Boat Tourists' Perception of Environmental Problems

A Case Study in Estonian, Finnish and Swedish Archipelago

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Abstract

Marine and coastal tourism is one of the fastest growing tourism industries in the world. Over the past three decades marine tourism has increased vastly. Despite the on-going increase of marine tourism, it is only in recent years that substantial research has begun.

Boat tourist perceptions of environmental problems were surveyed in the Estonian, Finnish and Swedish archipelago. Structured questionnaires were delivered to guest harbors during the peak season in 2012. A number of 144 boat tourists took part in the research.

The thesis was done in co-operation with the Green Islands project at Aronia Research and Development Institute in Finland. The Green Islands project aims to improve environmental conditions on islands in Estonia, Finland and Sweden.

Results showed that the majority of boat tourists considered the water quality of the Baltic Sea good. Results also showed that boat tourist value nature, good sea water quality and traditional landscapes. Results support the earlier work in the literature, suggesting that algal blooms can reduce tourist activities in the coastal and marine environment, and that marine litter is a growing problem in the Baltic Sea. Insights derived from responses are also discussed in the context of coastal planning and management.

The study suggests that environmental educational tourist programmes should be implemented in the Estonian, Finnish and Swedish archipelagoes. The study recommends further studies and monitoring programmes of marine litter in the Baltic Sea, the interrelations between algal blooms and tourist activities as well as tourist perceptions of environmental problems in the Baltic Sea.

Language: English Key words: Boat tourist, perception, environment

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Tiivistelmä

Meri- ja rannikkoalueiden turismi on yksi nopeimmin kasvavista turismin muodoista. Viimeisen kolmen vuosikymmenen aikana turismi merialueilla on lisääntynyt suuresti. Suuresta kasvusta huolimatta sen vaikutuksia on alettu laajemmin tutkia vasta viime vuosina.

Tässä työssä tutkitaan vapaa-ajan veneilijöiden käsityksiä ympäristöongelmista Eestin, Suomen ja Ruotsin saaristossa. Tutkimuksessa käytetään strukturoituja kyselylomakkeita. Tutkimukseen osallistui 144 veneilijää. Opinnäytetyö tehdään yhteistyössä Green Islands -projektiryhmän kanssa. Green Islands toimii Aronian Tutkimus- ja Kehitysinstituutissa Suomessa. Heidän tavoitteenaan on parantaa ympäristön laatua Eestin, Suomen ja Ruotsin saaristossa.

Tuloksien perusteella enemmistö veneilijöistä kokee veden laadun tilan Itämerellä hyväksi. Tulokset osoittavat myös, että veneilijät arvostavat luontoa, hyvää veden laatua ja perinnemaisemia. Tulokset vahvistavat aiempia tutkimuksia, joiden mukaan sinilevät saattavat vähentää turistien aktiviteetteja rannikko- ja merialueilla ja että meren roskaantuminen Itämerellä on kasvava ongelma. Veneilijöiden vastauksista saatuja näkemyksiä käsitellään rannikkoalueiden käytön ja suunnittelun pohjalta.

Tutkimus suosittaa ympäristöasioista tiedottamisen lisäämistä Eestin, Suomen ja Ruotsin saaristossa. Tämän lisäksi on suositeltavaa lisätä tutkimuksia meren roskaantumisesta, ympäristöasenteista sekä sinilevän ja turismin vaikutuksista toisiinsa.

Kieli: Englanti Avainsanat: veneilijä, käsitykset, ympäristö

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1 Introduction

Tourism is one of the largest and fastest growing industries and it is a significant contributor to national and local economies globally (Scott & Lemieux, 2009; UNEP, 2009; Miller & Auyong, 1991; Miller, 1993). International tourist arrivals are estimated to reach over one billion by end of 2012 and to reach 1.8 billion by 2030 (UNEP, 2012). Marine tourism is also increasing and as all tourism it can have ecological, social and cultural impacts (Hall, 2001; Orams, 1999). United Nations World Tourism Organization (2012) defines tourism: "...A visitor is a traveler taking a trip to a main destination outside his usual environment, for less than a year, for any main purpose other than to be employed by a resident entity in the country or place visited. A visitor (domestic, inbound or outbound) is classified as a tourist, if his trip includes an overnight stay, or as a same-day visitor or excursionist otherwise."

Marine tourism is a growing sector in global tourism industry and includes a wide range of activities from sea-kayak tours to whale watch ships (Orams, 1999). Despite of the on-going increase of marine tourism, it is only in recent years that substantial research has begun (Orams, 1999; Hall, 2001). The exact numbers of marine tourists around the globe is not known (Orams, 1999; Hall, 2001). Orams (1999) defines marine tourism as: "…includes those recreational activities that involve travel away from one's place of residence and which have as their host or focus the marine environment".

Marine and coastal tourism can change environments and societies harmfully and negatively, and impacts may be direct or indirect (Miller & Auyong, 1991; Stewart, 1993; Hall, 2001; Priskin, 2003). One of the most studied impacts is tourism-related effects on coral reefs in Australia (Hall, 2001). Visitor education is often recommended in order to minimize negative environmental effects caused by tourism (Priskin, 2003). Impacts of coastal and marine tourism need to be studied both on environmental and social conditions in order to develop better policy analyses, planning processes and public education (Miller, 1993). When tourism in marine environments is growing faster than ever before in our history, it is vital to acknowledge both negative and positive aspects economically, socially and environmentally (Miller, 1993). Tourism is, after all, identified as having both positive and negative effects on nature (Miller, 1993; Stewart, 1993).

There is a general consensus that destination image is one of the most important aspects in destination choice (Scott and Lemieux, 2009; Nilsson & Gössling, 2012). If the state and quality of the environment changes, it could affect tourism in the area (Nilsson & Gössling, 2012). Weather conditions experienced at tourist destinations will affect possibilities for activities in the area, e.g. swimming, and thus how tourists experience their holiday and plan their future holidays. Weather conditions e.g. warm summers can affect environmental phenomena such as algal blooms. As marine tourism is increasing, so will the debate of its management and

development. Values and perceptions on tourism and nature are linked to personal values, which can greatly influence the decision making processes in societies (Miller, 1993).

Coastal communities in western countries have shifted from traditional fishing to tourism-related livelihoods during the last thirty years (Klein et al., 2004). Coastal areas attract tourists for recreational, marine, cultural and aesthetical reasons. The importance of tourism is constantly growing in coastal zones (Klein et al., 2004).Algal blooms, marine litter, pollution from sewage facilities, oil spills and other related coastal pollution might diminish the attraction of coastal tourist destinations. From an economic perspective, marine and coastal ecosystems provide goods and services that can be directly or indirectly translated to economic values (Swedish Environmental Protection Agency, 2008; Remoundou et al., 2009). These estimated values can be useful guidelines in planning processes for coastal communities.

From a boat tourist perspective, preference of destination may vary according to the state of the coastal environment. Valuation studies, therefore, provide policy makers with necessary economic information of the strategies for sustainable marine and coastal ecosystem management (Remoundou et al.,2009). Some resource managers and scientists develop estimates of the economic effects of harmful algal bloom (HAB). Although such estimates are not necessarily exact measures of the true costs of HABs to society, they may prove useful in order to measure the scale of economic losses (Hoagland et al., 2002). From a socioeconomic perspective, HABs may have an impact on tourism in the marine environment (Kosenius, 2004). According to the study Tourism and Recreation Industries in the Baltic Sea Area: ”The tourism industry is heavily dependent on a good state of the Baltic Sea. The eutrophication status seems to be the most important environmental factor for the industries, and blue green algae blooms seem to be the most threatening eutrophication effect” (Swedish Environmental Protection Agency, 2008).

Marine and coastal tourism can have a negative impact on the environment and cause cultural, social, environmental and economic damage (Hall, 2001; Stewart, 1993; Orams, 1999). Boat tourism is related to negative impacts, such as marine litter, noise, paint leakage and oil spills, which can affect marine habitats and marine organisms. Boat tourism may also be connected to eutrophication, e.g. when waste from septic tanks is released to the sea. Size, shape and speed of a boat affect the level of environmental damage (Priskin, 2003). Even sailing boats can be harmful to the environment, e.g. some bird species might be disturbed (Priskin, 2003).

Negative environmental impacts might also affect tourism. According to a study by Nilsson and Gössling (2012), tourists cancel or shorten their holidays in southern Sweden because of algal blooms. During the last two decades the North Sea and the Baltic Sea have been exposed to algal blooms, and some tourist destination facilities have claimed that this has caused tourism to

decrease (Nilsson & Gössling, 2012). Public and political awareness about algal blooms has risen within the last decades (Rönnberg & Bonsdorff, 2004). The Baltic Survey found out that Baltic State citizens regarded marine litter, algal blooms, hazardous substances and oil leakages as a big problem in the Baltic Sea. Gas pipelines lying at the sea bottom, seawater quality and wind turbines were viewed as less problematic in most countries (Swedish Environmental Protection Agency, 2010).

According to Priskins (2003) study, education and age affected tourist perceptions most, and the gender and income groups had the least effect. Media can shape perceptions, attitudes and behavior (Priskin, 2003). Tourist perceptions of algal blooms in coastal southern Sweden were to some degree shaped by media reports, which often highlight the health risks associated with cyanobacteria (Nilsson & Gösslin, 2012).

Marine conservation areas for managing and controlling tourism in coastal and marine areas can be used as a management tool, because it combines possibilities for both preservation and development (Stewart, 1993). Marine protected areas differ in the range of protection and allowed activities, but they still offer possibilities for nature experiences for tourists. Nature experiences can further develop positive attitudes about the environment, which will encourage people to act more responsibly toward the environment (Stewart, 1993; Orams, 1999). Marine parks can act both as tourist attractions and protection areas if managed properly (Orams, 1999).

Community participation is recommended in the coastal management planning processes as it can provide more successful management plans (Stewart, 1993). Tourism management in marine and coastal areas should focus on minimizing the negative effects and maximizing the positive effects of tourism on environment and societies (Stewart, 1993). In order to do this successfully, a dialogue is needed between decision makers, locals, scientists and the private sector.

The Helsinki Commission recommend that the development of large tourist projects, such as large marinas, should be incorporated into integrated coastal zone management plans. In its EU Strategy for the Baltic Sea Region (2010) the European Union recommends to create networks between tourism industry and tourism education bodies, and develop sustainable methods for tourism in general. Unfortunately as Hall (2001) points out:

> ” There is usually little or no coordination between programmers that promote and market tourism and those that aim to manage coastal and marine areas. Environmental and planning agencies often fail to understand tourism, while tourism promotion authorities tend not be involved with the evaluation of its effects or its planning management. Therefore, one of the greatest challenges facing coastal managers is how to integrate tourism development within the ambit of coastal management, and thus increase the likelihood of long-term sustainability of the coast as a whole”.

Studies on tourist perception have been used to create plans and policies in many coastal areas (Priskin, 2003). In this context interconnected social and environmental studies, such as this study about marine tourism, provide essential and important information, which can help decision makers in coastal communities.

1.1 The Baltic Sea

The Baltic Sea is a brackish and shallow semi-enclosed sea located in northern Europe, from 53°N to 66°N latitude and from 20°E to 26°E longitude. The Baltic Sea is one of the largest bodies of brackish water in the world with a mixture of marine and freshwater species, and it is extremely vulnerable due to its special characteristics, e.g. low salinity level and low exchange of water. There are over 85 million people living around the Baltic Sea affecting the sea and its ecosystems (HELCOM, 2012; Finnish Environment Institute, 2010). There are hundreds of large cities in the Baltic Sea region, of which eleven have a population between 500 000-5 000 000 (Finnish Environment Institute, 2010).

The International Maritime Organization (IMO) has designated the Baltic Sea as a Particularly Sensitive Sea Area (PSSA). In order to full-fill the criteria for a PSSA, a marine area must have, for example, a unique ecosystem or historical value. There are only fourteen designated PSSA areas in the world, e.g. the Great Barrier Reef in Australia (IMO, 2012). According to the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) the Baltic Sea is defined as a special area with stricter requirements for maritime transport (Finnish Environment Institute 2012).

The intergovernmental Helsinki Commission (HELCOM) protects the Baltic Sea through co-operative means between Denmark, Estonia, the European Community, Finland, Germany, Latvia, Lithuania, Poland, the Russian Federation and Sweden (HELCOM, 2012). In a European perspective, environmental issues are becoming increasingly regulated via the EU, through such initiatives as the Marine Strategy Framework Directive (European Commission, 2012). Several non-governmental organizations (NGO) aim to improve conditions in the sea, such as the Baltic Sea Action Group and World Wildlife Foundation.

1.2 Marine and coastal tourism in the Baltic Sea

80 % of the people living in the Baltic Sea region spend leisure time at the sea at some point of their lives. Danes, Finns, and Swedes are the most frequent visitors at the sea compared to citizens in other littoral countries around the Baltic Sea. Coastal tourism industries in the Baltic Sea are likely to depend on the environmental quality of the marine environment (Swedish Environmental Protection Agency, 2008).

Prior to the 1950's boats were mainly made of wood by skilled craftsmen. Only wealthy people were able to use boats for recreational purposes. The invention of aluminium and other related materials has led to the production of cheaper and more reliable boats that more people could afford (Orams, 1999). Since the technological improvements more people have had opportunities for marine travel.

Since the 1960's the number of boat owners has increased both in Sweden and Finland. However, in Estonia people were not allowed to own boats during the Soviet era. After Estonia reclaimed their independence in 1991 boating activities have slowly started to increase (Swedish Environmental Protection Agency, 2008).

1.3 Environmental problems in the Baltic Sea

The Baltic Sea suffers from several environmental problems (Finnish Environment Institute, 2011). Human activities put a lot of pressure on marine ecosystems. Eutrophication, marine litter and increased maritime traffic, among other things, bring challenges to the well-being of the sea. In this study boat tourists were asked to rank their experiences of possible problems related to the Baltic Sea, and whether they perceive them as problems or not. I will cover them briefly here.

Environmental pollution covers all the other forms of pollution that are not mentioned below. Environmental pollution means the undesirable change in physical, chemical and biological characteristics of our air, land and water, e.g. radioactive waste and metals. The Baltic Sea has been exposed to an extensive use of chemicals and harmful substances for decades, e.g. PCPs and heavy metals. Substances are described as hazardous if they are toxic, persistent or bio-accumulative. Harmful substances also accumulate in organisms, e.g. the accumulation of toxic and heavy metals in Baltic fish species, such as cod. (HELCOM, 2010)

Oil pollution in the marine environment means the presence of crude or refined oil on the sea water or on the soil. Oil harms and kills sea birds, sea mammals and other animals and organisms in the marine environment, and disturbs marine habitats. Clean up and recovery from an oil accident can be extremely difficult, time consuming and expensive. Every year many sea birds are killed by oil which is discharged into the Baltic Sea (HELCOM, 2009). Helsinki Commission (2012) predicts: "…by 2015 the total amount of oil transported in the Baltic will amount to more than 130 million tonnes a year", which increases risks for oil accidents in the Baltic Sea.

Marine traffic is very intense in the Baltic Sea as it is one of the most densely trafficked sea regions in the world (HELCOM, 2012). Recreational boating is estimated to expand with an annual growth of 5% within the EU (EU, 2006).

Commercial fisheries and their practices have environmental impacts on the Baltic Sea by replenishing the stocks of commercially fished species and affecting species that are accidentally caught as by-catches, e.g sea birds and seals. Over-fishing is also a problem in the Baltic Sea, e.g. Baltic cod. The Baltic Sea fish species are both freshwater and saline water species, and live in challenging conditions. The small Baltic fisheries have been gradually replaced by industrial fisheries with more effective vessels with different types of trawling techniques. (HELCOM, 2008)

The 1,200 km long Nord Stream pipeline is currently being laid between Russia and Germany on the sea bottom of the Baltic Sea. Construction of pipe lines impacts marine organisms, marine habitats and sea bottom, which affects marine flora and fauna (Finnish Environment Institute, 2010).

Windmill parks and the wind energy sector have grown strongly over the recent years. Wind power is a renewable energy source, and a recommended energy option in EU environmental policies. However, wind power can alter the environment and cause negative impacts, e.g. change the natural scenery, which may affect tourism, create noise and disturb sea birds (Suomen Tuulivoimayhdistys, 2012). Knowledge of the ecological impact of wind farms is still limited. According to a 2011 Eurobarometer survey, Europeans would like to use more renewable energy than other energy sources, particularly solar (94%), and wind (89%) energy (European Commission, 2011).

Eutrophication, which is caused by increasing nutrient loads, is one of the most severe problems in the Baltic Sea (HELCOM, 2007). Eutrophication can lead to harmful algal blooms and oxygen

depletion on the sea bed. The amounts of nutrients have increased in the Baltic Sea during the last decades (Rönnberg & Bonsdorff, 2004; Frid & Dobson, 2002). Intensive agricultural practices, industry and urbanization contribute to the increased nitrogen and phosphorus levels in the marine environment of the Baltic Sea. Public awareness about eutrophication has risen in the Baltic Sea region (Rönnberg & Bonsdorff , 2004. There are environmental variations between archipelagoes in the Baltic Sea, and the consequences of eutrophication take different pathways in different parts of the sea, for example, the Gulf of Finland is one of the most polluted areas in the Baltic Sea ((Rönnberg & Bonsdorff, 2004).

1.3.1 Algal blooms

Eutrophication and associated algal blooms are considered to be the worst environmental problems in the Baltic Sea (HELCOM, 2012). Extensive and large algal blooms in the Baltic Sea can be seen from the satellite images (Finnish Environment Institute, 2012). Harmful algal blooms can be considered as natural hazards in many coastal areas in the world, and it is important to understand the scale of economic cost to societies (Hoagland et all., 2002).

Algal blooms can involve microscopic algae, macro algae or cyanobacteria. Cyanobacteria is toxic and can cause illness. Harmful algal blooms (HAB) have increased globally since the 1970s, mostly because of nitrogen and phosphorus discharge through agriculture, sewage disposal and discharge of industrial waste Climate change may strongly contribute to algal blooms. Algal blooms in the marine ecosystems may cause displacement of species, habitat alteration, oxygen depletion and even death of marine organisms. (Nilsson and Gösling, 2012)

1.3.2 Marine litter

Solid materials that are found in the marine environment are called marine debris or marine litter. Marine litter has become a severe problem in all the world's oceans and seas. Marine litter can be found all over the world's oceans and seas, even in remote areas, because some litter can travel long distances and can be persistent, e.g. plastics. Marine litter can originate from both land- and sea-based sources. Marine litter is an ecological, economic, health and aesthetic problem. Marine litter can kill marine wild life by entanglement or digestion of plastics. (Frid & Dobson, 2002; UNEP, 2009; Derraik, 2006).

Marine litter, such as nets and ropes, can also harm humans' vessels (Sheavly & Register, 2007). Especially plastic litter is a threat to the marine environment due to, e.g. the long life of plastics (Derraik, 2006).Marine litter may include common items such as nets, plastic bottles and plastic

bags, although any litter can obviously be dumped into the sea. Ocean dumping has been practised for centuries, and still continues in many parts of the world. However, before the industrial revolution most litter consisted of organic material, but now it is also synthetic, e.g. plastics (Sheavly & Register, 2007).There are many efficient ways to remove trash and litter from terrestrial environment, whereas efficient ways to do the same for marine litter are still waiting to be developed. In some areas where marine debris concentrates, so does marine life, which makes it more challenging to remove litter (National Oceanic and Atmospheric Administration, 2012)

To make sustainable strategies about marine litter requires both understanding and studies of human behavior and marine litter. Educational progammes, which include plastic industry, laws and policies, can provide means for preventing marine litter in oceans and seas (Sheavly & Register, 2007).

There is no comparable data on marine litter issues in the Baltic Sea among the states. The data on marine litter in the Baltic Sea has been collected by different non-governmental organizations and coastal municipalities, and is rarely comparable because of different practices and methods to collect the data. Plastic litter is the most common type of litter found in many Baltic coastal areas. (HELCOM 2007)

1.4 The aim of the study

This study attempts to understand how tourists perceive environmental problems in the Baltic Sea. The study is focused on tourist perceptions of algal blooms and marine litter, although I will also cover other marine environmental problems. Although I refer and discuss marine coastal tourism, my own study is strictly focused on boat tourists with sailing or motor boats in the central Baltic Sea region. To my knowledge there are no studies about boat tourist perceptions on environmental problems in the Baltic Sea. There are a few studies about coastal tourist perceptions on algal blooms in the Baltic Sea and about Baltic State citizens' perceptions on environmental problems as I have described above. Insights into the present perceptions of boat tourists are likely to be useful to coastal communities and decision makers in this study area, but can also be applied to other coastal regions in the Baltic Sea. It was expected that boat tourists would experience water quality as bad in the Baltic Sea, and that algal blooms have affected their water related activities. It was also expected that boat tourists would mainly seek sailing and boating experiences in the archipelago. It was expected that boat tourists would rank environmental problems in a similar way than to the Baltic Survey (2010).

This study aims to address the following research questions:

- How do boat tourists perceive environmental problems in the Baltic Sea
- Have environmental problems affected boat tourists' holiday activities

The research questions will be studied based on *"the Baltic Survey – a study in the Baltic Sea countries of public attitudes and use of the sea"* (2010), *"Tourist responses to extreme environmental events: The case of the Baltic Sea algal blooms"* by Nillson and Gössling (2012), *"Tourism and recreation industries in the Baltic Sea area How are they affected by the state of the marine environment? - An interview study"* (2008*), "Tourist perceptions of degradation caused by coastal nature-based recreation"* by Priskin (2003), *"Trends in ocean and coastal tourism: the end of the last frontier?"* by Hall (2001), *"The rise of coastal and marine tourism"* by Miller (1993) and *"Coastal zone tourism- A potent force affecting environment and society"* by Miller and Auyong

1.5 The Green Islands project

The work of his thesis is carried out within the EU-funded Green Islands project at the Aronia Research and Development Institute in Finland. Green Islands is a co-operative project between three countries, Estonia, Finland and Sweden, and it aims to create sustainable and environmentally friendly options for wastewater management, energy management and garbage disposal in the Baltic Sea region. The project also maps ecosystem services and analyzes greenhouse gas emissions. The main aim is to help decision-makers, municipalities and local people to make management solutions that are sustainable in the long run (www.greenislands.se).

2. Material and methods

2.1 Study sites and study area

The study sites were located on twelve islands in three littoral countries Estonia, Finland and Sweden around the Baltic Sea. The twelve islands consisted of the islands of Muhu, Saarema,

Skåldö, Iniö, Keistiö, Vänö, Högsåra, Kasnäs, Ingmarsö, Askö, Ornö and Utö. One additional study site, Peterzens guest harbor, was located on the Finnish mainland. 1-2 study sites located in each island depending on the number of guest harbors. Altogether fifteen study sites were visited. This study is part of the EU-funded Green Islands project and therefore most of the guest harbors are located on islands that are included in the Green Islands project. Study sites that are not included in the Green Islands project are Saarema in Estonia and Kasnäs and Peterzens in Finland. All islands are archipelago islands. Muhu and Saarema belong to the western Estonian archipelago, the Finnish and Swedish islands belong to several different archipelagoes.

2.1.1 Estonia

The Estonian study sites were located on the islands of Muhu and Saarema in the Baltic Sea, Estonia. The study site in Muhu was a small guest harbor Lõunaranna Port (N 58°32.458 and E 23°19.163). Lõunaranna Port has got anchorages for 55 sea-going vessels. The study site in Saarema was, a guest harbor Kuressaare City Guest Harbor (N 58°14.62 and E 22°28.25), and the number of berths was 132. The Kuressaare City Guest Harbor was included in the study area due its larger size and busier boat tourism activity. However, it must be mentioned, that the number of recreational boaters in Estonia was much lower than in Finland and Sweden.

Figure 1. Study area

Copy right: Green Islands

2.1.2 Finland

The Finnish study sites were located on the islands of Iniö, Vänö, Högsåra and Skåldö. The study sites in the Iniö municipality were the guest harbours Björklunds båtslip and Norrby on Iniö island and Keistiö Lanthandel located on Keistiö island. Björklunds båtslip (60°24,3' N, 21°22,6' E) is a small guest harbour with 30 berths. Norrby guest harbour (60°23,8' N, 21°23,5' E) also has anchorages for 30 boats. Keistiö Lanthandel guest harbour (60°22,3' N, 21°21,0' E) is on Keistiö island next to Iniö island, and has 28 berths. On the mainland an additional guest harbour called Peterzens (60°29,7' P, 21°26,4' I) was visited. Peterzens is a large guest harbour with 60-100 anchorages for boats.

Vänö guest harbour (59°51,85' N, 22°12,35' E) in the outer archipelago has 30-40 berths. The study site in Högsåra island was Kejsarhamnen (N59° 57,78' E022° 21,84') with 30-40 berths. The study site in Skåldö was the Sommaröstrand marina (59°54,1’ N, 23°24,5’ E) which has 20 berths. On the mainland in Kemiönsaari (between Högsåra and Vänö) an additional guest harbor, Kasnäs, (59°55,22' P, 22°24,70' I) was visited. Kasnäs has got 100 anchorages for boats.

2.1.3 Sweden

The Swedish study sites were located on the islands of Ingmarsö, Askö, Ornö and Utö. The study site on Ingmarsö island was Ingmarsö Gästhamn (59°27,54 N 18°45,24 E) with anchorages for 15-20 boats. The island of Askö (N 58.825473 E 17.648735) has two natural harbours. Two study sites were located on the island of Ornö: the guest harbour Brunnsviken (59°2,5 N 18°22,24 E) with 35 guest places and a new guest harbour called Kyrkviken (59°3,6 N 18°25,60 E) with 20 berths. The study site in Utö island was Utö guest harbour (58°58,12 N 18°19,36 E) with 616 anchorages for boats.

Table 1. Guest harbours in the study area

Guest harbor	**Island**	**Nationality**	**Co-ordinates**	**Anchorages**	**Green Island Participation**
Lõunaranna Port	Muhu	Estonian	58°32.458 N 23°19.163 E	55	Yes
Kuressaare City Guest Harbour	Saarema	Estonian	58°14.62 N 22°28.25 E	132	No
Björklunds båtslip	Iniö	Finnish	60°24,3' N, 21°22,6' E	30	Yes
Norrby	Iniö	Finnish	60°23,8' N, 21°23,5' E	30	Yes
Keistiö Lanthandel	Keistiö	Finnish	60°22,3' N, 21°21,0' E	28	Yes
Peterzens	Mainland	Finnish	60°29,7' N,	60-100	No

			21°26,4' E		
Vänö guest harbor	Vänö	Finnish	59°51,85' N, 22°12,35' E	30-40	Yes
Kejsarhamnen	Högsåra	Finnish	59° 57,78'N 22° 21,84' E	30-40	Yes
Kasnäs	Kemiönsaari	Finnish	59°55,22' N, 22°24,70' E	100	No
Sommaröstrand	Skåldö	Finnish	59°54,1’ N, 23°24,5’ E	20	Yes
Ingmarsö Guesthamn	Ingmarsö	Swedish	59°27,54 N 18°45,24 E	15-20	Yes
Brunnsviken	Ornö	Swedish	59°2,5 N 18°22,24 E	35	Yes
Kyrkviken	Ornö	Swedish	59°3,6 N 18°25,60 E	20	Yes
Utö guest harbour	Utö	Swedish	58°58,12 N 18°19,36 E	616	Yes
Natural harbors (2)	Askö	Swedish	58.825473 N 17.648735 E (island)	Natural harbors	Yes

2.2 Study group and questionnaires

The target group for this study was adult boat tourists visiting the archipelago islands in Estonia, Finland and Sweden. Respondents were at least 18 years old and lived outside the study area. Marine tourism may include different types of activities, e.g. sea-kayaking, but this study includes only recreational boaters travelling with either sailing or motor boats.

Tourist perceptions were measured through structured questionnaires (see Appendix). Questionnaires were made in May and June 2012. A master copy was done together with the Green Islands project. The master copy was written in English and translated to Swedish, Finnish, Estonian and German. German translation was done after an Estonia field trip in June 2012. German boaters filled in the English questionnaires during the field trip in Estonia, but frequently pointed out that they had difficulties with some English terms such as eutrophication. It was expected that most recreational boaters in the study area would be from Finland and Sweden, and a minority from Estonia, Germany and other Baltic countries. However, because the number of boat tourists from other countries than Estonia, Germany, Finland and Sweden was expected to be really low, or even zero, in most study sites, it was decided that English version would be sufficient enough for them. It was neither practical nor economically possible to translate the questionnaire to all languages in the Baltic Sea region.

The questionnaire had four pages including an introduction. A structured questionnaire was used: each boat tourist was presented with the same questions in the same order. The questionnaires consisted of the following parts:

- An introduction to the boat tourism survey and the Green Islands project

- Questions 1-4 were about the respondent's background including gender, age, education, nationality and whether respondent lives or has a summer house or is visiting the island

- Questions 5-6 were about visits to the island e.g. how many times respondent has visited the archipelago and what type of transport she/he uses when visiting the islands

- Questions 7-10 were about the respondent's purposes and preferences on the island, e.g. what is the main purpose of visiting the archipelago, what is the most important when choosing outdoor activities, and which nature types are important

- Questions 11-15 were about the respondent's experiences and attitudes to the quality and state of the nature in the Baltic Sea, ranking questions in the Likert-scale of what type of environmental problems he/she considers harmful, how does he/she gain information on the water quality, has he/she ever needed refrain from water-related activities due to environmental problems, and what kind of marine litter he/she finds most detrimental

Figure 2. Kuressaare guest harbor in Estonia (left) and Vänö island in the outer archipelago in Finland (right). Photo: Anne Palkeinen

2.3 Research methodology

Quantitative research aims at generalizing results from a sample of the population of interest. Researchers are able to test hypotheses and make predictions. Quantitative research aims to develop and employ theories and hypotheses pertaining to phenomena. Quantitative survey research often involves the use of structured questions, where the response options are fixed. For reliable conclusions and generalizations to be drawn from research, samples for quantitative research must be representative of the target group (Tilastokeskus, 2012). Structured survey can also be used in qualitative research.

In this study structured survey with close-end questions was used. For example the study conducted by Nilsson and Gössling (2012) used structured response alternatives in their questionnaires and collected data by using convenience sampling (un-random) method. Because boat tourists in this study were selected un-randomly, it is unknown whether they represent the wider boat tourist population. The results of the study are explained by using descriptive statistics.

2.4 Sampling method

Boat tourists were approached un-randomly based on their availability. A non-probability sampling method, called convenience sampling method, was selected for this study because of the subject's accessibility and proximity to the researcher, e.g boat tourists are easiest to recruit during the peak season and most guest harbors can only take a certain amount of boaters. Most

guest harbors in this study had 30-40 berths, only the guest harbors in Utö, Kasnäs, Saarema and Peterzens had 100 berths or more. Due to guest harbor sizes and the number of boaters all potential boaters were approached. The precise representative research on boat tourists is challenging because of the dynamics and movements of tourists.

Because every element of the population did not have an equal chance of being selected, the level of generalizability in this study is illustrative rather than representative. The aim is to show boat tourists' insights that could be useful for coastal communities, but that could also be further studied. In order to minimize drawbacks from un-random sampling, results of this study are compared to other studies on perceptions of environmental problems in the Baltic Sea.

2.5 Data collection

The study sites were visited during the peak season from June to August 2012. Boat tourists in the Baltic Sea region sail and boat during summer months, in wintertime conditions are too harsh.

The boat tourism survey had two parts: an on-site part and a guest harbor based part. The on-site part was conducted by collecting questionnaires in-person in all study sites. A guest harbor based part was conducted by leaving questionnaires in guest harbors for boat tourists.

In the on-site part questionnaires were delivered face-to-face to boaters visiting the guest harbors in the study area to ensure a good response and completion rate. With face-to face situations it is also easier to explain questions and terms if needed. Data collection was usually done between 7 am to 7 pm. However, it was observed on study sites that the best times to collect data are in the morning and in the afternoon, when boaters had more free time. During daytime guest harbors tended to have less boat tourists, boaters were usually sailing and boating.

A guest harbor based part was conducted by leaving questionnaires in some guest harbors. Questionnaires were left in guest harbors on Muhu, Vänö, Högsåra, Utö, Ingmarsö and Skåldö for a period of 3-10 weeks. The response and completion rate was expected to be much lower with questionnaires left in desks in guest harbors than in the on-site survey part.

The response rate in an on-site survey refers to the number of people who answered the survey divided by the number of people approached. The reliability of quantitative survey is influenced by quality of sampling frame and response rate. The response rate here is not related to sampling frame- which is not known - but it is merely meant to give insights into how many boat tourists

that were approached responded to the survey. The response rate was not calculated from guest harbor based questionnaires, because there was no way of knowing how many people checked the questionnaires, and how many of them answered and how many did not.

The summer of 2012 was rainy and may have affected the number of visitors in guest harbors.

Figure 3. Two natural harbors in Askö in Sweden. Photo: Anne Palkeinen

3. Results

An amount of 144 questionnaires (N=144) were collected between June 2012 and September 2012. 106 questionnaires were collected in the on-site part and 38 questionnaires were collected in the guest harbor based part. The response rate on the on-site part was 59.9%. The number of responses received from an on-site part was much higher than the responses received from the guest harbor based part. The time period for questionnaires left in guest harbors did not seem to have an effect regarding the response rate, e.g. questionnaires in Skåldö were available for boaters eight weeks and only one boater replied. More important than the time period was the enthusiastic personnel in the guest harbors who were willing to introduce the project to boaters.

Questionnaires were collected during the peak season, because boat tourists visit guest harbors more often during peak season than in any other season. Altogether 18 questionnaires were collected from Estonia, 55 questionnaires were collected from Finland and 71 questionnaires were collected from Sweden as shown in table 2.

Three respondents were from Estonia, 53 respondents were from Finland, 76 respondents were from Sweden, 9 respondents were from Germany and two respondents were from Lithunia and the Netherlands. The majority of respondents were from Finland and Sweden. Although two study sites were located in Estonia, only 3 responses were collected from Estonians. Most of the tourists in Estonian study sites were actually from Sweden, Finland and Germany.

The characteristics of the islands varied. Boat tourism in Estonia was relatively quiet and slow compared to Finland, and especially Sweden, where boat tourism activities seemed to be very popular. Estonians were not allowed to own a boat during the Soviet Era (Swedish Environmental Protection Agency 2008). Boat tourism in study sites in Finland and Sweden seemed much more active than in Estonia.

Table 2. Number of responses and respond rates in study sites

Study sites	**Personally collected responses**	**Total number of responses**	**Respond rate (%)***
Muhu, Estonia	2	11	100
Saarenma, Estonia	7	7	87,5
Skåldö, Finland	7	8	58,3
Iniö, Finland	10	10	62,5
Vänö, Finland	15	15	75
Högsåra, Finland	7	14	50
Kasnäs, Finland	8	8	72,7
Ingmarsö, Sweden	16	16	57,1
Askö, Sweden	12	27	100
Ornö, Sweden	7	7	70
Utö, Sweden	15	21	37,5
Total	*106*	*144*	

*Response rates are calculated from personally collected responses and are based on how many boaters responded to the questionnaire and how many refused

3.1 The background of the respondent

Out of the 144 responses 73 (51%) were from females and 70 (49%) were from males. One person had filled in the questionnaire without specifying his/her gender. The age of respondents was sorted into six categories (figure 4). Boaters from the age group 35-45 years old were the most represented group (43 responses) and boaters from the age group 18-25 years old were under represented (3 responses).

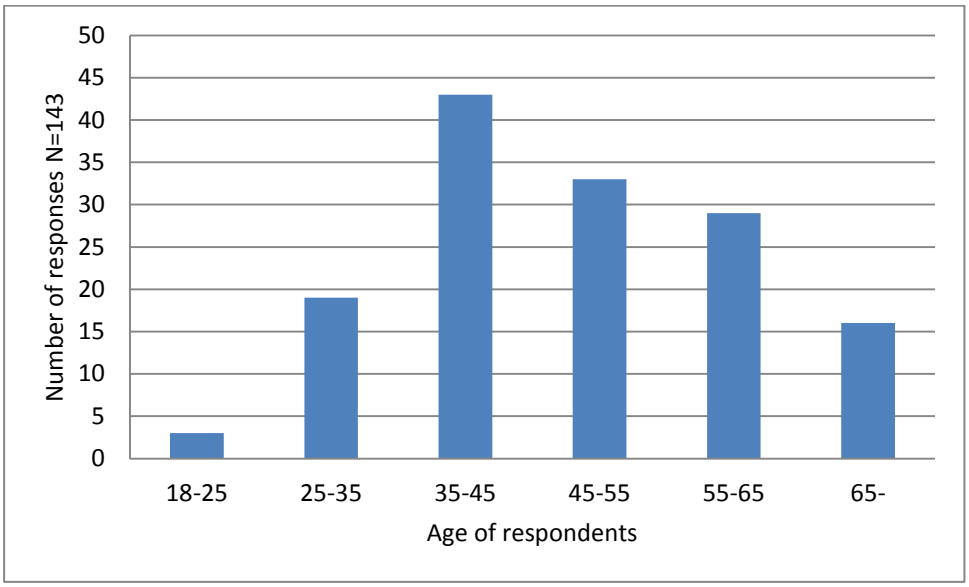

Figure 4. Age distribution among boaters N= 143

Respondents were asked to specify their level of education within three categories: elementary school, high school and higher education. If they had a higher education, they were asked to specify the type of higher education. However, a considerable amount of respondents did not specify the type of higher education. Most respondents were highly educated (74.6 %). The typical respondent in this study was a highly educated Swedish female or male, who belongs to the age group 35- 45 years old. He/she has visited the archipelago more than ten times.). Of the groups 15.9 % had completed high school and 9.4 % had completed elementary school (figure 5). Respondents who were highly educated were overrepresented.

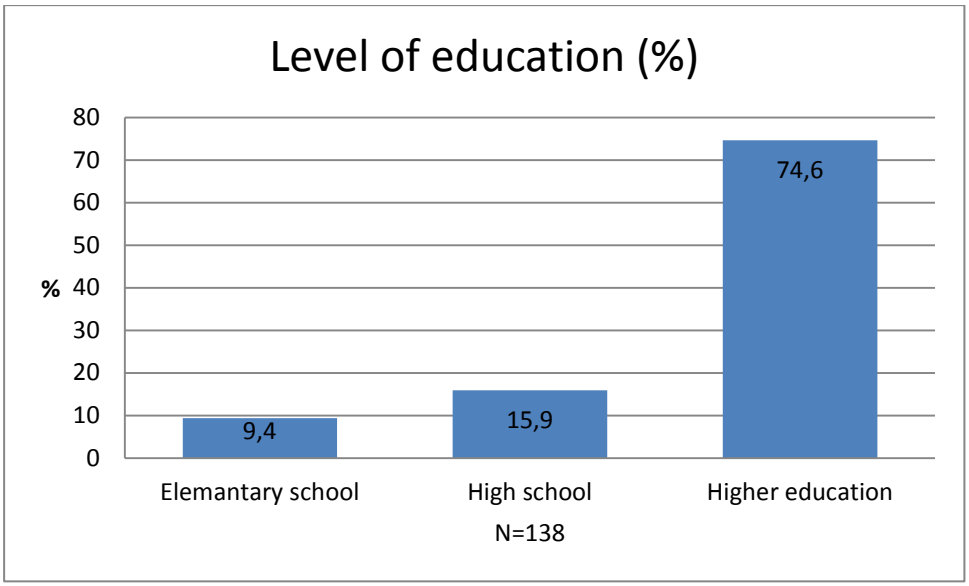

Figure 5. Level of education of respondents %

Most boaters, who participated in the study, were temporary tourists (93.7 %). A small portion of boaters (5 %) had a summer house on nearby island and one boater was a local. Most boaters (75.4%) had visited the archipelago more than ten times during the last ten years (see figure 6). Boaters were asked what type of transport they use when they visit the archipelago and most boaters (86.7%) used the boat as a transport. Some boaters (9.1%) used both a boat or a car to visit the archipelago. Only 1.4 % of boaters used public transport to visit islands. A minority of respondents used both car and public transport (0.7%) or boat, car and public transport (2.1%). It may also be that the last group did not understand the question properly, since all boaters, who participated in the study, where always first identified as recreational boaters.

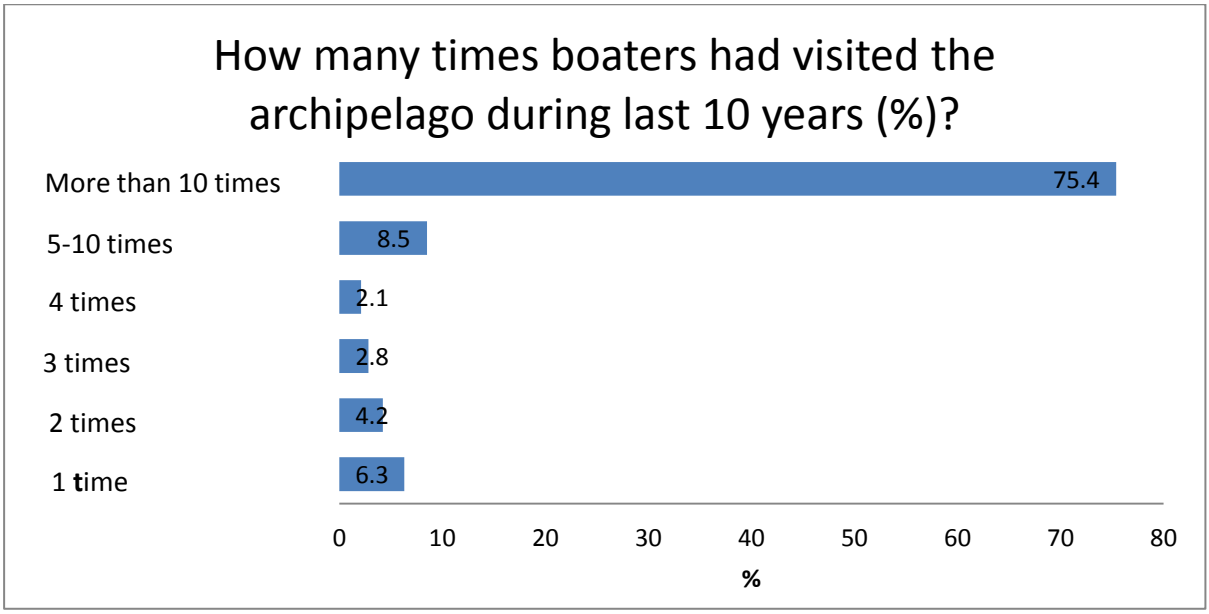

Figure 6. The number of visits to the archipelago N =142

In Estonia respondents came from Estonia, Germany, Finland, Sweden and Lithuania. In Finland the respondents' nationalities were Estonian, German, Finnish and Swedish. In Sweden respondents came from Germany, Finland and Sweden. The table shows the amount of visitors from different countries in this study. Most respondents were from Finland and Sweden (see table 3).

Table 3. Boat tourist nationalities in Estonia, Finland and Sweden (N=144)

	Estonian	German	Finnish	Swedish	Others
Estonia	1	3	3	7	1
Finland	1	1	50	1	-
Sweden	1	5	-	68	1

3.2 Purposes for visiting the archipelago

Nature was the most important reason to visit the archipelago (figure 7). Nature was chosen 83 times, sailing 74 times and beach life 41 times. Least important reasons to visit the archipelago were night life, fishing and culture (see figure 5). Respondents who chose option" other" told that their purposes of visit were, for example, diving, quietness of nature and relaxation. Boat tourists on Utö in Sweden also pointed out that they come to Utö for shopping, restaurants and minigolf.

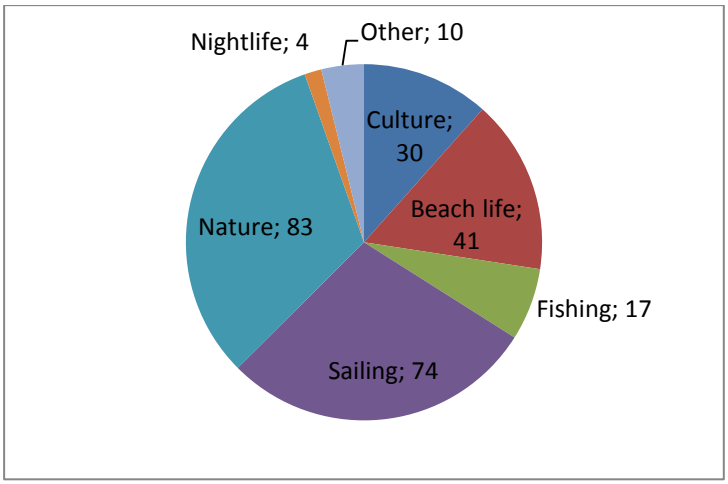

Figure 7. Boat tourists' purposes for visiting the archipelago. Multiple options could be chosen. (N=143)

Respondents were requested to state what factors are the most important to them when choosing outdoor activities (figure 8). Weather, nature and water quality were the most important factors when choosing outdoor activities. Water temperature, cost and the range and number of activities available on the island were the less popular factors for outdoor activities. Three respondents chose option "other" and they gave answers "lifestyle on islands", "atmosphere on islands" and "silence on islands" as factors when choosing outdoor activities.

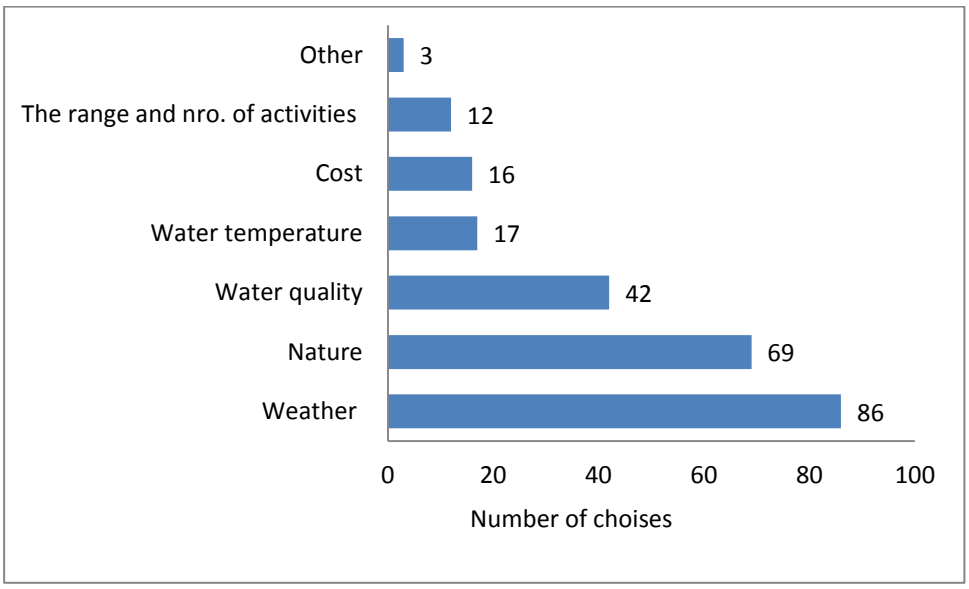

Figure 8. What is important for boat tourists when choosing their outdoor activities (N=143)

Respondents were requested to choose which nature types and properties of nature on the island are important to them and their outdoor activities (figure 9). Most respondents valued clean beaches, good sea water quality and open traditional landscapes with high natural and cultural values. High marine biodiversity, high biodiversity on land, groundwater quality and forest with high natural values were chosen by fewer respondents. Good hunting grounds, good fishing waters and high biodiversity of particular organism groups were important to few respondents. Those respondents who chose the option "high biodiversity of particular organism group" were asked to specify the organism group, and butterflies was the only group mentioned. However, most respondents who chose this option did not specify the organism group. Respondents who chose the option "other" were asked to specify what kind of nature types or properties of nature they value most. However, most respondents who chose the option "other" did not specify and those who did specify mentioned "lifestyle on islands" and "opportunity to dive".

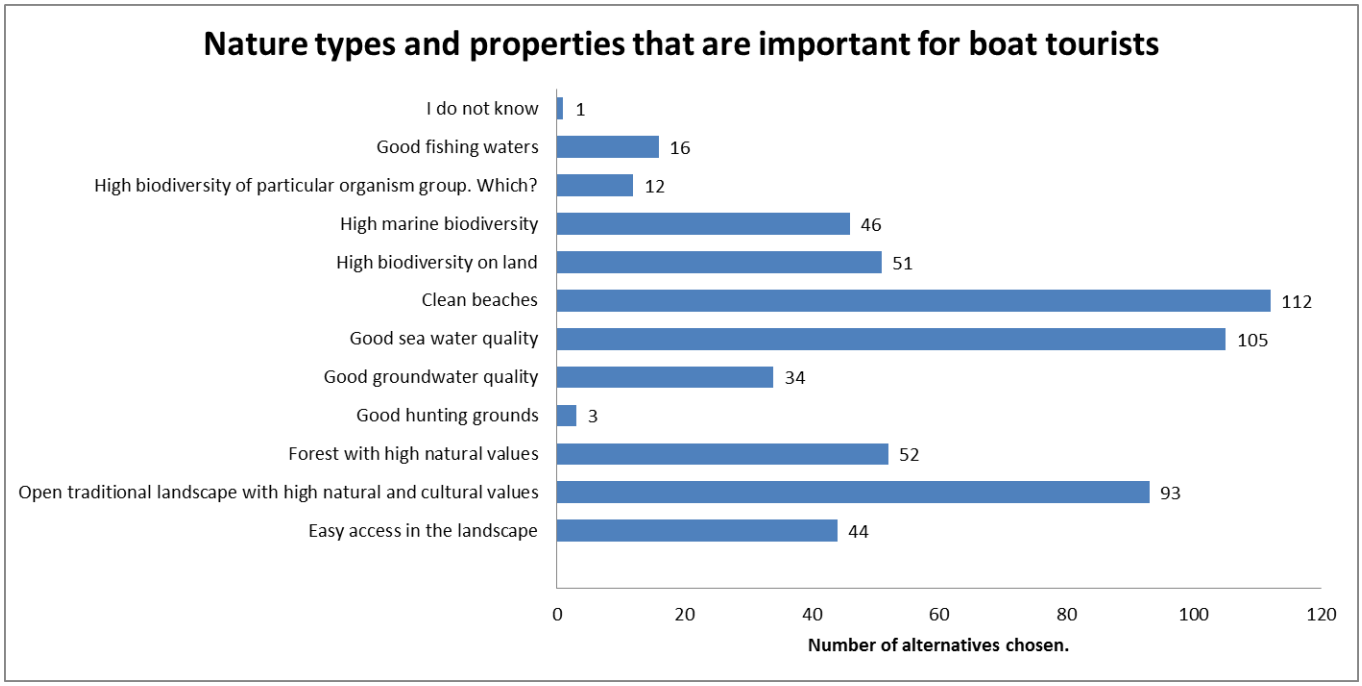

Figure 9.. Nature types that are important for boat tourists (N=144)

Respondents were also asked which of these nature types is the most important, and 124 out of 144 respondents responded to that question. *Good sea water quality, Clean beaches and Open traditional landscapes with high natural and cultural values* were the most important ones for respondents. *Good hunting grounds, Good fishing waters and High marine biodiversity* were the least important options.

3.3 Boat tourist perceptions of the water quality in the Baltic Sea

Most respondents (55. 3%) experienced the water quality in the Baltic Sea as good and 41% of respondents thought that the water quality in the Baltic Sea is bad. Only 3 % of the respondents said that the water quality in the Baltic Sea is very bad and 1% of the respondents that the water quality is very good (figure 10).

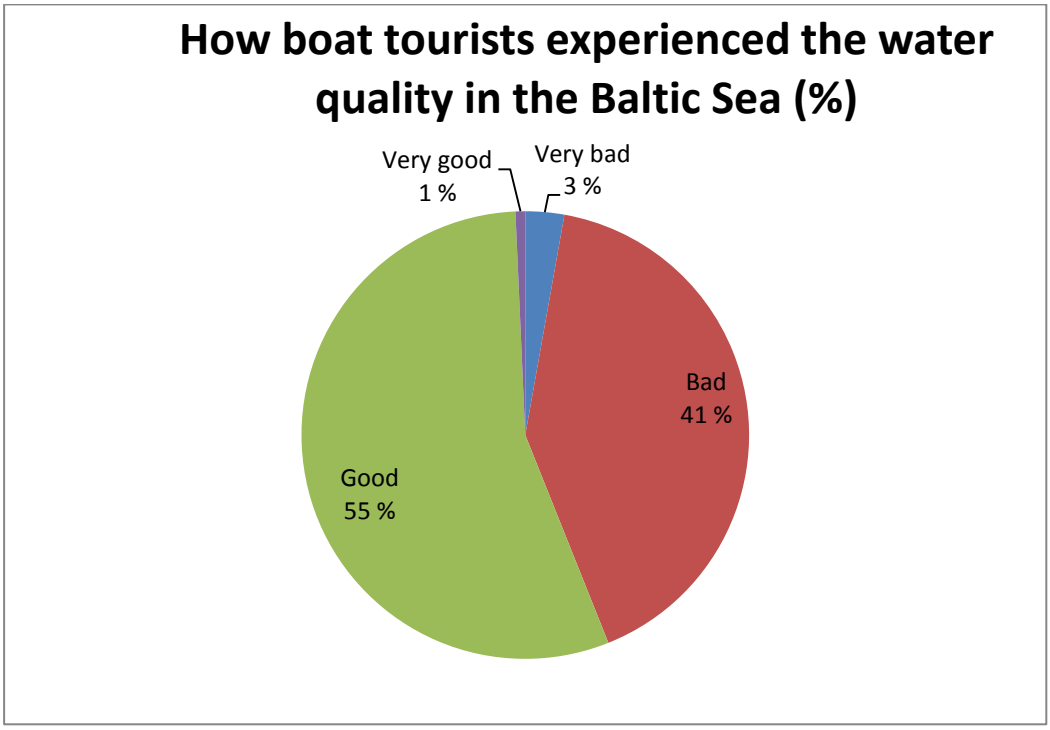

Figure 10. Boat tourist experiences of the water quality in the Baltic Sea N=144

There was no distinct difference between the gender groups on how they experienced the water quality in the Baltic Sea. 2.1% of the females and 0.7% of the males answered that the water quality in the Baltic Sea is very bad. 20.3% of both females and males experienced the water quality as bad. 25.9% of the females and 28 % of the males experienced the water quality as good. Only 0.7 of the females said that the water quality is very good. No male experienced the water quality as very good (figure 11).

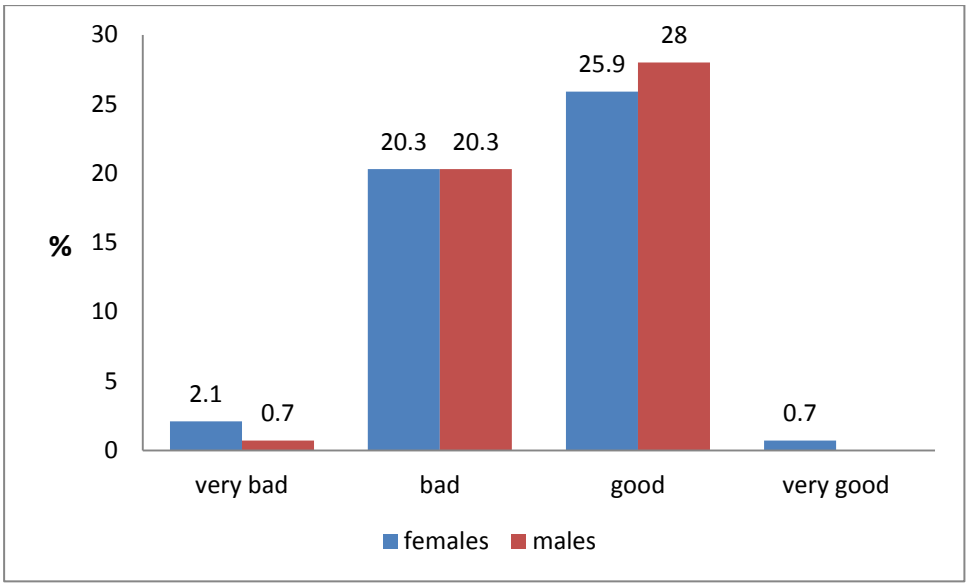

Figure 11. How females and males experienced the water quality (%). N=143

The experience of the water quality in the Baltic Sea varied among boaters in different countries. Boaters in Estonia and Sweden tended to experience the water quality as good more often than bad, whereas boaters in Finland tended to experience the water quality as bad more often than good (figure 12).

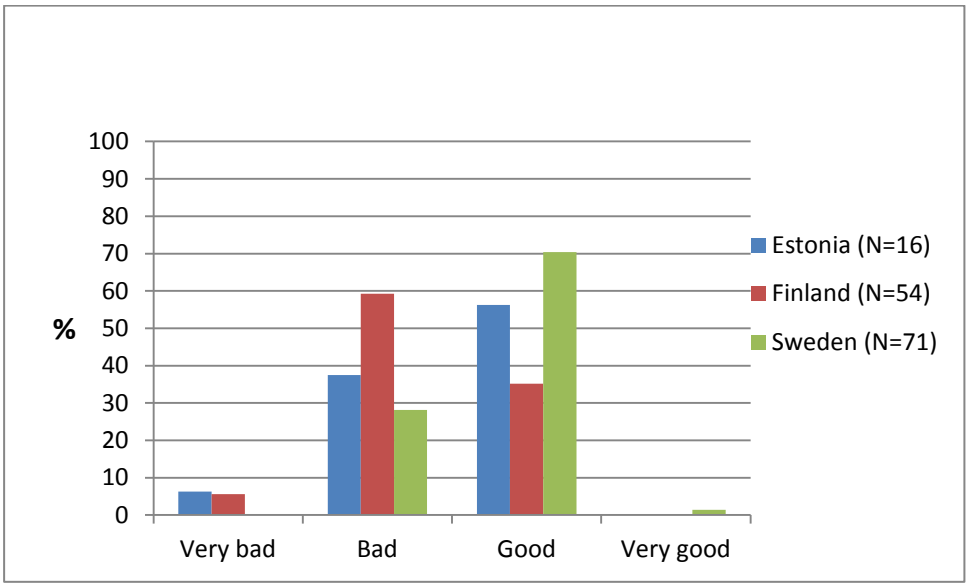

Figure 12. Boat tourist experiences of the water quality in all three countries

3.4 How do boat tourists gain information about water quality?

Respondents were asked how they gain information about water quality (figure 13). Multiple options could be chosen. The most common way of gaining information about the water quality was their own observation (107 responses) and the second most common way was media (84 responses). Boat tourists rarely relied on other persons on gaining information (17 responses). Some boat tourists also said that they search information about water quality from different Internet sites, such as Baltic Sea Portal, Finnish Environment Institute (SYKE) and John Nurminen Foundation. Some boaters wrote that their work is related to environmental management, and they receive information about water quality in the Baltic Sea from their work.

Respondents were expected to choose only one option, in reality multiple options were often chosen. It may not have been clear to respondents that this question was not one with multiple options. It may also be that respondents felt that they gain information from different sources, which are equally important to them. Only 61 respondents answered this question correctly.

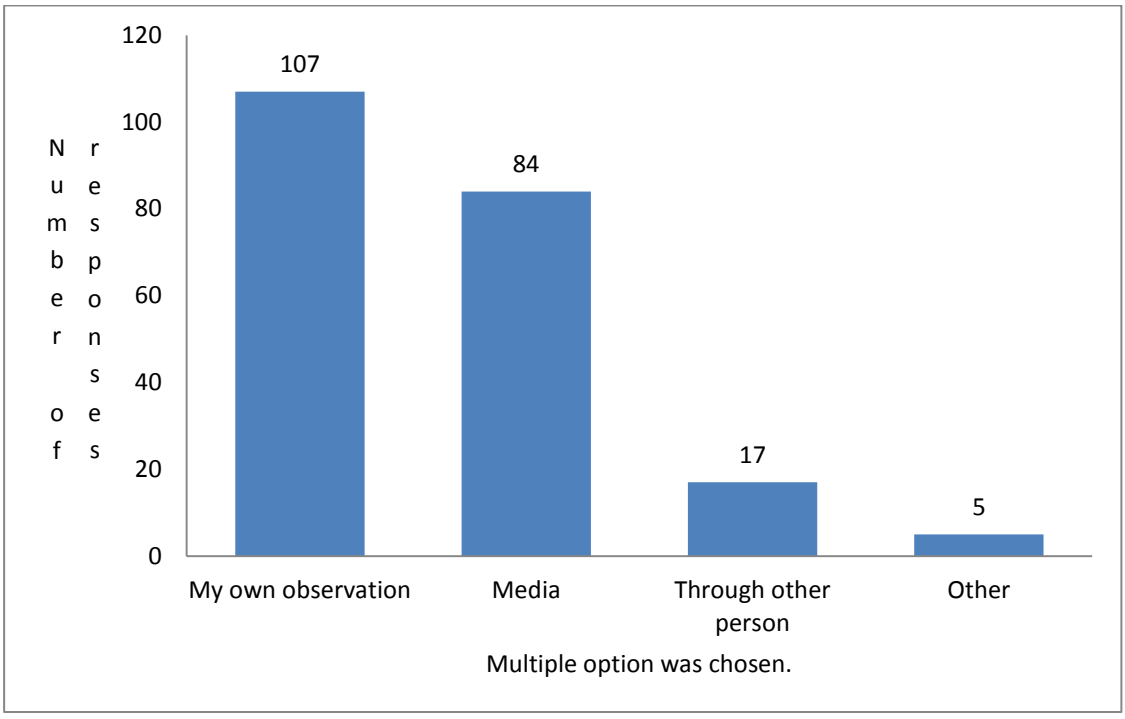

Figure 13. How boat tourists gain information about the water quality in the Baltic Sea

The majority of the respondents who gained information on through their own observation (57.4%), experienced the water quality in the Baltic Sea as good . 24.6% of the respondents, who relied on own observation experienced the water quality as bad, and 1.6% of them as very bad. 14.8 % of the respondents, who gained information from media, experienced the water quality as bad and 19.7% of them as good.

Table 4. How boaters experienced and how they gained information about water quality in the Baltic Sea (%)

Water quality	My own observation	Media	Through other person
Very bad	1.6	-	-
Bad	24.6	14.8	1.6
Good	57.4	19.7	3.3
Very good	-	-	-

N=61

3.5. Ranking questions about environmental problems in the Baltic Sea

Boat tourists were asked to rank environmental problems in the Baltic Sea. Algal blooms, eutrophication, environmental pollution and marine litter were regarded as large or quite large problems by most respondents. Oil pollution and boat traffic were ranked as slight problems, boat traffic even no problem. Most respondents regarded windmill parks, gas pipes and commercial fisheries as non-problematic (figure 14).

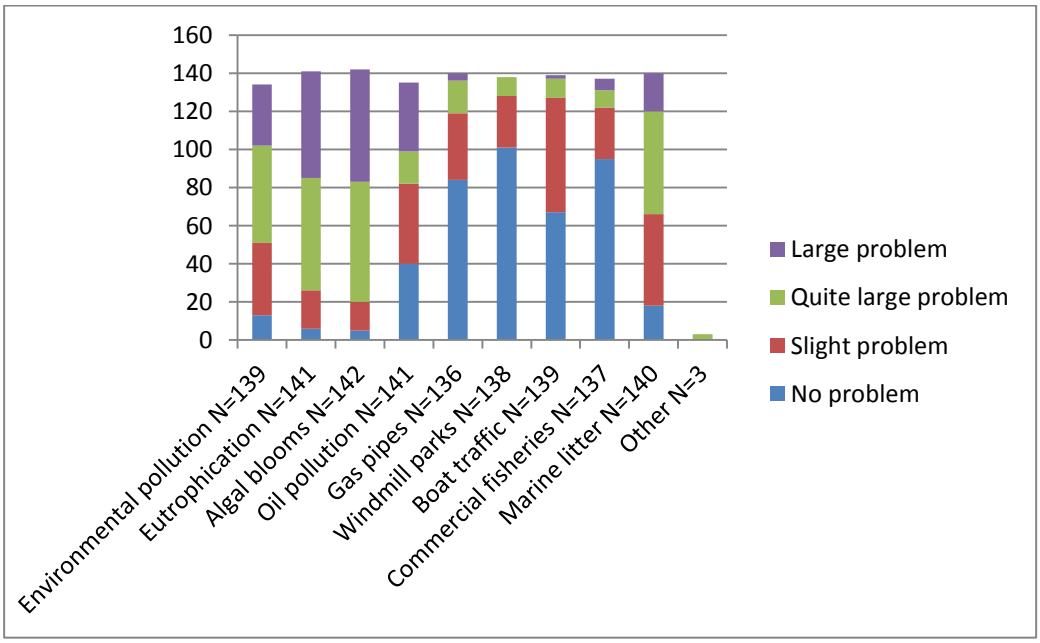

Figure 14. How boat tourists rank environmental problems

Respondents were also asked whether they had ever needed to refrain from any water related activities due to any of the above listed factors. Most boaters (67.5%) answered yes, and minority of boaters (31.7%) answered no (N=126). Boaters who answered yes were also asked which activity/activities they could not do and due to which factor. Most boaters identified the factor, but not the activities. 90.5 % of the boaters who answered yes identified algal blooms as a reason why they could not, e.g. swim, bathe or even sail. The rest of the boaters stated other factors, such as marine litter and oil.

Respondents were also asked to identify what type of marine litter they find most detrimental (plastic, oil, glass, metal or other). Many respondents had chosen multiple options, although only one option was preferred. Oil was chosen 93 times and plastic 67 times as the most detrimental marine litter. Glass was chosen 16 times and metal 12 times. Respondents who chose option "other" named, e.g. nuclear waste (figure 15).

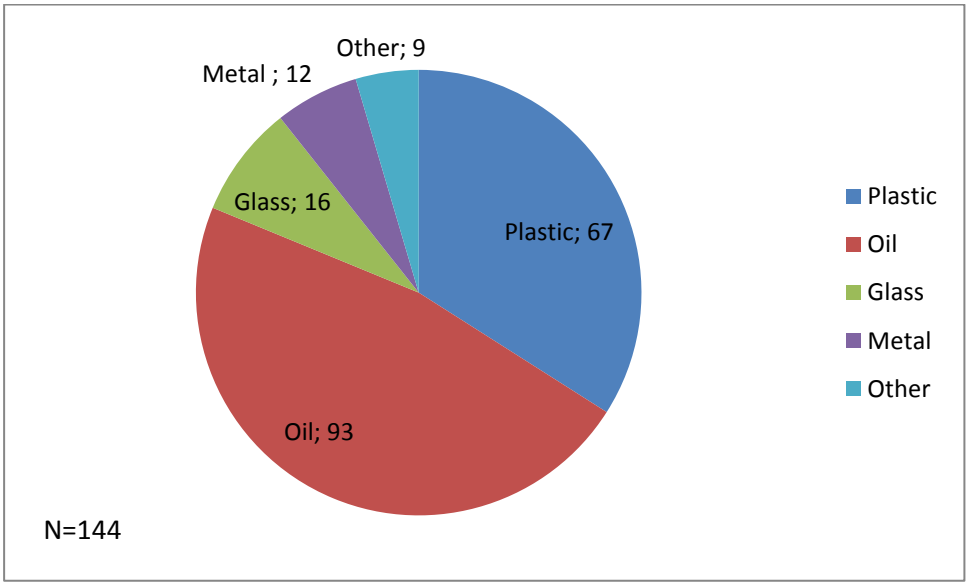

Figure 15. The type of marine litter boat tourists find detrimental

4 Discussion

Marine and coastal tourism is increasing all over the world ((Hall 2001, Orams 1999), and it is highly likely to increase also in the Baltic Sea. The increase of marine tourism should be taken

into consideration in planning and management of coastal zones at a local, regional and national level in the Baltic Sea region.

The results of this study give insights into how boat tourists in the Baltic Sea perceive the environment and environmental problems in the Baltic Sea. The typical respondent was a highly educated Swedish of Finnish female or male, who belongs to the age group 35- 45 years old. He/she has visited the archipelago more than ten times using boat as a transport.

There was no distinct difference between the gender groups on how they experienced the water quality in the Baltic Sea in my study. Most respondents were highly educated (74.6%), but the majority of respondents still experienced the water quality in the Baltic Sea as good. Their experience is contrary to numerous studies made of the environmental state of the Baltic Sea and it is clear that the Baltic Sea suffers from several environmental problems (Finnish Environment Institute 2011). Higher education did not contribute to the environmental awareness in this study.

Results indicate that boat tourists value nature and natural environments in the Estonian, Finnish and Swedish archipelago. The main purpose for boat tourists to visit the archipelago was nature. Only a few boat tourists wanted to visit the islands for fishing opportunities or night life. Boat tourists were regularly seen walking on islands enjoying the landscapes and nature. Some of them felt the archipelago areas in Finland and Sweden are very unique. Benefits of protecting marine and coastal environments could prove to be beneficial also for marine and coastal tourism, as a consequence conservation and tourism do not need to have contrary interests. Marine parks and marine protected areas could help put coastal towns and villages on the tourist map. E.g. Vänö and Högsåra in Finland and Askö in Sweden seemed to attract boat tourists because of their natural and traditional landscapes: boat tourists in particular often mentioned how they enjoy the local nature. Some of the boat tourists even said that they would not change anything in these islands, they want to experience ”quietness”, peaceful nature” and ”traditional landscapes”. Guest harbor owners and local shop keepers were occasionally very interested to learn about the preferences of the boat tourists. Many coastal communities have shifted from agriculture and fishing to tourism-related businesses. Tourism is vital for many islanders, and they are keen to learn tourist perceptions and attitudes about the archipelago.

The weather is the most important aspect for boat tourists when they choose their outdoor activities. Nature was the second most popular choice indicating again the importance of the natural environment for boaters. The range and number of activities and cost were important to only a few boaters. This might further indicate that boat tourists do not necessarily seek recreational facilities in the archipelago, but rather look for sea and nature related experiences.

Clean beaches, good sea water quality and traditional landscapes were the most important nature types and properties of nature for respondents. The majority of boat tourists did not value highly hunting grounds and fishing. This further illustrates what type of tourism management could be

applied in coastal zones. Nature was again valued highly by boat tourists. One of the boat tourists compared the Finnish and Swedish archipelago to the coastal zones of the USA. He did not like the abundance of hotels and restaurants in the US coastal zones, and preferred traditional landscapes with sheep and old fishing villages in the archipelagoes in the central Baltic. He thought that the value and uniqueness of the archipelago will only increase in time.

Most boat tourists experienced the water quality of the Baltic Sea as good. The results of this part of the study was expected to be different; it was expected that most boat tourists would experience the water quality in the Baltic Sea as bad. However, the summer of 2012 was rainy and cold, and since warm summers contribute to algal bloom growth, the cold summer could have affected the results. Boaters in Estonia and Sweden tended to experience the water quality more often as good rather than bad whereas boaters in Finland tended to experience the water quality more often as bad rather than good. More than ten boaters in Finland said that the water quality used to be much better 10-20 years ago, and some of them wished that the water quality would still be as good as it used to be. The Gulf of Finland, which is located close to the study area in Finland, is one of the most polluted and nutrient-rich areas in the Baltic Sea (Rönnberg & Bonsdorff ,2004). This could be one of the reasons why boaters in Finland experienced the water quality more negatively. The results of this part of the study were nevertheless surprising, because environmental problems, especially algal blooms, in the Baltic Sea are regularly covered by media in both Finland and Sweden. Environmental educational programmes should be developed along with other coastal planning and management. It could be beneficial to show pictures and video material, for example, about dead sea bottoms, since most marine and coastal tourists may not have had opportunities to actually see them. Visual images can be more vivid than words. It is important that the boat tourists, along with all the other marine and coastal tourists, are aware of the environmental problems in the Baltic Sea, especially since the sea is so vulnerable. Awareness may help to produce more environmentally friendly attitudes, which can lead to more responsible actions.

Respondents gain information about the water quality of the Baltic Sea mainly through their own observation. Some respondents used media or other persons to gain information. The fact that respondents relied on their own observation to gain information about the water quality may explain why a majority thought that the water quality in the Baltic Sea is good. Some boat tourists commented that they do not know how the condition of the marine environment is under the surface, but from a boater’s perspective it looks good or is perceived as good when there are no algal blooms. Some boaters said they check the water quality by observing other people’s actions, e.g. if people are swimming. Some boaters said that they check if there are any algal blooms in the guest harbors before anchoring, and if there are they will sail to another guest harbor.

Boat tourists were asked to rank environmental problems in the Baltic Sea. Most boaters rated windmill parks and gas pipes as non-problematic. According to the Eurobarometer study (2011) the wind power acceptance is very high in Europe. Boat tourists also showed signs of this, although they are the ones who could be expected to complain, for example, about visual aspects of windmills. In general, boat tourists did not mind windmills, some of them would even say that they want more of them. Only in Estonia were windmill parks occasionally criticized strongly, some people would say that they spoil the natural landscapes. However, Muhu island was the only study site close to the large wind mill park. Algal blooms and eutrophication were seen as large or quite large problems by most boaters, which was expected since both are considered to be the worst environmental problems in the Baltic Sea. Oil spills were also regarded by most as a big or a rather big problem. Some boaters said that they are afraid of oil accidents in the Baltic Sea. Environmental pollution was also ranked as a big or a rather big problem. The fact that environmental pollution, eutrophication, algal blooms and marine litter were considered as problems in the Baltic Sea shows positive aspects of the awareness about environmental problems associated with the Baltic Sea. Marine litter has not been viewed as a bad problem in the Baltic Sea (HELCOM, 2007), but surprisingly boaters ranked it relatively high. The results of this part of the study go together with Baltic Survey (2010) which found: ”Litter is a marine issue that is regarded in all littoral countries as a rather big or very big problem in the Baltic Sea.” (Swedish Environmental Protection Agency, 2010). Marine litter is a relatively less studied subject in the Baltic Sea region, and the results from this study and the Baltic Survey indicate the urgent need for monitoring programmers of marine litter in the whole Baltic Sea region.

Respondents were also asked whether they had ever needed to refrain from any water related activities due to any of the listed factors. Boaters who answered positively were also asked to identify activity/activities they could not do, and due to which factor. 90.5 % of the boaters who answered yes to the above question identified algal blooms as a factor why they could not e.g. swim, bathe or even sail. The rest of the boaters stated other factors, such as marine litter and oil. The results illustrate how often algal blooms can affect tourist activities in the Baltic. If marine and coastal tourists cannot do water related activities because of algal blooms, it can have an effect on their holiday destination preferences. Nilsson and Gösslin (2012) found out that some tourists in southern Sweden have cancelled or shortened their holidays because of algal blooms. An interview study conducted by the Swedish Environmental Protection Agency (2008) found that many coastal entrepreneurs were afraid that algal blooms might affect their economies negatively. Because coastal communities may suffer economically from algal blooms, further studies are needed on algal blooms and its impact on marine and coastal tourism.

Respondents regarded oil and plastic litter as the most detrimental marine litter. It was expected that the majority would choose oil, because of big oil accidents and media coverage. However, it was not expected that plastic would be chosen so many times, since plastic waste does not gain that much media coverage. The results of this part of the study indicate again that boat tourists experience marine litter- and especially plastic litter-more often than was expected. Some of the

boat tourists were keen to talk about the litter, for example, they wished more trash bins to the islands, e.g. Utö. Some of the boat tourists also said that guest harbors have improved a lot during the past 10 years by providing trash bins. Some boat tourists said that they can see more and more plastic litter in the sea. Because plastic essentially never biodegrades, it can become a permanent environmental problem. The use of the plastic products is steadily increasing in the Baltic Sea region and it is likely that some portion of that plastic material will end up in the sea. It can be very difficult, if not impossible, to remove the fragmented plastic litter from the sea. Plastic litter can be fatal to marine mammals and other animals. It is vital to acknowledge problems related to marine litter, especially plastics, and start international studies and monitoring programmes in the whole Baltic Sea region.

Tourism has a potential role of creating jobs and generating of tax revenues in the Estonian, Finnish and Swedish archipelago. Sustainable boat tourism could provide economic benefits for coastal communities. Marine ecotourism programmes could act as educational tools. Tourist operators, guest harbors and other boat tourist related organizations could promote responsible tourism in co-operation.

Agriculture and fishing are not as reliable livelihood for islanders as back in the 1960s, but tourism can be regarded as one of the few industries that are capable of stimulating the economies of coastal communities on islands. Local people in the Green Islands project were often enthusiastic and keen to discuss development management, but this does not necessarily mean that they want a further development of facilities, some of them said that they are more interested in promotion the destination .Many boat tourists in Vänö, Finland and Askö, Sweden mentioned that they liked the current situation on these islands and did not miss restaurants, shops, bars, etc. Sometimes tourists do not look for ”improvement”, ”change” or other similar types of things, but rather stay loyal to certain holiday destinations because destinations remain the same.

The number of responses was either very low or zero regarding questionnaires left in guest harbors, except in Muhu and Högsåra, where the guest harbor personnel were very interested and enthusiastic about the project. The number of responses was probably very low regarding questionnaires left in the guest harbors, because boat tourists may not have noticed the questionnaires on desks and there were no researchers asking to participate in the survey. The quality of on-site questionnaires was clearly better than of guest harbor questionnaires. A small number of respondents had difficulties to understand certain terms such as eutrophication. A number of respondents failed to reply to questions that required a written answer.

The results of this study give insights into how boat tourists in the Baltic Sea perceive environmental problems in the Baltic Sea. These insights can be useful for coastal municipalities, politicians and environmental policy-makers. However, to conclusively discuss the interrelationships between boat tourism and environmental problems in the Baltic Sea, further longitudinal research to assess long-term environmental changes in tourist awareness, activities, satisfaction and destination choice is required.

References:

Björklunds båtslip (2012). http://www.bjorklundbatslip.fi/fin/1.html (retrieved 15.10.2012)

Bäck S., Ollikainen M., Bonsdorff E., Eriksson A., Hallanaro E., Kuikka S., Viitasalo M., Walls M. (2010). *Itämeren tulevaisuus*. Tampere: Gaudeamus.

Crouch G (1994). The Study of International Tourism Demand: A Survey of Practice. *Journal of Travel Research,* 4,41-55.

Derraik J (2002). The pollution of the marine environment by plastic debris: review. *Marine Pollution Bulletin,* 44, 842-852.

The European Union (2012*). EU Strategy for the Baltic Sea region*. http://www.baltic-sea-strategy-tourism.eu/cms2/BSST_prod/BSST/en/start/index.jsp (retrieved 30.11.2012)

The European Union (2006). *Towards a future Maritime Policy for the Union: a European vision for the oceans and seas*. http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexplus!prod!DocNumber&lg=en&type_doc=COMfinal&an_doc=2006&nu_doc=275 (retrieved 30.11.2012)

European Commission (2012). *Marine environment* http://ec.europa.eu/environment/marine/index_en.htm(retrieved 30.11.2012)

European Commission (2011). *Special Eurobarometer 364.* http://ec.europa.eu/public_opinion/archives/ebs/ebs_364_en.pdf (retrieved 30.11.2012)

Finnish Environment Institute (2010). *The Baltic Sea region.* http://www.ymparisto.fi/default.asp?node=18323&lan=en (retrieved 30.9.2012)

Finnish Environment Institute (2012).*Protection of the Baltic Sea.* http://www.ymparisto.fi/default.asp?node=17722&lan=en (retrieved 30.11. 2012)

Finnish Environment Institute (2011). *Itämeren ongelmat.* http://www.ymparisto.fi/default.asp?node=15258&lan=fi (retrieved 30.11.2012)

Finnish Environment Institute (2011). *Venäjän ja Saksan välinen merenalainen maakaasuputki Suomen talousvyöhykkeellä* http://www.ymparisto.fi/default.asp?contentid=377061&la n=FI

Finnish Tourism Board MEK. (2004). *Suomen matkailumaakuva päämarkkinamaissa.* http://www.mek.fi/W5/mekfi/index.nsf/6dbe7db571ccef1cc225678b004e73ed/b431a49caee62f2ec225735b0032a953/$FILE/A140%20Suomen%20matkailumaakuva.pdf (retrieved 4.6.2012)

Frid C & Dobson M (2002*). Ecology of Aquatic Management*. Singapore: Pearson Education Limited.

Hall M. (2001). Trends in ocean and coastal tourism: the end of the last frontier? *Ocean & Coastal Management*,44, 601–61.

Helsinki Commission (2007). *Assessment of the Marine Litter problem in the Baltic region and priorities for response.* http://www.helcom.fi/publications/other_publications/en_GB/Outcome_Marine_Litter_Project/ (retrieved 4.12.2012)

Helsinki Commission (2008*). A historic view of Baltic fisheries*. http://www.helcom.fi/environment2/biodiv/fish/en_GB/history/(retrieved 15.9.2012)

Helsinki Commission (2010). *Hazardous substances in the Baltic Sea: an integrated thematic assessment of hazardous substances in the Baltic Sea.* http://www.helcom.fi/stc/files/Publications/Proceedings/bsep120A.pdf (retrieved 5.10.2012)

Helsinki Commission (2007). *Towards a Baltic Sea unaffected by eutrophication. HELCOM Overview 2007*. http://www.helcom.fi/stc/files/Krakow2007/Eutrophication_MM2007.pdf (retrieved 5.10.2012)

Helsinki Commission (2000) *Sustainable and environmentally friendly tourism in the coastal zones of the Baltic Sea area.* http://www.helcom.fi/Recommendations/en_GB/rec21_3/ (retrieved 30.11.2012)

Helsinki Commission (2009*). Reinforcing Oil Spill Response Capacity in the Baltic*. http://www.helcom.fi/stc/files/Publications/OtherPublications/Reinforcing_OilSpill_Resp_Capacity.pdf(retrieved 5.10.2012)

Helsinki Commission (2012*). Clean Seas Guide 2012.* http://www.helcom.fi/stc/files/Publications/Clean_Seas_Guide_2012_FINAL.pdf (retrieved 5.10.2012)

Hoagland P, Anderson DM, Kaoru Y, White AW (2002). The economic effects of harmful algal blooms in the United States: estimates, assessment, issues, and information needs. *Estuaries and Coasts*, 25, 819-837.

Ingmarsö Gästham(2012). http://www.ingmarsokajak.se/hamn.htm (retrieved 30.10.2012)

International Maritime Organization (2012). *Pollution prevention* http://www.imo.org/ourwork/environment/pollutionprevention/pssas/Pages/Default.aspx (retrieved 25.9.2012)

Kasnäs gästhamn (2012). http://www.kasnas.com/main.php?menuID=167 (retrieved 15.10.2012

Kiirikki M, Rantanen P, Varjopuro R, Leppänen A, Hiltunen M, Pitkänen H, Ekholm P, Moukhametshina E, Inkala A, Kuosa H and Sarkkula J. (2003). *Cost effective water protection in the Gulf of Finland- Focus on St. Petersburg.* Finnish Environment Institute. Helsinki.

Klein Y, Osleeb J & Viola M. (2004). Tourism generated earnings in coastal zone: regional analysis. *Journal of coastal research*, 4, 1080-1088.

Kosenius AK. (2004). *Estimating the benefit from the algal bloom reduction – an application of the contingent valuation method*. Master thesis. University of Helsinki.

Kuressaare City Harbour(2012) http://www.kuressaare.ee/sadam/en/index_en (retrieved 10.10.2012

Lõunaranna Port (2012). http://www.lounaranna.ee/avaleht/eng/ (retrieved 12.10.12)

Miller ML (1993). The rise of coastal and marine tourism. *Ocean and coastal management* ,20,181-199.

Miller ML and Auyong J. (1991). Coastal zone tourism- A potent force affecting environment and society. *Marine Policy,* 75-99.

Muhu Tourism Association (2012). http://www.muhu.info/ (retrieved 12.10.2012)

National Oceanic and Atmospheric Administration (2012). http://marinedebris.noaa.gov/ (retrieved 30.11.2012)

Nilsson JH and Gössling S (2012). Tourist responses to extreme environmental events: The case of the Baltic Sea algal blooms. *Tourism, planning and development,* 1-13.

Orams, M (1998). Marine Tourism: Development, Impacts and Management. London: Routledge.

Peterzens guest harbor(2012). http://www.peterzens.fi/ (retrieved 14.10.2012)

Priskin J. (2003). Tourist perceptions of degradation caused by coastal nature-based recreation. *Environmental management*, 32(2),189-204.

Remoundou K, Koundouri P, Kontogianni A, Nunes P, Skourtos M (2009).Valuation of natural marine ecosystems: an economic perspective. *Environmental Science and Policy,* 12, 1040-1051.

Roe D, Urquhart P (2001). *Pro-Poor Tourism: Harnessing the World's Largest Industry for the World's Poor. World Summit on Sustainable Development.* http://www.eldis.org/vfile/upload/1/document/0708/DOC10076.pdf (retrieved 5.6.2012)

Rönnberg C & Bonsdorff E (2004). Baltic Sea eutrophication: area-specific ecological consequences. *Hydrobiologia*, 514, 227-24.

Scott D & Lemieux C. (2009). *Weather and climate information for tourism. World Meteorological Organization & United Nations World Tourism Organization.* http://sdt.unwto.org/sites/all/files/docpdf/wcc3tourismwhitepaper.pdf (retrieved 30.10.2012)

Suomen Tuulivoimayhdistys ry (2012). http://www.tuulivoimatieto.fi/ (retrieved 20.10.2012)

Stockholm University Marine Center (2012)http://www.smf.su.se/english/ (retrieved 30.10.2012)

Stewart C. (1993). Sustainable tourism development and marine conservation regimes. *Ocean and coastal managemen,t* 20, 201-217.

Swedish Environmental Protection Agency (2010) *BalticSurvey – a study in the Baltic Sea countries of public attitudes and use of the sea.* http://www.swedishepa.se/upload/english/05_preserving_the_environment/BalticSurvey_Report_978-91-620-6382-5webb.pdf (retrieved 10.10.2012)

Swedish Environmental Protection Agency (2008). *Tourism and recreation industries in the Baltic Sea area How are they affected by the state of the marine environment? - An interview study*. http://www.swedishepa.se/Documents/publikationer/978-91-620-5878-4.pdf (retrieved 10.10.2012)

Tilastokeskus (2012). *Laadullisen ja määrällisen tutkimuksen erot.* http://tilastokeskus.fi/virsta/tkeruu/01/07/(retrieved 5.10.2012)

The World Tourism Organization (2012). *Understanding tourism: Basic Glossary*. http://media.unwto.org/en/content/understanding-tourism-basic-glossary (retrieved 5.12.2012)

United Nations Environment Programme (2012)*Marine litter* http://www.unep.org/regionalseas/marinelitter/about/default.asp (retrieved 4.6.2012)

United Nations Environment Programme (2012) *Sustainable coastal tourism* http://www.unep.fr/shared/publications/pdf/DTIx1091xPA-SustainableCoastalTourism-Planning.pdf (retrieved 20.9.2012)

United Nations Environment Programme (2012). Press release. http://media.unwto.org/en/press-release/2012-09-12/international-tourism-track-hit-one-billion-end-2012 (retrieved 20.9. 2012)

United Nations Environment Programme (2012). *Marine litter:global challenge* http://www.unep.org/regionalseas/marinelitter/publications/docs/Marine_Litter_A_Global_Challenge.pdf (retrieved 20.9.2012)

Vänö island.(2012). http://www.vano.fi/vano/ (retrieved 14.10.2012)

Appendices:

Boat tourism survey in the Baltic Sea region 2012

My name is Anne Palkeinen. I am studying at the Novia University of Applied Sciences in Raseborg, Finland. My field of study is Integrated Coastal Zone Management (IZCM), which can be defined as a sustainable coastal management system that aims to take into consideration all aspects related to coastal zones. ICZM aims to balance environmental, economic, social, cultural and recreational objectives related to a coastal management.

I am writing my bachelor thesis on tourist perception of marine environmental problems in the Baltic Sea for the Green Islands project, at Research and Development Institute Aronia. The Green Islands project aims to improve the environmental conditions in the Baltic region. The project aims at achieving "greener" islands by mapping, analyzing and evaluating waste, energy and water management together with greenhouse gas footprints and ecosystem services provided and utilized on islands in Sweden, Finland and Estonia.

If you would be kind enough to answer a few questions I would be very thankful. This survey should take about 5 minutes of your time. The questionnaire is anonymous.

If you have questions or are interested in the result of this research please do not hesitate to contact me by email anne.palkeinen@novia.fi.

If you want to know more about the Green Islands project and the role of this survey in Green Islands and Aronia research, you are welcome to visit the Green Islands website http://www.greenislands.fi/, or contact Kajsa Mellbrand on e-mail kajsa.mellbrand@novia.fi or phone +358 447998434.

Thank you for participating!

Boat tourism survey in the Baltic Sea region 2012

Questionnaire

1. Gender

☐ Female ☐ Male

2. Age

☐ 18-25 ☐ 25-35 ☐ 35-45 ☐ 45-55 ☐ 55-65 ☐ 65-

3. Education

☐ Elementary school ☐ High school
☐ Higher education/university- highest degree? _____

4. Do you/your household live on the island?

☐ Permanently ☐ Part of the year (f.ex. summer house) ☐ No (temporary visitor/tourist)

If temporary visitor/tourist, where do you normally live (city and country)?

5. How many times have you visited the archipelago the last 10 years?

☐ First time ☐ 2 times ☐ 3 times ☐ 4 times ☐ 5-10 times ☐ More than 10 times

6. When you visit the archipelago, do you come by

☐ Boat ☐ Car ☐ Public transport

7. What is the main purpose of this visit to the archipelago (multiple alternatives can be chosen)?

☐ Culture ☐ Beach life ☐ Fishing ☐ Sailing ☐ Nature ☐ Nightlife
☐ Other, what?

8. What is the most important to you when choosing outdoor activities?

☐ Water temperature ☐ Weather ☐ Water quality ☐ Cost ☐ Nature ☐ The range and number of activities in the area ☐ Other, what

9. Which nature types and properties of nature on the island are important for you and your outdoor activities (multiple alternatives can be chosen)?

☐ Easy access in the landscape
☐ Open traditional landscape with high natural and cultural values
☐ Forest with high natural values
☐ Good hunting grounds
☐ Good groundwater quality
☐ Good sea water quality
☐ Clean beaches
☐ High biodiversity on land
☐ High marine biodiversity
☐ High biodiversity of particular organism group (f.ex. birds, plants, insects…). Which?

☐ Good fishing waters
☐ I do not know
☐ Other, what?

10. Which of these nature types and properties of nature on the island is the most important for you and your outdoor recreational activities? Pick one of the alternatives above.

11. How do you experience the water quality in the Baltic Sea (choose one)?

	Very bad	Bad	Good	Very good
Water quality	☐	☐	☐	☐

12. How did you gain information on the water quality?

☐ My own observation ☐ Media ☐ Through other person ☐ Other, what?

13. Rank how you experience the magnitude of the following problems concerning the aquatic environment in the Baltic coastal zone?

	No problem			Large problem
	1	2	3	4
Environmental pollution	☐	☐	☐	☐
Eutrophication	☐	☐	☐	☐
Algal blooms	☐	☐	☐	☐
Oil pollution	☐	☐	☐	☐
Gas pipes	☐	☐	☐	☐
Windmill parks	☐	☐	☐	☐
Boat traffic	☐	☐	☐	☐
Commercial fisheries	☐	☐	☐	☐
Marine litter	☐	☐	☐	☐
Other, what?	☐	☐	☐	☐

14. Have you ever refrained from any water related activities due to any of the above listed factors?

☐ Yes ☐ No

If yes, which activity/activities have you refrained from, and due to which factor from the above list?

15. What kind of marine litter do you find most detrimental?

☐ Plastic ☐ Oil ☐ Glass ☐ Metals ☐ Other, what?

Thank you for participating!