Monitoring and management of visitor flows in recreational and protected areas – a case study from Aegna Island Estonia

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ABSTRACT
Aegna island situates in the northwestern corner of Tallinn Bay, Baltic Sea, Estonia. The island has a large variety of different landscapes, which is one of the reasons, why people like to visit Aegna and spend their free time there. For balancing human impact and offering sustainable recreational activities information about visitors is needed. This includes numbers, origins, activities, expectations and satisfaction of the visitors. In year 2002 first visitor survey was held in Aegna, but the results are not up-to-date and need to be renewed. In 2010 another visitor survey was conducted. Information from the questionnaires gives a satisfactory overview of the visitors of Aegna. Altogether with the data of the last survey in 2002, it is possible to mark out some changes that have taken place within eight years.

ADDITIONAL INDEX WORDS: sandy beaches, ICZM, Tallinn, tourists, recreation, visitor surveys

INTRODUCTION
Protected areas worldwide are becoming more crowded, with more people visiting them for many different activities. Recreation and tourism activities in nature reserves, natural parks and wilderness areas offer a growing management challenge. It is important to combine the protection of natural resources with opportunities offered by recreational activities (Mingyu et al., 2009). Managers need to balance visitor’s use and environmental protection. For that, needs and desires of visitors, the impact of their visits, their distribution and flow in time and space has to be collected (Cole and Daniel, 2003). Land managers need information on visitor characteristics, visitor impacts, and the effectiveness of visitor management tools. Visitor characteristics include numbers, origins, activities, expectations and satisfaction, and are determined principally from on-site visitor surveys. Information about visitors is particularly important to make monitoring programs more efficient, develop transportation, facilities and management systems. It can also be used to establish roads that meet the requirements of different user groups by channelling visitor flows and minimising conflicts between users (Janowsky and Becker, 2003). Most of what is known about visitors and their interactions with each other and with the park environment has come from verbal surveys. Visitors are questioned on the way in, along the way, on the way out or after returning home about who they are, where they are going, when they were there and what they were doing while there (Cole and Daniel, 2003). Also information about the satisfaction of experience, features of the park (toilets, camping sites etc) and specific components of the visit (wildlife viewing, scenery, vacationing etc) may be collected. Accurate and reliable information on visitor numbers help to minimize conflicts between visitor groups, identify potential “hotspots” within parks, improve infrastructure and services (Cessford and Muhar, 2003).

STUDY AREA AND OBJECTIVES

One of the major tourist destinations are coastal regions due to their physical attractiveness, beautiful landscapes and open space for leisure activities. These areas are important for recreation and leisure. Length of Estonian coastline is approximately 3800 km and there are more than 1500 islands. Aegna island lies in the north-western corner of Tallinn Bay, Baltic Sea (Fig. 1). Most of the island Aegna is covered with forests (85% of total). Although the island is small (almost 3km²) it has a large variety of different landscapes. In 1991 a nature protection area was developed in Aegna island.

Aegna has been open for tourists to visit for the last 50 years. Before that, at the beginning of 20-th Century a network of costal batteries was set up on Aegna and the whole island was turned into a restricted territory of the naval fortress. It wasn’t until 1960s it became possible to distribute the military buildings as holiday camps between Tallinn’s major enterprises. Restoration of independence in 1991 was of decisive importance and created good conditions for the development of the island of Aegna into a holiday centre that would preserve the unique natural environment.
of the island. Unfortunately, there was no noticeable progress on the island until spring 2006, when a landing pier was reconstructed. As a result the regular boat could safely land at Aegna.

Today Aegna is developing into a well-protected, well-tended, widely known and highly valued area. Most of the island is taken under protection, where tourists can spend their free time, including camping and make bonfire in special places, riding a bike and walking with pets (on leash), also picking berries and mushrooms. First visitor survey was held in Aegna 8 years ago. But these results are not up-to-date and doesn’t contain enough information visitor demands and wishes – where they would like to go, what they are doing, what they would like to improve etc. One of the main ideas of the research is to collect up-to-date information about visitors, compare differences and analyze changes of visitor flows in Aegna Island within 8 years by carrying out on-site visitor surveys.

METHODS

In summer 2002 and 2010 (June-September) visitor surveys were held in Island Aegna. On-site interviews were conducted at the main access points of trails on fifteen days during the summer (June-September) of 2010. In 2002 questionnaires were given to visitors from the local cafe and at the harbour. The interviews took place on randomly selected workdays and weekends. Altogether there were 143 questionnaires from 2002 and 221 questionnaires from 2010. The survey instrument asks socio-demographic characteristics such as age, origin, education and visit-related questions such as length of stay, frequency of visit, trip and area satisfaction, as well as motivations, and knowledge about protected area management (Nagy, 2002). Also some open questions were asked about collecting information of the island and what changes should be made to make Aegna more convenient to visit. As part of the survey in 2010, visitors were also asked to mark a route they planned to take or already had taken during their visit (Arnberger and Hinterberger, 2003).

Information about the number of people visiting the island was asked from the local ship company.

RESULTS AND ANALYSIS

This paper presents the results of the studies of 2002 and 2010 on Aegna Island. The primary means for data collection included on-site interviews with questionnaires and visitor flow counting (according to ship company information).

Visitor survey was held in order to have objective answers about visitor interests and knowledge of island Aegna. Results of the interviews give the overall impression of the visitors and the most common recreational activities in the island.

According to local ship company in summer 2010 over 8000 visitors came to island Aegna.

In the survey held on 2010, 221 visitors were questioned and the majority of them (76%) were in the active/working age, between 21 and 60. Only 7% were pensioners (over 61 years old) and 17% of children and young people. According to the survey, almost half of the people who visited the island had higher and the other half secondary education.

Most of the people came to the island for leisure, sunbathing, picnicking and to enjoy themselves in the natural environment (Fig. 2). Aegna has beautiful beaches on the northern and southern part of the island where visitors can go swimming, sunbathing, having a picnic etc. Some of the visitors spent their time hiking, camping and active sightseeing, collecting berries and mushrooms or working on an island. Most of the workers are volunteers, who help to keep an order for the visitors, give first aid and fight fires if necessary. For campers there are some special campsites where visitors can make fire safely, put up their tents without trampling the vegetation and use latrine.

Awareness of the protected area on island Aegna was also asked on a survey. According to that, 38% of the visitors were familiar with the restrictions in nature protection area and contrary 23% of questioned haven’t heard that most of the island is under protection. Other visitors, 39%, had heard about the restrictions, but weren’t sure what is allowed or forbidden.

Results of the interviews indicate that most of the visitors come to the island for only one day. Usually they come in the morning on a ferry and leave in the evening. For more enjoyable trip, visitors suggest to have some extra service and buildings in the island (a shop or a cafe, a playground for the children, sport activities etc). In order to improve the quality of island Aegna and to increase the satisfaction of visitors, it is important to know what kind of factors are of disturbance (Fig. 3). Visitors get disturbed by the garbage that can be found near the pathways and tourist attractions, also by other guests, who have come to island to leisure and party. The situation and availability of the

![Figure 1. Location of Aegna Island.](image1.png)

![Figure 2. Purpose of the visits on Aegna island summer 2010.](image2.png)
fireplaces, camping and picnic areas was mentioned by 14% of the visitors. The biggest problem that was mentioned is the transport to the island. At the moment, visitors can go to Aegna by ferry, which drives only in summertime (from May to October) two-three times a day, depending on a month. Approximately 28% of the visitors pointed out that the transportation is satisfactory to poor. According to the results, there are also very few message boards and pathways are badly marked or at poor state. This makes it hard to sightsee the island and may overload the main roads. Also some extra information about the island would come in hand for the visitors.

In 2002 visitor survey was held by Margit Kull as a part of her bachelor’s thesis (Kull, 2003). Altogether she collected 143 questionnaires. According to the results of her analysis most of the visitors (over 90%) were in the active/working age. The reason for coming to the island was mostly to have a trip to the nature, sunbathe, hike or camp, have a picnic or to do some sightseeing (Fig. 4). Collecting berries/mushrooms or working on the island weren’t mentioned by the visitors.

Results of the interviews made in 2002 show that at that time almost half of the visitors (47.9%) came to Aegna for a couple of days, another half spent there a day (35.9%) or a half (13.4%). Information about Aegna Island was mostly collected from the friends, acquaintances and co-workers. Visitors also found interesting data from the media, internet and information centres. In the survey, information about facilities and opportunities in the island were also asked. Over 50% of the visitors mentioned that there should be a shop and/or a cafe on the island. Also more information about the island was needed (information boards, markings of the roads, cards). Similarly to the survey results of 2010, visitors suggested to have some extra services – children playgrounds, sport equipment rental, availability of drinking water etc.

Overall impression of the island among the visitors in 2002 and 2010 is rather good or even great. Visitors are satisfied with the state of the forests and the beach, but it was mentioned that old and dangerous buildings should be renovated. Some of the interviewers marked that nothing should be changed in the island – everything is perfect.

**DISCUSSION**

On-site visitor surveys on island Aegna was suitable method to gather information of visitors needs and desires, features of the visited area and socio-demographic data. The number of persons interviewed during the summer 2010 was 221. It was less than expected, but enough for making first conclusions. Surveys made in 2002 by Margit Kull give a satisfactory impression of the visitors on Aegna at that time (Kull, 2003). Some of the results of Margit Kull’s research are also used in this paper and a comparison between the visitors in 2002 and 2010 is made.

According to the data, visitor’s age distribution in 2002 and 2010 has stayed almost the same. Most of the people are at working age – they are educated and interested to spend their free time enjoying the nature and resting. Surprisingly the number of pensioners in both surveys is quite low. Since Aegna was a very popular resort about 30-40 years ago, it would have been expected that people, who came to the island in the past, would have positive memories and would like to visit it again. On the other hand, a lot has changed during 40 years and the island is not the same it used to be.

Aegna has beautiful and unspoiled beaches, where visitors can enjoy sunbathing and swimming. This activity has been important among the visitors both in 2002 and 2010. Also hiking and camping has been mentioned in both interviews among the visitors. Aegna is very natural – most of the island is covered with the forest, landscape varies a lot. With the help of local government, campsites and fireplaces have been made and hiking roads have been marked. This gives a good opportunity to explore the island by hiking. In 2002 these changes hadn’t been done and in the interviews people pointed out the lack of signs and information boards, also special roads for hikers and bikers. Although in 2010 the situation with roads and information boards is much better, visitors still weren’t satisfied. One solution would be improving these shortages. On the other hand, Aegna is known by its natural environment and wilderness, making it very comfortable and simple for people to explore may result in diminishing the island’s value.

Since forest coverage is high in Aegna, there can also be found eatable berries and mushrooms. Picking the berries and mushrooms was mentioned among the visitors in 2010, but surprisingly not in 2002. The reason for that difference is unknown.

The results of 2010 survey indicate that awareness of protected areas in Estonia is not very high. Almost ¼ of the visitors of Aegna didn’t know anything about restrictions in protected areas. This result is similar to another visitor survey that was held among the visitors in one of Tallinn’s nature protected area (Tamme, 2009). Land managers should make efforts to improving people awareness about protected areas and nature. It is possible that more educated visitors result in less damaged nature; including less trash, trampling, vandalism, disturbance of the birds and animals.
Main disturbance among the visitors both in 2002 and 2010 is transportation to the island. Although Aegna is very near to Tallinn, the capital city of Estonia, the ferry connection is satisfactory. The main problem is about the time schedule; ferry goes only 2-3 times a day and only in summertime. Unfortunately the only alternative to get to the island at other times is to have a private boat.

With a help of the information from the visitor surveys it is possible to improve visitors’ well-being on the island and their awareness of the nature protected areas. Educating people should be important for both – land managers and local governments. With that the behaviour and attitude towards the nature and its protection may improve.

CONCLUSION

Because of the good location in Tallinn Bay and unspoiled nature, island Aegna has become very popular among the people. Most of the visitors like to spend their free day on an island, sightseeing, swimming, hiking, picking berries etc. As more visitors come to an island, there will be a need for management to protect the local nature and give satisfaction to the people. Without collecting information via on-site interviews it is hard to make the right decisions for sustainable development of the island. Results of the on-site visitor surveys made in 2002 and 2010 indicate the main socio-demographical characteristics of the visitors, also their expectations and satisfaction. Comparing these two surveys with each other, some similarities and differences can be pointed out. First, within years the length of stay has shortened from a couple of days to one day. Also picking berries and mushrooms as an activity has emerged. Similarly to 2002, visitors in 2010 pointed out the problems with transportation, lack of information and markings of the roads. Overall impression of the island was marked as rather good or even great both in 2002 and 2010. For improving the quality of recreational activities and at the same time protect the nature, it is important to look through visitors suggestions and if possible, make some changes or improvements. These surveys give a good first impression of the visitor’s distribution in island Aegna. For more advanced data, it is important to continue visitor monitoring in the island and also focus more thoroughly on routes visitors like to pass and sights they like to visit.

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