



Available online at www.sciencedirect.com

SCIENCE @ DIRECT®

Landscape and Urban Planning 69 (2004) 235–243

LANDSCAPE
AND
URBAN PLANNING

This article is also available online at:
www.elsevier.com/locate/landurbplan

Out in the country: sprawl and the quest for nature nearby

Rachel Kaplan^{a,*}, Maureen E. Austin^b

^a School of Natural Resources and Environment, University of Michigan, Ann Arbor, MI 48109-1115, USA

^b Environmental Science Department, Alaska Pacific University, 4101 University Drive, Anchorage, AK 99508, USA

Accepted 3 September 2003

Abstract

Residential development at the rural fringe, although contributing to many environmental problems, is steadily attracting new homeowners. Among the appeals of living “out in the country” are being closer to “nature” and having “space.” The purpose of this study is to examine what these concepts mean to individuals who decide to live in new commuter-based subdivisions. Study participants ($N = 231$), drawn from 18 residential communities in the same rural township, responded to a mailed survey that included 24 photographs of natural areas in communities such as theirs. In addition to having the scenes rated in terms of their similarity to the participants’ own setting, the survey included other approaches to assessing the perception of the nearby natural setting. Responses to one of these, an open-ended question about describing their neighborhood to a friend, showed a strong preponderance of nature-related descriptions (33% of all items mentioned). Based on the other questions, a typology of seven distinct kinds of natural areas emerged: manicured/landscaped areas, trees, gardens, mowed areas, forest, open fields, and wetlands. Using these seven nature categories to predict participants’ ratings of community satisfaction, regression analyses showed the overwhelming role played by the availability of forests. The forested scenes were also by far the most preferred. Yet forests are particularly vulnerable as new developments replace existing woodlands. The study thus points to the importance of finding ways to preserve the forested land, for environmental reasons as well as for the satisfactions derived from them by residents, neighbors, and visitors. Such protection of forests, as well as wetlands and open meadows, is more likely if these areas are seen by residents as being integral, communally owned parts of the overall development.

© 2003 Elsevier B.V. All rights reserved.

Keywords: Natural environment; Sprawl; Land use planning; Perception; Environmental preference; Forest

1. Introduction

Where once there was forest the land was cleared. Roads were built. Big houses went up. Sod was laid down on bare soil. People moved in. For these new residents this became their dream home “out in the country.”

The flight to the country is not a recent phenomenon. In recent decades, however, the dilemmas caused by the massive transformation of the landscape have received increasing recognition internationally. Sprawl has become a problem of national proportion in the United States. Among its characteristics are: low-density developments, reliance on automobiles, lack of centralized planning, and segregated land uses and land covers (Brown, 2001). Despite all the negative ramifications, the leap-frogging continues. More big houses on big lots appear in yet

* Corresponding author. Tel.: +1-734-763-1061;
fax: +1-734-936-2195.
E-mail address: rkaplan@umich.edu (R. Kaplan).

another area that had recently been a field, farm, or forest.

People who move to these new locations likely do not cherish the longer commutes and dependence on their cars. Among the tradeoffs that make living “out in the country” an attraction are being closer to “nature” and having “space.” The purpose of this study is to examine what these concepts mean to individuals who decide to live in new commuter-based subdivisions at the urban fringe. While these homeowners live in an area that is still relatively rural, their subdivisions are emblematic of suburban sprawl with relatively large lots and substantial lawns.

There is a sizable literature that documents the desire for and benefits of having access to nearby natural areas (e.g., Schroeder, 1988; Kaplan and Kaplan, 1989; Frumkin, 2001). There is also indication that knowledge of the availability of nature plays an important role whether or not residents actively engage with it (Kaplan, 1984a) and that having natural elements in the view from the window is a source of psychological benefits (Kaplan, 2001).

There are many ways to satisfy these desires and benefits from the nearby natural environment. Residential developments at the urban fringe, however, all too often meet these desires at great environmental cost (Benfield et al., 1999). Existing forestland is removed to make room for homes; habitat for wildlife is destroyed; impervious surfaces are increased; and the chemicals used to maintain vast lawns are unhealthy for entire watersheds. It is thus important to examine whether the desire for space and for living close to nature can be satisfied in ways that are more environmentally sustainable. This study explores a variety of natural settings available to the homeowners and their satisfactions with the patterns of nature available to them. Such information can help determine if there are ways of structuring developments in natural areas so that they simultaneously provide satisfaction for homeowners and protection for the environment.

2. Methods

2.1. Study site and participants

The study was conducted in southeastern Michigan in Hamburg Township, an area that was formerly a

summer resort community. Its 30 lakes and 10 miles (16 km) of river are still a major attraction, as is its proximity to major transportation routes and reasonable commute to Detroit (Stanford, 1999). Hamburg Township is one of the fastest growing townships in Michigan’s fastest growing county, Livingston (Livingston County Data Book, 2000).

In the early 1990s Hamburg Township enacted an incentive-based open space ordinance to preserve natural areas in residential developments. Built along the lines of Arendt’s (1996, 1999) open space conservation approach, this ordinance allows developers to site homes on smaller lots than normally required if they preserve specified amounts of the natural, yet buildable, land as open space. (For example, in an area normally zoned for 1 acre (0.40 ha), lots in a conservation subdivision are permitted to be one-third smaller.) These reserved open spaces, including trails and pathways and recreational sites, are owned communally by the residents of the development. (Further details of Hamburg Township’s approach are available in *Open Space Planning* (Livingston County, 1996).)

The study included residents of eleven such open space communities as well as seven traditional communities. (Findings related to comparisons of the two community types are presented in Kaplan et al. (in press)). All housing communities were built since 1990 and were at least 90% completed by the time of the survey (fall 2000). Table 1 shows the distribution of the communities included in the study in terms of median home value and the number of homes in each community.

Surveys were mailed to all residents in the selected communities using contact information provided by the township. We could not ascertain whether the names provided included homes that were not occupied or even lots that were not yet built upon. Furthermore, with bulk mailing, misaddressed material is

Table 1
Median home value and community size of residential communities selected for study

Number of homes	Median home value (US\$)	
	≤250000	>250000
16–25	5	1
30–50	2	6
55–70	3	1

not returned to the sender. Calculation of a return rate is, therefore, at the conservative extreme since it is based on number of surveys that were mailed, rather than the number known to have been received. Of the 648 surveys mailed, 231 were returned (36%). The analyses reported here are based on 96 returns from traditional and 135 from open space communities.

2.2. Survey and photo-questionnaire

The cover letter indicated our interest in the township's concern for managing growth and sought the resident's input about this as well as about their feelings related to the natural areas in and around their neighborhoods.

Residents' perceptions of the physical characteristics of their community were assessed using a variety of approaches. An open-ended question asked: "If you would describe your residential neighborhood to a friend, what 4 or 5 things would you want to be sure to mention?" Participants were also asked to indicate how well six natural features (e.g., "trees, but not forest," "woods, forest," "open field/meadow") characterize their residential neighborhood and 10 natural features (e.g., "large mowed area," "garden/flowers," "wetland/marsh") describe the view from their house; these items used a five-point rating scale with 1 for not at all and 5 for very well. (Five additional "view" items focused on aspects of the built environment and are not included in the analyses here.)

Included with the survey was a separate three-page booklet containing eight black and white photographs on each page. The scenes, all taken in residential communities in Hamburg Township, included woods, woods with trails, open fields and meadows, waterways and wetlands, and residential settings. Participants were asked to rate each of these 24 scenes in terms of their similarity to what they see from their home. The five-point rating scale was anchored at 1 for "I never or rarely see this sort of setting" to 5 for "very often—it's like the view from my home." They were also asked to rate the scenes to indicate how much they would like to have such a view (1 for not at all and 5 for very much).

The survey also included 16 items related to neighborhood satisfaction (e.g., sense of community, how your neighborhood looks), which were rated using a five-point scale (1 for not at all and 5 for very much).

A question regarding tradeoffs among choices buyers need to make in selecting a home included eight items (e.g., large house, not seeing neighbors' houses) to be allocated so they are equally distributed into four levels of importance (least, somewhat, important, and most).

2.3. Data analysis

For the photograph-based ratings of similarity as well as survey questions consisting of multiple items, we used principal component factor analysis with varimax rotation to generate meaningful themes. In these analyses the criterion of a minimum loading of 0.45 on no more than a single factor was used. Additional criteria were eigenvalues greater than 1.00 and alpha coefficients greater than 0.70.

3. Results

3.1. How would you describe your neighborhood to a friend?

The 949 responses to the open-ended question about describing the neighborhood to a friend represent an average of just over four responses per participant. A coding manual was developed based on these responses with inter-rater reliability between the two researchers of $r = 0.98$. The eight categories are listed in Table 2, both in terms of their occurrence in the participants' responses and their position as first to be mentioned.

Nature/open space was by far the most frequently used category relating to respondents' comments

Table 2
Participant-based description of residential community

Category	Total times mentioned (%)	Mentioned as first item (%)
Nature/open space	33	30
Neighborhood characteristics	18	8
Peace of mind	14	21
Sense of community	12	7
Lot size/space issues	11	17
Neighborhood size/density	5	11
Location/local features	5	5
Rural aspects	2	1

about their neighborhood. These characteristics were also the most likely to be mentioned first in the participants' listing. Included under this heading are mentions of landscape or topographical features (e.g., river or rolling hills), habitat and vegetation (e.g., forest, woodland area, trees, wildflowers), wildlife, views, and more general terms such as "nature," "natural," and "open space."

The neighborhood characteristics category was second highest in overall responses. Included here were mentions of "no thru traffic," cul-de-sacs and curved roads; the newness of the homes, their diversity in styles, and lack of fences. We coded neighborhood size/density comments (e.g., "small, cozy," "small # of houses") as a separate category, although these also characterize the neighborhoods. As shown in Table 2, this category received relatively few mentions.

The peace of mind category, receiving more than one-fifth of "first mentions," included such descriptors as "peaceful," "private," and "secluded." These characteristics reflect the greater sense of "space" residents seek when they move away from the crowded urban setting to a quieter place.

Sense of community was reflected in responses about "friendly, good, nice neighbors," "close neighborhood feel," and "neighborhood pride" as well as in comments about the lack of people at home, problems with dogs, and issues related to homeowner associations. This category ranked fourth in terms of frequency of mentions (12%) yet very few residents mentioned these social aspects of their neighborhood first.

We tracked responses related to the size of the lot as a separate category. We labeled the category lot size/space issues as comments reflected residents' sense of having space by virtue of the size of their own yards and the space immediately around their homes.

While items specific to location/local features of these subdivisions received relatively few mentions (5%), negative characteristics of the location such as high property taxes, too much development in the area, and increased traffic congestion provide evidence that, at least for some, not all is favorable about living in the country. Such negative aspects prompted one individual to state a desire to "move further out" in the country.

Finally, rural aspects (e.g., the presence of a barn in one neighborhood, the fact that the subdivision had

been farmland previously, or simply "rural setting") were rarely included in the participants' descriptions of where they live.

3.2. *What characterizes nearby nature?*

In order to empirically generate a typology of the nearby natural environment based on participants' perceptions, we used a multi-step process based on the three structured questions relating to the physical environment: similarity ratings of the photographs, physical characteristics of the neighborhood, and view from home. The scale for the photographs differed from the other two questions; therefore, two separate factor analyses were conducted. Results of these analyses were then correlated to derive a set of non-overlapping categories (using a criterion of $r < 0.40$).

Factor analysis of the photo-based ratings yielded four factors, which were labeled: wetland, forest, relatively open, and manicured/landscaped. Correlations among the first three factors were between $r = 0.40$ and 0.53 , while the last one correlated only with relatively open ($r = 0.47$). Factor analysis of the verbal descriptors of the physical setting yielded three factors: wetland, forest, and trees. These factors were not correlated with each other. However, correlations between the pair of wetland and the pair of forest factors (i.e., derived from the separate factor analyses) were strongly related ($r = 0.53$ and 0.63 , respectively). The item about whether an "open field/meadow" is characteristic of the neighborhood correlated highly ($r = 0.60$) with the photo-based relatively open factor, but not with any of the other measures. Two items from the view from home question—"garden/flowers" and "large mowed area"—did not load on any factors or significantly correlate with any of the other measures. Table 3 lists the final set of categories. All but two of the correlations among these seven categories are below $r = 0.20$. The exceptions are correlations of $r = 0.33$ between forest and wetland and $r = 0.29$ between forest and manicured/landscaped. The relative independence among these seven categories thus suggests that they provide a meaningful differentiation of the way the nearby natural environment is perceived.

Manicured or landscaped areas, which received the highest mean rating (3.9) and ratings of "4" or "5" by 55% of the participants, are characteristic of most of these suburban developments. This category consists

Table 3
Nearby nature categories

Category and items ^a	Alpha	Eigenvalue	Mean rating ^b	Percent rating ≥ 4.0
Manicured/landscaped (five scenes)	0.78	3.29	3.90 ^c	55
Trees ^d	0.74	1.62	3.78	62
Garden ^e	f		3.46	52
Mowed ^g	f		3.33	51
Forest ^h	0.74	1.70	3.23	39
Open ⁱ	f		3.00	39
Wetland ^j	0.75	2.57	2.73	22

^a N: how well do these describe the natural area in your neighborhood?; V: how well do these describe the view from your home?

^b Except as noted, rating scale: 1 for not at all and 5 for very well.

^c Photo-based similarity ratings: 1 for never or rarely and 5 for very often.

^d N: trees, but not forest; V: trees, but not forest.

^e V: garden/flowers.

^f Based on single item.

^g V: large mowed area.

^h N: woods, forest; V: forest.

ⁱ N: open field/meadow.

^j V: wetland/marsh; N: wetland area; V: lake/pond; N: lake, pond, river; V: river/stream.

of five scenes derived from the factor analysis of the similarity ratings. Fig. 1 shows the two scenes with the highest loadings on this factor. The scene shown in Fig. 2, also loading on the manicured factor, received the highest similarity rating (4.2) of any of the photographs, suggesting that large mowed areas are very common in these neighborhoods. By contrast, re-

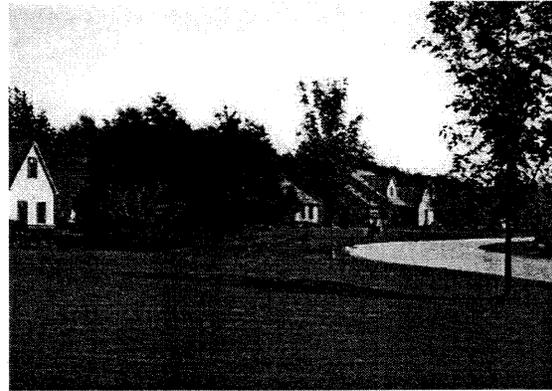


Fig. 2. This scene, showing large mowed area, received the highest similarity rating.

sponses to the survey item about having a view of a “large mowed area” received a lower mean rating (3.3), although half the sample gave the item a rating of “4” or “5.” Large mowed areas are distinct, however, from the large open areas (Fig. 3). Fewer than 40% of the participants gave high ratings to the survey item about whether open fields or meadows characterize their residential neighborhood.

The survey questions related to having “trees, but not forest” received the strongest endorsement (62% rated the items with “4” or “5”), indicating that trees both characterize these neighborhoods and are part of the participants’ view from home. Forests, by contrast, were far less likely to be components of the nearby natural environment. Only 39% of the sample rated these items as readily available.

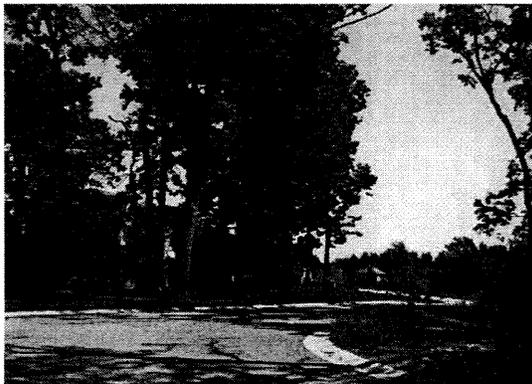


Fig. 1. Two scenes showing the landscaped areas representing the manicured/landscaped category.



Fig. 3. Two scenes from the “Relatively Open” photo-based factor.

3.3. Does what you see matter?

Table 3 shows that the different categories of nearby nature vary considerably in their availability. It does not address, however, whether these domains are related to the participants’ satisfaction with their residential community. To answer this question we used the seven nearby nature categories as independent variables and different facets of satisfaction as the dependent variables in a series of multiple regression analyses.

The satisfaction measures were derived from factor analysis of the ratings of 16 items about neighborhood satisfaction (Table 4). In addition to the three satisfaction factors, the single item about satisfaction with “peacefulness” was also included in these analyses as it was related to the open-ended comments. The mean rating for this item was 4.42.

The results of the regression analyses, one for each of the four satisfaction measures (Table 5), show that both the most (i.e., trees) and least (i.e., wetlands) available categories of the nearby natural environment are significant predictors of satisfaction with nature. Two other highly available kinds of nature, mowed areas and manicured or landscaped settings, as well as the less available open fields, were not significant in accounting for any of the satisfaction measures. The availability of gardens positively affected satisfaction with community, and, to a lesser extent, satisfaction with nature. Of the seven categories of nearby nature, however, the one that played by far the most critical role was the availability of forested areas within the residential community. It was a significant predictor of

three of the satisfaction measures: nature, community, and peacefulness. It is not surprising that the availability of different kinds of natural features in the environment (i.e., trees, garden, wetland) would be related to residents’ satisfaction with their nearby nature. What is surprising, however, is the finding that the forest category is such a pivotal aspect of the satisfaction ($\beta = 0.50$, $P < 0.0001$), strongly contributing to the high R^2 (0.41). It is also surprising that satisfaction with appearance was not significantly related to any of the nature categories.

Table 4
Satisfaction measures (factor loadings, alpha, and means)^a

	Nature	Community	Appearance
Seeing larger wildlife	0.76		
View of nature from home	0.75		
Seeing birds, squirrels	0.71		
Opportunities to walk	0.66		
Amount of open space	0.63		
Number of large trees	0.55		
Neighborhoodness		0.87	
Opportunities to interact with neighbors		0.84	
Sense of community		0.77	
Neighborhood landscaping			0.80
Properties looking nice			0.79
How neighborhood looks			0.65
Alpha	0.84	0.89	0.81
Eigenvalue	3.14	2.75	2.41
Mean rating	4.06	3.96	4.15

^a Items that did not load: peacefulness; privacy; safety and security; and density of homes.

Table 5
Results from regression analyses using nearby nature categories to predict four aspects of satisfaction

Nature category	Satisfaction			
	Nature β	Community β	Peacefulness β	Appearance β
Trees	0.17***	-0.02	0.12	0.09
Manicured/landscaped	0.06	-0.06	-0.08	0.11
Garden	0.12*	0.19**	0.10	0.09
Mowed	-0.04	0.01	0.10	0.01
Forest	0.50****	0.22**	0.19*	0.11
Open	0.01	0.00	0.04	-0.09
Wetland	0.14*	-0.04	0.13	-0.05
R^2	0.41	0.04	0.08	0.02
F	19.73****	2.09*	3.28***	1.61

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.005$.

**** $P < 0.001$.

The strong role played by forests is further echoed by the participants' preference ratings of the 24 photographs. While most scenes received relatively high preference ratings, only seven scenes had means above 4.00 (on a five-point scale). The forest factor consisted of five scenes each with a mean greater than 4.00 (and a factor mean of 4.4). The two most preferred scenes are shown in Fig. 4. Nearby forests are available to fewer than 40% of the participants (Table 3), but whether or not residents can see them, forest scenes are by far the most preferred.

Further indication of the importance of the nature context comes from responses to the question regarding tradeoffs in choosing where to live. Participants were asked to prioritize the items in Table 6 so there

Table 6
Tradeoffs in choosing where to live^a

	Least	Some	Important	Most
Nature view from home	1	8	25	66
Large residential lot/yard	8	18	35	39
Nature areas within walking distance	4	21	46	29
Large house	23	37	20	20
Not seeing neighbors' houses	27	33	27	14
Yard that is easy to maintain	22	39	31	8
Recreation areas within walking distance	37	38	15	10
Sidewalks	73	16	7	3

^a Table indicates percent selecting each importance category.



Fig. 4. Two scenes, from the forest factor, which received the highest preference ratings.

would be two checks representing each of the four degrees of importance (least, somewhat, important, and most). The importance of the natural environment is strongly reflected in the top choice, nature view from home. Living out in the country must include opportunities for having nature nearby and, ideally, within walking distance. The second highest priority, large residential lot/yard, reflects the desire for space, for a place that provides a buffer from others. However, the size of the house and the privacy from neighbors, were notably less important.

4. Discussion

Participants in the study are the first owners of homes in a fast growing, relatively rural township. Their residential communities have few if any jobs or services in walking distance and provide no public transportation. These communities are characterized by lots ranging between 0.5 and 2 acres (0.2–0.8 ha) with no fences to mark boundaries. They have large mowed areas, trees, and landscaping around the individual homes and at the entrances to the subdivisions, and individuals may have gardens. Some of the communities also have forested land and a few contain wetlands. These natural features, separately or as a whole, play an important role for the residents. They are the features most likely to be mentioned when residents describe their communities and are rated as the highest priority in selecting a home.

These results suggest that the nearby natural setting for many of these homeowners is not very different from suburban areas that are closer to urban centers. Individual gardens, trees, and lawn are common to many communities, although their expression differs substantially with house values. The desire to live “out in the country,” however, entails quests that extend beyond what is available closer to town. Perhaps it is a desire for bigger lawns, larger gardens, and a greater area to landscape around one’s home. The findings, however, highlight the overarching significance of forested areas. Such woods are highly prized; they are the strongest of the natural features in accounting for residents’ satisfactions not only for their natural surrounds, but also with the community and the sense of peacefulness.

Many residential developments have replaced the forests, and the forests that are still available might soon give way to future developments. This is not the case, however, in the so-called open space communities where the forests, as well as wetlands and open fields, are preserved and owned communally by the homeowners. Such preservation can benefit wildlife, is critical to stormwater management, and may provide other ecological benefits that derive from increased biomass. It also makes the resource everlastingly available to the community’s residents, their neighbors, and visitors. As Austin (this volume) shows, however, residents’ understanding of the open space concept conveys limited awareness of the unique benefits offered by these communities.

5. Conclusion

The flight to the countryside represents a complex array of human desires. This research provides evidence that the proximity to the natural environment plays a particularly important role for residents living in new subdivisions at the urban fringe. The process of developing new residential communities in these areas, however, often destroys these very qualities (Kaplan, 1984b) and the nearby woodlands that made a residential community attractive may soon become the site of another residential community.

While people appreciate the importance of their nearby natural environment, many of the features they seek and find satisfying could be more readily obtained in other ways than through individual ownership of large parcels of land. Many may not be aware of alternative ways to achieve these goals. The woods they seek and the sense that there are places to explore are more easily achieved by protecting these resources for the common good. A deeper understanding of the quest for nature nearby can be an important step in promoting the preservation of natural features and in designing communities that are more sustainable.

Acknowledgements

The work reported here was supported, in part, by the US Department of Agriculture, Forest Service North Central Research Station (Project 23-1999-20-

RJVA). Our thanks to Paul Gobster and two anonymous reviewers for their helpful comments on the manuscript.

References

- Arendt, R., 1996. Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks. Island Press, Washington, DC.
- Arendt, R., 1999. Growing Greener: Putting Conservation into Local Plans and Ordinances. Island Press, Washington, DC.
- Austin, M.E., 2003. Resident perspectives of the open space conservation subdivision in Hamburg Township, Michigan. *Landscape Urban Planning* (this volume).
- Benfield, F.K., Raimi, M.D., Chen, D.D.T., 1999. Once There Were Greenfields. Natural Resources Defense Council, New York.
- Brown, D.M., 2001. Sprawl in rural America: what it is and how it affects communities. *Small Town* 30 (2), 4–11.
- Frumkin, H., 2001. Beyond toxicity: human health and the natural environment. *Am. J. Prev. Med.* 20, 234–242.
- Kaplan, R., 1984a. Impact of urban nature: a theoretical analysis. *Urban Ecol.* 8, 189–197.
- Kaplan, R., 1984b. Human needs for renewable resources and supportive environments. In: Bradley, G.A. (Ed.), *Land Use and Forest Resources in a Changing Environment: The Urban/Forest Interface*. University of Washington Press, Seattle, WA, pp. 133–140.
- Kaplan, R., 2001. The nature of the view from home: psychological benefits. *Environ. Behav.* 33, 507–542.
- Kaplan, R., Austin, M.E., Kaplan, S., in press. Open space communities: resident perception, nature benefits, and terminological problems. *J. Am. Planning Assoc.*
- Kaplan, R., Kaplan, S., 1989. *The Experience of Nature: A Psychological Perspective*. Cambridge University Press, New York (republished by Ulrich's, Ann Arbor, MI, 1995).
- Livingston County, 1996. *Open Space Planning: Techniques, Design Guidelines, Case Studies and Model Ordinance for the Protection of the Environment, Agriculture, and Rural Landscape*. Department of Planning, Livingston County, MI.
- Livingston County Data Book, 2000. Department of Planning, Livingston County, MI.
- Schroeder, H.W., 1988. Environment, behavior, and design research on urban forests. In: Zube, E.H., Moore, G.T. (Eds.), *Advances in Environment, Behavior, and Design*, vol. 2. Plenum Press, New York, pp. 87–118.
- Stanford, R.A., 1999. *An Analysis of the Open Space-Designated Subdivision Concept as Applied in Hamburg Township, Michigan*. Unpublished Master's Thesis, Michigan State University, Michigan.

Rachel Kaplan is the Samuel T. Dana Professor of Environment and Behavior in the School of Natural Resources and Environment at the University of Michigan, where she is also a professor in the department of psychology. Her research focus on benefits of natural environments to human well-being is reflected in two co-authored volumes, *Experience of Nature: A Psychological Perspective* and *With People in Mind: Design and Management of Everyday Nature*, as well as numerous other publications.

Maureen E. Austin is an assistant professor of environmental science and outdoor studies at Alaska Pacific University in Anchorage. Her research interests include public participation in natural resource management, in particular exploring the exchange of information between resource professionals and the public. Her research and writing focus on urban forestry, land-use planning, and community resource management. She received her master's degree in forestry from Duke University and her PhD in community environmental education from the University of Michigan. Research for this article was conducted while serving as a research fellow at the School of Natural Resources and Environment at the University of Michigan.