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## Wildlife: a hidden treasure of green places in urbanized societies?

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**Wildlife and flora and the valuation of green places  
on different spatial scales**



## 2. Wildlife and flora and the valuation of green places on different spatial scales

### *Abstract*<sup>2</sup>

Recent decades have seen a growing interest in experiencing wildlife and flora in nature-based tourism destinations, and at the same time it is far less clear whether wildlife and flora also matter in experiencing and enhancing green places near home. This paper examines the importance of wildlife and flora as a reason for finding green places attractive, and whether they add to the valuation of green places, among the general public in the Netherlands. It also explores potential differences in the importance of wildlife and flora between local and national green places. Data from a large online survey (the Hotspotmonitor) were used. The results show that wildlife and flora are relatively unimportant reasons for attractiveness, although slightly more important in national than in local green places. Interestingly, wildlife and flora do add significantly to the valuation of local green places, whereas they do not play a significant role in the valuation of national green places. Our results also demonstrate that wildlife and flora in green places near home are important for broad segments of the population, whereas they matter more for traditional nature lovers in green places further from home.

Our findings suggest that more eye for geographical scale and nearness to home is needed in improving the roles which wildlife and flora can play in increasing the valuation of green places.

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<sup>2</sup> This chapter is based on: Folmer, A., Haartsen, T., Buijs, A., and Huigen, P.P.P., Wildlife and flora and the valuation of green places, a comparison between spatial scales. *Submitted to an ISI rated international journal.*

## 2.1 Introduction

Recent decades have seen a growing interest in experiencing wildlife and flora in green places visited for daytrips and holidays. A clear example is the rise of wildlife tourism, which can be defined as tourism in which visitors encounter wild animals (Ballantyne, Packer, & Sutherland, 2011; Higginbottom, 2004). The central idea behind the development of wildlife tourism is that multisensory wildlife experiences will lead to more intense emotional tourism experiences, to emotional affinity with nature areas, to environmental learning, and finally to stronger nature protective behavior (Ballantyne et al., 2011). Consequently, in the marketing of international nature-based tourism destinations, attractive wildlife or mega-fauna, such as dolphins, elephants, gorillas, lions, orang-utan, rhinoceros, tigers and whales, are often used as ‘flagship species’ (Higginbottom, 2004). The use of such iconic wildlife is based on prevailing ideas of what composes an appealing ‘zoological gaze’: the appearance, charisma and behavior of animals (Curtin, 2010; Tremblay, 2008). Increasingly it has been acknowledged that not only charismatic mega-fauna, but also charismatic mega-flora such as trees and forests (Hall, James, & Bairda, 2011) or smaller flora species such as orchids (Pickering & Ballantyne, 2013) or wildflowers (Priskin, 2003) can play a significant role in nature-based tourism.

Thus far, most academic research into the roles of wildlife and flora in leisure and tourism has focused on large charismatic wildlife as a main attraction of nature-based tourism destinations (e.g. Cong, et al., 2014; Curtin, 2009; 2010; Lemelin & Smale, 2006; Tremblay, 2008). However, it remains unclear how wildlife and flora play a role in the way people value green places closer to home. Moreover, only a few studies have paid attention to less charismatic or less exotic, more commonly present wildlife and flora (e.g. Bhatti, et al., 2009). For spatial planners and leisure and tourism managers, insight into the extent to which wildlife and flora contribute to a higher valuation of green places by lay people may be useful in developing more attractive green places. This is an important aim for urbanized societies like the Netherlands, as highly valued green places are becoming more and more important for outdoor recreation (Kienast et al., 2012), having contact with nature (Mitchell & Popham, 2007), and for improving the health and well-being of the population (Coley, Kuo, & Sullivan, 1997; Groenewegen et al., 2012; Hartig & Staats, 2005; Van den Berg, et al., 2010).

In this study, we examine how far wildlife and flora play a role in the perceived attractiveness of green places in the Netherlands. Our paper starts with a literature review of what

is known about wildlife and flora as main attractions of green places, followed by an examination of wildlife and flora as part of the overall nature experience of a place. Subsequently, an explanation of the data and methods is given. The results present the relative importance of wildlife and flora as a reason for attractiveness in local and national green places, as well as the extent to which people participate in recreation related to wildlife and flora. This is followed by an analysis of the importance of wildlife and flora in the valuation of local and national green places. The conclusion offers a reflection and discussion on the results. Recommendations for further research conclude the paper.

## **2.2 Wildlife and flora and the attractiveness of green places**

### **2.2.1 Wildlife and flora as main attractions of green places**

Wildlife and flora may affect the valuation of local green places, and green places further from home. Research has mainly focused on charismatic wildlife as the main attraction of green places further from home, such as nature-based tourism destinations and protected areas (e.g. Ballantyne, Packer, & Sutherland, 2011; Curtin, 2009; 2010). Tremblay (2008) states that particular wildlife species can be true icons of nature areas, motivating people to visit green places. In the Netherlands, the presence of large charismatic animals such as wild boar and red deer draws many people to large nature areas (Buijs & Langers, 2014). Experiencing iconic wildlife species is strongly related to visitor satisfaction with a nature-based tourism destination (Lemelin & Smale, 2006; Curtin, 2006; Tremblay, 2008). However, no studies have specifically examined how wildlife contributes to the valuation of green places.

Only a few studies have addressed flora as the main attraction for nature-based tourism destinations and protected areas (e.g. Ballantyne & Pickering, 2012; Priskin, 2003; Lindemann-Matthies et al., 2010). However, there are indications that for nature-based tourism destinations, charismatic flora are as important as charismatic wildlife (Pickering & Ballantyne, 2013). Priskin (2003) discovered that wildflowers are the most important attraction for spring visitors, while Lindemann-Matthies et al. (2010) pointed out that visitors perceive plant diversity as an enhancement of grassland attractiveness. More specifically, orchids have been found to attract visitors to various protected areas, for instance in Chili (Vidal et al., 2012), India (Jalal *et al.*, 2008), Italy and the UK (Pickering & Ballantyne, 2013). Flora also enhance local green places such as domestic gardens and urban parks (Bhatti, et al., 2009; Christie, 2004; Power, 2005; Head & Muir, 2006). Bhatti *et al.* (2009) found that private gardens are experienced as ‘extraordinary’ places full of enchanting encounters with flora. Despite their proven ability to enhance green

places, it remains unclear whether flora play a role in the valuation of green places near home or further afield.

### **2.2.2 Wildlife and flora as part of the overall experience of green places**

In addition to being main attractions of green places, wildlife and flora may also form an embedded and self-evident part of overall nature experience. In many studies, the importance of wildlife and flora in the attractiveness of green places has been analysed by incorporating wildlife and flora in more general aspects of nature, such as ‘naturalness’, ‘variety’, ‘ephemera’ or ‘biodiversity’. Tremblay (2008) states that spotting wildlife and flora is perceived as a confirmation of the naturalness of a place. This corresponds with the finding of Coeterier (1996) that Dutch people experience wildlife and flora as part of the naturalness of a landscape. Also Van den Berg, Vlek and Coeterier (1998) proved that biodiversity is a powerful predictor of beauty ratings for specific natural landscapes in the Netherlands, among both residents and visitors.

Several studies on green places further from home, such as nature-based tourism destinations and wilderness areas, show that an overall nature experience, including experiencing wildlife and flora, influences the perceived attractiveness of a green place. For instance, Schroeder (2002) found that in the overall nature experience, vegetation (e.g. trees, wild flowers, wild plants, and grass) as well as wildlife (e.g. birds, fish and other wildlife) add to the appeal of a wilderness place. Moreover, multisensory experiences of nature (e.g. hearing, seeing, sensing and smelling flowing water, birds, and other animals) play an important role in making tourism destinations attractive (Kirillova et al., 2014). How wildlife and flora blend in with an overall nature experience at nature-based tourism destinations is illustrated by Breiby (2014), who found that tourists regard ‘seeing and hearing animals in nature’ and ‘experiencing plants in nature’ as part of a feeling of harmony with nature.

In local green places, wildlife and flora may also have a role to play in raising appreciation, while being integrated within an overall nature experience. Some studies suggest that experiencing local wildlife and flora actually augment people’s emotional attachment and appreciation of green places near home. For instance, Ogunseitani (2005) found that the appreciation of ecological diversity (flowers, animals, and landscape ratings) is strongly related to the love for a nearby green place, while Ryan (2005) discovered that many people are attached to nearby nature and “enjoy being familiar with the plants and animals there” (p. 23). However, familiarity with local wildlife and flora may give rise to the idea that they are ubiquitous and therefore taken for granted. This is clearly illustrated by the way bird song functions as familiar

background sound of green places (Hedblom, et al., 2014; Ratcliffe, Gatersleben, & Sowden, 2013). Also flora often may be taken for granted in everyday environments (Head & Atchison, 2008). Therefore experiencing wildlife and flora may become merged into the overall nature experience of a familiar green place.

To summarize, the presence of wildlife and flora may blend in with the overall nature experience of a green place. Especially for local green places, wildlife and flora may easily be overlooked or taken for granted, due to their commonness and familiarity. In contrast, for green places further from home, such as nature-based tourism destinations and protected areas, wildlife and flora may be perceived as more charismatic, exotic and extra-ordinary. This leads us to hypothesize that wildlife and flora add more to the valuation of national green places, which tend to be visited during daytrips and holidays, than to the valuation of local green places, which are more important for everyday leisure.

## **2.3 Data and methods**

### **2.3.1 Data**

For our study, we used data from a large online dataset on the most attractive green places ('hotspots') in the Netherlands, called the Hotspotmonitor (HSM, see [www.Hotspotmonitor.eu](http://www.Hotspotmonitor.eu)). This is a Google Maps-based tool which was set up by the University of Groningen, the University of Wageningen and the Netherlands Environment Assessment Agency to gain more insight into social landscape values (De Vries, et al., 2013; Sijtsma, et al., 2012). In European and Dutch nature policy and planning, people's views on cultural and natural landscapes (social landscape values) are considered as important as ecological and economic values. The European Landscape Convention stresses the importance that governments react to "*the public's wish to enjoy high quality landscapes and to play an active part in the development of landscapes*" (Council of Europe, 2000, p. 1). In addition, the European Landscape Convention emphasizes that, for people's quality of life, positive valuations of landscapes matter a great deal: not only with regard to landscapes which are recognized as being of outstanding beauty, but also concerning landscapes in urban areas, in the countryside, in degraded areas, and in everyday areas (Council of Europe, 2000). The HSM provides insight into social landscape values of the general Dutch public, by monitoring the valuation of favorite green places on various spatial scales, as well as investigating reasons why people find these places attractive.

We used HSM version 1.2 (2010), which includes 3616 respondents. The central question is the following: "*Which places do you find very attractive, valuable or important and*



*why?*” (Sijtsma et al., 2012: 142). Respondents could choose from favorite places which are dominated by green, water, and/or nature, which we refer to as “green” places in this paper. They were asked to pinpoint their most favorite green places at local (< 2 kilometers from home), regional (< 20 kilometers from home), and national (the Netherlands) spatial scales. These distances were chosen because of the possible different meanings and recreational options these places offer. Local green places are important to everyday recreational behavior, regional green places are in people’s living environment (commuting and going to school) and are within reach for daytrips, and national green places correspond highly with the most important daytrip- and holiday destinations in the Netherlands (see De Vries et al., 2013). In this paper, we focus on comparing the importance of wildlife and flora in the valuation of local and national green places, as these types of places differ most from each other.

The respondents were asked explicitly to value the attractiveness of their favorite green place, on a scale of 1 to 10 (i.e., from very unattractive to very attractive). Moreover, respondents had to indicate the reasons why they find that place attractive (a closed question) and what recreational activities they undertake there (a closed question). The reasons for attractiveness (Table 2.1) were derived from previous relevant studies (Brown & Reed 2000; Coeterier, 1996; De Vries et al., 2007; Ode, Tveit, & Fry, 2008), and included a separate indicator for the presence of special wildlife and flora (Buijs & van Kralingen, 2003). With regard to recreational activities, we included ‘observe birds’, ‘observe wildlife’ (other than birds), and ‘observe flora’. In the remaining part of the paper, ‘observe wildlife’ refers to observing wildlife other than birds.

For the spatial representativeness of the survey, six regions with different landscape characteristics were selected: Groningen (North), Arnhem (East), Utrecht (the Centre), Enschede (East), Amsterdam (West) and Eindhoven (South). The survey was conducted in 2010 among members of a large Internet panel operated by the Dutch market research agency GfK (see De Vries et al., 2013). In total, 6854 members were approached (De Vries et al, 2013). With 3616 participants, the overall response was 53%. After taking out the respondents with missing values on the two most important variables in our study - the rating given on perceived attractiveness of their green place, and the reasons for attractiveness – as well as the respondents who marked their green place too far into the North Sea, or outside the Netherlands, 2602 respondents remained in our database. Our respondents were of all ages, equally divided by gender, well-educated, and living predominantly in urban areas (Table 2.2). Compared to the Dutch population, our respondents were relatively young (67% versus 53% younger than 50), and higher educated (56%

versus 31% bachelor degree or higher), while men and women, and rural and urban residents, were equally represented (Statistics Netherlands, 2015).

#### *Dependent variable.*

We used the ‘valuation of attractiveness’ of green places as a dependent variable in our regression analysis. Respondents were asked to value the attractiveness of each green place they pinpointed, on a scale from 1 to 10, from very unattractive to very attractive (De Vries et al., 2013). More than 95% of the respondents valued their favorite green places between 7 and 10, with a modus of 8.0 for both local as well as national green places. Therefore, the variance of the valuation of green places was relatively low ( $s^2 = 0.855$  for local, and  $s^2 = 0.897$  for national green places).

#### *Independent variables.*

As independent variables, we used reasons for attractiveness (Table 2.1 and 2.3), place characteristics (protected status and land-use of green places, Table 2.3), sociodemographics (age, gender, education, and urban-rural place of residence, recreation related to wildlife and flora), and nature images (Table 2.2).

The variable ‘protected status’ was constructed by calculating the distance between the markers placed by respondents to pinpoint the location of their favorite green place and the Dutch Nature Network (Ministry of Agriculture, Nature Management, and Fisheries, 1996). The Nature Network includes Natura 2000 areas and all other protected areas in the Netherlands. All markers that were placed in the Nature Network were coded 1 (protected status, with a margin of 500 metres), and all remaining markers were coded 0 (not protected). We also constructed the ‘land use’ variable: the land-use type where the favorite green places were located. We used the typology of Statistics Netherlands (2008) for that, distinguishing between ‘water’ (e.g. streams, rivers, lakes, sea), ‘forest’, ‘dry nature’ (e.g. dry grassland, dry heather), ‘wet nature’ (e.g. marshland, wet grassland, wet heather, peat), and ‘agriculture’.

The degree of urbanity of the place of residence was determined by using the address density of Statistics Netherlands (following Den Dulk, Van De Stadt, & Vliegen, 1992). We divided the five original categories into two commonly used categories: urban versus rural places, with more or fewer than 1,000 addresses per km<sup>2</sup> as criterion (e.g. Bijker & Haartsen, 2012).

We included respondents' nature images, as they can provide more insight into why wildlife and flora may be important as reasons for attractiveness. Nature images combine people's beliefs, values, and value orientations regarding the meaning of 'nature' and how it should be managed (Buijs, 2009). The respondents' dominant nature image was determined using cluster analysis (see Buijs, Elands, & Langers, 2009), resulting in four nature images: the wilderness, inclusive, aesthetic and functional nature image. The first three images reflect the Arcadian image of nature which predominates in modern Western societies (Worster, 1985). People with a wilderness image of nature prefer natural areas without humans or human artifacts. A broader definition of nature is held by people with an inclusive nature image, as they regard humans as part of nature. They reject the nature-culture divide. People with an aesthetic image focus on the hedonistic and aesthetic values of nature; they value nature most for leisure and tourism purposes. People with a functional nature image appreciate nature predominantly for its utilitarian values, such as opportunities for hunting, and fishing (Buijs, 2009). Among our respondents, the wilderness image was the most dominant nature image (Table 2.2). This corresponds with previous research on the most common nature image of the general Dutch public (Buijs, 2009).

#### **2.3.4 Method**

Using SPSS 20.0, we did a multiple regression analysis with 'valuation of attractiveness' as dependent variable, and reasons for attractiveness, place characteristics, sociodemographics, and nature images as independent variables. Due to the low variance of the dependent variable, this yielded a low adjusted  $r^2$  (adjusted  $r^2 = 0.062$ ) and relatively small differences in prediction power of the independent variables. Therefore, we decided to dichotomize the dependent variable into 'valuation at or below 8.0' (coded 0) and 'valuation above 8.0' (coded 1) and to carry out a binary regression analysis. We found similar, but more distinct differences in the relationship between the valuation of green places and the independent variables. Despite the low prediction powers of our regression models, they still provided insight into which reasons for attractiveness were mostly associated with a higher valuation of green places. They were therefore useful for our aim, to compare the relative importance of wildlife and flora in the valuation of green places on different spatial scales. However, it does make clear that there are other reasons for attractiveness which affect the valuation of favorite green places as well.

For the regression analysis, we could not use all reasons for attractiveness, because some variables were too small in number. Correlations between independent variables were low ( $r < .3$ ), and therefore all remaining variables could be used in the regression analyses. We estimated three different models for the valuation of both favorite local, and favorite national, green places. In

Section 4, we present the estimates in odds ratios, which express the likelihood of an independent variable contributing to a valuation higher than 8.0. In Model 1, we include only reasons for attractiveness; in Model 2 we add place characteristics; and in Model 3 we add sociodemographics, and nature images. We start Section 4 of this paper by discussing the most important reasons for finding a green place attractive, and whether or not wildlife and flora play a role in this.

## **2.4 Results**

### **2.4.1 Wildlife and flora as a reason for attractiveness of local and national green places**

For both local and national green places, wildlife and flora were not mentioned very often as a reason for attractiveness (Table 2.3). However, wildlife and flora were chosen significantly more often as a reason for the attractiveness of national green places than of local green places (16.4% versus 9.3%). Local green places were perceived mainly as attractive for their greenness, quietness (absence of humans) and naturalness, while the attractiveness of national green places was made up of a combination of greenness, quietness, naturalness, water, spaciousness, and recreational qualities of the natural environment (Table 2.3). Local green places were significantly more often located in agricultural land and wet nature than the national ones. National green places were significantly more often located in protected areas, water areas, and forests than local green places. There was also a difference in the recreational behavior related to wildlife and flora in the different types of green places. Respondents participated significantly more often in observing birds and flora in national than in local green places. Regarding the observation of birds in particular, this difference was remarkably large (21.5% versus 2.8%, Table 2.3). Respondents did not participate more often in observing wildlife in national green places, compared to local ones.

Respondents who regarded wildlife and flora as a reason for attractiveness of their local green place were slightly older (> 35 years or older) and more often male, compared to respondents in general (Table 2.2). Their level of education, place of residence and nature image did not differ from respondents in general. At the national level, respondents who regarded wildlife and flora as a reason for attractiveness tended to be older (50+), more often male, more highly-educated, and adhered to a wilderness image more often than respondents in general. Respondents who regarded wildlife and flora as a reason for attractiveness rated both their local and national green place significantly higher than others; respectively 8.2 versus 8.0 for local green places, and 8.7 versus 8.4 for national green places (Table 2.2).

To sum up, we can state that wildlife and flora more often played a role in the attractiveness of favorite national than local green places. However, compared to other reasons of attractiveness, wildlife and flora were relatively unimportant in both types of green places. Furthermore, in favorite national green places, wildlife and flora were more often alleged to be a reason for attractiveness by respondents who fit the profile of traditional nature-lovers: 55+ and well-educated (Curtin, 2008; Priskin, 2003; Pickering & Ballantyne, 2013; Lee & Scott, 2011). They were also more likely to retain a wilderness nature image. In favorite local green places, wildlife and flora were more often mentioned as a reason for attractiveness among broader population segments.

#### **2.4.2 Wildlife and flora contributing to the valuation of local and national green places**

Despite the relative unimportance of wildlife and flora as reason for finding green places attractive, our regression analysis on the valuation of green places revealed a different and spatially *reversed* effect. As presented in Table 2.4, Model 1, regarding wildlife and flora as a reason for attractiveness significantly increased the likelihood of valuing local green places higher than 8.0. Wildlife and flora were the second most influential factor in the valuation of local green places, after having a personal bond with the place.

After controlling for place characteristics, the relative importance of wildlife and flora remained the same in the valuation of local green places (Table 2.4, Model 2). Local green places located in protected areas and forests were more likely to be valued higher than 8.0 than other local green places. After adding sociodemographics, wildlife and flora became the third most influential variable affecting the valuation of local green places, after having a personal bond with the place, and being older than 50 (Table 2.4, Model 3). Respondents of 35 or older, females, low educated respondents and respondents retaining an inclusive nature image valued green places higher than other respondents. Participation in recreation related to wildlife and flora near home did not affect the valuation.

Regarding national green places, wildlife and flora did not significantly affect the likelihood of a valuation higher than 8.0 (Table 2.4, Model 1). After adding place characteristics, a protected status increased the likelihood of a high valuation of national green places most (Table 2.4, Model 2). Finally, after controlling for sociodemographics, and nature images, being older than 50 became the most important variable affecting the likelihood of a high valuation. Other remarkable results were that highly-educated (academic) respondents were more likely to value their favorite national green places higher than other respondents. Participation in observing birds and flora increased the likelihood of a valuation above 8.0 as well, while participation in observing

wildlife decreased the likelihood (Table 2.4, Model 3). In addition, respondents with an inclusive image were more likely to value their favorite national green place higher than other respondents. Gender did not matter in the valuation of national green places.

Based on our results, we have to reject the hypothesis that wildlife and flora add more to the valuation of national than to local green places. Respondents who regarded wildlife and flora as a reason for attractiveness were more likely to value their local green place higher than 8.0 than respondents who did not; while for national green places, no difference was found. In the valuation of local green places, wildlife and flora were relatively important, as only having a personal bond and age (> 50) had more effect on the likelihood of a valuation higher than 8.0.

## 2.5 Conclusion

We conclude that wildlife and flora play a role in the valuation of green places, and that this works differently for green places near home than for green places further from home. Although wildlife and flora are mentioned significantly less often as a reason for the attractiveness of local than of national green places, they do increase the likelihood of *a higher valuation* of local green places. This supports the idea that people may regard wildlife and flora as inseparable, embedded aspects of local green places. When asked for reasons for attractiveness, respondents mention natural attributes which relate to the overall character of green places, such as green ('green cover') and naturalness ('nature taking its own course'). In local green places, people may not be consciously aware of wildlife and flora, as local green places may serve as settings for daily life leisure activities that are not nature-based, such as exercise, relaxation, socializing, walking the dog, and so on (Manning & More, 2002). It is also possible that the types of wildlife and flora that are found in local green places are not exotic or charismatic flag ship species, and therefore not explicitly acknowledged as a reason for attractiveness. However, they do increase the likelihood of a higher valuation of local green places; they can make local green places special.

With regard to national green places, *wildlife and flora as a reason for attractiveness do not* affect the valuation, whereas *participation in recreation related to wildlife and flora does*. People who are interested in observing birds, and/or flora, find national green places more attractive than people who do not. Birdwatchers and flora observers are more likely to value national green places higher than people who do not indulge in these leisure pastimes. It is possible that birdwatchers and flora observers are more selective in the green places they value. We know that serious birders prefer places that meet their criteria on expected presence and variety of bird

species (Cole & Scott, 1999). In contrast, people who observe wildlife are more likely to value national green places lower than others do. This may be related to a perceived lack of wildlife visibility in visited green places. In the Netherlands, many people are drawn to large protected areas to see wildlife such as red deer and wild boar, but a quarter of visitors have never seen them, about half have seen them once in their lives, and only 16% see them once a year (Buijs & Langers, 2014). This may lead to dissatisfaction and explain a lower valuation of national green places among people who visit especially to observe wildlife.

We also found that the profile of people who regard wildlife and flora as a reason for attractiveness differs between local and national green places. In local green places, wildlife and flora are regarded as attractive features among broader segments of the population (35+, males, different educational backgrounds and adhering to different nature images) than in national green places (50+, males, university degree, holding a wilderness image). On the national scale, the profile of people who regard wildlife and flora as a reason for attractiveness corresponds with nature lovers (Curtin, 2008; Loubster, Mouton, & Nel, 2001; Priskin, 2003; Pickering & Ballantyne, 2013; Lee & Scott, 2011). In addition, people who regard wildlife and flora as a reason for the attractiveness of national green places are more likely to retain a wilderness image of nature than others do. Most remarkable is that locally, people's nature image does not affect the importance of wildlife and flora as a reason for attractiveness. This seems to demonstrate that local green places provide wildlife and flora experiences for a more varied group of people than national green places do.

Further research may focus on gaining more insights into *how*, *why* and *what kind of* wildlife and flora contribute to a high valuation of green places. Not much is known yet about how wildlife and flora are experienced, which species are appreciated most, and how wildlife and flora contribute to everyday leisure activities, especially in green places near home. Furthermore, more research could be done into the different profiles of wildlife and flora admirers, and into the potential role of leisure constraints of various groups.

Our results imply that the way wildlife and flora are marketed in leisure and tourism thus far is limited to a specific audience: nature lovers and those who can afford nature-based tourism. A stronger focus on improving opportunities to enjoy wildlife and flora near home can add to the attractiveness of local green places, for a broader audience.

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## Appendices

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Table 2.1

Reasons for attractiveness and their description in the Hotspotmonitor.

<b>Term</b>	<b>I find this place attractive, because...:</b>
Green	Green cover
Quiet	Few other people
Natural	Nature can run its own course
Water	Attractive water surface, river, lake or sea
Open	Panoramic and open views
Recreation	Good opportunities for recreation
Silence	Few disturbing sounds
Variation	Variation in type of vegetation, land use and between seasons
Non-urban	Little skyline disturbance, built-up area, roads etc.
Personal bond	Place has a special meaning for me
Historical	Many visible historical elements
Wildlife and flora	Special wildlife and flora
Harmony	Harmony in the landscape
Farming use	The landscape is used by farmers

Table 2.2 Descriptive statistics of all respondents, and of respondents who regard wildlife and flora as a reason for attractiveness of local, and national green places.

	Total sample		Wildlife and flora as reason attractiveness			
	N = 2602	Local green places		National green places		
		N = 242	Cramer's V	N = 428	Cramer's V	
<i>Valuation of attractiveness</i>	8.2 (0.9)	8.2 (0.9)		8.7 (0.9) <sup>***</sup>		
Mean Valuation (Standard Deviation)						
<i>Sociodemographics</i>						
Age			.092 <sup>***</sup>		.062 <sup>***</sup>	
18-34	30.6%	17.8%		25.7%		
35-49	36.4%	40.1%		35.0%		
50 +	33.1%	42.1%		39.3%		
Gender			.041 <sup>**</sup>		.087 <sup>***</sup>	
Male	48.6%	55.0%		58.4%		
Female	51.4%	45.0%		41.6%		
Education			.026		.065 <sup>**</sup>	
Up to lower	10.7%	12.0%		10.0%		
Higher secondary	10.0%	10.7%		8.4%		
Medium vocational	23.1%	22.3%		19.9%		
Higher vocational	34.4%	36.0%		34.3%		
Academic	21.8%	19.0%		27.3%		
Place of residence			.014		.004	
Urban	66.1%	64.0%		66.6%		
Rural	33.9%	36.0%		33.4%		
<i>Nature images<sup>a</sup></i>	N = 2216	N = 198	.033	N = 360	.079 <sup>***</sup>	
Wilderness image	39.7%	44.2%		46.9%		
Inclusive image	20.5%	20.2%		19.7%		
Aesthetic image	25.5%	23.2%		24.2%		
Functional image	14.2%	12.1%		9.2%		

<sup>a</sup>The total sample for nature images is lower (N = 2216 compared to N = 2602), because of missing values. Cramer's V indicates whether the profile of respondents who regarded wildlife and flora as reason for attractiveness differs from the profile of all respondents of the sample. This has been calculated separately for local and national green places.

Note: \*\*  $p < .05$ ; \*\*\*  $p < .01$ .



Table 2.3 Descriptive statistics of reasons for attractiveness, place characteristics and recreation related to wildlife and flora for local and national green places.

	Green places		
	Local	National	Cramer's V
	N = 2602	N = 2602	
Mean valuation (standard deviation)	8.0 (0.9)	8.4 (0.9) <sup>***</sup>	-
Mean valuation			
<i>Reasons for attractiveness</i>	(%)	(%)	
Green	75.5	60.8	.158 <sup>***</sup>
Quiet	46.6	50.0	.033 <sup>**</sup>
Natural	39.5	51.2	.118 <sup>***</sup>
Water	34.0	47.3	.136 <sup>***</sup>
Open	25.2	39.3	.151 <sup>***</sup>
Recreation	24.0	42.9	.200 <sup>***</sup>
Silence	15.8	30.4	.174 <sup>***</sup>
Variation	13.1	31.2	.217 <sup>***</sup>
Non-urban	13.3	28.5	.186 <sup>***</sup>
Personal bond	11.3	23.5	.162 <sup>***</sup>
Historical	10.7	13.1	.037 <sup>***</sup>
<b>Wildlife and flora</b>	<b>9.3</b>	<b>16.4</b>	<b>.107<sup>***</sup></b>
Harmony	5.5	8.3	.055 <sup>***</sup>
Farming use	0.7	1.6	.044 <sup>***</sup>
<i>Place characteristics</i>			
Protected area	43.6	84.9	.431 <sup>***</sup>
Water (rivers, lakes, sea)	3.4	28.1	.339 <sup>***</sup>
Forest	27.0	31.2	.046 <sup>***</sup>
Dry nature	22.5	23.9	.016
Agriculture	7.6	4.9	.057 <sup>***</sup>
Wet nature	39.4	11.9	.314 <sup>***</sup>
<i>Recreation related to wildlife and flora</i>			
<b>Observing birds</b>	<b>2.8</b>	<b>21.5</b>	<b>.287<sup>***</sup></b>
<b>Observing flora</b>	<b>5.3</b>	<b>8.5</b>	<b>.064<sup>***</sup></b>
<b>Observing wildlife</b>	<b>7.0</b>	<b>7.6</b>	<b>.012</b>

Note: <sup>\*\*\*</sup>  $p < .001$  <sup>\*\*</sup>  $p < .05$ .

Table 2.4

Predictors for valuation of local, and national green places.

	Likelihood of valuation green places > 8.0 (in odds ratios <sup>a</sup> )					
	Local green places (N = 2216)			National green places (N = 2209)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
<i>Reason for attractiveness</i>						
Green	1.13	1.17	1.13	0.87	0.91	.92
Quiet	0.93	0.93	0.94	1.29**	1.28**	1.30***
Natural	1.06	1.02	1.03	1.00	0.96	.95
Water	1.18	1.17	1.20	1.17*	1.07	1.09
Open	1.25*	1.20*	1.21	1.04	1.03	1.01
Recreation	1.06	1.11	1.14	0.87	0.86	.90
Silence	1.52***	1.46***	1.47***	1.50***	1.45***	1.48***
Variation	1.60***	1.61***	1.55***	1.39***	1.40***	1.33***
Non-urban	1.05	1.08	1.08	1.26**	1.25**	1.27**
Personal bond	2.37***	2.42***	2.48***	1.43***	1.47***	1.48***
Historical	1.52***	1.54***	1.52***	1.27	1.27*	1.25
<b>Wildlife and flora</b>	<b>1.69***</b>	<b>1.69***</b>	<b>1.67***</b>	<b>1.20</b>	<b>1.20</b>	<b>1.13</b>
Protected area		1.25**	1.27**		1.72***	1.68***
Landuse (ref. Wet nature)						
Water		1.27	1.27		1.24	1.18
Forest		1.38**	1.37**		0.97	0.92
Dry nature		1.22	1.18		1.12	1.02
Agriculture		1.11	1.08		1.09	1.09
Age (ref. age 18-34)						
35-49			1.45***			1.20
50+			1.68***			1.73***
Gender: Female (ref. Male)			1.29**			1.15
Education (ref. Academic)						
Up to lower secondary			0.62**			0.72*
Higher secondary			0.80			0.71**
Medium vocational			0.81			0.65***
Higher vocational (BA)			0.95			0.73**
Place of residence: Rural			1.02			1.09
Recreation related to						
<b>Observing birds</b>			<b>1.29</b>			<b>1.24*</b>
<b>Observing flora</b>			<b>0.91</b>			<b>1.45*</b>
<b>Observing wildlife</b>			<b>1.06</b>			<b>0.67**</b>
Nature images (ref. Functional)						
Wilderness			1.02			1.20
Inclusive			1.37*			1.33*
Aesthetic			0.90			1.09
Constant	0.17***	0.13***	0.09***	0.52***	0.31***	0.25***
<i>Statistics of models</i>						
Nagelkerke R2	.067	.076	.095	.069	.081	.106
-2 loglikelihood	2313.279	2299.475	2270.240	2933.324	2912.273	2867.800
Chi-square	101.463	115.267	144.502	117.255	138.306	182.780

Note: \*  $p < .10$ \*\*;  $p < .05$ ; \*\*\*  $p < .001$ . <sup>a</sup> Estimates are in odds ratios = likelihood that the independent variable has an effect on the dependent variable; > 1 = more likely; < 1 = less likely, close to 1: no effect.

