup>
<i>Galagania fragrantissima</i> Lipsky, Apiaceae (TJK12)	Chulingon <sup>T</sup> , Gereshag <sup>Y</sup> , Shibitag <sup>Y</sup>	Aereal parts	Seasoning <sup>TT, YY</sup>
<i>Heracleum lehmannianum</i> Bunge, Apiaceae (TJK10)	Karafsh <sup>Y</sup> , Kasruf <sup>T</sup> , Khorush <sup>T</sup>	Peeled stems	Eaten raw with salt <sup>TTT, YYY</sup> , lactofermented <sup>YY</sup>
<i>Malus sieversii</i> (Ledeb.) M.Roem., Rosaceae*	Sebi <sup>Y</sup>	Unripe fruits	Raw snack <sup>YY</sup>
<i>Melissa officinalis</i> L., Lamiaceae (TJK17)	Miasbu <sup>T</sup> , Miosgu <sup>T</sup> , Niosbu <sup>T</sup>	Aerial parts	Seasoning <sup>TT</sup>
<i>Mentha asiatica</i> Boriss., Lamiaceae (TJK01)	Pudina <sup>T,Y</sup> , Zubuda <sup>Y</sup>	Aerial parts	Added to sour milk as an aromatizer <sup>Y</sup> , seasoning of food <sup>Y</sup>
<i>Origanum vulgare</i> subsp. <i>Gracile</i> (K.Koch) Ietsw., Lamiaceae (TJKDR03)	Kokuty <sup>T</sup>	Aerial parts	Seasoning <sup>T</sup>
<i>Prunus cerasifera</i> Ehrh., Rosaceae*	Kabutak <sup>T</sup>	Unripe fruits	Raw snack <sup>T</sup>
<i>Prunus sogdiana</i> Vassilcz., <i>P. tadjikistanica</i> Zaprzjagaeva (TJK22) and <i>P. darvasica</i> Temb. Rosaceae*	Olacha <sup>T</sup> , Zardolu <sup>Y</sup>	Unripe fruits	Raw snack <sup>T, YY</sup>
<i>Pleurotus</i> sp., Pleurotaceae	Khorch <sup>T,Y</sup> , Khorchak <sup>Y</sup>	Fruiting body	Boiled and fried with oil <sup>TTT, YYY</sup> , dried for soup <sup>Y,T</sup> , fermented <sup>T</sup>
<i>Rheum maximowiczii</i> Losinsk., Polygonaceae, (TJK15)	Chukuri <sup>T,Y</sup> , Tarsangi <sup>T@</sup>	Petioles	Eaten raw with salt <sup>TTT, YYY</sup> , jam <sup>Y</sup> , lactofermented <sup>YY</sup>
<i>Rumex crispus</i> L. (TJK18) and <i>R. paulsenianus</i> Rech. f. (TJK20), Polygonaceae	Shila <sup>T</sup> , Sitk <sup>Y</sup> , Shulkha <sup>T,Y</sup>	Leaves	Eaten raw with salt <sup>TT, YY</sup> , dumplings <sup>TT</sup>
<i>Scandix pecten-veneris</i> L., Apiaceae (TJK16)	Euzanak <sup>Y,T</sup>	Whole plant	Food seasoning <sup>TT, YY</sup>

**Table 1** continued

Botanical name, family, and voucher specimen codes	Local names	Parts used	Traditional culinary uses
<i>Polygonum coriarium</i> Grig., Polygonaceae	Mashak <sup>Y</sup> , Toron <sup>T,Y#</sup>	Young shoots	Fermented <sup>TTT, YYY</sup> , jam <sup>Y</sup> , snack with salt <sup>YYY</sup>
<i>Rosa</i> sp.: Rosaceae	Gulixor <sup>T</sup>	Fruits	Seasoning <sup>T</sup>
<i>Taraxacum kok-saghyz</i> L.E.Rodin, Asteracea (TJK19)	Kokof <sup>T,Y#</sup> , Khokhu <sup>Y</sup>	Leaves	Eaten raw with salt <sup>TTT,YYY</sup> , filling for pies <sup>Y</sup>
<i>Ziziphora pamiroalaica</i> Juz., Lamiaceae (TJKDR01)	Gemilak <sup>T</sup>	Aerial parts	Seasoning <sup>TT</sup>
<i>Urtica dioica</i> L., Urticaceae (TJK11)	Gazanga <sup>Y</sup> , Jamila <sup>T</sup> , Zubuda <sup>T</sup>	Aerial parts	Boiled and fried for various dishes <sup>Y</sup>
Unidentified sp.	Zagala <sup>Y!</sup>	Bulbs	Eaten raw <sup>Y</sup>
Unidentified sp.	Kalacha <sup>Y!</sup>	Leaves	Soup <sup>Y</sup>
Unidentified sp.	Pata Kalacha <sup>Y!</sup>	Leaves	Soup <sup>Y</sup>
Unidentified sp.	Vusgushak <sup>Y!</sup>	Leaves and stems	Boiled <sup>Y</sup>
Unidentified sp.	Bugumakkakhag <sup>T</sup>	Tubers	Boiled <sup>T</sup>

@—Artificially managed in the wild, letting the plant grow without light in order to produce enlarged whitish petioles. !—Name recorded only among Yaghnobi resettled from the Yaghnob Valley in Dughoba. #—Name used by Yaghnobi only in Zumand. \*—Identified on the basis of folk name and plant and habitat description. Frequency of quotation: x—less than 3 people, xx—3–10 people, xxx—over 10 people



**Fig. 4** Warm soup made with *Allium rosenorum*, rice and sour milk. Sefedorak village (23.04.19)

boiled *A. rosenorum*, rice and sour milk (Fig. 4). Two other taxa were used for making soup, but we were unable to identify them due to relocation. Four plant

taxa and the mushroom were fermented, of which *Polygonum coriarium* and *Allium suworowii* by more



**Fig. 5** Lactofermented bulbs of *Allium suworowii*. Rabot village (24.04.19)

than 10 people. The cleaned bulbs of *A. suworowii* were soaked in water, which was changed every day, for 40 days to decrease bitterness, after which they were left to lacto-ferment or, more recently, pickled with vinegar for winter (Fig. 5). The use of *Urtica dioica* was recalled only by one Yaghnobi man, who had worked in Russia, reported its use in several foods, whereas all other interviewees denied its use even when asked explicitly.

Comparison between Yaghnobis and Tajiks

If we consider only the identified taxa, the difference in the used wild food plants between the two groups is noticeable, but not remarkable (Fig. 6). Adding unidentified species increases the difference, but not when we look at the intensively used plants. The qualitative comparison between uses shows only a few more divergences against the backdrop of the limited general diversity of uses in the region.

The comparison of the most popular foods made from wild plants shows the slight preference of Yaghnobis for raw snacking with salt (one more

taxon compared with Tajiks) and fermentation as a way of preservation (50% more taxa), such as fermenting young stems of *Heracleum lehmannianum* (Fig. 7) and *Rheum maximowiczii*.

While the Yaghnobi set of seasonings was rather restricted (Fig. 8), Tajiks named a greater variety, collecting five taxa (Fig. 9) in contrast to three used by Yaghnobis. Tajiks also used wild plants for making specific foods, of which the use of *Fritillaria eduardii* was described as a complicated and time-consuming process (roots ground and the starch washed, dried and later used for making porridge); the presented powder resembled potato starch in its consistency (Fig. 9).

Consequence of resettlement or routine knowledge erosion?

It is generally accepted that historical trauma refers to a complex and collective trauma experienced over time and across generations by a group of people who share an identity, affiliation, or circumstance. In recent years, researchers have shown that historical

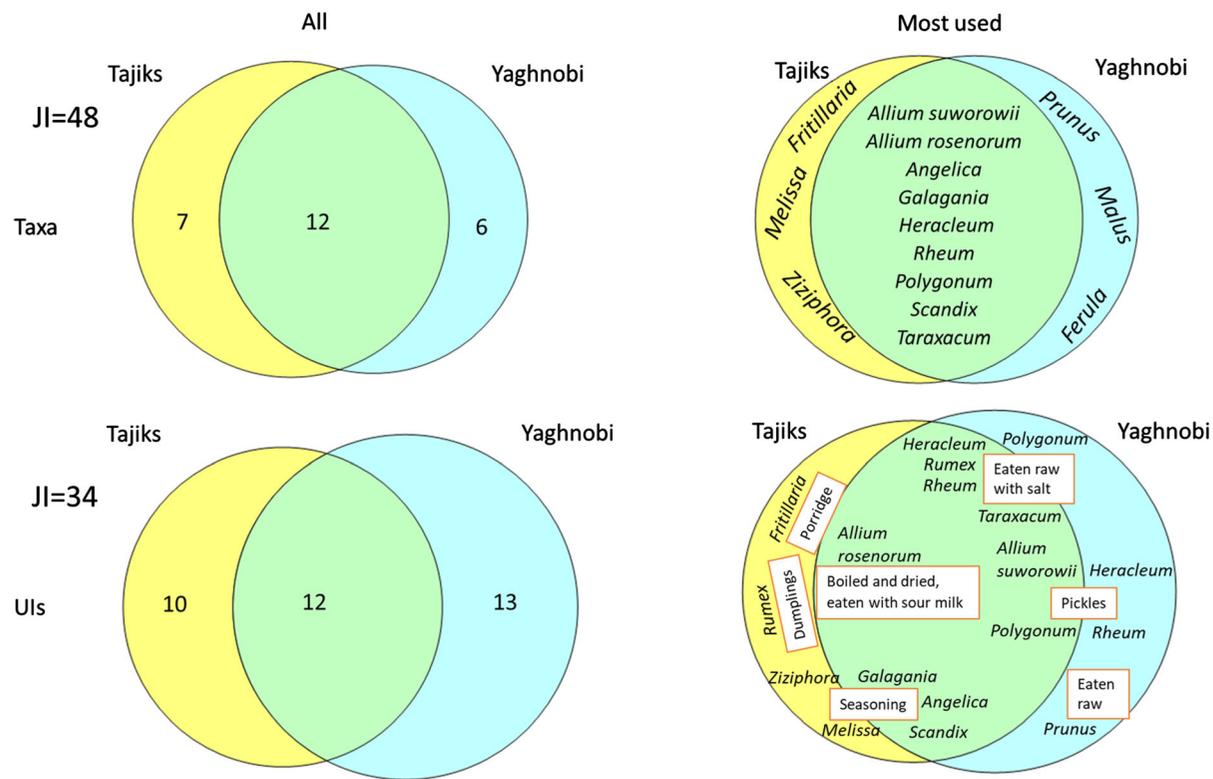


Fig. 6 Comparison of identified plant taxa and uses, and the most common ones, between Tajiks and Yaghnobi



**Fig. 7** Fermented young *Heracleum* stems brought to us by a Yaghnobi woman, but presented to us by a man from Sefedorak (23.04.19)

trauma consists of public narratives that link traumatic events in the past to a contemporary local context (Mohatt et al. 2014). Though little empirical data exists to explain the impact of environmental aspects of historical trauma, evidence suggests that historical loss of land affects both mental and physical health. Modern development and the growing disconnection from traditional healthy behavioral practices have reduced the way people obtain and prepare food and thus how they relate to it (Cwik et al. 2018). Recent studies have linked trauma with the concept of solastalgia. Albrecht et al. (2007) highlighted that environmental changes have an impact on people while they are directly connected to their home environment. Humans threatened by environmental change experience negative effects that are aggravated by a sense of powerlessness or lack of control over the spreading transformation process.

The general low number of used taxa by both Yaghnobis and Tajiks may already signal a



**Fig. 8** *Qurutob*, a dish made with a simple traditional Yaghnobi flatbread *fatir hamil* with fried onions and sour milk. A hospitable Yaghnobi family offered us *qurutob* with

fresh *Galagania fragrantissima* and demonstrated how the bread is made; Zumand (23.04.19)



**Fig. 9** Dried *Allium* (in the foreground) and seasoning mix, and starch made from the bulbs of *Fritillaria eduardii* as demonstrated by Tajiks in Rabot village (24.04.2019)

considerable erosion of wild food plant use among both ethnic groups. However, we do not have any historical or recent data from closely situated regions with which to compare wild food plant use. Therefore, comparing the study villages may provide some insight, but cannot definitely answer the question.

#### *Tajikisation of Yaghnobi plant names*

The Tajikisation of Yaghnobi plant names is relatively high, probably due to co-habitation of Yaghnobis with Tajiks in Sefedorak village. However, only two taxa solely had names overlapping with those used by Tajiks, while four others had Tajik names used in parallel with Yaghnobi names and another two Tajik names were used only by Yaghnobis currently living in Zumand. At the same time, in Dughoba, we recorded six Yaghnobi plant names not known in the other villages, yet four of them (Katk, Koru, Kalacha and Zagala) were listed as plants in the historical dictionary of the Yaghnobi (Andreev and Peshereva 1957). As Foucault (2003) pointed out, dominant cultures often silence or lessen the importance of other cultural groups' narratives, that is, they exclude other people's knowledge. Many authors, for example Loy (2006), have proposed that resettlement was used as a tool by the Soviet administration to transform traditional local societies into a Soviet one.

Dughoba Yaghnobis reported using almost all the other plants used by Yaghnobis in Sefedorak and in addition named seven taxa (among them four unidentified) which were not used by anyone else. They described in detail visits to the Yaghnob Valley

and were ready to bring us there, but the weather worsened and the trip was not possible. Three dried herbarium samples and one plant suitable for making a voucher specimen were provided, which were claimed to be from the Yaghnob Valley. Through all five interviews with the Yaghnobis who routinely visiting the valley, a hint of pride at originally being from there was present and stressed repeatedly. Remarkably, the sixth person said she knows little of the Yaghnobi language, although she was originally from the Yaghnob Valley ("I still know some words in Yaghnobi, but do not use them much. And neither do I use many plants"), naming only six commonly used taxa. She was the only one, among the Yaghnobis, who mentioned *Melissa* and the only person that we interviewed who did not use *Rheum*, as she said it does not grow close to Dughoba.

#### *Drivers of dietary acculturation*

A number of recent studies have postulated a link between cultural adjustment and the dietary changes of immigrants (Satia-Abouta et al. 2002). Dietary acculturation is a well-established immigrant effect which denotes the process by which minority groups adopt the nutritional practices and diet of their host country (Lesser et al. 2014). Field data has revealed that limited knowledge of available local flora makes food choices complicated for internal refugees.

During resettlement, internal refugee nutritional status may be further compromised when given unfamiliar and sometimes culturally inappropriate foods (Varghese 2002). The Yaghnobis interviewed in Zumand named only 12 taxa, those that overlapped

in use with Tajiks. A 58-year-old woman complained: “What can we take from here; nothing grows around here, just the plain mountains”. Indeed, the landscape and the vegetation in Zumand, which is located on the height of 2300 m.a.s.l., differ drastically from the vegetation of the Yaghnob Valley. Yet, it was not only the influence of the different vegetation. When asked about learning how to use wild food plants in their childhood, a 52-year-old man narrated: “I was a very small child when my parents were moved to Zumand. I do not remember myself in the Yaghnob Valley. I have never wanted to return there. My parents worked in the collective farm; they had no time to search for plants or teach their use to me. We used what was available”. There was a clear bitterness in his voice, a trauma not yet overcome with the passage of time. Yet, the famous Yaghnobi hospitality, so necessary for survival in the mountains, was not compromised. When we were leaving, he sent his daughter to bring us a loaf of their traditional bread, to be eaten on the long walk back. As Pollack (2003) argued based on his investigations in Bosnia-Herzegovina, mass trauma events can damage people’s relationships to place, but social acts and symbols that re-narrate the link between natural and social environments can prevent the negative effects of trauma. Regardless of whether the historical traumas are felt based on place, ethnicity, or other social, cultural, or contextual groupings, public narratives created in response to trauma influence one’s sense of identity.

### *The trauma of forced relocation*

There is a clear difference in the attitude toward wild food plants as well as the general attitude between the inhabitants of Dughoba and Zumand that we interviewed. While the number of interviews does not allow for making far-reaching conclusions or definitive statements, we can still observe specific characteristics describing the effect of trauma caused by relocation. First, it is the absence of the flora a person is used to, which, however, can be regained by visiting the place of origin. Second, the way people were relocated is even more crucial. In the case of Dughoba, people had the opportunity to choose where they wanted to go, and this freedom of choice (and some of them also chose Tajikisation) made returning to the homeland easier when the political

situation changed. In the case of Zumand, the element of freedom was completely absent, as people were relocated with brutal force, overnight, and put into inhospitable and unknown environments, destroying the safety net of the community. We observed similar symptoms of trauma among the Kurds of Azerbaijan, who were relocated from the mountain region to the plains of inland Azerbaijan during the armed conflict in Nagorny Karabakh (Pieroni and Sökand 2016) and among Afgani migrants in Pakistan (Manduzai et al. 2021).

### **Conclusion**

Our study showed a high level of Tajikisation among Yaghnobis, both those who live alongside Tajiks as well as those living separately. The only community that still has distinct Yaghnobi plant uses is the one which was given the opportunity to choose where to relocate before the general forced relocation and still visits the Yaghnob Valley regularly.

On the basis of the results of our study we suggest that affording a choice of where to relocate is better than no choice, as the loss of motivation also affects the use of wild food plants. Given the pressure of possible relocation of many groups of people in the light of global change, we suggest focusing efforts on studying similar cases in order to minimize the damage caused to people by relocation. We propose the following hypothesis which needs to be further studied in a concise and statistically valid manner: the trauma of forced relocation, even just a few kilometers away, directly or indirectly affects wild food plant use and with this the food security of the community.

**Acknowledgements** We are thankful to the study participants who shared with the authors their traditional knowledge and their limited food.

**Authors’ contributions** Study design: AP; Fieldwork: AP & RS; Data procession and analysis RS, AP & JP; Drafting the article: RS & JP; Review of the manuscript: AP. All authors have read and approved the final version of the manuscript.

**Funding** Open access funding provided by Università Ca’ Foscari Venezia within the CRUI-CARE Agreement. The study was funded by the University of Gastronomic Sciences and Ca’ Foscari University of Venice.

**Availability of data and materials** All data has been included in the main text.

#### Declarations

**Conflict of interest** The authors declare that they have no competing interests.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

#### References

- Albrecht G, Sartore GM, Connor L, Higginbotham N, Freeman S, Kelly B, Stain H, Tonna A, Pollard G (2007) Solastalgia: the distress caused by environmental change. *Australas Psychiatry* 15(Sup. 1):95–98
- Andreev et al (1957) = Андреев МС, Пещерева ЕМ (1957) Ягнобские тексты с приложением ягнобско-русского словаря, составленного МС Андреевым, ВА Лившицем, АК Писарчик. Издательство Академии наук СССР, Москва-Ленинград
- Arzumanov S (1957) 1957 = Арзуманов СДж. In: Каримов ХК Русско-таджикский словарь. Госиздат иностранных и национальных словарей, Москва
- Barth-Jaeggi T, Zandberg L, Bahruddinov M, Kiefer S, Rahmarulloev S, Wyss K (2020) Nutritional status of Tajik children and women: transition towards a double burden of malnutrition. *Matern Child Nutr* 16:e12886. <https://doi.org/10.1111/mcn.12886>
- Basello GP, Guizzo D, Ognibene P (2008) Sulla Punta di uno Spillo. Rapporto Scientifico sulla Prima Missione Etnolinguistica nella Valle dello Yaghnob (Repubblica del Tagikistan). 31 luglio 2007–23 agosto 2007. Con uno Studio monografico di A. C. D. Panaino. Ravenna, Milano
- Benkato A (2015) Recent work in Yaghnobi studies. *Iran Caucasus* 19(3):283–294
- Capus G (1883) Das Jagnau-Tal und seine Bewöhner. *Petermanns Mitteilungen* 29:93–102
- Cilli E, Delaini P, Costazza B, Giacomello L, Panaino A, Gruppioni G (2011) Ethno-anthropological and genetic study of the Yaghnobis: an isolated community in Central Asia. A preliminary study. *J Anthropol Sci* 89:189–194. <https://doi.org/10.4436/jass.89003>
- Cwik M, Rosenstock S, Tingey L, Goklish N, Larzelere F, Suttle R, Haroz E, Hill K, Craig M, Barlow A (2018) Characteristics of substance use and self-injury among American Indian adolescents who have engaged in binge drinking. *Am Indian Alsk Native Ment Health Res Monogr Ser* 25(2):1–19. <https://doi.org/10.5820/aian.2502.2018.1>
- Delaini P (2010) Amuleti e cura magica tra gli Yaghnobi: un viaggio ai confini della medicina tradizionale islamica e iranica in Islâm. 'Uyûn al-AkhbârStudi sul mondo islamico, pp 209–221
- Delaini PA (2008) Small-Scale Pharmacy at Gharmen—2800 m in Tajikistan Mountains. In: A Scuola di Pace II. Nuove risposte alle sfide autoidentitarie, economiche e giuridiche del XXI secolo. A cura di A. Panaino. Edizioni Mimesis – IsIAO, Emilia-Romagna, Milano, pp 105–114
- Delaini P (2012) Diario etnobotanico. Raccogliendo piante officinali sulle montagne del Tajikistan. In: Ognibene P, Panaino A (eds) A Scuola di Pace III. Si vis pacem para pacem. A cura di Gian Pietro Basello. Edizioni Mimesis – IsIAO, Milano, pp 111–118
- Delaini P (2013) Traditional medicine in the Yaghnob Valley. Notes on body therapy, pregnancy and birth care. In: Panaino A, Gariboldi A, Ognibene P (eds) Yaghnobi studies I. Papers from the Italian Missions in Tajikistan, vol 1. Milano-Udine-Paris, pp 119–140
- Erdal MB, Oeppen C (2018) Forced to leave? The discursive and analytical significance of describing migration as forced and voluntary. *J Ethn Migr Stud* 44(6):981–998
- Fontefrancesco M, Barstow C, Grazioli F, Lyons H, Mattalia G, Marino M, McKay AE, Söukand R, Corvo P, Pieroni A (2019) Keeping or changing? Two different cultural adaptation strategies in the domestic use of home country food plant and herbal ingredients among Albanian and Moroccan migrants in Northwestern Italy. *J Ethnobiol Ethnomed* 15:11. <https://doi.org/10.1186/s13002-019-0290-7>
- Geiger W (1898–1901) Die Pämirdialekte, Anhang: Über das Yaghnöbī. In: Geiger W, Kuhn A (eds) Grundriss der Iranischen Philologie. I, 2. Abteilung, VIII. Kleinere Dialekte und Dialektgruppen, Strassburg, pp 288–344
- González-Tejero MR, Casares-Porcel M, Sánchez-Rojas CP, Ramiro-Gutiérrez JM, Molero-Mesa J, Pieroni A, Giusti ME, Censorii E, De Pasquale C, Della A, Paraskeva-Hadijchambi D (2008) Medicinal plants in the Mediterranean area: synthesis of the results of the project Rubia. *J Ethnopharm.* 116(2):341–357
- Gunya A (2002) Yaghnob Valley—nature, history, and chances of a mountain community development in Tajikistan. KMK, Moscow
- Folke C, Carpenter SR, Walker B, Scheffer M, Chapin T, Rockström J (2010) Resilience thinking: integrating resilience, adaptability and transformability. *Ecol Soc* 15(4):20
- Foucault M (2003) Society must be defended: lectures at the Collège de France. Picador, New York
- ISE (2006) International Society of Ethnobiology Code of Ethics (with 2008 additions). <http://ethnobiology.net/code-of-ethics/>. Accessed 3 Nov 2019
- Kassam KAS (2010) Pluralism, resilience, and the ecology of survival: case studies from the Pamir Mountains of Afghanistan. *Ecol Soc* 15(2):817–829

- Kassam KA, Karamkhudoeva M, Ruelle M, Baumflek M (2010) Medicinal plant use and health sovereignty: findings from the Tajik and Afghan Pamirs. *Hum Ecol* 38(6):817–829
- Kershen AJ (2017) *Food in the migrant experience*. Routledge, London
- Keusgen M, Fritsch RM, Hisoriev H, Kurbonova PA, Khasanov FO (2006) Wild Allium species (Alliaceae) used in folk medicine of Tajikistan and Uzbekistan. *J Ethnobiol Ethnomed* 2:18. <https://doi.org/10.1186/1746-4269-2-18>
- Kalontarov Y (2008) = Калонтаров Я. Фарҳанги нави тоҷикӣ-руси. Душанбе
- Lesser IA, Gasevic D, Lear SA (2014) The association between acculturation and dietary patterns of South Asian immigrants. *PLoS ONE* 9(2):e88495. <https://doi.org/10.1371/journal.pone.0088495>
- Loy T (2006) From the mountains to the lowlands—the Soviet policy of “inner-Tajik” resettlement. *Internet-Zeitschrift für Kulturwissenschaften*, 16, [http://www.inst.at/trans/16Nr/13\\_2/loy16.htm](http://www.inst.at/trans/16Nr/13_2/loy16.htm). Accessed 21 Dec 2019
- Loy T (2013) The big fraud—recollecting the resettlement of the population of the Yaghnob valley. In: Kreyenbroek PhG, Allison C (eds) *Remembering the past in Iranian societies*. Harrassowitz Verlag, Wiesbaden, pp 141–164
- Manduzai AK, Abbasi AM, Khan SM, Abdullah A, Prakofjewa J, Amini MH, Amjad MS, Cianfaglione K, Fontefrancesco MF, Soukand R, Pieroni A (2021) The importance of keeping alive sustainable foraging practices: wild vegetables and herbs gathered by Afghan refugees living in Mansehra district, Pakistan. *Sustainability* 13:1500. <https://doi.org/10.3390/su13031500>
- Medeiros PMD, Soldati GT, Alencar NL, Vandebroek I, Pieroni A, Hanazaki N, de Albuquerque UP (2012) The use of medicinal plants by migrant people: adaptation, maintenance, and replacement. *Evid-Based Compl Alt eCAM*. <https://doi.org/10.1155/2012/807452>
- Mohatt NV, Thompson AB, Thai ND, Tebes JK (2014) Historical trauma as public narrative: a conceptual review of how history impacts present-day health. *Soc Sci Med* 106:128–136
- Novak L (2010) *Jahgnóbsko-český slovník (s přehledem jahgnóbské gramatiky) / Яғнобӣ-чехӣ луғат (яғнобӣ зивокӣ дастури фехрастипӣ)*. Univerzita Karlova v Praze, Praha
- Qvirist L (2016) On yeasts from traditional fermented foods: Characterization, phytate degradation, strain improvement and applications. Doctoral thesis. Chalmers University of Technology: Gothenburg. <http://publications.lib.chalmers.se/records/fulltext/245097/245097.pdf>. Accessed 2 Dec 2019
- Pieroni A, Hovsepyan R, Manduzai AK, Soukand R (2020) Wild food plants traditionally gathered in central Armenia: archaic ingredients or future sustainable foods? *Environ Dev Sustain*. <https://doi.org/10.1007/s10668-020-00678-1>
- Quave CL, Pieroni A (2015) A reservoir of ethnobotanical knowledge informs resilient food security and health strategies in the Balkans. *Nat Plants* 1(2):14021. <https://doi.org/10.1038/nplants.2014.21>
- Panaino A (2013) The Italian scientific mission in Tadjikistan: the case of the Yaghnob Valley. In: *Sogdians, their precursors, contemporaries and heirs*. The State Hermitage Publishers, St. Petersburg, pp 461–476
- Paul D, Abbess E, Müller K, Tiessen C, Tiessen G (2010) The ethnolinguistic vitality of Yaghnobi. SIL Electronic Survey Report 17. <https://www.sil.org/resources/archives/9107> Accessed 5.12.2019. Accessed 1 March 2020
- Pollack CE (2003) Burial at Srebrenica: Linking place and trauma. *Soc Sci Med* 56(4):793–801
- Rahmonov O, Holbegov M, Szczypek T, Snytko VA, Klys G, Rahmonova M (2014) The consequences of vegetation degradation under the influence of anthropogenic activity in the territory of the Zarafshan Range (Western Tajikistan). *Geogr Nat Res* 35(2):193–197
- Rasulova MR (ed) (1991) *Flora Tadzhikskoi SSR*, 10. Leningrad, Nauka
- Satia-Abouta J, Patterson RE, Neuhouser ML, Elder JP (2002) Dietary acculturation: applications to nutrition research and dietetics. *J Am Diet Assoc* 102(8):1105–1118. [https://doi.org/10.1016/S0002-8223\(02\)90247-6](https://doi.org/10.1016/S0002-8223(02)90247-6)
- Shishov A (1910) = Шишов АП. *Таджики: этнографическое и антропологическое исследование*. Ч. 1: Этнография. Издание АЛ Кирснера, Ташкент
- Singh RK, Kumar A, Singh A, Singhal P (2020) Evidence that cultural food practices of Adi women in Arunachal Pradesh, India, improve social-ecological resilience: insights for Sustainable Development Goals. *Ecolog Proc* 9:29
- Soelberg J, Jäger AK (2016) Comparative ethnobotany of the Wakhi agropastoralist and the Kyrgyz nomads of Afghanistan. *J Ethnobiol Ethnomed* 12:2. <https://doi.org/10.1186/s13002-015-0063-x>
- Sõukand R, Pieroni A (2016) The importance of a border: medical, veterinary, and wild food ethnobotany of the Hutsuls living on the Romanian and Ukrainian sides of Bukovina. *J Ethnopharm* 185:17–40
- Stevens PF (2017) Angiosperm phylogeny. <http://www.mobot.org/MOBOT/research/APweb>. Accessed 5 Dec 2019
- The Plant List (2013) <http://www.theplantlist.org/>. Accessed 5 Dec 2019
- Turner NJ, Davidson-Hunt IJ, O’Flaherty M (2003) Living on the edge: ecological and cultural edges as sources of diversity for social-ecological resilience. *Hum Ecol* 31(3):439–461
- Ujfalvy Ch E de [de Mezö-Kövesd] (1879) *Expédition scientifique française en Russie, en Sibérie et dans le Turkestan*. T. 2. E. Leroux, Paris
- Varghese S, Moore-Orr R (2002) Dietary acculturation and health-related issues of Indian immigrant families in Newfoundland. *Canadian journal of dietetic practice and research: a publication of Dietitians of Canada = Revue canadienne de la pratique et de la recherche en diététique. une publication des Diététistes du Canada* 63(2):72–79
- von Berlepsch V, Rodríguez-Pose A (2019) The missing ingredient: distance. Internal migration and its long-term economic impact in the United States. *J Ethn Migr Stud*. <https://doi.org/10.1080/1369183X.2019.1567303>

**Publisher’s Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.