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**Factors affecting the pattern of use of Community Forests –
A case study of three forests in Israel**

by

Aliza Fleischer, Moshe Shaler and Cecil C. Konijnendijk

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P.O. Box 12, Rehovot 76100, Israel

ת.ד. 12, רחובות 76100

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Abstract

With rapid urbanisation in many countries, the need for urban woodland as recreation environments and for other purposes is growing. Due to lack of resources it is important to identify the factors leading to successful urban woodland, i.e. woodland that meets the demands and preferences of local communities. Previous studies have identified such success factors as being, among other, knowledge about the composition of the local community, involvement of that local community, proximity and accessibility, and development of recreational facilities that meet actual demands. Based on a survey of the three Israeli municipalities and their community forests, it was found that a variety of factors jointly determine the success of urban woodland. In community forest accessibility was found to be the impediment for a high visitation rate, while in the second it was the low level of maintenance and development. Only one of the three woodlands studied is acting as true community forest and thus can be used a model for other urban woodlands. Planners and policy makers have to look at the full spectrum of factors in order to develop urban woodlands that are highly appreciated and frequently used by local urban communities.

Keywords: accessibility; community forestry; community involvement; urban woodland

* Corresponding author: Aliza Fleischer, Department of Agricultural Economics and Management, The Hebrew University of Jerusalem, Rehovot, Israel, e-mail: fleische@agri.huji.ac.il.

Moshe Shaler, Community Forestry Department, The Keren Kayemeth Le'Israel (KKL), Israel.

Cecil C. Konijnendijk, woodSCAPE consult, Dragoer, Denmark.

Introduction

Background

During the past decades, in a time of growing urbanisation across the globe, increasing attention has been given to the importance of urban and peri-urban green spaces for the quality of urban life and environment. Various concepts and approaches have been developed to describe and enhance the many functions and values of green spaces in urban societies. The term ‘urban forestry’, for example, has come into wider use to refer to the planning and management of all tree-dominated green resources, both publicly and privately owned, in and near an urban area (e.g., Johnston, 1996; Miller, 1997; Randrup et al., 2005; Konijnendijk et al., 2006). Just like trees along streets and in parks and gardens, urban woodland is one element of this wider ‘urban forest’. Urban woodland plays a very important role within the overall urban green space resource due to its particular characteristics (Konijnendijk, 2008). It represents nature close to where people live and offers recreational settings where people can get away from the hustle and bustle of urban life. Moreover, urban woodland provides an important educational environment, e.g. for children to learn about nature and natural processes.

In order for urban woodland to meet the demands of urban society, it is important that local users are involved when these woodlands are planned, designed, established and managed (Van Herzele et al., 2005; Janse and Konijnendijk, 2007). This is reflected in the increasing use of the term ‘community forests’ in urban settings – traditionally community forestry has related to forest management for and involving local rural communities (Raintree, 1991; Brender and Carey, 1998; Konijnendijk, 2003). Community forestry in an urban context is very much about shaping urban woodland according to the (changing) preferences and needs of local urban societies – and often together with these local dwellers (e.g. Davies and Vaughan, 1998). This approach would imply that urban woodland is managed and takes

shape according to the particularities of local urban society, as for example reflected in local urban woodland use. Thus together with factors such as woodland size and the presence of alternative nearby green spaces, local communities determine how a particular urban woodland looks, for example in terms of structure. Forest management thus reflects – or should reflect – the local community and its use of the woodland. Better understanding of the interrelations between the local urban community, woodland use, woodland management and woodland structure is important for improving woodland management and the use of the woodland.

Although the individual topics of urban woodland (recreational) use and urban woodland management have been covered rather extensively in the literature (e.g., Konijnendijk et al., 2005 for an overview), the linking of the two has been less common. Moreover, the topic of local community characteristics and its impacts on woodland use and management has been considered much less frequently. These interrelated topics are studied in this article for the specific context of urban woodlands in Israel, a highly urbanized country where increasing attention is given to developing urban woodland according to the community forestry concept, i.e. in a partnership between cities, foresters, and local residents. Three case studies of ‘community forests’ are analysed and it is shown that the pattern of use depend on the full context of the woodland, including the characteristics of the local community woodland. Moreover, the local community and its use shape the local urban woodland, in terms of (preferred) structure, characteristics, facilities and so forth. This knowledge can be used to improve woodland management.

Urban woodland and recreational use

Urban woodland, defined here as non-built land on which trees are the dominant vegetation, provides a wide range of benefits. They offer attractive settings for outdoor

recreation, both for daily (short-term) and longer-term use (e.g., Hörnsten, 2000; Tyrväinen et al., 2005; Arnberger, 2006). By encouraging people to be physically active in restorative environments and by helping create better quality of urban environment, green areas can help improve physical and mental health as well (e.g., Grahn and Stigsdotter, 2003; Nilsson et al., 2007). Social and aesthetic benefits of green space also include providing more attractive living environments, offering opportunities for social and intercultural contact, and educational values in terms of keeping urban residents in touch with nature (German-Chiari and Seeland, 2004; Konijnendijk, 2008). Recreational use is without any doubt the prioritised use of most urban woodland. Although in cities and towns, parks typically have the highest frequency of recreational visitation, urban woodland is also very popular. A study of urban woodland in Europe showed that forests situated in or bordering cities typically attract 2000 or more visits per hectare per year, which is much higher than the visitation rate for ‘regular’ forest (Konijnendijk, 2003). The popularity of urban woodland also emerges from the study by Bürg et al. (1999) for Vienna. In the period 1993-1997, telephone surveys indicated that between 66 and 80% of the Viennese population visited the nearby Wienerwald forest area. No less than 28% of the Viennese visited the Wienerwald every day. A national survey of recreational use of forests, nature and other open areas in Denmark showed that forests and green areas in the Greater Copenhagen area have some of the highest visitation numbers. ‘Top scorer’ is Jægersborg Dyrehave & Hegn, a woodland park which attracts close to 7.5 million visits per year, an average of 4,460 visits per hectare per year. On average, forest and nature areas in Greater Copenhagen accommodate close to 1,500 visits per hectare per year (Jensen, 2003).

Proximity as the key to intensive use

Proximity to local residents is a key factor in determining the use of green space in general and urban woodland in particular. Walking time has clearly been identified as the single most important precondition for use of urban green space, including urban woodland. This also means that the majority of the users of a certain urban woodland come from the nearby residential area(s) (e.g., Hörnsten, 2000; Van Herzele and Wiedemann 2003; Arnberger, 2006), thus suggesting that the characteristics and preferences of the nearby local community or communities are very important. Studies of urban woodland use in the British town of Redditch showed that over 70% of the users had less than a five minutes' walk to the woodland which they used (Coles and Bussey, 2000). In some cases, however, urban woodland areas are so popular (or perhaps so unique or in lack of 'competition') that even some more distance does not hamper their use, as the case of the Wienerwald shows. Fifty-nine percent of the users come by car and 47% by public transport (Bürg et al. 1999). Of course this implies that accessibility, for example in terms of car parks and public transport, is good and, very importantly, that people have the financial means to travel to the woodland. Proximity and accessibility are especially crucial for low income groups, who often lack alternatives for nearby outdoor recreational areas. In Marseilles, France, low income groups and retired people especially use the inner-city public green, while most of the population takes to the surrounding hills, other more natural areas and local beaches for their recreation (Werquin, 2004). Other special needs groups should also be considered in this respect. These include, among other, children, the elderly, handicapped people young mothers, and so forth (e.g. Van Herzele and Wiedemann, 2003).

Local communities and differing recreational uses

In general, walking is the most popular activity in (European) urban woodland (e.g., Bürg et al., 1999; Elsasser, 1994; Jensen, 2003). Other typical uses of (European) urban

woodland are relaxing and being in/observing nature. Although these common uses exist, knowledge about the composition, characteristics and preferences of the nearby local community is important for analyzing and even predicting urban woodland use. High shares of elderly, young people, people with lower incomes, people with different ethnic backgrounds, and so forth, all lead to particular ways of using the nearby woodland. A growing body of literature has looked into the perceptions and preferences of different groups as regards nature, forest and green space (see Coles and Bussey, 2000; Tyrväinen and Mäkinen, 2004; Tyrväinen et al. 2005 for examples). Different people associate woodland with different feelings, possibilities for activities, and so forth. In Vienna, researchers identified several ‘user profiles’ according to typical activities and behaviour. Visitor types included, for example, the active and mobile (23% of visitors), the nature watcher (21%), the social (16%) and the sporty and relaxed (10%) (Bürg et al., 1999). Children of different ages are an example of how different people have their own ways of using green space and nature. A national study in Denmark indicated that 49% of the Danish children between 10 and 14 years old use nature (in general) for playing, while 37% respectively 34% (also) mention walking and cycling as main uses (Danmarks Naturfredningsforening, 2004). Ethnic minorities comprise yet another particular group of users of urban woodland (see e.g. Burgess, 1995; Jókövi, 2000; Konijnendijk, 2008).

Recreational use of urban woodland is continuously changing, along with changes in society at large and local communities in particular, such as shifts in age composition, income, lifestyles, ethnic composition, and so forth. For example, today many people expect to participate in outdoor leisure activities of their choice, at times and locations convenient to their own lifestyle, as a result of developments towards more individualistic and less organized recreation and leisure behaviour (Pröbstl, 2004).

Impacts of local community recreation on urban woodlands and their management

Recreational use of urban woodland is thus highly diverse, depending on many factors, including the types of users. In line with this, studies have shown that different urban woodlands and other green spaces fulfil different roles depending on, for example, their size and location, as well as the characteristics of the people living nearby. Van Herzele and Wiedemann (2003) developed hierarchical categories of urban green space for Flanders, Belgium, ranging from residential green space (smaller areas within 150 meters from the local residence) to 'city forests' (woodland areas of at least 200 ha in size, situated within 5 km of the residence). Similar hierarchical divisions have been made in cities like Stockholm (Ståhle, 2004). A Danish survey of use of three Copenhagen parks of different size and location showed that, although all (wooded) parks cater for local residents, they all also had their particular role as well, with some serving the population of the entire city (Københavns Kommune, 2005). Urban woodland and other green space can often be characterized depending on the frequency, length and type of main recreational use. In Barcelona, for example, a distinction was made between daily, regular and occasional green space users, each with their own specific demands (Priestley et al., 2004).

That the preferences of different users can help shape urban woodland, for example by influencing design and management, is suggested by some studies. Woodland visitors in Redditch, UK, for example, expressed a clear preference for mixed woodlands over for example coniferous woodlands; the minimum size of a 'real' woodland was identified to be 2 ha (Coles and Bussey, 2000). Gundersen and Frivold (2008) analysed studies on forest preferences in three Nordic countries. They found, for example, that studies suggest that people's preferences for a forest stand increase with increasing tree size and advanced stage of stand development. User preferences can also affect woodland outlook in terms of recreational facilities. Although users of the Wienerwald generally showed themselves rather

satisfied with recreational facilities, they felt that signage, nature educational trails and toilet facilities were not sufficiently present (Bürg et al., 1999).

Materials and method

Case description

Interrelations between local community, their recreational use of woodland, woodland management, and woodland structure have been studied in Israel. In 2005, Israel had a population density of 305 people per km² (countrywide) and of 1930 inhabitants/km² in the centre of the country. More than 91% of the population resided in urban settlements (Central Bureau of Statistics, State of Israel, 2006). Israel has a highly diverse population. Its cultural diversity is reflected in its seven million people from many origins (Europe, America, Africa and Asia) and religions (76% Jewish, 20% Muslim and 4% Christians and other religious affiliations). Immigration contributes significantly to the already high population growth rate. In the 1990s, for example, more than one million people immigrated to Israel from the former Soviet Union and Ethiopia. Rapid population growth has led to ongoing development of existing and new communities, roads and infrastructure. This has created tremendous pressure on green open spaces, including forest areas. Threats to forests and forest fragmentation are particularly severe near urbanized areas. On the other hand, more urban woodland and other green space is needed to meet the recreational and other demands of the urban population.

Most forests in Israel are managed by Keren Kayemeth Le'Israel (KKL), an NGO that plays the de-facto role of Israeli 'forest service'. The country presently has a forest cover of 6%, comprising planted forests (92,000 hectares, or 220 million trees) and tended native woodland (50,000 ha). In order to meet the changing demands in a highly urbanised society, about six or seven years ago, KKL embarked on a special programme to improve the development and management of forest areas near cities and towns. Together with cities and

local communities, KKL is developing so-called 'community forests' that should meet the demands of local urban society, as well as can withstand the continuous pressure of urbanisation. Ideally, the community forests comprise a partnership between KKL, local authorities and the local community (Fig. 1).

As a rule, community forests in Israel are small and under intense development pressure. Some of today's community forests were originally planted as conventional forests. However, the establishment of new communities and growth of existing ones have created a situation of 'bringing the city into the woods', with urbanization encroaching on the forests and reducing their area. In some cases the forests become a rather unpleasant 'backyard' of the community. Israel's complex human-cultural composition expresses itself even at the single community level. The community forest is bordered by diverse neighbourhoods which might differ significantly in their attitude to the forest and the way they make use of it. The challenge for KKL and other actors now face is to transform these forests into a green window of opportunity for improving the environment and quality of life for the surrounding communities.

Description of the three community forests

Three woodland areas incorporated in the Israeli community forestry program were selected as case studies, namely the forests of Shoam, Rosh-Haayin and Migdal Haemek. The forests and their adjacent towns differ in their attributes.

The city of Shoam is a relatively new town, founded in 1993. It reached 18,000 residents in 2005. Almost half of the population is under the age of 18. The town is characterised by homogeneous and socio-economically strong population. The Shoam forest extends over 200 ha, being situated east of the city. A major highway separates the city from the forest a fact that does not facilitate the accessibility of the forest to the residents. It takes

them about ten minutes by car to reach the forest (Fig. 2). KKL began planting the forest in 1987. The forest consists of different species of trees, coniferous, fruit and other broadleaved trees. The area between them is dotted with wild flowers and rich with archaeological ruins. Since 2003 the forest is well cared for and was planned and developed in a joint venture with the local community. The organised activities in the forest are based on a model and principles of organisational and planning collaboration between KKL, the local council and representatives of the community. KKL initiates activities amongst the citizens of the town and some of the residents volunteer to act as guides in the forest. In spite of the planning and organization efforts there is still not enough transfer of information about the forest to the local residents.

The Rosh-Haayin Forest extends over 100 ha adjacent to the north of the city of Rosh-Haayin . The city is the largest town of the three studied with 38,000 residents. It comprises two sub groups: a socio-economically strong population that lives in new neighbourhoods close to the forest, and a weak, low income and older population that lives in the old part of the town relatively far from the forest. KKL began planting the Rosh-Haayin forest in the late 1970s. It consists of a combination of mature tree groves alongside new plantings of native forest and woodland trees. There are some archaeological sites, including the biblical town of Even HaEzer, wildflowers and scenic lookouts. One of the tributaries of the Yarqon River runs the length of the forest. The accessibility of the forest to the residents of Rosh-Haayin is very good. People can reach it by foot or by bicycles within a few minutes. The northern neighbourhoods have a better access due to their proximity to the forest. Since 2002 the forest has been well cared for (Fig. 3). It was planned and developed in a joint venture with the local community. Similar to Shoam the organised activities in the forest are based on a model and principles of organisational and planning collaboration between KKL, the local council and representatives of the community. KKL initiates activities amongst the citizens of the town, it

publishes extensively these activities and some of the residents volunteer to act as guides in the forest.

Of the three forests, the Migdal Haemek forest is the least developed forest for public use (Fig. 4). The city of Migdal Haemek has 25,000 residents. It is characterised by a demographically heterogeneous and socio-economically weak population. About 35 percent of its residents are new immigrants who arrived during the 1990s. Half of Migdal Haemek's population is religious – a large portion of which are Ultra Orthodox. This means that they cannot drive to the forest during holidays and Saturdays due to religious restrictions regarding driving during the Sabbath. The forest extends over 450 ha, surrounding the town of Migdal Haemek as a continuous belt. KKL began planting the forest in 1933. It consists of pine trees dotted with wild flowers and archaeological ruins in between them. The forest is easily accessible to most of the population in the city and it can be reached by foot or bicycles. At the time of the study, the recreational infrastructure and facilities were not well developed, organised activities were not taking place, the local population was not involved in forest management, nor were there any publications concerning the forest.

Methodology

A telephone survey was conducted during January 2006 amongst a representative sample of households in the three communities. All the households in each town were represented in the sample and it includes visitors and non-visitors. The aim was to interview a sample of 300 residents from each town in order to have sufficient data for our analysis. However, since some of the questionnaires were not completely filled out, the result was a sample size of close to 300 from each town (293 in Shoam, 296 in Rosh-Haayin and 322 in Migdal Haemek). A representative adult in the household answered the questions and they described the visiting behaviour of the whole household. The respondents were firstly asked if

they had visited the forest in the 12 months preceding the survey. Those who did not visit were asked to list the reasons why and under what condition they would visit the forest in the future. Those that had visited the forest were asked about their visits, activities during the visits and their level of satisfaction from the visit. Both groups were given statements about the impact of the forests on their well being and they were asked to grade their level of agreement with the statements. Finally each respondent answered questions regarding their socio-economic and demographic situation.

Results and discussion

In Table 1 one can see that the three community forests are used differently by the residents of the adjacent towns. Rosh-Haayin forest was visited by 54 percent of the households in the year preceding the survey. Each household that visited the forest visited it on the average 9.6 times with standard deviation of 17.2. Number of visits ranged from 1 to 100. In Shoam the visitation rate was found to be lower; only 42 percent of the households visited the forests, with a similar average as in Rosh-Haayin of 9.4 visits per visiting household. However, the standard deviation is 25.9, much larger than in Rosh-Haayin. This less equal distribution of the number of visits between the households is reflected in the range of visits. In Shoam the number of visits ranged between 1 and 250. In Migdal Haemek the pattern of visitation in the forest was found to be completely different. Only 26 percent of the households had visited the forest during the year preceding the survey. Those who visited did it very intensively and reported an average of 17.9 visits a year, i.e., almost 1.5 times a month. If we average the number of visits over all the population, taking into account non-visiting households (households that did not visit received the value of zero for the number of visits), than Rosh- Haayin has the largest value, followed by Migdal Haemek, while Shoam has the lowest visitation rate.

It should be noted that the Rosh- Haayin forest is highly developed for visitors and is managed closely together with the population. Based on Van Herzele et al. (2005) and Janse and Konijnendijk (2007), we can see that this management practice does yield a high participation rate of the local population and contributed to urban woodland success.

By multiplying the average number of visits per household by number of households in each town we were able to receive an estimate of the number of visits of the town residents in the adjacent forests. The forest of Rosh-Haayin seems to serve the citizens of the Rosh-Haayin town more than the other two forests. It has the largest average number of visits and the largest population, resulting in an estimated 53,550 visits a year. In second place is Migdal Haemek with 36,190 visits and far below due to the small population size and low number of visits per households is Shoam with 16,380 visits.

The main reasons for not visiting differ considerably between the three forests and thus convey important information about the different use patterns (see Table 2). Shoam residents claim that the main reason for not visiting is lack of information. They stated that they are not aware of the existence of the forest and thus do not visit it. Migdal Haemek residents are aware of the existence of the forest but still refrain from visiting the forest due to lack of 'pull effects'. Thirty-five percent note that there is nothing to do there, 17 percent claim the forest is neglected while 8 percent feel uncomfortable to visits there. The total picture is of an uninviting forest for public use. In Rosh-Haayin the main reason for not visiting is lack of time which can be looked at as a lack of 'push effect'. Those who do not visit the forest apparently prefer to do other things. The forest management or the information about it are not the reasons behind the non-visiting behaviour.

The visitors in all the forests seem to prefer slightly more the spring and summer seasons over the fall and the winter. No significant differences were found between the forests. However, there are some differences in the days of the week preferred by the visitors.

The visitors of Shoam prefer mostly the weekend; 88 percent prefer to visit the forest during that time. In Rosh-Haayin, 77 percent of the forest visitors prefer the weekends, while in Migdal Haemek 69 prefer the weekends and the remaining 31 percent visit the forest during the weekdays. This is not surprising due to the fact that the visitors in Migdal Haemek forests visit it intensively, which means that they do it during the week and the weekends.

Visitor activities in the forests are depicted in Table 3. The most favoured activities are walking and picnicking. This result is not surprising, as walking was found to be the most popular activity in European urban woodlands, as described above. By analysing in depth the favoured activities of the heavy users (over 12 visits a year) it was found that in Shoam it is picnicking and in Rosh-Haayin walking. In Migdal Haemek the visitors prefer strongly to walk and walk their dog in the forest. This means that in Migdal Haemek, where the most frequent users reside, residents treat the forest as a neighbourhood urban park. Those who live close by walk there and take their dogs on a regular basis to the forest as they would do in a neighbourhood park.

This point is clarified even more when we look at the mean of transportation to the forest. In Shoam, 23 percent walk to the forest while the rest ride a car (71%) or bicycle (18%). In Rosh-Haayin, 52 percent walk to the forest and the rest come by car (56%) or bicycle (10%). In Migdal Haemek 57 percent of the visitors walk to the forest and the rest ride a car (45%) or bicycle (4%). The big difference in the means of transportation between Shoam and the other two forests is explained by the relative long distance of the forest from the town. This means that they use it a regional forest – they get into the car and drive to the forest. At the other end of the spectrum, the high percentage of visitors walking to the forest in Migdal Haemek strengthens the contention that the visitors use it as an urban park. Furthermore, the heavy users probably reside closest to the forest and thus can easily walk there.

Visitors received a statement “the forest provides me with ...” and they had three options, namely to choose between “open space for recreational activities”, “feeling of closeness to nature”, and “base for sports activities”. These three options were provided based on earlier experiences from Israel. From the distribution of the answers in Table 4 we can see that the most popular option in all three cities was “open space for recreational activities”. This finding strengthens previous studies that found that the main role of the urban woodland is to act as open green space for recreational activities. However, a larger percentage of Migdal Haemek visitors chose it in comparison to Shoam and Rosh- Haayin, whereas, a larger percentage of Shoam visitors chose the other two options. This result shows again that Migdal Haemek visitors tend to regard the forest as a local park for recreational activities while Shoam visitors see it as a regional park.

Visitors and non-visitors had to state their level of agreement with the statement “one of the main reasons to my content from living in the city is the forest”. Fifty-six percent of the visitors (33% of non-visitors) in Rosh-Haayin, 50 percent (38% non visitors) of the visitors in Migdal Haemek and 28 percent (21% non-visitors) in Shoam agreed with the statement. This once again shows the different importance given to urban woodland in different types of cities.

An attempt was made to characterise the visitors to the three forests by comparing the socio-economic and demographic attributes of visitors and non-visitors in each forest. In Migdal Haemek no significant difference was found between users and non-users, except level of income. The wealthier residents use the forest more than their low income counterparts. Those are also the ones that live in the ‘good’ neighbourhoods located close to the forest and view it as their own local park.

In Shoam it seems that the forest is used mainly by families with kids. As mentioned before, the population of Shoam is homogenous in term of income and education level, thus it is not surprising no significant difference exist between these attributes.

The most significant differences between users and non-users were found in the case of Rosh-Haayin. The typical forest user here is between the ages of 30 to 50, married with children living at home, with a high income and high education level

It seems that the forest in Rosh-Haayin serves the ‘strong’ part of the population of the city. In both Shoam and Rosh-Haayin it seems that the visitors use the park as a base for activities with the children. This result comes up repeatedly in different studies of national parks in Israel, as national parks are visited and used more by high income strong population than the low income weak population (Feinerman et al., 2004).

Conclusions

With ongoing urbanisation grows the need for urban woodland as a base for recreational activities. It is noted in the literature that there are several factors that determine ‘successful’ urban woodland. Amongst them are: involvement with the local community in planning and managing; proximity and accessibility - short walking distance yields high visitation rates; and recreation facilities – visitors prefer to have facilities such as toilets, trails and signage. It was also determined in various studies that different segments of the population have different use patterns. The three Israeli community forests studied in this paper differ in their level of development, location, population involvement and the attributes of the local community. Comparing their patterns of use sheds some light on the link between the different factors characterizing the forest to the utilization of the forest by the local community.

The Rosh-Haayin forest is the most developed forest, it is managed closely with the local population and it is located close to the better-off households in the town of Rosh-Haayin. All these factors position the forest as a 'true' community forest with a high visitation rate. The Shoam forest has all the characteristics of the Rosh-Haayin forest excluding the distance. The accessibility plays an important role and the need to use a car for travel – even for a short distance – can explain the low visitation rate in comparison to Rosh-Haayin forest. It seems that the local population treats the forest as a regional forest that is located close to them rather than as a community forest. The visitors of Migdal Haemek forest, unlike its two counterparts, treat it like an urban park. It is the least developed forest and although it is characterized by excellent accessibility to most of the population only a small number of residents use it very intensively. It is not managed by the local population or developed and thus is not appealing enough. We can conclude that the Rosh-Haayin forest can be used as a model for the other two forests. Improving accessibility in the Shoam forest will contribute to the level of visitation. In the case of Migdal Haemek there is a need for improvement in the forest's maintenance and facilities and for management practices that will involve the local population.

The information provided in this paper can present an important tool for forest managers and other local community officials in optimizing the use and development of community forests and other urban woodland. Although only three forests were studied and only a brief questionnaire was used, the study did show that it is a variety of factors that determine a 'successful' community forest. Although the data itself are not transferable, the method of data collection and its analysis can be adopted for different forests.

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Table 1. Distribution of the respondents in the three case study towns according to visiting and non-visiting behavior and population size

	Shoam	Rosh- Haayin	Migdal Haemek
Visited the forest (%)	42	54	26
Did not visit (%)	58	46	74
Total (%)	100	100	100
No. of respondents	293	296	322
Average number of visits to a visitor (standard deviation)	9.4 (25.9)	9.6 (17.2)	17.9 (31.8)
Average number of visits to a household (standard deviation)	3.9 (17.4)	5.1 (13.5)	4.7 (18.0)
Total number of visits of households	16,380	53,550	36,190
Number of household in the town	4,200	10,500	7,700
Number of residents in the town	18,000	38,000	28,500

Table 2. Distribution of reasons for not visiting the local forest for non-visitors (%)

Reasons	Shoam	Rosh- Haayin	Migdal Haemek
There is nothing to do	15	16	35
No time	30	38	21
The forest is neglected	0.6	2	17
I don't feel comfortable	0.6	2	8
I am handicapped	0.6	6	7
I don't know the forest exist	47	28	7
Other	8	17	30
No. of non-visitors	160	133	233

Note: Multiple responses allowed.

Table 3. Distribution of visitors in each forest according to type of activity (%)

Reasons	Shoam	Rosh- Haayin	Migdal Haemek
Walking	66	74	54
Picnic	43	50	27
Ride a bicycle or other recreational vehicle	23	17	17
Walk the dog	0	8	11
Family celebration	4	3	1
Car ride	5	0	0
Other	2	4	6
No. of visitors	123	159	85

Note: Multiple responses allowed.

Table 4. Distribution of visitors according to the answer to the statement: “The forest provides me with ...”

Reasons	Shoam	Rosh- Haayin	Migdal Haemek
Feeling of closeness to nature	66	65	60
Open space for recreational activities	69	72	78
Base for sports activities	35	33	30
No. of visitors	123	159	85

Note: Multiple responses allowed.



Fig. 1. A Model of Community Forestry management in Israel.



Fig. 2. A view of Shoam and the highway from Shoam Forest.



Fig. 3. Trail and signage in the well-developed Rosh-Haayin Forest.



Fig. 4. A view of an unkempt area in Migdal Haemek Forest