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Botanists and their childhood memories: an underutilized expert source in ethnobotanical research

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Botanists are an overlooked group of informants in ethnobotanical studies. The aim of this study was to assess their potential as sources of original ethnobotanical information. Wild food plants remembered by Polish botanists from their childhood were freelisted by 71 botanists. The results were compared with several ethnobotanical studies: three from the 21st century and one from the mid-20th century. The botanists listed 123 species (mean of 9.3 species per individual). Although the average number of personal freelists was slightly lower for botanists than for local key informants in two of the other studies (11 and 13, respectively), the total list of species was longer than in any other Polish ethnobotanical study. Two of the ethnobotanical studies supplied richer material on past famine plants, whereas the botanists mentioned many alien plants and plants from urban habitats not mentioned in the ethnographical study. It can be concluded that botanists are possibly the best source of information for studies of contemporary or new uses of plants, but are inadequate for uses that are dying out. *Botanical Journal of the Linnean Society*, 2012, **168**, 334–343.

ADDITIONAL KEYWORDS: children – ethnobotanical methods – experts – florivory – foraging – freelisting – urban ethnobotany – wild food plants.

INTRODUCTION

Children can be important informants in ethnobotanical studies. Research performed in communities with vivid human–natural environment interactions has shown that the knowledge of children concerning natural resources, their uses and classification (particularly food) can be close to that of adults (Zarger & Stepp, 2004; Setalaphruk & Price, 2007; Łuczaj & Nieroda, 2011). Children not only transmit the knowledge to each other whilst playing and helping adults, but also by exploring their natural environment, trying new species as snacks, inventing toys, etc.; in the process, they generate new knowledge and develop their own experience. In addition, some parts of the knowledge of children may be remnants of older traditions, which are no longer practised by adults (Svanberg, 1997; Anderson, 2000; Łuczaj, 2008). This relictual knowledge is sometimes forgotten later in adulthood, but is maintained in the community by co-figurative transfer among children (Anderson, 2000).

In contrast with the general population, botanists are able to report their childhood memories using botanical taxonomy and, as they have often been interested in plants and worked with plants from an early age, their memories may be preserved more vividly. When the first author (ŁŁ) attended the conference of the Polish Botanical Society in Szczecin in 2007 and told his fellow botanists about his research on wild food plants in Poland, he was struck by the amount of detail they remembered about the use of plants from their childhood, and how precise they were in the determination of the taxa they used. This was in stark contrast with average rural informants, who had great problems describing plants and had to be taken to the places in which the plants mentioned

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were growing to determine to which species they were referring. Taking informants to the field and documenting research by voucher specimens is an important part of ethnobotanical studies, but is time consuming. At the conference, the first author (ŁŁ) thought that it would be a useful exercise to compare the knowledge botanists have about wild food plants with data gathered in ordinary field research.

The use of experts as informants can be encountered in many fields of study, for example, engineering (Gramling, Forsyth & Wooddell, 1998), linguistics (Handford & Matous, 2011), medicine (Leifker *et al*., 2011), agronomy (Li *et al*., 2011), sociology (Nguyen, Higgs & Hellard, 2009) and ethnography (Lim *et al*., 2002; Gil, 2010). In ethnobotany, we have not yet encountered any papers in which professional botanists are the only informants. However, the use of local experts on plants as key informants is widespread, particularly in the study of medicinal plants. This choice of data gathering is called purposive sampling and its use in ethnobotany has been discussed extensively by Tongco (2007). As no papers have reported the results of ethnobotanical data gathering using botanists, we tried to fill this gap.

Freelisting is a widely applied method in ethnobotanical field research (Martin, 1995; Alexiades & Sheldon, 1996; Quinlan, 2005; Rivera *et al*., 2007; Thomas, Vandebroek & Van Damme, 2007), and nearly all the research on wild food plants in Poland has been performed using the freelisting method. Interview questions, applying freelisting, start with 'which plants do you know that are used for . . . ?', and then a studied domain is mentioned, such as medicine, food, construction, fuel, fodder, etc. By using freelisting, which is understandable for both literate and illiterate persons, an inventory of plants used in a given community can be easily obtained. Freelisting is not time consuming and data can be analysed quantitatively, thus making it appropriate for comparative studies. Quinlan (2005) has proposed that written freelists should be applied, when possible, giving more time for research participants to ponder the subject. We learned from our field experience and from other researchers that, when informants are interviewed only once, they may be surprised by the topic, questions and the presence of an outsider, and thus they forget to mention some important plant species/items for a domain (Brewer, 2002). Hence, when using a freelist orally, this method should be supported by other field techniques, such as participant observation and in-depth interviews, or key informant interviews.

Poland is a good place to perform methodological comparisons in ethnobotany, as this is a country for which large amounts of ethnobotanical data from the 19th and 20th centuries are available, particularly concerning medicinal and wild edible plants (Łuczaj & Szymański, 2007; Łuczaj, 2010a, b; Svanberg *et al*., 2011). In addition, the flora has been well studied, and a detailed atlas of the distribution of vascular plants (using a 10-km grid) has been published (Zając & Zając, 2001). Poland is predominantly a lowland country, which, although regional differences occur, is (compared with other large European countries, such as France, Spain, Italy or Ukraine) relatively homogeneous concerning vegetation and climate. Our main research question was whether botanists can, from their own experience, supply new information on wild food plants in a country with an existing large volume of ethnobotanical data. Our working hypotheses were that: (1) botanists can support new information on wild plants used by children as snacks; and (2) can supply longer plant lists than any other contemporary informants, but shorter than mid-20th century rural informants who still used/remembered famine food plants. To test these hypotheses, we compared results from our research among botanists with those performed in the 1948 Polish Ethnographic Atlas (PEA) and a few recently conducted investigations in rural areas of Poland. Our second objective was to check whether the written freelist questionnaire directed to key informants provides a richer inventory than oral freelists directed to the general population.

METHODS

The questionnaire among modern day botanists

The questionnaire sheets about the use of wild food plants were distributed among Polish botanists in September 2007, during the congress of the Polish Botanical Society (Polskie Towarzystwo Botaniczne, PTB) in Szczecin. After the conference, they were sent to *c*. 500 botanists (members of the Society and other botanists, participants of the congress) using the e-mail list of the Society (obtained courtesy of the organizers of the congress). Several questionnaires were also distributed by Dr Ewa Pirożnikow (University of Białystok). Altogether, 71 botanists from all major regions of Poland took part in the study: three professors, ten associate professors, 32 PhD graduates, 23 MSc graduates (mainly PhD students) and three MSc students. Female researchers constituted the majority of respondents (48/71), making the gender structure of the respondents similar to that of other ethnobotanical questionnaires, the primary informants of which are usually women. Most respondents specialized in plant ecology and/or plant taxonomy.

No direct questions about the background and social status of respondents were included in the

questionnaire. From conversations with many of the botanists, it can however be supposed that they came from a variety of social backgrounds, with the small town and countryside intelligentsia best represented (children of school teachers, officials and the like). The place of origin of the respondents can be inferred from the description of the location of their childhood memories: 14 came from cities (> 100 000 inhabitants), 16 from smaller towns, 27 from the countryside and 11 supplied information from both towns/cities and the countryside, either as a result of changes of residence or extensive travelling in their childhood.

The questionnaire asked the respondents to freelist wild food plants eaten in their childhood (until they were 18 years old). Respondents were also asked to list separately species of wild food plants collected by other children. A table was provided for answers. For each use-report they were asked to give the years when the plants were consumed and the location (at least the region). Each respondent was asked to sign the questionnaire with their name and scientific degree. Respondents had ample time to answer the questionnaire. Most returned it a day later or sent it by post or email. Plant names were given according to *Flora Europaea* (Tutin *et al*., 1964–1980).

The ethnographic questionnaire from 1948–49

The 1948–49 PEA study is the most exhaustive and reliable ethnobotanical source from 20th century Poland. It was organized and supervised by the Head of the Polish Folklore Society, Professor Józef Gajek. It used two kinds of questionnaire (later called Q1 and Q2), both based on freelisting of the taxa used, without presuggesting any species. Q1 was an empty table with two columns, one for local plant names and the other for the plant part used. Q2 was used to provide more information on particular species; questions about each species (e.g. who collected it, who it was prepared by, what the local names were, etc.) occupied two pages, including a space in which to attach a small herbarium specimen (Łuczaj, 2008). Some respondents returned both Q1 and Q2, and some only Q1 or Q2, so that the depth of information concerning particular places varied. Altogether, 76 Q1s and 391 Q2s, with 235 herbarium specimens containing information on edible plants, were used in this study. They were filled in by the correspondents of the Polish Folklore Society, mainly teachers and farmers, but also lawyers, priests, physicians or even youths (e.g. scouts). They interviewed local people, usually from the villages in which they lived themselves, and sent the results back to the PEA office. The data came from 98 localities from all over Poland. Recently, more PEA questionnaires (from 95 localities) were found in the PEA office in Cieszyn (Łuczaj, 2010a, b), but this only partly published material was not taken into account in this comparison, and only data published by Łuczaj (2008) were included. In 49 of the studied questionnaires, the number of informants was given; it ranged from one to six (mean, 2.5), and hence we can estimate that the results from the 98 localities may be based on around 200, 300 or even more informants.

The 21st century questionnaires

Jędrusik (2004) compared the results of ethnographical questionnaires used in 1964–69 and 2000–2003 in 82 villages throughout Poland to sample the use of wild food plants. The answers were elicited by a mixture of freelisting and presuggested questions. The history of these studies has been characterized in detail in other publications (Kłodnicki & Drożdż, 2008; Łuczaj, 2010b). The use of only 51 and 32 taxa was recorded in 1964–69 and 2000–2003, respectively. In the latter period, inhabitants reported using only 2.9 taxa per village (one or a few informants supplied information per village). Some caution must be exercised in the interpretation of the results of the studies analysed by Jędrusik (2004), however, as it seems that these were performed hastily, mainly by young ethnographers and ethnography students instructed to study particular villages they visited for the first time (Łuczaj, 2010b).

Nieroda (2009) used a questionnaire to study the knowledge of the use of wild food plants in three adjacent villages in south-east Poland, in an area with relatively well-preserved traditional rural culture. She studied 213 adults (aged > 40 years) and 176 secondary school children. Adults mentioned using 30 species of wild food plants (mean of 4.7 species) and children 22 species (mean of 2.7 species).

Pirożnikow (2010) gathered data on wild food plant use in north-east Poland (Podlasie region) using freelisting questionnaires and by interviewing local key informants. On average, 13 species were listed per questionnaire and she gathered information on the use of 122 species. The large number of taxa listed in the study can be attributed to three factors: (1) the detailed nature of the study (exhaustive interviews performed by a botanist); (2) the choice of particularly knowledgeable informants; and (3) the fact that the Podlasie region is, with parts of the Carpathians, the most traditional and 'undeveloped' part of Poland where remnants of peasant culture can still be studied.

RESULTS

The botanists listed 123 plant species (Tables 1 and 2; authors of plant names are given in the tables). Of

Table 1. Comparison of the study of wild food plants from 1948 (Polish Ethnographic Atlas, PEA) and the study of wild plants collected by botanists in their childhood from 2007 (Polskie Towarzystwo Botaniczne, PTB)

Species	Part	1948 $N = 96$ %	2007 $N = 71$ %	
Rumex spp. [*R. acetosa* L. – 31, *R. acetosella* L. – 6, *R. thyrsiflorus* Fing. – 3]	Leaves	78.1	59.1	ns
Chenopodium album L.	Leaves	52.1	2.8	‡
Rubus subgenus *Rubus* spp. [*R. caesius* L. – 7, *R. plicatus* Weihe & Nees – 3, *R. nessensis* W.Hall – 1]	Fruits	50.0	46.5	ns
Fragaria vesca L.	Fruits	49.0	40.8	ns
Vaccinium myrtillus L.	Fruits	48.9	46.5	ns
Urtica spp.	Leaves	39.6	7.0	‡
Vaccinium vitis-idaea L.	Fruits	35.4	18.3	*
Rubus idaeus L.	Fruits	33.3	38.0	ns
Oxalis spp.	Leaves	32.3	40.8	ns
Corylus avellana L.	Fruits	30.2	36.6	ns
Rosa spp. [*R. rugosa* Thunb. – 7, *R. canina* L. – 5]	Fruits	30.2	22.5	ns
Prunus spinosa L.	Fruits	28.1	9.9	†
Armoracia rusticana P.Gaertn, B.Mey. & Scherb.	Roots	27.1	0	‡
Betula spp.	Sap	27.1	8.4	†
Sambucus nigra L.	Fruits	25.0	9.9	*
Crataegus spp.	Fruits	22.9	15.5	ns
Carum carvi L.	Seeds	19.8	0	‡
Elymus repens (L.) Gould (syn. *Elytrigia repens* (L.) Desv ex. Nevski)	Rhizomes	19.8	0	‡
Tilia spp.	Flowers or leaves	17.7	8.4	ns
Acorus calamus L.	Young shoots	13.5	14.1	ns
Trifolium spp. [*T. pratense* L. – 10, *T. repens* L. – 5, *T. hybridum* L. – 2, *T. medium* L. – 1]	Flowers	13.5	31.0	*
Centaurea cyanus L.	Petals	12.5	1.4	†
Quercus spp. (mainly *Q. robur* L.)	Fruits	12.5	4.2	ns
Mentha spp. [*Mentha longifolia* (L.) Hudson and *M. arvensis* L. in PAE study]; [*M. arvensis* L. – 1, *M. aquatica* L. – 1, *M.* × *piperita* L. – 1, *M. pulegium* L. – 1 in PTB study]	Leaves	11.5	7.0	ns
Malva spp. [*M. neglecta* Wallr. – 20, *M. sylvestris* L. – 4, *M. alcea* L. – 1, *M. pusilla* Sm.– 1]	Immature fruits and leaves	9.4	36.6	‡
Malus sp. – wild	Fruits	4.2	9.9	ns

The number of respondents who listed the species for the PTB study is given in square brackets for some taxa.
The species which occurred in at least 10% of the questionnaires in either one of the studies were taken into account.
Chi-squared test: ns, not significant ($P > 0.05$); *$0.05 > P > 0.01$; †$0.01 > P > 0.001$; ‡$P < 0.001$.

those species, 11 were cultivated-only taxa, the parts of which were gathered by children without their parents' permission, and thus treated as 'wild' by the respondents. Twenty-three taxa have not been reported previously to be consumed in Poland. Most of these newly reported taxa are snacks eaten by children (leaves, young shoots, flowers and fruits).

Professors (including associate professors) listed, on average, 8.3 taxa (median, 8), PhD graduates 9.5 (median, 8.5), and masters and students (treated together) 9.1 (median, 8). Women and men listed a similar number of species (9.4 and 9.0, respectively). There was no significant difference between any of the categories (Mann–Whitney *U*-test, $P > 0.05$). The longest list contained 31 taxa, and one of the professors sent an empty questionnaire explaining that his parents kept him away from nature when he was a child and he never gathered any plants!

Respondents from small towns and the countryside listed slightly more taxa than those from cities (means of 8.6, 8.8 and 6.6, respectively), but the difference between the city respondents and those

Table 2. Taxa mentioned by botanists, not listed in Table 1

Species	Part	Status	No. of records $N = 71$
Allium spp. (incl. *A. oleraceum* L., *A. schoenoprasum* L., *A. vineale* L. and *A. ursinum* L.)	Aerial bulbils and bulbs		7
Prunus domestica L. *s.l.*	Fruits	C	7
Dactylis glomerata L.	Inner parts of shoots		6
Prunus padus L.	Fruits		6
Prunus serotina Ehrh.	Fruits	[!!]	6
Prunus avium L.	Fruits		5
Secale cereale L.	Green seeds	CC	5
Syringa vulgaris L.	Flowers	[!!]C	5
Taraxacum spp.	Leaves		5
Morus alba L.	Fruits	CC	4
Papaver somniferum L.	Seeds	C	4
Pinus sylvestris L.	Young shoots		4
Caragana arborescens Lam.	Flowers	[!!]CC	3
Papaver rhoeas L.	Seeds		3
Picea abies (L.) H.Karst.	Young shoots		3
Poa spp. (incl. *Poa annua* L. – 1, *Poa trivialis* L. – 1)	Inner parts of shoots	[!!]	3
Polygonum aviculare L.	Leaves		3
Rubus saxatilis L.	Fruits		3
Symphytum officinale L.	Flowers		3
Taxus baccata L.	Pseudo-fruits	[!!]	3
Trapaeolum majus L.	Flowers	CC	3
Vicia spp.	Flowers and immature seeds		3
Achillea millefolium L.	Flowers	[!]	2
Amelanchier sp.	Fruits	[!!]C	2
Bellis perennis L.	Flowers		2
Berberis vulgaris L.	Fruits		2
Daucus carota L.	Roots		2
Lolium perenne L.	Inner parts of shoots	[!!]	2
Malus cfr *purpurea* (A.Barbier) Rehder	Fruits	CC	2
Prunus cerasus L.	Fruits	C	2
Reynoutria japonica Houtt.	Tips of young shoots	C	2
Ribes nigrum L.	Fruits		2
Ribes spicatum E.Robson	Fruits		2
Symphoricarpos albus (L.) S.F.Blake	Fruits	C	2
Abies alba Mill.	Young shoots		1
Agrostis sp.	Inner parts of shoots	[!!]	1
Alopecurus pratensis L.	Inner parts of shoots	[!!]	1
Angelica archangelica L. ssp. *litoralis* (Fr.) Thell.	Leaf stalks	C	1
Artemisia absinthium L.	Leaves		1
Artemisia vulgaris L.	Stalks		1
Brassica napus L. ssp. *napobrassica* (L.) Rchb.	Leaves	CC	1
Brassica rapa L.	Leaves	CC	1
Calamagrostis sp.	Inner parts of shoots	[!!]	1
Calendula officinalis L.	Flowers	C	1
Calluna vulgaris (L.) Hull.	Flowers	[!!]	1
Carex spp.	Inner parts of shoots	[!!]	1
Chamomilla recutita (L.) Rauschert	Flowers and leaves		1
Hemerocallis sp.	Flowers	CC	1

Table 2. *Continued*

Species	Part	Status	No. of records $N = 71$
Hippophaë rhamnoides L.	Fruits	C	1
Holcus lanatus L.	Inner parts of shoots	[!!]	1
Juglans regia L.	Fruits	C	1
Juncus sp.	Inner parts of shoots	[!!]	1
Juniperus communis L.	Pseudo-fruits		1
Phleum pratense L.	Inner parts of shoots	[!!]	1
Plantago lanceolata L.	Leaves		1
Plantago major L.	Leaves		1
Primula elatior (L.) Hill	Flowers	[!!]	1
Prunus armeniaca L.	Fruits	CC	1
Prunus fruticosa Pallas	Fruits	[!!]	1
Pulmonaria obscura Dumort.	Flowers		1
Quercus rubra L.	Fruits	[!!]C	1
Ranunculus ficaria L. (syn. *Ficaria verna* Huds.)	Young leaves		1
Ribes alpinum L.	Fruits		1
Salix sp.	Catkins		1
Salvia splendens Sell ex Roem. & Schult.	Flowers	[!!]CC	1
Sedum acre L.	Leaves	[!!]	1
Sempervivum sp.	Leaves	[!!]C	1
Silene vulgaris (Moench) Garcke	Flowers	[!]	1
Solanum tuberosum L.	Tubers	CC	1
Typha sp.	Rhizomes		1
Viburnum opulus L.	Fruits		1

CC, cultivated species; C, cultivated species likely to be found as a persistent garden escape or spreading alien; [!!], the first record of the food use of this wild or feral plant species in Poland; [!], a new use of a species, the use of which had already been recorded in Poland. Note that some uses may concern individual experimentation with potentially toxic plants and do not represent a documentation of a 'traditional' use.

from small towns and the countryside was not significant (Mann–Whitney *U*-test; $P = 0.32$). The largest number of taxa was mentioned by respondents with mixed childhood residence, i.e. from both cities/towns and countryside (mean of 15.1; the difference between this group and the rest of the respondents, who had single backgrounds, was highly significant; Mann–Whitney *U*-test; $P = 0.0016$). This group included both botanists who changed their residence during childhood and those who lived in a city but regularly spent summers in the countryside.

The list of species obtained from botanists was longer than the list from the PEA study, which recorded the use of 98 species. However, in the PEA study, a list from one locality contained, on average, more species (mean, 11.3; median, 10) than an average list supplied by a botanist (mean, 9.3; median, 8).

There was a high level of similarity between the results of both studies, although, among the most commonly mentioned species in the PEA study, there were more leafy vegetables and, in the PTB study, immature fruits and flowers appeared (these are typical snacks for children). In the PEA study, the most commonly listed species were *Rumex* spp., *Chenopodium album* (leaves of both), *Rubus* subgenus *Rubus* spp., *Fragaria vesca*, *Vaccinium myrtillus* (fruits of all three), *Urtica* spp. (leaves), *Vaccinium vitis-idaea*, *Rubus idaeus* (fruits of both), *Oxalis* spp. (leaves), *Corylus avellana* and *Rosa* spp. (fruits of both). In the PTB study, the most commonly listed taxa were similar: *Rumex* spp. (leaves), *Rubus* subgenus *Rubus* spp., *Vaccinium myrtillus, Fragaria vesca* (fruits of all three), *Oxalis* spp. (leaves), *Malva* spp. (immature fruits), *Rubus idaeus* (fruits), *Capsella bursa-pastoris* (immature fruits), *Corylus avellana* (fruits), *Trifolium* spp. (flowers) and *Robinia pseudoacacia* (flowers). However, the presence of frequently reported snacks for children must be noted (*Capsella*, *Malva*, *Trifolium*, *Robinia*).

For 19 of the 31 most common species from the PEA study, there was no difference in frequency between the studies (Table 1). However, a few species appeared in the results of only one study. The PTB study did not record some important spices, such as caraway (*Carum carvi*) and horseradish (*Armoracia*

rusticana), or couchgrass (*Elymus repens*), an important former famine plant. Wild greens, once used mainly during food shortages, such as nettles (*Urtica* spp.) and fat hen (*Chenopodium album*), were rare in the PTB study. The extraction of birch sap (*Betula* spp.) was also much more frequently mentioned in PEA than in PTB.

DISCUSSION

The list of species supplied by contemporary botanists is longer than that from a detailed ethnographic study 60 years ago and from contemporary ethnographic studies by Jędrusik (2004) and Nieroda (2009), and longer than the list supplied by Pirożnikow (2010). We can thus conclude that botanists are valuable sources of ethnobotanical information and that written freelisting is an efficient method. Although one botanist supplied a slightly shorter list of species than an average correspondent of PEA in 1948 and Pirożnikow's key informants, we must bear in mind that PEA correspondents usually worked with more than one informant and that, in both PEA and Pirożnikow's study, mainly elderly, and probably the most knowledgeable, informants were selected.

The high efficiency of data gathering with the proposed method must be underlined. The list of 123 species was obtained from 71 botanists, whereas other surveys used more informants and correspondents. Pirożnikow's list of 122 species was obtained from 297 informants during a field study using diverse field methods, returning to the informants to complete the plant lists, and lasting a few years (Table 3). The list of 98 species from the PEA study was obtained after a 2-year research project with a few hundred key informants, and was performed 60 years earlier, when the memories of food shortages were vivid, as the project was carried out just after World War II.

The ethnobotanical literature lacks studies using surveys among botanists as the main research tool. However, it should be mentioned that a 19th century ethnobotanical questionnaire, issued by Rostafiński in 1883, had a high response rate from professional and amateur botanists (Köhler, 1993; Łuczaj, 2010a). In addition, Maurizio (1926), in his monograph of plant foods, often referred to correspondence with other botanists. A good target for ethnobotanical surveys among botanists could be areas of the globe in which the traditions of ethnobotanical studies are not strong, but the network of botanists studying local floras is high, e.g. Ukraine, Russia and other parts of the former Soviet Union. However, such a questionnaire among botanists could probably be a valuable ethnobotanical source in any country.

Table 3. Comparison of wild food plant studies discussed in the article

Years of data collection	1948–49	2000–2003	2007–2008	2007–2008	2003–2009	2007
Source of data	Łuczaj (2008)	Jędrusik (2004)	Nieroda (2009)	Nieroda (2009)	Pirożnikow (2010)	This study
Geographical range of study	All of Poland	All of Poland	Three villages in south-east Poland	Three villages in south-east Poland	North-east Poland – 134 villages	All of Poland
No. of questionnaires	98	82	213	176	248	71
No. of informants and their characteristics	A few hundred (~ 100–300) local key informants	> 82 local key informants	213 adults	176 children	297 local key informants	71 botanists
Mean no. of wild food plants used	11	2.9	4.2	2.7	13	9.3
Total no. of taxa mentioned	98	32	30	22	122	123

A great advantage of this survey among botanists was the recording of the use of newly established alien plants, often in urban settings. We could say that the PTB survey supplied a more 'urban' record of wild food plant use in Poland, as a considerable proportion of the botanists grew up in cities. They listed many alien plants (e.g. *Robinia pseudoacacia*, *Prunus serotina*, *P. cerasifera*, *Amelanchier* spp.) and ruderal species (*Capsella bursa-pastoris*, *Malva* spp., *Polygonum* spp.). Botanists also listed in detail the names of grass species, the inner parts of the stalks of which were sucked, something completely absent from ethnographic studies.

The study also shows a phenomenon probably typical for children across the globe, i.e. florivory (eating flowers) (Holuby, 1896; Milliken & Bridgewater, 2004; Tardío, Pardo de Santayana & Morales, 2006; Moerman, 2010). Nineteen species listed (nearly 16%) were flowers. Some of the flowers, fruits and leaves eaten by children may be toxic in larger amounts, and the list of species used by children shows the complete spectrum of their experimentation with plant consumption. Thus, Table 2 should not be treated as a list of documented 'traditional' uses of plants. The importance of plants for children (as food and toys) is an underdocumented domain, and only a few studies have dealt with this topic (Holuby, 1896; Udziela, 1929; Milliken & Bridgewater, 2004).

The PTB survey failed to record the basic famine green vegetables (e.g. *Urtica*, *Chenopodium*) still used in the mid-20th century; it has a contemporary focus, i.e. the survey among the botanists was a good tool for reporting the use of plants contemporary to the respondents, but an inadequate tool for recording historical changes.

Small differences in the number of reported species between respondents from cities and the countryside are proof that urban ethnobotany is an area of study worth developing in Poland, which has been completely neglected in previous ethnographic works on wild food plants (Kujawska, 2011). The incorporation of urban areas is an important trend in modern ethnobotanical studies (Pieroni & Vandebroek, 2007; Pardo-de-Santayana, Pieroni & Puri, 2010).

Knowledge about wild food plants, at least the basic species, is shared by most members of the Society. It would be interesting to see whether botanists are an equally adequate source of information about medicinal plants. However, medicinal plant knowledge is more individual, and it is to be suspected that botanists would be less useful for researching this field of expertise. Indeed, as a result of the high variability of medicinal knowledge within communities, local ethnomedicinal experts have long been used in ethnobotany as key informants (Tongco, 2007; Santos, Amorozo & Ming, 2008; Pérez Machín *et al*., 2011). There are still other ethnobotanical topics for which a survey among botanists could bring valuable results, e.g. toy plants and children's games involving plants.

The distribution of an ethnobotanical survey among botanists had yet another advantage. In our opinion, it raised awareness of the need to document the disappearing ethnobotanical heritage in the country. Repeating a similar study in other European countries could supply cross-cultural comparisons.

CONCLUSIONS

The survey of wild food plants carried out among botanists resulted in a longer list of plants than other contemporary or 20th century studies, including long field studies carried out over several years by a large team of researchers. For more than half of the more common species, there were no significant differences in their frequencies in the PTB and PEA surveys. The study among ethnobotanists failed to record past famine plants, used in the 19th and early 20th centuries, even the most common plants. However, the resulting list included a surprising amount of information on the use of alien and ruderal plants, especially in urban environments, including several species not reported to be used before. It also included, for the first time, a long list of children's snacks.

Written freelisting methods proved to be efficient to obtain an exhaustive inventory of wild food plant species consumed contemporarily or recently. It can be recommended for other similar studies among literate key informants or experts, provided that the basic idea of how to complete the questionnaire is explained sufficiently.

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