“My Husband Usually Makes Those Decisions”: Gender, Behavior, and Attitudes Toward the Marine Environment

Misse Wester · Britta Eklund

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Abstract Human behavior impacts the environment we live in. In order to better understand how one group, boat owners, in three Nordic countries adjacent to the Baltic Sea; Sweden, Finland and Denmark, viewed the relationship between the marine environment, leisure boats and issues of responsibility, a survey study was conducted ($n = 1701$). The results show that there are differences between gender in many areas and those women in general are more environmentally friendly than men in their views and behavior. Men and women seek information about boating by different channels and this knowledge may be used in future information campaigns. Both men and women ranked boat owners as having the lowest impact on the marine environment and perceived these to be responsible for addressing environmental issues caused by leisure boat activities. The results also show that it is important to prove the effectiveness of an environmentally safe product since this factor is ranked higher than price when considering buying a product. The results suggest that once environmentally friendly behavior is established, such as recycling, this behavior continues. One implication of this study is that small changes in human behavior are seen as acceptable but larger commitments are more difficult to achieve. If individuals do not feel responsible for causing environmental damage, this aspect needs to be addressed in information aimed at this group. Novel

approaches on framing the information and new ways of disseminating information are needed.

Keywords Marine environment · Pro-environmental behavior · Gender · Anti-fouling · Boat owners

Introduction

It comes as no surprise today that human behavior impacts the environment we live in. Most often, the negative consequences of human activities receive the most attention and large efforts have been performed that aim to reduce man-made environmental damage. In some settings it seems paradoxical that some activities undertaken to enjoy and interact with ones natural surroundings, such as hiking, boating or fishing, can damage the very nature that is the target of enjoyment. Increased tourism to more remote and untouched parts of the world, might threaten the ecology of the place. Similarly, increased boating for recreation or fishing in sensitive archipelagos might disturb the marine environment by the release of chemicals, wastes or exhausts.

Environmental Issues

In recent years, the consequences of damaging human behavior have received much attention, ranging from the development of environmental legislation to information campaigns calling for voluntary actions on an individual level that reduce the impact of the environment. Many scientific studies have aimed at investigating the role of attitudes and values, and how these relate to environmental concerns and behavior. It is usually found that environmental problems are perceived as serious risk and that most people see themselves as environmentally conscious

M. Wester (✉)
Division of Philosophy, The Royal Institute of Technology,
Teknikringen 78B, 100 44 Stockholm, Sweden
e-mail: misse.wester@abe.kth.se

B. Eklund
Department of Applied Environmental Science, Stockholm
University, Svante Arrhenius väg 8, 114 18 Stockholm, Sweden

(Schultz and others 2005). However, the link between attitudes and behavior is weak and is affected by multiple factors (Mainier and others 1997, Cottrell 2003). This means that having a positive attitude toward recycling or reducing waste or pollutants in theory is one thing; when faced with a practical situation and when choosing how to act, other factors than attitudes and values are included. It can also be a case of having a positive attitude toward behaving environmentally friendly, but not being able to translate this attitude into behavior (Pe'er and others 2007). Indeed, behavior or behavioral intentions can be quite inconsistent and must be further examined (Steg and Vlek 2009). Stern (2000) found three different kinds of behaviors that are governed by different sets of values and norms: consumer patterns, where the focus is on what goods are bought; environmental stewardship focusing on, e.g., voting; and policy support, such as willingness to pay. Research has also shown that values are not a one-dimensional concept but rather encompass a range of dimensions. In an attempt to explain the link between environmental attitudes and values, values are divided into three categories that relate to human attitudes and behavior and negative consequences for valued objects (Stern and Dietz 1994). The three dimensions are: self, other people and all living things (Schultz and others 2005). In order to understand the mechanisms that underlie human behavior, focus need to be on how individuals perceive their ability to adapt. It is of great importance, when formulating desired behavioral changes, whether people feel they can or cannot respond to changes in the environment (Grothmann and Patt 2005). For example, attitudes toward recycling might be positive but there are situational constraints that hinder this act. This suggests that a shift in focus from attitudes to situations or logistics need to be done (Barr and Gilg 2007). Households that consider recycling their food waste do express a pro-environmental attitude which is stipulated with an 'if'-clause: they want to contribute to a sustainable waste management *if* others do the same, or *if* they are rewarded in some sense (Andermyr and Johansson 2008). The effects of climate change has recently been given much attention, issues relating to the marine environment are also perceived as serious environmental issues, with trash in the ocean being a source of concern for many individuals (Burger and others 1999). Tied to the issues of values and attitudes is the function of responsibility. If I value an object highly, say the local lake where I live, and feel that there are things I can do to reduce the negative impact on human behavior on this lake, chances are I will engage in activities that do not harm this lake. Of course, the other end of this scale is when there are natural objects that I do not value as highly, feel that there is little I can do about the environmental damage to this object and that the responsibility of doing this falls on some other actor, my

behavior will be different. Many times, it is difficult to balance what is reasonable for the individual to do and what falls on manufacturers, retailers and regulators to decide.

Regulation plays one such role in coming to terms with environmental problems. If harmful substances are banned and phased out, there will be no choice to make for the individual consumer. One example of legislation on an international level that aims at reducing human-made environmental problems is the Biocidal Products Directive (BPD 1998) (98/8/EC) that regulates the use of biocidal substances throughout the European Union. Right now, a harmonization process is going on within this Directive where the active biocides in different products are evaluated. One of the product groups is anti-fouling paints. The aim is to overcome the existing variations across nations, within countries and applications for different areas and groups. In most countries the regulations differ between pleasure-boats and larger ships with more strict regulations for pleasure boats. The reason is that the smaller boats usually sail closer to the shore and moor in shallow areas, which are important recruiting areas for a number of organisms and the coastal ecosystem (Pihl and others 1995; Eriksson and others 2004; Sandström and others 2005; Lotze and others 2006). An example of differences between countries is the use of anti-fouling paints for pleasure boats in the Baltic Sea, where Sweden has the most strict regulation and have not approved any anti-fouling paints based on copper leakage (Swedish Chemicals Agency 1998) contrary to the other Baltic countries. However, along the Swedish west-coast, where the problem of fouling is worse, copper leaking paints are allowed but may maximally release 200 $\mu\text{g Cu/cm}^2$ during the first 14 days and maximally 350 $\mu\text{g Cu/cm}^2$ during the first 30 days. These leakage rates were also introduced for Danish waters in 2003. When it comes to dumping human waste into the sea, Finland has a zero-tolerance policy and requires all leisure boats to use emptying stations for their latrines. However, controlling the compliance of these two laws is not easy since it is difficult to perform inspections of these activities at sea. The Baltic Sea is a particularly interesting area of study since it is governed not only by national legislation but also on the European level. This means that multiple actors have a stake in formulating environmental issues—both *what* issues to address and *how* best to address them (Haila 2008).

Boating as Recreation and Environmental Concern

In Sweden alone, the number of leisure boats is estimated to about 718,000 and ca 14,000 new boats are sold every year (Statistics Sweden 2004). This means that by 2009,

the number of boats can be up to 800,000, giving Sweden one of the highest ratings of boats *per capita*. For Denmark and Finland, the number of leisure boats is estimated to be roughly the same as for Sweden. As there are no national registers documenting the actual number or types of leisure boats owned in the respective countries, it is difficult to give an exact figure on how many leisure boats there are in the Baltic area. Even though the exact impact of leisure boats on the marine environment cannot be determined, three major sources of pollution that stem from leisure boats are well-known. First, the exhausts from motors (both 2-stroke and 4-stroke motors) into the marine environment is one source of pollution (Eklund 2008). Second, the use of anti-fouling paint on the boat hull is a documented source of biocides, e.g. copper, tributyltin and irgarol (Eklund and others 2008). Third, human waste from leisure boats that is dumped into the ocean increases the nitrogen and phosphorus contents and by this enhances eutrophication in the sea (Schiewer and Schernewski 2002).

Now, using a boat for a recreational activity is not purely negative. Besides giving the individuals a certain amount of pleasure, being engaged in outdoor activities and the involvement in environmental educational programs 'in the field' can increase pro-environmental attitudes (Cottrell 2003; Zelezny 1999). Of course, there are variations in how pro-environmental attitudes are expressed and to what extent individuals are able to behave environmentally friendly, where gender is one of these differences.

Gender Differences

Studies have shown that women are more involved in environmental issues when compared to men, but that this involvement usually is more informal and through performing voluntary actions, whereas men are more often members of environmental organizations (Torgler and others 2008). Overall, the results from studies on the relationship between gender and environmental concern and attitudes are mixed (Dietz and others 1998; Torgler and others 2008). Women express a greater willingness to take voluntary actions to prevent further effects of climate change, whereas men are more likely to expect changes to come through governmental policy and regulatory processes (O'Connor and others 1999). Other studies suggest that women might have stronger pro-environmental attitudes than men, and that this might affect their consumer behaviour but not their willingness to make personal sacrifices for the benefit of the environment (Dietz and others 1998). These differences are intriguing and have implications for the actions of individuals, since men and women have different views on factors that ultimately affect behavior. There are also other differences between genders

that are of interest here. One example is that cars more often are owned by men and that men more often use the car compared to women (SIKA 2007). Studies in leisure constraints show that both men and women feel constrained by various factors such as lack of time or money, social or geographical isolation, and lack of skills but that these constraints decrease with age (Jackson and Henderson 1995). Looking at gender differences, women experience more social isolation and lack of skills that prevent them from engaging in leisure activities (ibid). In risk research clear differences between the risk perception of men and women have been found, where men are thought to have more knowledge of specific risks or perceive to have more influence over them than women do (Finucane and others 2000; Wester-Herber and Warg 2000; Siegrist and others 2005). Also, the social group the individual identifies with is important for behavior. For example, the function of social contracts, social status or the perception of how others behave on environmentally sustainable behavior has been investigated (see Gardner and Stern 2002 for a review; Johansson-Stenman and Martinsson 2006). Some argue that married couples with children are more constrained or compliant in their behavior. This in turn is a result of their involvement in their communities and that women look to their children's' future as a reason to behave in a certain manner. There has been some critique that differences in perception between genders are often observed, but rarely explained (Gustafson 1998). Some have tried to explain that women, because of their traditional roles as nurturer and caregivers, have more pro-environmental attitudes than men. This perspective has been questioned since attitudes toward the environment are formed before adulthood is achieved (Torgler and others 2008). Instead focus has been put on issues of perceived control and influence (Finucane and others 2000). Others have pointed out the importance of examining gender as a cultural expression of social norms (Jackson and Henderson 1995).

The aim of this study was to investigate how boat owners in three Nordic countries adjacent to the Baltic Sea (Sweden, Finland and Denmark) viewed the relationship between the marine environment, leisure boats and issues of responsibility. More specifically the following issues are approached: differences between men and women in usage of boats, environmental awareness, environmental responsibility, and behavior.

Materials and Method

A survey study was conducted with participants from Sweden, Finland and Denmark through a nationally

representative web-based panel created by SIFO Research International. Finding a way of reaching the relevant population was somewhat troublesome. In none of these three countries are there formal rules that require individuals to register ownership of a boat of any size. Since membership in local or national boating organizations is sporadic this was also judged not to reflect the range of different boat owners. Therefore it was decided that SIFO International was to recruit participants from the three participating countries by approaching a large sample and by using a qualifying question (Do you or any member of your family own a boat?). Approximately 500 respondents from each country were recruited and a total of 1701 respondents participated in the study.

Only respondents that indicated that they owned a boat were included in the study. This means that the boat could be owned by individuals or jointly by a family, e.g., by a married couple. Most questions in the study were asked in a way that would reflect the opinion of the individual. However, some questions may be a response to how environmental issues concerning the boat are handled by the boat owners in practice and then do not necessarily reflect the opinion of an individual.

The survey was constructed and contained 30 questions covering four areas. First, background questions, such as age, gender, type of boat, how long they used the boat on average every season and how far they traveled on an average trip, were asked. Information on size of boat was collected but not included in the analysis since it was judged not to affect the overall perception of issues relating to the marine environment. Background questions were also included where the boat owners sought information on issues relating to boating and the environment. Second, items relating to environmental awareness were asked in order to investigate how the respondents perceived impact on the marine environment from pleasure boats. Third, issues concerning how the respondents viewed the responsibility of different actors for degradation and improvement of the marine environment were brought forward. The fourth area of questions was related to specific behavior including questions such as if the respondents recycled their waste while onboard or if they had done anything to reduce the environmental impact of their boat.

A total of 1701 respondents completed the survey, where men made up 58% ($n = 986$) and women 42% ($n = 715$) of the sample. The survey was distributed electronically and only targeted a specific group (i.e. boat owners) and therefore calculating a response rate is not applicable for this study. The study was conducted in the fall of 2008. The material is analyzed using ANOVA and Chi-squared tests.

Results

The results are grouped according to background, environmental awareness, responsibility and behavior.

Background Information

The results show there were differences between men and women relating to age, how long they had owned the boat, areas and length of usage per season, and average length of trip. The results are presented in Table 1.

Differences between men and women are seen in many variables. The type of boat, sailboat or motorboat, does not

Table 1 Boat owner profile by gender (%)

	Men (%)	Women (%)
Type of boat		
Motorboat	69.5	72.5
Sailboat	30.5	27.5
Age		
Up to 40 years of age	30.8	40.8
Between 41 and 55	30.2	32.4
56 and over	38.9	26.7
Years of ownership		
0–5	27.3	35.1
6–10	18.4	19.2
11–15	11.9	9.8
16–20	10.4	10.5
20 or longer	32	25.5
Usage per season		
1–10 days	26.2	32.4
11–20 days	30.7	27.6
21–30 days	20.4	17.9
31 days or longer	22.7	22.1
Areas of usage		
Racing (sailboats)	2	1.5
Fishing	21.1	14.4
Mode of transportation	11.2	11.6
Shorter trips—recreational	52.5	60
Longer sailing trips	13.2	12.4
Distance traveled per day		
Up to 2.8 nautical miles	17	21.4
3–6 nautical miles	29.5	32.9
7–11 nautical miles	27	24.5
12–17 nautical miles	15.1	13.4
Over 17 nautical miles per day	11.4	7.8
Maintenance of boat		
Do all maintenance myself	64.2	60.8
Do most, but hire help	31.2	31.5
Full-service by marina	4.6	7.7

vary to a significant degree between men and women, but men have owned their boats for a longer time, ($\chi^2_{(4, N=1701)} = 16.22, P = .003$). In general, men also use their boats more days every season, ($\chi^2_{(3, N=1701)} = 8.49, P = .037$) and make longer trips compared to women, ($\chi^2_{(4, N=1701)} = 12.71, P = .013$). Women instead, use their boats more for shorter recreational trips, ($\chi^2_{(4, N=1701)} = 15.09, P = .005$). Men also care for their boats themselves to a larger extent than women, while women are more likely to leave the care of the boat to a marina ($\chi^2_{(2, N=1701)} = 7.65, P = .022$). There is also a difference in age among this group of boat owners, as more men are 56 years of age or over, ($\chi^2_{(2, N=1701)} = 30.85, P = .000$) while women generally are younger.

Membership

The respondents were asked whether or not they belonged to different organizations, as membership in environmental organizations can be one way of measuring environmental concern. The results are presented in Table 2 and show that men are more likely to be a member of a local boat club compared to women ($\chi^2_{(1, N=1701)} = 4.51, P = .034$). Women are less likely to be members of any organization than men in this sample ($\chi^2_{(1, N=1701)} = 4.94, P = .026$).

Information and Knowledge

The respondents were asked where they turned to get new information on boats, e.g. new products for boat care and other relevant issues. The results can be seen in Fig. 1.

Table 2 Membership in organizations according to gender (%)

	Men	Women
Local boat club	48.4*	43.5
Environmental organization	4.8	4
No membership in any organization	49.1	54.5*

* $P = 0.000$

Fig. 1 Gender differences in use of sources for information on leisure boats (% of total)

Figure 1 reveals that men browse the Internet or ask other boat owners to a greater degree than women, whereas women turn to friends and family ($\chi^2_{(6, N=1701)} = 70.92, P = .000$). It is interesting to note that a large fraction of men do not believe they need additional information relating to their boats.

Environmental Awareness

The respondents were asked to indicate if they had seen any changes in the marine environment in their local area and were given three options. Table 3 presents the results.

Here, it can be seen that men perceive that any changes they have observed have been for the better, whereas women tend to see changes for the worse ($\chi^2_{(2, N=1701)} = 16.3, P = .000$).

The respondents were asked how they viewed the impact on the marine environment caused by their boats, compared to other actors that might affect the marine environment in the Baltic Sea. They were asked to indicate, on a five-point scale, the impact of seven different actors on the marine environment. The results indicate that women rated the impact of all mentioned actors, except agriculture, as significantly higher than men—including themselves as boat owners (Table 4).

Responsibility: Impact of Own Boat and Responsibility of Other Actors

Regarding which actor was perceived as most responsible for addressing environmental problems in the Baltic area, Table 5 shows that 'Authorities' and 'local industry' ranked highest and 'individual boat owners' lowest.

Women had a higher mean value across all actors than men. However, it might be worth noting that all ratings were quite high, around 4, with 5 representing a maximum score. This suggests that responsibility is seen as being high and equally shared between different actors,

Table 3 Perception of changes in the Baltic Sea

	Men	Women
Yes, for the worse	34,3	36,8
Yes, for the better	15,9	9,2
No, no changes	49,8	54

Table 4 Analysis of variance (ANOVA) for gender and perceived negative environmental impact on the Baltic Sea ($n = 1701$)

Actor	Men		Women		F
	Mean	SD	Mean	SD	
Agriculture	4.28	0.96	3.98	1.1	36.44*
Industry	4.13	0.91	4.36	0.86	28.9*
Leisure boats	2.62	1	3.17	1.01	126.95*
Harbors	3.41	0.96	3.74	0.94	49.59*
Commercial fleet	3.86	0.96	4.1	0.9	36.46*
Climate change	3.42	1.12	3.74	1.05	36.15*
General environmental degradation	3.62	0.97	3.89	0.97	33.61*

* $P = 0.000$ **Table 5** Responsibility for addressing environmental problems with the Baltic marine environment

Actor	Men		Women		F
	Mean	SD	Mean	SD	
Authorities	4.21	0.94	4.4	0.84	18.76***
Local industry and farms	4.31	0.89	4.44	0.78	9.89**
Commercial fleet	4.12	0.95	4.24	0.96	6.24*
Individual boat owners	3.89	1	4.14	0.95	24.86***

*** $P = .000$; ** $P = .002$; * $P = .013$

regardless of how the individual contribution of the actor is perceived.

The respondents were also asked who they thought was responsible for addressing the negative impact caused specifically by leisure boats in the Baltic Sea. Table 6 shows that both men and women perceived the individual

Table 6 Responsibility for addressing negative environmental impact specifically from leisure boats

Actor	Men		Women		F
	Mean	SD	Mean	SD	
Producers of boats and boat products	3.9	0.99	4.2	0.92	40.49*
Authorities	3.89	1	4.16	0.94	31.25*
Marinas	3.72	0.97	4.1	0.95	65.68*
Boat owners	4.05	0.96	4.29	0.87	27.81*

* $P = .000$

boat owner as most responsible for reducing the impact of leisure boats.

Again, even though there are differences, responsibility overall is rated high for all those involved with leisure boats.

Behavior: Use of Environmental Products, Recycling, and Disposal of Human Waste

Turning now to how boat owners behave, four items were used in order to measure the respondents' choices in relation to the environment. The respondents were asked two questions aimed at investigating which factors were important when purchasing products for their boats' maintenance, questions about recycling were asked, as well as how they handled the waste from the latrine.

In Fig. 2, it can be seen how the respondents rank what they believe to be important when buying products for the maintenance of their boats.

As the figure shows, women are more likely than men to buy only environmentally safe products or to buy them when these products are available, 67% compared to 55%. This difference is significant ($\chi^2_{(4, N=1701)} = 30.96$, $P = .000$) and thus the environment in this context is judged to be of lesser importance to the men compared to the women (Fig. 3).

For both men and women, the effectiveness of the product was most important in choice of product and price was seen as of least importance. However, availability ($F_{(1, 1699)} = 13.57$, $P = .000$) and environmentally safe ($F_{(1, 1699)} = 44.32$, $P = .000$) were ranked lower for men than for women.

The respondents were also asked questions about their recycling behavior while using the boat and where they disposed of the garbage once on land. The results show there were no significant differences between genders (Table 7).

Even if the space on any boat is limited, causing practical obstacles for sorting the waste, more than 70% of both men and women sort their waste.

Human waste discharged to the sea increases the eutrophication and therefore it is important to map how many of the boat owners that empty their toilets onboard directly into the ocean. In the survey, about one third had toilets onboard ($n = 621$) whereas the remaining respondents used facilities on land. As can be seen in Fig. 4, women have portable toilets on board, so-called port-a-potties, to a greater extent than men, whereas men tend to dump their waste into the sea or use the mechanical removal stations in marinas to a greater extent than women ($\chi^2_{(2, N=621)} = 10.61$, $P = .005$).

It can be noted that almost half of the respondents dump their human waste into the sea.

Fig. 2 Gender differences in considerations when buying products for boat maintenance (% of total)

Fig. 3 Gender differences in preferences when buying boat products (% of total)

Fig. 4 Gender differences in emptying on-board facilities (% of total)

Table 7 Recycling behavior on the boat (%)

	Men	Women
Sort waste on boat		
Yes	73.1	71.7
No	26.9	28.3
Dispose of hazardous waste		
Use marinas recycling bins	43.5	50.1
Use other recycling bins	54.3	48.3
Do not know where to dispose	2.2	1.7

All respondents were asked if they would be willing to make certain changes in the way they use their boats in order to become more environmentally friendly. Two results can be observed in Table 8: First, there are no significant differences between men and women's expressed willingness to change. Second, the overall percentage of respondents that have indicated a willingness to do something is quite low.

On average, it seems that only one fifth of the sample would be willing to make physical changes to their boats, but would be more willing to change their driving behavior.

Discussion

The results show that there are differences between genders in many areas. Women generally express more environmentally friendly attitudes than men in their views and

Table 8 Willingness to change to environmentally friendly options (% of total)

	Men	Women
Change fuel	16	20.3
Change motor	20.5	16.1
Change driving pattern	38.6	41.1
Change to biodegradable oil	30.9	35.8
Not willing to change	20.5	18

behavior. Men and women seek information about boating by different channels, indicating that future information campaigns need to utilize multiple channels or strategies in order to reach all intended audiences. Both men and women perceive boat owners as having the lowest impact on the marine environment but are perceived to be responsible for addressing environmental issues caused by leisure boat activities. The results also show that it is important to prove the effectiveness of an environmental safe product since this factor is ranked higher than price when considering buying a product. The results suggest that once environmentally friendly behavior is established, such as recycling, this behavior continues.

Gender Differences in Usage of Boat

First, it can be noted there are differences between men and women regarding how the boat is used, where women usually went on shorter recreational trips rather than fishing trips. Within this sample, women were also younger than the men and had owned their boats a shorter time. If this is a trend it will be even more important in the future to direct information to this group of boat owners. The majority of boat owners did all the maintenance on their boats themselves, but men to a larger extent. Women were more inclined to leave the work to a marina.

In contrast to previous results (Torgler and others 2008), the results from this study indicate that women are not members of an environmental group to a greater extent than men. Overall, membership in any organization, environmental or other interest group, is low among this sample and only around half are members in any boat club. There are two interpretations of this, one where boat owners see no need to formalize their belonging since they feel they are already united in some manner as owning a boat demonstrates a group membership and in most cases have off-season storage facilities for their boats where they can seek informal contacts with other boat owners. The other option is that a large fraction of boat owners are reluctant to join any organization and since there are no legal requirements to register as a boat owner, membership is not sought.

Research has shown that married couples are more aware of environmental issues and more compliant as they are influenced by their social group (Torgler and others 2008). This would imply that the social group has an effect on behavior. For boat owners, the role of social groups seem to be relevant as most of the men stated that it is within this group new information is sought. Women tend to turn more to family and friends for information relating to their boat. This is interesting when considering that boats can be owned jointly: women ask their husbands and they ask other boat owners. This implies that different

channels of communication ought to be used in order to reach the two groups.

Environmental Awareness

If a group does not perceive they are contributing to making an environmental problem worse, they will not be motivated to change their ways. In this study, about two thirds of the respondents had not seen any changes, or had seen changes for the better in their marine environment. This perception, in combination with the view that leisure boats are not as responsible as other actors for the environmental degradation of the Baltic Sea makes behavioral changes more difficult to achieve—even if the price is right. Even though both men and women see that individual boats owners are responsible for reducing the impact of leisure boats in the Baltic, they do not perceive themselves as playing a major part in the total environmental problems that exist in the marine area. This limited perception of the contribution of leisure boats to the general problem may make it easier to acknowledge responsibility in theory. In practice, however, things seem to be different.

It can also be noted that more men have seen the Baltic Sea change for the better (16%), whereas for women this number is lower (9%). This finding, in combination with two other results; the lower ranking of leisure boats as contributors to the declining marine environment by the male respondents and that men seek information about boats among other boat owners, gives the conclusion that the perception of leisure boats is reinforced by and within this group.

Environmental Responsibility

There were no differences in how men and women ranked the actors responsible for causing and addressing the environmental issues present in the Baltic Sea. Leisure boats are seen to have the least impact on the marine environment, at the same time as the individual boat owner is seen as responsible for possible environmental damage caused by the boats. This might illustrate an interesting attitude from an environmental standpoint: of course boat owners are willing to accept responsibility for and deal with possible negative consequences of their actions—something that is very easy since their activities are not seen as causing any problems. Taking this attitude, ‘what I do does not matter’ in the big scheme of things, in combination with the low group membership might give the individual the impression that this really is not a big environmental problem. However, there are many boats in the Nordic countries and many drops tend to form a river, making it an important task to communicate just how big the combined problem is.

Behavior

The majority of the respondents showed a behavior that would favor a better environment. Both men and women sorted and recycled their waste to a high degree (>70%) and 68% of the women and 58% of the men bought environmental safe products. From this study, it can be seen that recycling is fairly widespread and that this waste is taken care of. However, other behavior aimed at reducing the impact of the environment seems more difficult to achieve. Changing to use of biodegradable oil or altering how one drives the boat seems to be changes that everyone can do, but changing the motor or changing fuel is more difficult. This is an interesting finding since these two are probably more likely to be costly—something that most respondents indicated was not important for buying more environmentally friendly boat products. For these products, it was more important that they were effective and available.

The preferences between genders were also different where women rather considered the environment. However, the effectiveness was the most important factor for both men and women. Since price was regarded as the least important factor this is probably an area where further improvement in behavior can be achieved, among both men and women, in particular when the effectiveness of environmental products can be proven.

When it comes to taking care of the waste from toilets only less than half of the total sample emptied on land. The reason may both be that most boats do not have the technical facilities to empty their on board toilets on land and still only few harbors offer this possibility. This is something that can be changed by regulation and encouraging installing technical facilities on board, which has been done with success in Finland.

Differences in perception between genders are interesting since they raise an important question: who has the final say if a couple has different opinions? Even if our experience from speaking to boat owners indicates that the husband usually makes the final decision on matters relating to the boat, this aspect needs to be better investigated. For the aim and scope of this article however, the answers will be interpreted to represent the individuals' opinion, regardless of how the boat is owned.

Conclusions

For the larger literature on how human perceptions of their environment affect their behavior, this study can contribute by providing three conclusions that can be applied to other areas of environmental concern. Even though this study focuses on boat owners, this group can be used to represent

any groups that use the environment for recreation (Cottrell 2003).

First, if it is believed that an increase of information will affect human behavior a thorough analysis is needed of how individuals organize and how communication can be directed at these smaller units. Men and women tend to organize in separate interest groups and also differ in choosing which groups they collect information from. If information is to be provided, it needs to address relevant issues, such as the impact of the specific behavior on the environment in order for individuals to get a better understanding on the dimension of the problem. However, only providing information is no guarantee for altering human behavior. Even if social groups have strong influences on behavior, relying on the social norms to influence behavior (soft compliance) is not enough, especially when the social groups have values that encourage undesired behavior. Investing in communication or information with and to these social groups might have a limited or no effect at all since the social group and norm is stronger than any other source of information. Some studies suggest that a stronger reliance on enforcing compliance with regulation (hard compliance) might reduce the 'free-rider'-effect since individuals feel that the whole group are 'in this together' (Attari and others 2009). Of course, this approach causes challenges when individuals are not organized in groups, making individual compliance a more resource consuming task. From a gender perspective, following the results presented in this article, it might be interesting to note that when men and women own an object jointly, like a car or boat, men and women will perceive the environmental impact of this object differently. These differences will affect where and if they seek additional information and from whom this information is sought. It needs to be further investigated how actual decisions are made regarding which actions to take, or not to take, in relation to the perceived environmental impact. If women see the impact of their behavior to be larger than men do, new ways of providing information and empowering women need to be investigated and developed. In this context it might also be meaningful to address issues of effectiveness in relation to making the final decision on what products to buy or what behavior to invest time in. Perhaps the environmental debate could gain from a more public discussion of what is effective for the individual and what is effective for improving the environment.

Second, many studies have indicated that consumers do not feel that price is an issue when buying more environmentally sound products (Batte and others 2007) and the findings in this article seem to support this for smaller investments if the goods are available. So increased prices for a better environment is good in theory, but needs to be further evaluated for larger, more inconvenient and

expensive projects. However, once more environmentally sound behaviors are established, such as recycling, these behaviors seem to stay around. Therefore, identifying ways of getting individuals over the threshold into better behavior is needed. One possible way to combine these two ideas is to make compliance with environmental regulation less costly, such as subsidizing certain products or services (Stranlund 1995). This can be one way of providing an alternative for those groups, e.g., women that want to decrease the impact of their behavior on the environment.

Third, from a gender perspective consistent differences are found between men and women regarding the perception of environmental degradation, willingness to engage in environmentally sound behavior and the role of individual responsibility in environmental issues where women express more pro-environmental values than men. If these findings are to be further investigated, rather than just observed and stated, more focus need to be put on mapping the behavioral differences between men and women. For example, any effort aimed at decreasing the use of cars, the impact of leisure boats or reliance of fossil fuel needs to be formulated according to the relevant circumstances for these two groups. Instead of drawing up large national goals more work can be done on a smaller scale. Again, the need to further document and understand the differences between men and women in situations when the final decision is made, especially when money and vehicles are involved, must be met in order to better address the fundamental requirements that are needed for behavioral change. Perhaps identifying the power structures and relationships within a family can be one way of deepening the understanding of the underlying structures that need to be addressed in order to achieve changes in behavioral patterns (Ferree 1990) and maybe the merging of gender theory and environmental science will have positive effects for the natural environment as well as the social one.

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