

Perceived reasons for changes in the use of wild food plants in Saaremaa, Estonia

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Abstract

Recent studies on the use of wild food plants have identified various reasons for their use and underlined their importance as an emergency food supply. This work analysed the content of narratives obtained as comments regarding the reasons for using or not using wild food plants mentioned during 48 semi-structured recorded interviews. The results show that past demand for the diversification of food experiences and taste was essential for the consumption of wild plants, while the present concern for the disappearance of wild food taxa familiar from childhood is one of the main reasons for decrease in their consumption. This indicates that people do not really feel that they need to use wild food plants anymore (except for the health benefits), and that they are concerned that their favourite plants are no longer available. The erosion of the practical use of wild food plants is also supported by the very small frequency in which the influence of teachings coming from outside the community was mentioned in discussions of both the past and present, and thus the loss of traditional uses is not really substituted by new uses acquired from elsewhere. Further research is needed to understand lay perceptions of the changes that have occurred in nature, society and the economy, in the context of their influence on the everyday use of wild food plants to appreciate the ways in which knowledge erosion takes place and to find means of retaining this basic knowledge within the society.

Keywords: wild food plants, ethnobotany, unlearning debt, perception of the availability of plants, perception of changes, Saaremaa, Estonia

Wild plants have been highly valued by humans as food at various times throughout human history, providing nourishment, vitamins, minerals and security in hard times. The proportion of wild plants used for food during different periods depends on diverse factors, and their popularity and the reasons for use differ in both time and space.

Recent studies on the use of wild food plants have identified various reasons for their use depending on the current situation of the researched region: the need for nourishment in regions experiencing food shortages (Ocho et al 2012; Mattalia et al 2013; Redžić and Ferrier 2014, Abbet et al 2014; Quave and Pieroni 2014), the alleviation of poverty (Cruz-Garcia and Price 2014), the cultural value of wild taxa (Kaliszewska and Kołodziejaska-Degórska 2015), following new trends or the revival of old traditions (Łuczaj et al 2012), as an integral part of traditional cuisine (Biscotti and Pieroni 2015; Guarrera and Savo 2016), and the perceived health properties of wild food plants (Guarrera and Savo 2013; Alarcón et al 2015), contributing to the food-medicine continuum (Júnior et al 2015), to name only a few. Of these, the use of wild plants as an emergency food supply has been valid through the whole history of humankind, with their use remaining

more homogenous and equitable compared to the use of medicinal plants, as has recently been demonstrated through the comparison of two different ethnic groups sharing the same ecological niche (Quave and Pieroni 2015) or one ethnic group divided by state borders (Sõukand and Pieroni 2016). An *unlearning debt* phenomenon has been observed, referring to the situation in which various plant uses (especially those related to emergency foods) are still remembered but no longer practiced and hence doomed to be forgotten, or unlearned (Kalle and Sõukand 2016). This makes local knowledge concerning the use of wild food plants, supported only by the need for nutrients during times of food shortage, quite vulnerable to erosion.

The cause of such an unlearning debt can be identified at large: rapid changes in socio-economic and ecological conditions within the lifetime of one generation. However, there are myriad of other reasons varying by person or by plant/use. Moreover, to survive, knowledge has to be preserved within the community, and so it is vital to understand the reasons for the consumption of wild food plants that people themselves identify as important. A recent investigation conducted in Austria (Schunko et al 2015) quantitatively evaluated motivations for the gathering/non-gathering of wild plants through a structured questionnaire composed on the basis of the motivation categories mentioned by local farmers during semi-structured interviews in a previous study. The authors concluded that obtaining high quality products and the enjoyment of the plant-gathering activity were the motivations most often stressed (Ibid). Future, Serrasolses et al (2016) investigated the reasons for continuation of use or abandonment of very limited set of plants in three Catalan-speaking regions. They concluded that the taste and the aroma were the most popular reasons for both continuation and abandonment of the use, followed by changes in everyday routes, lack of knowledge and perception of the specific plants as childhood food (Ibid).

To understand the phenomenon more deeply, I wanted to identify the subjects people themselves emphasize while talking about use of wild food plants during their lifetime, without being explicitly asked to discuss the reasons for using wild food plants. The design of the interviews was oriented so as to get a clear and exhaustive overview of the nomenclature of wild food plants used in Saaremaa and the changes in uses which have occurred within the lifetime of participants. The quantitative results, including a list of wild food plants, their precise uses and changes in their uses during the lifetime of interviewees, were analysed in another publication (Kalle and Sõukand 2016).

This is the second article on the analysis of lay perceptions regarding wild food plants in Estonia (for the first one see Sõukand and Kalle 2015) and the third article on the use of wild food plants in Saaremaa (for the other two see Sõukand and Kalle 2016, Kalle and Sõukand 2016) contributing to the understanding of the patterns underlying the use of wild food plants in contemporary Europe.

1. Data and methods

1.1. Research site

Saaremaa (Ösel) is the largest island in Estonia (2,673 km²) and the fourth largest island in the Baltic Sea. About half of the roughly 30,000 inhabitants live outside of its urban centre, Kuressaare. The population of the island is very sparse, mean population density is 12 people per km². As people tend to inhabit small towns or village centres, some countryside locations have population density even below 3 people per km² (Eesti Statistika 2016). Soviet kolkhoz system and repressions preceding establishment of kolkhozes (many wealthy landowners were sent to Siberia) destroyed local farm system (more or less self-sufficient farmsteads covering all the island). After the decay of Soviet Union kolkhozes were privatized, land returned to their previous owners or their successors and many people were left unemployed. Nowadays there are only few farms arranged (or restored) according to the old farm system. The majority of people work in towns and the countryside is inhabited mainly by retired kolkhoz workers or intellectuals who have returned to their childhood home, and a few enthusiast farmers and summer residents, who permanently live either in Kuressaare or on the mainland in Tallinn.

The island boasts a mild maritime climate, and it possesses a wide variety of soil and habitat types. The more than 1200 vascular plants growing on the island constitute about 80% of the native plant species found in Estonia. About 10% of them are rare and protected. In 1990 63% of Saaremaa was covered by characteristic coniferous forests, while the share of arable land reached further from the coast than in the other regions of Estonia (Mander 1994). Since the 1990s the ecological and socio-economic situation of

Saaremaa has undergone considerable changes: wooden meadows and alvars, once used as pastures for collective farms, were abandoned due to the lack of pasturing animals and subsequently became overgrown with grass, trees and bushes. Local inhabitants clearly perceived the degradation and disappearance of most valued landscapes at the end of 20th century (Kaur et al 2004). Now, with the help of different nature conservation schemes some areas are slowly being cleared, moved or even pastured again.

1.2.Data collection

The data used for the present article was obtained along with the data on the use of wild food plants, which itself was part of our wider field study on present and recent past uses of medicinal and wild food plants, conducted on the island of Saaremaa in June-August 2014.

To obtain diachronic information the folk history method (reconstruction of historical events through the memory of common people, sensu Hudson 1966) was used. People were asked to recall the use of plants throughout their entire life and indicate as exactly as possible when the specific use was encountered. As a rule the subject was approached via use (for food in general, for making soup, jam, salad, etc.) or plant group (wild tree fruits, forest fruits, greens), but not through a specifically named plant. The interview was semi-structure with the open-ended questions, allowing some space for discussing and comments regarding the subjects of interest for the interviewees; telling personal plant-use related narratives was encouraged. All interviewees discussed to a greater or lesser extent throughout their interview why they ate or did not eat wild food plants at certain periods of their lives, even though people's opinions on neither this subject nor the reasons for changes were explicitly asked. Their insights into the subject, although quantitatively only approximate, were still interesting and deserved further analysis. I use the analysis of narratives on the use of wild food plants obtained as a by-product of a classical ethnobotanical study as a tool to identify the subjects important for people in this context. Hence, I will follow the themes spontaneously brought up in the interviews by the people themselves, endeavouring to categorize these themes in order to better understand the main perceived reasons for temporal changes in the use of wild food plants. As the reported use of wild food plants has changed drastically within one lifetime, a change in attitudes towards the reasons for their use/non-use is also expected.

Although the number of people interviewed during the field study was slightly larger, only local rural residents who had spent their childhood on Saaremaa Island in countryside settings were considered for this analysis. Forty eight face-to-face semi-structured interviews that were carried out with 50 people older than 60 years of age (including 21 males and 29 females born between 1928 and 1952) were selected for this study; two of the interviews were conducted with married couples simultaneously.

Interviews lasted from 0.5 to 2.5 hours, and in most cases they were voice-recorded with the person's permission and later transcribed. The purpose of the study was explained and prior oral informed consent was obtained from all interviewees. The study followed the Code of Ethics of the International Society of Ethnobiology (ISE 2008). The voice-recorded interviews as well as their transcripts are stored at the Estonian Folklore Archives of the Estonian Literary Museum; collected voucher specimens are deposited at the Estonian University of Life Sciences herbaria (TAA). Botanical nomenclature follows The Plant List database (2013).

1.3.Data analysis

Interview transcripts were entered into RQDA software (Huang 2010). A keyword list was developed on the basis of the content analysis of subjects that popped up during the interviews as well as the emphasis the respondents used when addressing the subject of consumption and the gathering of wild food plants. The content analysis (see for example Holsti 1969; Hsieh and Shannon 2005) research technique has been used in various disciplines. The main purpose of content analysis is to process information in a systematic way in order to summarize and categorize the data based on patterns in elements of the text, such as words or phrases and their meaning. The keywords were identified from the transcribed interviews according to the similarity of meaning. One narrative was attributed several keywords in the event that several statements were presented in one narrative fragment. The subject brought up in the group interview was considered one discussion episode. Keywords were later categorized and selected keyword categories sorted in order to understand the main reference points of the people when they talk about why they use or do not use wild

plants for food. The comparison of the keywords within the categories used when talking about childhood or the present allowed noting the reasons people themselves notice and address changes in wild food foraging and consumption behaviour. The subsequent analysis (e.g. the counting and comparing of keywords) was guided by the logic of the results. The attitudes expressed through the keywords were almost never neutral, but rather in most cases they covered factors either positively influencing or restricting/discouraging the use of wild food plants. Therefore, keywords derived from the discussed subjects were provisionally divided into “positive” and “negative” influencers and conditionally attributed a “+” or “-” sign in order to understand whether the context of the discussion around the keyword was either positively or negatively associated with the use of wild food plants.

1.4. Coding of content

While coding the content, the initial idea was to obtain as many different keywords as possible, to cover all potential attitudes towards the use of wild food plants from a free discussion on the subject. However, it was important to reduce, as much as possible, the number of analysis units in order to organize and analyse the results, and so although during the initial stage the wordings of the interviewees were used as keywords, in the final stage some keywords were merged whenever the meanings were similar. There were still seven such keywords related to one text only, retained for further analysis so as to cover important concepts not covered by other keywords. For example the keyword “always available” represents a broad understanding of the constant availability of natural resources, although it was rarely mentioned in trackable form: “In childhood raspberries grew in the forest and alongside the garden. We made tea for drinking, it was very tasty. The stems were always available; we did not collect them in advance” [Male, b. 1936, Kärļa]. Another example is the keyword “grows here”, attributed to text describing the use of a plant that was utilised when it grew, yet ceased to be used after it disappeared: “Formerly (a few years ago), when the yard was clear, a lot of St John’s Wort [*Hypericum* spp.] grew here. We collected it and drank it as a regular tea. Since it grew here, this was reason enough to collect it. After we ploughed the land, it disappeared” [Male, b. 1946, Karja]. The idea of using what grows close by is rather widespread in society, especially regarding medicinal plants, but also wild food plants considered good for health, and it is even further promoted by literature popularizing the use of plants, stating that a medicinal plant itself comes to a person when there is the need for it.

Although in general the wordings of the interviewees were followed, sometimes their words were interpreted and changed into more comprehensive keywords for the sake of understanding and brevity. For example, the text-attributed keyword “demand for tradition” had only this connotation, although it was expressed differently: “Nuts [of *Corylus avellana* L.] were collected in childhood and now I also collect them every year when there are some. We dried and then ate them. At Christmas table nuts were present then and they still are now, it is unthinkable [to have a Christmas feast] without them” [Male, b. 1950, Valjala].

2. Results

In sum, 51 keywords were identified in the narratives through the textual analysis (Table 1). A large number of keywords in every individual interview were rather ambivalent, possible to attribute to several discussion categories. However, for the clarity of analysis the majority of keywords (48) were divided into six main discussion categories: **availability** of wild plants, their **taste**, **demand** for nutrients, wild plants as part of **pastime** activities, their **perceived effect on health** and their knowledge or use being **influenced from outside** the family/community.

Table 1. Fifty-one codes identified in the narratives through the textual analysis.

AVAILABILITY	demand of tradition	PERCEIVED EFFECT ON HEALTH
afraid to go into the forest	empty stomach	considered toxic
always available	everything had to be used	healthy side-effect
animals were not eating	natural conservant	pollution
bad health	need	vitamins
brought to garden	need for sour	TASTE
cannot collect from private lands	need for sweet	good taste
cultivars were not available	no need	not tasty
grows far away	not starving enough	peculiar taste
grows here	other not ripe	taste of childhood
had time to collect	surrogate	tasted better in childhood
no time to collect	INFLUENCE FROM OUTSIDE	too sour
nothing to collect	collecting for state purchases	OTHER
now cultivated	fashion	disliked occasional trial
obtained from pharmacy/shop	literature	liked occasional trial
someone supplies	passive knowledge from outside	not men's work
taxa disappeared	PASTIME	smaller than cultivated
DEMAND	childhood discovery	wild is better
all needed obtained from own field	<i>en passant</i>	
big family	for luck	

To understand the attitudes towards the use of wild food plants, the ways in which people addressed the subject will be thoroughly analysed and the context analysis will be illustrated with the excerpts from the interviews.

2.1. Availability

Availability was in general the most commonly discussed subject, addressed mainly through the context of the accessibility of wild food resources in the past as well as the present. The availability of wild food plants was rarely perceived as something self-evident, as only one person referred to them as always available. On the contrary, the majority of the people who addressed the subject indicated poor availability of the taxa or limited access to the habitats as suppressors of the consumption of wild food plants. The texts describing the positive influence of availability were also often expressed through negation, such as “cultivars were not available” comments describing the use of wild berries in the past as the at hand food supply. For example, an elderly couple developed a dialogue around raspberries (*Rubus idaeus* L.): “When we were children, we did not have raspberries in the garden, we had wild raspberries [Male, b. 1938, Püha]. No, in Oppi [the name of the place] there were home-raspberries, but those were later, probably brought from the forest and planted in the garden” [Female, b. 1941, Püha]. Another example was provided by a woman born in 1946 in Valjala parish: “We ate wild strawberries, as we did not have any home-strawberries.” Quite interesting here, as well as in many other interview excerpts, is the linguistic differentiation between wild and cultivated: wild taxa are often referred to with the preposition *forest-* (*metsa-*) and cultivated with the preposition *home-* (*kodu-*) or *garden-* (*aed-*) even if both raspberries and strawberries are often found in more or less open territories like meadows or ditch-lands. This contributes to the Estonian perception of the wild as related to the forest (cf. Sõukand and Kalle 2015).

This leads to two other keywords related to cultivation: “brought to garden”, referring to a food plant relocated from the wild into the home-garden of the interviewee but still perceived as wild, as opposed to “now cultivated”, referring to the intended cultivation of the relatives of wild plants, that had consequently reduced the use of wild food plants.

Different wild taxa of *Allium* species were mentioned as subjected to recent domestication, mainly due to current trends for making “healthy spring salads”, but also because some of them (like ramson *Allium ursinum* L.) are protected under conservation law and can be collected only for personal use: “Now women make goatweed [*Aegopodium podagraria* L.] salads in the spring, add in some different plants and it tastes good. In the spring we also make ramson salad, it grows for example on Abruka Island. We used to collect it from Sõrve Peninsula, for making salad. But now I have brought it to the garden, it grows here and I pick it when needed. This is the only food plant that I grow” [Male, b. 1950 Valjala]. Another example concerns a more common taxon, chives (*Allium schoenoprasum* L.): “I have brought chives from the wild to my garden, on purpose to be able to make chive salad” [Female, b.1943, Mustjala].

The cultivars that have replaced wild relatives are referred to as fruits, for example: “We collected a lot of rowan (*Sorbus aucuparia* L.) tree fruits, made jam and then refrigerated it. Now we have cultivars with dark fruits, we conserve them for the winter and make jam” [Female, b. 1947, Kaarma]. The cultivation of taxa formerly perceived as wild is also common, although only one person explicitly mentioned it in relation to the subject of food: “Chamomile [*Matricaria chamomilla* L.] is an everyday tea, now I don’t know from where to collect it, you can only buy it from the pharmacy. Earlier it grew among the grain, but I haven’t seen it there for a long time. Now we grow it in our own garden, I just wanted to go to collect it today. My daughter-in-law brought the seeds from the shop, we seeded once and now it seeds itself” [Female, b. 1934, Jaani].

The availability of resources was, in the author’s opinion, also perceived through the availability of time needed to collect wild plants. The availability of time was regarded as a positive factor allowing the stocking up of needed resources only in the past: “Mother collected *maaõunad* [lit. land-apples, *Malus* spp. (either *M. sylvestris* (L.) Mill. or *M. domestica* x *M. sylvestris*)]. Those apples grow somewhere in the wild, they started themselves from seed and are not engrafted. Mother tended calves and young animals in the kolkhoz, she had to go and see them every day, but at the same time she had a lot of free time to collect apples” [Female, b. 1935, Püha].

More frequently addressed was the lack of time (“no time to collect”), which was again connected only with the past, referring to the lack of time by parents to deal with such an issue as plant collecting, explaining at the same time their limited interest in wild food plants during childhood. This concerned both the time before and during the so-called Soviet era: “Mum had to work, first on the farm and then in the kolkhoz” [Female, b. 1935, Püha]. Their time was consumed by different tasks, including cultivation and tending animals: “Our father had tuberculosis and mother had no time to go to the wild to collect any plants, because we had 11 hectares of land and animals – cows, sheep and pigs” [Female, b. 1933, Põide]. Also a big family demanding food limited the time available for gathering wild resources: “We had a big family and a lot of work and no time to collect wild food plants” [Male, b. 1936, Kärkla]. Such limited exposure to wild food plants has probably sometimes resulted in the further lack of interest, explained again by the lack of time: “My mother did not have time to collect from the wild, she had nine children and our father was sent to Siberia. I myself also had no time to

collect wild plants; I have worked my whole life as a milkmaid and cattlemoan" [Female, b. 1936, Kaarma].

For retired people, as were the majority of our interviewees, the absence of time was not the issue any longer. Instead, while discussing their present accessibility to wild resources, the keyword "bad health" was often used, addressing the health problems of the collector, which does not allow going to the forest or the consumption of the food: "This year I cannot collect berries, as I had eye surgery, and now I cannot bend down anymore" [Female, b. 1947, Jaani]. Sometimes the personal disability which prohibits the collection of plants is compensated by "someone else supplying" the same resources: "Earlier I collected bilberries [*Vaccinium myrtillus* L.], but not anymore, I cannot go. Now my daughter collects and provides them for me" [Male, b. 1932, Põide].

Two rather modern, although relatively minor, problems related to the access to wild resources are fear of the wild ("afraid to go into the forest") and shy deference toward private property ("cannot collect from private land"). Fear of the forest may be explained by either vipers: "Now I rarely go into forest, because I fear snakes" [Female, b. 1952, Püha]; or ticks, which bear numerous dangerous infections and are highly diseased particularly in this region: "Now no one dares to go into the forest, ticks will eat you" [Male b. 1938, female, b. 1941, Püha]. Although by common law berries and other wild plant resources can be picked from private land from sunrise to sunset, people are still afraid to do that, as the meaning of private property is not quite clear to them: "Now everyone has their own land, you cannot go to collect on someone else's land. Before there were state forest enterprises, one could collect there" [Male, b. 1931, Anseküla].

Despite its small size, Saaremaa has a wide variety of soils and habitats, but some plants are rather rare in certain regions: "Dewberries [*Rubus caesius* L.] and cloudberry [*Rubus chamaemorus* L.] were brought from far away, we made jam from them and ate them as they were" [Female, b. 1946, Kaarma]. People have mainly addressed the growth of specific wild taxa away from their home as an obstacle for collecting them in their childhood (when motor vehicles were rare and the primary means of moving around were either on foot or by horse): "I collected cowberries only rarely, as here we did not have good cowberry places and we did not have a car in our family at that time [in childhood], to drive far" [Female, b. 1951, Anseküla]. Those people who otherwise were rather dedicated foragers of the fruit available nearby, also mentioned poor access to taxa growing far away: "We did not collect other berries [besides barberry *Berberis vulgaris* L., two strawberries *Fragaria vesca* L., *Fragaria viridis* Duchesne, wild plum *Prunus domestica* L., bird cherry *Prunus padus* L., dewberries, and raspberries], as we did not have bogs nearby, we had a place by the seaside" [Female, b. 1935, Püha]. One man described the act of collecting distantly growing fruits as an independent and time-consuming undertaking: "Apple jam did not persist on its own and cowberry had more of those ascorbic acids. Cowberry and bilberry forest was about five kilometres away from home and thus an activity was organised in which all the kids, in groups of three or four, went there together; the smaller kids were left at home. And then we collected several buckets at once; we went early in the morning and came back late at night – a long way to go and not an everyday job" [Male, b. 1950, Valjala]. Collecting from far away was mainly associated with fruits, but ramson was also brought from distant places.

The greatest obstacle for collecting wild food plants at the present time or until recently has been, however, the perceived disappearance of specific taxa (keyword "taxa disappeared"). Various people noted the vanishing of different taxa, yet some of them dominated the landscape: caraway [*Carum carvi* L.], both strawberry taxa and wild nuts. The disappearance

of caraway has been mainly attributed to intensive mowing and the perceived pollution of its habitat: “Caraway tea was made in childhood, now we also make it, the taste is so good. We had a lot of caraway here along the roadside, but one woman started to mow there and destroyed its habitat, it does not grow anymore. One should not mow that place; it does not seed itself anymore” [Male, b. 1941, Kaarma]. The disappearance of strawberries is primarily associated with the overgrowth of places where people used to collect strawberries when they were children or young adults: “We had enormous amounts of strawberries here, we collected up to 50 litres and made raw jam, we used to compete by household. Now it seems impossible the amount that was eaten. Now forests are overgrown; all the strawberries are gone” [Female, b. 1947, Jaani]. Nuts are mainly considered gone as well due to bad climatic conditions: “As children we collected a lot of nuts, now they don’t grow here anymore. Forests have grown mad, trees have grown so big, earlier domestic animals used to eat them clear and hazel trees were a good size. Times were different, the hazel tree is flowering early, when it is still cold, hence we can get only few of them” [Female, b. 1942, Kihelkonna]. Other taxa noticed to be gone are various so-called wild berries (*Rubus caesius* and *Rubus saxatilis* L.) as well as shrub fruits alpine currant (*Ribes alpinum* L.) absent due to the overgrowth of open spaces and forest, tree fruits like Swedish whitebeam (*Sorbus intermedia* (Ehrh.) Pers.) or wild plums that are cleared out around houses, and also some herbaceous plants like chamomile that sporadically went wild when it was cultivated or native valerian (*Valeriana officinalis* L), which might be less encountered due to amelioration of agricultural land. Some such concerns may be attributed to the image of “a happy and plentiful childhood”; however, this was not the case in the childhood of the majority of the interviewees.

Partially as compensation for the perceived poor availability of specific taxa, but also because it is easier to get the needed resources, people also stressed that now they purchase these plants from pharmacies and retail shops. The main taxa acquired in this way are caraway and chamomile. “Caraway is one thing that has disappeared from Saaremaa; maybe wild pigs eat their roots [in fact, they do]? We had a lot of caraway, it grew everywhere, and you did not need to grow it on Saaremaa. Caraway tea is the old traditional tea; you need to boil it for five minutes. It was drunk along with food, especially on winter evenings. In the summer heat other drinks were used. Caraway was also added everywhere as a condiment. But now I cannot find it anywhere on the grassland, all has been overgrown. And now I have to buy it from the pharmacy” [Female, b. 1934, Kaarma].

2.2. Demand

The subject of demand was addressed through numerous different keywords, with a general emphasis on need-induced use or non-use due to the lack of need. It would be logical to assume that the most distressing need would be an “empty stomach” or in the case of a “big family” to feed, yet only few people mentioned these conditions, and thus it might also reflect only temporary hunger of a child, for example: “When [in childhood] my stomach was empty, we then “put our noses to the ground” and collected all the goatweed, nettles, primroses, dandelions and sorrels as supplemental food” [Female, b. 1947, Kaarma].

Demand was also perceived not as nutrient-related, but rather as more of a need for “something different”, when cultivated species were not available: “Sorrels were eaten in childhood when apples were not yet ready. They were good and sour. But when apples were ripe we ate the apples, and there was no need to collect plants from the wild” [Male, b. 1932, Anseküla].

The most demanded taxa, however, were wild food plants as surrogates for “the real thing”, such as bog myrtle (*Myrica gale* L.) during the shortage of hops (*Humulus lupulus* L.), oak bark and acorns (*Quercus robur* L.) for making coffee, primrose flowers and caraway seeds as a substitute for oriental tea, juniper (*Juniperus communis* L.) branches in place of rue chaff as a filter for beer, among others. Another traditional practice, namely the chewing of tree resin, was now perceived as a substitute for modern gum-chewing: “We used to chew plum tree resin as children, instead of chewing gum” [Male, b. 1938 and female, b. 1941, Püha].

In peasant, and later farming, society everything suitable for food had to be used up, or at least an attempt was made to use it. The traces of such thinking are still visible: “We have a wild pear [*Pyrus pyraeaster* (L.) Burgsd.] tree here. It is kind of different, it has some kind of spine, and usually pear trees don’t have a spine. I don’t know where it came from; it started to grow by itself. It is such an interesting tree. One year it was so full of pears, it was a pity to look at. So I had the desire to check if anything could be done with the fruit. I was hoping that if I boiled them with a lot of sugar then the taste would go away. But no, the wooden taste did not go away and the children did not want to eat them. They tasted like wood and also very sour, although a slight taste of pear was also present. We have another tree in our garden, a big pear [*Pyrus communis* L.] tree, but it is not bearing fruit this year” [Female, b. 1946, Valjala].

The natural ability of some wild fruits, like cowberry (*Vaccinium vitis-idaea* L.), cranberry (*Vaccinium oxycoccos* L.) and bilberry, to preserve over the winter without sugar added was another reason named: “We made a salad from cowberry; it was eaten at Christmas and other times. Cowberries are good, because they don’t ferment; other jams start to ferment without sugar. That’s why we added cowberries to apple jam. Cowberry jam was previously the most made one, as there was no sugar available. Jam was stored in a wooden tub, about the size of two buckets, and eaten the whole winter” [Male, b. 1935, Mustjala].

The absence of the need for supplemental food was also well acknowledged, although it was generally related to uses abandoned since childhood: “And then wild oregano [*Origanum vulgare* L.] was an important seasoning for sausages. We collected it ourselves and dried it. Then it was added during the making of white sausages and other meat dishes. I have not used it recently; there are plenty of other dried spices in my cupboard and growing in my garden that also add flavour [to food]” [Female, b. 1947, Kaarma]. A more explicit relationship to the absence of cultivated food was expressed through the refusal to eat wild food plants as the person or family was not considered to be starving enough: “My husband once asked that if we have famine in the house that we have to eat nettles [*Urtica dioica* L.]” [Female, b. 1932, Mustjala]. The opposition to wild food plants in favour of cultivated ones is expressed through the sentiment that all that is needed was already cultivated and in abundance: “When I was child, many berries grew in our garden, for example gooseberry, cherries, so I used to eat them” [Male, b. 1936, Kärla].

Few specific taxa, such as sorrels [*Rumex* spp. and *Oxalis acetosella*], wild apples and barberry, were perceived as eaten due to the need for sour taste. For example: “We ate sorrels, made a soup out of them, early in the spring. We collected them from the forest. It became hard quickly; this could be done just a few times. There was nothing else sour in the springtime” [Male, b. 1931, Pöide]. The need for sweets (the experience of sweet taste) was acknowledged much less, for example: “We collected wild strawberries, ate them as they were and made jam. We also made desserts with crushed strawberries and milk. There were almost no sweets available at that time, I still remember, when mum brought caramel candy from town and it was so sweet” [Male, b. 1946, Karja].

2.3. Taste

Discussions around taste may be a bit biased, as we sometimes asked interviewees to describe the taste of some wild fruits of trees and shrubs in order to insure the accuracy of identification if there was no opportunity to see the original taxa. However, the majority of taste descriptions are related not to tree fruits, but to a wide variety of taxa or food made with wild plants (all kinds of forest fruits, flowers, green snacks, teas, and breads) perceived as either tasty (in the majority of cases) or not tasty. Taste, being a very personal yet a culturally defined factor (Ghirardini et al 2007), was described by a variety of adjectives, such as tasty, sour, sweet, fresh, etc. for a “good” taste. For example: “We collect whole inflorescences of primrose [*Primula veris* L.] and dry them for tea all the time. The tea is very tasty and good” [Female, b. 1951, Anseküla]. Bad taste was described by words like sour, dull, bitter, pungent, etc.; for example: “I have recently tasted dandelions [*Taraxacum officinale* F.H.Wigg. (coll.)] when they are young in the spring. I don’t remember if I had eaten them in childhood – it is such a bitter thing, I can’t imagine what would force a child to eat it” [Female, b. 1946, Valjala].

Three interviewees also described taste regarding one specific taxon, juniper, as “peculiar”, not being able to ascribe its taste to any of the other categories. For example: “Now we collect a handful of juniper berries to add to the Christmas meat. It gives such a peculiar taste. I don’t recall if I have eaten juniper berries by themselves, just putting them in the mouth and chewing” [Female, b. 1943, Mustjala]. The dependence of the taste of the final product on preparation or manipulation of the plant was also well noted: “I have made rowan berry syrup, to treat cough, but kids liked to drink it as such with tea, they liked the taste very much. The rowan tree is a very nice nature-kind plant, it has to be put close to home, and it will keep lightening and all bad things away. And a branch of the rowan should be put in the car for protection. Our rowan tree growing behind the house is full of fruits this year. I sometime put a few fruits in my the mouth, but they are so bitter, I don’t want them. If I need to eat, I would eat them. I have also let them freeze in a basket in front of the storehouse and then they were not so bitter anymore” [Female, b. 1934, Jaani].

Two keywords within the taste subject are associated with childhood only, yet refer to the present use of plants. Many of the interviewees, however, perceive that wild plants tasted better in their childhood and cite this as a reason for not eating, or eating less often, some specific wild food plants; for example: “I collected sorrel [*Rumex* spp.] and ate it fresh and when we were little mum used to cook sorrel kissel. Now I don’t like sorrel, it is somehow dull” [Male, b. 1946, Karja]. For one woman, born in 1933 in Põide parish, caraway represented the “taste of childhood”: “I grew up with the taste of caraway.”

2.4. Perceived effect on health

A positive effect of wild food plants on health was perceived mainly through acknowledging their vitamin richness, especially Vitamin C. The need for vitamins has been recognised by numerous literature sources and media programs since the middle of the 20th century, so the population was well educated regarding the subject. “We eat leaves and flowers of dandelion every early spring. Also now, it is a mine of vitamins” [Female, b. 1946, Kaarma]. However, the understanding of the best methods of preserving the high vitamin content is not always up to date: “I eat dog-rose [*Rosa* spp.] fruits fresh and then dry them in oven. They contain Vitamin C and I use them, because of their good taste, for making everyday tea” [Female, b. 1942, Jaani].

People also acknowledge the healthy side-effects of eating wild plants, saying that they are good for health, as they give strength and vitality, but they are not specifically used for healing: “Birch sap is best of all. Maple sap as well. You should drink about a hundred litres of birch sap every year, at least. I drink birch sap all the time. This is the right thing to do, I can feel strength coming back and less food is needed. It gives you energy, maybe even makes you smarter” [Male, b. 1931, Anseküla].

Yet even more pronounced is the perception of the negative influence on health, expressed through the knowledge of the toxicity of some wild taxa and the sensed threat of pollution common in modern times. Interviewees recalled that in their childhood they were taught to differentiate poisonous plants from edible ones. Poisonous fruits were often called viper’s fruits (*ussimarjad*), and this name was mentioned in many interviews in reference to the red or black fruits of several plants: “Our parents said this is a food mushroom, this is a viper’s/worm’s mushroom (*ussiseen*) which means it is a poisonous mushroom. Father told us about the fruits of the lily of the valley [*Convallaria majalis* L.], whose fruits turn bright red, which we should not eat, they are for the vipers, vipers eat them. The same name was also used to refer to black fruits of bird cherry; they were not food for humans. Now children chew some flower stems in the garden and are poisoned. We were countryside children, none of us was poisoned. We were taught not to touch or do things we knew nothing about” [Female, b. 1945, Jaani]. Perceived toxicity of relatively harmless bird cherry fruits was particular to some regions of Saaremaa (Sõukand and Kalle 2016), yet even cranberry could be considered toxic in certain circumstances: “I remember that one spring the sheep were left outside and they stayed there the whole summer on their own. In autumn we went there, by Kugalepa Lake in the bog, trying to find them and there were red berries on the ground, stems like threads attached. Grandma forbade us to eat them, saying that they could be poisonous. But those were cranberries, grandma had never seen them before [she came from the region where cranberries were not found]” [Female, b. 1932, Mustjala]. Not only were fruits considered dangerous, but also grass stalks due to the fear of actinomycetes, and in one case receptacles of primrose: “As children we ate primrose flowers. Now we know that they are in fact toxic. I did not know it then, they were sweet for me. In Võhmküla children ate them and their stomachs started to hurt. The local medical assistant asked what they ate and they said that they ate receptacles of primrose. And then he said that they are toxic. But I did not eat them too much” [Female, b. 1940, Jaani].

Perceived pollution (car fumes on the roadside, chemicals and pesticides in the fields) was a quite sensible reason for no longer eating some wild plants for many interviewees. “One cannot collect anything from the field or field edge; all is covered with pesticides and fertilizers” [Male, b. 1938, Püha]. The situation is perceived to be worsening over time; childhood is often recalled as the period of a clean environment: “We collected caraway seeds with mother for the winter along roadsides. In old times all roadsides were full of caraway and they were clean. Now I am afraid to collect anything from the roadside” [Male, b. 1946, Karja].

2.5. Pastime

A considerable proportion of discussion episodes were related to the use of wild food plants as a pastime activity. The pastime category is a bit ambivalent, as it encompasses all subjects discussed in the context of spending free time as well as children’s attempts to try the taste of wild plants. The majority of the discussion episodes attributed to this category fall into “*en passant*” eating, when few fruits or leaves were taken while passing by the plant (habitat), during play, on the way to/from school or work, or just wandering in the field: “In the forest

wild strawberries also grew. When we went swimming, strawberries could be found alongside paths. We ate them on our way, but also went to collect them” [Female, b. 1951, Anseküla]. Eating *en passant* was clearly differentiated from collecting for food or preservation: “Alpine currant grew in the forest; we ate it, but did not collect it” [Female, b. 1934, Kaarma]. Some others did not even call it eating, but merely tasting or snacking.

Children are eager to try new things, or experimenting. This was also well reflected in interviews: “Near our barn in the forest grew a wild apple tree [*Malus* spp.]. We did not eat them for real, we just nibbled on them a bit, children nibble on all things” [Female, b. 1933, Püha]. The taxa tried and tasted were very diverse: “In childhood we tried, just for sport, pine shoots and spruce shoots” [Female, b. 1943, Mustjala].

Plants were also eaten just “for luck”: “In childhood we believed that the eating of lilac flowers [*Syringa vulgaris* L.] with five or more petals brings luck. Whenever we saw such flowers we ate them; usually lilac flowers have only four petals” [Female, b. 1931, Anseküla].

2.6. Influence from outside

While the majority of information, as well as first-hand experience and practice, was acquired from the family or local community during the interviewees’ childhood, some knowledge was also obtained through influence from outside the community. Contrary to the assumption that books or journals may have heavily influenced the use of wild food plants, very few people mentioned books as a source of knowledge; but even so, they may constitute an additional post-use knowledge source: “I read somewhere that sea kale [*Crambe maritima* L.] must be very good for you, it was praised for being rich in vitamins” [Male, b. 1934, Valjala].

Some plant uses have been perceived as a new fashion or trend temporally found within the community. For example, one woman described the boom of dandelion use: “I can tell you about dandelion; it was a kind of big craze for several years during the 1980s-1990s. My family and I used to make “dandelion honey”, my mum and sister picked up the knowledge from somewhere. We collected dandelions, but I don’t remember if there were only flowers or also leaves; most of it was a mass of yellow dandelion flowers. Then an enormous amount of sugar and boiled water was added, and the concoction was pressed, cooked and reduced. The result was a liquid resembling honey. It was quite tasty. If honey is yellowish, then this was a bit greenish. I don’t think this could be healthy, as so much sugar was added to it. We were not the only family doing it: one taught the other and so on, many did it in our area, we did not invent it on our own” [Female, b. 1951, Anseküla]. Even more people reported knowing about some new fashionable uses, yet not applying them for themselves: “I have not eaten such raw things that they suggest now, like dandelions; no, I have not eaten them” [Female, b. 1942, Kihelkonna].

Few wild taxa (juniper and rowan fruits) were tasted or used for food besides collecting them for state purchase, common in the Soviet era for medicinal and food plants. Even if the use of the plant was known from childhood, such purchases encouraged people to collect and use them: “Juniper fruits were collected by kids for pharmacies, they collected a lot. And then one time there was so many of them left over that we crushed them and made some sort of kvass, I don’t remember what it was called. As children we drank such a drink a lot; my grandpa used to make it” [Female, b. 1934, Jaani].

2.7. Other subjects discussed (“leftovers”)

The remaining subjects mentioned in the interviews, although difficult to group, also deserve some attention. The first, most standalone of these indicated that dealing with wild food was traditionally more of a female task, while men had little knowledge nor interest in the subject. Among the four men independently mentioning the subject, one older individual specified: “In Saaremaa the division of labour was very strict: men worked in the fields and forest and women had to cook, do housework and wash the laundry; that’s why I don’t know much about cooking” [Male, b. 1935, Mustjala]. Another man seconded him: “I haven’t made food myself, but I know that plants were put into the food, yet I don’t know what plants those were, as I did not do the cooking myself” [Male, b.1941, Kärkla]. Although statistical analysis did not show a significant difference in the number of plants that men used compared to women (Kalle and Sõukand 2016), mainly due to some very knowledgeable men interested in wild food plants, the general attitude towards plants in relation to cooking was more modest in men than in women. It is also interesting to note that those “standalone” keywords (mentioned by only one person) were contributed primarily by male interviewees, which indicates that men had a slightly different, although statistically insignificant, attitude towards the subject.

In addition to a good taste, which was also implied in the context of all four cases, an invisible *something* existed that, in peoples’ opinion, made wild fruits better than domesticated ones: “Wild strawberry jam is much better than the jam of home-strawberry, a completely different thing” [Female, b. 1951, Anseküla]. However, a negative attitude towards the collecting of wild food plants was also expressed by one interviewee: “Those sorrels [*Rumex* spp.] growing in the forest had much smaller leaves compared to ones that were cultivated, so we did not make soup with them” [Female, b. 1931, Anseküla].

Three interviewees recalled their one or two time experience with some specific foods made with wild taxa in the context of family social events. A man described his family’s attempt, during his childhood, to make goatweed salad, yet this did not become a permanent use: “When I was a kid, about 70 years ago, we made a salad from goatweed, just once or twice for trial” [Male, b. 1934, Valjala]. A woman described her experience with a different attitude towards eating wild plants: “When I was around 10 I had a chance to try nettle soup. At that time we had our uncle from Tallinn visiting. My father was originally from the mainland, so we always had relatives visiting. Everyone else left home, for a funeral or something, but the kids were left behind. And this uncle then made us a miracle soup, there was goatweed, and I suspect also nettle, sorrel [*Rumex* spp.] and other such things. It was so interesting and tasty, so when the others came home they were wondering what he fed to the kids. My uncle was a city man and a teacher by profession” [Female, b. 1951, Anseküla]. Another woman, in contrast, described an experience which did not inspire her to investigate the further use of dandelion: “One lady invited me to her birthday, it was years ago, and she had found a recipe somewhere, which contained dandelion stems, flowers and roots cut into small parts. It also contained goatweed leaves and something else, I don’t remember what. And then she served it, telling us that she made it herself. But it was so bitter and she said that ‘this was the first and the last time, I won’t make it anymore’. This dandelion root was always an extremely bitter thing” [Female, b. 1931, Anseküla].

2.8. Distribution of keywords frequency between past and present

The characteristics of the data do not allow for credible statistical analysis of the division of the keywords, as no specifying questions were asked regarding the subjects discussed. However, to summarize and visualize the results of the textual analysis, some further provisional quantification was made in order to better understand the main tendencies in

society surrounding the theme of the use of wild food plants. As it could already be seen from the content analysis, some discussed subjects popped up more frequently than others, e.g. more people drew attention to them. Even more uneven was the distribution of the frequency between temporal domains (Figure 1). When discussing the past, people brought up more keywords related to demand, taste and pastime, while the main subject addressed while discussing the present was the availability (or rather unavailability) of wild resources. We indeed succeeded in documenting a change in the perceived importance of wild food plants for the researched community, especially given that the discussion frequency regarding availability in the present increased almost twofold compared with the past, while discussions concerning the subject of demand dropped fourfold in the present compared to the past.

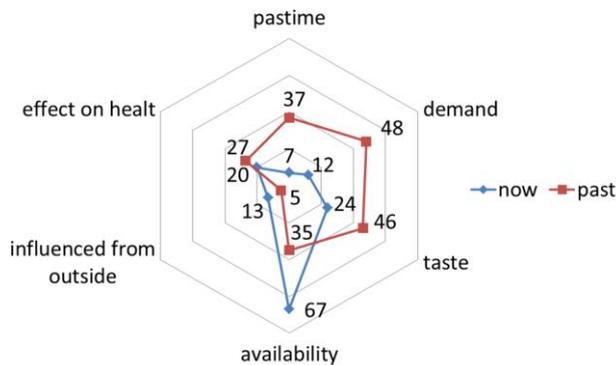


Figure 1. Discussion frequency of subjects related to the past and present use of wild food plants.

Influence on health was more or less evenly represented in discussions about both the present and the past, which signals that the population's general knowledge concerning the possible effect of plants on human health has not changed drastically within the lifetime of one generation, as both the poisonous and wholesome properties of (wild) plants were already discussed widely in popularizing literature prior to and during the time of WWII. The least addressed subject was related to influences from outside the community, indicating the strength and importance of the traditional transmission of knowledge and practices. Yet, the threefold increase in the number of discussion episodes regarding the present compared to the past, signals the growing importance of potential influences coming from outside the tradition.

2.9. Positive and negative influence of discussed factors

A summary of the polarized division (Figure 2) shows that “positive” discussion points supported the importance of wild plants as a pastime activity, providers of good or diverse tastes and the demand for food, while the main discussion subject concerning present use was addressed mainly through negation, e.g. the absence of habitats in the vicinity or the disappearance of specific plant species. Keywords encountered in discussions of the pastime subject were quite positive (or in some cases rather neutral). The effect on health was positively and negatively addressed nearly equally in both past and present domains.

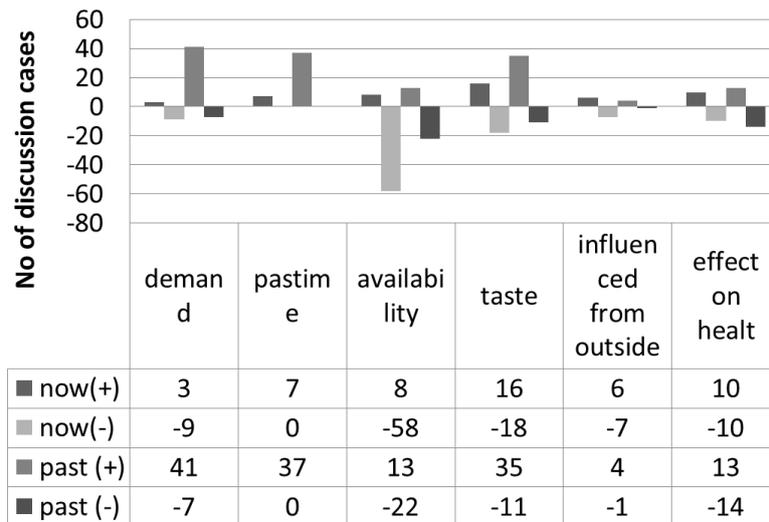


Figure 2. Discussion frequency of subjects according to the perceived attitude towards the use of wild food plants in the past and present. + positive influence on their use; - negative influence on their use.

To summarize this analysis, I visualized main keywords documented through content analysis regarding wild food plants mentioned by people during the interviews, organizing them within the subject based on occurrence frequency, conditional influence on the use and representation within the two different temporal domains (Figure 3). The most diverse selection of keywords (16) was obtained in the context of discussions about the **availability** of wild food plants. However, only two keywords, reflecting a negative effect towards the use of wild food plants (“bad health” and “grow far away”) were used regarding both the past and present, while the rest were used either regarding the past (6) or the present (8) (Figure 3a). The keywords used while speaking about the availability of plants in the past only were more or less divided between positive and negative expressions, although the majority of the keywords were expressed through negation and opposition (for example “no time to collect” and “cultivars were not available”), whereas the keywords used regarding the present had both negative and affirmative connotations (such as “taxa disappeared” vs “obtained from pharmacy”). The latter keyword (“obtained from pharmacy”) can also be considered, or perceived as, a negation of demand, yet the majority of the intentions expressed during the interviews were rather that as the taxa was no longer available in the wild it was obtained from the pharmacy/retail store.

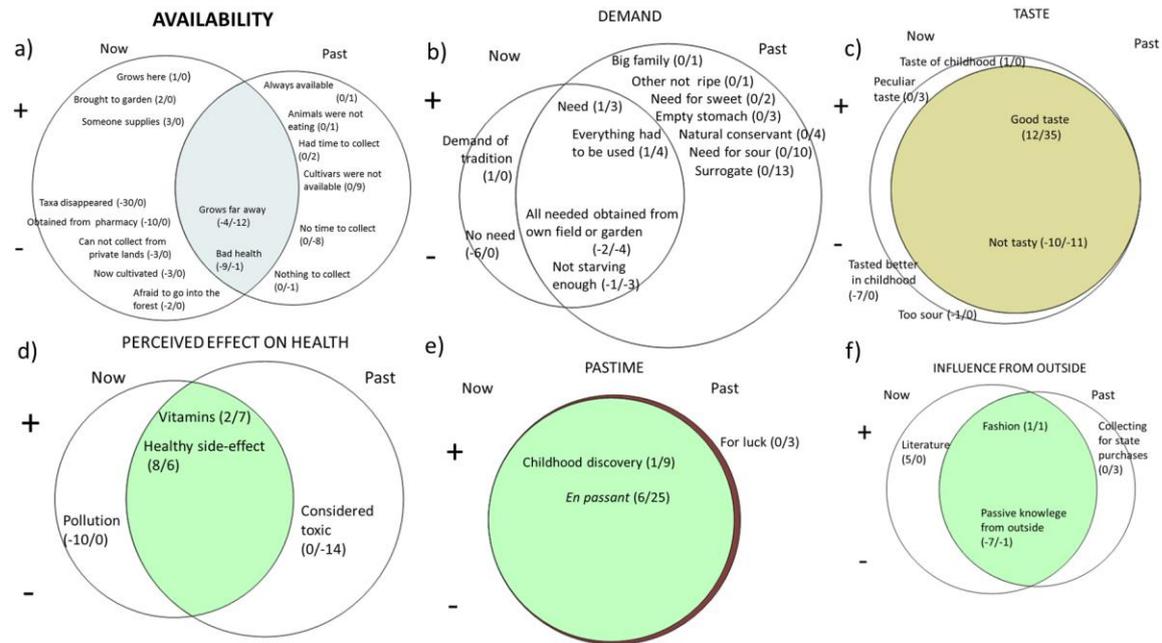


Figure 3. Detailed overview of the keywords used in each subject domain regarding the use of wild food plants in the past and present. Overlapping areas represent the keywords that were used to describe both the past and the present, while the outer rings refer to the keywords that were used in reference to either the past or the present. Numbers in brackets indicate the number of people mentioning similar keywords; + positive influence on their use; - negative influence on their use.

The category of *demand* encompassed 13 keywords (Figure 3b), the majority of these being used in the past (11), including four used in both the past and present, while only two keywords (“demand of tradition” and “no need”) refer solely to use regarding the present. The keywords mentioned in both the past and present are not very numerous, represented by only two that positively (general “need” and “everything had to be used”) and two that negatively (“all needed obtained from own field or garden” and “not starving enough”) influence the use of wild food plants. The keywords used for past demand, while all positively influencing the use of wild food plants, stressed the need for surrogate or natural preservatives (which can also be perceived as a substitute for sugar), but also the need for nutrients (“big family” and “empty stomach”). The two remaining keywords (“need for sweet” and “need for sour”) used regarding the past were positive; yet could also have been categorized under the subject taste.

While the diversity of the keywords used to denote **taste** (Figure 3c) is rather limited (only 6 keywords), all of them are related to the present (including two used regarding the past as well). The keywords used only to address the present provide a more detailed explanation of taste (positive: “peculiar” and “taste of childhood”; negative: “tasted better in childhood” and “too sour”), while the two keywords used in both the past and present were in fact the most well-represented and addressed the perception of taste in general (positive: “good taste” and negative: “not tasty”).

The remaining three small categories are both addressed through four or less keywords. Of these subjects, **perceived effect on health** (Figure 3d) is the most numerous. While positive aspects of the effects on health (ideas about the healthiness and vitamin richness of wild food plants) have been discussed regarding both the present and past, the two remaining keywords are both negative: while talking about the past people emphasized the poisonousness of plants, whereas environmental pollution in mentioned in the context of the present. **Pastime**

(Figure 3e) is the only category that does not possess any keyword that was used when discussing the present only, while just one of three keywords (“for luck”) was used exclusively in the past. The whole category of pastime, related mainly to childhood activities (like “discovery”), was still perceived in a similar light or simply continued into adulthood (“*en passant*”). The least numerous **influence from outside** category (Figure 3f) reveals the very modest perceived influence of “literature” (journals, books) as a modern source of information, although it is widely assumed that the current use of wild plants is highly influenced by literary and other media sources. Even if this is in fact the case, people do not perceive it as such. On the other hand, “collecting for state purposes” was a reason for collecting and the secondary use of plants in the rather recent past. “Passive knowledge” (the knowledge known to be used by others, but not personally used) was considered negative due to the attitude held by the interviewees, showing that regardless that the new uses are known by peoples, quite a proportion of them were not adopted into practice throughout the life of the interviewees. Following “fashion”, although mentioned, was also of minor importance to the interviewees.

3. Discussion and conclusions

The current study aimed to deepen the understanding of the mechanisms underlying the phenomenon of unlearning debt (Kalle and Sõukand 2016), e. g. identify the reasons for rapid erosion of the knowledge of the use of wild food plants. The understanding of the phenomenon is important because the use of wild food plants is seen as homogenous, due to representing emergency foods of the past (Quave and Pieroni 2015, Sõukand and Pieroni 2016), hence being a mean for securing food in case of sudden cease of presently available supply of cultivated foods.

I used approach uncommon in ethnobotany and, relaying on narratives, analysed the subjects people themselves emphasized while talking about the use of wild food plants during classical ethnobotanical study concentrated on documenting the nomenclature of wild food plants used within the lifetime. I have argued that the change in the use of plants brought along also changes in the attitudes toward the reasons why plants have been used and this attitude can be detected retrospectively.

The results of the study were better in line with the findings of Serrasolses et al (2016), especially regarding importance of taste and changes *en route* as the reasons for abandoning the use of wild food plants. Yet, recreational activities associated with gathering of wild food resources, as outlined in Schunko et al (2015) were never mentioned, and high quality of the wild products was mentioned only occasionally. The reason for such disagreement may be in distinct in socio-economical background, but also in different methodological approach to the collection of the data.

The content analysis of the narratives recorded during the interviews showed a clear temporal difference in the subjects discussed. General division of the diverse keywords between the past and present, as well as changing proportions of the temporally shared keywords, indicate considerable change in the perception of the importance, availability and applicability of wild food resources within the changing natural environment and culture. Change of the popular perception of the reasons for using/not using wild food plants was well perceived and noted by people and indicates that people have a fairly good understanding of the processes underlying the collection of plants from the wild. The fact that past demand for the diversification of food experiences and taste has been replaced by the present concern for the

disappearance of wild food taxa familiar from childhood suggests that people do not really feel that they need to use wild food plants anymore (except for the health benefits), and that they are concerned that their favourite plants are no longer available. The erosion of the practical use of wild food plants is also supported by the very small frequency in which the influence of teachings coming from outside the community was mentioned in discussions of both the past and present, and thus the loss of traditional uses is not really substituted by new uses acquired from elsewhere. Further research is needed to understand lay perceptions of the changes that have occurred in nature, society and the economy, in the context of their influence on the everyday use of wild food plants to appreciate the ways in which knowledge erosion takes place and to find the means of retaining this basic knowledge within society.

Acknowledgments

The fieldwork was supported by the grant from Estonian Ministry of Education and Science EKKM14-300 and the Estonian Research Council grant IUT22-5; writing of the paper was supported by the European Union through the European Regional Development Fund (Centre of Excellence in Estonian Studies, CEES). The author is grateful to all inspiring interviewees. Special thanks to Raivo Kalle, who equally participated in the fieldwork and transcription of the interviews and Urmas Sutrop for important suggestions on the earlier version on the manuscript. The author declares no conflicts of interest.

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This is a pre-print version of the article:

Sõukand, Renata. 2016. Perceived reasons for changes in the use of wild food plants in Saaremaa, Estonia. *Appetite*.

doi:10.1016/j.appet.2016.08.011

Sõukand, R., & Kalle, R. (2016). Perceiving the biodiversity of food at chest-height: use of the fleshy fruits of wild trees and shrubs in Saaremaa, Estonia. *Human Ecology*. DOI: 10.1007/s10745-016-9818-9

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