

# Chapter 11

## Urban Gardens: Pockets of Social-Ecological Memory

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**Abstract** It is well known that urban allotment gardens provide important ecosystem services. Their potential to act as sources of local resilience during times of crisis is less appreciated, despite the role they have played as areas of food security during times of crisis in history. Their ability to provide such relief, however, requires that the skills and knowledge needed for effective gardening can be transmitted over time and across social groups. In short, some portion of urban society must remember how to grow food. This chapter proposes that collectively managed gardens function as ‘pockets’ of social-ecological memory in urban landscapes by storing the knowledge and experience required to grow food. Allotment gardeners operate as ‘communities of practice’ with ecosystem stewardship reflecting long-term, dynamic interactions between community members and gardening sites. Social-ecological memories about food production and past crises are retained and transmitted through habits, traditions, informal institutions, artifacts and the physi-

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cal structure of the gardens themselves. Allotment gardens thus serve as incubators of social-ecological knowledge with experiences that can be accessed and transferred to other land uses in times of crisis, contributing to urban resilience. Conversely, failure to protect these pockets of social-ecological memory could result in a collective ‘forgetting’ of important social-ecological knowledge and reduce social-ecological resilience.

**Keywords** Ecosystem services • Social-ecological memory • Resilience • Urban gardens • Allotment gardens • Community of practice • Food production

*In this chapter, social and ecological scientists from the Stockholm Resilience Centre and National Center for Ecological Analysis and Synthesis in the United States, propose that allotment gardens function as ‘pockets’ of social-ecological memory by storing the knowledge and experience required to grow food and to attract pollinators and birds. Such social-ecological memories about food production, including during times of crisis such as war, are retained and transmitted through habits, traditions, informal institutions, artifacts and the physical structure of the gardens themselves, and may serve as a source of urban resilience during future crises.*

## Introduction

Currently, around three million allotment gardens are found across Europe, 10,000 of which are found in Stockholm, Sweden, occupying 210 ha of land and involving about 24,000 people (Barthel et al. 2010; Nolin 2003). In a built-up urban environment, allotment garden areas appear as lush, well-managed, flower-rich landscapes. In Stockholm, allotment gardens are often considerably old, some in existence for a century. The size of these allotment areas can differ significantly (3,450–70,000 m<sup>2</sup>) as can their elements, ranging from areas devoted strictly to horticulture to plots with small chalets surrounded by kitchen gardens and fruit trees. Individual plots are often leased on 25 year contracts from the City of Stockholm, and while the common grounds of allotment area communities, such as pathways and lawns, are open to the public, individual garden plots in the community are not (Barthel et al. 2010). Property rights are organized hierarchically, with individual or familial management rights for each plot embedded in the self-organized rules-in-use of local allotment communities, themselves embedded in the regulations of the city wide allotment union (ibid).

Allotment gardens can be broadly described as representing legacies of traditional household gardening practices where the users’ knowledge of gardening has been passed on and socially retained for considerable time, often over several generations (Nolin 2003). In this sense, allotment gardens represent social arenas for present-day household gardening in urban landscapes. During times of prosperity the strongest motivator for allotment gardening appears to be enjoying a sense of

place (see Stedman and Ingalls, Chap. 10, this volume) rather than economic returns in the form of cheap food (Andersson et al. 2007, see also Okvat and Zautra, Chap. 5, this volume, for other non-food benefits of community gardening). Experienced allotment gardeners have higher quality local ecological knowledge, compared to city park employees (Andersson et al. 2007). Additionally, gardeners work to create and protect species diversity in their plots, practices demonstrated to provide valuable ecosystem services benefiting urban citizens outside of those gardens (Barthel et al. 2010).

While allotment gardens are appreciated for the leisure they provide, their esthetics and their contributions to urban biodiversity (Davis et al. 2009; Goddard et al. 2010; Kendal et al. 2010), they have also been important contributors to human well-being in times of crisis (Humphries 1996; Select Committee 1998). However, as strong urbanization continues metropolitan landscapes are constantly transformed (Cox 2005), which puts pressure on remaining urban green space and on physical sites that allow for civic ecology practices (Krasny and Tidball 2009; Barthel 2008; Krasny and Tidball 2010). Such transformations constantly challenge places that urbanites have utilized for sustenance in the past, and with the loss of those places, social memories of urban food production could easily dissolve (Barthel et al. 2010, 2013). Drawing on lessons from Europe generally and Stockholm in particular, this chapter proposes that urban allotment gardens function as ‘pockets’ of social-ecological memory preserving knowledge and providing local resilience to urban areas in times of crisis.<sup>1</sup> We further consider social interactions in allotment gardening associations and various ways in which gardens can serve as repositories of ecological practices, experiences and knowledge.

In the next section, we present a brief history of allotment gardening in Europe, synthesizing findings from historical investigations to demonstrate the gardens’ ability to act as pockets of social-ecological memory in times of crisis. We next review past research on social memory and define the concept of social-ecological memory. Drawing on Barthel et al. (2010), we then analyze social-ecological memories among urban gardeners and describe the features by which such memories are stored and transmitted over time, before offering concluding remarks.

## Allotment Gardens as Pockets of Social-Ecological Memory

The uses to which European allotment gardens have been put have shifted in relation to societal changes, transitioning from leisure gardens in prosperous times to important providers of alternate food sources during periods of societal crisis. In fact, European allotment gardens have their origins in such crises, arising in large part from the enclosure and privatization of common lands during the transition

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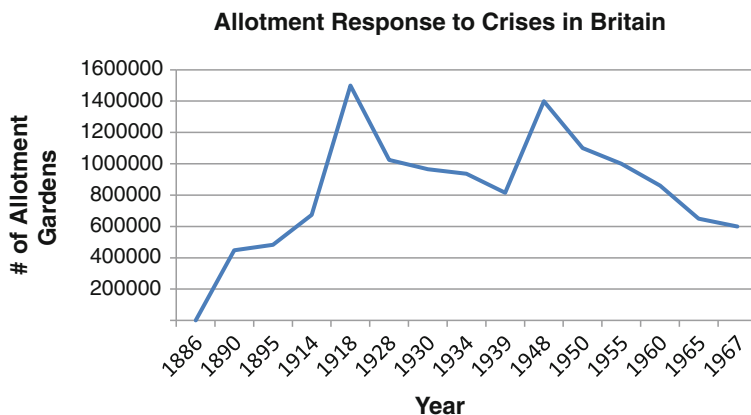
<sup>1</sup>Local resilience refers to the capability of people on a local level to absorb change and surprise, reorganize and continue to live on without tipping over critical thresholds (Carpenter and Folke 2006). See also Tidball and Krasny, Chap. 2, this volume.

from feudal agrarianism to industrial urbanism (see Crouch and Ward 1988; Moran 1990). The origins of Swedish allotment gardens follow a similar pattern. In the 1800s, Stockholm, like many European cities, faced social problems such as mass migration from the countryside, unhealthy and meager living conditions of the working class, and a loss rural identity (Engels [1844] 2009; Lindhagen 1916). As in other nations, the social movement promoting allotment gardens in Sweden was driven by the work of relatively small, dedicated groups of social activists who garnered support from various governmental bodies to construct allotment areas (Lindhagen 1916; Nolin 2003).

Allotment gardens were an important source of resilience during the transition from feudal to urban social life. They proved equally important during the ‘great wars’ in Europe. The British experience is illustrative. During WWI supply connections to outside food sources were cut. Acknowledging the national threat of starvation, the government permitted local authorities to transform unoccupied urban lots into vegetable gardens. Parks, sport fields and even portions of Buckingham Palace were converted into gardens as part of the *Every Man a Gardener Campaign* (Crouch and Ward 1988; Select Committee 1998). The number of allotment gardens surged from 600,000 to 1,500,000, with one garden per five households. By 1918 allotment gardens had provided Britons with 2,000,000 tons of fresh vegetables (see also Lawson, Chap. 14, this volume).

Allotment gardening declined precipitously after the war, with many plots returning to their original purposes as places of leisure. Two major allotment acts were passed during this time. The Land Settlement Facilities Act (1919) assisted returning service men by allowing all citizens to possess allotment gardens, not just laborers (see also Geisler, Chap. 16, this volume). The Allotments Act (1922) provided more security to allotment tenants, creating representative associations and ownership protections (Select Committee 1998). World War II sparked a second explosion in allotment gardening similar to the WWI campaign. British citizens were urged to ‘Dig for Victory’. By 1942, ten million sets of allotment gardening instructions were being distributed annually (Fig. 11.1 for examples of propaganda posters). One out of every two manual workers had either an allotment or a private garden (Crouch and Ward 1988). The number of allotment gardens increased from 800,000 before the war began to 1,400,000, with gardeners producing 1,300,000 tons of food. After the end of World War II the number of allotment gardens declined steadily, decreasing to around 600,000 in the 1960s (Humphries 1996, Fig. 11.1).

Similar boom and bust cycles of urban allotment gardens occurred in many other nations during WWII. Germany’s 450,000 allotment gardens rose to 800,000 by the close of the war (Gröning 1996). In France the number of urban allotment gardens rose to 600,000, and during the war’s peak 20 million household gardens supplied 40 % of the vegetables consumed in the United States (Basset 1979, see also Lawson, Chap. 14, this volume). While Sweden was not directly involved in the war, related food shortages sparked an explosion in allotment gardens, rising from 30,000 prior to the war to 130,000 during its peak, producing approximately 10 % of all the vegetables consumed in Sweden (Barthel et al. 2010).



**Fig. 11.1** Allotment gardening responding to societal crises in Britain (Sources: Moran (1990); Select Committee (1998); Barthel et al. (2013))

It is evident that allotment gardens have been important sources of local resilience in times of crisis in European cities. However, their continued ability to provide this resilience requires that past experiences of such crises and how they were addressed remain present in living social memory. We turn now to a discussion of such social memories and their relation to local ecosystem stewardship.

## Social Memories

Supra-individual memory that stores experiences of living pasts and influences future group behavior is often referred to as collective or social memory (Coser 1992; Gunn 1994; Olick and Robbins 1998; McIntosh et al. 2000; Crumley 2002; Gongaware 2003; Folke et al. 2003; Nazarea 2006). This line of thought originates from Halbwachs, a protégée of pioneering sociologist Emile Durkheim. Durkheim's work posited the concept of 'collective excitement' as fertile ground for understanding cultural creativity (Durkheim [1915] 2001; Coser 1992). Halbwachs' work showed how this excitement was kept alive and transmitted between creative periods (Coser 1992). He argued that whereas only individuals remember, individual memory processes derive from social interaction and are facilitated through supra-individual means shared with others, such as language, symbols, events, and cultural contexts (see also Misztal 2003). Accordingly, social groups construct their own images of the world through agreed-upon versions of the past – versions constructed through negotiation, not private remembrance. It is in this sense that there exists a *social memory* (Coser 1992).

Halbwachs (1926 [1950]) further maintained that social memory can be divided into two major types: (1) autobiographical memories, which are narratives of identity based on individual experiences; and (2) historical memories, which are experiences

stored in institutions, objects, places and written accounts. Oral tradition is stressed as central for re-producing collective memory and meaning (e.g., Halbwachs 1926 [1950]; Stein 1995; Olick and Robbins 1998; Wertsch 2002; Misztal 2003; Tidball et al. 2010). The fact that memories are often organized around landscapes suggests they are strongly connected to physical places and intimately linked to sensory perceptions (Misztal 2003), which is why experiences may modify social memory in relation to a constantly changing environment (Gunn 1994; Scott 1998). Spatial morphology, ruins, landscapes, monuments, and architecture provide social cues for interpersonal relations and for relations to non-humans (Hollis 2002; Murdoch 2006). Through habits, past experiences may be passed on, often tacitly, in embodied, non-textual and non-cognitive ways (Misztal 2003). This phenomenon is sometimes referred to as *habit memory*, and it is reflected in bodily postures, activities, techniques and gestures, and through practice it brings the past into the present (Nazarea 1998; Crumley 2000).

The social memory of communities, then, constitutes the variety of forms through which behaviors of people are shaped by collective remembrances of the past, and functions as collectively shared mental maps for dealing with a complex world (Olick and Robbins 1998; Crumley 2002; Misztal 2003; Rothstein 2005; North 2005). Many scholars argue that memories are not strict factual representations of events, but rather constitute interpretations used in narrative constructions, tightly connected to emotions (Misztal 2003). Memories of everyday experience are therefore frequently distorted. However, traumatic (or ‘light bulb’) memories such as of environmental crises are more likely to be accurate (Schacter 1995; Misztal 2003). Generally, the ingredients of social memory are neither a purely social construction nor historical facts established once and for all, but rather exist along the continuum between those polarities (Rothstein 2005).

Our use of the term *social-ecological* memory connotes the fact that our focus here is exclusively on remembrance processes of communities involved in ecosystem management. Drawing on Barthel et al. (2010), we use allotment gardens in the Stockholm urban landscape as a case study to focus our attention on the means by which knowledge, experience and practice about how to manage a local garden ecosystem are retained in a community, and modified, revived and transmitted through time.

## Remembering in Allotment Gardens

Barthel (2008) found that social groups involved in allotment gardening in Stockholm can be characterized as *communities of practice* (Wenger 1998; Krasny and Tidball 2009), as they hold characteristics such as mutual engagement, mutual enterprise and shared repertoire, including routines, words, tools and stories by which members interact and socially construct shared understanding about the world (Lawrence 2009; Barthel et al. 2010). According to Wenger (1998), and empirically observed

**Table 11.1** Social-ecological memory in allotment gardens of Stockholm

Repositories of knowledge and practices	Examples
Habits/rituals	Imitation of practices, communal spring/fall cleaning and exchange of seeds
Oral tradition	Narratives, teachings, phrases and proverbs
Rules-in-use (institutions)	Protection of various organisms, property rights and proportion of space used for food production
Physical forms/artifacts	Meeting protocols, booklets, photographs, and the physical gardens
External sources of support	Media and written accord, regulations, social networks

Modified from Barthel (2008) and Barthel et al. (2010)

in Stockholm, social practice evolves in garden communities through the interplay of *participation* (a process of taking part or sharing with others) and *reification* (making an abstraction into an enduring object). Such a dual process involves continuous social learning (Armitage et al. 2008; McKenna et al. 2008; Krasny and Tidball 2009) and also creates objects, artifacts and metaphors which tend to outlive the repertoires of practices that first shaped them. These then come to form part of shared memories of the community (Wenger 1998; Misztal 2003).

Results from studies in Stockholm show that participation transmits and modifies ecological practices and knowledge related to allotment gardening, and that the most important repositories are oral tradition and collective rituals/habits, as well as the reification processes as an outcome of those (Table 11.1). Habits include exchange of seeds and recipes, as well as mimicking of bodily postures and practices. Elderly respondents stated that such mimicking started during their childhood years, as they grew up or spent summers in the Swedish countryside (Barthel 2008). Important rituals are the compulsory spring and fall planting and harvesting events, which are repeated every year, as well as every day coffee breaks and ongoing board meetings. An example is democratically elected boards of allotment gardens, which hold ongoing meetings where they negotiate the governance of the association, such as how to handle rule breakers and how to share the water resources. These meetings are always documented (Barthel et al. 2010). We found that oral traditions include teachings by elected mentors, every day exchange of experiences, and ordinary gossip, which continuously result in a shared jargon, metaphors and proverbs. Newcomers of all ages, mostly Swedes but also people from different ethnic backgrounds, tap into the garden practices primarily through taking part in such rituals (Barthel 2008; Barthel et al. 2010).

Even if not framed as participation, these findings are in line with the literature on rural community-based conservation, which has focused primarily on the roles of oral traditions, beliefs, ceremonies and ritual practices in transferring sound ecological management practices (Hanna et al. 1996; Berkes and Folke 1998; Berkes 1999; Berkes and Turner 2006; Pilgrim et al. 2007). Our findings complement this research by showing that participation involves not only interactions

between people, but also between people, soils, plants, animals and other physical objects in their gardens, and that it always involves reification processes (Barthel et al. 2010). Such interactions with living ecosystems are constantly modified, since allotment gardeners daily adjust to multiple subtly differing situations. They also incorporate, by monitoring, often in a tacit fashion, ecological feedbacks, i.e., many small, almost imperceptible variations that a constantly changing context creates (ibid). As a result their practices must be revived and reinvented, even as they remain 'the same practices'. Participation hence generates lived experience of the local ecosystem, and creates things (or at least perceived as things) which persist, including physical objects as well as artifacts and rules-in-use. These are the reification processes described by Wenger (1998), and in allotment gardens such processes result in booklets, photos, proverbs, metaphors, and self-organized rules as well as the physical gardens themselves.

The spatial morphology of allotment gardens, consisting of small chalets, hedges, nesting-boxes, vegetable plots, fruit trees, flowers, and other elements, are outcomes of reification processes, and central for guiding ecological practices and for storing experiences (Barthel et al. 2010). For instance, the open character of the allotment gardens, with low hedges or fences, enables gardeners to engage in spontaneous daily conversations and mimicking of management practices, but it also constrains them from gardening on the wrong side of the border. Chalets enable gardeners to garden on rainy days. Fruit trees, raspberry hedges and flowers inherited from relatives all demand special treatment and they all function as support for recalling experiences of past garden practices.

Also self-organized institutions (rules-in-use, Ostrom 1990) in allotment gardens are a result of reification that constrain, enable and construct further participation. Examples of rules-in-use are norms that urge gardeners to use at least one-third of the space for food production and also protective norms related to wild bees and small birds (Andersson et al. 2007). For instance, empirical research on 534 individual garden-plots in four allotment areas showed that gardeners chose some flowers with their only intent being to feed pollinators, and many gardeners improved nesting opportunities for wild bees (ibid). Once in place these flowers and nests steer future garden practices that improve the habitat quality of wild bees, which in turn benefits the gardeners since pollination underlies the generative capacity of the garden ecosystem to produce flowers, fruits and many vegetables. Hence the positive feedback sign for the gardeners is increased abundance of pollinating bees, which gives gardeners a sense of a healthy garden. Continued participation reproduces these rules-in-use via habits, rituals and oral tradition, and habitat improving practices are hence carried forward in the community in interplay with the local ecosystem (see Mahoney 2000; Barthel et al. 2010). Interestingly, such social-ecological memory supports not only the allotment communities, but also the ecosystem service of pollination over large areas of the urban landscape (Osborne et al. 2001; Greenleaf et al. 2007).

Part of the ecological knowledge carried in social-ecological memory seems to be tacit knowledge expressed in habits and behavior to fit the particular environmental situations of the gardeners. Examples are the protection of, and the habitat improvement for, insectivorous birds, which are common in allotment gardens.



These practices increase abundance of many bird species and support the ecosystem service of pest regulation (Franz 1961; Mols and Visser 2002; Ellis et al. 2005). In so called habit memory (Miształ 2003; Nazarea 2006), these management practices are tacitly carried forward in time, supporting small birds that regulate disturbances acting on longer time scales than those perceived by most gardeners, which are a couple of decades at the most (Andersson et al. 2007). These aspects of social-ecological memory are ecologically important particularly during times of disturbance events, such as pest outbreaks. It seems as if allotment gardeners engage in reducing risk and preparing for up-coming disturbances even though such risk lies in the subconscious, beyond the cognitive and what gardeners rationally can discuss. However, rational or not, such memory contributes to resilience building.

Although social-ecological memory may be rather inert as described above, it is simultaneously constantly metamorphosed (Nazarea 2006), not only because we forget and remember partially, but also because our forms of participation and perspectives change, and we experience life in new ways. Also, fast-acting external carriers of information (e.g., media and scientific knowledge), continuously modify local ecological practices and knowledge.

Social-ecological memory of urban gardening also is embedded in a wider social context (e.g., internet, books, garden markets and legal frameworks) that may support or erode it. The citywide allotment union, garden magazines and enabling regulations are examples of external memory support (Table 11.1). For instance, property rights regulations determined by the city are important. In contrast to the situation for many community gardens in the United States where leaseholds are often on a 1 year basis, leaseholds of allotment gardens in Stockholm are usually written on long-term basis; up to 25 years is common. These long-term leaseholds may better enable allotment gardeners to freely self-organize, and to invest in physical structures and in perennials, such as fruit trees, but they also better enable people to dwell long enough to more fully experience and capture the complex and site specific processes that underlie garden production (Barthel et al. 2010).

Based on the findings, we propose that social-ecological memory is an evolving feature of the urban garden communities that is both emergent and persistent – a source of resilience in times of crisis. Reification and participation function as distinct but interrelated modes, as a dual process, which with time generates a ‘shared living memory’ that retains and creates ecological practices, experiences and knowledge. Such social-ecological memory allows gardeners to proceed without needing to know everything, and it helps newcomers to join the community by linking into retained practices, reviving and reinventing them (Barthel 2008; Barthel et al. 2010).

## Conclusion

Metaphorically, one may view social-ecological memory as a knowledge repository akin to a library, involving physical infrastructures, social interactions, and well-prescribed protocols structuring the storage and future use of information. Ecological

knowledge and gardening practices reflect the construction and organization of this library by previous generations as new information is continuously added. Social-ecological memories are critical components of social-ecological systems, providing potential sources of resilience to cope with abrupt and often surprising change (Folke et al. 2003).

A sustainable flow of desirable ecosystem services depends on the resilience of social-ecological systems (Berkes et al. 2003). According to Carpenter et al. (2001), management needs to address slow changing processes, for instance nutrient content in soil or water, because those are of significance in relation to thresholds. In this context, social-ecological memory as a carrier of practices, experiences and knowledge becomes important, since memory also is a slowly evolving, cumulative feature of social-ecological systems and it has potential to carry experiences from the distant past that can be revived and recombined into novelty (Folke et al. 2003). Combining the notion that acquisition of new practices typically follows resource crises such as might be encountered in the red zones that are the subject of this volume, with what is known about the dynamic learning of communities of practice (Berkes and Turner 2006; Wenger 1998), it is reasonable to hypothesize that traces of experiences of crisis events are retained in social-ecological memory of many allotment gardeners, perhaps tacitly reflected in the norm of using a portion of the garden space for food production.

Ornamental flowers are dominating the visual appearance in allotment gardens nowadays; however empirical studies show that practices of food production are present even though few individuals actually experienced the earlier described periods of food shortage. Rules-in-use and habits urge gardeners to use about one-third of space in their garden plot for crop production, which reflects experiences of when these urban gardens were important for sustenance, such as during WW I and WW II (Barthel 2008). The social-ecological memory steers gardening practices towards producing fertile black soils, edible plants, and habitat improvement for pollinators and insectivorous birds, and thus indirect ecosystem services that regulate the performance of crop production, such as pollination and pest regulation (Barthel et al. 2010).

Interestingly, as noted above, gardeners are not necessarily cognizant of the ecological significance of some of the practices resulting from their shared social-ecological memory. The younger generation of gardeners has never experienced starvation, and most are not economically dependent on their produce. Still, practical knowledge of food production is present in those gardens, inscribed in rituals, rules, practices and artifacts, and can be mobilized and transmitted to the broader urban population in times of food shortage. Those with no gardening knowledge can link to such communities of practice and produce food without much previous experience, just as occurred in London's parks and abandoned lots during WW I and WW II.

The European experience during the world wars illustrates the importance of urban gardens and the social-ecological memory stored therein for maintaining resilience in urban systems. A more recent example described from Havana by Altieri et al. (1999) is also telling. After the fall of the USSR in 1989, the Cuban economy

collapsed. Imports (including food) fell 75 % and there was a 50 % reduction in fertilizer availability. This caused a catastrophic food shortage, particularly among urbanites. The Cuban government responded by relaxing rules regulating the sale of excess produce, initiating an urban gardening boom. Ten years later, Havana had 400 horticulture clubs producing 8,500 tons of vegetables, 7.5 million eggs and 3,650 tons of meat via organic gardening, and urban gardens became a key element of Cuban national food strategy (Altieri et al. 1999).

However, current urbanization processes constantly erode the proportion of green space due to new construction (Barthel et al. 2005), and hence the potential of expanding allotment gardens over a larger proportion of the landscape in times of crisis diminishes. Crises, like disease outbreaks, trade disruptions, political conflict or wars cut connections. Scholars and policy makers should therefore counteract the illusion that distance has lost its significance for food security and start integrating local gardens when planning for urban resilience (Barthel et al. 2013).

Resilience planning for metropolitan landscapes is about engaging in insurance strategies that maintain as many future options as possible (Folke et al. 2003). Food security is no exception. Urban populations are vulnerable to food shortages due to limited green space and the ease with which they can be cut off from trade networks of food (Steel 2009). Urban gardens and the social-ecological memory that they retain should become explicit elements of planning for post-disaster scenarios in urban areas. These gardens serve as ‘pockets’ that retain social-ecological memories in urban landscapes, generate ecosystem services, and counteract ecological illiteracy (Kaplan et al. 1998; McDaniel and Alley 2005). Without these gardens there arises the risk of a social ‘forgetting’ in metropolitan landscapes, and the disappearance of the knowledge, practices and experiences that these gardens store.

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