ISEE/RC'2001
Fifth International Conference of the International Society for Ecological Economics (ISEE)
Russian Chapter (Russian Society for Ecological Economics - http://RSEE.narod.ru/)
"Ecological Economic Management and Planning in Regional and Urban Systems"

Institute oc Control Sciences, Russian Academy of Sciences, Moscow, Russia,
September 26-29, 2001

Valuation of Recreational Benefits and Visitor Conflicts in an Urban Forest

Oliver Kleiber,

Center for Sustainability Management (CSM),

University of Lueneburg, Germany

Abstract

This paper focuses on the following three issues: the conflicts and mutual disturbances of the recreation users visiting the urban forest of Allschwil, the willingness to pay (WTP) to visit this specific forest, according to different visitor groups, and finally the impact of the presence of a conflicting user group on the visitor's benefit.

The paper presents first results of an extensive visitors' survey carried out in the urban forest of Allschwil in the immediate vicinity of the City of Basle, Switzerland, between September 2000 and June 2001.

The visitors of the urban forest of Allschwil have a positive attitude towards an annual entry charge without regard to possible disturbances or conflicts between different user groups. More than every second visitor feels disturbed by at least one other user group. Every fifth visitor feeling disturbed is willing to pay for the exclusion of the disturbing group.

1. Introduction

A sustainable development of the forests demands that the forest as a natural habitat of plants and animals is permanently protected, its sustainable utilization is guaranteed and its protective and welfare function are secured. This co-relation is currently being investigated in an interdisciplinary research project at the University of Basle and the Center for Sustainability Management of the University of Lueneburg, which this survey is part of. The project aims to examine, describe and assess ecological, social and economic aspects and effects of the leisure time utilization of urban forests.

Forests are increasingly exposed to intensive recreational use and leisure activities (e.g. COLE, 1996; DWYER, 1994; SATCHELL, 1998) – especially in urban areas (e.g. WINTER et al., 1999). Large numbers of visitors lead to crowding and visitor conflicts. As a result and in order to

minimize the encounters visitors disperse increasingly in the woods, which results in a great burden on the forest as a natural habitat of plants and animals (e.g. BAUR, 1999; JACSMANN, 1990). For this reason, forestry managements not only face additional expenses caused by the recreational use of the forest but also diminishing revenues due to the reduction in timber quality and volume (e.g. BARTELHEIMER & BAIER, 1991; BERGEN, 1994).

Leisure activities require specific infrastructure such as paths for performing a physical fitness programme, fire places, mountain bike tracks, bridle paths, etc. and hence cause different costs. While forest managements can more or less assess these costs, the visitors' benefits have not yet been valuated. Different types of visitors such as strollers, dog owners, runners, horse riders, bikers etc. can be expected to benefit to a different extent from the use of the forest. To balance the recreational use and its impact forestry managements need to evaluate these benefits and understand and assess the interdependencies between the benefits of different user groups.

The surveyed forest, called "Allschwiler Wald", a deciduous forest of 210 ha, is located in the immediate vicinity of the City of Basle, Switzerland. It is an example of a highly frequented urban forest and is considered a typical local recreational area for the Basle residents. Easily accessible by foot, bicycle, public transport or car it offers a beautiful hilly landscape surrounded by open fields, making it attractive to strollers, walkers, cyclists and picnickers as well as to runners, bikers, horse riders, etc. However, the appropriate location and the easy access lead to over usage in some places and thus often to visible erosion with all the consequences for nature (BAUR, 1999; see also COLE et al., 1997).

The core topic of this research project is to investigate the extent of conflicts between forest user groups, the visitor's benefit of using the forest, and the impact of the presence of the most conflicting party on this benefit as well as the additional expenses and diminishing revenues faced by the forestry management due to the recreational use.

This paper presents first results focusing on the following three issues:

a) The willingness to pay (WTP) to visit the forest of Allschwil according to different visitor groups. It should be pointed out that even though many studies have been dealing with the WTP for recreational uses, even focusing on forests[1], the present survey is the first one to break it down to different recreation user groups.

b) The existence and extent of conflicts and mutual disturbances between the visitors; and

c) The WTP to exclude the most conflicting party.

The evaluation of the impact of the presence of a conflicting party on the visitor's benefit is based on the contingent valuation method (CVM) by assessing the WTP for the exclusion of the most disturbing group. The same method was used to evaluate the general annual WTP to visit the forest as well as the annual WTP per user group.

2. Method and Design of the Survey

A general problem in estimating economic values of environmental resources is that these resources are not sold in markets so there are no observations on actual transactions from which to infer preferences. But the values or benefits of environmental public goods are of great interest, for instance to compare them with the costs of providing recreation opportunities in forests. Publications in this field discuss several methods to quantify the benefits of environmental public goods. The best known and most established methods for the quantification

[1] For a good overview of several recent studies see UBA, 1998.

of recreation values are the travel-cost method (TCM) and the contingent valuation method (CVM).[2] For the study data was collected to determine the recreation value by both methods. However, the present paper concentrates on presenting descriptive results of assessing the annual WTP based on the CVM.

In order to assess the visitors' benefits mentioned above, the actual visitors of the forest of Allschwil were interviewed. Their individual benefit was identified by assessing their WTP for an annual entrance pass. Furthermore, visitors were asked whether they felt disturbed by other users and if they were willing to pay a fee for the exclusion of the group which they personally felt most disturbed by. This exclusion payment would be used to provide for a substitute recreational area for the disturbing group.

The data for the survey was collected by interviewing visitors of the forest of Allschwil who were passing certain control points located at different entrances to the forest. The interviews were based on a questionnaire, which was discussed with experts, pre-tested and revised before it was used for the survey.[3] The structured questionnaire contains 36 questions including sub-questions. A few open-ended questions are included in the questionnaire and at the end enough room for remarks is offered to ensure that respondents have an opportunity to express their views freely and to comment on the questions. The interviewers made frequently use of this possibility.

2.1 Annual entry charge

The aim of the question about the WTP for an annual forest recreation pass is to evaluate the annual recreational benefit of the forest to its visitors. The benefit can so be contrasted with the additional expenses and diminishing revenues caused by the recreational use of the forest.

An annual entry charge functions as payment vehicle for the elicitation of the general WTP. For this purpose a payment card, a typical instrument of the CVM, was used.[4] After the explanation of the situation in forest management[5] and the objective of an annual pass the WTP-question[6] was asked twice. First the payment card with a range of prices offered from CHF[7] '0.- ' to 'over 400.- ' was shown to the interviewee and he or she was asked a) "How much are you just willing to pay for such an annual pass?". In case of an existing WTP-question 19b) was added: "This means, if the annual pass was more expensive than CHF XY.- (amount indicated in question 19a)) you would no longer come to this forest and would not you pay more?" In case the interviewee denied he or she was asked to indicate his or her absolute "pain barrier".

---

[2] For the methods, their advantages/disadvantages and case studies see e.g. BATEMAN & WILLIS, 1999; BJORNSTAD & KAHN, 1996; CLAWSON & KNETSCH, 1966; ENDRES & HOLM-MÜLLER, 1998; GARROD & WILLIS, 1999; MARGGRAF & STREB, 1997; MITCHEL & CARSON, 1989; NAVRUD, 1992; WARD & BEAL, 2000.

[3] The design of the questionnaire and the survey is based on DIEKMANN (1997) and is influenced by the survey carried out by ELSASSER (1996). Due to comparison options of the WTP the questions about the annual entrance fee (not the exclusion payment) were taken from ELSASSER (1996) and slightly adapted. For further ideas and instructions how to design a CV questionnaire and survey see e.g. GREEN & TUNSTALL, 1999.

[4] For a general summary of elicitation techniques used with CVM see e.g. MÄNTYMAA, 1997, 19ff; BATEMAN et al., 1999.

[5] The preceding question (question 18) functions as an introduction to the CV question. Interviewees were explained that public use of the forest induces costs for the maintenance of trails, fire places, for waste disposal, etc.. They were then asked whether they believed this money was well invested or not and if they would be willing to pay more taxes to subsidize forest management. In the following (question 19a) they were explained that these costs (no information was given about the amount!) should be covered by the visitors like people are used to in swimming baths/lidos, fitness centres, cross-country skiing-tickets, etc. Additionally the respondents were asked to imagine that similar entrance fees had to be paid for every forest of the region as well as for forests in other regions.

[6] Question no. 19a) and 19b).

[7] Swiss Francs (CHF 1.00 ≈ US$ 0.60).

Apart from the WTP '*don't know*'- and '*no comment*'-answers were recorded as well. Strong opposition against entry charges ('protest vote') was recorded and the interviewee was informed that the WTP question was of academic interest only. After being given this information the respondent's WTP was asked for nevertheless. Usually the interviewees were not told whether or not it was intended to introduce an entrance fee and the interviewers were instructed to use this information restrictively. In case entry charges were rejected the interviewee was asked for his or her reason(s). Along with ELSASSER (1996) '*no comment*'- and '*don't know*'-answers to question 19a) were counted as no WTP (CHF 0.-). However, in case of a '*don't know*'-answer for the 'pain barrier' question (19b)) CHF 1.- was added to the amount reported in question 19a).

2.2 User conflicts and exclusion of the most conflicting user group

The question[8] whether or not the respondent feels disturbed by another user group[9] was designed as an open-ended question. No possibly disturbing groups were suggested by the interviewers. The respondent spontaneously had to name the disturbing groups and had to specify to what extend he or she felt bothered ('a little', 'much', 'very much'). In case more than one group were mentioned the most disturbing group had to be pointed out.

For assessing the impact caused by the presence of the most conflicting party on the visitor's benefit the WTP for exclusion of this party was called up with the elicitation technique of open-ended questions. In contrast to the entrance fee of question 19 the payment vehicle for the exclusion of the most disturbing group is conceived as an annual donation (question 20a)): "Assume that you could exclude the disturbing group by paying for a substitute – i.e. this particular group would not be allowed to enter this wood so that you were not disturbed anymore. The annual amount which you would pay would be used for setting-up a substitute recreational area and its maintenance. Against this background would you agree to make an annual payment?" In case of '*Yes*' the respondent was asked about the amount (question 20b)). '*No comment*'- answers to question 20a) and '*don't know*'-answers to question 20b) were treated the same way as in question 19a) and b) respectively.

2.3 Interviews

Between September 2000 and June 2001 720[10] statistically usable interviews were taken. For each of the four seasons a period of 18 (September) or nine (January) respectively eight days (April and June) was chosen, each including weekdays and two (January, April, June) or three (September) weekends. The interviews took place at seven different control points, located at the entrances of the forest.[11] In order to ensure the most possible range of visitors being interviewed the seven sites were selected in accordance with the scientific and socio-economic results of a study by BAUR (1999) and discussed with the ranger. BAUR distinguishes different levels of recreational use and density in the "Allschwiler Wald". Control points were chosen as to capture both people visiting places of low frequency as well as those going to very busy and troubled areas within the forest. Every day was split up in five time frames of three hours each, which were then randomly assigned to the seven control points, so that only one entrance was surveyed

[8] Question 15a) and 15b). Question 14 refers to user group(s) welcomed by the interviewee.
[9] In contrast to LOESCH (1980) users were classified according to their activities carried out in the forest, whereas the motivation of the visits or the attitudes towards the forest were not taken into account.
[10] 722 visitors agreed having a interview. Two of them aborted the interview after only a few questions and another two aborted just shortly before the end.
[11] There are about 15 official entrances to the forest of Allschwil.

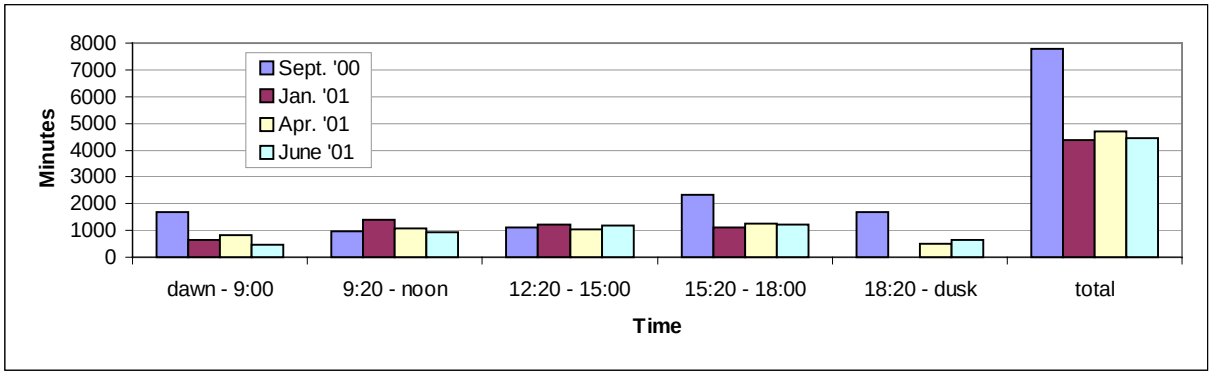
at the time.[12] All passers-by entering the forest at the surveyed site were counted. Whenever possible the visitors who passed by were asked for an interview.[13] When a group entered the forest the interviewee was chosen by random numbers.[14] Only visitors older than 15 years were interviewed.

Since the interviews were carried out by only four persons who were well trained the error rate could be kept very low and thus almost all the data was usable for statistical analysis. The analyses were conducted using the Statistical Package for the Social Sciences (SPSS 10.0.7) and Excel 2000.

3. Statistical Evaluation of the Interviews and Results

For the data capture a total of 355[15] hours were spent interviewing and/or counting the forest visitors at the seven selected sites. Figure 1 shows the allocation to the different time frames. During these hours 7434 visitors entering the forest were counted of whom 720 (= 9.7%) were interviewed. On average an interview took 14 minutes.

Figure 1: Time spent at interviews and/or counting the forest visitors, four seasons.

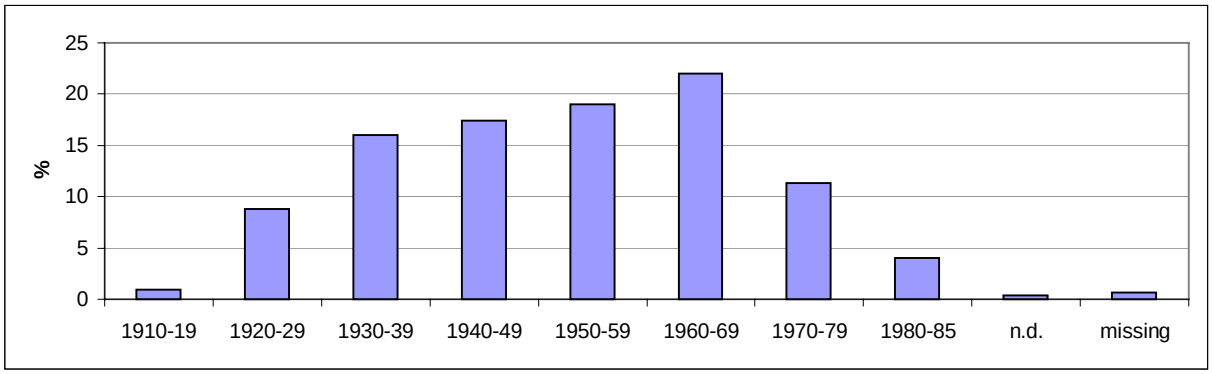


3.1 Demography of the interviewed visitors

Visitors of all age groups were interviewed (Figure 2). 53.3% were women and 46.7% men (n = 715). More than one third of the visitors started their visit of the forest less than 1.5km away from where they were interviewed. Starting point was home in 91,0% (n = 719) and 74,1% of the interviewees stated that the only reason for the trip was the visit of the forest. For another 15,3% (59,5% of the remaining 25.9%) the visit of the forest was the main reason for the trip whereas 5,4% considered it of minor importance (21.1% of the remaining 25.9%). 63,0% (n = 717) visit the forest of Allschwil more often than any other forest, park or open land, whilst 25,1% visit various places.

[12] Time frames: dawn (not earlier than 6.20am) - 9.00am., 9.20 - noon, 12.20 - 15.00pm., 15.20 - 18.00pm., 18.20 - dusk (not later than 8:20pm.).
[13] Most of the time the interviewers were by themselves. While the interviewer was interviewing a visitor people entering the forest were just counted.
[14] A sheet with group sizes and correspondent random numbers to cross out was given to the interviewers.
[15] September 2000: 130h, January 2001: 73h, April 2001: 78h, June 2001: 74h.

Figure 2: Age groups of interviewed visitors



For more than a third of the interviewed visitors (34.4%, n = 706) the distance between the starting point for the visit of the forest and the interview site at the entrance of the forest was less than 1,5km away. 66.9% had to travel 2.85km or less. Only 9.5% came from further away than 4.5km.

The forest of Allschwil is frequently visited: 65.2% of the interviewed persons (n = 710) come once a week or more often (Figure 3). Most people (91.1%, n = 719) stay for two hours or less (Figure 4).

Figure 3: Frequency of visits.

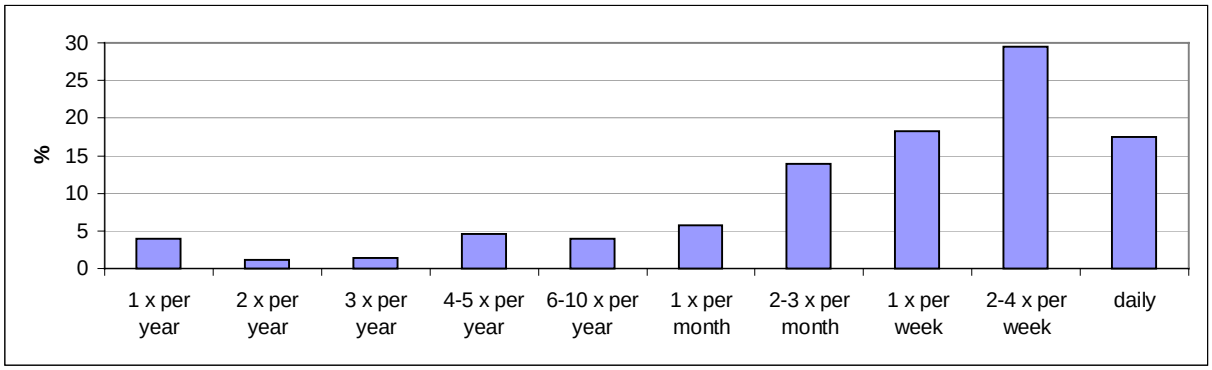
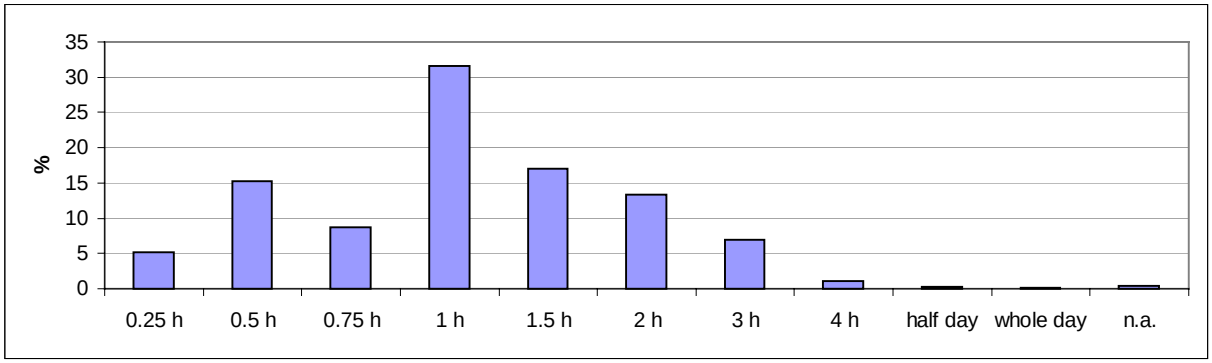


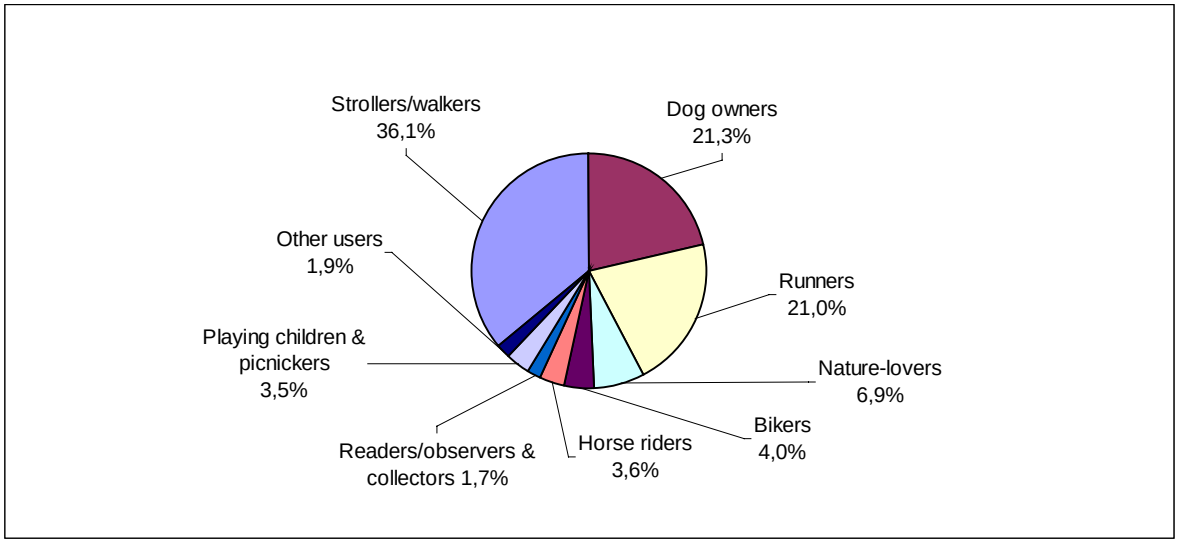
Figure 4: Duration of stay in the forest per visit.



3.2 User groups

Eleven different types of user groups or activities were identified among the interviewed visitors (n = 720): „Strollers/walkers“, „dog owners“, „bikers“, „runners“, „horse riders“, „playing children“,[16] „picnickers“, „readers/observers“, „nature-lovers“, „collectors“ and „other users“[17] (Figure 5). Most interviews were carried out with „strollers/walkers“ (36.1%), „dog owners“ (21.3%) and „runners“ (21.0%). „Picnickers“ (1.9%), „playing children“ (1.5%), „readers/observers“ (1.0%), „collectors“ (0.7%) and „other users“(1.9%) are all below 2%. In Figure 5 the smallest groups are merged. No hunters were met.

Figure 5: User groups



3.3 Willingness to pay for an annual forest recreation pass

Three quarters of all respondents are willing to pay an annual entry charge (74.9%, n = 716). The median[18] amount is CHF 100.-. In total 149 (20.7%) interviewees were given the information of the academic interest of the WTP-question. 88 (59.1%) of the informed still answered in the negative, 4 (2.7%) refused to answer, 55 (36.9%) were then willing to pay (the answers of 2 participants (1.3%) are missing).[19]

Compared to the 74.9% (n = 716) willing to pay (visitor weighted) for an annual pass the average mean of the WTP by user groups (group weighted) is only slightly lower (73.3%). „Picnickers“ reported the highest acceptance of an entry charge (92.9%, n = 14) while only 42,9% of the small group of „readers/observers“ (n = 7) would agree to pay such a fee (Table 1). As for the amount different user groups would accept as entrance fee, „runners“ (n = 151) and „bikers“ (n = 29) reported the highest WTP (CHF 150.- or 120.-) whereas „collectors“ (n = 5), „strollers/walkers“

[16] Interviewed were the adults accompanying the children.
[17] „Other users“ are visitors like garden plot owners, skaters, farmers, persons in wheel chairs, etc..
[18] Since strongly biased responses do not affect the median (as much as the mean) in this first analysis the median (of the second response (question 19b)) shall be primarily discussed. For further details (median of the first response, mean and standard error) see Table 1.
[19] Since more than 50% of the interviewees being given the information of the academic interest of this question answered in the negative the median WTP for an annual entry charge of these interviewees is CHF 0.-.

(n = 256)[20] and „picnickers“ (n = 14) indicated the lowest (CHF 55.-, 60.- and 60.50 respectively).

Most people not willing to pay for an annual entrance fee argued that costs induced by leisure activities should be paid as today by the local government or taxpayers.

Table 1: WTP for an annual pass

	Willing to pay		First response[e]			Second response[e]		
Forest user group (n[a])	In groups (weighted)	Mean of the 11 groups	Median [CHF]	Mean [CHF]	Standard error	Median [CHF]	Mean [CHF]	Standard error
Strollers/Walkers (256[b])	67,2%		50,0	80,7	9,6	60,0	128,9	15,3
Absolute number	172		256	256		256	256	
Dog owners (153)	73,9%		100,0	124,9	11,7	101,0	197,8	21,5
Absolute number	113		153	153		153	153	
Bikers (29)	82,8%		100,0	141,7	54,0	120,0	263,9	92,3
Absolute number	24		29	29		29	29	
Runners (151)	85,4%		100,0	139,1	12,0	150,0	224,6	21,0
Absolute number	129		151	151		151	151	
Horse riders (26)	73,1%		60,0	107,2	25,9	100,5	186,0	45,0
Absolute number	19		26	26		26	26	
Playing children[c] (11)	72,7%		30,0	48,6	15,8	100,0	110,0	35,0
Absolute number	8		11	11		11	11	
Picnickers (14)	92,9%		47,5	48,7	7,9	60,5	70,6	13,2
Absolute number	13		14	14		14	14	
Readers/observers (7)	42,9%		0,0	71,4	34,3	0,0	128,6	71,4
Absolute number	3		7	7		7	7	
Nature-lovers (50)	84,0%		60,0	110,1	25,8	100,0	192,6	46,7
Absolute number	42		50	50		50	50	
Collectors (5)	60,0%		45,0	129,0	77,1	55,0	471,0	386,3
Absolute number	3		5	5		5	5	
Other users[d] (14)	71,4%		55,0	73,9	25,5	90,0	107,9	36,4
Absolute number	10		14	14		14	14	
All respondents (n=716[b])	74,9%	73,3%	60,0	106,9	5,9	100,0	176,3	10,4
Absolute number	536	11	716	716		716	716	

[a] Number of group members interviewed.
[b] excl. 4 WTP-answers missing (256 instead of 260 strollers/walkers).
[c] Interview partners were the adults accompanying the children.
[d] Other users: garden plot owners, skaters, farmer, person in wheel chair etc.
[e] In 9 cases '*don't know*' was answered to the WTP-question (4 strollers/walkers, 1 dog owner, 2 horse riders, 2 nature-lovers). These answers were counted as CHF 1.-/year.

3.4 Disturbed and most disturbing user groups

In total 720 visitors from all different user groups were asked whether or not they felt disturbed by the presence of another group. When several groups were named the respondents had to define the most disturbing one.

Disturbed groups

51.3% of the interviewees (visitor weighted, n = 720) or 51.7% (group weighted) feel disturbed by one or several other user groups in the forest. Especially the „picnickers“ (64.3%), „horse

[20] 4 of the WTP-answers are missing; in total 260 „strollers/walkers“ were interviewed.

riders“ (61.5%), „nature-lovers“ (64.0%) and the group „other users“ (64.3%) complain about other visitors. Even the second less disturbed group („strollers/walkers“) is only just below the average (46.2%). The only visitors obviously not feeling intensively detracted by others are the „readers/observers“ (14.3%). (Table 2).

Most disturbing groups

Dogs („dog owners“) and „bikers“ seem to be the most problematic groups. 17.9% of all interviewed visitors (n = 720) reported that they feel mostly disturbed by dogs. 15.7% feel mostly disturbed by „bikers“.„Partying people/picnickers“[21] cause some disturbance (5.0%) and „other disturbing groups“ was considered the most disturbing group by 9.2% (Table 2, bottom line). „Other disturbing groups“ comprises vandals, visitors with motorized vehicles, etc.

Table 2: Disturbed and most disturbing user groups

	Disturbed		Most disturbing group											
Disturbed group (n[a])	In groups	All respondents, (n=720)	Strollers/Walkers	Dogs (dog owners)	Bikers	Runners	Horse riders	Playing children[b]	Partying people/Picnickers[d]	Readers	Nature-lovers	Collectors	"Other disturbing groups"[e]	Most disturbing group missing
Strollers/Walkers (260)	46,2%	16,7%		16,9%	17,7%	0,4%	1,2%		3,8%				5,8%	0,4%
Absolute number	120			44	46	1	3		10				15	1
Dog owners (153)	50,3%	10,7%		2,6%	21,6%	2,0%	3,3%	0,7%	5,2%				14,4%	0,7%
Absolute number	77			4	33	3	5	1	8				22	1
Bikers (29)	55,2%	2,2%	3,4%	31,0%			3,4%		3,4%				13,8%	
Absolute number	16		1	9			1		1				4	
Runners (151)	53,6%	11,3%		30,5%	5,3%		2,6%	0,7%	4,6%				9,9%	
Absolute number	81			46	8		4	1	7				15	
Horse riders (26)	61,5%	2,2%		3,8%	42,3%	3,8%			3,8%				7,7%	
Absolute number	16			1	11	1			1				2	
Playing children[b] (11)	54,5%	0,8%		45,5%					9,1%					
Absolute number	6			5					1					
Picnickers (14)	64,3%	1,3%		14,3%					28,6%				21,4%	
Absolute number	9			2					4				3	
Readers/observers (7)	14,3%	0,1%			14,3%									
Absolute number	1				1									
Nature-lovers (50)	64,0%	4,4%		22,0%	24,0%			2,0%	6,0%				10,0%	
Absolute number	32			11	12			1	3				5	
Collectors (5)	40,0%	0,3%		40,0%										
Absolute number	2			2										
Other users[c] (14)	64,3%	1,3%		35,7%	14,3%		7,1%		7,1%					
Absolute number	9			5	2		1		1					
Mean of the 11 groups	51,7%													
All respondents (n=720)		51,3%	0,1%	17,9%	15,7%	0,7%	1,9%	0,4%	5,0%	0,0%	0,0%	0,0%	9,2%	0,3%
Absolute number	369		1	129	113	5	14	3	36	0	0	0	66	2

[a] Number of group members interviewed.
[b] Interviewed were the adults accompanying the children.
[c] Other users: garden plot owners, skaters, farmer, person in wheel chair etc.
[d] Because the difference between the activities picnicking (only 3 interviewees (2 strollers/walkers, 1 dog owner) reported that they feel mostly disturbed by picnickers) and partying (33 interviewees felt mostly disturbed by partying people) is not very clear these two groups were merged.

[21] Because the difference between the activities picnicking (only 3 interviewees (2 „strollers/walkers“, 1 „dog owner“) reported that they feel mostly disturbed by „picnickers“) and partying (33 interviewees felt mostly disturbed by „partying people“) is not very clear these two groups were merged.

[e] "Other disturbing groups": e.g. vandals, visitors with motorized vehicles etc.

With the threshold set at 20% (every fifth person feels disturbed; see light grey fields) potential conflicts become evident between several groups. Especially dogs („dog owners“) and „bikers“ are considered a problem by almost every other group.

More than every third person of the groups „playing children“[22] (45.5%), „collectors“ (40.0%) and „other users“ (35.7%) feels annoyed by dogs. Dogs also bother almost one third of all „bikers“ and „runners“ (31.0% and 30.5% respectively). „Bikers“ cause disturbance especially to „horse riders“ (42.3%), „nature-lovers“ (24.0%) and „dog owners“ (21.6%). 28.6% of the „picnickers“ complain about „partying people“ and 21.4% of the „picnickers“ about „other disturbing groups“.

3.5 WTP for exclusion of the most disturbing group

Every fifth (19.8%) respondent out of those feeling disturbed by other visitors (n = 369) is willing to pay for the exclusion of the most detracting group (Table 4). Looking at the average level of the single user groups this is true for 31,4%. In every group except for the „collectors“ some interviewees feel disturbed to such extend that they would pay for the exclusion of the disturbing party. The highest percentage is found among „readers/observers“ (100%), „picnickers“ (44.4%) and the „playing children“[23] (33.3%). Among the large groups such as „strollers/walkers“, „dog owners“ and „runners“ almost every fifth respondent 18.3%, 21.1% and 16.3% respectively of those feeling disturbed would pay to get rid of the detracting groups. Only the „collectors“ refuse to pay for the exclusion of the conflicting party.

The groups with the highest WTP for exclusion are the „horse riders“ (CHF 150.-), „runners“ (CHF 100.-) and „dog owners“ (CHF 100.-) (Table 4).

Table 3: Exclusion payment faced by the disturbing groups

	Most disturbing group										
	Strollers/Walkers	Dogs (dog owners)	Bikers	Runners	Horse riders	Playing children[b]	Partying people/Picnickers	Readers	Nature-lovers	Collectors	"Other disturbing groups"[c]
Median[a] [CHF]	5,0	100,0	80,0	20,0	20,0	50,0	45,0				40,0
Mean[a] [CHF]	5,0	84,1	110,7	20,0	20,0	50,0	62,2				56,3
Standard error	-	12,1	18,7	-	-	-	24,3				14,2
Absolute number of visitors willing to pay for the exclusion of the most disturbing group	1	29	22	1	1	1	5[d]	0	0	0	13

[a] In 4 cases respondents were willing to pay for an annual donation for the exclusion of the most disturbing group (2 others, 1 biker and 1 partying people) but couldn't say how much. These answers were counted as CHF 1.-/year.
[b] Interviewed were the adults accompanying the kids/teenagers.
[c] "Other disturbing groups": e.g. vandals, visitors with motorized vehicles etc.
[d] No picnickers were mentioned explicitly (only parting people were reported).

[22] Interviewed were the adults accompanying the children.
[23] Interviewed were the adults accompanying the children.

Table 4: WTP for exclusion of most disturbing group

Disturbed group (n[a])	Only group members willing to pay				All group members feeling disturbed		
	Willing-to-pay (in groups, weighted)	Median[h] [CHF]	Mean[h] [CHF]	Standard error	Median[h] [CHF]	Mean[h] [CHF]	Standard error
Strollers/Walkers (120[b])	18,3%	50,0	81,7	18,0	0,0	14,9	4,4
Absolute number	21	21	21		115	115	
Dog owners (77[c])	21,1%	100,0	87,2	18,0	0,0	18,4	5,5
Absolute number	16	16	16		76	76	
Bikers (16[d])	20,0%	10,0	21,7	14,2	0,0	4,3	3,3
Absolute number	3	3	3		15	15	
Runners (81[e])	16,3%	100,0	102,3	17,1	0,0	16,6	5,0
Absolute number	13	13	13		80	80	
Horse riders (16)	25,0%	150,0	175,0	47,9	0,0	43,8	22,3
Absolute number	4	4	4		16	16	
Playing children[f] (6)	33,3%	75,0	75,0	25,0	0,0	25,0	17,1
Absolute number	2	2	2		6	6	
Picnickers (9)	44,4%	47,5	61,3	20,0	0,0	27,2	13,5
Absolute number	4	4	4		9	9	
Readers/observers (1)	100,0%	50,0	50,0		50,0	50,0	71,4
Absolute number	1	1	1		1	1	
Nature-lovers (32)	25,0%	50,0	42,5	5,3	0,0	10,6	3,5
Absolute number	8	8	8		32	32	
Collectors (2)					0,0	0,0	
Absolute number	0	0	0		2	2	
Other users[g] (9)	11,1%	20,0	20,0		0,0	2,2	2,2
Absolute number	1	1	1		9	9	
Mean of the 11 groups	31,4%						
All respondents (n=720)	19,8%	50,0	82,3	8,4	0,0	16,7	2,4
Absolute number	73	73	73		361	361	

[a] Number of group members feeling disturbed.
[b] incl. 5 WTP-answers which are missing (120 instead of 115).
[c] incl. 1 WTP-answer which is missing (77 instead of 76).
[d] incl. 1 WTP-answer which is missing (16 instead of 15).
[e] incl. 1 WTP-answer which is missing (81 instead of 80).
[f] Interviewed were the adults accompanying the kids/teenagers.
[g] Other users: garden plot owners, skaters, farmer, person in wheel chair etc.
[h] In 4 cases respondents (2 strollers, 1 dog owner, 1 runner) were willing to pay a annual donation for exclusion but couldn't say how much. These answers were counted as CHF 1.-/year.

As illustrated above dogs („dog owners") and „bikers" are the most conflicting groups. In accordance to this result these two groups face by far the highest exclusion payment (Table 3). In general, visitors disturbed by dogs and „bikers" are willing to pay CHF 100.- and 80.- respectively for their exclusion.

Most people not willing to pay argued that every person should have the right to visit this forest and nobody should be excluded. To their opinion the disturbance was not enough to justify these measures. Instead tolerance and respect should be fostered.

4. Discussion and Prospect

This is the first empirical study known by the author examining and measuring the extent of conflicts between user groups as well as measuring the WTP to exclude the most disturbing user group in order to increase welfare or leisure value of the urban forest.

Almost three quarters (74.9%) of all respondents are willing to pay for an annual entry fee. This result is slightly higher than the rates of other surveys (e.g. ELSASSER, 1996: 72.9%; WINTER et al., 2000: 71.6%). The visitor weighted median WTP for an annual entry pass for the forest of Allschwil is CHF 100.- per year. Since most of the visitors of the forest of Allschwil visit this forest very frequently (62.5% come at least once a week)[24] the annual entry charge seems to be the most appropriate and realistic payment vehicle. Possible influences on the amount of the WTP like income, age, sex, frequencies of visits, amount of family members, membership of wildlife/nature conservation organisations, etc. have been collected and will have to be analysed in detail in this project. This might explain at least to some extent the difference between the WTP of the Basle and the Hamburg forest visitors. The median annual WTP in Hamburg was 1992/93 DM 75.- [25] (ELSASSER, 1996). Other studies estimating the WTP for recreational use of forests asked for or calculated the WTP per visit.[26] Therefore the present paper, offering a mere first outline of the analysis of the collected data, does not yet put the results into perspective by comparing them with other studies.

The analyses per group are difficult for certain groups because of their small sizes (e.g. „collectors", „readers/observers", „playing children", „picnickers"). However, these small groups were not merged for the presented study in order to illustrate the differences between the groups.

„Picnickers" (92.9%), „runners" (85.4%) and „nature-lovers" (84.0%) have the most positive attitude towards a general annual entry charge. Sportive groups like „runners" (CHF 150.-) and „bikers" (120.-) as well as the „dog owners" (CHF 101.-) indicate the highest median WTP for an annual fee.

In contrast to recent publications about forest visitors in Switzerland (BUWAL, 1999; MOSER, 2000)[27] and in accordance with BAUR et al. (1999) every second visitor (51.3%) of the forest of Allschwil feels disturbed by one or several other user groups. Dogs and „bikers" are the most problematic groups being reported by 17.9% and 15.7% respectively of all respondents. Dogs mostly detract groups like „playing children"[28] (45.4%), „collectors" (40.0%) and „other users"[29] (35.7%). Since these groups are rather small in number stated results must not be overstressed. The conflicts or the general impact caused by dogs to „bikers" (31.0%) and „runners" (30.55) are more relevant. „Bikers" especially annoy „horse riders " (42.3%) but also „nature-lovers" (24.0%) and „dog owners" (21.6%). Between „dog owners" and „bikers" the conflict obviously is mutual. More than every fourth (28,6%) „Picnicker" feels disturbed by „partying people". Reasonable assumption for this fact is that they use the same infrastructure like fire places etc. and therefore they are often in the neighbourhood of each other.

A positive attitude towards the WTP for the exclusion of the most disturbing forest user group was reported by every fifth respondent (19.8%) feeling detracted. Particularly „horse riders ", „runners" and „dog owners" are willing to pay annually CHF 150.-, 100.- and 100.- respectively

[24] For an overview of frequency rates of forest visits in urban and periurban areas see SCHMITHÜSEN & WILD-ECK, 2000, 398/399.

[25] 1993: DM 1.- ≈ CHF 0.90, DM 1.- ≈ US$ 0.60.

[26] For a good overview of several recent studies see UBA, 1998.

[27] According to BUWAL (1999) and MOSER (2000) recreational forest users hardly disturb themselves.

[28] Interviewed were the adults accompanying the children.

[29] „Other users" are visitors like garden plot owners, skaters, farmers, persons in wheel chairs, etc.

for the exclusion of the most conflicting party. The highest annual amount for exclusion was reported against dogs and „bikers“ (CHF 100.- and 80.- respectively).

Over-usage of the forest of Allschwil is recognised by its users. Therefore they are willing to pay for the exclusion of the most disturbing group in order to reduce conflicts and, at the same time, to achieve a level of use which is more sustainable. In addition they are willing to pay for an annual entry fee to cover the costs for the provision and maintenance of recreation facilities.

More detailed and backed up statistical analyses will be carried out. Influences of variables like income, age, sex, frequencies of visits, number of family members, membership of wildlife/nature conservation organisations, seasons, etc. on the WTP for the annual entry fee and the WTP for exclusion of the most conflicting party are to be analysed. Moreover the influence of the information ‘annual pass as an academic question’ and the intensity of the conflicts will be looked at. The results will be put into perspective by comparing them with other studies in this field. Additionally, they will be contrasted to the forestry management’s expenses in order to come up with proposals to the forest management.

Acknowledgements

This survey is part of the interdisciplinary project "Welfare Function of the Forest" funded by the Foundation "Mensch-Gesellschaft-Umwelt" (MGU), University of Basle.

References

Bartelheimer, Peter & Baier, M. (1991): Belastungen der Forstbetriebe aus der Schutz- und Erholungsfunktion des Waldes. Schriftenreihe des Bundesministeriums für Ernährung, Landwirtschaft und Forsten, Angewandte Wissenschaft, Heft 399. Münster-Hiltrup: Landwirtschaftsverlag.

Bateman, Ian, Langford, Ian & Rasbash, Jon (1999): Willingness-to-Pay Question Format Effects in Contingent Valuation Studies. In: Bateman, Ian & Willis, Kenneth (eds.): Valuing Environmental Preferences; Theory an Practice of the Contingent Valuation Method in the US, EU, and Developing Countries. Oxford: Oxford University Press, 511-539.

Bateman, Ian & Willis, Kenneth (eds.) (1999): Valuing Environmental Preferences; Theory an Practice of the Contingent Valuation Method in the US, EU, and Developing Countries. Oxford: Oxford University Press.

Baur, Bruno, Gilgen, Christian, Lack, Markus, Herde, Thomas, Rusterholz, Hans-Peter, Stingelin, Karin, Dell, Denise, Alig, Peter, Lesslauer, Claude, Sutter Matthias (1999): Der Allschwiler Wald. Allschwiler Schriften. Allschwil: Verkehrs- und Kulturverein Allschwil,.

Bergen, Volker (1994): Probleme, Methoden und Lösungsmöglichkeiten der Forstpolitik. Forst und Holz, 49. Jg., Heft 6, 154-157.

Bjornstad, David & Kahn, James (eds.) (1996): The Contingent Valuation of Environmental Resources; Methodological Issues and Research Needs. Cheltenham: Elgar.

BUWAL (ed.) (1999): Gesellschaftliche Ansprüche an den Schweizer Wald – Meinungsumfrage. Schriftenreihe Umwelt, Nr. 309.

Clawson, Marion, Knetsch, Jack (1996): Economic of Outdoor Recreation. Baltimore: John Hopkins University Press.

Cole, David (1996): Wilderness Recreation Use Tends, 1965 Through 1994. Res. Pap. INT-RP-488. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station-Ogden.

Cole, David, Watson, Alan, Hall, Troy & Spildie, David (1997): High-Use Destinations in Wilderness: Social and Biophysical Impacts, Visitor Responses, and Management Options. Res. Pap. INT-RP-496. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

Diekmann, Andreas (1997): Empirische Sozialforschung; Grundlagen, Methoden, Anwendungen. Reinbek bei Hamburg: Rowohlt.

Dwyer, John (1994): Customer Diversity and the Future Demand for Outdoor Recreation. Gen. Tech. Rep. RM-252. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station.

Elsasser, Peter (1996): Der Erholungswert des Waldes: Monetäre Bewertung der Erholungsleistung ausgewählter Wälder in Deutschland. Schriften zu Forstökonomie, Band 11. Frankfurt: Sauerländer.

Enders, Alfred, Holm-Müller, Karin (1998): Die Bewertung von Umweltschäden: Theorie und Praxis sozioökonomischer Verfahren. Stuttgart: Kohlhammer.

Garrod, Guy & Willis, Kenneth (1999): Economic Valuation of the Environment: Methods and Case Studies. Cheltenham: Elgar.

Green, Colin & Tunstall, Sylvia (1999): A Psychological Perspective. In: Bateman, Ian & Willis, Kenneth (eds.): Valuing Environmental Preferences; Theory an Practice of the Contingent Valuation Method in the US, EU, and Developing Countries. Oxford: Oxford University Press, 207-527.

Jacsman, Janos (1990): Die mutmassliche Belastung der Wälder durch die Erholungssuchenden. ORL-Bericht 79/1990. Zürich: vdf.

Loesch, Gerhard (1998): Typologie der Waldbesucher. Betrachtung eines Bevölkerungs-querschnitts nach dem Besuchesverhalten, der Besuchsmotivation und der Einstellung gegenüber dem Wald. Dissertation. Forstliche Fakultät der Georg-August-Universität Göttingen.

Mäntymaa, Erkki (1997): Essays on environmental benefits and hypothetical markets. Department of Economics, University of Oulu. Finland: Oulu University Press.

Marggraf, Rainer & Streb, Sabine (1997): Ökonomische Bewertung der natürlichen Umwelt: Theorie, politische Bedeutung, ethische Diskussion. Heidelberg, Berlin: Spektrum.

Mitchell, Robert, & Carson, Richard (1989): Using Surveys to Value Public Goods: The Contingent Valuation Method. Washington, D.C.: Resources for the Future.

Moser, Kuno (2000): Nutzergruppen im Rahmen des Waldnutzungskonzepts Naturlandschaft Sihlwald. Konfliktpotentiale und Regelungsmöglichkeiten. Thesis for diploma. Departement Forstwissenschaften, Professur Forstpolitik und Forstökonomie, ETH Zürich.

Navrud, Ståle (ed.) (1992): Pricing the European Environment. Oxford: Oxford University Press.

Satchell, Michael (1998): Mountain bikers over corporate loggers. U.S. News & World Report, 05/18/98, Vol. 124, Issue 19, 36.

Schmithüsen, Franz, Wild-Eck, Stephan (2000): Uses and perceptions of forests by people living in urban areas – findings from selected empirical studies. Forstwissenschaftliches Centralblatt, No. 119, 395-408.

UBA (ed.) (1998): Die Bedeutung des Naturvermögens und der Biodiversität für eine nachhaltige Wirtschaftsweise: Möglichkeiten und Grenzen ihrer Erfassbarkeit und Wertmessung. Forschungsbericht 101 03 165/02. Berlin: Schmidt.

Ward, Frank, Beal, Diana (2000): Valuing Nature with Travel Cost Models: A Manual. Cheltenham: Elgar.

Winter, Patricia, Palucki, Laura, Burkhardt, Rachel (1999): Anticipated Responses to a Fee Programm: The Key is Trust. Journal of Leisure Research, Third Quarter, Vol. 31, Issue 3, 207-227.

Biography

Dipl. Umwelt-Natw. Oliver Kleiber, research assistant, Center for Sustainability Management (CSM), University of Lueneburg, Germany.

Contact: Center for Sustainability Management (CSM), Chair of Corporate Environmental Management, University of Lueneburg, Scharnhorststr. 1, 21335 Lueneburg, Germany.

Tel.: ++49-(0)4131/ 78 2128.

Fax: ++49-(0)4131/ 78 2186.

email: kleiber@uni-lueneburg.de

Internet: www.uni-lueneburg.de/umanagement