

Chapter 3

Nutritional Ethnobotany in Europe: From Emergency Foods to Healthy Folk Cuisines and Contemporary Foraging Trends

Łukasz Łuczaj and Andrea Pieroni

3.1 Introduction

In several countries and regions of Europe, ethnobotanical studies and reviews give us a picture of traditionally used wild food plants, for example, in Spain (Aceituno-Mata 2010; Benítez 2009; Bonet and Vallès 2002; Criado et al. 2008; Dávila 2010; Gonzalez et al. 2011; Parada et al. 2011; Pardo-de-Santayana et al. 2005, 2007; Pardo-de-Santayana and Morales 2010; Polo et al. 2009; Tardío et al. 2005, 2006; Rivera et al. 2005; Tardío 2010; Velasco et al. 2010; Verde et al. 2003), Portugal (Carvalho and Morales 2010; Pardo-de-Santayana et al. 2007), Italy (di Tizio et al. 2012; Guarrera 2003; Guarrera et al. 2006; Ghirardini et al. 2007; Paoletti et al. 1995; Picchi and Pieroni 2005; Pieroni 1999, 2001; Pieroni et al. 2002, 2005), Greece (Della et al. 2006; Forbes 1976), France (Marco et al. 2003), Bosnia-Herzegovina (Redžić 2006), the whole Mediterranean area (Hadjichambis et al. 2008; Leonti et al. 2006; Rivera et al. 2006a), Austria (Christanell et al. 2010; Schunko and Vogl 2010; Schunko et al. 2012), Switzerland (Abbet et al. *in press*), Poland (Kujawska and Łuczaj 2010; Łuczaj 2008, 2010a, 2010b, 2011; Łuczaj and Kujawska 2012; Łuczaj and Szymański 2007), Slovakia (Łuczaj 2012a), Hungary (Dénes et al. 2012), Belarus (Łuczaj et al. 2013a), Croatia (Łuczaj et al. 2013b, 2013c), Bulgaria (Nedelcheva 2013), Ukraine (Łuczaj 2012b), Sweden (Svanberg 1998, 2011, 2012), Iceland, and the Faroes (Svanberg and Ægisson 2012). Some of these papers were coming from a special volume of the journal *Acta Societatis Botanicorum Poloniae*, which was devoted to the ethnobotany of wild food plants (Dénes et al. 2012; Kalle and Sõukand 2012; Łuczaj 2012a; Svanberg 2012) and

Ł. Łuczaj (✉)

Department of Botany, Institute of Applied Biotechnology and Basic Sciences, University of Rzeszów, Rzeszów, Poland
e-mail: lukasz.luczaj@interia.pl

A. Pieroni

University of Gastronomic Sciences, Pollenzo, Cuneo, Italy
e-mail: a.pieroni@netcologne.de

© Springer Science+Business Media New York 2016

M. de C. Sánchez-Mata, J. Tardío (eds.), *Mediterranean Wild Edible Plants*,
DOI 10.1007/978-1-4939-3329-7_3

also contains a separate article summarizing the changing in the use of wild food plants in Europe (Łuczaj et al. 2012). In this chapter, we include the main points drafted in that article extended by looking at the latitudinal and longitudinal aspects of wild food plant use in Europe.

Plant use patterns are usually not constant. Nowadays, in most cases, ethno-botanical studies reveal either a dramatic or gradual loss of traditional knowledge and practices (e.g., Łuczaj 2008; Sõukand and Kalle 2011; Turner et al. 2011). The changes in patterns of wild plant use differ by region and are associated with the general socioeconomic changes in Europe. Moreover, times of famine seem to be in the distant past for industrially developed countries. Food made of cultivated plants and bought from the supermarket appears on the table with relatively little effort, while collecting wild species is more time consuming and season dependent. In spite of that, the importance of wild food plants for food security and in shaping alternative models of consumption is emphasized (Madej et al. 2014; Muller and Almedom 2008). Moreover, in Europe, there are new phenomena associated with plant use appearing in modern societies. Some of them have to do with migration and new ethnic minorities appearing in cities and bringing new traditions with them. For example, Ukrainian migrants throughout Europe tend to collect *Rumex* spp. for their traditional green borsch, and Asian migrants look for bracken fiddleheads in European woods (Pieroni and Gray 2008; Picchi and Pieroni 2005). In Great Britain and Ireland, many members of the large Polish minority search through the woods looking for fungi species traditionally gathered in Poland to the surprise of the local mycophobic population. Other phenomena appear due to new tendencies in nutrition and self-medication facilitated by the rapid spread of information via the Internet. On top of that, not all the traditions are gone; in some areas, old traditions are cultivated for a variety of reasons, while in others, they are lost.

3.2 A Gradual Decrease in the Necessity of Use of Wild Food Plants

The use of wild plants in Europe is often associated with times of famine or food scarcity (although not exclusively). Most of the early studies on the use of wild food plants in Europe—from those coming from the nineteenth century until more or less the 1960s—capture the memory of famine and the use of wild plants for survival, including the consumption of starvation foods that in normal times would be discarded by the community. There were many outbreaks of famine in some parts of Europe in the nineteenth and twentieth centuries. Probably one of the most serious was caused by the potato blight (1844–1849). This affected many potato-dependent countries, from Ireland to Poland (Maurizio 1926, 1927, 1932; Ó Grádá 2009). Locally, famines due to crop failure appeared in some parts of Europe for a few successive decades (Häkkinen 1992; Nelson 1998; Svanberg 2007; Svanberg and Nelson 1992). A severe famine hit Russia in 1892, then there was World War I (1914–1918) and the revolution and the establishment of the Soviet Union which

brought famine in 1921–1922 (Sorokin 1975). In 1932–1933, millions of people starved to death in the Ukraine (Conquest 1987; Ó Gradá 2009). The Spanish Civil War (1936–1939) and later World War II (1939–1945) brought another revival of emergency food (Matalas and Grivetti 2007). For most European countries, this was the last episode of serious lack of food, apart from the Balkans when the conflicts, which emerged during the collapse of Yugoslavia, caused a series of food crisis. The best documented and the longest one is the over 3-year siege of Sarajevo, which was captured from inside by the Bosnian botanist Sulejman Redžić, who not only recorded the emergency plants used, but also tried to alleviate the crisis by running media programs explaining the use of wild plants in the besieged city (Redžić 2010; Redžić et al. 2010).

Two kinds of poverty food are dominant in memories or sources from the nineteenth century: plants used to make potherb or soup and those employed as additional ingredients for making bread. The use of potherb/soup wild vegetables composed of many species survived mainly in the Mediterranean, at least in some rural areas, whereas in other parts of Europe, such soups are usually made with few species, for example, nettles (*Urtica dioica* L.) or sorrel (*Rumex* spp.). However, the use of wild plants for making bread has almost completely disappeared from the European diet. The famine bread ingredients consisted of a large variety of products, including even clay, cambium of trees, and wood shavings. Other common additions were acorns, lesser-used seeds of Fabaceae plants (e.g., *Vicia* spp.), dried and milled leaves, rhizomes and roots, sometimes even mosses and lichens. Still, most of the plants used in times of famine were also used when just a shortage of grain occurred in the spring time (Łuczaj 2011; Maurizio 1926; Tardío 2010). Some of the plants used during famine were the species used also at normal circumstances but in small amounts; others were only used in severe famine. Some of the plants commonly used in times of even slight food scarcity are now completely forgotten (Table 3.1).

Although it was probably not perceived as so by the historical users, many of the uses of wild food plants are related to the diversification of a monotonous diet in non-famine times. In many Mediterranean countries (e.g., Portugal, Spain, Italy and Greece), different *Lamiaceae* and *Apiaceae* species have also been used to spice various products. The use of wild food plants for this diversification does not depend so much on the geographical position or the variety of the flora of the users but on access to supplies and the knowledge and creativity of the cook. In northern Europe, the choice of aromatic plants is not so large as in the south, but the available aromatic plants were used in a similar way, particularly juniper (*Juniperus communis* L.) pseudo-fruits and caraway (*Carum carvi* L.) fruits (Kalle and Sõukand 2012; Łuczaj 2011). It is worth noting that local aromatic *Lamiaceae* species, so omnipresent in the Mediterranean cooking, rarely found their way in northern European cuisine. The exception is, for example, the use of *Mentha* spp. (e.g., *M. longifolia* (L.) Huds.) to spice the cheese-and-potato filling of dumplings in parts of southeast Poland (Łuczaj 2008, 2011). The scarcity of aromatic plants in northern Europe sometimes attracted attention to even relatively toxic species such as *Tanacetum*

Table 3.1 Examples of famine plants important in nineteenth century or early twentieth century nutrition in Europe, now nearly forgotten. (Adapted from Łuczaj et al. 2012)

Species (Part used)	Country
<i>Elytrigia repens</i> (L.) Desv. ex Nevski (rhizomes)	Poland
<i>Arum</i> spp. (bulbs)	Croatia
<i>Eryngium</i> spp. (roots)	England, Croatia
<i>Trapa natans</i> (fruits)	Poland, Hungary, Montenegro
<i>Polypodium vulgare</i> (rhizomes)	Poland, Slovakia
<i>Angelica sylvestris</i> L. (young stems)	Estonia
<i>Anthriscus sylvestris</i> (L.) Hoffm. (young stems)	Estonia
<i>Equisetum arvense</i> L. (tubers, spring shoots)	Estonia
<i>Cirsium oleraceum</i> (L.) Scop. (young stems)	Estonia
<i>Cetraria islandica</i> (L.) Ach. (thallus)	Estonia
<i>Crepis vesicaria</i> subsp. <i>haenseleri</i> (Boiss. ex DC) P. D. S (basal leaves)	Spain
<i>Quercus ilex</i> subsp. <i>ballota</i> (Desf.) Samp. (acorns)	Spain
<i>Crataegus monogyna</i> Jacq. (fruits)	Spain
<i>Rosa canina</i> L. (young shoots)	Spain
<i>Chondrilla juncea</i> L. (young shoots)	Spain
<i>Sonchus asper</i> (L.) Hill (peeled midribs)	Spain
<i>Cichorium intybus</i> L. (basal leaves)	Spain
<i>Scorzonera laciniata</i> L. (tender leaves and stems)	Spain
<i>Silybum marianum</i> (L.) Gaertn. (peeled basal leaves)	Spain
<i>Cynodon dactylon</i> (L.) Pers. (rhizomes)	Spain

vulgare L., which was used to be added to omelettes in England or some dishes in eastern Slovakian (Ruthenian) cuisine (Phillips 1983; Łuczaj 2012a).

The earliest work on children's wild food snacks comes from the Slovakian botanist Jozef Ludovit Holuby (1896). It is believed that the way children approach nature may be a relic of how our ancestors did (Łuczaj and Kujawska 2012; Łuczaj 2012a). Kids often participated in their mother's gathering activities (Łuczaj 2008), but they seem to have had a "folklore" of their own, mainly with plants eaten raw (Kalle and Sõukand 2013; Łuczaj and Kujawska 2012, Tardío et al. 2006). These were often flowers (which contain some sugar in their nectar, such as *Lamium album* L.), mature fleshy fruits, nuts and seeds as well as some tasty and interesting-looking immature fruits, for example, *Capsella bursa-pastoris* (L.) Medik. or *Malva* spp., widely eaten across Europe (Kalle and Sõukand 2013; Łuczaj and Kujawska 2012; Tardío et al. 2006; Tardío 2010). Other snacks are often specific to certain regions of Europe and are reported only from one country.

Children taste everything, sometimes even poisonous plants, but the bitter taste usually warns against future consumption. Thus, early age experimentation may have been a continuing source of introduction or reintroduction of food plants in the diet (Łuczaj and Kujawska 2012). Some of the snacks tasted in childhood were still occasionally "in use" in adulthood, but the majority of modern adults simply do not get many chances to eat them again. Nowadays, even in rural areas, children do not spend as much time in the fields as their parents or grandparents did. They

not only do not take part in pastoral and agricultural activities but generally spend little time outdoors.

A large influence on the use of wild foods in the twentieth century was the lowering price of sugar. Sugar was used in cooking centuries before. In Poland, already in the seventeenth and eighteenth centuries, sweets made with candied *Acorus calamus* L. rhizomes were used in large quantities by manor houses (Dumanowski 2010). At this time, in England also, sugar was getting gradually cheaper (Burnett 1989). However, the price of sugar was extremely high. When it became lower in the early twentieth century, rural populations in many countries, following the example of the higher classes, started making preserves using sugar. In northern Europe, in the nineteenth century, the major way of preserving fruits was drying (Łuczaj 2011). However, later, making jams and pasteurized juices and sweetened wines made of both cultivated and wild fruits became popular. This reached its climax in the 1980s during the economic crises after martial law in 1981 and in Estonia in the 1990s when sugar was in short supply. Later, this trend disappeared due to the large choice of products in shops and the bad health reputation of sweetened foods (Łuczaj et al. 2012).

3.3 Reasons for the Contemporary Decrease in the Use of Wild Food Plants

The use of wild food plants in nutrition in many European communities, particularly urban ones, is very low nowadays. In large parts of northern and Eastern Europe, people only collect wild fruits and mushrooms (Łuczaj 2008, 2010a, 2011, 2012b; Dénes et al. 2012; Kalle and Sõukand 2012; Svanberg 2012), whereas in Southern Europe, some wild greens, such as *Asparagus acutifolius* L., *Scolymus hispanicus* L., and *Silene vulgaris* (Moench.) Garcke, are also relatively popular (Tardío et al. 2006, Tardío 2010). In some other areas, only a few species of wild vegetables are collected, for example, *Rumex acetosa* L. in Poland (Łuczaj 2010a) or *Allium ursinum* L. in the Alps (Schunko and Vogl 2010).

The consumption of many wild edible plants in the Western Mediterranean was strongly linked to traditional management activities such as tending livestock, charcoal burning, or bracken harvesting. In some cases, it was also linked to casual walks in the woods, such as walking to school. As most of these activities are not common anymore, people have also abandoned the behaviors associated with them (Tardío et al. 2005). Another important activity in the acquisition and maintenance of knowledge about edible plants was herding (Fig. 3.1). When following cattle or sheep, children and adult herders had a lot of time to observe nature, as they moved through the landscape (Łuczaj et al. 2013c).

Many rural communities in Mediterranean countries still practice the gathering of some wild vegetables, but this knowledge is becoming fragmented and the practice is restricted almost exclusively to older people (e.g., Aceituno-Mata 2010; Hadjichambis et al. 2008; Łuczaj et al. 2013c; Tardío et al. 2006). The loss of ac-



Fig. 3.1 The collection of wild vegetables in the Mediterranean is closely connected with pastoral and agricultural activities and is a by-product of other activities, such as shepherding (as in this photo) or weeding crops. (Vrana (northern Dalmatia, 2013), photo by Łukasz Łuczaj)

cess to nature causes even such a universal plant use category as children's snacks to gradually vanish. Many children have very little access to the rural environment, and the nomenclature of greens growing in urban settings is very limited.

Changes in the availability of species may affect their use. *Chenopodium album* L., once the most widely used wild food plant in Poland, is now difficult to collect in many areas, as herbicide spraying has almost completely eliminated it. Nowadays, the use of nettle (*Urtica dioica*) is more popular as this is a perennial and ruderal species, unaffected (or rather positively affected) by changes in agriculture. In the mid-twentieth century, an agricultural cereal weed, cornflower (*Centaurea cyanus* L.), was extensively used in Poland to make a fermented drink (Łuczaj 2011); however, later this use completely disappeared, probably due to the use of herbicides eliminating the cornflower (Łuczaj 2011). Modern agricultural practices, mainly deep ploughing and the use of herbicides, are also responsible for the lesser abundance of wild vegetables in Spain (Tardío et al. 2005; Polo et al. 2009). Many of them were weeds of cereal crops and usually exploited as human or animal food when crops were hand-weeded. Some of them are currently consigned to roadsides or abandoned agricultural lands.

Generally, access to wild food resources is limited more by a lack of proper habitats (e.g., for urban dwellers) rather than the lack of access to land. Probably only England, which has so-called trespassing laws, is an extreme example of limiting access for nonowners to wild resources—limiting public access to paths, roadsides, seaside, and common lands (see the Land is Ours campaign on the web against this

law). In contrast, in Scotland and mainland Europe, public access rights are much broader with the famous *allemansträtt* (i.e., “all people’s right”) in Scandinavia (allowing even limited camping in someone’s empty land). Similarly, in Poland and in the Mediterranean countries, people roam freely through the landscape collecting fungi and medicinal plants in private lands.

In Eastern Europe, for example, in Poland and Estonia, the recent fashion for large short-mown lawns excludes the traditional ruderal flora abounding with species such as *Urtica dioica*, *Aegopodium podagraria* L., and *Arctium* spp., a potential pool of many edibles (Łuczaj et al. 2012).

In Ukraine, many people stopped collecting birch sap and other wild foods after the nuclear catastrophe in Chernobyl (Łuczaj 2012b). For the few last years in Estonia and Poland, many parents have forbidden their children to eat wild berries for fear of echinococcosis. The parasite is spread by foxes, who became abundant due to mass vaccination (Łuczaj 2012a).

In Spain, the changes in the availability of wild edible plants are caused by the abandonment of grazing, pollution of streams, consolidation of land parcels, and the abandonment of the protection of fruit trees in the landscape (Łuczaj et al. 2012).

The examples of overharvesting of wild food plants in Europe are actually not so common, compared to the overharvesting of medicinal plants. This can be attributed to the fact that food plants must be common to become food plants, whereas some medicinal plants can be a rare expensive produce, susceptible to extermination. The examples of overharvesting in Europe include: *Rorippa nasturtium-aquaticum* in Campoo, Spain; *Artemisia granatensis* for beverages in Spain (Łuczaj et al. 2012); and *Polypodium vulgare* in Poland (Łuczaj 2011). In Poland and Estonia due to the danger of overharvesting, some wild edible species are taken under protection (e.g., *Allium ursinum*—Łuczaj et al. 2012). In Eastern Europe, special combs were traditionally used to collect *Vaccinium myrtillus* L. berries. However, as they also damage the plant’s leaves, forest authorities banned them long ago (Łuczaj et al. 2012).

3.4 Latitudinal and Longitudinal Gradients in Food Plant Use in Europe with Special Reference to Wild Green Cuisines

The most visible difference in the present plant use in Europe is the contrast between the Mediterranean and the part of Europe north of the Alps. In the whole European Mediterranean, wild greens used to be commonly eaten in large amount up until very recently, and they are still eaten in many rural areas of Italy, Greece, Turkey, Cyprus, Croatia, Herzegovina, and Spain (e.g., Aceituno-Mata 2010; Benítez 2009; Bonet and Vallès 2002; Carvalho and Morales 2010; Criado et al. 2008; Dávila 2010; Della et al. 2006; Dogan 2012; di Tizio et al. 2012; Forbes 1976; Ghirardini et al. 2007; Guarrera 2003; Guarrera et al. 2006; Gonzalez et al. 2011; Hadjichambis et al. 2008; Łuczaj et al. 2013b, 2013c; Marco et al. 2003; Paoletti et al. 1995; Parada et al. 2011; Pardo-de-Santayana et al. 2005, 2007; Pardo-de-Santayana and

Table 3.2 List of wild greens of the *minestrella* soup, in northwest Tuscany, Italy. (Data Pieroni 1999)

<i>Allium vineale</i> L.	<i>Picris hieracioides</i> L.
<i>Apium nodiflorum</i> L.	<i>Plantago lanceolata</i> L.
<i>Bellis perennis</i> L.	<i>Plantago major</i> L.
<i>Beta vulgaris</i> L. ssp. <i>maritima</i> (L.)Thell.	<i>Primula vulgaris</i> Hudson
<i>Borago officinalis</i> L.	<i>Raphanus raphanistrum</i> L.
<i>Bunias erucago</i> L.	<i>Ranunculus ficaria</i> L.
<i>Campanula rapunculus</i> L.	<i>Reichardia picroides</i> (L.) Roth
<i>Campanula trachelium</i> L.	<i>Rumex crispus</i> L.
<i>Cichorium intybus</i> L.	<i>Rumex obtusifolium</i> L.
<i>Cirsium arvense</i> (L.) Scop.	<i>Salvia pratensis</i> L.
<i>Crepis leontodontoides</i> All.	<i>Salvia verbenaca</i> L.
<i>Crepis sancta</i> (L.) Babcock	<i>Sanguisorba minor</i> Scop.
<i>Crepis capillaris</i> (L.) Wallr.	<i>Silene alba</i> (Miller) Krause
<i>Daucus carota</i> L.	<i>Silene vulgaris</i> (Moench) Garcke
<i>Foeniculum vulgare</i> Miller	<i>Sisymbrium officinale</i> (L.) Scop.
<i>Geranium molle</i> L.	<i>Sonchus asper</i> L.
<i>Hypochaeris radicata</i> L.	<i>Sonchus oleraceus</i> L.
<i>Lapsana communis</i> L.	<i>Symphytum tuberosum</i> L.
<i>Leontodon hispidus</i> L.	<i>Taraxacum officinale</i> Web.
<i>Lichnis flos-cuculi</i> L.	<i>Urtica dioica</i> L.
<i>Malva sylvestris</i> L.	<i>Urtica urens</i> L.
<i>Papaver rhoeas</i> L.	<i>Viola odorata</i> L.
<i>Picris echioides</i> L.	

Morales 2010; Picchi and Pieroni 2005; Pieroni 1999, 2001; Pieroni et al. 2002, 2005; Polo et al. 2009; Tardío et al. 2005, 2006; Rivera et al. 2005; Tardío 2010; Velasco et al. 2010; Verde et al. 2003; see also Table 3.2 and 3.3). North of the Alps, wild greens are not gathered to such an extent now (e.g., Dénes et al. 2012; Kalle and Sõukand 2012; Łuczaj 2008, 2011, 2012a, 2013a; Svanberg 2012; Svanberg and Ægisson 2012). If they are still used, it is usually one of a few species, mainly used in soups.

Łuczaj (2008, 2010a) introduced the terms *herbophilia* and *herbophobia* to differentiate the opposing cultural attitude towards the use of wild greens: seeking them as a valuable part of the diet and avoiding them/being scared of them. He argued that Polish folk culture can be seen as moderately herbophobic. Katz (2012) showed that Amazonia is a place of total herbophobia; the instances of using green vegetables in general are very rare in Amazonia societies. Łuczaj (2010a) pointed out that the lack of wild greens in modern diets can stem from three different factors:

- General decrease in the use of wild food
- “Herbophobia,” that is, avoiding any greens due to associations with famine, lack of nutritive properties, or classifying them as animal food
- The competition between the cultivation of greens, for example, cabbage, other brassicas, spinach and lettuce in particular, and the use of wild greens

Table 3.3 Wild green vegetables used in Dalmatia (southern Croatia) and in the adjacent south-western Herzegovina. (Adapted from Luczaj et al. 2013b, 2013c)

<i>Allium ampeloprasum</i> L. (Liliaceae)	<i>Myagrum perfoliatum</i> L. (Brassicaceae)
<i>Allium schoenoprasum</i> L. (Liliaceae)	<i>Ornithogalum umbellatum</i> L. (Liliaceae)
<i>Allium vineale</i> L. (Liliaceae)	<i>Papaver rhoeas</i> L. (Papaveraceae)
<i>Amaranthus retroflexus</i> L. (Amaranthaceae)	<i>Picris echinoides</i> L. (Asteraceae)
<i>Anchusa arvensis</i> (L.) M. Bieb. and other species of the genus (Boraginaceae)	<i>Plantago coronopus</i> L. (Plantaginaceae)
<i>Asparagus</i> spp., mainly <i>A. acutifolius</i> L. and <i>A. officinalis</i> L. (Asparagaceae)	<i>Portulaca oleracea</i> L. (Portulacaceae)
<i>Beta vulgaris</i> L. (Amaranthaceae)- wild	<i>Ranunculus</i> cf. <i>neapolitanus</i> Ten. (Ranunculaceae)
<i>Borago officinalis</i> L. (Boraginaceae)	<i>Ranunculus muricatus</i> L. (Ranunculaceae)
<i>Brassica oleracea</i> L. (Brassicaceae)	<i>Reichardia picroides</i> (L.) Roth. (Asteraceae)
<i>Bunias erucago</i> L. (Brassicaceae)	<i>Rhagadiolus stellatus</i> (L.) Gaertn. (Asteraceae)
<i>Capparis orientalis</i> Veill. (Capparaceae)	<i>Rumex</i> spp., included <i>R. patientia</i> (Polygonaceae)
<i>Capsella bursa-pastoris</i> L. (Brassicaceae)	<i>Ruscus</i> spp. (Asparagaceae)
<i>Centaurea scabiosa</i> L. (Asteraceae)	<i>Salicornia herbacea</i> L. (Amaranthaceae)
<i>Chenopodium album</i> L. (Chenopodiaceae)	<i>Salvia verbenaca</i> L. (Lamiaceae)
<i>Chondrilla juncea</i> L. (Asteraceae)	<i>Scolymus hispanicus</i> L. (Asteraceae)
<i>Cichorium intybus</i> L. (Asteraceae)	<i>Scorzonera laciniata</i> L. (Asteraceae)
<i>Cirsium arvense</i> L. (Asteraceae)	<i>Scorzonera villosa</i> Scop. (Asteraceae)
<i>Clematis vitalba</i> L. (Ranunculaceae)	<i>Silene latifolia</i> Poir. (Caryophyllaceae)
<i>Crepis sancta</i> (L.) Bab. (Asteraceae)	<i>Silene vulgaris</i> (Mch.) Garcke and related species (Caryophyllaceae)
<i>Crepis</i> spp. (Asteraceae)	<i>Smilax aspera</i> L. (Smilacaceae)
<i>Crepis zacintha</i> (L.) Bab. (Asteraceae)	<i>Smyrniolum olusatrum</i> L. (Apiaceae)
<i>Crithmum maritimum</i> L. (Apiaceae)	<i>Sonchus</i> spp. (Asteraceae)
<i>Daucus carota</i> L. (Apiaceae)	<i>Tamus communis</i> L. (Dioscoreaceae)
<i>Diplotaxis tenuifolia</i> (L.) DC. (Brassicaceae)	<i>Taraxacum officinale</i> Weber (Asteraceae) and other species from the genus
<i>Erodium cicutarium</i> (L.) L'Hér. ex Aiton (Geraniaceae)	<i>Tordylium apulum</i> L. (Apiaceae)
<i>Eruca sativa</i> Miller (Brassicaceae)	<i>Torilis nodosa</i> (L.) Gaertn.
<i>Eryngium maritimum</i> L. and <i>E. campestre</i> L. (Apiaceae)	<i>Tragopogon</i> spp. (Asteraceae)
<i>Foeniculum vulgare</i> Mill. (Apiaceae)	<i>Urospermum picroides</i> (L.) Desf. (Asteraceae)
<i>Geranium molle</i> L. (Geraniaceae)	<i>Urtica dioica</i> L. (Urticaceae)
<i>Hirschfeldia incana</i> (L.) Lagr.-Foss. (Brassicaceae)	<i>Urtica pilulifera</i> L. (Urticaceae)
<i>Hypochaeris radicata</i> L. (Asteraceae)	<i>Valerianella locusta</i> L. (Valerianaceae)
<i>Lactuca serriola</i> L. (Asteraceae)	<i>Viola arvensis</i> Murr. (Violaceae)

However still, deconstructing the reasons of this division of Europe in a “herbophilous zone” of the Mediterranean and a moderately herbophobic rest is a complex matter. Both ecological and cultural reasons can be behind it. The Mediterranean region can be characterized by low forest cover, dry summer, mild and wet winters, and it corresponds more or less to the area of olive cultivation. One of the explanations may be the low fertility of many of the degraded maquis habitats, which made people to learn to utilize every possible species in the environment. In contrast, in less populated northern Europe, which also has a surplus of rainfall, large amounts of wild greens can be collected even if one knows only a few commonest species (Łuczaj 2008). That is why only a few species such as *Urtica dioica*, *Chenopodium album*, or *Rumex* spp. were mainly collected.

In some Italian and Spanish regions, a blend of many different wild species (up to 40 or even 50) has been used in vegetable recipes in particular (Paoletti et al. 1995; Pieroni 1999; Tardío 2010; Turner et al. 2011). In Italy, complex wild vegetable soups are known in the North of the country: in Liguria (*prebuggiun*), in Friuli (*pistic*) and in northwest Tuscany (*minestrella di Galliciano*) (Table 3.2). More often, however, wild greens—especially whorls and other tender aerial parts of several Asteraceae and Brassicaceae (i.e., *Cichorium intybus*, *Picris echinoides*, *Sonchus oleraceus*, *Chondrilla juncea*, *Sinapis arvensis*, *Hirschfeldia incana*, *Brassica nigra*, *Urospermum dalechampii*, *Brassica fruticulosa*, *Raphanus raphanistrum*, *Bunias erucago*) were stewed, in Southern Italy and especially Sicily, with olive oil and garlic and daily consumed as a side dish. Similar blends of vegetables are made in Dalmatia, called *mišanca*, *pazija*, *svakober*, *divlje zelje* (Łuczaj et al. 2013b, 2013c; Table 3.3), in Spain (Tardío et al. 2006; Tardío 2010) and called *chorta* in Greece. Most of these wild greens have shown a remarkable antioxidant activity and important bio-pharmacological properties, which assign them a primary role in the prevention of ageing-related and other degenerative diseases (Local Food-Nutraceuticals Consortium 2005; Schaffer 2005; Romojaro et al. 2013).

The abovementioned mixes were also known, and even had special names, but to a much lesser extent, in northern Europe. In such countries and Poland, Slovakia, Belarus, and Ukraine, mixed wild greens were usually made into a soup or potherb with other more calorie-rich ingredients (potatoes, flour, milk, cream, etc.). Even in the nineteenth century, however, these mixes usually included only a few species, much fewer than in the Mediterranean. This can probably be attributed to a larger biomass of greens available, which enabled gathering larger amounts of green vegetables even knowing only a few species such as *Chenopodium album*, *Urtica dioica*, *Aegopodium podagraria*, or *Heracleum sphondylium*. Nowadays, the use of wild greens in the abovementioned countries has decreased dramatically. In Poland, recent ethnobotanical surveys show that respondents are unable to recall famine plants except for *Urtica dioica* and *Chenopodium album* (Łuczaj 2010a; Łuczaj and Kujawska 2012), thus present ethnobotanical studies, even if the oldest people are interviewed, cannot reveal the whole spectrum of plants used even just at the end of the nineteenth century. That is why it is important to quickly capture the memories of former wild food plants in the countries where few or no ethnobotanical works were carried out as well as to make use of historical sources. Some of the plants

used in potherbs and soups in central and northern Europe are the same or closely related species used in the south of Europe. Here we should mention, for example, *Urtica* used throughout Europe. Also, *Chenopodium* species, mainly *Chenopodium album* and *Chenopodium bonus-henricus* have been used for food in many countries of Europe. In northern Europe, *Rumex acetosa* and *R. acetosella* were and sometimes are used for soups. In the Mediterranean, a related species—*Rumex pulcher*—is used, mainly in mixed cooked vegetable recipes.

One of the most reasonable explanations is that actually the exploitation of wild vegetables represented in Southern Europe a by-product of the cereals domestication that took place during the Neolithic Revolution. The so-called *Mediterranean diet* is a food system based on a daily consumption of many grains, pulses, cheese, and especially vegetables; wild greens represented, especially until the very recent past and partially still nowadays, a crucial portion of these plant ingredients especially during the early spring and in the fall, and their role may have been largely underestimated by nutritionists and historians of food systems (Pieroni et al. 2002, 2005; Rivera et al. 2005).

Cultural factors may have played an additional role in enhancing the use of wild greens. Although wild greens were used throughout Europe, in times of food scarcity, their use in the Mediterranean may have been enhanced by the Greek and Roman culture. Ancient Greek writing emphasize the health benefits of wild greens and wild greens mixes or culinarily associated with the use of olive oil, so important for the Roman Empire. These two factors may have additionally increased the intensity of the use of wild greens in the Mediterranean. A similar situation occurs in East Asia (China, Japan) where the wide use of wild greens nowadays is enhanced by the belief of the healthiness of wild products (Kang et al. 2012). The proof that the wide use of many species of wild greens was not always restricted only to the Mediterranean is Belarus. In western Belarus, around 20 species of wild greens were still used at the end of the nineteenth century. Their use was so intense that large amounts of wild greens were even dried for winter (Łuczaj et al. 2013b), a phenomenon not recorded in other European countries but widespread in China (e.g., Kang et al. 2012).

Another factor supporting the existence of wild-green centred cuisines is the maintenance of knowledge of the usefulness of some plants of lesser quality that could be necessary in times of scarcity (Johns 1994). It is a fascinating question, why these multispecies wild green mixes are remembered in some parts of the Near East and the Mediterranean, while they were completely forgotten in northern Europe, where they also existed in the nineteenth century or earlier.

If the north–south, division is very pronounced; clear west–east differences are difficult to see. In the Mediterranean zone, very similar plants, mainly weeds, are used both in the western and eastern Mediterranean. Plants such as *Sonchus oleraceus*, *Daucus carota*, *Cichorium intybus*, *Crepis* spp., *Foeniculum vulgare*, *Portulaca oleracea*, *Tragopogon* spp., *Taraxacum* spp., *Silene* spp., *Rumex pulcher*, *Sinapis* spp. etc. are eaten throughout the Mediterranean, and the small differences in the local choice of, mainly Asteraceae, plants are caused by the availability of particular species (e.g., Aceituno-Mata 2010; Benítez 2009; Bonet and Vallès 2002; Carvalho and Morales 2010; Criado et al. 2008; Dávila 2010; Della et al.

2006; Dogan 2012; di Tizio et al. 2012; Ertuğ 2004; Forbes 1976; Ghirardini et al. 2007; Guarrera 2003; Guarrera et al. 2006; Gonzalez et al. 2011; Hadjichambis et al. 2008; Łuczaj et al. 2013b, 2013c; Marco et al. 2003; Paoletti et al. 1995; Parada et al. 2011; Pardo-de-Santayana et al. 2005, 2005; Pardo-de-Santayana and Morales 2010; Picchi and Pieroni 2005; Pieroni 1999, 2001; Pieroni et al. 2002, 2005; Polo et al. 2009; Tardío et al. 2005, 2006; Rivera et al. 2005; Tardío 2010; Velasco et al. 2010; Verde et al. 2003). Similarly north of the Alps, the commonest wild vegetables, for example, *Chenopodium* spp., *Urtica dioica*, *Rumex* spp. and *Oxalis* spp., were widely consumed from the Atlantic coast all the way to Russia (e.g., Dénes et al. 2012; Kalle and Soõkand 2012; Łuczaj 2010a; Nedelcheva 2012; Svanberg 2012).

Unfortunately, historical ethnobotanical data from the UK, France, and Germany are rather scattered, so it is difficult to compare the use of the wild greens in those countries compared to central-eastern Europe where recently these data have been well reviewed and summarized. In spite of the extremely small number of wild vegetable species used north of the Alps, some local specialities were still preserved. For example, in parts of Northern England, a special dish called *Easter ledger pudding* is made using the leaves of *Polygonum bistorta* L. (Phillips 1983). In parts of Romania, *Tussilago farfara* L. leaves are commonly used to wrap sarma rolls (Dénes et al. 2012), and in several areas of both Western and Eastern Europe, *Allium ursinum* is used for soups and salads (Łuczaj 2012a).

3.5 New Trends Emerging

More recently, in times of the decreasing quality of supermarket foods, the interest in wild collected foods is gaining a lot of media attention. Numerous field guides are issued, and wild food/foraging workshops are organized. New culinary vogues are promoted by media and health-oriented people (see also Table 3.4).

As a part of this trend, articles such as acorn coffee, *Allium ursinum*-enriched products and birch sap have appeared in health food shops in Poland and many other countries (Łuczaj and Kujawska 2012). In Estonia, health-food shops offer mostly products of non-local origin, although acorn and *chicory*-based coffee have also been reintroduced (in Spain and Poland up until the mid-twentieth century it was poor people's coffee, and now it is a health food), also syrups made of *Juni-perus communis* and *Taraxacum* spp. are sold. As a new trend, probably following the example of a similar German product available in health-food shops in Estonia, pasta made with the powder of *Urtica* spp., *Vaccinium myrtillus*, and *Cantharellus cibarius* Fr. is making its way to the customer. In 2010, the company Eesti And (Estonia Gift) started to produce and market pickled and salted forest mushrooms (<http://www.eestiand.ee/>) in their larger stores—food that was just a few decades ago made and stored in every household regardless of status and distance from the forest but now massively abandoned unless bought from the stores (in other countries, e.g., Poland, pickled mushrooms have been sold in shops for decades).

Table 3.4 Wild plant taxa, traded by a small southern-Swedish foraging enterprise, which is also the main provider of wild food plants at the restaurant NOMA, in Copenhagen (Data from Luczaj et al. 2012)

Species	Part
Blackthorn (Sloe), <i>Prunus spinosa</i> L.	Fruits
Bramble (Blackberry), <i>Rubus</i> sp.	Fruits and unripe fruits
Camomile, <i>Matricaria recutita</i> L.	Flowers
Chickory, <i>Cichorium intybus</i> L.	Leaves and flowers
Chickweed, <i>Stellaria media</i> (L.) Vill.	Aerial parts
Chives, <i>Allium schoenoprasum</i> L.	Flowers
Cow parsley, <i>Anthriscus sylvestris</i> (L.) Hoffm.	Leaves, buds, and flowers
Cuckooflower (Lady's Smock), <i>Cardamine pratensis</i> L.	Aerial parts
Daisy, <i>Bellis perennis</i> L.	Leaves and flowers
Dandelion, <i>Taraxacum officinale</i> Weber s.l.	Leaves, buds, and flowers
Elder, <i>Sambucus nigra</i> L.	Flowers and fruits
Garlic mustard, <i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	Leaves, shoots, and seeds
Grass-Leaved Orache, <i>Atriplex littoralis</i> L.	Leaves and unripe fruits
Ground-Elder, <i>Aegopodium podagraria</i> L.	Shoots, buds, and flowers
Harebell, <i>Campanula</i> sp.	Flowers
Hop, <i>Humulus lupulus</i> L.	Shoots
Nettle (Stinging Nettle), <i>Urtica dioica</i> L.	Shoots and unripe fruits
Orpine, <i>Hylotelephium telephium</i> (L.) H. Ohba	Aerial parts
Ostrich Fern, <i>Matteuccia struthiopteris</i> (L.) Tod.	Shoots
Ramsons (Wild Garlic), <i>Allium ursinum</i> L.	Shoots, leaves, flowers, unripe fruits, and young seedlings
Raspberry, <i>Rubus idaeus</i> L.	Leaves and fruits
Red clover, <i>Trifolium pratense</i> L.	Flowers
Purple dead nettle, <i>Lamium purpureum</i> L.	Aerial parts
Ribwort plantain, <i>Plantago lanceolata</i> L.	Leaves and unripe inflorescences
Rose, <i>Rosa</i> spp.	Flowers and fruits
Sand leek, <i>Allium scorodoprasum</i> L.	Leaves and seeds
Scurvy grass, <i>Cochlearia</i> sp.	Aerial parts
Sea arrowgrass, <i>Triglochin maritima</i> L.	Leaves and unripe fruits
Sea aster, <i>Tripolium vulgare</i> Nees	Leaves
Sea pea, <i>Lathyrus japonicus</i> Willd.	Flowers and shoots
Sea plantain, <i>Plantago maritima</i> L.	Aerial parts
Leaf sea rocket, <i>Cakile maritima</i> Scop.	Leaves and flowers
Sea sandwort, <i>Honckenya peploides</i> (L.) Ehrh.	Aerial parts
Sea-kale, <i>Crambe maritima</i> L.	Leaves, flowers, buds, and fruits
Small-flowered winter-cress, <i>Barbarea stricta</i> Andr.	Leaves and flowers
Sorrel (Common Sorrel), <i>Rumex acetosa</i> L.	Leaves
Spruce (Norway Spruce), <i>Picea abies</i> (L.) H. Karst.	Shoots
Swedish Whitebeam, <i>Sorbus intermedia</i> (Ehrh.) Pers.	Fruits
Sweet cicely, <i>Myrrhis odorata</i> Scop.	Leaves, flowers, and unripe cones
Tansy, <i>Tanacetum vulgare</i> L.	Flowers

Table 3.4 (continued)

Species	Part
Violet, <i>Viola</i> sp.	Flowers
Water mint, <i>Mentha aquatica</i> L.	Leaves
Water-Cress, <i>Rorippa nasturtium-aquaticum</i> (L.) Hayek	Leaves
White deadnettle, <i>Lamium album</i> L.	Leaves
Wild marjoram, <i>Origanum vulgare</i> L.	Leaves
Wild onion, <i>Allium vineale</i> L.	Leaves and fruits
Wild thyme (Creeping Thyme), <i>Thymus serpyllum</i> L.	Leaves
Winter-cress, <i>Barbarea vulgaris</i> W.T. Aiton	Flowers
Wood sorrel, <i>Oxalis acetosella</i> L.	Aerial parts
Woodruff, <i>Galium odoratum</i> Scop.	Aerial parts
Wych elm, <i>Ulmus glabra</i> Huds.	Unripe fruits
Yarrow, <i>Achillea millefolium</i> L.	Leaves and flowers
Yellow archangel, <i>Lamium galeobdolon</i> (L.) Crantz	Young shoots and flowers

In Poland, *Dary Natury*, a firm owned by Mirosław Angielczyk, has experienced a tremendous success in selling and promoting natural wild foods and nutraceuticals. It has been very active in the Polish market for a dozen years or so. It mainly sells mixed herbs for herbal infusions and liqueurs, but popular products also include herbal coffee substitutes (acorn, chicory, etc.), birch sap, and even acorn flour. According to the owner, in 2013 they produced a few tons of acorn flour (from *Quercus robur*). Acorns are shelled, leached using pure water, dried and powdered. The flour is available on their Internet site for only 21 PLN/kg (ca. 5 €/kg).

Immigrants from other countries, also outside Europe, are a very little-studied category when it comes to harvesting in the wild. However, observations made in Sweden show that, for instance, Turks, Kurds, Chinese, Koreans, and Thai immigrants are rather widely using the free access to private land and are harvesting wild plants, berries, and mushrooms for their own consumption and also for selling in the markets (Svanberg 2012).

Wild food plants have always been sold in vegetable markets. In the nineteenth-century Poland, these were wild fruits, grains of manna grass (*Glyceria* spp.), and even the rhizomes of *Polypodium vulgare* were sold in a town (Jasło) (Łuczaj 2011, Kujawska and Łuczaj 2010). Apart from that, a variety of mushrooms has been sold in the mycophilous parts of Europe. For example, a few dozen taxa of fungi were sold in the market of Poznań, Poland, in the beginning of the twentieth century (Szulczewski 1996).

Nowadays, in most Eastern European countries, the selling of wild food plants in the market is restricted to wild berries, mushrooms and herbs for making tea, and occasionally also *Rumex acetosa* leaves or horseradish roots—in Estonia, also horseradish leaves (unpublished observations from Poland and Estonia).

Green wild vegetables are rarer than fruits in the markets. However, they are often sold around the Mediterranean, frequently in Italy, Greece, and Croatia (Łuczaj et al. 2012, 2013) and occasionally also in Spain (Tardío 2010).

The twentieth century has seen a decline in the sales of wild food plants not only in Poland, but all over Europe. However, in the twenty-first century, we may witness the reoccurrence of wild products not only in specialist health food stalls but also in ordinary vegetable markets. Such a phenomenon can already be seen in Germany and Austria. Probably the only wild vegetable that has survived from the peasant society in Sweden is *Urtica dioica*, which is still popular among many urban people. However, wild forest berries (*Vaccinium*, *Rubus*) continue to be very much used among Swedes in general and hold a time-honoured place in both home cooking and restaurant kitchens. Since the mid-twentieth century, there has also been an increasing demand for wild mushrooms. Many people pick their own mushrooms, recognizing everything from 2–3 species to almost 30 edible taxa. Nettles, wild berries, and mushrooms are also available in the weekly street markets during summertime and autumn, but berries and mushrooms can also be found in super-markets (Svanberg 2012).

Lost traditional knowledge on wild food plants is rediscovered and re-created by individuals particularly interested in the issue. This knowledge is later spread via a variety of workshops, seminars, and particularly media (books and television programs). As far as media is concerned, it teaches edible plants in a new way. Traditionally this knowledge was gained from parents, grandparents, or peers and was a cognitive process not only involving visual, abstract learning but also “rambling” through the countryside, smelling plants and learning their location (Sõukand and Kalle 2010). Maybe that is why edible plant workshops are so popular, being more akin to a traditional way of learning plants. However, usually neither the published guides nor the workshops relate to local practices. They are an amalgamation of proposals regarding how to utilize local floras referring to the traditions of use of these plants in North America, Asia, and other parts of Europe. Thus new species are becoming utilized. For example, in Poland, the use of *Allium ursinum* leaves as food has not ever been recorded in ethnographic sources, but now it is common among many families in the Carpathians due to the media attention this plant has gained (Łuczaj and Kujawska 2012). The decreasing access to wild food plants created a longing for such food, and this gives good ground for all kinds of courses and books. In Estonia, the publishing of books on the use of wild food plants has intensified during the recent decades, as have all publications regarding the use of plants and alternative medicine. Alongside, dozens of courses, local and general, are advertised every year, reintroducing old local uses and introducing new uses of autochthonous and alien plants into the diet of Estonians. Since regaining independence, the Estonian Defence League (voluntary) organizes regular survival courses, which include teaching on the use of wild plants and animals for food. The influence of those books and courses can be evaluated only years later, as people tend to accept teachings selectively, sometimes in a random way (Sõukand and Kalle 2012).

The users of most wild food guides are people who are interested in food independence, survival, or a healthy lifestyle. Probably, the first widely known European guide of this style was Richard Mabey’s *Food for Free* sold in Britain in hundreds of thousands of copies (Mabey 1972). Later in the 1990s and 2000s, the

French botanist François Couplan published several similar guides in French and German, for example, Couplan (1989). In the 1980s and 1990s, a wild food guide by the Czech author Dagmar Lánská was sold in large numbers of copies in Eastern Europe, for example, in Czechoslovakia and Poland (Lánská 1992). In the countries of former Yugoslavia, a similarly influential author was the botanist Ljubiša Grlić (2005). Some of the professional field ethnobotanists also published wild food guides for the general public (Łuczaj 2002; Tardío et al. 2002) or even created TV culinary series (*Dziki Obiad Łukasza Łuczaja*, i.e., “Łukasz Łuczaj’s Wild Lunch”, by Canal Plus). An influential photographic guide by Roger Phillips should also be mentioned (Phillips 1983). Another promoter of wild food was the most known European (British) survival handbook writer Ray Mears (also the author of film series). It should also be noted that Mears authored a book and a TV series with the prominent British archaeobotanist Gordon Hillman (Mears and Hillman 2007).

One very special book should also be mentioned, *L’Ensalada champañela* (Marco et al. 2003). The new edition of this French guide to wild salad plants also contains a large amount of material on the traditional use of this group of plants in southern France, thus being a guide and a regional monograph in one. A similar guide was published in Albacete, Spain (Rivera et al. 2006a).

In Valchiusella and in the middle Serchio Valley (Galliciano), in northwest Italy, in the last years, local associations have begun to organize spring workshops on wild food plant identification, gathering and cooking, lead by local elderly women. Recently, a *Museum of the Wild Herbs* was also born in Liguria (Cosio d’Arroscia, NW Italy), while in diverse Italian areas, especially in Lombardy (Brianza), in the Marche region and in Eastern Sicily, short courses and weekend seminars, mainly animated by local botanists, seem to play a crucial role in re-instilling folk knowledge on locally used wild food plants and this kind of initiative in Italy is becoming extremely popular (e.g. http://www.piantespontaneeincucina.info/struttura/html/header/feste_e_sagre.html, <http://www.accademiadelleerbe.it/>).

Yet another effort worth mentioning is the *Plants for a Future* database created by Ken Fern from England (PFAF 2015). Though it does not contain data from modern ethnobotanical studies, it is an influential source in spreading knowledge on edible plants.

It is noteworthy that this loss of local knowledge and use of wild gathered plant species is paralleled by an increased interest in such resources by the gastronomic and intellectual elite in the search for new stimuli, culinary experiences, and health food (for example, visit <http://www.slowfood.it>). The increasing presence of wild food products can also be seen by agritourism farms or local rural restaurants as a part of the local traditional heritage offered by them. In Poland this is, for example, nettle soup and a variety of wild fruit products (Łuczaj 2011). In Spain, herbal teas prepared with species such as *Jasonia glutinosa* (L.) DC. or *Sideritis hyssopifolia* are served in restaurants of tourist areas such as Serranía de Cuenca or Picos de Europa. Moreover, in the case of *Jasonia glutinosa*, new products are appearing and some restaurants offer ice cream made with its infusion. *Sideritis hyssopifolia* L. is also used to aromatise homemade and commercial herb liqueurs, and it is even available on the Internet (Pardo-de-Santayana et al. 2005). Another interesting

Spanish liqueur is *patxaran/pacharán*. It is usually made by macerating *Prunus spinosa* fruits, cinnamon bark, a few coffee seeds, and sugar in anisette and/or liquor. The tradition of preparing liqueurs with its fruits is old, but this recipe is originally from Navarre and now commonly prepared or bought throughout the country. In fact, it is cultivated in the region for the industry of *pacharán*. A similar and popular liqueur based on sloe fruits still exists in Central Europe and Northern Italy.

The use of wild food plants has also been recently promoted by avant-garde restaurants. Here, we should mention above all the pioneering experiences of the chefs Michel Bras and Marc Veyrat in France more than two decades ago and nowadays what is considered one of the best restaurants in the world, NOMA in Copenhagen, run by René Redzepi, offers a cuisine that is largely based on local wild products, including a wide selection of wild food plants (Table 3.4), which are also sometimes foraged by the NOMA staff. Following the aesthetic lines drafted by Redzepi in his *Time and Place in Nordic Cuisine* (Redzepi 2010), wild plants are considered to be a crucial element of a given place and, therefore one of the pillars of a cuisine, which would like to express the “sense of place”.

In the meantime, many other top European restaurants tend to use a large number of wild taxa in their kitchen; among them, it is worth mentioning the new generation of the Scandinavian chefs of the “Nordic cuisine” movement, that is, Magnus Nilsson as well as the Argentinian top chef Mauro Colagreco, who owns his restaurant on the French–Italian border. Earlier in the 1990s, a well-known expert on wild foods in the francophone countries, François Couplan (www.couplan.com), worked with leading French chefs incorporating wild plants in their menus. Recently, the Polish top chef, Wojciech Amaro published a book *Natura kuchni polskiej* which incorporates many wild foods into haute-cuisine dishes (Amaro 2006). In Spain, there are also some luxury restaurants, such as the restaurant of the Hotel Alfonso VIII in the city of Plasencia, whose menus offer traditional and re-created dishes with at least six wild plant species, such as *Urtica dioica*, *Tamus communis*, *Rorippa nasturtium-aquaticum*, *Montia fontana*, *Allium ampeloprasum*, *Asparagus acutifolius*, and *Scolymus hispanicus* (Recetario Extemeño 2005).

Until recent times, the use of wild food plants in restaurant menus was not practiced in Estonia. But slowly it is becoming an attractive option, for example, in spring 2012 an invitation for the employment of a “gatherer” by a café in Tallinn was newsworthy for several news portals (Łuczaj et al. 2012). In England, there is a small rural enterprise called “Forager” engaged in gathering and supplying wild food, mostly to the restaurant trade (<http://www.forager.org.uk/>), having also written *The Forager Handbook*, a guide to the edible plants that grow in Britain (Irving 2009). Wild berries have a long tradition within Swedish restaurant culture. However, some other wild plants, earlier used only locally by peasants, have become regional specialties. *Allium scorodoprasum* L. was traditionally used in coastal areas as a spring vegetable, especially in stews. On Gotland island, it has been harvested for centuries, used as a remedy against spring fatigue. Nowadays, it is an appreciated early vegetable for the regional speciality, leek soup and is also available in restaurants. Also, berries of *Rubus caesius* L., very little used earlier, are nowadays used as jam and considered a regional speciality of Gotland (Svanberg

1998, 2012). In Finland, products, especially desserts, made with berry juice from *Hippophae rhamnoides*, are seen as regional specialties of Österbotten and Åland Islands and found in many restaurants. In the Faroes and Iceland, and to some extent also in Norway, stalks of *Angelica archangelica* have become a fashionable food made into various products, which can be found in restaurants or bought canned in stores (Svanberg 1998, 2011; Fosså 2006).

In Italy, we (AP and co-workers) recently surveyed ten top chefs, who use flowers in their cuisines. The most interesting finding was that the large parts of the used flowers (including also a few cultivated ornamental plants) do not have any connection to the culinary folk traditions and/or food ethnobotanical literature in Italy.

Changes in plant use are not linear. Some species can become the subject of temporary vogues. In Poland, making a fermented, fizzy, cornflower *Centaurea cyanus* flower lemonade was very common in the mid-twentieth century but has not been reported earlier or later (it probably disappeared mainly due to the decline of *C. cyanus* populations caused by the development of intense agriculture), and *Taraxacum* flower syrup was very popular in the 1990s women's magazines but now seems to be less popular (Kujawska and Łuczaj 2010; Łuczaj 2011). In Poland, the use of dandelion (*Taraxacum*) leaves has had its ups and downs. Dandelion leaves were usually regarded as famine food and there are very few reports of using them (as Polish cuisine avoids bitter tastes). However, vogues for eating dandelion leaves entered Poland a few times, directly from France: first at the end of the nineteenth century among the upper classes, and later in the mid-twentieth century among the families who came back from emigration in France. Both times the trend passed, as it did not withstand the "anti-bitter" attitude of the majority of the Polish population (Łuczaj 2011; Kujawska and Łuczaj 2010). As Kujawska and Łuczaj pointed out (Kujawska and Łuczaj 2010), Polish dishes are now undergoing "Mediterraneanisation" (e.g., by replacing butter and lard with olive oil and by adding Mediterranean-style aromatic herbs to traditional Polish recipes). One may wonder how long this fashion will last.

3.6 Toxicological Issues Linked to Wild Plants/Fungi Gathering

In many European countries, the sale of fungi in markets is heavily regulated due to the danger of poisoning (Peintner et al. 2013). For example, in Poland, 40 species or genera are legally sold (Łuczaj and Nieroda 2011). Some of the most commonly eaten fungi—*Russula* spp.—cannot be sold to the public due to the similarity of the juvenile fruiting bodies of some species from the genus (e.g., *R. cyanoxantha* (Schaeff.) Fr., *R. virescens* (Schaeff.) Fr., etc.) to the most deadly mushroom, the death cap (*Amanita phalloides* (Fr.) Link). The sale of wild food plants has not seen such regulation, probably for two reasons: They are less present in many countries and also because of the fact that in the large majority of cases the toxic plants are very bitter.

From our own experience, the experience of other people dealing with wild food promotion, and from media coverage, we identified two possibly most dangerous issues (however both of them with only a few cases around Europe):

1. Poisonings with *Convallaria majalis* L. and *Colchicum autumnale* L. leaves by confusing them with the edible *Allium ursinum* (Davanzano et al. 2011; Pilegaard 2012).
2. Confusing edible Apiaceae (e.g., *Pastinaca sativa* L. and *Daucus carota* L.) with the poisonous ones (*Oenanthe crocata* L. and *Conium maculatum* L. respectively)—this issue was extensively discussed by Irving (2009).

In the last few years, some cases of intoxications were caused by the wrong plant identification linked to a new or “re-acquired” knowledge of wild food plants, which was not refined or trained with long-term experience in the field. Informing the public about the possible dangers of wild plants’ consumption, particularly when eaten regularly or in large amounts, alongside the benefits, is an increasingly important educational task (Łuczaj et al. 2012).

References

- Abbet C, Mayor R, Roguet D, Spichiger R, Hamburger M, Potterat O (in press) Ethnobotanical survey on wild alpine food plants in Lower and Central Valais (Switzerland). *J Ethnopharmacol*. doi:10.1016/j.jep.2013.11.022
- Aceituno-Mata L (2010) Estudio etnobotánico y agroecológico de la Sierra Norte de Madrid. PhD Thesis. Universidad Autónoma de Madrid, Madrid
- Amaro W (2006) *Natura kuchni polskiej*. AmarONE, Warszawa
- Benítez G (2009) Etnobotánica y Etnobiología del poniente granadino. PhD thesis. Facultad de Farmacia. Universidad de Granada, Granada
- Bonet MA, Vallès J (2002) Use of non-crop food vascular plants in Montseny biosphere reserve (Catalonia, Iberian Peninsula). *Int J Food Sci Nutr* 53:225–248
- Burnett (1989) *Plenty and want: a social history of food in England from 1815 to the present day*. Routledge, London
- Carvalho AM, Morales R (2010) Persistence of wild food and wild medicinal plant knowledge in a Northeastern region of Portugal. In: Pardo-de-Santayana M, Pieroni A, Puri R (eds) *Ethnobotany in the New Europe: people, health and wild plant resources*. Berghahn Books, Oxford-New York, pp 147–171
- Christanell A, Vogl-Lukasser B, Vogl CR, Güttler M (2010) The cultural significance of wild gathered plant species in Kartitsch (Eastern Tyrol, Austria) and the influence of socio-economic changes on local gathering practices. In: Pardo-de-Santayana M, Pieroni A, Puri R (eds) *Ethnobotany in the New Europe: people, health and wild plant resources*. Berghahn Press, New York-Oxford, pp 51–75
- Conquest R (1987) *The harvest of sorrow: soviet collectivization and the terror-famine; famine in the Ukraine, 1932–1933*. Oxford University Press, Oxford
- Couplan F (1989) Le régal végétal. Plantes sauvages comestibles. *Encyclopédie des plantes comestibles de l’Europe*, vol 1. Equilibres, Flers
- Criado J, Fernández López JM, Leocadio G, Núñez Núñez RM, Blanco E (2008) *Uso tradicional de las plantas en Toledo*. Diputación de Toledo, Toledo

- Davanzo F, Miaglia S, Perego S, Assisi F, Bissoli M, Borghini R et al (2011) Plant poisoning (2011) increasing relevance, a problem of public health and education. *J Pharm Sci Res* 3(7):1338–1343
- Dávila P (2010) Estudio etnobotánico comparativo de la colleja [*Silene vulgaris* (Moench) Garcke] en dos localidades de la Comunidad de Madrid. Proyecto de Fin de Carrera. Universidad Autónoma de Madrid. Facultad de Ciencias, Madrid
- Della A, Paraskeva-Hadjichambi D, Hadjichambis AC (2006) An ethnobotanical survey of wild edible plants of Paphos and Larnaca countryside of Cyprus. *J Ethnobiol Ethnomed* 2:34
- Dénes A, Papp N, Babai D, Czúcz B, Molnár Z (2012) Wild plants used for food by Hungarian ethnic groups living in the Carpathian Basin. *Acta Soc Bot Pol* 81(4):381–396
- di Tizio A, Łuczaj Ł, Quave CL, Redžić S, Pieroni A (2012) Traditional food and herbal uses of wild plants in the ancient South-Slavic diaspora of Mundimitar/Montemitro (Southern Italy). *J Ethnobiol Ethnomed* 8:21
- Dogan Y (2012) Traditionally used wild edible greens in the Aegean Region of Turkey. *Acta Soc Bot Pol* 81(4):329–342
- Dumanowski J (2010) Tatarskie ziele w cukrze czyli staropolskie słodczyce. Muzeum Pałac w Wilanowie, Warszawa
- Ertuğ F (2004) Wild edible plants of the Bodrum Area (Muğla, Turkey). *Turk J Bot* 28:161–174
- Forbes MHC (1976) Gathering in the Argolid: a subsistence subsystem in a Greek agricultural community. In: Dimen M, Friedl E (eds) Regional variation in modern Greece and Cyprus: toward a perspective on the ethnography of Greece. pp 251–264 (*Annals of the New York Academy of Science* 268) Wiley, New York
- Fosså O (2006) Angelica: from Norwegian mountains to the English trifle. In: Hosking R (ed) Wild food: proceedings of the Oxford symposium on food and cookery 2004. Prospect Books, Totnes, pp 131–142
- Ghirardini MP, Carli M, Del Vecchio N, Rovati A, Cova O et al (2007) The importance of a taste: a comparative study on wild food plants consumption in twenty-one local communities in Italy. *J Ethnobiol Ethnomed* 3:22
- González JA, García-Barriuso M, Amich F (2011) The consumption of wild and semi-domesticated edible plants in the Arribes del Duero (Salamanca-Zamora, Spain): an analysis of traditional knowledge. *Genet Resour Crop Evol* 58:991–1006
- Grlić L (2005) Enciklopedija samoniklog jestivog bilja. Ex libris, Rijeka
- Guarrera PM (2003) Food medicine and minor nourishment in the folk traditions of Central Italy (Marche, Abruzzo and Latium). *Fitoterapia* 74:515–544
- Guarrera PM, Salerno G, Caneva G (2006) Food, flavouring and feed plant traditions in the Tyrrhenian sector of Basilicata, Italy. *J Ethnobiol Ethnomed* 2:37
- Hadjichambis A, Paraskeva-Hadjichambi D, Della A, Giusti ME, De Pasquale C, Lenzarini C et al (2008) Wild and semi-domesticated food plant consumption in seven circum-Mediterranean areas. *Int J Food Sci Nutr* 59(5):383–414
- Häkkinen A (1992) On attitudes and living strategies in the Finnish countryside in the years of famine 1867–1868. In: Häkkinen AJ, (ed). Just a sack of potatoes? Crisis experiences in past and present societies. *Societas Historica Finlandiae*, Helsinki, pp 149–166
- Holuby JL (1896) Aus des Botanik slowakischer Kinder des Trentscher Komitates in Ungarn. *Deutsche Botanische Monatsschrift* 19 (8–9):126–131
- Irving M (2009) The Forager handbook. Wild food guide to the edible plants of Britain. Ebury Press, London
- Johns T (1994) Ambivalence to the palatability factors in wild plants. In: Etkin NL (ed) Eating on the wild side. The University of Arizona Press, Tucson, pp 46–61
- Kalle R, Sõukand R (2012) Ethnobotanical review of edible plants of Estonia. *Acta Soc Bot Polon* 81(4):271–281
- Kalle R, Sõukand R (2013) Wild plants eaten in childhood: retrospective of 1970s–1990s Estonia. *Bot J Linnean Soc* 172:239–253

- Kang Y, Łuczaj Ł, Ye S, Zhang S, & Kang J (2012) Wild food plants and wild edible fungi of Heihe valley (Qinling Mountains, Shaanxi, central China): Herbophilia and indifference to fruits and mushrooms. *Acta Soc Bot Polon* 81(4): 405–413
- Katz E, Lopez CL, Fleury M, Miller R, Payê V, Dias T et al (2012) No greens in the forest? Note on the limited consumption of greens in the Amazon. *Acta Soc Bot Polon* 81(4):283–293
- Kujawska M, Łuczaj Ł (2010) Studies of wild food plants in communist and post-communist Poland. Changes in use and in research methodology. In: Pochettino ML, Ladio A, Arenas P (eds) *Tradiciones y Transformaciones en Etnobotánica/Traditions and Transformations in Ethnobotany*. San Salvador de Jujuy: Edición Cyted (Programa Iberoamericano Ciencia y Técnica para el Desarrollo), pp 539–545
- Łuczaj Ł (2002) Dzikie rośliny jadalne Polski, przewodnik survivalowy. Chemigrafia, Krosno
- Łuczaj Ł (2008) Archival data on wild food plants eaten in Poland in 1948. *J Ethnobiol Ethnomed* 4:4
- Łuczaj Ł (2010a) Changes in the utilization of wild green vegetables in Poland since the 19th century: a comparison of four ethnobotanical surveys. *J Ethnopharmacol* 128:395–404
- Łuczaj Ł (2010b) Plant identification credibility in ethnobotany: a closer look at Polish ethnographic studies. *J Ethnobiol Ethnomed* 36:4
- Łuczaj Ł (2011) Dziko rosnące rośliny jadalne użytkowane w Polsce od połowy XIX w. do czasów współczesnych. *Etnobiologia Polska* 1:57–125
- Łuczaj Ł (2012a) Ethnobotanical review of edible plants of Slovakia. *Acta Soc Bot Polon* 81(4):245–255
- Łuczaj Ł (2012b) Brzozowy sok, “czeremsza” i zielony barszcz—ankieta etnobotaniczna wśród botaników ukraińskich. Birch sap, ramsons and green borsch—an ethnobotanical survey among Ukrainian botanists. *Etnobiologia Polska* 2:5–22
- Łuczaj Ł, Kujawska M (2012) Botanists and their childhood memories: an under-utilized expert source in ethnobotanical research. *Bot J Linnean Soc* 168:334–343
- Łuczaj Ł, Nieroda Z (2011) Collecting and learning to identify edible fungi in Southeastern Poland: age and gender differences. *Ecol Food and Nutr* 50:319–336
- Łuczaj Ł, Szymański WM (2007) Wild vascular plants gathered for consumption in the Polish countryside: a review. *J Ethnobiol Ethnomed* 3:17
- Łuczaj Ł, Pieroni A, Tardío J, Pardo-de-Santayana M, Sökand R, Svanberg I, Kalle R (2012) Wild food plant use in 21st century Europe: the disappearance of old traditions and the search for new cuisines involving wild edibles. *Acta Soc Bot Pol* 81(4):359–370
- Łuczaj Ł, Köhler P, Pirożnikow E, Graniszewska M, Pieroni A, Gervasi T (2013a) Wild edible plants of Belarus: from Rostafiński’s questionnaire of 1883 to the present. *J Ethnobiol Ethnomed* 9:21
- Łuczaj Ł, Zovko Končić M, Miličević T, Dolina K, Pandža M (2013b) Wild vegetable mixes sold in the markets of Dalmatia (southern Croatia). *J Ethnobiol Ethnomed* 9:2
- Łuczaj Ł, Fressel N, Perković S (2013c) Wild food plants used in the villages of the Lake Vrana Nature Park (northern Dalmatia, Croatia). *Acta Soc Bot Pol* 82(4):275–281 (in press)
- Lánská D (1992) Jadalne rośliny dziko rosnące (edible wild plants). Delta W-Z, Warszawa
- Leonti M, Nebel S, Rivera D, Heinrich M (2006) Wild gathered food plants in the European Mediterranean: a comparison analysis. *Econ Bot* 60:130–142
- Local Food-Nutraceuticals Consortium (2005) Understanding local Mediterranean diets: a multi-disciplinary pharmacological and ethnobotanical approach. *Pharmacol Res* 52:353–366
- Mabey R (1972) *Food for free*. Collins, London
- Madej T, Pirożnikow E, Dumanowski J, Łuczaj Ł (2014) Juniper beer in Poland: the story of the revival of a traditional beverage. *J Ethnobiol*, in press
- Marco C, Chauvet M, Mathez J, Ubaud J, Passama L, Garrone B et al (2003) Les salades sauvages. L’Ensalada champanèla. Les Ecologistes de L’Euzière, Saint Jean de Cuculles
- Matalas A-L, Grivetti LE (2007) Non-food during famine: the Athens Famine Survivor Project. In: MacClancy J, Henry CJ, Macbeth H. *Consuming the Inedible: neglected dimensions of food choice*. Berghahn, New York, pp 131–139

- Maurizio A (1926) Pożywienie roślinne w rozwoju dziejowym (Plant food in human history). Kasa Mianowskiego, Warszawa:
- Maurizio A (1927) Geschichte unserer Pflanzennahrung, von den Urzeiten bis zur Gegenwart. Paul Parey, Berlin
- Maurizio A (1932) Histoire de l'alimentation depuis la Préhistoire jusqu'à nos jours. Payot, Paris
- Mears R, Hillman G (2007) Wild food. Hodder and Stoughton, London
- Muller J, Almedom AM (2008) What is "famine food"? Distinguishing between traditional vegetables and special foods for times of hunger/scarcity (Boumba, Niger). *Hum Ecol* 6(4):599–607
- Nedelcheva A (2012) An ethnobotanical study of wild edible plants in Bulgaria. *EurAsian J BioSci* 77:94
- Nedelcheva A (2013) An ethnobotanical study of wild edible plants in Bulgaria. *EurAsian J BioSci* 7: 77–94
- Nelson MC (1998) Bitter bread: the famine in Norrbotten 1867–1868. *Almqvist & Wiksell International*, Uppsala
- Ó Gráda C (2009) Famine: a short history. Princeton University Press, Princeton
- Paoletti MG, Dreon AL, Lorenzoni GG (1995) Pistic, traditional food from Western Friuli, N.E. Italy. *Econ Bot* 49:26–30
- Parada M, Carrió E, Vallès J (2011) Ethnobotany of food plants in the Alt Empordà region (Catalonia, Iberian Peninsula). *J Appl Bot Food Qual* 84(1):11–25
- Pardo-de-Santayana M, Morales R (2010) Chamomiles in Spain. The dynamics of plant nomenclature. In: Pardo-de-Santayana M, Pieroni A, Puri R (eds) *Ethnobotany in the new Europe: people, health and wild plant resources*. Berghahn Press, New York-Oxford, pp 283–307
- Pardo-de-Santayana M, Blanco E, Morales R (2005) Plants known as te in Spain: an ethno-pharmacobotanical review. *J Ethnopharmacol* 98(1–2):1–19
- Pardo-de-Santayana M, Tardío J, Blanco E, Carvalho AM, Lastra JJ, San Miguel E, Morales R (2007) Traditional knowledge of wild edible plants used in the northwest of the Iberian Peninsula (Spain and Portugal). A comparative study. *J Ethnobiol Ethnomed* 3:27
- Peintner U, Schwarz S, Mešić A, Moreau PA, Moreno G, Saviuc P (2013) Mycophilic or mycophobic? Legislation and guidelines on wild mushroom commerce reveal different consumption behaviour in European countries. *PLoS ONE* 8(5):e63926
- Phillips R (1983) Wild food. Macmillan, London
- Picchi G, Pieroni A (2005) Atlante dei prodotti tipici. Le erbe. RAI, Roma
- Pieroni A (1999) Gathered wild food plants in the upper valley of the Serchio river (Garfagnana), Central Italy. *Econ Bot* 53:327–341
- Pieroni A (2001) Evaluation of the cultural significance of wild food botanicals traditionally consumed in Northwestern Tuscany, Italy. *J Ethnobiol* 21:89–104
- Pieroni A, Gray C (2008) Herbal and food folk medicines of the Russlanddeutschen living in Künzelsau/Talacker, South-Western Germany. *Phytother Res* 22:889–901
- Pieroni A, Nebel S, Quave C, Münz H, Heinrich M (2002) Ethnopharmacology of liakra: traditional weedy vegetables of the Arbëreshë of the Vulture area in southern Italy. *J Ethnopharmacol* 81:165–185
- Pieroni A, Nebel S, Santoro RF, Heinrich M (2005) Food for two seasons: culinary uses of non-cultivated local vegetables and mushrooms in a south Italian village. *Int J Food Sci Nutr* 56:245–272
- Pilegaard K (2012) Ramson confusable with poisonous plants. 2012/2. National Food Institute, Technical University of Denmark, Division of Toxicology and Risk Assessment [Internet] 2012 [cited 2012 July 17]. <http://www.food.dtu.dk/upload/f%C3%B8devareinstituttet/food.dtu.dk/publikationer/2012/ramson%20confusable%20with%20poisonous%20plants.pdf>
- PFAF (2015) Plants for a future database. <http://www.pfaf.org>. Accessed 10 Oct 2015
- Polo S, Tardío J, Vélez-del-Burgo A, Molina M, Pardo-de-Santayana M (2009) Knowledge, use and ecology of golden thistle (*Scolymus hispanicus* L.) in Central Spain. *J Ethnobiol Ethnomed* 5:42
- Recetario extremeño [Internet] 2005 [cited 2012 June 01]. <http://www.cacerespatrimonio.com/Gastronomia/index.htm>

- Redzepi R (2010) Times and place in Nordic Cuisine. Phaidon Press, London
- Redžić S (2006) Wild edible plants and their traditional use in the human nutrition in Bosnia-Herzegovina. *Ecol Food Nutr* 45:189–232
- Redžić S (2010) Use of wild and semi-wild edible plants in nutrition and survival of people in 1430 days of siege of Sarajevo during the war in Bosnia and Herzegovina (1992–1995). *Coll Antropol* 34(2):551–570
- Redžić S, Barudanović S, Pilipović S (2010) Wild mushrooms and lichens used as human food for survival in war conditions; Podrinje—Zepa region (Bosnia and Herzegovina, W. Balkan). *Hum Ecol Rev* 17(2):175–181
- Rivera D, Obón C, Inocencio C, Heinrich M, Verde A, Fajardo J, Llorach R (2005) The ethnobotanical study of local Mediterranean food plants as medicinal resources in Southern Spain. *J Physiol Pharmacol* 56:97–114
- Rivera D, Verde A, Fajardo J, Inocencio C, Obón C, Heinrich M (2006a) Guía etnobotánica de los alimentos locales recolectados en la provincia de Albacete. Don Juan Manuel, Albacete
- Rivera D, Obón C, Heinrich M, Inocencio C, Verde A, Fajardo J (2006b) Gathered mediterranean food plants—ethnobotanical investigations and historical development. In: Heinrich M, Müller WE, Galli C (eds) Local Mediterranean food plants and nutraceuticals, vol 59. Forum of nutrition. Karger, Basel, pp 18–74
- Romojaro A, Botella MÁ, Obón C, Pretel MT (2013) Nutritional and antioxidant properties of wild edible plants and their use as potential ingredients in the modern diet. *Int J Food Sci Nutr* 64:944–952
- Schaffer S, Schmitt-Schillig S, Müller WE, Eckert GP (2005) Antioxidant properties of Mediterranean food plant extracts: geographical differences. *J Physiol Pharmacol* 1:115–124
- Schunko C, Vogl CR (2010) Organic farmers use of wild food plants and fungi in a hilly area in Styria (Austria). *J Ethnobiol Ethnomed* 6:17
- Schunko C, Grasser S, Vogl CR (2012) Intracultural variation of knowledge about wild plant uses in the biosphere reserve grosses walsertal (Austria). *J Ethnobiol Ethnomed* 8:23
- Sorokin P (1975) Hunger as a factor in human affairs. University Presses of Florida, Gainesville
- Sõukand R, Kalle R (2010) Plant as object within herbal landscape: different kinds of perception. *Biosemiotics* 3(3):299–313
- Sõukand R, Kalle R (2011) Change in medical plant use in Estonian ethnomedicine: a historical comparison between 1888 and 1994. *J Ethnopharmacol* 135(2):251–260
- Sõukand R, Kalle R (2012) The use of *teetaimed* in Estonia, 1880s–1990s. *Appetite* 59(2):523–530
- Svanberg I (1998) The use of wild plants in the Faroe Islands 1590–1990: a contribution to Scandinavian ethnobotany. *Svenska Linnésällskapets Årsskrift* 1996–1997:81–130
- Svanberg I (2007) Fattigmanskost. In: Bromberg G, Lindell G (eds) Till livs med Linné: om mat hälsa och levnadskonst. Atlantis, Stockholm, pp 185–195
- Svanberg I (2011) Folklig botanik. Dialogos, Stockholm
- Svanberg I (2012) The use of wild plants as food in pre-industrial Sweden. *Acta Soc Bot Pol* 81(4):317–327
- Svanberg I, Ægisson S (2012) Edible wild plant use in the Faroe Islands and Iceland. *Acta Soc Bot Pol* 81(4):233–238
- Svanberg I, Nelson MC (1992) Bone meal porridge, lichen soup, or mushroom bread: acceptance or rejection of food propaganda 1867–1868. In: Häkkinen AJ (ed) Just a sack of potatoes? Crisis experiences in past and present societies. Societas Historica Finlandiae, Helsinki, pp 119–147
- Szulcowski JW (1996) Pieśń bez końca: Zbiór tekstów folklorystyczno-etnograficznych. PSO, Poznań
- Tardío J (2010) Spring is coming: the gathering and consumption of wild vegetables in Spain. In: Pardo-de-Santayana M, Pieroni A, Puri R (eds) Ethnobotany in the New Europe: people, health and wild plant resources. Berghahn Books, Oxford-New York, pp 211–238
- Tardío J, Pascual H, Morales R (2002) Alimentos silvestres de Madrid. Ediciones La Librería, Madrid
- Tardío J, Pascual H, Morales R (2005) Wild food plants traditionally used in the province of Madrid. *Econ Bot* 59(2):122–136

- Tardío J, Pardo-de-Santayana M, Morales R (2006) Ethnobotanical review of wild edible plants in Spain. *Bot J Linn Soc* 152:27–72
- Turner NJ, Łuczaj Ł, Migliorini P, Pieroni A, Dreon AL, Sacchetti L et al (2011) Edible and tended wild plants, traditional ecological knowledge and agroecology. *Cr Rev Plant Sci* 30:198–225
- Velasco JM, Criado J, Blanco E (2010) Usos tradicionales de las plantas en la provincia de Salamanca. Diputación de Salamanca, Salamanca
- Verde A, Rivera D, Heinrich M, Fajardo J, Inocencio C, Llorach R, Obón C (2003) Plantas alimenticias recolectadas tradicionalmente en la provincia de Albacete y zonas próximas, su uso tradicional en la medicina popular y su potencial como nutraceuticos. *Sabuco Rev Est Albacet* 4:35–72