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Urban Allotment Gardens in Poland: Implications for Botanical and Landscape Diversity

Piotr Klepacki[1] and Monika Kujawska[2]*

Abstract. Polish allotment gardeners, who cultivate publicly owned urban space, constitute the largest group of city land managers in the country. Although research on allotment gardens in Poland exists, detailed studies about the uses of cultivated plants are absent. The aims of this study are to document plant richness and diversity of allotment-garden use and to explore the (changing) purpose of such gardens. Interviews, guided walks, and plant inventories were done, conducted among 46 urban allotment gardeners in three Polish cities in 2009. We documented 257 botanical taxa; the great majority were used as ornamentals (191 taxa), followed by food (66) and medicinal plants (5). However, names of edible varieties were rarely reported. In addition, very few protected and invasive species were registered in our study. Polish urban gardeners are attached to traditional food and ornamental plants (core repertoire), but they also show a moderate interest in novel plants (peripheral fashion). We observed an important shift in urban allotment garden management in Poland. Until the collapse of Communism, in the late 1980s, they had a chiefly productive character and today they are becoming more akin to pleasure gardens.

Keywords: urban ethnobotany, urban gardening, ornamental plants, food plants, Polish city gardeners

Introduction

Ethnobotanical research has entered urban areas and gained importance over the last two decades (Almada Duarte 2010; Emery and Hurley 2016; Kujawska 2011; Pieroni and Vandebroek 2007). Among the topics undertaken within urban ethnobotany are allotment and community gardens and small-scale agriculture in European cities (*inter alia*: Germany: Bendt et al. 2013; Great Britain: Ellen and Platten 2011; Spain: Camós et al. 1983, Camps-Calvet et al. 2015; Sweden: Barthel et al. 2010). The diversity of approaches, conceptual frameworks, and methods applied in the above-mentioned research projects indicate that the subject of urban gardening is extremely complex and may be studied from very different angles (Bell et al. 2016).

"Urban agriculture" is a term popularized during the United Nations Habitat conference in 1996 in Istanbul and it stands for "…the growing, processing, and distribution of food and other products through intensive plant cultivation and animal husbandry in and around cities" (Butler and Maronek 2002; after Bellows 2004:250). According to Ellen and Platten (2011:566), "allotments can be seen as part of a wider category of 'homegarden' in contrast to farms, in that they are small patches of land, intensively cultivated by family and friends for home consumption using horticultural methods, albeit governed by different rules of tenure." In Europe, allotment gardens were established during an epoch of intense industrialization in the late eighteenth and the beginning of the nineteenth century. They emerged as a response to the food and health security problems of a growing number of peasants who flooded European cites (Barthel et al. 2010; Villace et al. 2014). Governments

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and representatives of the industrial sector encouraged these peasants, who now worked in cities, to partially reproduce their rural subsistence patterns in a new environment. Allotments served to augment social stability—increased family food security, promoted healthy exercise, and healthy green spaces, and encouraged women to participate in gardening activities. Because of this history, allotment gardens in Europe used to have a predominantly productive character. Additionally, allotment-keepers were encouraged to plant diverse crops, although this was not always explicitly stated (Barthel et al. 2010). For example, in Poland, monoculture was forbidden in allotments; therefore, if a gardener wished to convert his plot into a potato field, he was prohibited from doing so (Zych 2012). Nevertheless, allotment-keepers could barter or sell the surplus of their crops (Bellows 2004).

Addressing urban allotment gardens in contemporary Europe is important for a few reasons. They are valuable green spaces within urban areas with high functionality (Breuste 2010). Allotment gardens may provide numerous ecosystem services: from habitat provision for biodiversity up to food production and several non-material benefits that gardeners derive from actions performed on their plots and through contact with nature (Borysiak et al. 2016; Cabral et al. 2017; Camps-Calvet et al. 2015). According to Barthel et al. (2010) and Bendt et al. (2013), allotment and community gardeners retain many characteristics that define communities-of-practice (Wenger 1998). These are mutual engagement, shared jargon, a joint enterprise, and shared repertoire, "which includes routines, words, tools and stories by which members create meaningful statements about the world. They constitute social arenas for local on-going processes of learning and negotiating, which continually create shared histories" (Barthel et al. 2010:261).

Progressive urbanization is threatening the existence of allotment gardens in the whole of Europe, especially those located in city centers (Barthel et al. 2013; Bell et al. 2016; Breuste 2010; Kronenberg et al. 2013). The urbanization process leads to concentration of residences, offices, and commercial centers within an urban area (Almada Duarte 2010). As a result, the amount of concrete expands to the detriment of green spaces, e.g., allotment gardens (Spilková and Vágner 2016). Urbanization contributes to the process of alienation between humans and nature. Some researchers identify this process as "ecological illiteracy" (Barthel et al. 2010) or "extinction-of-experience" (Miller 2005), which are defined as "a sort of ongoing generational amnesia among city peoples about their relationships to, and dependence upon, diverse ecosystems" (Kahn 2002; Miller 2005; Pilgrim et al. 2008, after Bendt et al. 2013:18).

Another threat is a proposal to open allotment gardens as public space for recreation for local citizens (Szczęsny and Kimic 2012), a process that would probably transform them into parks. In Poland, existing open space is reduced in allotment gardens; however, opening it to the public would mean redesigning this space. If allotment gardens were lost or converted into other land uses, the opportunities for food production, passing ecological knowledge, and many social interactions would be lost. The conversion of allotment gardens into parks or other spaces would inevitably contribute to the reduction of plant richness and diversity (Speak et al. 2015). On the other hand, there are positive examples of open space development and coexistence with allotments (Rubino 2007).

Allotment Gardens in Polish Cities

There are 965,000 registered allotment gardeners (Gorczyca 2013) in Poland and their plots, together with communal areas within gardens, cover 43,350 hectares of urban space (Gorczyca 2013). Allotment gardeners, who cultivate publicly owned urban space, constitute the largest group of

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city land managers in the country (Bellows 2004).

The importance of allotment gardens as a source of vegetables and fruits was an important issue during the greater part of the twentieth century in Poland. In the late 1980s, during the fall of Communism, when queuing to buy food was an endemic problem, food expenses comprised 40% of the household budget (Bellows 2004; Pawlikowska-Piechotka 2010). Until the 1990s, the creativity of gardeners was focused on improving the household budget by producing food for family needs (Bellows 2004). However, this is not to say that there were no ornamental species found at that time. They were always present and played the role of symbolic capital and adornment in the allotments, being used, for example, for church and family ceremonies. Alternatively, ornamentals were sold as surplus products from non-official one-person stands in the street. During Communist times, there were quotas for particular species in a given area and ornamental plants could not exceed 10% of the total area of an allotment plot (standard plot had 300 m^2 [Szkup 2013]). Therefore, allotment gardens were not considered aesthetic places in which to spend one's leisure time as they may be today.

The collapse of the Communist regime in 1989 was an important turning point in the perception of urban allotments by both users and policy makers and, consequently, for the definition of their function and purposes (Bellows 2004). In the latest governmental Act about allotment gardens, from 2013, we read that the primary role of these gardens is to satisfy recreational and other social needs and to allow for gardeners to produce horticultural crops for their own needs (Article 3; Ustawa z dnia 13 grudnia 2013). This official act, establishing rules for allotment gardens in Poland, puts stress not on food production, but rather on recreation and leisure. Food production is one of many activities that the Act defines as "other social needs."

Although research on allotment gardens in Poland exists, most studies have not focused on the richness or composition of plants cultivated on plots. There are several studies conducted in the field of social anthropology (Szczurek and Zych 2012), sociology (Gorczyca 2013; Szkup 2013), architecture (Romanowski 2012), landscape structure, and public health (Pawlikowska-Piechotka 2011). Therefore, the aims of this study are 1) to document plant richness and diversity of allotment-garden uses and 2) to explore the (changing) purpose of such gardens. Addressing these two issues is key to understanding current patterns in the use and function of allotment gardens and their potential impact on urban environment and society.

Methods

The data analyzed in this article constitute a part of a broad project called *Dzieło-działka* [The Art of the Allotment], coordinated by the Ethnographic Museum in Kraków between 2009 and 2012. The overall aim was to explore the current phenomenon of allotment gardening in Polish cities (Szczurek and Zych 2012).

The research was conducted in three cities in the Southern part of the country: Kraków, Katowice, and Wrocław (Figure 1). Seven Family Allotment Gardens (in Polish, *Rodzinne Ogrody Działkowe*, abbreviated here as ROD) were studied. The oldest allotment included in this research was ROD Tadeusz Kościuszko in Katowice, established in 1909, and located in a central city neighborhood. Three allotment gardens were established in the period before World War II, and four established after 1945 (Table 1).

In Poland, the principles of allotment gardens are governed by the Act from December 13, 2013 (Ustawa z dnia 13 grudnia 2013). The Act defines the purpose of the existence of allotment gardens and regulates the ownership of the land, the scope of activities, and the status of plot

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Figure 1. Map of the study sites.

users. According to this Act, family allotment gardens are portions of land that are in the hands of associations of allotment gardeners, divided into communal land and plots (up to 500 m²) and equipped with the infrastructure necessary for their proper functioning (Article 2). The Act states that family allotment gardens are public utilities, serving to satisfy the recreational and other social needs of local community members by providing them with access to communal land and plots, which also gives the opportunity for gardeners to produce horticultural crops for their own needs. The purpose of the allotment gardens is also to raise environmental health in urban contexts (Article 3). Family allotment gardens are established on land owned by the State or local government units (Article 7-9), which provide the land in perpetuity to associations of allotment gardeners (Article 11). Any plantings, devices, and objects on the plot made or purchased with funds

Table 1. Urban allotments studied during ethnographic research in Poland, 2009-2010, "The Art of the Allotment" (*'dzieło-działka'*), Ethnographic Museum in Krakow.

City	Garden name (ROD)	Established	Additional info	No. of informants	No. of reports	No. of species	Average reports/ taxon
Katowice	Kościuszki	1909	One of the oldest allotment gardens in Poland. Located near the city center.	12	594	199	2.98
Kraków	Dębniki	1933	Established on an old clay excavation place and dumping ground.	7	273	148	1.84
	Zakole Wisły	1962	Established on a backwater of the Vistula River and partly on a former landfill of pharmaceutical plant.	7	281	132	2.13
	Krowodrza	1938	Made within an old fortress.	6	238	142	1.68
	Przodownik	after 1945	A small allotment, in a vicinity of Cistercian monastery in Mogiła and nearby steelworks.	5	195	99	1.97
Wrocław	Różanecznik	after 1945	Founded on the grounds of an old artillery range.	7	351	173	2.03
	Westerplatte	after 1945		2	73	57	1.28

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by plot users (allotment gardeners) are their own property (Article 30). Article 12 prohibits a plot user from residing or performing any kind of business on it.

Study Participants

Informed consent was granted by study participants before interviews. No ethical approval was required for this study in Poland, as no participants were subjected to any other treatment than voluntary interviews. The research was carried out following the code of ethics of the American Anthropological Association and the Society of Ethnobiology.

The fieldwork was done in 2009 among 46 allotment gardeners: 25 people from Kraków, 12 from Katowice, and 9 from Wrocław. These were predominantly elderly, retired people. Only three persons remained occupationally active. The mean age of informants was slightly above 68 years (median 66.5; SD = 10.8). Towards the end of our field research, we discovered a community of younger allotment gardeners—ecologists who were trying to put the ideas of permaculture into practice. We did not include them as part of the study, but they provide an opportunity to introduce a new player into allotment gardening—young people interested in ecological forms of gardening, which they implement mainly through foreign books and courses (Kujawska and Chwoła 2008).

The interviews were done with individual gardeners (22 women, 19 men) and with five couples. The largest number of informants completed higher education, followed by those with secondary education, and just a few informants completed vocational education. One person completed only a primary education. There were no data on level of educational attainment for 11 people.

Data Collection

The interviews began with a biographic interview followed by a comprehensive questionnaire, which was aimed at topics related to social and ecological aspects of gardening (Szczurek and Zych 2012). The study participants were also asked to provide a list of all the plants they cultivated or managed on their plots during a given year. A list of all ethnotaxa found on each plot was prepared during guided walks with informants around their gardens. This list was complemented with photos of the species mentioned. Taxa were determined mainly based on photos taken by the researchers during guided walks. Photographic documentation and voucher specimens are deposited in the Herbarium of the Jagiellonian University (KRA).

Data Analysis

Only taxa present in at least two gardens were included in the analysis. The basic unit of analysis was a "use report"—one taxon used for a specific purpose by a given gardener. For each taxon, the following parameters were described (according to Chmiel 2000; Filipczak 2011): growth (in the form of value ranges), life strategy (annual, biennial, perennial), life form (tree, shrub, herb, creeper), leaf color, flower color, the leaves' winter behavior (deciduous or evergreen plants), and the main plant application in codified form (ornamental, fruit, leafy vegetables, etc.). The distinction between categories of use, such as "fruit" and "vegetable" is based on modes of consumption. Basic descriptive statistics are used to summarize results.

Observations from the field supported our interpretation of results, as we spent a considerable amount of time in the allotments, often helping gardeners in their work. In this fashion, we acquired experience and, at the same time, confidence in our results.

Results

A total of 257 botanical taxa were recorded, belonging to 72 plant families (see Supplementary Table 1). Gardeners cultivated on average 43.6 (median 39) taxa on individual plots. The most widely

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represented botanical families were Rosaceae and Asteraceae, with taxa used for both food and ornamental purposes. In contrast to the many families representing exclusively ornamental plants, there were only two families that contained taxa used exclusively for culinary purposes (Figure 2). The great majority of the taxa were used as ornamentals (191 taxa), followed by food (66) and medicinal plants (5). One species was used as a kind of natural fertilizer (stinging nettle, *Urtica dioica*). Several species had a double function: as food and ornamentals or food and medicines.

Food plants had more reports per taxon (mean 16.5, median 8) than medicinal (mean 9, median 7.5) and ornamental plants (mean 7.6, median 4). This shows that although food plants were represented by less taxa than ornamental, they appeared more frequently in gardens.

Amongst the life forms, herbs predominated, comprising at least 65% of all recorded species. Trees and shrubs together accounted for approximately 31% (Table 2). Half of the plants were small—up to 50 cm high; 68% reached a height of 1 meter. The choice of herbaceous plants of small dimension was explained by the size of plots (between 250–500 m^2), in which gardeners often wanted to squeeze as many species as possible. Two-thirds of the listed taxa were perennial plants (although most of them were relatively small herbs),

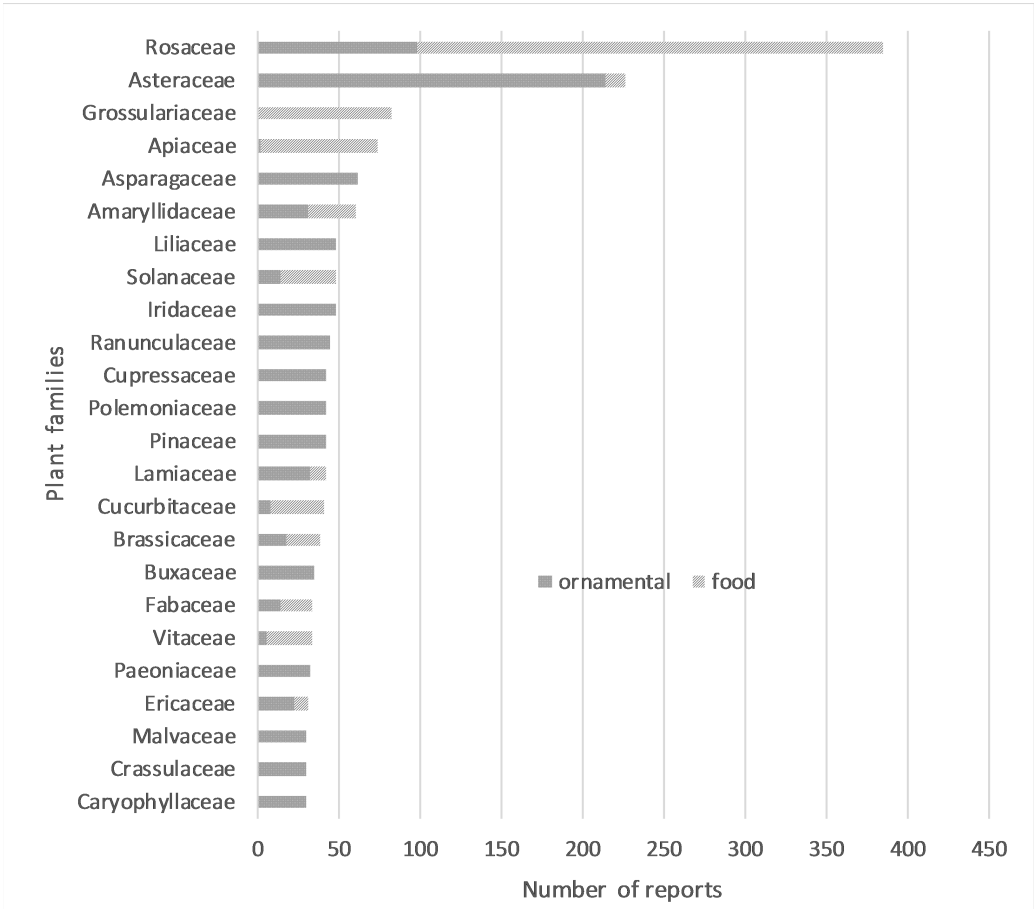


Figure 2. Botanical families, whose species are used as food and/or ornamentals (with 30 reports or above).

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the rest were annual, and only 2% comprised bi-annuals. The distribution of life forms corresponds with gardeners' preferences. Perennial plants require less effort in maintenance and are more cost-effective—gardeners do not need to spend money on seeds and seedlings every year.

We documented a few species grown in urban allotments that are of conservation concern, quite rare in nature, and which are protected in Poland (Rozporządzenie 2014), e.g., pasqueflower (*Pulsatilla* sp.), bride's feathers (*Aruncus dioicus*), English yew (*Taxus baccata*)—however, they probably are cultivars and come from garden shops. We did not document many invasive species, only wild cucumber (*Echinocystis lobata*) and common milkweed (*Asclepias syriaca*) (the latter found in only one garden and not incorporated in the analysis).

Ornamentals are the dominant category among useful plants cultivated in urban allotment gardens in Poland today. Many ornamental species were found only in a few gardens, which indicates little consensus among gardeners and an individualized preference. The most commonly found ornamental species in urban allotment gardens were, however, taxa that have been present in manor gardens (less in rural gardens) for centuries: roses (*Rosa* spp.), peonies (*Peonia* spp.), phlox (*Phlox paniculata*), common box (*Buxus sempervirens*), lily of the valley (*Convalaria majalis*), tulips (*Tulipa* spp.), dahlia (*Dahlia hybrida*), zinnia (*Zinnia elegans*), aster (*Aster* spp.), and African, French, and other marigolds (*Tagetes* spp.) (Bach and Bałdysiak 2008; Baranowski 1964; Dzięciołowska and Latkowska 2009; Ząłek 2003). They form a "core repertoire" for city gardeners. Changing fashions for some particular species could be observed: angel's-tears (*Brugmansia suaveolens*) was

Table 2. Height class and life forms of plants cultivated in the studied urban allotment gardens in three Polish cities.

	Number of reports	Number of taxa	% of all taxa
Life form			
Herb	1149	168	65%
Shrub	412	39	15%
Tree	286	31	12%
Sub-shrub	85	11	4%
Vine	73	9	3%
Height class (m)			
0.01–0.2	392	58	22%
0.21–0.5	487	65	25%
0.5–1	417	53	21%
1.1–2	398	50	19%
2.1–5	215	22	9%
5–10	96	12	5%
Life cycle			
Perennial	1483	193	75%
Annual	501	61	24%
Bi-annual	21	4	2%

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very popular a few years ago, now giving way to Adam's needle (*Yucca filamentosa*) and different species from the *Hosta* genus. Nonetheless, much more novelty could be observed in the cultivation of ornamental plants than food plants.

Among food plants cultivated on urban plots, the most salient species (reflected in the number of reports) were the traditional ones: amongst fruit trees these were apples (*Malus domestica*), pears (*Pyrus communis*), and plums (*Prunus domestica*); among fruit-bearing shrubs were gooseberry (*Ribes uva-crispa* subsp. *sativum*), red current (*Ribes rubrum*), black current (*Ribes nigrum*), and raspberry (*Rubus idaeus*)—species widely cultivated for winter preserves like jams and juices.

The most important vegetables were tomatoes (*Lycopersicon esculentum*), followed by cucumbers (*Cucumis sativus*), string beans (*Phaseolus vulgaris*), and parsley (*Petroselinum crispum*), the latter used both for its root and leaves. Gardeners cultivated tomatoes, which require a lot of experience and care (due to the prevalence of disease in Polish allotment gardens), basically for their taste because, according to informants, were much better than that of any variety found in shops. Cucumbers were cultivated to be used in salads and as a lacto-fermented vegetable. Few plants were cultivated as spices and condiments. Viewed from the perspective of gardeners' choices and food crop preferences, Polish allotment-keepers display conservative characteristics, adhering to well-tried and tested crops. On the other hand, they are selectively receptive to some novel taxa that fit into their plot dimensions. This is observed in the growing importance of the apricot tree (*Armeniaca vulgaris*), which is normally of small size, bearing a great quantity of fruit and is therefore seen as very efficient in the allotment economy.

Allotment gardens are not the place for medicinal plant cultivation and procurement. Only five taxa used in home treatment were recorded: mint (*Mentha* sp.), kitchen sage (*Salvia officinalis*), common balm (*Melissa officinalis*), thyme (*Thymus* sp.), and stinging nettle (*Urtica dioica*). Mint, sage, and thyme were also used as food additives, and all of them were employed in herbal infusions.

We recorded only one plant species of natural fertilizers or repellents—nettle. A few of the informants prepared a kind of a fermented potion, with which they would water plants to strengthen them or when they were diseased. In most gardens, nettle was not a cultivated plant; it was a protected and managed weed. In the gardens we studied, nettle always grew in the back of the gardens, close to the compost (a compulsory element on every plot).

We were able to observe the gardeners' expertise in some areas of cultivation. A few of our interviewees dedicated themselves to cultivating species and varieties that are particularly difficult to maintain, such as roses or tomatoes (i.e., one gardener had 250 tomato plants of several varieties). These gardeners were unique because of their collections of plants focusing on a particular taxon. They were also recognized as experts about those taxa.

Discussion

Contemporary urban allotment gardens in Poland retain progressively fewer characteristics of urban agriculture. The predominance of ornamental species found in this study indicates the recreational character of the allotment gardens. However, the importance of fruit trees, shrubs, and annual vegetables vary amongst the studied plots. The allotments we studied represent a more recreational-productive than purely recreational character. That could be biased by the fact that our informants were mainly elderly and retired people. Some of them were born before or during World War II and experienced food shortages or even famine. Those experiences may have triggered long-term food security strategies (Barthel and Isendahl 2013). At present,

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there is less need to produce food for one's own consumption, as fruits and vegetables are considered relatively cheap. Those gardeners who still produce their own food are motivated by custom, resourcefulness, thrift, and the need for some form of sovereignty. Some of them also hold a strong conviction that homemade food, even from the city, but without pesticides, is still better than the fruits and vegetables in supermarkets. Moreover, varieties of some vegetables (e.g., tomatoes) and fruits (e.g., apple variety "Papierówka") cultivated on plots are rarely available in grocery shops or vegetable markets. These heirloom varieties are important for gardeners, as the preference for their taste was acquired during childhood and youth. Memory trajectories (i.e., species remembered from one's childhood or inherited in the family) are among the most important factors influencing people's choices for particular species (Holl 2005; Kujawska and Sosnowska 2012; Sordi et al. 2008; Vogl-Lukasser and Vogl 2004).

The growing popularity and predilection for coniferous trees and shrubs is of note. They are becoming integral parts of many urban gardens, something difficult to imagine 50 years ago in the rural and urban allotment gardens, as conifers were thought to be forest, not garden, plants (Uruszczak 2012; Zątek 2003). However, the coniferous trees planted on urban plots are mainly ornamental cultivars and come predominantly from the Pinaceae family, such as spruce and pine species. Today, *Thuja* sp. is becoming extremely popular, as it was found in more than 50% of the gardens. Additionally, the native juniper was recorded in one-third of the gardens. This trend has been also observed in other studies dedicated to rural contemporary gardens (Bach and Bałdysiak 2008; Dzięciołowska and Latkowska 2009; Uruszczak 2012).

Why do Polish gardeners want to keep conifers on their small plots? Based on our survey, this choice is purely motivated by aesthetics. As was explained to us, gardeners wanted to have beautiful looking plots the whole year round. As some allotment-keepers also visit their plots during the winter time to feed birds, check that there has not been robbery (Wala 2012), or simply spend New Year's Eve there—they want to be surrounded by plants that are green and seem "alive," even in the wintertime. For the same reason, we also found common box (*Buxus sempervirens*) present in majority of the gardens. Hence, the shift we have observed from perceiving allotment gardens as a place for producing food to viewing plots as an enclave of beauty has decisively influenced the choice of plants cultivated in urban allotment gardens (see also Birol et al. 2005). Gardeners are encouraged to convert their plots into aesthetic arenas by the garden authority/managers, who are challenged by the city council and find themselves under pressure to keep the allotments as attractive urban settings, if they do not want to be "devoured" by developers (Szczurek and Zych 2012). However, with the growth in importance of lawn surface and low-maintenance perennial conifers, gradual floristic simplification of urban allotments may occur. Plots may acquire a "clichéd layout," something already observed in Polish rural gardens, which have lost their traditional and diverse character (Dzięciołowska and Latkowska 2009:82).

The trends we have observed in Polish allotment gardens are confirmed in other East European countries: in transition economies, off-farm employment opportunities increase, which means that people rely less on their own produce from gardens. Subsequently, involvement in garden maintenance decreases, which inevitably influences the gradual simplification of plant composition and diversity: perennials, ornamentals, and low-maintenance species predominate (Birol et al. 2005).

Home, community, and allotment gardens have been considered as sustainable and resilient ecosystems (Smith et al. 2006). Such gardens are characterized by

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reduced application of chemical fertilizers and pesticides; thereby, they contribute to the protection of natural and semi-natural habitats for wild flora and fauna (Daniels and Kirkpatrick 2006; Galuzzi et al. 2010).

We collected numerous statements from gardeners saying that they would prefer to avoid using agro-chemical products on their plots (Kujawska and Sosnowska 2012); however, we did not gather much information about natural modes of tillage and cropping, nor about natural fertilizers and repellents. In Polish cities, air and ground pollution is a problem for gardeners, according to studies on soil quality (e.g., Bielińska 2006). For example, in Kraków, the pollution is so heavy that some gardeners are discouraged from cultivating edible plants there. In Katowice, at the ROD Kościuszko, plot-users are prohibited from cultivating root vegetables because of soil pollution, even though some still do.

Scholars who have addressed urban allotments and community gardens in Europe stressed the importance of these gardens as spots for biological diversity in city spaces (Barthel et al. 2010; Bendt et al. 2013, Ellen and Platten 2011; Galuzzi et al. 2010; Speak et al. 2015). According to the researchers, urban allotments have the potential to host greater plant diversity than public parks and the countryside, especially in areas dominated by monocultures. The richness of plants cultivated in Polish allotment gardens, as well as diversity of their uses, confirms this tendency. However, knowledge about protected and invasive species, according to our findings, is marginal among Polish allotment gardeners, and this fact is not taken into account when planting a given species. Plant choices among allotment gardeners still remain a subject worthy of further exploration.

Urban allotment gardens in Poland have a vast group of users, not only allotment holders but also their relatives. An estimated 17% of adults in Poland spend their time on allotment gardens (CBOS 2012). They are mainly inhabitants of small towns (up to 20,000 inhabitants) and large cities (50,000–100,000 inhabitants). A majority of surveyed people (88%) agreed that allotment gardens should be preserved inside cities, where 57% insisted they should maintain their current form, 35% considered changing them into public parks and recreation areas, and only 11% were convinced that it would be better to convert these spaces into residential areas (CBOS 2012).

Study participants produce fruits and vegetables mainly for self-subsistence; that is, an ongoing inter-generational practice which involves children and grandchildren. Passing knowledge and skills between generations implies an enculturation process of consumption preferences (Evans et al. 2016) promoting healthier dietary habits. In general, health issues in context of urban gardening are well documented in the literature (e.g., Soga et al. 2016a) with dozens of studies showing that urban gardening has a positive influence on health and wellbeing.

Contact with nature, even in urban context, can influence one's attitude toward nature conservation in general, a phenomenon known as the "pigeon paradox" (Dunn et al. 2006). Even contact with common synanthropic fauna like urban pigeon makes people more sensitive to conservation issues in a global scale. Correspondingly, gardening in urban allotments may counteract the process of alienation between humans and nature (i.e., "ecological illiteracy," extinction-of-experience; Barthel et al. 2010; Soga et al. 2016b; Zhang et al. 2014).

The work of millions of gardeners in European cities has often been categorized as a sub-economy (Ellen and Platten 2011:566), represented by socially feminized labor and under-valued social capital (Bellows 2004:270). Nevertheless, the contemporary surge of research concentrated on different forms of gardening in

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urban spaces highlights the importance of people who are working within social, ecological, and economic margins for the conservation of biological and cultural diversity (Nazarea 2005).

Conclusions

Allotment gardens in Poland that had a chiefly productive character three decades ago are increasingly becoming akin to pleasure gardens. This phenomenon is the combined result of market trends, current aesthetic needs, and pressure from allotment administrators, as well as, indirectly, city developers who are willing to adopt these attractive green spaces. The shift from the cultivation of annual edible species to ornamental perennials may lead to the floristic simplification of allotment gardens. Through this process urban gardens may acquire clichéd layouts, such as those already observed in Polish rural gardens. Our findings are in agreement with the conclusions proposed by Emery and Hurley (2016:815) that "rich and complex relationships between people and other life forms persist in the social and ecological configurations of cities. These relationships are sometimes novel, [and] sometimes reflect traditional ecological knowledge and livelihoods...." As observed, Polish urban allotment gardeners are attached to traditional food and ornamental plants, but they also show a moderate interest in novel (and mostly exotic) plants.

The recorded richness of cultivated species and relatively high number of taxa cultivated on individual plots reflect gardeners' knowledge of the plant resources cultivated in urban gardens. The diversity of uses indicates the direction in which Polish allotment gardens are developing at the moment. A great majority of the studied gardens had a recreational-productive character. These findings are significant, as Polish allotment gardeners form the largest group of city land managers who cultivate publicly owned urban space (Bellows 2004).

Last but not least, the relatively high representation of ornamental plants documented in ours and other's studies on home, allotment, and community gardens across the globe creates a demand for a new interdisciplinary approach towards a better understanding of this economically and symbolically important domain, yet overwhelmingly understudied within an ethnobotanical framework. Until now, a thesis formulated by Goody (1993), that the cultures of flowers develop mostly where civilization is highly elaborated and urbanized, has not been challenged nor sufficiently supported with sound research results or reviews. A new approach and paradigm for comprehending ornamental plants and their role in current societies would require a truly interdisciplinary platform combining botany (adequate identification of subspecies and cultivars, creation of spaces in herbaria for storage of cultivated species) and several branches of cultural anthropology, such as anthropology of esthetics and senses, and methodology for combining "everyday life" studies and subtle ecologies (see Wyndham 2009; and also Gavin et al. 2015; Lepofsky 2009; Nabhan et al. 2011).

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