

[Print](#)

Journal of Resources, Energy, and Development

Vol.7(2) September 2010

Print ISSN : 0975-7554

Online ISSN : 0975-7562

Forests, heritage green spaces, and neighbourhood parks: citizen's attitude and perception towards ecosystem services in Bengaluru

Savitha Swamy: Ashoka Trust for Research in Ecology and the Environment (ATREE), Bengaluru

Email savitha@atree.org

and Soubadra Devy

Abstract

Traditionally, conservation has been mainly addressed in relation to large pristine ecosystems such as forests that deliver a wide variety of ecosystem services. This perception of large green patches providing more services seems to be strongly entrenched in the minds of people. So much so, that even though cities comprise mainly of several small neighbourhood parks and a few large heritage parks, the large parks seem to attract the attention and support of naturalists, ecologists, and citizens. The large parks, undoubtedly, provide a wider range of services as compared to small ones. However, small parks also provide services that benefit the neighbourhood society, which cannot be undervalued. Apart from recreational services, our field surveys show that these small parks are important pockets for migratory birds and other local biodiversity. This study, through social surveys with park users across the city of Bengaluru, attempts to understand people's perception towards a gradient of green spaces—'forests, heritage parks, and neighbourhood parks'.

Introduction

Biodiversity and conservation, even today, are addressed mainly in the non-urban context. Two dominant strategies are conservation using flagship images, of charismatic animals (for example, tigers), and conservation of large pristine habitats. Though in the early 1970s and 1980s the concept of Single Large or Several Small (SLOSS) was highly debated, it seems to have left conservation biologists largely biased towards conservation of Single Large habitats. Large-area conservation also stems from requirements for large charismatic mammals. These approaches of large-area conservation have got carried over to the urban set up, and as a result, large parks always attract the attention of naturalists, ecologists, and citizen groups. Although, small neighbourhood parks provide various ecosystem services and are critical habitats for birds and butterflies, their value is often undermined because of the large area bias.

Cities depend on large hinterlands from where they draw a variety of services and flush their outputs (Bolund and Sven Hunhammar 1999). The large green spaces do function at a higher level when compared to the small neighbourhood parks, in terms of ecosystem processes, functions, and services such as supporting biodiversity, cultural services (recreation, enhancement of property value), regulating services (climate, hydrology), among others (Millennium Ecosystem Assessment 2005). However, it is only a small population in the neighbourhood that benefits from the large park, whereas it is the larger population that benefits from the several neighbourhood parks scattered around the city. Also, from the biodiversity point of view, these neighbourhood parks could be vital habitats for creatures like birds and butterflies to move from one green space to another. Thus, small neighbourhood parks are also valuable in comparison to large green spaces in an urban context, as they offer a wide range of ecosystem services to the society.

Since the urban ecosystem is largely a human-dominated system, it is increasingly important to understand how people value and connect with urban green spaces and ecosystem services. Attitude of people is known to influence the action towards conservation of green spaces. We do not have a homogeneous society with similar level of commitment to conservation of green spaces. An environmental psychology study showed that people have varied degrees of relationship with green environments on different levels such as home, neighbourhood, and city (Gerd and Wanke 2002; Walmsley and Lewis 1984). The analysis showed that people are attached to their home environment, followed by the green spaces in their neighbourhood. This kind of attachment is said to have an overall effect on people's working and living cultures. Thus, attitude is also a powerful predictor of behaviour, and an important tool in determining human response to policies and decision-making (Kaiser and Fuhrer 1999). A major actor in urban conservation is the local government, which largely determines the conservation of urban green space. Hence, green-space conservation requires engagement with multiple actors at various levels. Several studies have shown that cooperation between agents and both public and private partnerships could help in enhancing the present system (Olsson, Folke, and Hahn 2004). With people's dependence on urban green spaces increasing for various ecological services, there is an urgent need to gear up the functioning of these spaces through good conservation and management practices.

The aim of this paper is to understand people's perception and attitude towards forests, large heritage parks, and neighbourhood parks in Bengaluru. We measured bird and butterfly diversity in neighbourhood parks that were sampled. Also, we analysed people's views on green spaces, and how they could be incorporated in enhancing the services green spaces provide to the society and towards conserving biodiversity.

Study site

Bengaluru was once called the 'Garden City' of India because it had several green spaces at different spatial scales, starting from home gardens and avenue trees to large parks. With the IT companies coming in, rapid developments have led to the city now being called the 'IT Capital' of India. The development of the IT sector has resulted in a mixed set of communities accepting western cultural influences, and, hence, traditional practices such as kitchen gardens are being lost. To cater to the demands of IT professionals, several developmental activities such as road widening and a major metro project have supported the growth of the city. These projects have resulted in the loss of neighbourhood parks and the felling of avenue trees. Several groups have been monitoring a decline in biodiversity because of the loss in green spaces (Karthikeyan 2000). The green spaces, which once sustained a variety of wildlife species, are slowly disappearing. There is growing realization for the need for stewardship, wherein the local people and active environmental groups have organized themselves to conserve some of the existing green spaces. These factors make Bengaluru an ideal site for this study.

Methods

Public parks within the city were identified using the Bangalore Developmental Authority (BDA)—Comprehensive Plan (CP) 2005–2015 maps, and the Eicher 2003 book (Bangalore Development Authority 2005; Eicher 2002). Bengaluru is divided into 47 planning units, out of which nine units were sampled. The planning units are distributed across three zones/belts. The first belt is core Bengaluru and is called Petta. The second belt consists of old residential areas, and the third belt comprises newer areas that have been developed over the past few years. A total of 18 neighbourhood parks across nine units were sampled (Figure 1).



Figure 1 Parks sampled in Vijayanagar area

Questionnaire surveys were conducted, which comprised both open- and closed- ended questions. People's perception and attitude towards forests, large heritage parks, and neighbourhood parks were assessed by conducting social surveys within the neighbourhood parks, as well as in Lalbagh, a heritage park. Preliminary surveys in neighbourhood parks showed that there was an age-wise segregation in park usage. In order to capture the entire age spectrum, surveys were conducted mornings and in the evenings. The questionnaire captured, first, the benefits people derived from ecosystem services across forests, Lalbagh Heritage Park, and small neighbourhood green spaces, and, second, the attachment and stewardship levels towards the gradient of green spaces.

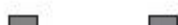
Bird and butterfly surveys were also conducted in 2009 in neighbourhood parks to evaluate biodiversity that these small neighbourhood parks shelter. Surveys were carried out using point count method with a 10-minute observation time, which was repeated thrice. Bird surveys were carried out between 6:30 a.m. and 8 a.m., and butterfly surveys were conducted between 9:30 a.m. and 11 a.m. Windy, cloudy, and rainy days were avoided for this survey. The Shannon Index was calculated using Estimate S (Zar 1998).

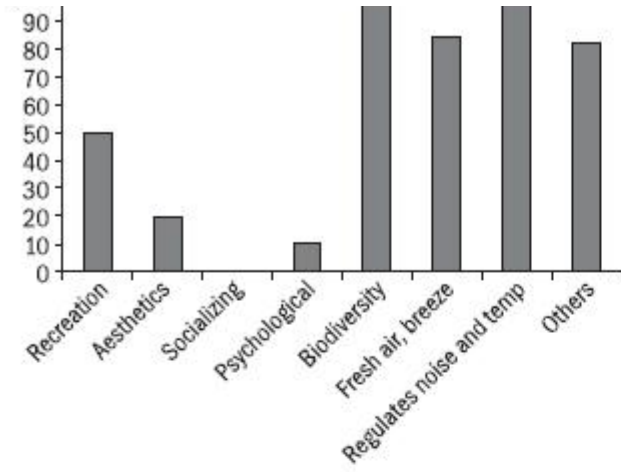
Finally, respondents were asked questions to evaluate non-market resources such as fresh air and breeze, and biodiversity derived from green spaces, to understand how they value ecosystem services from which the society benefits.

Results and discussion

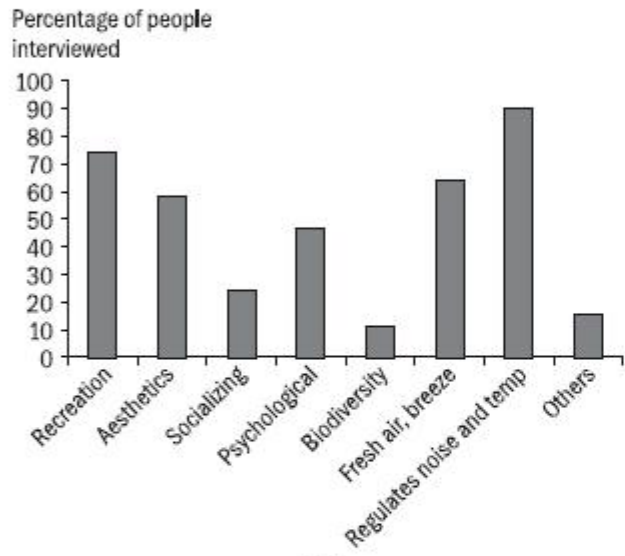
A total of 50 social surveys were conducted in Lalbagh. Forests were perceived to provide enhanced ecosystem services when compared to the Heritage Park and neighbourhood parks. Although the services provided by the Heritage Park and neighbourhood parks were similar, people valued the Heritage Park more because of the enhanced services it provides (Figures 2a, 2b, and 2c). Heritage parks, like forests, are also monitored by naturalists and ecologists, because these are known to support several birds and butterflies and serve as an important stepping stone for several local migrants. A similar survey carried out in neighbourhood parks reveals that the diversity of bird and butterflies across these parks is similar. Interestingly, rare birds and butterflies were also recorded (Figure 3). Thus, not only do large green spaces support rich and rare biodiversity, neighbourhood parks also support them, albeit in fewer numbers.

Percentage of people
interviewed
100





2a



2b

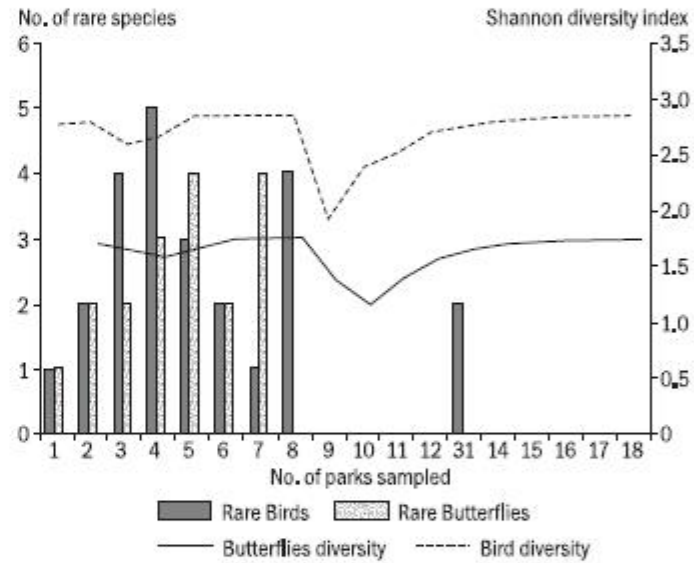
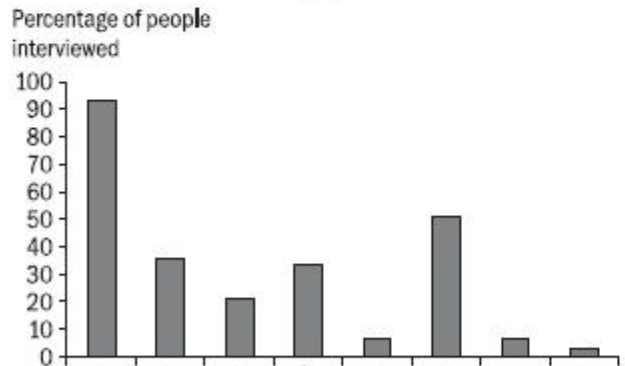


Figure 3 Biodiversity survey in neighbourhood parks

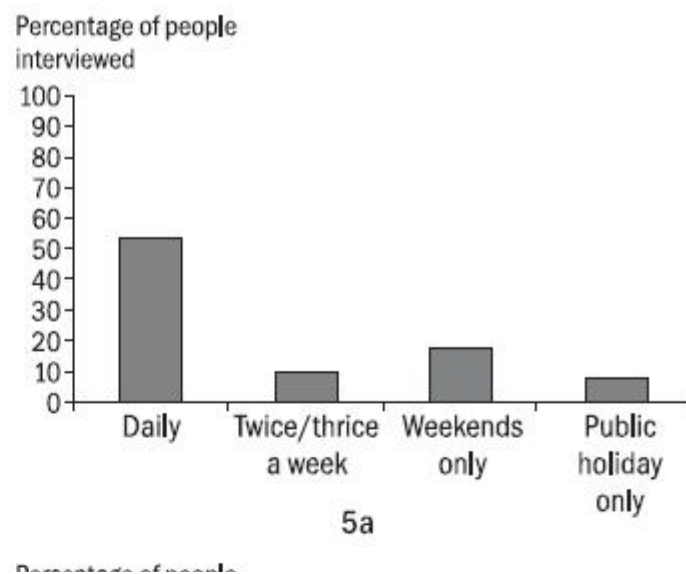
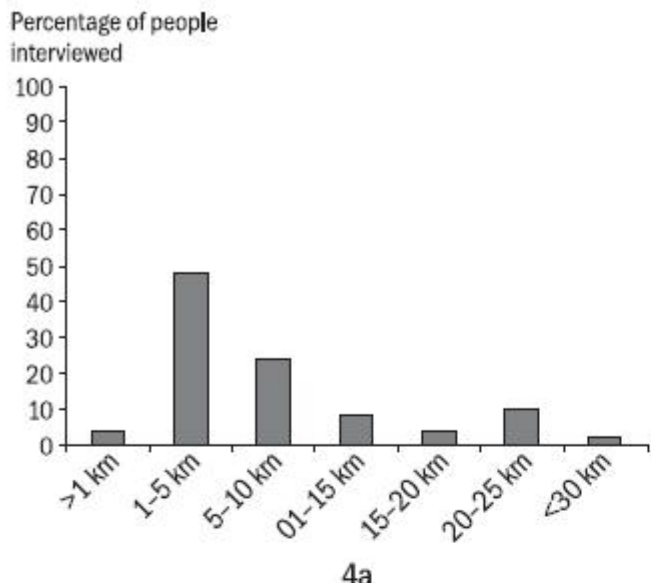


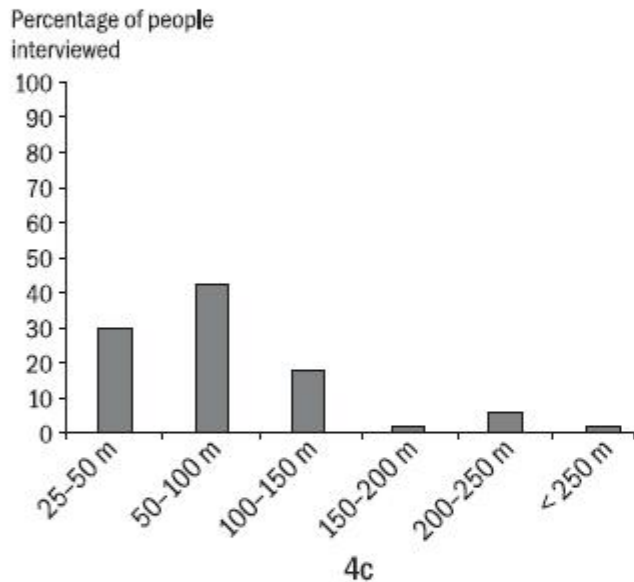
2c

Figure 2a,2b, 2c People's perception of ecosystem services across forests, Lalbagh Heritage Park, and neighbourhood parks

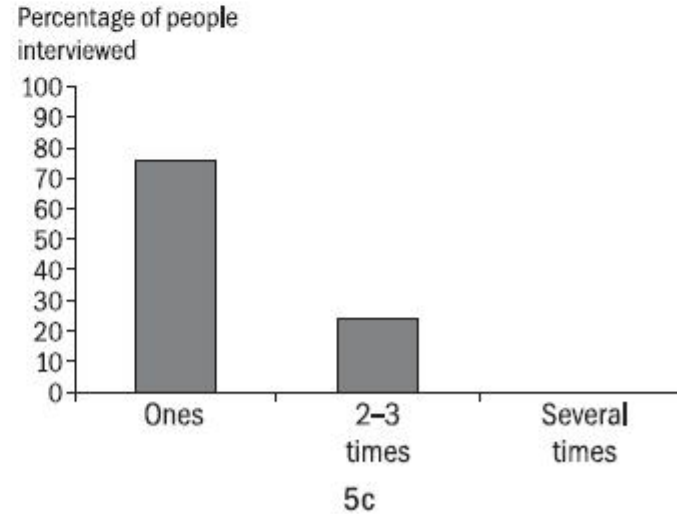
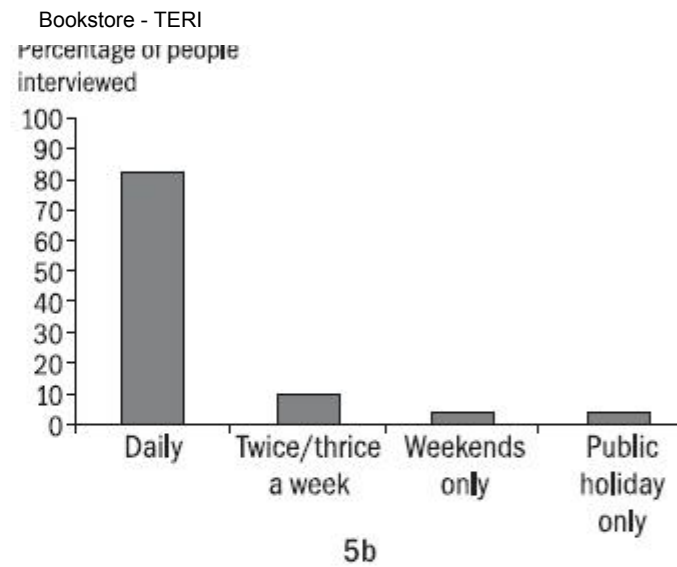
Neighbourhood parks seem to act as important green spaces for not only generalist birds, but also local migrants such as the greenish leaf warbler and golden oriole. Butterflies such as blue bottle and great orange tip, which are normally encountered in wooded areas, were found in these parks. These neighbourhood parks could be acting as critical stepping stones to the nearest large green spaces such as Lalbagh in Bengaluru. Lack of stewardship and conservation efforts towards these small parks could have a cascading effect on the biodiversity supported by large spaces.

Ecosystem services are often appreciated by people in constant contact with nature who benefit the most from this association. To analyse if this holds time even in an urban system, park users were asked how far they commute to visit the park. Interestingly, although the heritage park is in the centre of the city, and not in close proximity to the larger community, the distance does not seem to deter them from visiting the park frequently (Figure 4a and Figure 5a). People travel over 25 kilometres to reach the park, showing that the larger community utilizes the heritage park. Unlike the heritage park, the neighbourhood park attracts a restricted group of users, which is mainly the neighbourhood community (Figure 5b). On a larger scale, although forests are visited infrequently by a small proportion of the people, it is valued the most as compared to the heritage parks and neighbourhood parks (Figures 5a, 5b, and 5c).





4c
Figure 4 Distance travelled to visit forests (a), Heritage Park (b), and neighbourhood parks



5b
Figure 5 Frequency of visits to forests (a), Heritage Park (b), and neighbourhood parks (c)

Survey responses revealed that 56% of the people interviewed are willing to pay an average of Rs 11 as entrance fee to Lalbagh, and only 24% are willing to pay an average of Rs 7 to visit the neighbourhood parks. People not willing to pay expressed that if public space usage entails a fee, the poorer communities will not have any access to them. Also, people feel that neighbourhood parks are too small and, hence, do not require any management.

Iconic parks such as Lalbagh seem to attract wider support of the community. Often, it is argued that usage and direct contact lead to appreciation of nature (Rosenzweig 2008). However, according to this study, size seems to have a masking effect as people are not aware of some of the services, their neighbourhood parks provide.

Conclusion

In order to conserve and maintain neighbourhood parks, it is essential for environmental groups and ecologists to advocate the cause of these parks and develop innovative partnerships, which will change the mindset of the urban community towards small green spaces. Although a few neighbourhood parks are managed by the Residence Welfare Association (RWA) around the park, the stewardship can be further extended to other parks, and also enhanced by involving multiple stakeholders. A multiple stakeholder framework relies on seizing a window of opportunity and linking diverse set of actors operating at different levels, often in networks involving local users, municipalities, to regional and national organizations. This framework could be a useful model for collaborations to redesign parks, and improve their management to support more biodiversity and provide enhanced services to people.

References

- Bolund P and Hunhammar S. 1999. **Ecosystem services in urban areas**. Ecological economics 29: 293–301 pp
- Millennium Ecosystem Assessment. 2005. **Ecosystems and human well-being**. Washington, D.C.: Island Press
- Gerd B and M Wanke. 2002. **Attitudes and attitude change**. New York: Psychology Press, Taylor & Francis
- Walmsley D J and G J Lewis. 1984. **Human Geography: behavioural approaches**. London: Longman
- Kaiser F, Wolfing G S, and Fuhrer U. 1999. **Environmental attitude and ecological behaviour**. Journal of Environmental Psychology 19: 1–19 pp.
- Karthikeyan S. 2000. **Fauna of Bengaluru City**. Bengaluru: WWF
- Rosenzweig M L. 2008. **Win–Win Ecology: how the earth’s species can survive in the midst of human enterprise**. New York: Oxford University Press
- Olsson P, Folke C, and Hahn T. 2004. **Social-ecological transformation for ecosystem management: the development of adaptive co-management of a wetland landscape in southern Sweden**. Ecology and Society 9(4): 2–28 pp
- Bangalore Development Authority. 2005. **Master Plan–2015**, Volume 3. Bangalore [Proposed land use maps, BMP and periphery areas, Indo-French Protocol]
- Eicher. 2002. **Bangalore city map**. New Delhi: Eicher Good Earth Limited
- Zar J P. 1998. **Biostatistical Analysis**. New Jersey: Eaglewood cliffs, Prentice Hall [4th edition]