

The role of local ecological knowledge and land-use history in Finnish urban planning

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Introduction

The loss of green areas as a consequence of urbanisation prompts us to consider the importance of urban nature more carefully. Urban nature provides essential ecosystem services, which set grounds for considering biodiversity in urban planning. In addition to direct user services, such as recreational, psychological and environmental services^{1,2,3}, experiences from urban nature can provide wider educational and societal services^{4,5}. In order to preserve enough green areas and ecosystem services for urban dwellers, the importance of utilization of ecological information in the urban land-use planning process has been emphasised^{6,7}.

The contemporary legislation in Finland obliges planners and decision-makers to base land-use decisions on adequate ecological information, and also to consider views and knowledge of local stakeholders⁸. Local residents, nature enthusiasts and other user groups potentially have a long history living close to urban green areas, and they can provide useful information on the ecology of the area to planners in addition to landscape historical analysis and scientific ecological studies.

In this paper, we address the role of such *local ecological knowledge* in urban areas, and its potential utilization in urban planning process as *lay-expert knowledge*^{9,10}. Local ecological knowledge (hereafter also LEK) refers to ecology as a natural science, and can include a person's general nature knowledge and a more specific experiential knowledge of the local nature gained during the land-use history in the area. Local ecological knowledge can also be a blend of scientific and practical knowledge, and in our information society, where science is visible all around, it is difficult to distinguish between purely experiential knowledge and scientific knowledge¹¹. The urban residents, whether or not well educated, read popular scientific journals and newspapers, and watch a variety of nature programs on television to obtain information on urban nature and ecology. This has a great impact when residents are observing and valuing urban nature. *Local* refers to those urban people who live in or vicinity of the area of concern, or are in intense interaction with the area. Unlike ecological research information, LEK is not a result of a systematic scientific study, but its strength is in long time series of local observations¹¹.

The potential existence of LEK in the Finnish urban settings could be supported by the long tradition of Finns living close to nature in rural conditions, where the use of nature resources

for livelihood and recreation resulted in lay people acquiring a deep knowledge of nature¹². Although the rapid urbanisation after the Second World War period has changed this tradition, many Finns who reside in urban areas, still have a close relationship with nature and use green areas on a regular basis for recreational purposes^{2,13}. Furthermore, Finnish cities usually cover large areas with a low human population density, which enables the existence of large nature areas inside the city borders. Urban dwellers are thus not forced to travel far away to reach recreational areas.

Data and methods

We collected data by interviewing eleven land-use planning professionals (architects, landscape architects and engineers), three biologists, four representatives of local nature associations (three of them also working as biologists, one as a nature photographer) and three local resident activists. Selection of the interviewees was based on their expert or key-informant roles in the study area, and the interview questions addressed issues such as the meaning, importance and utilization of LEK. The study area was the Helsinki metropolitan area, Finland, where the majority of the 21 interviewees worked or lived. The Helsinki metropolitan area (with ca. 960 000 inhabitants) is the most densely populated urban area in Finland, but amongst built areas contains numerous parks, forests, lakes, rivers, seashores and inner bays, which are extremely important recreational resources for the residents. The semi-structured interviews¹⁴ were carried out during August 2002 - March 2004, and were analysed by using qualitative content analysis¹⁵.

Results

Importance of LEK. According to the interviewees, it is essential to consider local knowledge and opinions as part of information used in the planning process. Local ecological knowledge can be an important addition to scientific ecological information and may become increasingly valuable if there are little or no nature studies done in the area. For instance, population dynamics of certain species may vary from year to year, and local observations during longer time period may sometimes provide a better basis for decision-making. However, some places important to local users may not necessarily include specific conservational values, but may nevertheless be of high importance to them. Local nature objects may be important to local users primarily through the world of experience and only secondarily through the occurrence of species or biotopes. Such arguments from residents can be an important back-up for the planner who desires to develop the area in an ecological way. Furthermore, the existence and accumulation of LEK may enhance local residents taking root in their home area, and thus appreciating it more.

Obtaining LEK. The utilizers of LEK (planners, consultants and environmental officials) may obtain the knowledge in several ways. First, they can actively search for local residents and enthusiasts who are knowledgeable about the nature in the plan area. Second, residents and other stakeholders can on their own initiative contact planning officials by statements or through participatory process. According to the interviewed planners, persons who know a lot about local nature and who are at least somewhat familiar with scientific ecology are the best sources. More experienced planners may know several nature enthusiasts in the city, and through personal contacts and networks more such knowledgeable and collaborative persons can be found if needed. In addition to individual participants, the knowledge can be found

through local nature associations. For instance, if there are nature studies to be made in the district, the associations can help in informing local nature enthusiasts about the need of additional information. Quite often the nature associations write their own statements about the plan.

As several interviewees noted, there is a vast amount of LEK and ecological expertise about Finnish urban areas, including Helsinki metropolitan area, but in order to utilize that knowledge the knowledgeable persons have to be active in participating. One of the reasons for passiveness can be the challenge of presenting their knowledge and opinions publicly and in such language professionals and decision-makers use and understand. Additional challenges in obtaining LEK through participatory methods are the suitable timing of participation, informing stakeholders about the plan process, and appropriate methods of participation.

Utilizing LEK. Although there might be enough LEK available, utilizing the knowledge was regarded challenging by the interviewees. Planners receive a large variety of information and opinions from participants through public hearings, workshops, written statements or other ways of communication. It is challenging to analyse the information and opinions in order to utilize them in the plan, and from all the received information, it may be difficult to distinguish ecological knowledge. Received information regarding the local nature may vary from opinions, feelings and experiences to very knowledgeable species observations and well-justified perspectives on the development of urban green areas. All these can be useful for the planner, but regarding the information as ecological knowledge may require more than just opinions.

Planners prefer well-justified and reliable knowledge, but they must be able to determine how reliable the source of the knowledge is. The interviewed planners emphasised that local knowledge must be treated critically, because it may easily contain inaccuracies. In the case of species (or biotope) observations, planners principally trust them (they do not assume that the source is making a false statement), and these can be verified on location if necessary. The situation becomes more difficult if the observation is several years old, because circumstances may have changed. However, an old observation may indicate that the area is of potential importance for biodiversity. If the area's nature is erased or altered, the species loses the potential habitat. A study made by a consultant during short period of time faces this situation, too; observations from a longer time period may tell if certain species have lived there or not.

The issue of reliability and validity of the knowledge is related to its objectivity and subjectivity, and thus valuing the knowledge. According to the interviews, LEK is often subjective, which makes its utilization more challenging. Subjectiveness is clearly an issue associated with opinions and feelings. LEK can be very emotional because ordinary dwellers may not be able to argue clearly about their experiences and opinions. However, as the interviewed planners noted, emotional stances have their impact on planners, and a good planner tries to interpret what is on the background of these emotional bursts.

Furthermore, local dwellers and users may appreciate different elements of local nature in very different ways. For instance, to some dwellers certain trees can be close and familiar associated with a lot of memories, whereas others may see the same trees as "just shading". A planner, however, has to take both arguments into consideration as part of the planning process. The difference of views of the individual dwellers may thus cause a great nuisance to the planner who tries to utilize these controversial messages.

What kind of emphasis and value LEK has compared to scientific research information collected and produced by ecological experts such as biologists working as consultants? Ecological research information is usually considered objective, but sometimes its reliability and objectivity has to be scrutinised if studies are made in a rush within a relatively short period of time, or by inexperienced consultants. In these cases good local ecological knowledge can be more reliable than an ‘official study’.

Figure 1. summarises the main results in a conceptual flow chart, where the ways and challenges of obtaining LEK are listed on the left hand side, and the importance and challenges of utilizing LEK on the right hand side.

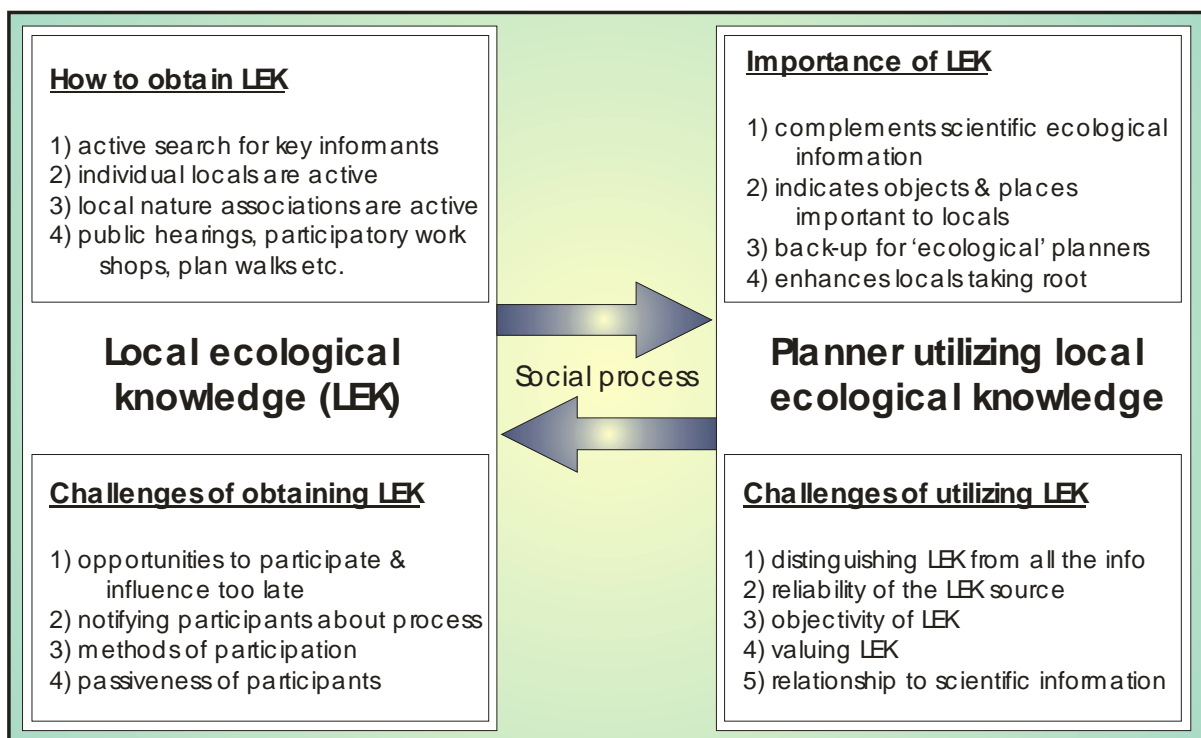


Figure 1. The main results in a conceptual flow chart. The feed-back arrow from right to left indicates that the perceived importance of LEK and challenging elements in utilising LEK also affect on obtaining LEK in the first place. This flow of knowledge can be seen as a social process.

Discussion and conclusions

The results of this study indicate that the elements of LEK could be categorised as follows:

1. Species and biotope observations (spatial and temporal variability)
2. Single nature entities and objects valuable to dwellers (as well as to nature enthusiasts) (e.g. forest patch, meadow, brook, tree)
3. Opinions, feelings and ‘emotional matters’, aesthetic values

The key issue in utilizing LEK seems to be how the end-users are able to separate ‘more objective elements’ (category 1) and ‘more subjective elements (categories 2 & 3) of the received LEK. Furthermore, it is challenging to say who has the right or the power to value which of the ‘objective observations’ are the most important, or if the ‘objective observations’ are more important than opinions, or which opinions are more important than other opinions. Today in Finland, species and certain biotopes are perhaps regarded more valuable or worth conservation than just beautiful or respected landscapes or nature objects. The reason for this may be that ‘observational’ information is easier to measure and legitimise than the more aesthetics-based and thus more subjective information of beautiful landscapes and other nature objects. But quite often these elements of LEK are tightly linked together. The words of the interviewed nature enthusiast well highlight the situation; “*Apparently the nature appreciation is a kind of ‘all-inclusive package’; includes both the species and the aesthetics they bring with*”.

Although the knowledge and opinions of local participants might be expressed in ‘common’ language with less sophisticated terms and arguments compared to planners or decision-makers, the critical and deeply complex issues fundamental to society-nature relationships and their transformation to planning decisions are also to be found in the words of locals^{16,5}. Thus, it would be necessary for planners in participatory process to understand and interpret the language of locals in appropriate way¹⁷. This might not be a simple task, especially when it comes to ecological issues, because of the complexity of ecological systems and their value-laden understanding both to planners and locals⁶. While the planners are experts who are assigned to lead the planning process, they have to be ready to consider people’s thoughts and knowledge, and through their own expertise in a way ‘filter’ this information for planning and decision-making purposes. Furthermore, it is challenging for them to cope with uneven distribution of knowledge and activity of different focus groups. As Davies¹⁶ noted, “*the big question is, how is it possible to consider the range of different views to make a just and equitable decision*”. In order to cope with these challenges and control both the ecological and social impacts of land-use change, there is a demand for social scientists to be involved in the planning process¹⁸.

Narratives of especially older residents can bring out useful knowledge of the importance of the area also in historical perspective and can guide land-use planners to consider ecological and cultural heritage of the area. The recent more participatory approach in planning also reflects the change in the green space planning policy taken place during last decade or so: knowledge and opinions from local residents are appreciated and at least the idea is to integrate them into the planning process through participative planning methods. As a part of planning information, LEK can guide the sustainable land-use planning and management of urban areas, and as such work as one dimension of linking ecological and human-social systems in land-use planning.

If LEK alongside scientific information is available, and the tools to obtain and utilize it exist, the core issue still is *how* the knowledge is finally utilized¹⁹. There has to be the will of decision-makers to maintain a certain amount of urban green areas with a certain ‘ecological quality level’ under the pressure of planning new residential areas for the growing urban population. This will is largely dependent on the prevailing set of values of urban residents, key professional actors, and perhaps most importantly, politicians.

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