



EKO MARINA III – INVENTORY, MAPPING AND ENVIRONMENTAL SUPPORT FOR SWEDEN'S RECREATIONAL MARINAS

Inventory of Sweden's recreational marinas, mapping of their structure, and the development of a prototype for a self-monitoring system for environmental sustainability

THE SWEDISH INSTITUTE FOR THE MARINE ENVIRONMENT REPORT NR 2024:5

(a report is based on the Swedish Institute for the Marine Environment's report no. 2021:6)

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FOREWORD

The Swedish Agency for Marine and Water Management's prioritization of recreational boat issues stems from a multifaceted perspective. Recreational boating has a significant indirect and direct impact on aquatic ecosystems, especially in sensitive coastal areas. The direct impact comes from the release of hazardous substances or contaminants from antifouling paints and fuel emissions, waste disposal, and habitat disruption that can degrade water quality and harm marine life.

The Swedish Agency for Marine and Water Management commissioned the translation of this report on eco marinas from Swedish to English due to multiple purposes. A translation enhances accessibility and dissemination of valuable information beyond the Swedish-speaking audience, facilitating broader international collaboration and knowledge exchange, especially within the European Union and our regional sea conventions HELCOM in the Baltic Sea and OSPAR in the North-east Atlantic, and their measures relating to eco marinas. For example, measure S13 in the Baltic Sea Action Plan (2021); *Promote environmentally sustainable recreational boating, including the use of best environmental practices through education and raising awareness of boat users and the personnel of marinas and guest harbours. Promote also "green" marinas and guest harbours by e.g., introducing eco-labelling of marinas and developing guidance and best practice documents by 2025 as a help for the marinas to reach criteria.*

Due to the interconnected nature of aquatic environmental pressures, a stronger international collaboration will also contribute to the implementation of the national work of measures in the Swedish Program of Measures according to the Marine Strategy Framework Directive (2008/56/EC); to *Reduce the spread of contaminants from recreational craft* (measure 17).

We also hope that this translated report on eco marinas can support stakeholders as boat clubs, boating industry organisations and municipalities in their work towards more sustainable marinas.

Lastly, we see that the work with creating eco marinas form an important basis to contribute to the achieving of good chemical status and good environmental status in our rivers, lakes and coastal waters.

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SUMMARY

Eko Marina III is the third part of a project which began in October 2019, with the overarching aim of exploring the possibilities for developing eco-labelling for Swedish marinas that could decrease their negative environmental impact. This part of the project has focused on three primary tasks: 1. To produce an extensive inventory of Sweden's recreational marinas, 2. To map the marinas' structures, with the aim of better understanding their functions, opportunities and limitations, and 3. To begin the development of a digital tool which can include an eco-label index whilst also comprising a support platform for marinas in their work towards sustainable conversion. The inventory resulted in 2,654 marinas being identified. The previous assumption was that there were approximately 1,500 marinas in Sweden, which has thus been proven to be a significant underestimation. Although hidden statistics are likely to remain, the inventory results could be valuable for future research projects aiming to explore the environmental impact of recreational marinas. The inventory showed that 213 municipalities in Sweden have marinas within their municipal borders. Seventy-five percent of the 2,654 marinas are in municipalities with a sea coast and 25% are in municipalities with lake coastlines only.

The mapping of the marinas' structures was made possible through a survey whereby representatives from the marinas described information relating to their marina's ownership form, age, water depth, size, mooring opportunities, available infrastructure, other neighbouring business, etc. In total, 486 marinas were represented in the survey, with 464 giving complete answers. This means that the survey covered approximately 17.6% of Sweden's marinas, and the geographical distribution of counties and municipalities represented in the survey largely mirrored the inventory result. The results from the survey illustrate that recreational marinas form a heterogeneous group, where important differences exist between them when it comes to function, structure, ownership and available infrastructure. The percentage distribution of marinas within different size categories shows that there is a great shift towards smaller marinas. Sixty-eight percent of the respondents had between two and 150 berths at jetties,¹ and just 8% had more than 400 berths. The typical marina was between 41 and 70 years old, but the results also showed that new marinas are being established whilst already established marinas continuously expand in size. The marinas represented in the survey were mainly run as non-profitable associations, and 71% were members of at least one Swedish boating industry organisation (a larger proportion than in the inventory: 44%). Thirty-eight percent of the marinas had access to few (median value 20) boat storage places on land during the summer, while a larger proportion (64%) had boat storage places on land during the winter (median value 70). The access to infrastructure differed considerably between the marinas, and was due to differences in size, organisational affiliation and geographical location, amongst other factors. In general, recreational marinas that were members of boating industry organisations were larger in size. Additionally, larger marinas had a greater proportion of the infrastructure listed in the survey.

To explore the marinas' interest in a digital tool to support their environmental work, the respondents were also asked about which digital functions would be of interest to them in such a potential tool. The project group decided to proceed to work with a digital support platform for environmental self-monitoring, which 73% of the respondents said they had a medium to great

¹ In this report, the term 'jetty' is used to describe 'mooring site' in broad terms – including wharfs, piers, floating docks, etc.

interest in. This decision was partly due to the survey responses, but also due to interviews with marina representatives which were conducted during the project. Through the interviews, it became clear that many marinas lack knowledge about and understanding of their environmental responsibilities, and need support to establish systematic self-monitoring to avoid emissions. Eco-labelling of recreational marinas could never function properly without a solid self-monitoring foundation. Yet, the fact that marinas are not legally obliged to seek licences as environmentally hazardous activities according to Swedish environmental law has resulted in a situation where many individuals engaged in marina activities mistakenly believe that the landowner or the municipality has full responsibility. As the marinas are legally defined as environmentally hazardous activities, they have a significant responsibility to comply with Swedish environmental law and to have a functioning self-monitoring system in place. This applies to all types of marinas – regardless of size, facilities, number of staff members, etc. Further, the level of knowledge about existing laws and the resources to meet their requirements differ immensely in practice between marinas. This is central to remember when developing tools, aids and awareness-raising initiatives.

To illustrate how a digital support platform (hereafter also referred to as ‘the digital tool’) can be used to assist recreational marinas in their self-monitoring and to explore which functions it may have, the example of boat hull washing was chosen. (A step-by-step guide to self-monitoring is presented in Annex 4.) The overreaching aim of the digital tool is to help marinas establish systematic self-monitoring in which risks are identified, routines and action plans are created, and work is documented and checked to ensure that the marina’s negative environmental impact is minimised. The tool offers a possibility to estimate the consequences of decisions made by the marina which may result in emissions, harm or problems for the environment or human health, which may risk leading to further costs due to investigations, measures or salvage operations. The tool is expected to facilitate conferrals of information and routines, since a platform with a digital database is less bound to and dependent on specific individuals. Furthermore, the tool can facilitate the preparations before an inspection visit from the supervisory authority (the municipality). By gathering all information about the marina’s self-monitoring on one single platform where different areas of this self-monitoring are linked and easier to examine, the marina gains better control over its own environmental impact and a greater understanding of what can be improved. In addition to the self-monitoring support, it is also possible to include other services within the tool, such as information material and educational material aimed at the marina’s staff, members and guests.

A prototype for a digital tool was demonstrated during the project to a working group and a reference group consisting of boating industry organisations, marinas, public authorities and researchers. In general, the reactions towards the tool were positive. The participants identified potentials to streamline the work within the marina, increase the marina members’ environmental engagement and receive valuable support for prioritising a sustainable conversion. However, the complexities and detailed levels of the tool were identified as a potential hindrance for marinas whose environmental work remains underdeveloped. Further challenges in the development of an Eko Marina platform are finding a way to respect and handle the heterogeneity of marinas, and dealing with the fact that there are great variations in terms of financial circumstances and knowledge about Swedish environmental law among marinas.

BACKGROUND

Recreational marinas and recreational boats cause a variety of environmental problems, especially in shallow coastal environments (Moksnes et al., 2019). To address the environmental impact of recreational marinas, the Swedish Agency for Marine and Water Management commissioned the Swedish Institute for the Marine Environment – in collaboration with IVL Swedish Environmental Research Institute – to carry out the Eko Marina project, which started in 2019 and has continued through several sub-projects.

In the first part of the project, Eko Marina I, the aim was to map the environmental responsibilities of recreational marinas, underline how they affect the environment negatively and investigate the possibilities for creating a policy instrument to make recreational marinas more environmentally friendly. The final report from Eko Marina I (Swedish Institute for the Marine Environment report 2020:5) describes the environmental impact of recreational marinas and the existing eco-labelling systems for recreational marinas, and presents a proposal for an environmental index for marinas that can be valuable in the creation of new eco-labelling. The project also investigated the environmental legal regulation of recreational marinas. The project found that since there is no legal requirement for recreational marinas to be notified and registered as the environmentally hazardous activities they are, tools and data are needed to give the marinas an overall picture of the environmental requirements and rules they must follow. It was noted that there was a need to make it easier for the marinas to carry out self-monitoring, to comply with and potentially exceed the minimum requirement level under the Swedish Environmental Code.

The review of existing eco-labelling systems showed that the criteria and certifications were not sufficiently specific to achieve environmental improvements at marinas. In particular, the criteria were not sufficiently detailed regarding emissions to water and soil, requirements for procedures for handling harmful boat hull paints and noise. It was found that vague guidelines and poor guidance on the activities with the greatest environmental impact from marinas' operations made it difficult for marinas to prioritise actions in these areas. All in all, these were the reasons why a new index for environmental labelling of marinas was developed. The design of a new environmental index was based on the areas where marinas have the greatest environmental impact. Within each impact area, a set of evaluation criteria was developed and grouped into 1. mandatory requirements and 2. activities generating extra points.

In the next sub-project (Eko Marina II), the environmental index was evaluated in cooperation with several marinas to test how a point-based index would work in practice and how to collect data for adaptation and improvement. The Swedish Institute for the Marine Environment's report 2021:2 describes the basis for further developing the labelling. The aim was to work with 17 different marinas to evaluate which environmental criteria are relevant to include in eco-labelling recreational marinas, but also which criteria work less well when applied to marinas. In addition, an analysis was carried out of which criteria were easier/more difficult to fulfil. The analysis of questionnaire responses showed that there were large differences between individual marinas in terms of how they met the current environmental index criteria. It was also found that it was noticeably difficult for marinas to fulfil the legal, mandatory requirements and the basic criteria in the environmental index. Many criteria were felt to be too extensive and unspecific, making it

difficult for marinas to know what was required to score extra points. In general, many marinas felt that the criteria were complexly written and needed to be clarified to be understood. Suggestions that were made included clearer examples and supporting documentation linked to the criteria to ensure that the marinas answered the eco-labelling questions correctly. The eco-label was revised to give an environmental index 2.0 with supporting documentation, with explanations and checklists for different environmental index criteria and action plans for various environmental problems.

The Eko Marina II project also proposed various collaborations in sustainable boating that could be deepened in connection with an eco-label. An initial business model for an eco-label was developed, and a preliminary idea for a digital prototype called the Eko Marina application (app) was described. The Eko Marina app was proposed to help marinas and leisure boat owners by “making it easy to do things right”, offering the possibility to save documentation and procedures digitally. Digitalisation can contribute to easy internal accessibility, and facilitates sharing information with regulatory authorities, members and other marinas. The goal was also that there should be a clear link between the risk-reducing work required by law and what may be requested during supervision. The environmental index was proposed to guide and suggest measures needed to achieve basic legal requirements, but also to exceed the legal requirements. The idea was further to link the app to a website with information for leisure boat owners and marinas, with the possibility to connect to other services and platforms. The conclusions from Eko Marina II were that an eco-label can become a toolbox for marinas and leisure boat owners, making it easy to do things right and to work proactively with environmental issues. Potentially, the Eko Marina app could streamline supervision for municipalities and facilitate the digitalisation of the marina’s documents and procedures, in order to create order and structure for environmental work at recreational marinas.

In the continuation project Eko Marina III, an inventory of Sweden’s recreational marinas² has been produced to create a better understanding of where the marinas are located and how they are structured, which is required to develop a sustainable model for an eco-labelling system that works for as many marinas as possible. However, the inventory may also be useful for research and information within recreational boating in general, as it provides a more up-to-date picture of the number of marinas and the distribution of recreational boating in Sweden.

A basic prerequisite for conducting a comprehensive inventory is that there is a consensus on the meaning of the term ‘recreational marina’. During the project, it has become clear that the lack of an official Swedish definition of ‘recreational marina’ has resulted in multiple interpretations by different actors within the boating industry, which can be assumed to have affected the results of both the inventory in this study and the continuous supervisory and environmental work intended to cover all marinas. This project has departed from the definitions of ‘recreational boat’ and ‘recreational marina’ contained in the Swedish Maritime Administration’s regulations on the reception of waste from recreational craft (SJÖFS 2001:13, section 2, paragraph 2). It defines a ‘recreational boat’ as “[...] a vessel, regardless of type and mode of propulsion, used for sporting or recreational purposes”. The definition of a ‘marina’ appears in SJÖFS 2001:13, section 2, paragraph 3, and reads “[...] a place or geographical area established to provide service to

² Note that when the word ‘marina’ appears in this report, it always refers to a recreational marina. The purpose of this varying use of terms is to simplify reading. It should also be mentioned that the term equivalent to ‘leisure boat harbour’ is often used in Swedish as a synonym for ‘recreational marina’, but in this report only the latter is used.

recreational boats, but not small jetties and simple berths”. This means that all types of boats (motorboat, sailboat, rowing boat, canoe/kayak, etc.) can be defined as recreational boats, provided that their purpose is in line with section 2, paragraph 2. However, this does not mean that all jetties where leisure boats can moor are recreational marinas. The criteria that 1. the berth must have been constructed and 2. the marina is conducted as some form of business with revenue (usually through mooring or membership fees) have been added in this study with the purpose of clarifying which types of berths are counted as marinas. This interpretation means that **guest harbours, shipyards, community marinas and public marinas** are included in this study, whilst most private jetties and natural harbours/mooring sites are not.

CHAPTER 1: INVENTORY OF SWEDEN'S RECREATIONAL MARINAS

The national number of recreational marinas is difficult to calculate, since marinas are not registered through a licensing system. One thousand, five hundred is a figure that has long been used to describe the total number of recreational marinas in Sweden. Authorities, researchers and organisations have referred to 1,500 marinas for over ten years, and in both the Swedish Institute for the Marine Environment's own reports and the Swedish Government's public reports this figure has been assumed to provide a fair picture of the number of recreational marinas in the country (see Koroschetz et al., 2020: SOU 2011:82). However, it is unclear where the figure of 1,500 comes from. In the Swedish Maritime Administration's comments in response to the Swedish Association of Local Authorities' letter "Sjöfartsverkets föreskrift om mottagning av avfall från fritidsbåtar och föreskrift om genomförande av Östersjöstrategin" ("Regulation on the reception of waste from recreational craft and regulation on the implementation of the Baltic Sea Strategy", ref. 0602-02-01135), the figure is mentioned in relation to the number of activities that may be affected by the requirements of the then proposed Baltic Sea Strategy. The document is dated 26 March 2002, and is the oldest document found by the authors of this report in which the figure appears. The comments may be one reason why 1,500 has become a widely used figure in discussions concerning the extent and distribution of recreational marinas in Sweden. Another possibility is that the figure is based on the number of members of boating industry organisations. The National Association of Guest Harbours Sweden (RGS) has just over 400 members and estimates that this represents about 85% of the country's total number of guest harbours (Upplev båtlivet, 2020b). The Swedish Boat Union (SBU), in turn, estimates that there are about 1,000 community marinas with berths of various kinds in Sweden, of which 900 are affiliated with the organisation (Upplev båtlivet, 2020a). In total, these organisations' members amount to almost 1,500 recreational marinas. However, boatyards and previously unmapped marinas are examples of activities that are not considered in such estimate. To be able to answer the question of how many marinas there are in Sweden with greater certainty, a more comprehensive inventory is therefore required.

This chapter will briefly present the results of several previous national and regional inventories. These are presented to illustrate examples of major mapping work that preceded Eko Marina. This is followed by a more detailed account of the inventory carried out in 2021 within the framework of this project, and how it differs from previous inventories, the methods used, the distribution of marinas in the country and possible sources of error that have been identified.

PREVIOUS NATIONAL AND REGIONAL INVENTORIES OF MARINAS

The 1962 Leisure Time Inquiry ("1962 års fritidsutredning")

As part of the 1962 Leisure Time Inquiry, a national inventory of recreational marinas (then referred to as 'small boat harbours') was produced. The inquiry defined marinas as those harbours that "[...] are used entirely or to a considerable extent for small boats (motor and sailing boats)" (SOU 1966:33 p. 36). These included guest harbours, community marinas, connecting harbours and outports. Outports are simple marinas with services in the form of berths and, for example, barbecues, toilets and waste reception facilities. They often serve as tourist destinations

located outside coastal towns, and all boat users have the right to use them (see e.g. Svenska Kryssarklubben, 2021). Connecting harbours are also sometimes called communication harbours. These were described in SOU 1966:33 as being intended for boat-owning urban populations, and differ from outports in that they are easily accessible from the mainland. It is unclear to what extent and in what sense the term is used today. Community marinas are usually formed as membership-based boat clubs or are jetties collectively owned and run by local residents. The concept of guest harbours is used in the same way now as when the leisure inquiry was conducted, and is often a form of marina that overlaps with other types of marinas. In a comparison with Eko Marina's definition of recreational marinas, all types of recreational marinas were included in the 1966 inventory except shipyards. The committee carried out the inventory by collecting information from municipalities and county administrative boards. The municipalities had to answer questionnaires concerning, for example, existing facilities, users of these facilities, expansion plans and ownership, which the committee then sent to the county administrative boards for review and compilation.

The inventory resulted in the identification of 666 marinas with a total capacity of approximately 45,000 berths. Of these, 390 were classified as member harbours, 82 primarily as guest harbours, 14 as connecting harbours and 12 as outports. The committee also estimated that, at the time, there were approximately 200,000 motorboats and 100,000 sailing boats in Sweden that required a slightly more advanced mooring system than vessels such as smaller rowing boats.

Environmental Cooperation Västra Götaland – inspection guide for environmental offices (2005)

In the supervision guide for the environmental offices in Västra Götaland county from 2005, the municipal environmental offices were encouraged to carry out inventories of marinas within their borders. The authors defined marinas as connecting harbours, member harbours, guest harbours, pick-up and launch sites, winter mooring sites, boatyards, marinas, and natural harbours, which is a broader definition than the one used in the Eko Marina project. The guide made an estimate of the number of marinas in the county based on what was available on the websites of boating industry organisations. The estimate was that there were over 100 guest harbours in the county. Other types of marinas were not estimated. Within the framework of the collaboration project, no inventory was carried out, but municipalities have subsequently carried out inventories themselves (see, among others, Helgesson, 2014; Ramböll, 2018).

The Environmental Association Blekinge Väst – Inventory of recreational marinas (2011)

By checking aerial photos and internet sources, through telephone contact with municipal representatives and via local knowledge, the Environmental Association in Blekinge County drew up an inventory of its municipalities' recreational marinas in 2011. A total of 26 marinas falling under the association's definition were identified, and the definition was based on the concept description in SOU 1966:33. Guest harbours, community harbours, and jetties and activities for which the association considered it difficult to assess the structure were included in the inventory.

Skåne County Administrative Board – environmental conditions of Skåne's marinas (2016)

In 2016, Skåne County Administrative Board requested GIS coordinates for marinas from the county's municipalities, private operators and community marinas. This resulted in 72 marinas being identified in the county. The report does not contain an explicit definition of what is considered a 'marina', but based on the marinas listed, it can be deduced that at least community

marinas, guest harbours and shipyards were included in the concept.

Gothenburg Region's Association of Municipalities – Ramböll (2018)

In 2018, Ramböll was commissioned by the Gothenburg Region's Association of Municipalities (GR) to produce an inventory of berths and map the structure of marinas located in the municipalities of Gothenburg, Kungsbacka, Kungälv, Orust, Stenungsund, Tjörn, Uddevalla and Öckerö. The survey resulted in a total of 518 map points being listed, and includes both guest harbours and community marinas with more than ten berths. However, some points with fewer than ten berths and those without any berths at all have also been included, which means that the boundaries of what is considered a recreational marina in the survey are somewhat unclear. The inventory as such, however, is one of the more comprehensive inventories for these municipalities.

Metria on behalf of the Swedish Agency for Marine and Water Management – physical disturbance in shallow sea areas (2020)

Metria AB, in collaboration with DHI Sweden AB, has mapped and analysed the physical impact in shallow sea areas (<15 metres deep) along the Swedish coast (see Törnqvist et al., 2020a). Although the purpose of the study was not specifically to include marinas, they were indirectly included as the study included jetties. Based on analyses of ship traffic, satellite images, collected geographical data, a manual interpretation of aerial image mosaics from Lantmäteriet and the development of a GIS method for estimating potential physical impact, 2,562 jetties were identified which Metria assumes to be marinas. This figure does not include marinas in lakes, marinas <2,500 m² with jetties extending <10 metres from the shore or those without either y-booms or buoys. Furthermore, the marinas were not identified by name, which makes it difficult, based on Metria's data, to determine whether there are 2,652 different marinas and whether they are still in use (Törnqvist et al., 2020b).

In addition to the above-mentioned estimates and inventories, several surveys have been carried out at municipal level which will not be presented in detail in this report. However, the data collected through this municipal work has been useful for the results presented below, in that the municipalities' surveys of recreational marinas within their borders have been included in Eko Marina's inventory data. Furthermore, the Swedish Transport Agency (Transportstyrelsen) has, since 2015, conducted a recurrent national leisure boating survey (Båtlivsundersökningen) to investigate Swedish recreational boating. The survey shows, for example, how many leisure boats in seaworthy condition there are in Sweden, how many households have a leisure boat, and what the prevailing attitude is towards a re-introduction of a boat registry (Swedish Transport Agency, 2024).

EKO MARINA'S INVENTORY OF SWEDISH RECREATIONAL MARINAS

Based on the above-described definition of the term 'marina' (see Background), 2,654 marinas have been identified in Eko Marina's inventory. This means a percentage increase of 77% compared to what was previously estimated to be Sweden's total number of marinas (1,500). Since recreational marinas not only affect the possibility of participating in recreational boating but are also a source of negative environmental effects, previous underestimates risk giving an incorrect picture of how much Sweden's recreational marinas affect coastal and lake environments (see Moksnes et al., 2019). This underestimation also risks giving a misleading

picture of how many marinas should be subject to supervision and how many should be responsible for self-monitoring, which are of central focus in the Eko Marina project and will be discussed in more detail in Chapters 5, 6 and 7.

The sections below present the inventory. First, the method used to identify activities is described, as well as the different steps taken to ensure that the municipal affiliation and the categorisation ‘recreational marinas’ is correct for all listed marinas. This is followed by a presentation of the results and a description of the potential sources of error noted during the work, which may be important to bear in mind when reviewing the list of marinas resulting from the inventory.

Methodology

The inventory was carried out in two phases to ensure that as many of Sweden’s recreational marinas as possible could be included in the final list. The first phase consisted of a *basic inventory*, including actors on the membership lists of the Swedish Association of Guest Harbours (RGS), the Swedish Boat Union (SBU) and the National Association of the Boat Industry (Sweboat). These lists are published on the boating industry organisations’ own websites (see RGS 2021; SBU 2021; Sweboat 2021). There is some overlap in the membership lists, as several marinas are members of both RGS and SBU. These marinas have only been listed once in the inventory list. In total, this meant that about 1,300 organised marinas were added to the inventory. Thereafter, further checks were carried out against other websites that list marinas, such as Svenska Gästhamnar (2021), the Swedish Cruising Association (Svenska Kryssarklubben) (2021), the Swedish Transport Agency’s (Transportstyrelsen) Marina Map (2021), Eniro maps (2021a; 2021b), the municipalities’ own websites with information about marinas and previous inventory reports (see the Environmental Association Blekinge Väst, 2011; Skåne County Administrative Board, 2016; Ramböll, 2018).

Advanced map analyses have not been carried out. Instead, the results from the report *Physical disturbance in shallow marine areas* (Törnqvist et al., 2020b) have been used as an assessment basis to determine the probability of when a realistic number of inventory objects have been identified. As part of the basic inventory and the effort to expand the list, the country’s county administrative boards were also contacted by email and asked to provide information on marinas’ *notifications of water activities* (e.g. dredging).

The second phase of the inventory consisted of a *review of the data* (control inventory) with the aim of expanding the list, correcting any incorrect information, eliminating duplicates and registering the marinas under the correct municipal affiliation and marina name. This was done by sending forms to environmental inspectors from all the country’s municipalities. On these forms, the environmental inspectors were asked to list the names of all the marinas within the municipality that fall within Eko Marina’s definition of a marina. The environmental inspectors’ lists were then compared with the list created during the basic inventory. All municipalities that submitted responses to the form (262 out of 290) received feedback via email, and marinas that the environmental inspectors had not included in their responses but that had been identified during the basic inventory were communicated. The environmental inspectors were asked to clarify whether these marinas were located in their municipalities, whether or not they should be regarded as marinas according to Eko Marina’s definition, and whether they constituted duplicates or were domiciled in a marina that was already included in the list. The environmental

inspectors clarified most of these issues via email. In this way, a number of marinas could be removed from the list on the grounds that they should not be regarded as marinas (e.g. they completely lacked berths, were private jetties, etc.). In cases where the environmental inspectors did not know whether the marina existed or was located in the municipality, the project group left it on the list.

Results

Searches on the websites of boating industry organisations, municipalities, the Swedish Transport Agency and map search companies, which made up most of the basic inventory, led to the identification of approximately 1,700 marinas. In addition to the basic inventory, another questionnaire was also sent to municipalities and marinas in connection with the project's second objective (see Chapter 3). Through this questionnaire, another 97 marinas were added that had not previously been identified in the inventory. These were identified through the municipalities that received the questionnaire having been asked to forward it to all marinas within the municipality. The survey thus became an unplanned but effective method in the inventory. The request for information from the county administrative boards regarding the dredging of marinas did not result in many further additions. All county administrative boards referred to the municipalities as the supervisory authority for information regarding marinas, and the majority of the responding officials stated that the county administrative board does not have a register or sufficient filing in its diary systems for marina applications to be easily retrieved. However, a small number of county administrative boards submitted extracts from their registers where, in a few cases, it was possible to read that marinas had submitted applications. This expanded the list by another 14 marinas and meant that a total of around 1,800 marinas were listed through the basic inventory.

The subsequent control inventory led to the list from the basic inventory being reduced by about 250 marinas. Almost 200 activities were found to fall outside Eko Marina's definition of a marina. Sweboat's members made up most of the activities that were removed, as many of its members work with types of leisure boat-related service other than offering moorings. Furthermore, the control inventory led to some marinas being registered under other more locally accepted names, registered in other municipalities and/or merged into one activity because they were, in practice, located within the same marina as other already listed activities. However, the main contribution of the control inventory was to *increase* the number of marinas in the list.

More than 1,100 activities not identified during the basic inventory were added to the list due to the emails and questionnaire contact with the municipalities' environmental inspectors. This contributed to the final inventory result covering a total of 2,654 marinas.

Geographical location of marinas

According to the inventory, Sweden's 2,654 recreational marinas were distributed across all of Sweden's 21 counties. Most of the marinas were located in Stockholm County (24%) and Västra Götaland County (23%), while the lowest share of marinas was found in Jämtland, Jönköping, Kronoberg and Örebro counties (about 1%; Figure 1).

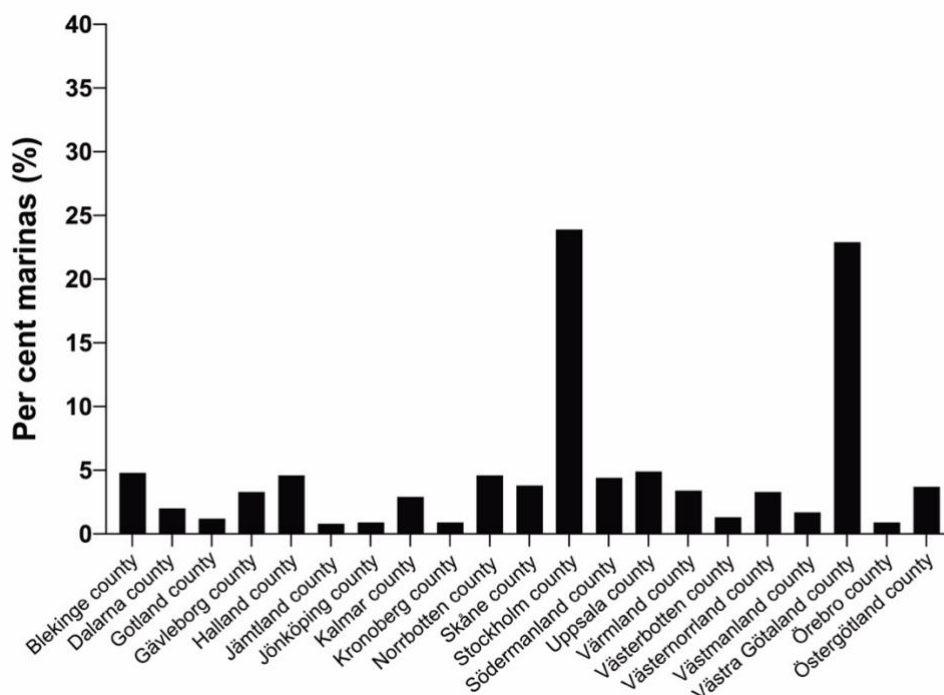


Figure 1. Location of recreational marinas. The figure shows the percentage distribution of Sweden's marinas between different counties.

Recreational marinas were identified in 213 of Sweden's 290 municipalities with both sea and lake coastlines (Figure 2). Värmdö was the municipality with the most listed marinas. There, 148 marinas were identified, representing 5.6% of the total number. Other municipalities with a large proportion of Sweden's marinas were Gothenburg Municipality (133 marinas; 5.0%), Stockholm Municipality (90 marinas; 3.4%) and Kungsbacka Municipality (88 marinas; 3.3%). (See Annex 1 for a complete list of the number of marinas in Sweden's municipalities and counties.)

Information about which of Sweden's municipalities have a sea coastline was taken from Statistics Sweden's report on coasts and beaches in Sweden (SCB, 2013). Accordingly, 87 of Sweden's 290 municipalities border the sea. In the inventory, marinas have been identified in 86 of these municipalities. Only Burlöv, with its short stretch of coastline consisting of coastal meadows and shallow, soft seabed, reported that it has no marinas. Recreational marinas were also identified in 127 inland municipalities that only have lake coastlines. All municipalities with a sea coastline also had a lake coastline, but information on the distribution of the municipalities' marinas between the sea and lakes is not available, which means that we do not know what proportion of each municipality's marinas are located by the sea or lakes. However, municipalities with a sea coastline had significantly more marinas than those with only a lake coastline, averaging 23 and five marinas per municipality respectively ($P < 0.0001$; Figure 2). This is despite the fact that the average coastline length was higher for municipalities with no sea coastline (an average of 1,609 km in municipalities with a sea coastline only and 1,117 km in municipalities with both sea and lake coastlines). Overall, 75% of the 2,654 marinas identified were located in municipalities with sea (and lake) coastlines, and 25% in inland municipalities with lake coastlines only.

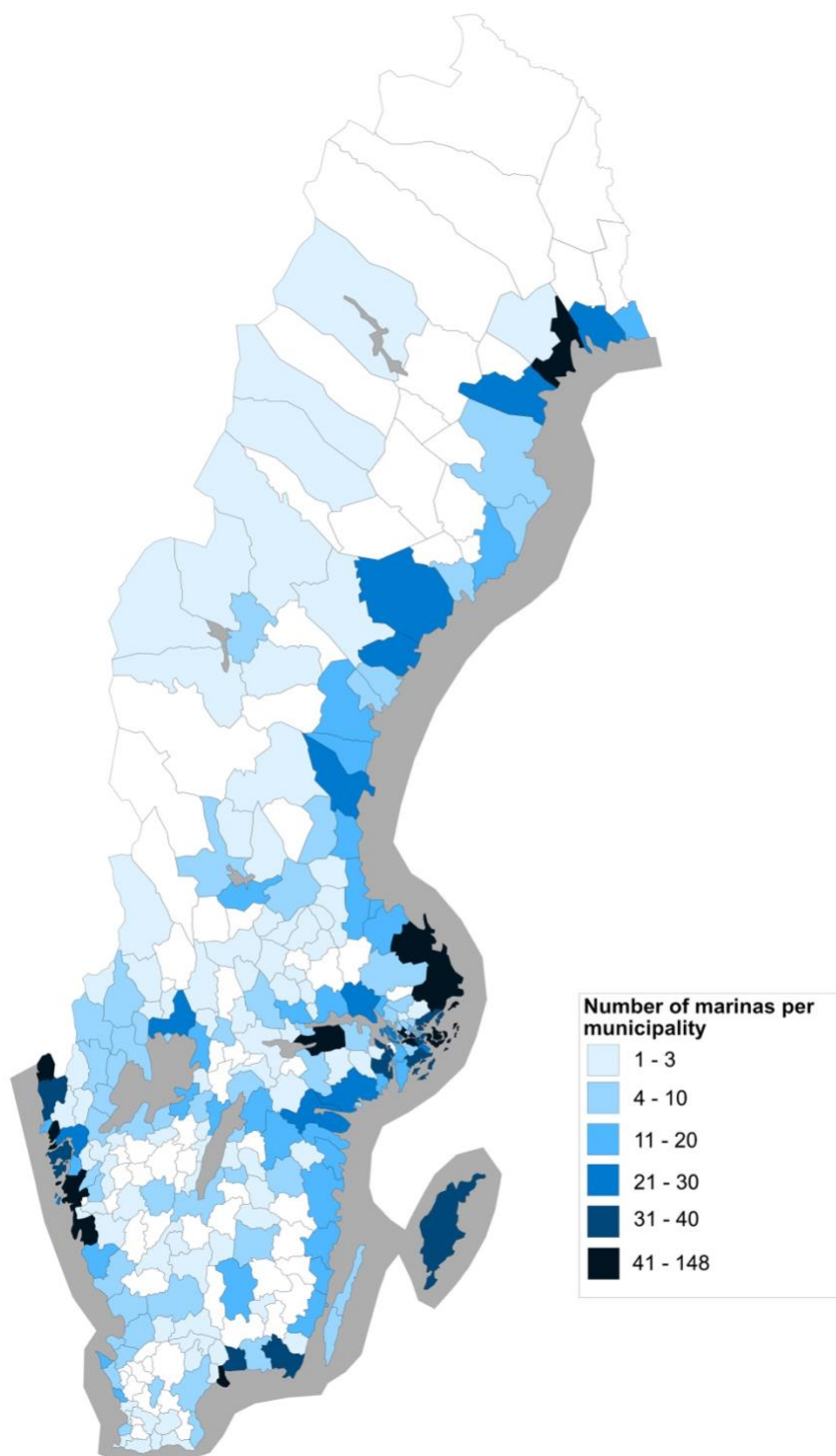


Figure 2. Number of marinas per municipality. The colour indicates how many marinas the municipality has according to six different categories. In uncoloured municipalities, there are no marinas listed in the inventory.

To allow for a fairer comparison of marina numbers in municipalities, the number of marinas per head of population and per 10 km of coastline was calculated for each municipality. Population information for each municipality in 2020 was obtained from Statistics Sweden (SCB), and the

number of marinas per 1,000 inhabitants was calculated. The highest densities of marinas were measured for municipalities in Västra Götaland, Stockholm, Uppsala and Blekinge counties (Figure 3). Municipalities with a sea coastline had significantly more marinas per person compared with municipalities that only have a lake coastline; on average 0.78 and 0.26 marinas respectively per 1,000 inhabitants ($P < 0.0001$). However, several municipalities bordering the large lakes Vättern, Vänern, Mälaren and Siljan had more marinas per 1,000 inhabitants than some coastal municipalities (Figure 3).

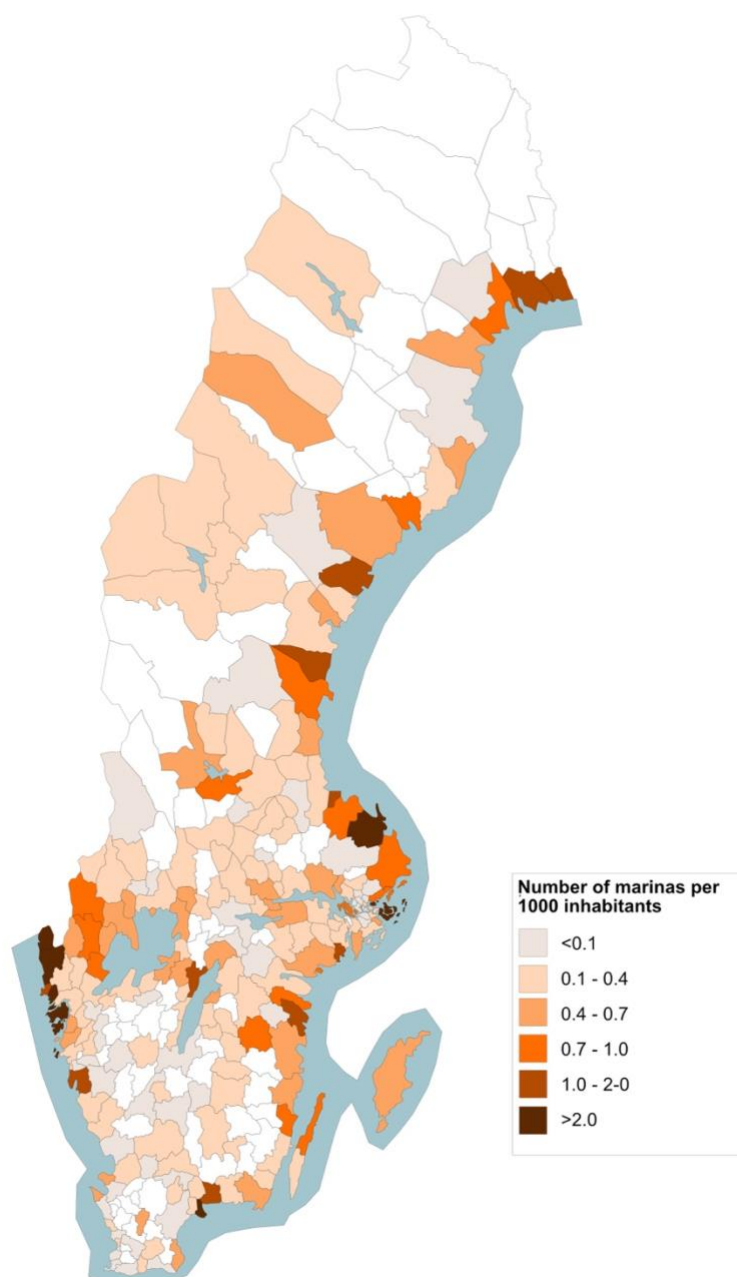


Figure 3. Number of marinas per 1,000 inhabitants. The colour indicates how many marinas per 1,000 inhabitants the municipality has according to six different categories. In uncoloured municipalities, there are no marinas listed in the inventory.

Information on the total sea and lake coastline lengths per municipality was compiled from Statistic Sweden's calculations (SCB 2013). The number of marinas per 10 km of coastline was then calculated. As information on the distribution of the municipalities' marinas between sea and lake is not available, the total coastline for each municipality was used. This therefore also includes coastal areas that are not suitable for marinas, and the density of marinas per 10 km of coastline is therefore very small. However, it gives an indication of the density of marinas in the different municipalities.

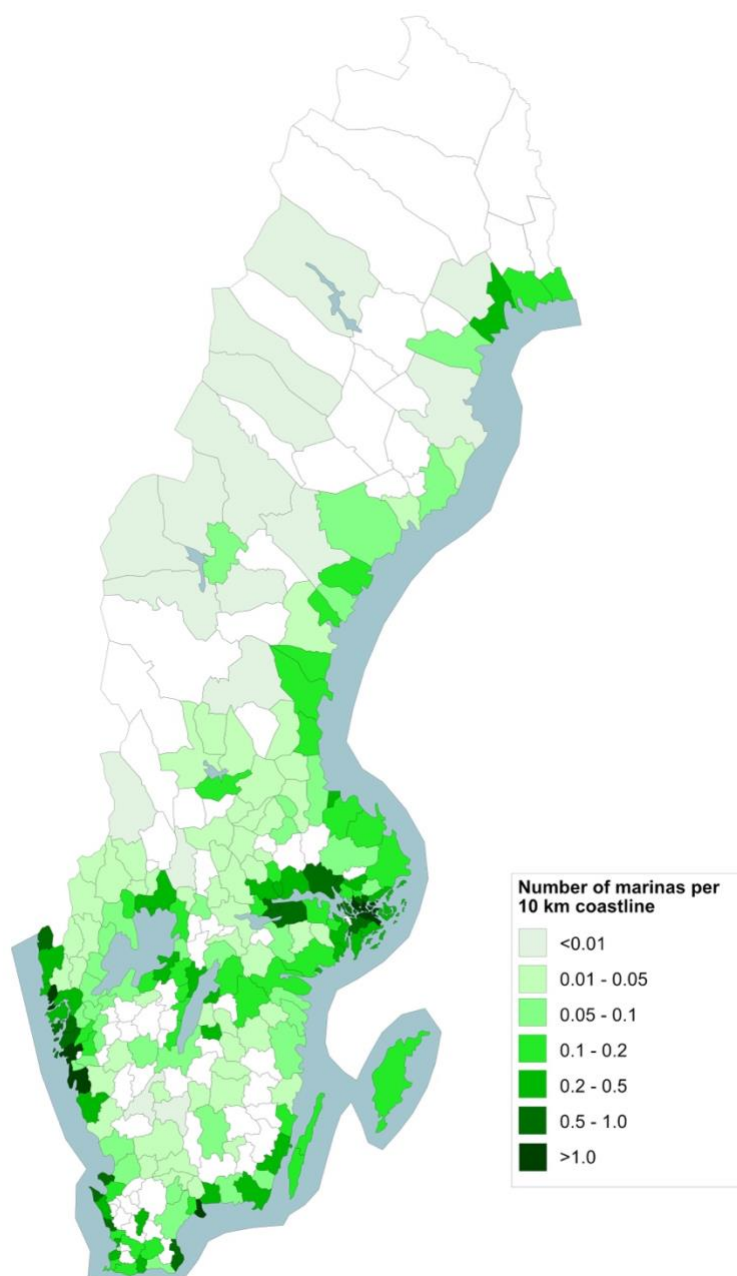


Figure 4. Number of marinas per 10 km of coastline (sea and lake combined). The colour indicates how many marinas per 10 km of coastline the municipality has according to seven different categories. In uncoloured municipalities, there are no recreational marinas listed in the inventory.

Municipalities with a sea coastline had significantly higher densities of marinas compared to municipalities that only have a lake coastline; on average 0.50 and 0.12 marinas per 10 km of coastline respectively ($P < 0.0001$; Figure 4). The highest densities of marinas were measured for municipalities in Stockholm, Blekinge, Västra Götaland and Halland counties (Figure 4).

The organisational affiliation of marinas

Of the marinas identified in the inventory, 44% were affiliated with one or more of Sweden's boating industry organisations (SBU, RGS and/or Sweboat). Thus, there are approximately 1,168 organised and 1,486 unorganised marinas in Sweden. The majority of the organised marinas were affiliated with SBU (27%) or RGS (12%; Figure 5). The proportion of affiliated marinas varied between municipalities and counties. The highest proportion of organised marinas was found in Jämtland and Dalarna counties (95% and 75% respectively), with the lowest proportion in Halland, Uppsala and Norrbotten counties (22–24%; Figure 6). However, it is important to note that organised marinas have been easier to identify during the inventory work. In municipalities and counties where many unidentified marinas still remain, the proportion of organised marinas may thus be overestimated. If one examines the degree of organisation within each municipality, the variation is even greater (0–100%). The large variation is, to some extent, due to the fact that the number of marinas varies greatly between municipalities, which means that the answers affect the outcome of the analysis more in municipalities with few marinas. If only municipalities with more than ten marinas are included in the analysis, the highest proportion of organised marinas was in Lidingö (94% of 18 marinas), Oskarshamn (91% of 11 marinas), Östersund (90% of ten marinas), Sotenäs (86% of 14 marinas), Stockholm (86% of 90 marinas) and Karlskrona (83% of 36 marinas), while the lowest proportion of organised marinas was found in Köping (0% of 11 marinas), Östhammar (11% of 54 marinas), Piteå (13% of 24 marinas), Strömstad (14% of 52 marinas) and Kungsbacka (14% of 88 marinas).

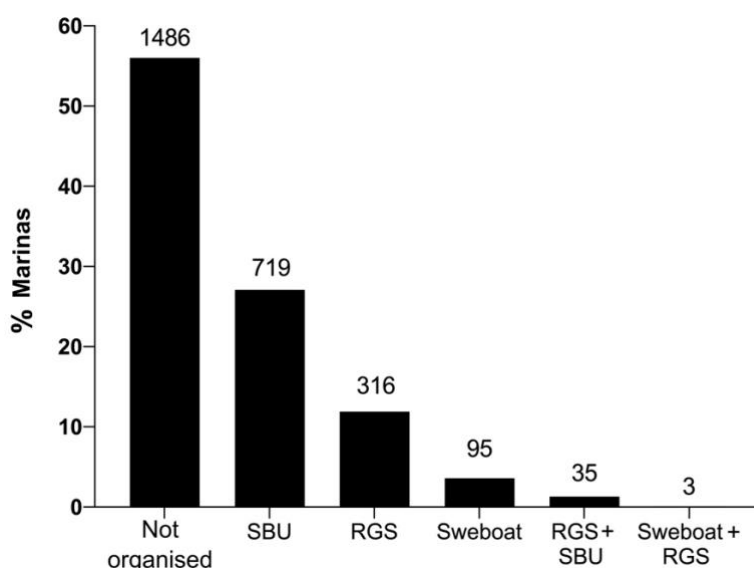


Figure 5. Organisational affiliation of Sweden's marinas in 2021. The figure shows the percentage distribution of marinas between organisations. The numbers above the bars indicate the total number of marinas in the different categories.

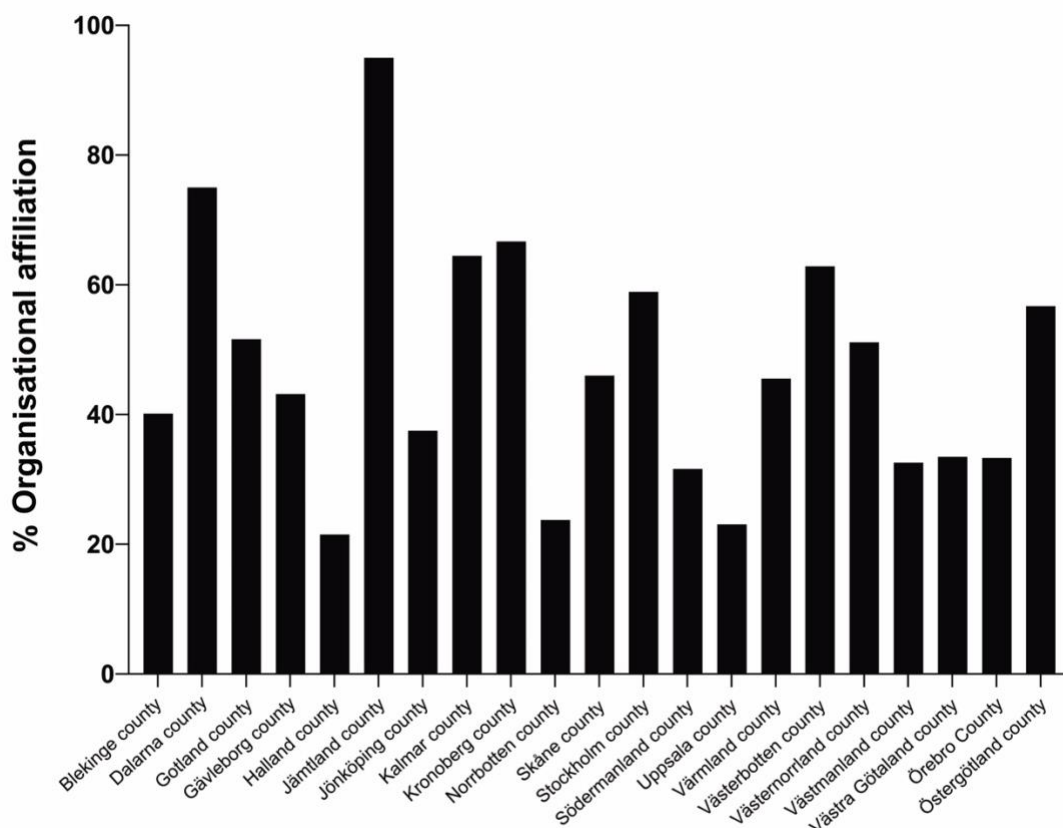


Figure 6. Marinas with organisational affiliation in different counties in 2021. The figure shows the percentage of marinas that are affiliated/organised with one of the boat industry organisations (SBU, RGS and/or Sweboat) in each county.

Possible sources of error

The fact that the list generated by the inventory is probably not complete should be taken into account when reading the above. This is due to a number of sources of error which are discussed in the following section, such as a lack of previous inventory data, a difficult defining the sampling frame and the absence of responses from a number of municipalities.

Lack of previous evidence

There is no requirement for marinas to register in any official registry. At the same time, Sweden is one of the countries with the most lakes in the world and has a long coastline, which makes it difficult to establish and maintain control of the existence of both old and new marinas (Swedish Water Environment, 2021). The likelihood of there being many marinas “going under the radar” can be exemplified by the previous estimate of 1,500 marinas compared to Eko Marina’s inventory results. However, due to the lack of older and continuously updated data to compare the inventory results with, it is difficult to know how comprehensive Eko Marina’s inventory is.

Hard-to-define sampling frame

Although the project group has provided one definition of what is meant by a marina within the framework of Eko Marina, municipalities may have different definitions and could thus have

excluded some activities from their registers which would constitute marinas according to this project. When marinas are not considered to be covered by the municipality's supervisory responsibility, they become part of the hidden numbers that arise when concepts are not understood in the same way by all actors. It can be assumed that there is a number of unreported marinas in the municipalities using definitions other than that proposed by Eko Marina, but this may also apply to the municipalities that only partially use another definition, as well as those that claim to use the same, since no Swedish legislation clearly describes how a recreational marina should be defined.

Incomplete response basis

The majority of Sweden's municipalities have provided a list of which recreational marinas they supervise. However, 27 municipalities have not done so, including two smaller coastal municipalities. Since environmental inspectors from the other municipalities contributed to a sharp increase in the number of marinas in the final inventory list, the lack of responses from some municipalities means that there may be gaps in the inventory that have affected the final results. Since 75% of the municipalities that did not respond according to the inventory have ≤ 2 marinas within their municipal boundaries (of which 50% have 0), this source of error is probably small.

Summary of the inventory

Actors within the Swedish leisure boat community have long suggested that there are around 1,500 recreational marinas in Sweden. Eko Marina's inventory has resulted in a list indicating that there are at least 2,654 marinas in the country. Through an inventory of the boating industry organisations' members, reports and regional inventories, as well as contact with county administrative boards and municipal environmental inspectors, Eko Marina's list can be considered one of the most comprehensive inventories of marinas produced since 1962. What this project has benefited from which did not exist when the last national inventory of marinas was carried out is the availability and extent of information offered by the internet. Because of this, many activities have been identified and easier communication has been possible. However, there are very few previous national surveys to compare with Eko Marina's inventory results. Since the 2,562 marinas in *Physical disturbance in shallow sea areas* (Törnqvist et al., 2020b) do not include marinas in inland lakes, this means that there is probably still a large, albeit now reduced, number of unreported cases.

CHAPTER 2: MAPPING THE MARINAS – WHAT DO SWEDEN’S RECREATIONAL MARINAS LOOK LIKE?

What the results of the inventory show is that knowledge of the number of recreational marinas has been – and probably still is – inadequate. In Eko Marina II (Koroschetz et al., 2021), it was found that there is also a lack of data and knowledge regarding how marinas are structured and what equipment and infrastructure they have access to in order to reduce their negative environmental impact. At local and regional levels, a number of surveys of this infrastructure have been carried out within the framework of major inventory projects. However, there are large differences in this work between municipalities and regions, and a national overview has been lacking.

To create an overall picture of recreational marinas in Sweden, a digital survey was carried out within the project. The survey consisted of questions relating to the ownership form, age, design, water depth, access to infrastructure, neighbouring actors and attitude towards potential eco-labelling. The primary reason for asking these questions was that they were deemed to provide a good overview of operational structures. Furthermore, the answers to these questions were assumed to be able to provide a picture of the challenges within marinas’ environmental work, and to lay a foundation for the continued work towards a sustainable transition of leisure boating in Sweden. This chapter presents the method for the survey. This is followed by a presentation and analysis of the results.

METHOD

The survey questionnaire was sent by email to 70% of the marinas identified in the basic inventory. There are two reasons why not all 2,654 organisations included in the final list were sent the questionnaire. One reason is that the survey was conducted during the same time period as the inventory. Another reason is that there is no contact information for many marinas identified in the basic inventory. Of the 1,700 organisations included in the basic inventory, it was possible to find email addresses for 1,200 of them. These included all municipalities in the country, which each received an email in which they were asked to answer the questionnaire if the municipality itself operates recreational marinas, and to forward the questionnaire to their potential inspection objects.

The survey was open between 5 July and 2 September 2021, and consisted of a total of 16 questions, of which 14 were mandatory. The initial question in the survey aimed to clarify whether the activity that the respondent was answering about falls within Eko Marina’s definition of a recreational marina (see Background). If any of the definition criteria were not met, the questionnaire was terminated. The response options “Do not know” and “Yes” gave access to the remaining parts of the questionnaire. Of the following 15 questions, 12 were closed questions in the form of tick boxes or drop-down lists. The remaining three questions were optional, and asked about 1. The name of the marina, 2. Whether the respondent had any final comments/questions and 3. The opportunity for the respondent to provide their name and contact details. The full questionnaire can be found in Annex 3.

RESULTS

Seven hundred and fifteen out of 1,200 recipient activities responded to the survey, which equals a total response rate of 60%. Of these, 486 respondents stated that the activity they represent falls wholly or partly under Eko Marina's definition of a marina. In 17 cases, two different representatives responded on behalf of the same marina, resulting in duplicate responses from the marina. In 19 cases, the respondent had included several different marinas in the same response. Five responses were incomplete due to unclear information provided. Depending on what has been analysed, these incorrect answers have been handled differently and this will be explained further below. In general, however, it can be said that in cases of duplicate answers or answers comprising multiple marinas, an average (e.g. for the number of berths) was used. The five answers with insufficient information were excluded, which resulted in the majority of the analyses being based on data from a total of 464 marinas.

Geographical location and representation in the survey sample

The survey contains complete data from 464 of the 2,654 marinas identified in the comprehensive inventory. This means that the survey data contains information from 17.5% of Sweden's marinas. To further ensure that the marinas included in the survey are representative of the entire population of recreational marinas in Sweden, the distribution of marinas between counties and municipalities was examined. The distribution between coastal and inland was also compared between marinas in the survey and in the inventory. As we only have information on the name and municipality for the marinas that are not included in the survey, it is more difficult to ensure that the data is representative in terms of the structure and design of the marinas (e.g. size, form of ownership and age). For this type of variable, we can therefore only study how the responses to the questionnaire are distributed between different categories. This means that we can ensure that all categories are represented and describe how the frequency is distributed between different categories. However, what is important to bear in mind is that the survey data is a random sample, which means that, for example, the size distribution of the marinas could have been different if a larger sample was included in the analysis. Furthermore, there may be a bias in the data in that certain types of marinas can be assumed to be more likely to respond to the survey. This may, for example, include marinas that have a particular interest in environmental issues, organised marinas and larger marinas. This is something to keep in mind when drawing conclusions from the survey data and using the results of the survey to make statements about Sweden's marinas in general.

All of Sweden's 21 counties are represented among the survey responses, as well as 138 (48%) of Sweden's 290 municipalities. The distribution of marinas between counties is similar to that seen for the comprehensive inventory (Figure 1), and the majority of the survey responses came from marinas in Stockholm County (32%) and Västra Götaland County, while the fewest responses came from Örebro, Jämtland and Jönköping counties (approx. 1%; Figure 7; see Annex 2 for a complete list of the number of marinas in the survey responses from Sweden's municipalities and counties).

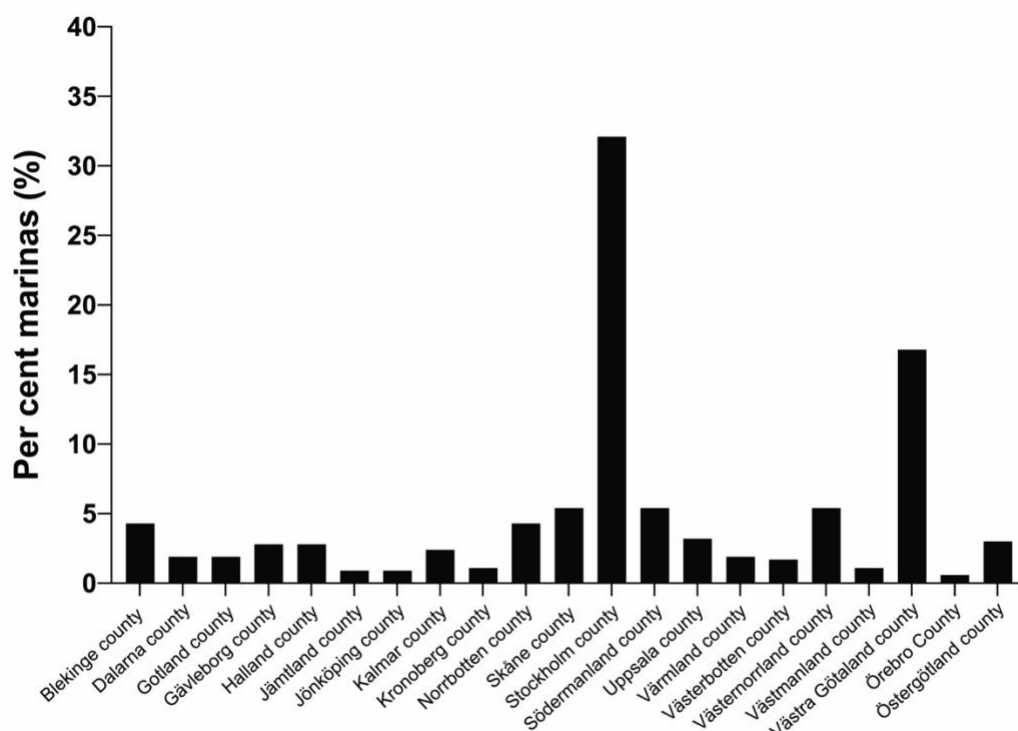


Figure 7. The location of marinas. The figure shows the percentage distribution of marinas between different counties among the responses received in the survey.

The inventory identified marinas in 213 of Sweden's 290 municipalities. The inventory has thus identified marinas in 75 municipalities that are not represented in the survey. This means that 65% of the municipalities with marinas are included in the survey data. The municipalities not represented in the survey consisted primarily of inland municipalities that do not have a sea coastline or a large lake (Figure 8). Furthermore, in most cases (73%), the municipalities that are missing from the survey data only had between one and three marinas, which may explain why they were not reached by (or did not respond to) the survey. One municipality that stood out, however, was Östhammar, where 54 marinas were identified in the inventory (which constitutes 2% of all recreational marinas in the inventory), but where none of these are represented in the survey data. The explanation for this is probably that there were difficulties in identifying marinas in this municipality before the questionnaire was sent out, which could be because a relatively low proportion of the municipality's marinas were members of any of the boating industry organisations (11%). Only five of these marinas received the questionnaire (without responding), while the other 49 marinas were only identified during the subsequent control inventory. Other municipalities that had a higher percentage of marinas in the inventory compared to the questionnaire survey included Värmdö Municipality (5.6% in the inventory and 2.6% in the questionnaire), Gothenburg Municipality (5.0% in the inventory and 1.5% in the questionnaire), Kungsbacka Municipality (3.3% in the inventory and 1.1% in the survey), Lysekil Municipality (2.3% in the inventory and 0.9% in the survey) and Norrtälje Municipality (2.2% in the inventory and 1.5% in the survey), which means that these municipalities can be considered somewhat underrepresented in the survey analysis.

See Annexes 1 and 2 for complete lists of the number of marinas in the inventory and survey for each county and municipality.

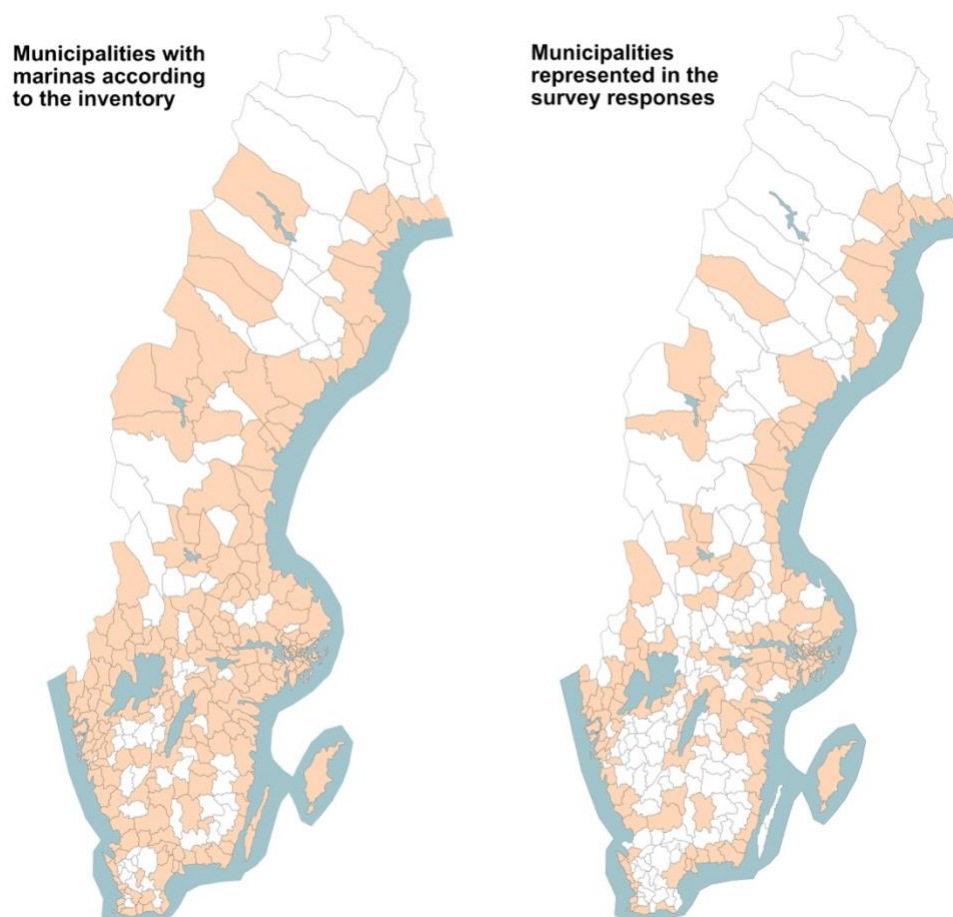


Figure 8. Representation of municipalities in the survey data. The maps show municipalities with marinas according to the comprehensive inventory (left) and municipalities represented in the survey data (right).

Of the 138 municipalities included in the survey data, 77 (56%) had a sea coastline (and a lake coastline) and 61 (44%) only had a lake coastline. Among the municipalities with marinas in the inventory, a slightly lower proportion (40%) had a sea coastline (and a lake coastline). This means a higher representation of municipalities with a sea coastline in the survey data compared to the inventory. Of the 86 municipalities with a sea coastline, 89% were represented in the survey. The representation in the survey was lower (48%) among the 127 municipalities with only a lake coastline (Figure 8). These results show that municipalities with a sea coastline (which on average have more marinas) were well represented in the survey data and, overall, the 464 marinas in the survey data were distributed in a similar same way to the marinas in the inventory, where 75% were in municipalities with a sea coastline (and a lake coastline) and 25% in municipalities with only a lake coastline.

In summary, the comparison of the geographical distribution of marinas between counties, municipalities and type of coast with the inventory shows that we have a good representation of recreational marinas in the survey data.

Age

Most of the recreational marinas represented in the survey (87%) were established 21 years or longer ago, and the largest proportion of marinas (39%) were 41–70 years old (Figure 9A). A large proportion (28%) were also older than 70 years old, while 2.6% were younger than ten years old. These results show that Sweden's recreational marinas are rather old, but that new marinas are also being added. However, the question concerning the marinas' ages does not capture any new construction in the older marinas. Therefore, the relationship between the age of the marina and the number of jetty berths was also investigated. The analysis showed that there was a clear and statistically significant ($P=0.004$) relationship between age and marina size, with older marinas being larger than younger marinas (Figure 9B). Recreational marinas between 41 and 70 years old had an average of 174 berths, while marinas that were less than ten years old had an average of 32 berths. This suggests that marinas are likely to expand with time.

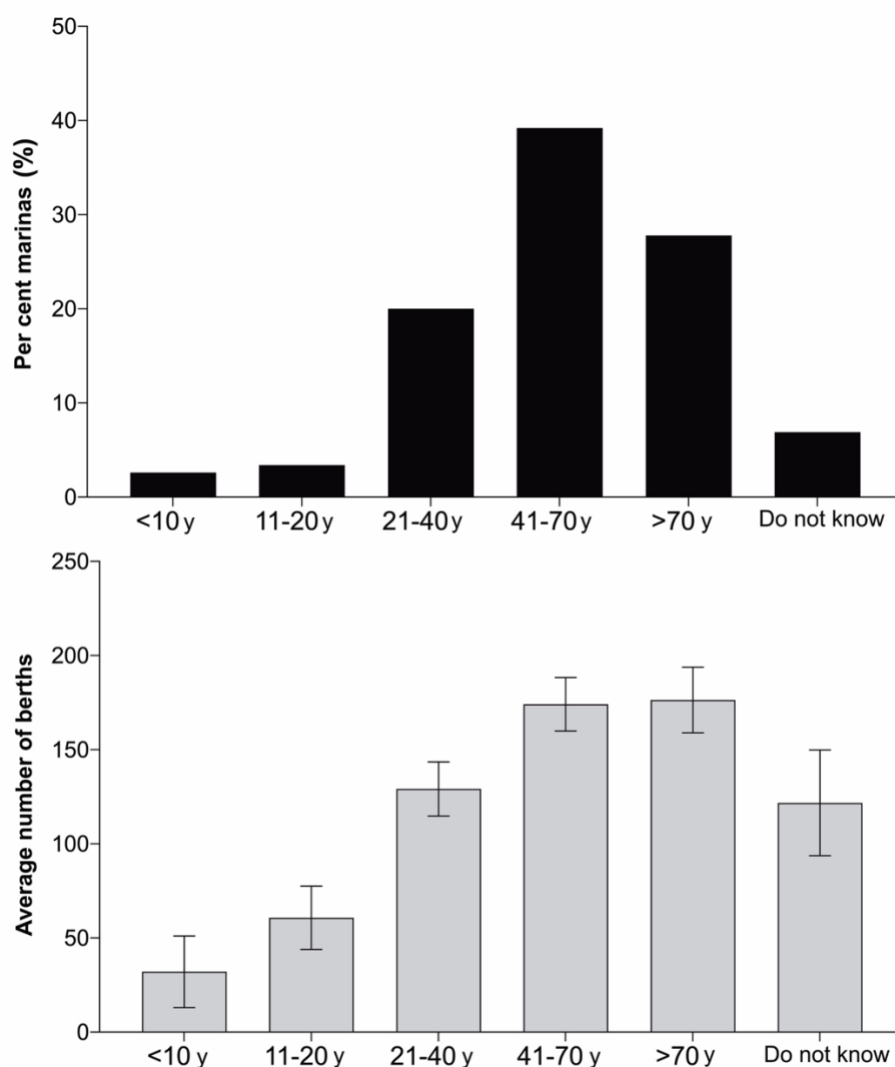


Figure 9. Age of marinas. The figure shows A) the percentage distribution of marinas in different age categories and B) the average number of jetty berths (\pm SE) for marinas in different age categories.

Depth

The depth of the inner and outer parts of recreational marinas where boats are moored varied, but the majority of marinas had a depth of 1–1.5 metres (31%) in the inner part of the marina and 2–3 metres (27%) in the outer part. A few marinas (1%) had a depth exceeding 6 metres in the inner part of the marina. In the outer part, 15% of marinas indicated that the depth exceeded 6 metres (Figure 10).

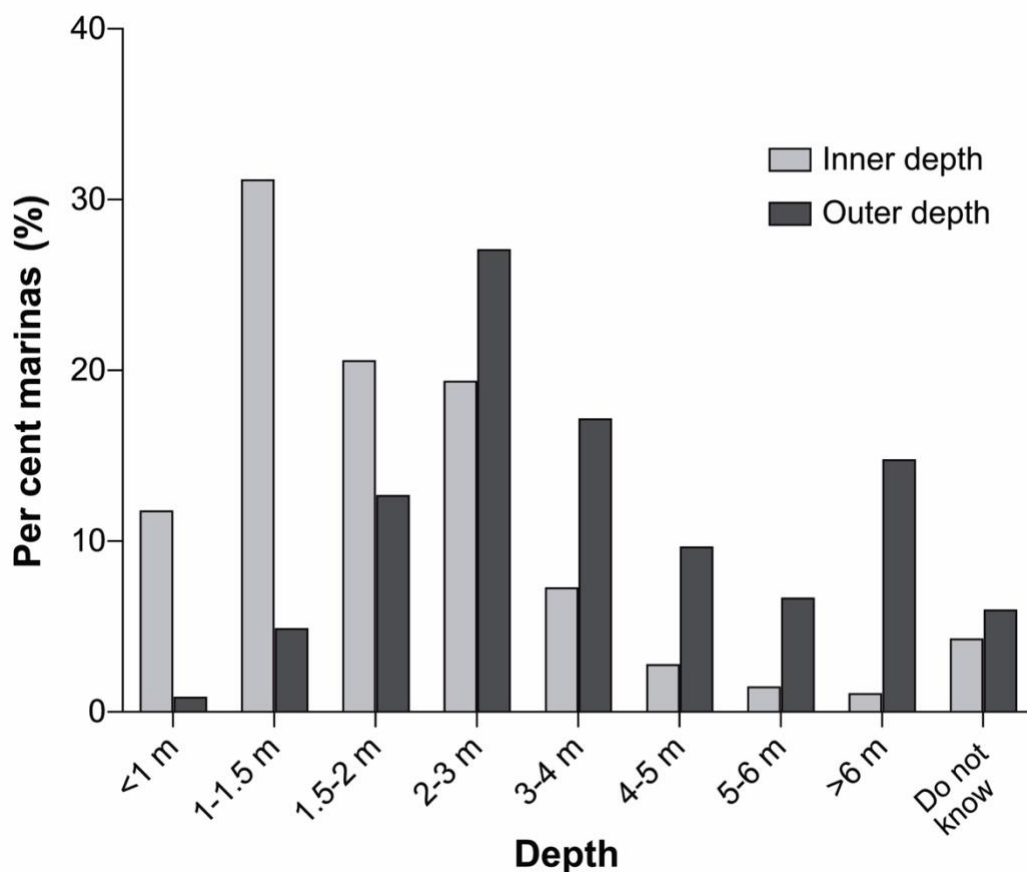


Figure 10. The depth around the marinas in the survey data. The figure shows the percentage distribution of the depth in the inner and outer parts of the marinas.

Form of ownership

Most of the marinas that responded to the survey (61%) were run as non-profit associations (Figure 11). The category “public benefit purpose” includes non-profit associations with limited tax liability and marinas run by municipalities.

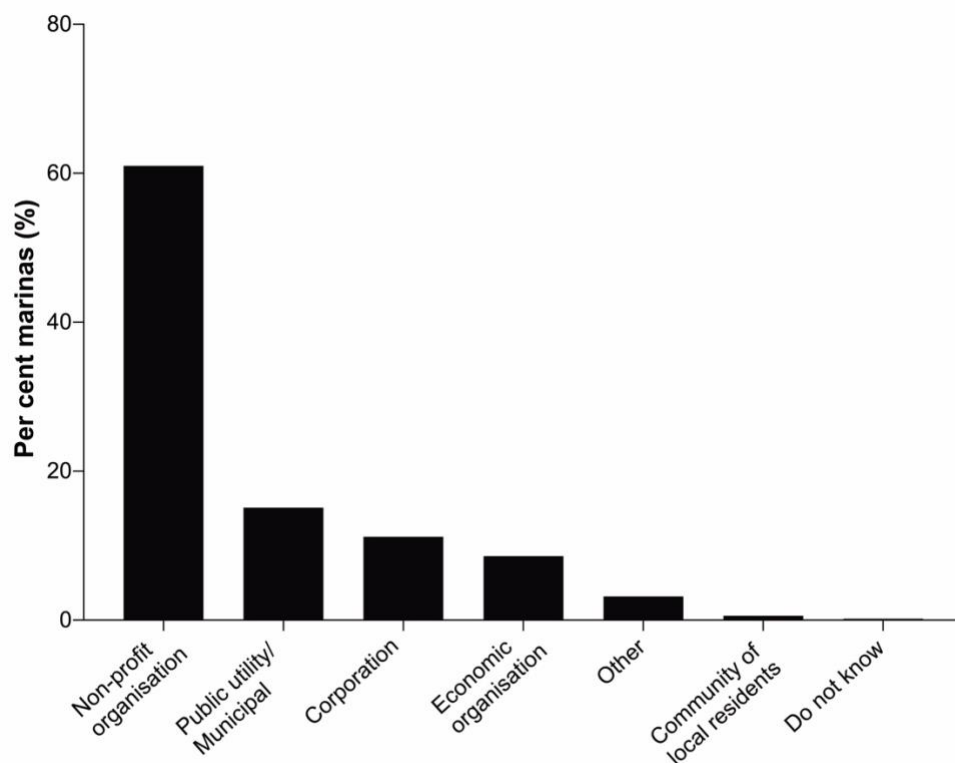


Figure 11. Recreational marinas' form of ownership. The figure shows the percentage distribution of different forms of ownership among the marinas in the survey.

Respondents' roles in the organisation

A large proportion (36%) of the respondents were the chairperson of the organisation (Figure 12). Among those who ticked the option "Other", 39% stated that they work as environmental officers, environmental representatives or environmental coordinators at the marina, 18% were coordinators with unspecified areas of responsibility, 16% were harbour masters and the rest were either responsible for different parts of the organisation (e.g. finance, facilities or school activities), former board members or government officials.

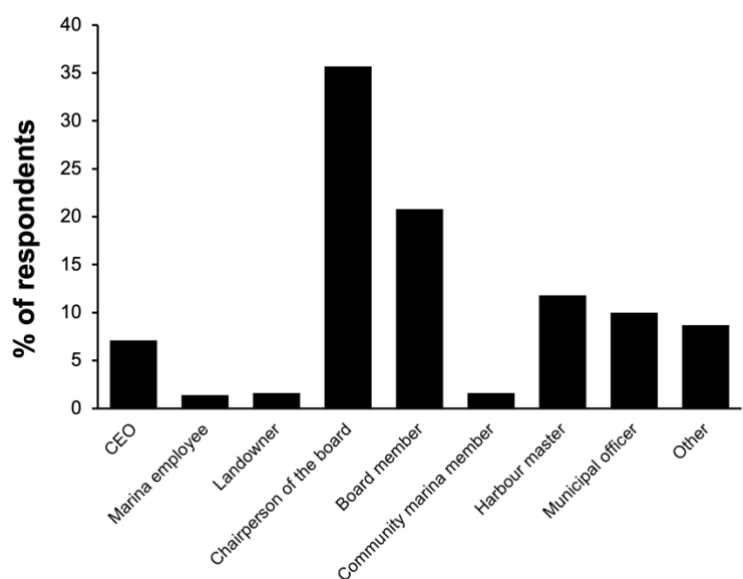


Figure 12. Respondents' roles in the organisation. The figure shows the percentage distribution of roles among the respondents in the survey.

Organisational affiliation

Among the recreational marinas represented in the survey data, 71% were affiliated with one or more boating industry organisations (SBU, RGS and/or Sweboat). Among the organised marinas, 45% were affiliated with SBU and 21% with RGS (Figure 13). Compared with the inventory data, where about 44% of the marinas were affiliated with a boating industry organisation, this means that there was a certain overrepresentation of organised marinas in the survey data. This is probably because the survey was sent out to recreational marinas that were identified during the basic inventory. In that data, the proportion of organised marinas was significantly higher than after the control inventory.

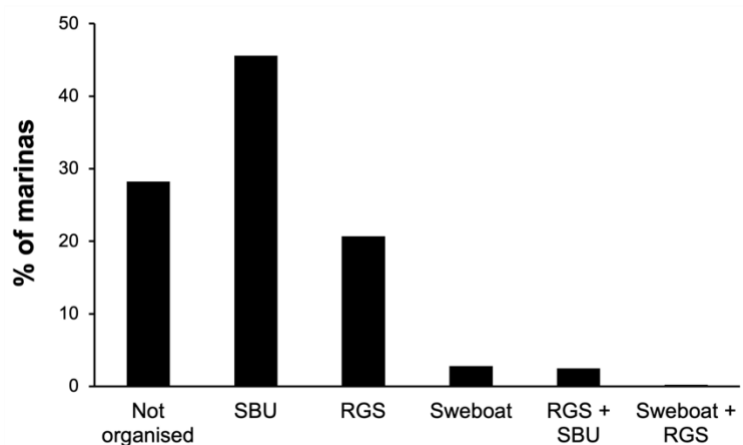


Figure 13. Organisational affiliation of recreational marinas in the survey data. The figure shows the percentage distribution of marinas affiliated with different organisations.

Jetty berths

The 464 marinas in the survey had between two and 1,350 berths, with a median value of 101. The size distribution among the marinas was skewed towards smaller marinas, with 26.5% having between two and 50 berths, 50% between two and 100 berths, and 90% between two and 350 berths (Figure 14). Only 1.2% (6) of the marinas had more than 1,000 berths.

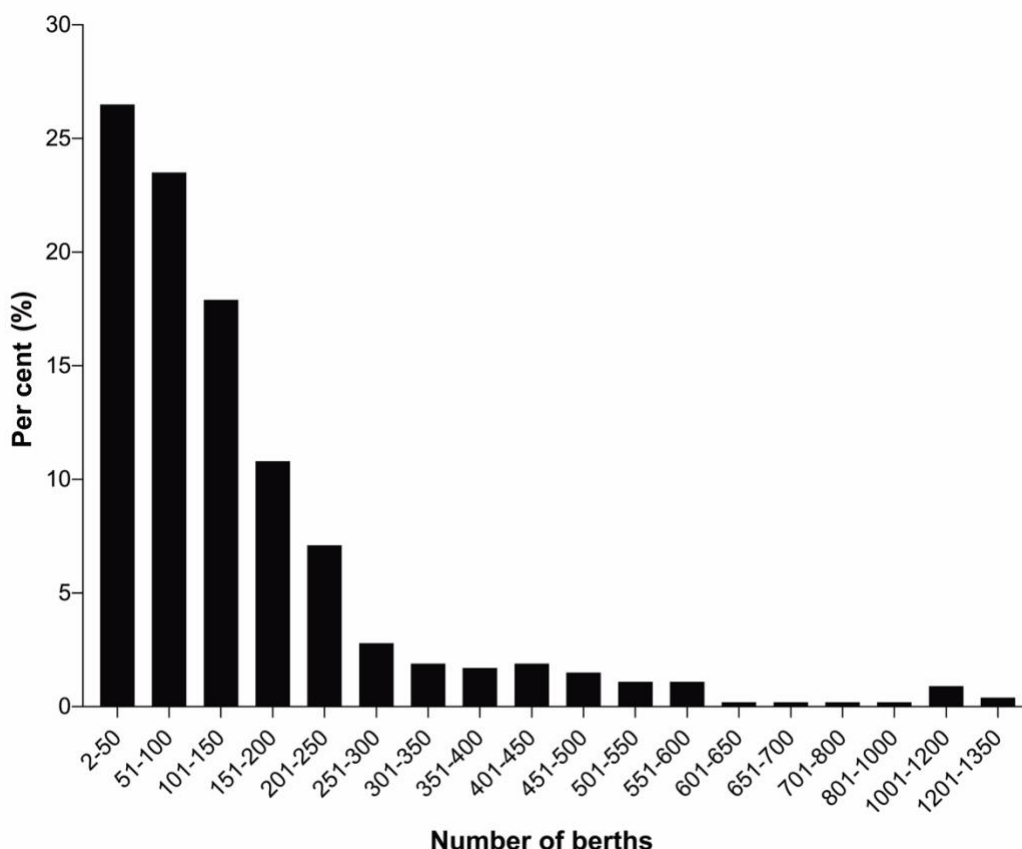


Figure 14. Size distribution of marinas in the survey data. The figure shows the percentage distribution of marinas between different size categories based on the number of berths.

Given that the percentage distribution of marinas in different size categories from the survey responses is representative of the entire group of marinas in Sweden, there are an estimated 410,210 berths distributed over the 2,654 recreational marinas identified in the project. Compared to the estimate made in the 1962 leisure report (see Chapter 2), this would mean that the number of berths in Sweden has increased by over 800% in about 60 years. However, the earlier report did not include shipyards, which probably makes the real increase lower but still considerable. In 1962, the committee also estimated that there were at least 300,000 recreational boats in Sweden at the time (SOU 1966:33). According to the Swedish Transport Agency's boating investigation (2020), there are currently about 860,000 recreational boats, which means that the recreational boat population has also increased significantly, which may explain the increase in berths for leisure boats.

The number of berths also varied between marinas in different counties. The largest number of berths were found at marinas in Värmland, Skåne and Halland counties (median 350, 210 and 160 berths respectively), and the smallest number of berths were at marinas in Jämtland, Gotland and Västernorrland counties (median 22, 35 and 35 berths respectively). The number of berths also differed statistically ($P=0.004$) depending on whether the marina was affiliated with any of the boat industry organisations. Marinas affiliated with SBU or RGS had a median value of 120 berths, while marinas that were not affiliated with either organisation had a median value of 80 berths.

To estimate the total length of all jetties at Sweden's recreational marinas, the total length of jetties at 20 randomly selected marinas within three size categories (2–100 berths – nine marinas, 100–350 berths – seven marinas, and 350–1,350 berths – four marinas) from the survey was measured using satellite images of the marina area. The number of berths reported in the survey was then divided by the measured jetty length. The average number of berths per metre of jetty was then used to estimate the jetty length of all marinas in the survey. On average, the marinas had 0.46 (± 0.15 SD) berths per metre of jetties, and the 464 marinas included in the survey are estimated – based on this value – to have a total jetty length of 156 km, with a median value of 220 metres of jetties per marina. The total mooring length of the 2,654 marinas identified in the project is similarly estimated at 892 km, based on the percentage distribution of the number of berths per marina from the survey.

Mooring at buoy

Of the marinas included in the survey (82), 17.6% stated that they had buoys where boats can be moored. At these marinas, the number of buoys ranged from one to 200, with a median value of five buoys. Most of the marinas (73%) had ten buoys or fewer, and only 7% (6) had 50–200 buoys.

Sites on land

Twenty-one percent of the marinas (98) had spaces for camper vans. For these marinas, the number of spaces ranged from one to 200, with a median value of ten camper van spaces. Most of the marinas (74%) had 20 spaces or fewer, and only 8% (8) had between 50 and 200 spaces.

Thirty-eight percent of the marinas in the survey (174) had land-based storage of boats/trailers during the summer. At these marinas, the number of storage spaces ranged from one to 1,200, with a median of 20 spaces. Most marinas (81%) had 50 or fewer spaces and 3% had over 200 spaces (Figure 15A). However, the possibilities for land-based storage of boats during the winter were greater at the marinas.

Most of the marinas in the survey, 64% (299), stated that they had space for storing boats on land during the winter. At these marinas, the number of spaces varied between one and 1,350, with a median value of 70 spaces. Most marinas (88%) had 1–200 spaces, and 2% had between 500 and 1,350 spaces (Figure 15B).

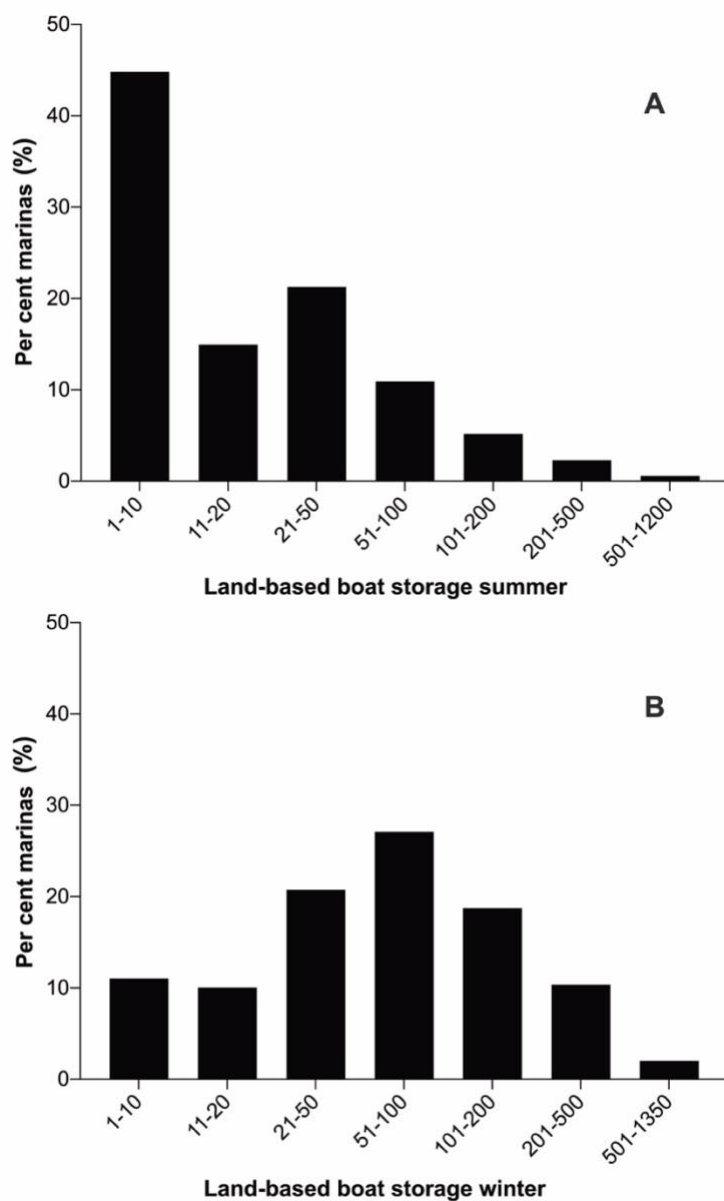


Figure 15. Spaces for land-based storage of boats/trailers in the survey data. The figure shows the percentage distribution of marinas between different size categories based on the number of spaces A) during the summer and B) during the winter.

Guest harbour nights

Fifty-three percent of the marinas in the survey (245) indicated that they rent out berths to visiting boats daily. At these marinas, the number of guest days that visiting boats spend at the marina per year varied between one and 30,000, with a median value of 90 per marina and year. Most of the marinas (70%) had 300 guest harbour nights or fewer per year, and 14% (34) had between 1,000 and 30,000 guest harbour nights per year. The number of guest harbour visits was significantly higher at marinas affiliated with RGS, compared to unorganised marinas (on average 1,298 and 179 guest harbour visits per marina and year, respectively; $P < 0.001$; Figure 16).

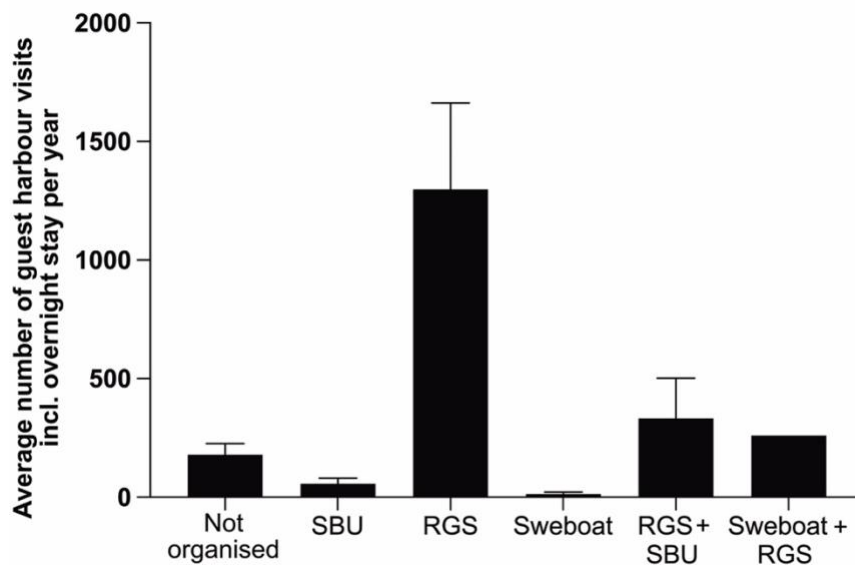


Figure 16. Guest harbour visits at the recreational marinas in the survey data. The figure shows the average number (\pm SE) of guest harbour visits including overnight stays per marina and year for marinas affiliated with different boating industry organisations.

Infrastructure and functions of recreational marinas

In the survey, the marinas were asked to tick all available infrastructure at the marinas out of the 17 different types of infrastructure or other functions that had been listed. Survey responses where the respondent had answered for more than one marina were removed from this analysis, and the results are therefore based on the responses from 445 of the marinas in the survey. The marinas had an average of 46% of the listed infrastructure. The most common type of infrastructure – available at over 70% of the marinas – was a toilet, the possibility of filling a water tank and a boat ramp. Most of the marinas also had electrical outlets, the possibility of disposing household waste, showers, an environmental officer and an environmental policy (Table 1). The number of marinas responding that they had berths for guests was slightly lower (49%) than the number of marinas that had estimated their guest marina nights (53%; see above). The difference here is probably because the analysis of guest harbour 24-hour visits per year also includes cases where the respondent answered for several marinas (where the number of guest harbour visits was divided by the number of marinas in the answer). The most uncommon type of infrastructure according to the analysis was boat washers (5% of the marinas) and the possibility to charge electrically powered boats (11% of the marinas; Table 1). Nine marinas (2%) stated that they did not have any of the listed infrastructure at the marina. These consisted mostly of smaller marinas (with a median of 40 jetty berths).

Table 1. Share of recreational marinas (%) with different types of infrastructure and functions at the marina.

TYPE OF INFRASTRUCTURE/FUNCTION	AVAILABLE (%)
Toilet	79.6
Filling water tanks	78.0
Ramp	71.2
Electrical outlets	69.0
Disposal of household waste	68.1
Environmental policy	60.4
Environmental officer	59.6
Shower	55.5
Guest harbour berths	49.0
Pump-out stations for sewage water	48.1
Disposal of hazardous waste	34.2
Recycling station	31.2
Boat crane	27.9
Wash-down pad	20.0
Boat gas station	16.9
Charging station for electric boats	10.6
Boat washer	4.9
None of the above	2.0

The link between marina size and available infrastructure

To investigate whether the size of the marina played a role in terms of infrastructure availability at the marina, the answers regarding infrastructure linked to the number of jetty berths were analysed, with the marinas being classified according to five size categories. The analysis results showed that marinas with over 400 jetty berths had a significantly higher proportion of the listed infrastructure (92%; $P < 0.001$) compared to marinas in other size categories (Figure 17). Smaller marinas with 2–50 berths had on average 37% of the listed infrastructure.

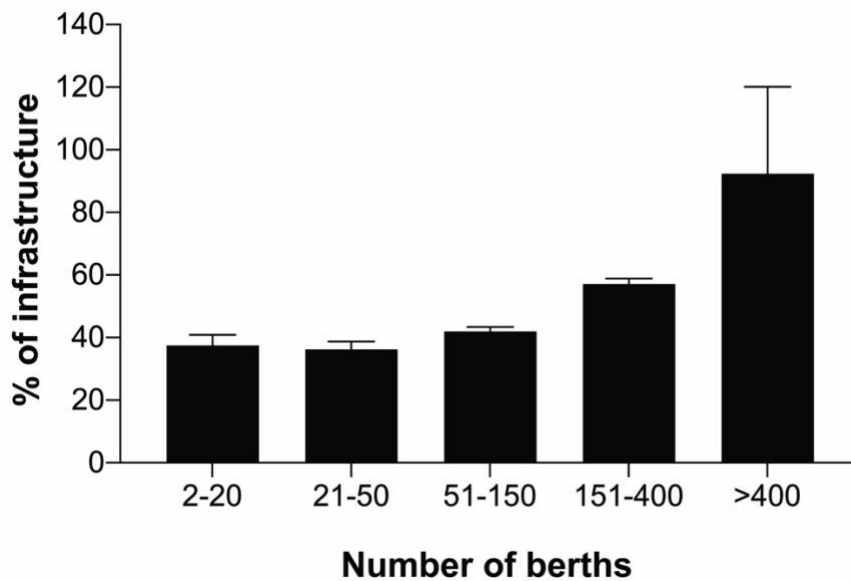


Figure 17. Infrastructure linked to marina size. The figure shows the average percentage (\pm SE) of the infrastructure listed in the survey for marinas in different size categories based on the number of jetty berths.

Certain types or categories of infrastructure were analysed separately to gain a better understanding of their prevalence in relation to marina size (Figures 20A-H). In general, the presence of different types of infrastructure increased with the size of the marina, but some types of structures and functions had a more even distribution between different marina sizes, such as boat washers, charging stations for electric boats and an environmental policy.

Ability to receive waste. The analysis of the percentage of waste management facilities (combining the recycling station, household waste and hazardous waste categories) that the marinas had within the different size categories showed that large (>400 berths) and medium (151–400 berths) marinas were able to receive waste to a greater extent than smaller marinas (2–150 berths). On average, 56% and 70% of waste management infrastructure was available at medium and large marinas respectively, while the figure was 34–39% in smaller marinas (Figure 20A).

Pump-out stations for sewage water. Large (>400 berths) and medium-sized (151–400 berths) marinas had pump-out stations for sewage water to a greater extent (82% and 64% of marinas respectively) compared to 32–41% of smaller marinas (Figure 20B).

Wash-down pads. Wash-down pads were more common at large (>400 berths) and medium-sized (151–400 berths) marinas compared to smaller marinas. Among large and medium-sized marinas, 53% and 32% of marinas had a wash-down pad, respectively, while this figure ranged from 8% to 15% among marinas with two to 150 berths (Figure 20C).



Figure 18. Wash-down pad in Limhamn's marina. Photo by Olle Enqvist.

Boat washers. There were no significant differences in the prevalence of boat washers by marina size, and the proportion of marinas with boat washers varied between 2% and 9% for the different size categories (Figure 20D).



Figure 19. Boat washer. Photo by Carl Rönnow.

Charging stations for electric boats. In terms of access to electric boat charging facilities, there were differences between the size classes of marinas, but there were no clear relationships. On average, charging stations were most common at the largest marinas with over 400 berths (29%). Small marinas (2–20 berths) had access to charging to the same extent as marinas with between 151 and 400 berths (14%), while marinas with 21–50 and 51–150 berths had charging infrastructure available at 9% and 5% of marinas respectively (Figure 20E).

Boat gas stations. The largest marinas with more than 400 berths had greater access to gas stations (50% of marinas) compared to smaller marinas (10–20% of marinas; Figure 20F).

Environmental officers. An environmental officer was most common at marinas with between 151 and 400 berths, with 82% of marinas having an environmental officer. Recreational marinas with over 400 berths had an environmental officer in 68% of cases. For marinas which had between two and 150 berths, the proportion with an environmental officer was 33–59% (Figure 20G).

Environmental policies. An environmental policy was most common at marinas with between 151 and 400 berths, with 79% of these marinas having one. Recreational marinas with over 400 berths had an environmental policy in 62% of cases. For marinas with between two and 150 berths, the proportion with an environmental policy was 41–60% (Figure 20H).

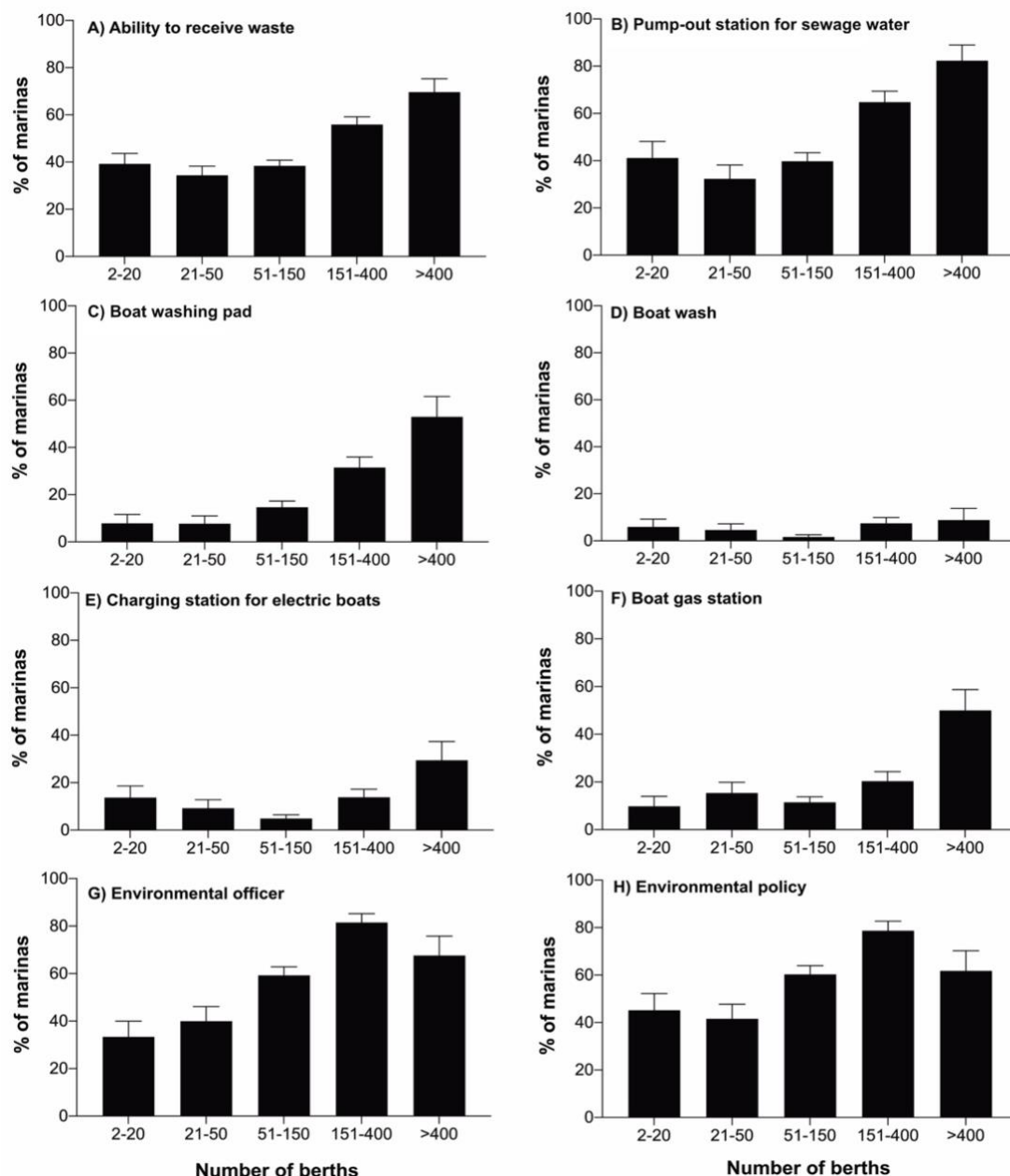


Figure 20. Infrastructure linked to marina size. The figure shows the percentage of marinas with different types of infrastructure or functions (A–H) in different size categories based on the number of berths.

The link between county/municipality and available infrastructure

To investigate whether the geographical location of the marina was important for the availability of infrastructure at the marinas, the responses on infrastructure were analysed in relation to county and municipality. The results of the analysis showed that the availability of infrastructure (of the 17 types listed; see Table 1) varied greatly between different municipalities and counties. Among the counties there was a variation of 31–65%, with Kalmar, Västra Götaland, Örebro, Skåne and Halland counties having the highest proportion of available infrastructure (Figure 21). Between the municipalities, the variation in available infrastructure was even greater, at 0–88%.

However, since the results from several municipalities are based on only one marina, it is not possible to say anything reliable about the differences between municipalities. If only municipalities with five or more marinas are included in the analysis, the variation in available infrastructure is 25–71%, where Karlshamn, Kungsbacka, Lidingö, Sundsvall, Österåker, Gothenburg and Öckerö had 50–71% of the infrastructure listed, and Norrköping, Tyresö and Trosa had 25–30%.

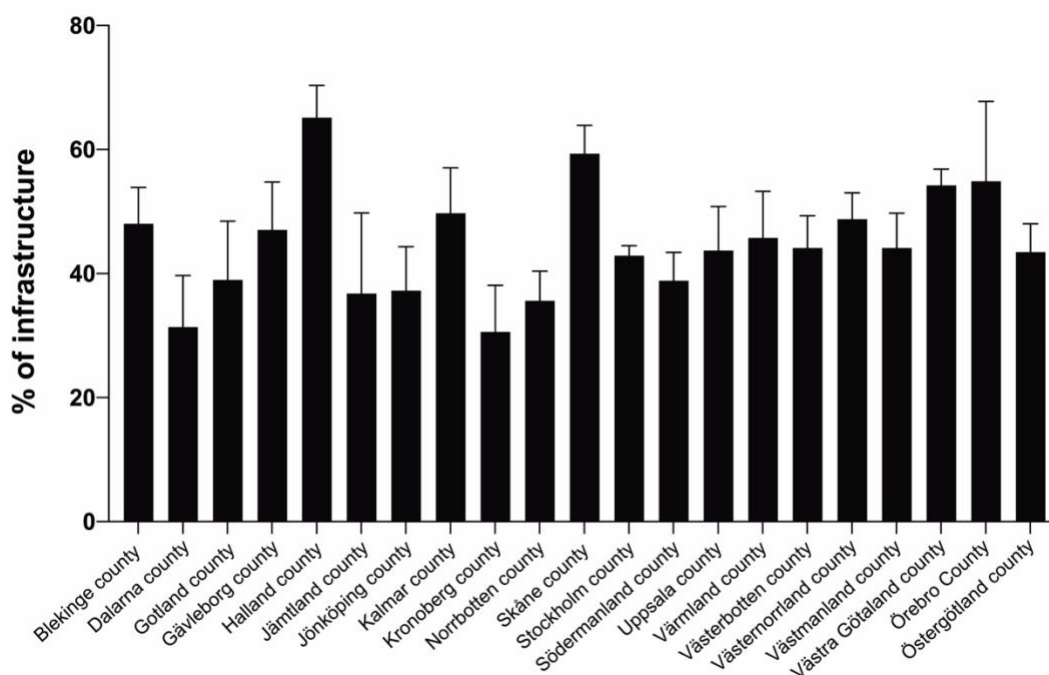


Figure 21. Infrastructure linked to county. The figure shows the average percentage (\pm SE) of infrastructure listed in the survey for marinas in different counties.

Certain types or categories of infrastructure were analysed separately to get a better understanding of how common they are in relation to the geographical location of the marina (Figures 22A–H). However, it is important to note that the data from the different counties differs, from three marinas in Jönköping and Örebro counties to 145 and 69 marinas in Stockholm and Västra Götaland counties (see Annex 2 for a complete list of the number of marinas in the survey for each county and municipality). This means that the results should be interpreted with caution for those counties with few marinas in the data.

Ability to receive waste. Waste management facilities (recycling station, household waste and hazardous waste) at the marinas varied between 13% of the marinas in Kronoberg County and 74% of the marinas in Halland County (Figure 22A). In many of the counties, it was possible to receive waste at 32–50% of the marinas.

Pump-out stations for sewage water. No significant differences were seen between counties, and the proportion of marinas with pump-out stations for sewage water varied between 0% and 67% in different counties. However, for the majority of counties, this type of facility was available at 40–58% of marinas (Figure 22B). The highest proportion of marinas with pump-out stations (67%) was in Värmland and Örebro counties. Only in Jönköping County did 0% of marinas

report that they had access to pump-out stations for sewage water. Within this county, however, data was only available for three marinas, so this result should be interpreted with caution (although the marinas were relatively large, with between 120 and 600 jetty berths).

Wash-down pads. Access to wash-down pads varied greatly between counties, and in eight counties there were no marinas with wash-down pads included in the questionnaire (Figure 22C). The majority of these counties had only a few marinas (3–5) included in the questionnaire, so the results should be interpreted with caution. Wash-down pads were found at marinas in counties with a sea coastline, and only Västernorrland County (24 marinas in the survey) and Västerbotten County (eight marinas in the survey) lacked marinas with wash-down pads. The availability of wash-down pads was highest among marinas in Halland County (77%).

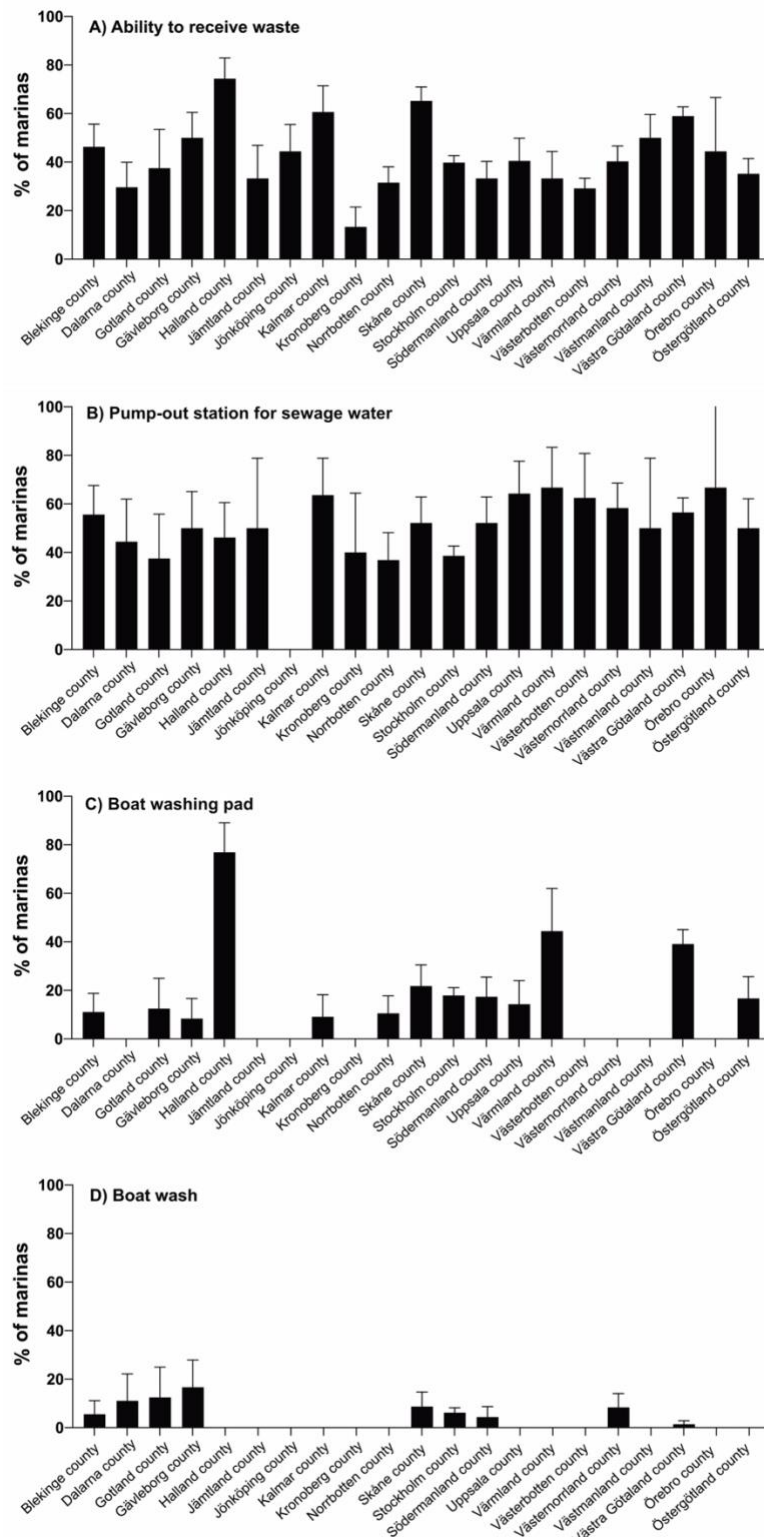
Boat washers. Boat washers were only available in nine counties (Figure 22D). The counties with marinas that had access to boat washers were mainly located on the Baltic Sea coast, with Gävleborg County having the highest proportion of marinas with boat washers (17%). Also, 11% (one marina) in Dalarna County, which has no sea coastline, had boat washers. In Västra Götaland County, 1.5% of the marinas had access to boat washers.

Charging stations for electric boats. No significant differences were seen between counties, and the proportion of marinas with the possibility to charge electric boats varied between 0% and 21% in different counties. The highest proportion of marinas with charging infrastructure was found in Västernorrland County (21%) and Kalmar County (18%; Figure 22E).

Boat gas stations. The proportion of marinas in different counties with a boat gas station varied between 0% and 48%, but the majority of the counties had a gas station at 20–22% of the marinas. The highest proportion of marinas with access to boat gas stations was in Skåne County (48%; Figure 22F).

Environmental officers. The proportion of recreational marinas with an environmental officer varied between 0% and 92% in the different counties, but most of the counties had an environmental officer at 40–60% of the marinas. The largest proportion of marinas with an environmental officer was in Stockholm and Halland counties (75% and 92% respectively; Figure 22G).

Environmental policies. The proportion of marinas with an environmental policy varied between 0% and 80% in the different counties, but most of the counties had an environmental policy at 33–61% of the marinas. The highest proportion of recreational marinas with an environmental policy was in Halland and Stockholm counties (77% and 80% respectively; Figure 22H).



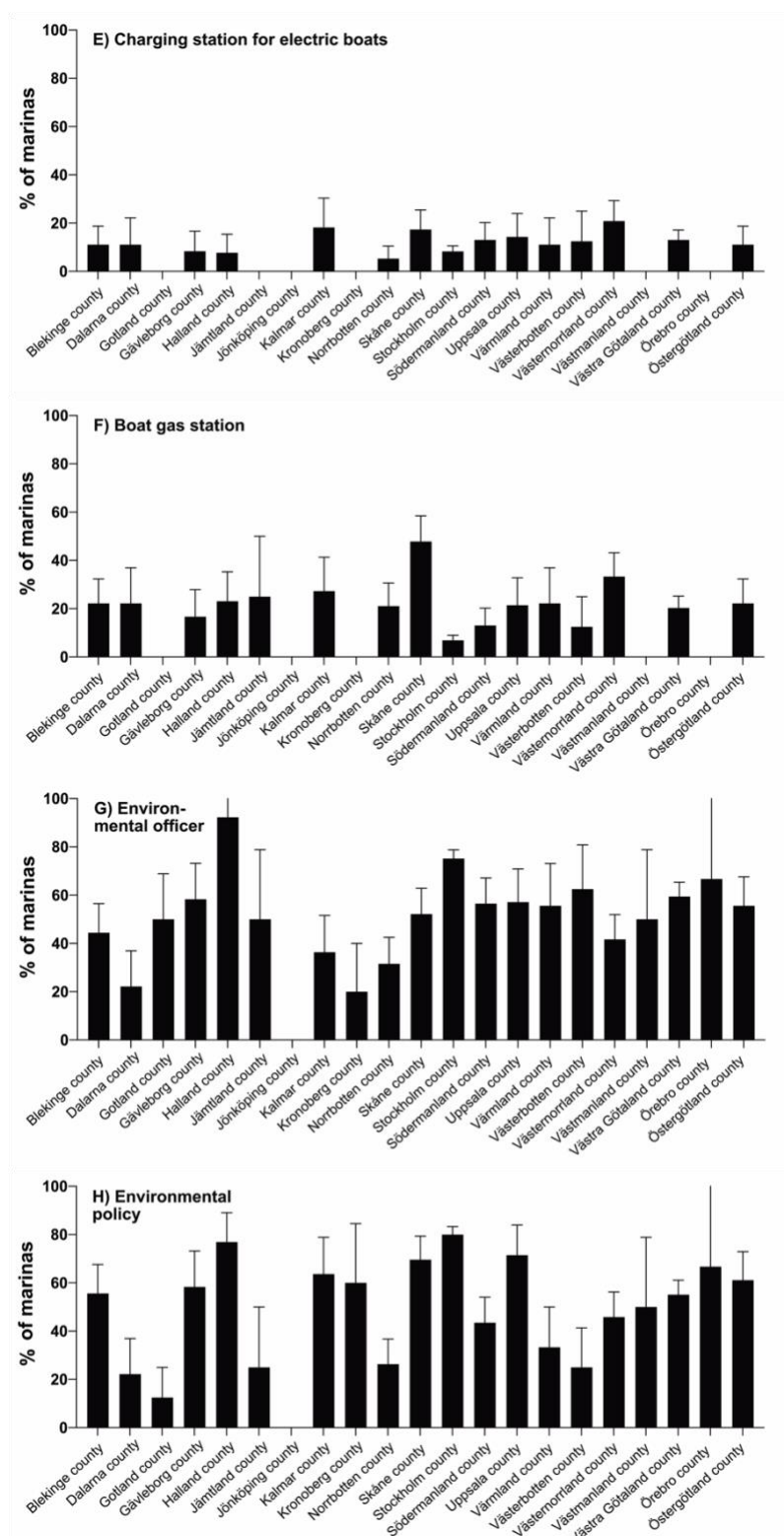


Figure 22. Infrastructure linked to counties. The figure shows the percentage of marinas with different types of infrastructure or functions in different counties. Note that the number of marinas included in the basis for the analysis differs between counties (see Annex 2), and that the variation within counties is large, meaning that the results should be interpreted with caution.

The link between organisational affiliation and available infrastructure

To investigate whether the marina's affiliation with a boating industry organisation was important for the availability of infrastructure, the responses regarding infrastructure were analysed in relation to the degree of organisation. The results of the analysis showed that the availability of infrastructure (of the 17 types listed in Table 1) was significantly higher at marinas affiliated with RGS or Sweboat compared to marinas without organisational affiliation or belonging to SBU ($P < 0.001$; Figure 23). On average, marinas that were members of RGS had 60% of the listed infrastructure, while unorganised marinas had 37% (Figure 23).

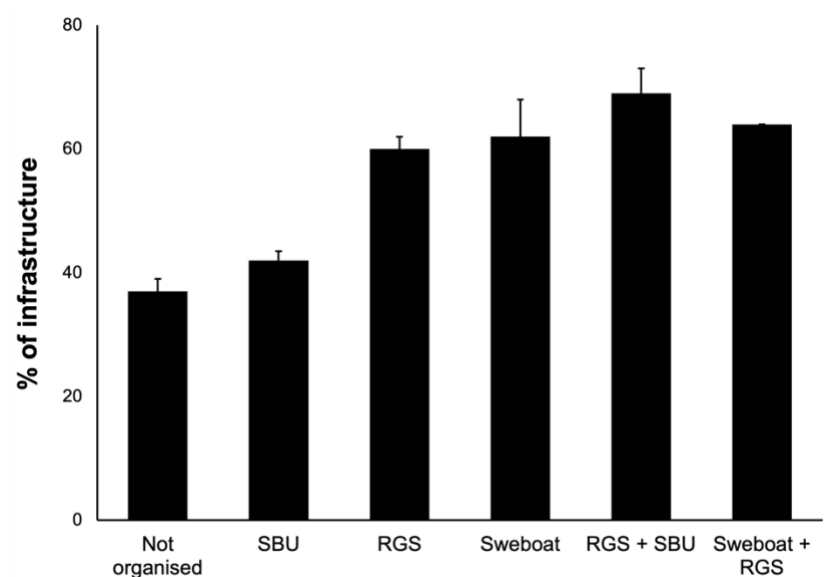


Figure 23. Infrastructure linked to boating industry organisation affiliation. The figure shows the average percentage (\pm SE) of infrastructure listed in the survey for marinas with different organisational affiliations.

Certain types or categories of infrastructure were analysed separately to get a better understanding of how common these are in relation to the marina's organisational affiliation (Figures 24A–H). As only one marina was a member of both Sweboat and RGS, it was removed from the separate analyses. Organisational affiliation had a major impact on the availability of certain types of infrastructure and functions at the marinas, where for example pump-out stations for sewage water were found to a greater degree at marinas affiliated with RGS and wash-down pads were most common among marinas affiliated with Sweboat.

Ability to receive waste. Waste management facilities (recycling stations, household waste and hazardous waste) at marinas ranged from 37% to 72% (Figure 24A). Marinas affiliated with RGS, Sweboat or RGS+SBU were able to receive waste to a higher extent (64–72%) than unorganised marinas and marinas affiliated with SBU (37%).

Pump-out stations for sewage water. Recreational marinas affiliated with RGS or RGS+SBU had access to pump-out stations to a greater extent (72% and 83% of marinas respectively) compared to marinas that were not affiliated with any organisation or marinas affiliated solely with SBU (34% and 43% respectively; Figure 24B).

Wash-down pads. Wash-down pads were available at a higher proportion of marinas affiliated with Sweboat (75%) compared to marinas affiliated with other organisations and unorganised marinas (16–26%; Figure 24C).

Boat washers. Marinas affiliated with RGS+SBU had access to brush washing to a greater extent (25%) than marinas that were members of just one of the two or marinas that were unorganised (2–8%; Figure 24D).

Charging stations for electric boats. Marinas affiliated with Sweboat were more likely to have electric boat charging facilities (33%) than unorganised marinas (5%; Figure 24E).

Boat gas stations. Gas stations were more prevalent at RGS or RGS+SBU marinas (39–50%) compared to marinas with only SBU membership or unorganised marinas (9–11%; Figure 24F).

Environmental officers. The proportion of marinas with an environmental officer was higher at marinas affiliated with any of the organisations (63–92%) compared to unorganised marinas (32%; Figure 24G).

Environmental policies. The proportion of marinas with an environmental policy was higher at marinas affiliated with any of the organisations (70–100%) compared to unorganised marinas (28%; Figure 24H).

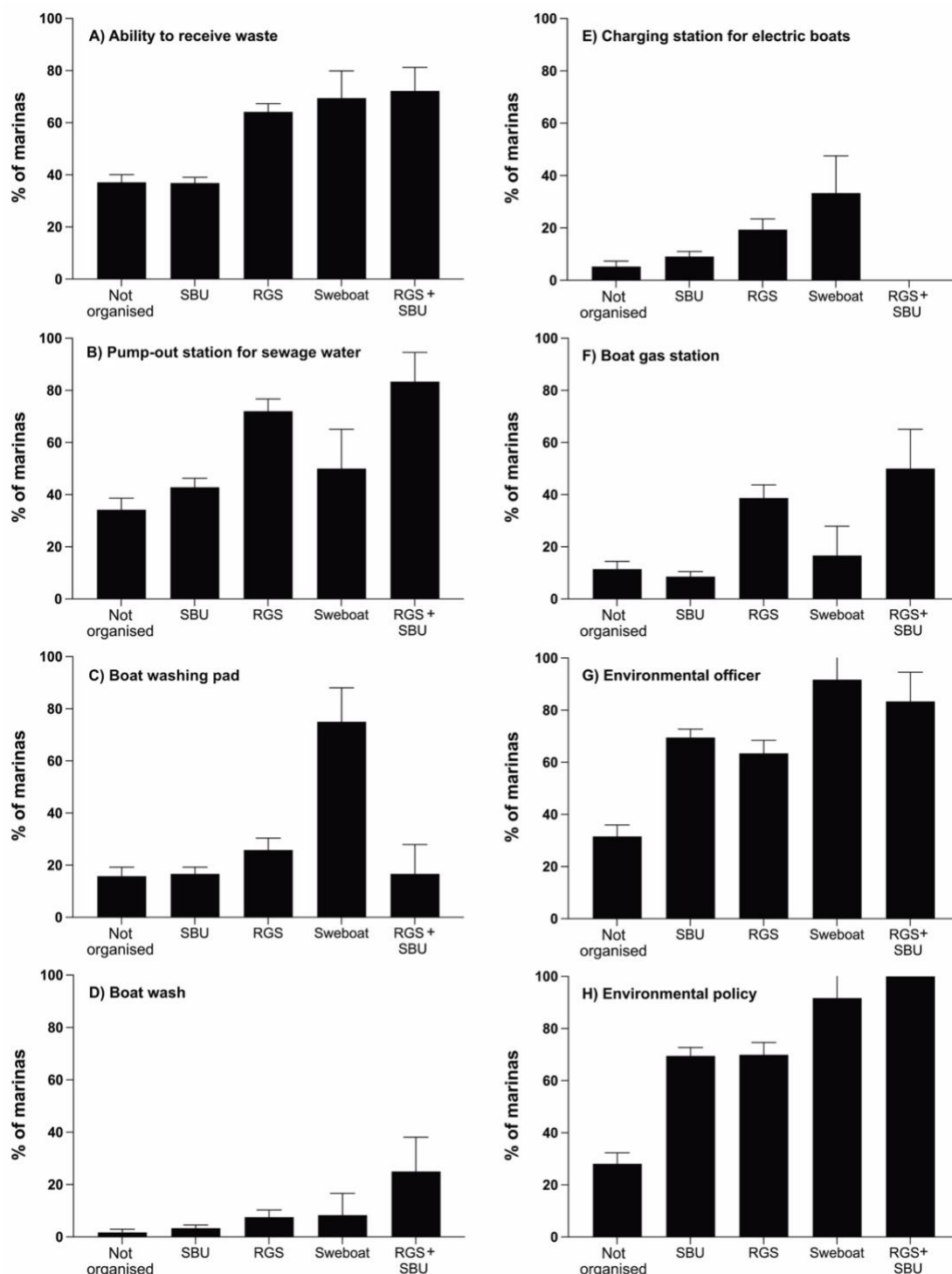


Figure 24. Infrastructure linked to organisational affiliation. The figure shows the percentage of recreational marinas with different types of infrastructure or functions (E–H) for recreational marinas with different types of organisational affiliation.

Neighbouring actors

In the questionnaire survey, the marina representatives were also asked to tick which actors are in close proximity to the marina (<1 km) among 18 different types of listed actors (Table 2).

Similarly to the analysis of the marina infrastructure, the individual cases where the respondent had answered for more than one marina were removed. The results are therefore based on the responses from 445 marinas. The median value is 22% and the average is 23% when it comes to proximity to the actors listed in Table 2 below.

Most marinas are located in close proximity to public transport links, at least one restaurant and boat club facilities. It can be assumed that the boat clubs referred to in many of the responses are the community marinas that the respondents themselves represent. It is least common for marinas to have close access to dredging companies, engine manufacturers and jetty suppliers (<2%). It also seems to be very unusual for marinas to be located in close proximity to diving centres and sailing schools (<5%) (see Table 2).

Table 2. Proportion of marinas (%) responding that they have different types of actors in the neighbourhood of the marinas.

TYPE OF NEIGHBOURING OPERATOR	YES (%)
Public transport	61.3
Restaurant	58.9
Boat club facility	58.7
Hotel/hostel	35.5
Marina service	29.2
Shipyard	28.3
Boat gas station	27.0
Tourist information	26.1
Camping	20.4
Housing company	19.3
Boat dealers	16.9
Boat experience company	11.5
Boat builder	5.6
Boating school	4.3
Dive centre	4.0
Jetty supplier	2.9
Dredging company	1.8
Engine manufacturer	0.4
None of the above	13.5

The purpose of investigating which actors are in close proximity to the marinas is that it provides a picture of the actor landscape in Swedish recreational boating, which can clarify the opportunities the various activities have for local cooperation, and can illustrate how land and water in the area are utilised. This information is important for Eko Marina, as the development of a prototype for an environmentally sustainable self-monitoring system developed within the framework of the project is intended to work in cooperation with various actors.

SUMMARY OF THE MAPPING

A compilation analysis of the survey and the inventory shows that there are 2,654 recreational marinas in Sweden, which together have approximately 892 km of jetties with space for 410,210 boats. Of these marinas, 44% are affiliated with at least one of the boating industry organisations (SBU, RGS and/or Sweboat). Most marinas are between 41 and 70 years old, but the age distribution also shows that new marinas are being established. The size of the marinas increases with age, which indicates that additional jetties are being added to existing marinas. The marinas are largely run as non-profit associations, and the typical marina has about 100 berths, access to a boat ramp, toilet and shower, the possibility to dispose of household waste and fill a water tank, and electrical outlets. The typical marina also has an environmental officer and an environmental policy. However, the results also make it clear that Sweden's recreational marinas are heterogeneous, with major differences in terms of size, form of ownership and access to infrastructure. Thus, this creates great differences among the marinas when it comes to their negative environmental impact.

Based on the size distribution among marinas in the survey, 68% of Sweden's marinas (about 1,802) are smaller marinas with space for up to 150 leisure boats, and an estimated 211 are marinas with more than 400 berths. The size of the marina is important for the availability of infrastructure, and marinas with 150 berths or fewer had an average of 39% of the infrastructure listed in the survey (see Table 1), while larger marinas (>400 berths) had 92% of the infrastructure. In particular, smaller marinas were more likely to lack access to a wash-down pad, pump-out stations for sewage water and waste management. These marinas were also less likely to have an environmental officer and an environmental policy. Although smaller marinas naturally have a smaller environmental impact than large ones, small marinas constitute the most common type of recreational marina in Sweden. The large number of small marinas means that their cumulative effects on the environment can be significant. It is therefore important that smaller marinas also review and work actively to reduce their negative environmental impact. The larger marinas generally have a greater negative impact on the environment, so measures to reduce this are particularly important.

Organisational affiliation also proved to have a positive effect on access to infrastructure and functions at the marinas. However, the degree of organisational affiliation is also affected by the size of the marina, with organised marinas generally being larger. However, in general, organised marinas were more likely to have an environmental officer and an environmental policy, indicating that boating industry organisations provide their members with information and tools for establishing this type of function. For certain types of infrastructure, organisational affiliation had a particularly clear effect, such as the availability of wash-down pads, which were present at 75% of marinas affiliated with Sweboat compared to 16–26% at unorganised marinas or marinas affiliated with another organisation. There were also clear geographic differences in terms of

access to infrastructure, with, for example, wash-down pads only being available at marinas located in counties with a sea coastline (where the need for wash-down pads is greater, since boat hulls tend to be painted with biocide paints there, compared to boats in lakes where biocide paint is forbidden), and boat washers were most common at marinas on the east coast.

The results regarding land storage facilities at marinas are interesting both from an environmental perspective (e.g. the need to clean up contaminated land) but also when talking about the transition to a more sustainable recreational boating industry. Increasing the possibilities for land-based storage of boats during the summer can contribute to a reduced need for additional constructions in the water. In the survey, only 38% of marinas stated that such facilities were available, and of these, a large majority of the marinas only had 20 land-based spaces or fewer. As the demand for berths seems to increase with the age of the marina (older marinas generally have more berths), an alternative to building more jetties could be for marinas to expand their land-based infrastructure for boat storage. Finally, the survey shows that there is room for increased access to equipment, infrastructure and functions designed to reduce negative environmental impacts in both small and large marinas. However, the mapping of the marinas also shows how varied the conditions (economic, social and geographical) are for marinas to act and work to reduce their negative environmental impact.

CHAPTER 3: THE MARINAS' INTEREST IN A DIGITAL TOOL FOR ENVIRONMENTAL SELF-MONITORING

The main purpose of the survey, the results of which are described in Chapter 2, was to create an overall picture of recreational marinas in Sweden. However, the survey also had another purpose, which was to form an idea of the marinas' need for and interest in Eko Marina as a digital environmental self-monitoring system to use in their work towards a sustainable transition. The survey therefore also included questions concerning the marinas' interest in a digital tool (a mobile application) to use for the following tasks:

- Provide environmental information to members
- Provide environmental information to guests
- Collect information from members and guests
- Advertise products and services that can facilitate compliance with laws, regulations and rules that can help reduce environmental impact
- Learn/read more about what boat owners can do to reduce their negative environmental impact
- Self-monitoring

The marinas were asked to answer each question using a scale between 1 and 5, where 1 = *not at all interesting* and 5 = *very interesting*. The answers were interpreted as 5 and 4 meaning a great degree of interest, 3 meaning a medium degree of interest, and 2 and 1 meaning little or no interest. Given that the purpose of the analysis was to investigate the respondents' interest, all questionnaire responses (486) were included in the results presented below. In cases where the respondent included several marinas in their response, it was checked and confirmed that all marinas included in their response are operated with the same form of ownership and are members of the same boating industry organisation. This chapter presents the respondents' answers and an analysis of the responses based on 1. form of ownership, 2. organisational affiliation and 3. the respondent's role at the marina. These three factors have been assumed to potentially influence attitudes towards the suggested digital tool, as the economic, organisational and personal conditions vary at different marinas and among individuals. When it comes to the analysis of organisational affiliation, it is affiliation with the Swedish boating industry organisations RGS, SBU and Sweboat that is referred to (see Chapter 1).

It is important to emphasise that the analyses are not representative of all individuals in the various marina roles, as there are many people involved in the work carried out at marinas, and the survey only covers a small proportion of these. The same applies to, for example, jetties collectively owned and run by local residents (0.6% of the survey base), members of Sweboat (3%), marinas that are members of both SBU and RGS (2.5%), landowners (0.6%), employees (1.4%) and community harbour members without board positions (1.6%). The results should therefore be understood as a presentation of different patterns that can be identified from the survey data, and not as definitive conclusions about the groups covered by the analysis.

Provide environmental information to members and guests

Different types of marinas have different types of boat users, and thus also face different opportunities and challenges in their environmental work. At a community harbour with active boat club members, the boat users are often committed, obliged to follow the community marina's statutes, and aware of how the marina should be run. Guest harbours also often have rules of conduct, but since the boat users do not tend to have their permanent berths there, marinas with primarily guest berths face different types of challenges than community marinas. While a community marina can provide environmental information to its members on an ongoing basis, it is impossible for a guest harbour to predict exactly who its future customers will be. This means that guest harbours' environmental information is often only available to boat users once they have arrived at the marina.

This may explain why interest in a digital tool for sharing environmental information differs depending on who the intended recipient is. While 51% of respondents had a strong interest in being able to share environmental information with guests, the corresponding figure for members is 31%. A large proportion (46%) had little or no interest in a tool for sharing member information (Figure 25).

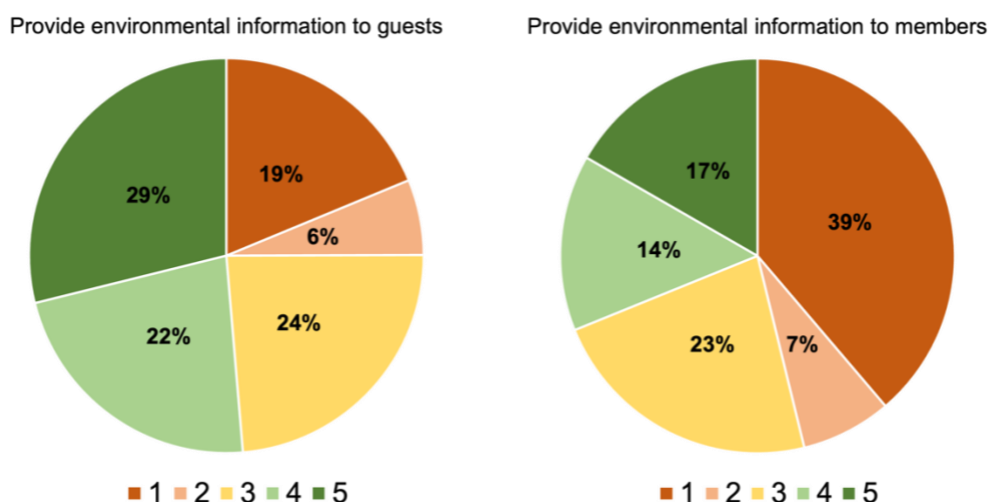


Figure 25. Percentage distribution of all respondents' interest in a digital tool to provide environmental information to guests and members respectively.

Ownership form and how it impacts interest in providing information through a digital tool

In all categories of ownership form, there was great interest in being able to share information with guests ($\geq 50\%$), except among marinas that were operated as limited companies, trading partnerships or sole proprietorships (hereon referred to collectively as "Commercial marinas"). Commercial marinas seemed to be the most divided on the issue, as there were just as many respondents (36%) who considered this function to be of great interest as there were who had little or no interest (Table 3). One explanation for this could be that some commercial marinas have already developed internal tools to communicate with their customers, while others lack such solutions.

Table 3. Percentage distribution within different forms of ownership of interest in a digital tool to provide environmental information to guests.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
PUBLIC UTILITY/MUNICIPAL	51%	25%	24%
CORPORATION	36%	29%	36%
NON-PROFIT ORGANISATION	55%	23%	23%
ECONOMIC ORGANISATION	50%	21%	29%
COMMUNITY OF LOCAL RESIDENTS	67%	33%	0%

At the same time, $\geq 38\%$ of respondents in all categories of ownership form had little or no interest in a tool for providing environmental information to their members (Table 4). The community marinas run by local residents represented in the survey data were in complete agreement with this, which may be because this type of activity is normally carried out by a small number of people who own properties in relative or very close proximity to each other and therefore already have contact routes to reach each other. The greatest difference in the percentage of interest in providing information to guests versus members was among non-profit and municipal organisations (18%) and non-profit organisations (20%). In the case of non-profit organisations, this can be assumed to be due to the nature of this type of organisation. Chapter 2, section 7 of the Swedish Local Government Act stipulates that municipalities' business activities shall aim "[...] to provide public service facilities or services for their members". This means that the facilities must be of benefit to all municipal residents. Furthermore, the transparency requirement that exists for public utility/municipal organisations means that the association must be open to all who wish to become members (Swedish Tax Agency, 2021). For quantitative reasons, it is therefore unclear how these associations should relate to membership mailings, as virtually anyone should be able to count themselves as a member.

Table 4. Percentage distribution within different forms of ownership of interest in a digital tool to provide environmental information to members.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
PUBLIC UTILITY/MUNICIPAL	33%	23%	44%
CORPORATION	29%	29%	43%
NON-PROFIT ORGANISATION	30%	22%	48%
ECONOMIC ORGANISATION	40%	21%	38%
COMMUNITY OF LOCAL RESIDENTS	0%	0%	100%

Non-profit organisations were the second least interested in providing environmental information to their members (48%), which could be explained by the reason described at the beginning of this section, namely that member marinas (often run as non-profit organisations) do not have guest berths to the same extent as other types of recreational marinas such as guest harbours. Another explanation could be that non-profit associations with organisational affiliation with SBU must use SBU's system to register their members, which means that this suggested function may already be fulfilled at these marinas through another digital tool. This will be discussed further in the following section.

Organisational affiliation and how it impacts interest in providing information through a digital tool

Interest in sharing environmental information with guests was high among marinas with membership of the various boating industry organisations. However, interest was greatest among the unorganised marinas (55%; Table 5). This could be because the boating industry organisations usually send out a number of information mailings related to recreational boating and the coastal environment to boat users at their associated marinas each year. Boat users at unorganised marinas do not receive these emails, and such marinas must therefore find their own ways of sharing environmental information. An example of an information mailing sent out is the annual edition of the *Guest Harbour Guide*, in which the RSG-affiliated guest harbours are listed with information about the infrastructure available at the marinas. Since interest in sharing environmental information with guests was also high among these RSG-affiliated guest marinas (47%), the responses can be interpreted as indicating a need for more opportunities to provide environmental information to guests among RGS members as well.

What the survey responses further illustrate is that the majority of marinas affiliated with one type of organisation often seemed to have functions that did not make them 'pure' community marinas, guest harbours, etc. For example, the high number of SBU-affiliated marinas that had an interest in sharing environmental information with guests (51%) indicates that community marinas also often have guest places for visiting boats where there may be a need to share information in various ways.

Table 5. Percentage distribution among members of different boating industry organisations of the interest in a digital environmental tool to provide environmental information to guests.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
NOT ORGANISED	55%	21%	24%
RGS	47%	23%	30%
SBU	51%	27%	22%
SBU+RGS	42%	25%	33%
SWEBOAT	50%	36%	14%

The boating industry organisations' frequent information mailings to boat users could also explain why a large majority (70%) of SBU member did not see a need to provide their members with more environmental information (Table 6). Carl Rönnow, an expert in environmental and sustainability issues at SBU, explained that the organisation's newsletter is sent out about eight times a year to approximately 8,000 boat users at community marinas. In addition to this, Båtliv's newsletter is sent out ten times a year to approximately 140,000 boat users at community marinas. There is also a function in SBU's membership system, *BAS*, that enables the marinas that are members of SBU to send mailings directly to their members, but according to Rönnow it was unclear to what extent this function is used (personal communication, 18 November 2021). Conversely, there was a very high level of interest among RGS marinas in being able to share environmental information with their members (74%). This could be explained by the often dual functions of marinas, where marinas with guest berths in one part of the marina area may also have permanent berths for local residents or berths for members of community marinas. The marinas that had dual organisational affiliations (SBU+RGS) did not experience quite as great a need for additional opportunities for member mailings, which can possibly be explained by access to SBU's *BAS* system.

Table 6. Percentage distribution among members of different boating industry organisations of the interest in a digital environmental tool to provide environmental information to members.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
NOT ORGANISED	37%	22%	41%
RGS	74%	9%	17%
SBU	11%	20%	70%
SBU+RGS	0%	100%	0%
SWEBOAT	7%	93%	0%

The role of the respondent and how it impacts interest in providing information through a digital tool

Chapter 2 presents the distribution of the respondents' different roles at the recreational marinas, as well as who was included in the group "Other". Many of them had a direct role in the marina's daily operations in the form of board positions, management positions or harbour master roles, for example. A very small number were landowners, community marina members without board positions and marina employees (see Figure 11; Chapter 2). This means that the data is limited, and so is the possibility of using it to draw any general conclusions. Based on the survey data, however, a pattern can be discerned where representatives in all groups seemed to have a great interest in a tool that makes it possible to provide environmental information to guests, except for community marina members without board positions (Table 7). This may possibly be due to members not feeling a great need to use such a tool, or that to members who answered the questionnaire not feeling that visiting boats were a common phenomenon at their community marinas.

Table 7. Percentage distribution of different respondents' interest in a digital tool to provide environmental information to guests.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	63%	17%	20%
MARINA EMPLOYEE	57%	29%	14%
LANDOWNER	67%	0%	33%
CHAIRPERSON OF THE BOARD	55%	22%	23%
BOARD MEMBER	54%	17%	28%
COMMUNITY MARINA MEMBER	25%	63%	12%
HARBOUR MASTER	41%	34%	24%
MUNICIPAL OFFICIAL	38%	34%	28%
OTHER	52%	34%	14%

When it comes to sharing environmental information with members, opinions were similar among respondents. Two groups that stood out slightly were landowners and marina employees, where the majority had a strong interest in such a tool (Table 8). A possible explanation could be that due to their role at the marina, there was a need to share information with boat users, but no access to SBU's BAS system, for example.

Table 8. Percentage distribution of respondents' interest in a digital tool to provide environmental information to members.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	26%	37%	37%
MARINA EMPLOYEE	57%	14%	29%
LANDOWNER	100%	0%	0%
CHAIRPERSON OF THE BOARD	33%	19%	48%
BOARD MEMBER	31%	21%	48%
COMMUNITY MARINA MEMBER	50%	0%	50%
HARBOUR MASTER	29%	21%	50%
MUNICIPAL OFFICIAL	31%	31%	39%
OTHER	30%	23%	48%

Collecting information from members and guests

To understand and be able to deal with the challenges and opportunities that exist when it comes to making a sustainable transition at a marina, it can be valuable to collect information about who

uses the marina and what this usage looks like. This may involve, for example, collecting information on boat ownership, boat owner contact details, which boat hull paints are used or which methods the boat owners use to care for their boats. In general, the pattern that can be discerned in the survey data indicates that there was an interest in collecting such information among the respondents (Figure 26).

Collecting information from members and guests

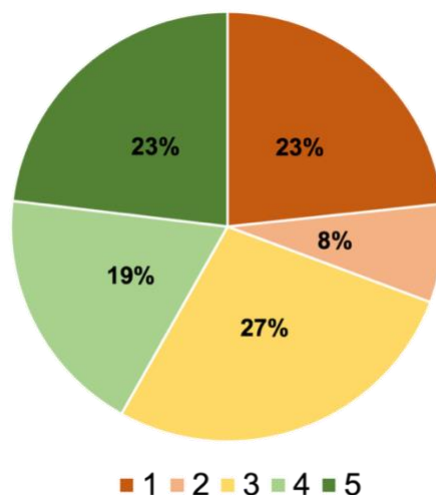


Figure 26. Percentage distribution of interest among all respondents in collecting information from members and guests through a digital tool.

Ownership form and how it impacts interest in collecting information through a digital tool

The greatest interest in collecting information from members and guests was found among commercial marinas and public utility/municipal recreational marinas (Table 9). A possible explanation for the higher interest at these types of marinas may be that the customer base/boat users tend to change more frequently at these types of marinas than the members of other types of marinas. This constitutes an obstacle when creating boat registers or similar.

Table 9. Percentage distribution within different forms of ownership of the interest in collecting information from members and guests through a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
PUBLIC UTILITY/MUNICIPAL	56%	22%	23%
CORPORATION	60%	18%	23%
NON-PROFIT ORGANISATION	37%	30%	34%
ECONOMIC ORGANISATION	36%	29%	36%
COMMUNITY OF LOCAL RESIDENTS	0%	100%	0%

Organisational affiliation and how it impacts interest in obtaining information through a digital tool

The two groups that expressed the greatest interest in a digital tool for collecting information were organisations that were members of the RGS (72%) and unorganised organisations (60%; Table 10).

Table 10. Percentage distribution among members of different boating industry organisations of the interest in collecting information from guests and members through a digital tool.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
NOT ORGANISED	60%	20%	20%
RGS	72%	13%	16%
SBU	20%	43%	36%
SBU+RGS	0%	0%	100%
SWEBOAT	0%	0%	100%

Interest was comparatively low among marinas affiliated with SBU (Table 10). According to Carl Rönnow (personal contact), the BAS system allows marinas to save some information that is necessary, such as membership lists of the boat users at the marina. This is probably the reason why the majority of SBU marinas did not have much interest in an additional membership information system. For Sweboat's members, which primarily consist of companies of different kinds from the boating industry, the lack of interest can possibly be explained by various existing customer systems.

The role of the respondent and how it impacts interest in collecting information through a digital tool

All groups had a medium to high degree of interest in obtaining information from members and guests (Table 11). The largest proportion that responded that they did not have such an interest was community marina members (40%), which could possibly be because it is from this group that the information in such a function would be requested. Nor did the landowners who participated in the survey have a particularly strong interest in this type of function. A potential explanation for this could be that the landowners did not see it as their task to collect information from marina users.

Table 11. Percentage distribution of respondents' interest in collecting information from members and guests through a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	34%	29%	37%
MARINA EMPLOYEE	71%	29%	0%
LANDOWNER	0%	67%	33%
CHAIRPERSON OF THE BOARD	36%	31%	33%
BOARD MEMBER	43%	26%	32%
COMMUNITY MARINA MEMBER	60%	0%	40%
HARBOUR MASTER	47%	24%	29%
MUNICIPAL OFFICIAL	43%	32%	25%
OTHER	57%	18%	25%

Advertising products and services

Another type of function is the possibility for digital adverts for products and services that can make it easier for marinas to comply with laws, regulations and rules that can help them reduce their negative environmental impact. Such a function could contribute to financing the continuous operation of the digital tool and reduce potential fees for users, and could also contribute to disseminating information about innovation, infrastructure and other available features that can be used in the sustainable transition of recreational marinas. In general, respondents were in favour of a tool with this type of function (Figure 27).

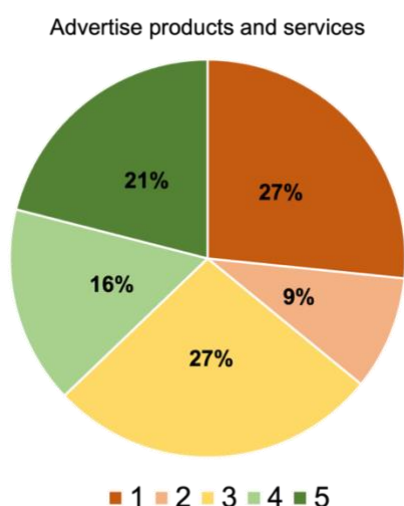


Figure 27. Percentage distribution of interest among all respondents in advertising products and services through a digital tool.

Ownership form and how it impacts interest in advertising through a digital tool

The greatest interest was found among respondents from commercial marinas and public utility/municipal recreational marinas (Table 12). One possible explanation is that these marinas saw the potential to spread information about their own activities and services to a wider customer base, which non-profit organisations or communities of local residents, for example, do not need to do not the same extent.

Table 12. Percentage distribution within different forms of ownership of interest in advertising products and services through a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
PUBLIC UTILITY/MUNICIPAL	51%	19%	30%
CORPORATION	50%	21%	29%
NON-PROFIT ORGANISATION	32%	31%	37%
ECONOMIC ORGANISATION	38%	21%	40%
COMMUNITY OF LOCAL RESIDENTS	0%	0%	100%

Organisational affiliation and how it impacts interest in advertising through a digital tool

It was primarily unorganised activities and RGS-affiliated marinas that had a great interest in being able to disseminate advertisements with an environmental focus through a digital tool (Table 13). One reason why unorganised marinas saw such a need may be that unorganised marinas lack access to channels for reaching a wider circle, such as the organisations' websites, and the member magazines *Båtliv* (SBU), *Båtbranschen* (Sweboat) and *Gästhamnsguiden* (RGS).

The reason why marinas affiliated with RGS had such a high interest in being able to advertise (73%) can probably be explained by the type of activity such marinas represent. RGS members are classified as guest harbours, which means that the boat users who use their berths vary almost every day. The ability to disseminate information about the environmentally friendly services and products offered by the marinas may result in more frequent use of these and increased visits by boaters wishing to reduce their negative environmental impact.

Table 13. Percentage distribution of interest in advertising products and services through a digital tool among members of different professional organisations.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
NOT ORGANISED	54%	18%	28%
RGS	73%	9%	18%
SBU	13%	45%	42%
SBU+RGS	0%	0%	100%
SWEBOAT	0%	0%	100%

The role of the respondent and how it impacts interest in advertising through a digital tool

Respondents in the different business roles seemed to disagree on whether they were very interested or not at all interested in a digital tool for advertising (Table 14). The reasons for this are unclear, but could possibly be due the respondents' personal attitudes towards advertising.

Table 14. Percentage distribution of respondents' interest in advertising products and services through a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	34%	36%	40%
MARINA EMPLOYEE	43%	43%	14%
LANDOWNER	33%	33%	33%
CHAIRPERSON OF THE BOARD	29%	35%	35%
BOARD MEMBER	39%	23%	38%
COMMUNITY MARINA MEMBER	50%	13%	38%
HARBOUR MASTER	41%	19%	40%
MUNICIPAL OFFICIAL	43%	25%	43%
OTHER	50%	20%	30%

Learning/reading more about reducing negative environmental impacts from leisure boating

The majority (60%) stated that they had a strong interest in a digital tool that enables boat owners to learn/read more about reducing their negative environmental impact related to leisure boating (Figure 28).

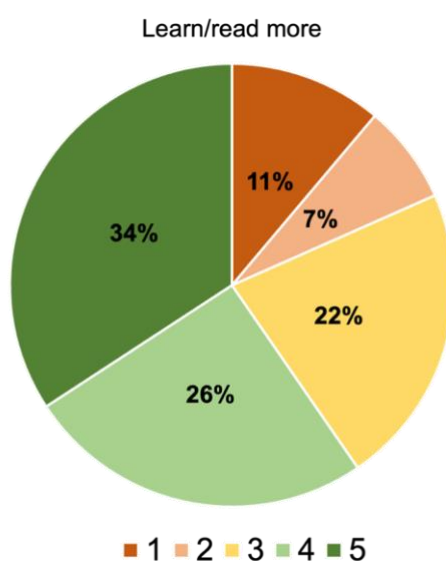


Figure 28. Percentage distribution of interest among all respondents for a digital tool to learn/read more.

Ownership form and how it impacts interest in reading/learning more in a digital tool

Regardless of the form of ownership, there was great interest in providing opportunities for boat owners to learn and read more about how the marina and/or boat user can reduce their negative environmental impact (Table 15). This illustrates how the respondents from the different marinas had similar access and lacked information to a similar extent.

Table 15. Percentage distribution within different forms of ownership of the interest in learning/reading more in a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
PUBLIC UTILITY/MUNICIPAL	66%	18%	16%
CORPORATION	73%	14%	13%
NON-PROFIT ORGANISATION	58%	24%	19%
ECONOMIC ORGANISATION	43%	31%	26%
COMMUNITY OF LOCAL RESIDENTS	100%	0%	0%

Organisational affiliation and how it impacts interest in reading/learning more in digital tool

Among the unorganised marinas and the members of all boating industry organisations except Sweboat, the majority of respondents had a great degree of interest in a knowledge-promoting digital tool on the theme of sustainable boating (Table 16).

Table 16. Percentage distribution of interest in learning/reading more in a digital tool among members of different professional organisations.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
ORGANISED	64%	18%	18%
RGS	54%	35%	10%
SBU	61%	18%	21%
SBU+RGS	58%	33%	8%
SWEBOAT	36%	29%	36%

At the time of writing this report, there are several information channels for individuals at both unorganised and organised marinas where they can read and learn more about sustainable boating. One example is the website www.båtmiljö.se, which is run by SBU. Another is the website www.upplevbatlivet.se, which collects information provided by SBU, the Swedish Cruising Organisation, the Swedish Sailing Federation, RGS and Sweboat. There is also information on how leisure boating can be made more sustainable from the Swedish Agency for Marine and Water Management, the Swedish Transport Agency, the Swedish Maritime Administration, the Swedish Environmental Protection Agency, universities, other research institutes and other commercial actors. However, the respondents' answers can be interpreted as

indicating a lack of a tool that collects all relevant information.

The role of the respondent and how it impacts interest in learning/reading more in a digital tool

Interest in a digital knowledge tool was high among all respondents, regardless of their role at the marina (Table 17).

Table 17. Percentage distribution of different respondents' interest in learning/reading more in a digital tool.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	51%	26%	23%
MARINA EMPLOYEE	86%	14%	0%
LANDOWNER	33%	67%	0%
CHAIRPERSON OF THE BOARD	55%	22%	23%
BOARD MEMBER	67%	24%	10%
COMMUNITY MARINA MEMBER	50%	38%	13%
HARBOUR MASTER	60%	19%	21%
MUNICIPAL OFFICIAL	53%	26%	21%
OTHER	75%	9%	16%

Environmental self-monitoring

Environmental self-monitoring is – and should be – a central part of every marina's work. The survey data did not include questions about how the marinas' environmental self-monitoring work was performed at a given point in time, but 46% of the respondents thought it would be very interesting to have a digital tool to use in the marina's environmental self-monitoring work (Figure 29). However, it is unclear how the distribution of responses reflected the respondents' level of knowledge and experience of conducting environmental self-monitoring, which could have influenced their responses.

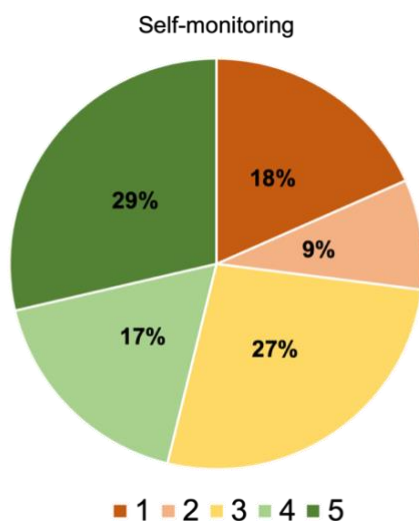


Figure 29. Percentage distribution of interest among all respondents in a digital tool for their self-monitoring work.

Ownership form and how it impacts interest in environmental self-monitoring through a digital tool

In all types of ownership forms, interest in a digital tool for working with environmental self-monitoring was high, especially among public utility/municipal marinas (70%; Table 18). The fact that the interest was slightly higher among commercial marinas compared with marinas run as non-profit organisations could be explained by the fact that commercial marinas generally know that environmental self-monitoring is a necessary part of the marina's work, while the non-profit marinas probably do not have as much knowledge of this.

Table 18. Percentage distribution within different forms of ownership of the interest in a digital tool for self-monitoring.

ORGANISATION	HIGH INTEREST (4-5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1-2)
PUBLIC UTILITY/MUNICIPAL	70%	14%	16%
CORPORATION	61%	30%	9%
NON-PROFIT ORGANISATION	36%	30%	35%
ECONOMIC ORGANISATION	60%	24%	17%
COMMUNITY OF LOCAL RESIDENTS	33%	67%	0%

The majority (53%) of the respondents who answered that they represent public utility/municipal marinas had also indicated that they were municipal officials. This is particularly emphasised in the municipality also being the supervisory authority for recreational marinas, and as such they are responsible for ensuring that all recreational marinas comply with the environmental self-monitoring required by law.

Organisational affiliation and how it impacts interest in environmental self-monitoring through a digital tool

When it comes to the distribution of respondents who represent marinas with membership of different boating industry organisations, differences can be seen. Representatives from Sweboat and those with membership of SBU+RGS had no interest in a digital tool for environmental self-monitoring (Table 19). This could be because these organisations consider that they already have sufficient self-monitoring systems of their own. However, their answers may also be due to the way the question was asked, since no information about what a digital tool could contribute more specifically was included in the wording.

Table 19. Percentage distribution among members of different boating industry organisations of the interest in a digital tool for self-monitoring.

ORGANISATION	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
ORGANISED	60%	20%	20%
RGS	72%	13%	16%
SBU	20%	43%	36%
SBU+RGS	0%	0%	100%
SWEBOAT	0%	0%	100%

Interest in this type of function in a digital tool was the greatest among respondents from RGS-affiliated guest harbours. According to Dick Netterlid, who was Secretary General of RGS at the time, these marinas have access to RGS's own intranet which includes support for environmental self-monitoring, information about RGS's criteria and requirements, recommended measures and various templates for environmental policies, waste management, emergency plans, crisis management and marina rules (personal communication, 19 November 2021). Of the 15 Swedish marinas awarded the international environmental certification Blue Flag in 2021, twelve were members of RGS (Blue Flag, 2021, personal communication, 19 November 2021). Five of the twelve RGS-affiliated marinas that also received the Blue Flag were represented in the survey. When asked how much interest they had in a tool for their environmental self-monitoring work, each responded differently. Two of the marinas had little or no interest, one marina had a medium degree of interest, and two marinas had a degree of great interest. The respondents' answers can thus be interpreted in different ways. One possibility is that the RGS-affiliated marinas also receiving the Blue Flag were working actively with environmental issues and had already realised the importance of effective environmental self-monitoring to a greater extent than other types of marinas. Another possibility is that guest harbours face a particular type of challenge, for

example in the form of constantly changing boats and customers, which makes environmental self-monitoring work particularly complex and thus makes the need for a digital tool greater than for other marinas. A third possibility is that the tools that were available when the question was asked were not perceived as sufficient by all the respondents from the RGS-affiliated marinas who answered the survey.

The role of the respondent and how it impacts interest in environmental self-monitoring through a digital tool

It is mainly board members and harbour masters who are uninterested in an environmental self-monitoring digital tool (47% and 48% respectively; Table 20).

Table 20. Percentage distribution of different respondents' interest in a digital tool for self-monitoring.

FORM OF OWNERSHIP	HIGH INTEREST (4–5)	AVERAGE INTEREST (3)	LITTLE OR NO INTEREST (1–2)
CEO OF THE MARINA	37%	31%	31%
MARINA EMPLOYEE	14%	86%	0%
LANDOWNER	67%	0%	33%
CHAIRPERSON OF THE BOARD	62%	19%	19%
BOARD MEMBER	13%	49%	47%
COMMUNITY MARINA MEMBER	25%	62%	13%
HARBOUR MASTER	31%	21%	48%
MUNICIPAL OFFICIAL	62%	23%	15%
OTHER	75%	23%	2%

Those who have the greatest interest in such a tool are landowners, chairpersons and municipal officials. One possible explanation for this could relate to the legal liability for environmentally hazardous activities. In most non-profit and economic associations with more than four members, there is no main responsible individual – that is, a natural person who controls or owns the marina. In practice, this means for example that the chairperson of the board is not to be regarded as chief operator of the marina, and the responsibility according to the Swedish Ordinance (1998:901) on the self-monitoring of operators does not fall directly on the chairperson, but on the marina as a legal entity. However, it may be stated in contracts or the marina's statutes that, for example, the chairperson or the landowner is to be considered the chief operator (Swedish Companies Registration Office, 2021). Furthermore, there is no legal definition of who is to be considered an operator in the Swedish Environmental Code. In the Swedish Land and Environment Court's decision of 14 June 2017 in case M 6243-16, the court concluded that the circumstances of the individual case must be assessed to be able to determine who should be considered the chief operator. In the case, the court stated that a basic prerequisite for deciding who is chief operator is that the person has the actual and legal ability to act, which will be discussed in more depth in Chapter 4. By holding the highest position on a marina's board or by

being the owner of the land where environmentally hazardous marina activities are carried out, the uncertainties surrounding the legal definition of who is to be considered chief operator may give reason for respondents in these positions to have a well-functioning environmental self-monitoring system in place. The reasons for the great interest among municipal officials may be partly due to municipalities themselves operating marinas, and partly to municipalities being supervisory authorities and thereby being able to benefit from more comprehensive environmental self-monitoring at the marinas they supervise.

SUMMARISING INTEREST IN THE FEATURES IN A DIGITAL TOOL

In general, there was interest in several different functions in a digital tool. The greatest interest was in functions where one could read/learn more about how to reduce the negative environmental impact of leisure boating. The least interest was in a tool for sharing information with marina members.

In many cases, differences could be ascertained in the responses depending on the form of ownership, whether the marinas were organised and which boating industry organisation they were members of, and what role the respondent had at the marina. For example, public utility/municipal marinas and commercial marinas had a greater interest in obtaining information from their members and guests and in advertising products and services than marinas with other forms of ownership. RGS-affiliated marinas had a great interest in sharing information with members, while a large number of the SBU-affiliated marinas had little or no interest in this. Sweboat-affiliated marinas generally had little or no interest in all the proposed functions, except when it came to providing environmental information to their customers. In terms of differences between respondents with different roles at the marina, the function of environmental self-monitoring stood out, as the chairpersons, landowners and municipal officials had a great interest while harbour masters and board members had little or no interest.

In Eko Marina III, the development of a digital prototype has focused on the last-mentioned function – environmental self-management. In the following chapter, we explain why self-monitoring is an important area to streamline and develop further at recreational marinas, and suggest how it can be done. What this chapter has illustrated, however, is that there are several other functions that could also be developed in the digital tool in the future.

CHAPTER 4: ANALYSIS OF STAKEHOLDER NEEDS

To be able to develop a digital tool that can help marinas to change and improve their environmental work, it is important to understand the marinas' future needs, increase their understanding of the issue of responsibility, and include the local supervisory authorities' perspectives and requirements for environmental work at the marinas both now and in the future, systematically and methodically. This chapter shortly describes these aspects and clarifies the responsibility issues in marinas and how they are regulated through the Swedish Environmental Code. It further presents the results from a follow-up survey with 39 supervisory authorities regarding their past, present, and future supervisory work.

LIABILITY UNDER THE SWEDISH ENVIRONMENTAL CODE

Under current legislation, recreational marinas are – in most cases – neither notifiable nor licensable activities, and are therefore so-called environmentally hazardous U-activities. A U-activity chooses whether to have written environmental self-monitoring. Even though marinas are not notifiable activities, they are regulated by the general rules of consideration in Chapter 2, sections 2–8 of the Environmental Code (Table 3). Chapter 2 of the Environmental Code applies to anyone who conducts or intends to conduct an activity or take a measure that may cause damage or disruption to the environment or health. This includes municipal and commercial operations, non-profit organisations, communities and private individuals. In the case of supervision and decisions on investigations, the decision is directed at the person who is considered to have control over the activity and who, through agreements, procedures, controls and measures, can follow up and ensure that the activity does not cause serious damage in the long or short term. (See Chapter 3 for further discussion on chief operator.)

Chapter 2, sections 2–8 of the Environmental Code constitutes umbrella legislation for how all activities, regardless of size or scope, must reduce the risk of harm to the environment and health through caution and through the choice of a suitable site, a suitable method, suitable products, and protective measures and preparedness. The risk reduction is the basis for good self-monitoring, whether it is written or not. The establishment is expected to act proactively to reduce the risk of release by planning, organising and controlling all risks that may arise within the establishment and that may lead to exposure or release of dangerous substances. The organisation is also expected to ensure, through inspections, that the self-monitoring works effectively and, in the event of deviations, to act promptly and vigorously to prevent serious harm from occurring and to provide information to the supervisory authority.

RECREATIONAL MARINAS' VIEWS ON OPERATIONAL RESPONSIBILITY AND SELF-MONITORING

Many of the criteria developed in the Eko Marina projects focus on environmental aspects that can be achieved through well-planned and systematic self-monitoring. Self-monitoring is a very important part of marinas' environmental work to reduce pollutant emissions and improve their environmental performance.

In most cases, marina activities require neither notification nor authorisation for environmentally hazardous activities, which means that the activities are rarely regulated in decisions with clear conditions or formal requirements for written self-monitoring. Many harbour masters are unaware that the marina's chief operator is primarily responsible and that they are therefore expected to manage and control all parts of the activity by conducting active and systematic self-monitoring, regardless of whether this is written or oral. Many incorrectly assume that it is the property owner or lessee (which is often the municipality) who has the primary responsibility for identifying risks and acting if harm occurs. Many operators also perceive that they have no control over how the individual boat owners plan and carry out their environmentally hazardous activities, and assume that the harbour master's responsibility is limited to providing information and, if necessary, arranging communal facilities for waste, toilet waste or wash-down pads with treatment. In the judgement M6243-16 referred to previously in Chapter 3, it was clarified that requirements are directed at the person who is considered to have control over the activity, i.e. the chairperson of the board of the community marina or the CEO if it is a company. Despite this, harbour masters and marina members are often unaware that they can be held liable when, for example, a spill occurs at the marina.

Even though many marinas lack systematic environmental self-monitoring, there is now increased environmental commitment among many boat owners and interest from marinas in reducing their negative environmental impact. It is therefore of the utmost importance to clarify the issue of responsibility and to show how this knowledge can be used to motivate and improve marinas' environmental work.

PRIORITISED INSPECTION IN THE PAST, PRESENT AND FUTURE

The lack of national consensus on how often inspections and supervisions should take place and uncertainty about what is included in municipal inspections and supervisions mean that the marinas have different perceptions of which requirements they must meet when conducting self-monitoring.

To find out which prioritised inspection and supervision areas the local inspection authorities have worked with over the past ten years and which areas they will focus on in the future, a follow-up questionnaire was sent to 45 inspection authorities (aimed at municipal environmental inspectors working with the inspection and supervision of recreational marinas). The questionnaire was answered by 39 environmental protection inspectors from municipalities in different parts of Sweden (Figure 30). In the survey, officials who work in the field with municipal environmental inspection (environmental and health protection inspectors) were asked which inspection areas the municipalities had focused on in the last ten years and what they intended to focus on in the next few years, provided that sufficient staff resources were available. The survey also included a question regarding whether the municipalities had decided on targeted inspection measures within their action programmes to achieve established environmental quality

standards. The inspectors were further asked whether they cooperated with other municipalities in the planning and implementation of future inspections and supervisions of recreational marinas, and whether they considered that they had the resources/staff needed to carry out the above-mentioned inspections in the coming years. They were also given the opportunity to describe the need for national and regional guidance for inspection to cope with these inspection areas.

Based on previous dialogues with municipal inspection authorities, it appears that inspection and supervision visits to recreational marinas are generally conducted with pre-selected focus areas, as the many areas linked to marina activities are too extensive to go through on a single occasion. Inspections and supervisions are often carried out in the form of projects, with ready-made checklists and sometimes in cooperation with other municipalities. The municipal environmental protection inspectors select specific risk areas to be inspected, and do not always consider that there may be different issues or focus areas that are relevant to different marinas. Inspection visits often mean that marinas are made aware of their operational responsibilities. The lack of inspection and supervision visits can contribute to smaller marinas underestimating their operational responsibility and need for self-monitoring, as they are not aware of the requirements in the Environmental Code's rules of consideration and the reverse burden of proof applied in the Environmental Code.

In recent years, the risks of spreading hazardous substances from recreational marinas have been increasingly highlighted by many actors working with leisure boating, and work has begun to develop guidelines, cooperate more, and increase the supervisory authorities' knowledge. The result of the follow-up survey further showed that the environmental protection inspectors indeed plan to shift their focus to address the spread of hazardous substances, partly by prioritising inspection areas other than those that have been prioritised thus far (Figure 30). Previously, there has been a sharp focus on waste issues at recreational marinas, including the management of environmentally hazardous waste as well as household waste and recycling. The management of wrecks and emptying of sewage water has also been in focus in the past, but is expected to decrease somewhat in the future. Instead, investigations and measures relating to contaminated areas (soil and sediment) as well as stormwater management and water quality were highlighted as issues that will be prioritised more in inspections and supervisions in the future. Enforcement areas that will continue to be prioritised in the future include accident preparedness, inventory and remediation of boat hull paints, boat washing and fuels. All the priority areas highlighted in future inspections require good self-monitoring to be able to demonstrate (through protective measures, measurements and good documentation) that risk assessments and preventive measures have been carried out to ensure that the risks of environmental impact have been minimised.

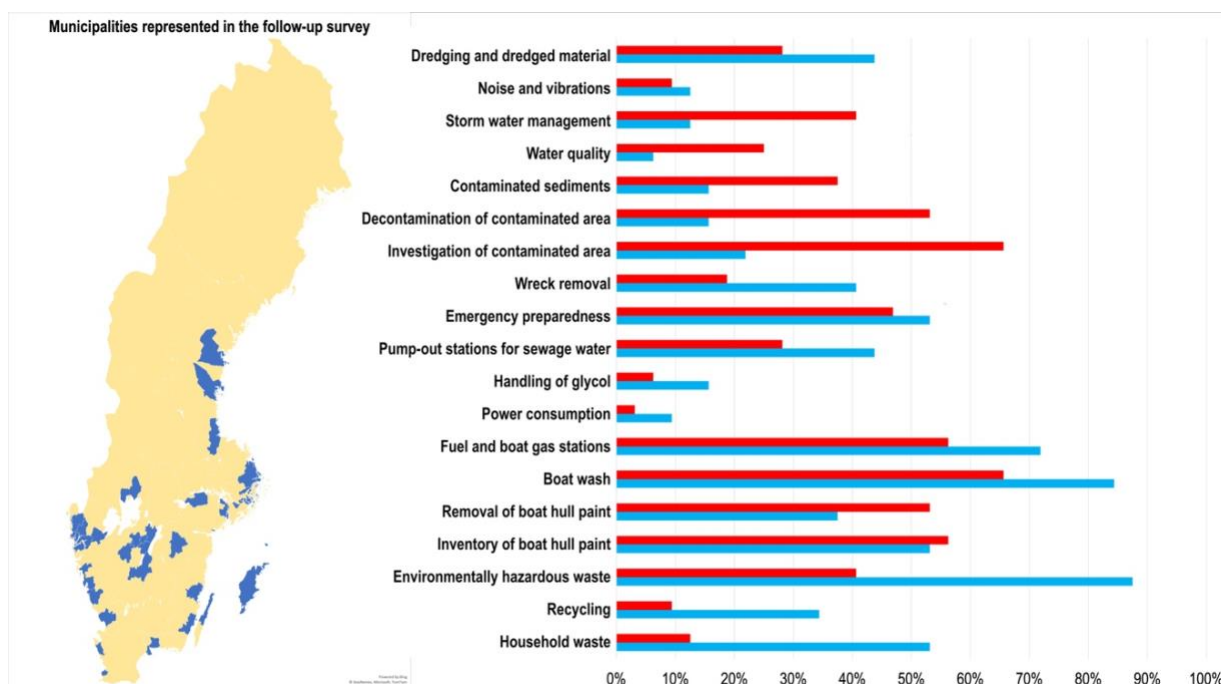


Figure 30. Summary of the questionnaire answered by 39 environmental and health protection inspectors working with inspections at recreational marinas on which inspection areas they have focused on in the past (blue) and which areas will be prioritised in the future (red).

ECO-LABELLING – ONLY POSSIBLE THROUGH GOOD SELF-MONITORING

When the Eko Marina project started, the aim was to investigate the conditions for developing a new eco-label that effectively contributed to improving the environmental work of marinas to reduce negative environmental impact on the marine environment. Based on interviews and discussions with marinas, it appears that support functions linked to internal self-monitoring are considered more important than obtaining “another eco-label that can be used for marketing purposes”. The continued development of a prototype within this project has therefore focused primarily on self-monitoring in the form of a digital support platform.

CHAPTER 5: DEVELOPMENT OF A DIGITAL TOOL FOR SELF-MONITORING AT RECREATIONAL MARINAS

In Eko Marina I, the various impact areas associated with marinas were described and classified. Within this first part of the Eko Marina project, a mapping of existing eco-labels and how well they matched the impact areas identified was also carried out. Within each impact area, various criteria were set that showed how marinas could gradually work to improve their environmental work and reduce their environmental impact. In the continuation project Eko Marina II, these criteria (Index 2.0) were restructured to better reflect the inspection and supervision areas and issues included in the work of the inspection authorities. Work on exploring different business model options was also initiated within this second part of the project. In the Eko Marina III project presented in this report, the focus has been on winning support for and developing the criteria further, and on developing a digital prototype based on the previously developed index. Based on the survey responses from marinas presented in Chapter 2 and interviews with marina representatives, it has become clear that many marinas need support to manage their systematic environmental self-monitoring, which is a basic condition for any credible environmental certification and an important part of the work to reduce the negative environmental impact of marinas.

EXISTING SUPPORT SYSTEMS FOR SELF-MONITORING AT RECREATIONAL MARINAS

Several boating industry organisations representing boat owners and marinas in Sweden (for example Sweboat, SBU and RGS) have worked actively in recent years to improve the environmental work carried out at their member marinas. Among other things, Sweboat and SBU have produced self-monitoring programmes with templates and checklists that can be used by their members. These consist largely of yes/no questions linked to various inspection areas, where the marinas also can add a brief follow-up plan after each answer (including an assessment of how quickly a measure is required). Regarding RGS, several members are involved in the Blue Flag eco-labelling scheme, where part of the self-monitoring work is highlighted in Blue Flag's environmental criteria. The boating industry organisations have also highlighted in discussions during Eko Marina that they are currently working on revising the support material provided to members.

This material is mainly provided in paper format in a self-monitoring binder (non-digital), which limits the possibilities for making the results available and sharing them with various people at the marina or the supervisory authority. There are also no concrete proposals for how implementation/follow-up and documentation should be done in relation to various specific measures in the self-monitoring binders.

ADVANTAGES OF A DIGITAL SUPPORT PLATFORM FOR SELF-MONITORING

Marinas often conduct several different activities that can lead to emissions or other environmental impacts if there is no systematic self-monitoring work. Without experience of how self-monitoring should be carried out, this can be perceived as a very extensive and difficult task. A digital support platform can facilitate self-monitoring in several ways, as summarised below.

Digital documentation creates continuity. By gathering all information linked to the marina and its self-monitoring (e.g. drawings, plans, pictures, list of members, list of chemicals, environmental policies, sampling results and agreements) in a database, accessibility for different people at the marina to take part in the self-monitoring increases, which contributes to less dependence on specific individuals for its administration and ensures continuity in the environmental work. For example, a new chairperson of the board can easily gain insight into all ongoing cases and documentation from facilities, suppliers and previous inspections by being granted authorisation in the tool. Another example is documentation, where easy access to previous sampling makes it possible to follow up on previous measurements/actions and plan for the long term.

The purpose and target points for the continued work on digital support for marinas are presented below.

- The content is adapted based on the type of marina
- Joint responsibility creates cohesion
- Motivate more sustainable investments
- Systematic work creates security
- Facilitates dialogue with supervisory authorities.
- Holistic view of the marina's environmental impact.

DESIGN OF A SUPPORT PLATFORM

In this part of the report, we summarise ideas about what should be included in the support platform (also referred to as the 'digital tool'). Much of what is mentioned is yet to be developed, while one thematic area (boat hull washing) was developed as a prototype version in a subsequent part of the project (Eko Marina IV).

Basic information about the marina

For the support platform to be able to create an adapted self-monitoring programme based on the marina's specific conditions, information initially needs to be entered into it. This information includes the size of the marina, infrastructure, geographical location and contact information for responsible persons at the marina.

In order to carry out effective self-monitoring, the marina also needs to have sufficient information about the boats within the harbour area and contact information for boat owners. Each individual boat owner who has a berth and/or winter storage place at the marina should therefore be given access to the support platform through a mobile app in which they can enter their contact details and information about their boat (boat type, age, boat's name, year of construction, current owner, boat owner since year/month, last used hull paint, etc.) and confirm

annually (through for example digital ID verification) that they follow the marina's rules. This gives the marina greater opportunities to follow up on e.g. emissions, contaminated surfaces and abandoned wrecks. With better knowledge about which boats have been/are located within the marina area, it is also potentially feasible to retrospectively distribute costs for sanitation and requirements to the responsible party, if it should become relevant.

Example from the support platform prototype: Boat hull treatment

After filling in basic information about the marina and boats within it as exemplified above, several thematic sections relating to marina activities become activated. (For all thematic areas, see Table 21 below.) One of these is the "Boat hull treatment" section, in which the marina is asked to fill in information regarding hull treatment options, e.g. "Sanding, scraping and painting", "Choice of hull treatment method" and "Boat hull washing". There is then a range of options to choose from and information for the marina to fill in, including information about potential washing plates and whether pressure washing is offered.

The idea is that all sections on the platform are connected, so that the information added by the marina in the "Boat hull treatment" section also becomes available and relevant in other sections. Furthermore, each section will, in addition to asking for information from the marina itself, include information with tips on what to consider when it comes to aspects such as boat washers. This information will include links to other sources for further information regarding the requirements for boat hull washing (e.g. the Swedish Agency for Marine and Water Management's guidelines for boat hull washing).

Other examples of information that will be included in the boat hull treatment section are:

- Notification and decision from the supervisory authority
- When treatment of washing water from leisure boats is required
- Legislation cited in the decision
- Selection guide for treatment systems
- Questions about the treatment system
- Control mechanisms for the treatment system
- Individuals responsible for operation and maintenance
- Procedures for wash water sampling
- Analysis of water samples
- Selection of analysis packages for water samples
- Procedure for incoming sample results
- Basis of assessment for analyses
- Volume of water that has passed through the treatment plant
- Agreed conditions for discharge
- Analysis results from sampling

Other impact areas to be included in the support platform

During Eko Marina I–II, six impact areas were defined within which a few criteria were developed linked to different types of activities at the marina (Table 21). These areas and criteria are described in more detail in the final report from Eko Marina II. In the further development of the prototype platform, questions and step-by-step guides will be developed for each of these impact areas.

Table 21: Summary of the six impact areas defined in Index 2.0, which are the starting point for the design of the support platform, and examples of the specific questions addressed in each area.

SELF-MONITORING AREA	INCLUDES ISSUES WITHIN
MANAGEMENT SYSTEM	Self-monitoring plan, environmental policy, local regulations, organisational structure, distribution of responsibilities, training, follow-up of deviations and violations, emergency plan, and communication and information to members and visitors.
RECREATIONAL BOAT USE	Procedures for oil leakage from boats, county water, glycol/refrigerant, chemical handling and chemical inventory.
BOAT HULL TREATMENT	Rules and procedures for handling hull paint containing harmful substances, sanding, scraping and painting, blasting, hull washing and facilitating the use of alternatives to biocide paint.
CONTAMINATED LAND AND SEDIMENTS	Action plan for contaminated land, stormwater management, mooring and marina areas, sediment sampling and remediation, and groundwater.
WASTE	Waste, hazardous waste, littering, abandoned wrecks, recycling and sewage water management.
IMPACTS FROM THE MARINA	Noise, light emissions, erosion, jet skis, sensitive areas in the local environment, eco-driving, shading from jetties, idling, surface water and sediment sampling, phasing out two-stroke engines, promoting reduced emissions through sailing, smaller engine sizes, etc, energy and emission plans and targets, land-based boat storage, maintenance dredging, work machinery, fuel and electricity use, promoting access to better fuels and charging for boats and electric cars, launching via ramp.

Additional functions that can be connected to the digital platform

In addition to information about the marina's conditions, including size, infrastructure and boats, as described above, there are several functions that should be developed within the platform linked to the marina's self-monitoring. This includes a step-by-step guide for developing a clear environmental policy that summarises the marina's ambition and attitude when working with different types of environmental risks. The environmental policy should be revised annually and clearly communicated to members and staff, which is easier when the policy is digitalised. Other

functions to be included in the tool include the possibility of developing a digital crisis preparedness plan, setting reminders for infrastructure maintenance and using digital templates for contracts.

In addition, the support platform could also be used to disseminate knowledge to employees and members, and to clarify information about rules and legal requirements that everyone at the marina must follow. Specific training packages can be designed and made available on the platform to inform boat owners, members, board members and harbour masters about different practices, environmental issues or initiatives at the marina. Instruction videos, templates and links to other websites with relevant information on various topics could be made available on the digital platform, too. Lastly, it should also contain a discussion forum for marinas to share experiences and tips with others to inspire and motivate improvements in environmental work.

EVALUATION OF THE PROTOTYPE

To produce a basis for the design and further development of the support platform, representatives from the boating industry were involved in the project. In addition to the survey results presented above, the design process also entailed in-depth interviews with two marinas, internal and external workshops, and recurrent meetings with a reference group consisting of marina representatives (from both commercial and non-profit organisations) and boating organisation representatives. Some of these evaluations are presented below.

Workshop with small reference group

A reference group was established with participants from seven marinas (including community marinas and guest harbours) and two boating industry organisations (Sweboat and SBU). In October 2021, a workshop was organised with the working group to discuss the work on inspection, supervision and self-monitoring at marinas. During the workshop, the project group presented the draft version of the digital support platform and exemplified how it could be used by the marinas. The reference group had the opportunity to provide feedback and suggest changes. Initially, the responsibility issue at marinas was presented from the perspective of the Environmental Code, followed by the results of past and future focus areas for the inspection of recreational marinas. The prototype for the digital support platform was then presented.

The feedback consisted of both general thoughts about the marinas' own experiences and challenges with inspection and supervision, and information about the work conducted by the boating industry organisations. The boating industry organisations explained how they support their members in self-monitoring, and provided detailed comments and ideas about which functions should be included in the development of a digital platform. They also observed that there is a great divide between commercial and non-profit marinas, with the commercial marinas already having a clearer obligation to have a functioning self-monitoring programme. In addition, it was pointed out that there is a large regional variation, whereby some municipalities only carry out inspections after events such as spills and discharges, while other regions have come further with routine inspections and supervision. The boating industry organisations have therefore developed checklists and handbooks to support their members. It was also pointed out that it is important to conduct environmental work in the right order, with marinas first ensuring that leisure boats are and remain clean from prohibited and toxic substances before starting to clean up soil and sediment.

The commercial marinas stated that their environmental work is already structured, with different focus areas having been identified for the foreseeable future. These marinas mentioned that it was a priority to have close dialogue with the supervisory authorities, in order to reduce the perception of inspection as being policing and to reduce the risks of misunderstandings and miscommunication in supervision. Among the non-profit marinas, there was a great variation in terms of how far they had come in their environmental work. More practical obstacles were discussed from the perspective of the marinas, where convincing members that environmental work is good for the marina, the members and the sea was described as a great challenge. The environmental managers at community marinas were described as often having a split relationship with members, partly as a friend and partly as an inspector, which made it more difficult to act and point out when violations of rules occurred, etc.

Furthermore, the marinas' need for assistance in making prioritisations in their environmental work was also visible during the workshop. An example emerged where the supervisory authority requested a measure for storing five litres of petroleum spirit at the marina while 200 boats with fuel tanks are moored in the area. The possibility for a platform to support the risk assessment work was considered very valuable, with a 'traffic light'-based warning system built into the platform being seen as useful if it could constitute a basis for prioritisation and strategic choices. For example, the risks increase if the marina allows biocide-based antifouling paint (yellow/red), which requires more procedures and protective measures within the area of operation, compared to if the marina chooses to clean all boats and switch to biocide-free alternatives (green). Internally, this type of classification could help members to become more involved in environmental issues, and it creates continuity when the members of the board change. At the same time, the marina could show the supervisory authority that the work is moving in the right direction and which parts already fulfil the environmental requirements. The platform can thus work towards a higher level of environmental performance without the marina having to be eco-labelled. One view among participants was that Eko Marina eco-labelling could come potentially become relevant at a later stage. If so, it was underscored by the participants that such a label should not compete with existing eco-labels. A major risk mentioned by representatives from both marinas and boating industry organisations was that the complexity and level of detail could scare away those marinas that had not yet started working with their environmental self-monitoring.

Other potential functions for the platform that were discussed included contract templates, both for agreements with municipalities and for individual boat owners. The reference group also discussed whether the platform could create opportunities to jointly apply pressure in connection with the prices of analysis packages, sampling, waste disposal, etc. Another function discussed was the possibility of coordinating environmental work and the purchase and use of emergency response equipment (such as bilges) between neighbouring marinas. There was also a discussion on the possibility of storing information on historical ownership of boats at the marinas, as well as historical information about with what and how the boats had been painted and cleaned.

The costs of environmental work varied among the participating marinas. Some marinas said that it was impossible to borrow money for environmental investments due to a lack of land and lease agreements. In addition, many anticipated large future costs for soil remediation and dredging work at the marinas. These costs were likely to be borne by the marinas' members. If the platform could help the marinas better demonstrate to inspection authorities that they have functional self-

monitoring arrangements, this could be an argument for reducing inspection visits and costs.

User journeys

Initially, two user journeys – “Establishing procedures to comply with the Environmental Code” (Table 22) and “Performance of self-monitoring” (Table 23) – were developed through in-depth interviews and role plays with marina representatives. The purpose of these was to clarify examples of difficulties that a harbour master can face and how the problem can be remedied with the help of the digital support platform. These were later used in the development of the support platform.

Table 22. User journey for establishing procedures for self-monitoring to comply with the Environmental Code.

USER EXPERIENCE ROUTINES	USERS: Responsible in marina.	SCENARIO: Creation of procedures to fulfil the Environmental Code.	GOALS & EXPECTATIONS: The person responsible is newly appointed and needs to establish procedures to ensure that the marina complies with the Environmental Code.
STEP 1	THE USER'S OBJECTIVES Understand what is required to fulfil the Environmental Code.	THE USER'S THOUGHTS AND FEELINGS Feeling insecure and overwhelmed, due to the complexity of knowing how to fulfil legal requirements and great responsibility.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Information on environmental law. Clarification through digital guidance.
STEP 2	THE USER'S OBJECTIVES Break down into relevant requirements for the marina.	THE USER'S THOUGHTS AND FEELINGS Uncertain, difficult and complex. What should be prioritised?	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Digital guidance, step-by-step briefing, questions based on the marina's conditions.
STEP 3	THE USER'S OBJECTIVES Creating routines.	THE USER'S THOUGHTS AND FEELINGS Difficult, complex, not sure if everything is included.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Guided path to develop standardised procedures, reminders for action.

Table 23. User journey for carrying out self-monitoring and preparing for inspection.

USER EXPERIENCE IMPLEMENTATION	USERS: Responsible in marina.	SCENARIO: Performance of self-assessment.	GOALS & EXPECTATIONS: The person responsible needs to ensure that procedures are followed, ensure that the work is documented in a useful way, and create an information basis so that the supervisory authority can easily carry out an inspection.
STEP 1	THE USER'S OBJECTIVES Assignment of tasks.	THE USER'S THOUGHTS AND FEELINGS Frustrated. Currently working with loose papers that are inserted into binders. Becomes dependent on and sensitive to the availability of certain individuals.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Create a unified system to make it easy to search for and find information – regardless of who is the user.
STEP 2	THE USER'S OBJECTIVES Performing tasks.	THE USER'S THOUGHTS AND FEELINGS Sometimes difficult to know what to do when there is only a short description of the tasks in existing templates.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Create tasks with guidance using photos, film, information text, etc.
STEP 3	THE USER'S OBJECTIVES Document the results.	THE USER'S THOUGHTS AND FEELINGS Feels a bit outdated. Writes things down on paper, which is then placed in a binder.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT Documentation is digitised with the possibility to search within the documents. Possibility to use a camera during inspections.
STEP 4	THE USER'S OBJECTIVES Submitting documentation to the supervisory authority.	THE USER'S THOUGHTS AND FEELINGS Must collect various documents, scan pages from binders and email them over.	OPPORTUNITIES AND IDEAS FOR IMPROVEMENT The marina shares compiled data with the supervisory authority directly from the platform.

At the workshop with representatives from the reference group, the discussions confirmed the picture provided by the user journeys. The workshop participants felt that it was difficult to know which procedures to develop, how to design them, and how to carry out and document the results. A digital support platform could be a solution to the challenges highlighted by the user journeys, by providing structured guidance and appropriate information.

Views of the large reference group

Another, larger reference group was established within the project, consisting of about twenty representatives from different types of marinas (small non-profit marinas to larger commercial marinas, guest harbours, etc.), the boating industry organisations Sweboat, SBU and RGS, authorities and researchers. In November 2021, a group meeting was organised where the survey results and the prototype for the platform were presented. Participants were given the opportunity to provide comments and feedback on the content and structure. The feedback was fed into the development of the platform. One challenge that was identified during the meeting was again the many differences among marinas, potentially resulting in great variations in terms of interest in a digital platform. Some marinas were described as already fulfilling the requirements for self-monitoring and would thus not need the tool. Other marinas were described as having a great need for a support platform and were willing to pay for such a service. Some marinas are currently not subject to inspection and supervision, and are thus not likely to be interested in a tool designed to make inspections and supervision smoother.

SUMMARY OF EVALUATION

Overall, the reception of the prototype at the workshop with the smaller reference group was positive. The participants saw many opportunities for streamlining their own marina activities. However, the digital tool's complexity and level of detail were perceived as potential obstacles for marinas that have not yet come far in their environmental work. It is therefore important in the further development of the platform that the strategic choices are clarified, and that the marina's environmental work is clearly visualised and fed back to the user. The feedback is a good basis for the marina's environmental work, and can assist the marina when prioritising the most needed actions. One area that seems central to all marinas is contact with the supervisory authority, which – if streamlined – can lead to important progress in environmental self-monitoring work. Using the digital support platform to make this work more effective could lead to a reduced need for supervision and thus reduced costs. In addition, it is important that the marinas and the supervisory authority have the same views when it comes to both which areas are prioritised for the forthcoming inspection and supervision period, and where the greatest environmental benefit can be achieved. One challenge in the work to develop the platform will be to meet the heterogeneity among the marinas, where there is great variation in the marinas' financial conditions, their knowledge of the Environmental Code and the municipalities' focus on supervision.

CHAPTER 6: INCENTIVES FOR A SUSTAINABLE BOATING TRANSITION

To obtain a deeper understanding of the environmental self-monitoring work at marinas, Eko Marina III included an evaluation of the incentives that the inspection authorities believed existed and should be developed further for a sustainable transition to take place at recreational marinas. ‘Incentive’ is here defined as a synonym for stimulus measure and driving force, and means *a circumstance that stimulates a certain behaviour*. The primary incentive explored in this report, and which forms the basis for the Eko Marina project in general, is the existence of an environmental label (see Koroschetz et al., 2020, 2021).

Municipal officials from Sweden’s 290 municipalities were asked in a survey conducted during Eko Marina III what incentives they believed existed and should/could be developed at local, regional and national levels for marinas to work with to reduce their environmental impact. One hundred and nine municipalities (38%) were answered the survey questionnaire, of which 102 stated that they had marinas within their borders. Most of the respondents (82%) stated that they worked as environmental inspectors. Thirteen percent of the respondents described themselves as heads of municipal units within the areas of civil engineering, marinas or the environment, and 5% stated that they worked as municipal coordinators within the areas of environment, culture or leisure. Respondents were given the opportunity to answer the questions freely (text-based answers).

In many cases, the respondents chose to emphasise one incentive per level. The way the questions were asked probably influenced the answers, and it can be assumed that many of the respondents would have listed a larger number of incentives per level had the question been phrased differently. What can possibly be interpreted from the answers is that the mentioned incentives were what the respondent considered to be the primary/major ones. This chapter summarises the municipal officials’ responses, which are categorised within six broad areas:

- Economy and finance
- Engagement and knowledge-sharing
- Innovation and infrastructure
- Legal and regulatory requirements
- Cooperation
- Supervision

In cases where reference is made to the municipality’s opinion, it is the respondent’s answer that is intended. Although the respondents were asked to answer the questions as representatives of their respective municipalities, their own bias can be assumed to have affected the answers. The survey questions can be found in their entirety in Annex 4.

Each section in this chapter describing incentives related to facilitating a sustainable leisure boat transition begins with a presentation of the views expressed by respondents in the larger, general survey of 109 municipalities represented. It concludes with a presentation of the results of the

follow-up survey (see Chapter 4) and brief analyses of the responses linked to the focus area of the Eko Marina project. It is important to emphasise that the respondents' answers in the follow-up survey were more detailed than in the previous survey. This affects the extent to which incentives are raised within the area of supervision in this report compared to other areas, which may be misleading as respondents would likely be able to mention more examples of incentives if they were offered space for an in-depth dialogue about them. It also illustrates how the way in which questions are asked directly affects the type of answers received. In the follow-up survey, the questions were more focused on certain issues related to supervision, which was not the case in the initial survey.

LOCAL LEVEL

This section presents the incentive measures at local level that the respondents believed could lead to marinas acting more sustainably. Eight percent believed that there was a complete lack of such incentives at present, and all respondents indicated that there was a need for more incentives to be initiated within the municipality.

Table 24. Percentage distribution of incentives at local level that officials considered to exist already, and what should/could be developed further.

LOCAL INCENTIVE AREA	EXISTING TODAY	SHOULD/COULD BE DEVELOPED
ECONOMY & FINANCE	6%	9%
COMMITMENT & KNOWLEDGE	22%	23%
INNOVATION & INFRASTRUCTURE	15%	10%
LEGAL & REGULATORY REQUIREMENTS	21%	5%
COOPERATION	2%	9%
SUPERVISION	18%	14%

Economy and finance

Six percent of the respondents stated that there were financial incentives at local level (Table 30). Two municipalities gave examples of municipal subsidies for sustainable transition.

Other positive economic consequences of an environmentally conscious operation were also described, including the marina's image being strengthened and the likely growth of the customer base if profiled as a "sustainable marina". Some instead emphasised the negative economic consequences that marinas are forced to face if they choose not to work on their environmental impact, e.g. expensive clean-up costs.

A few municipalities (9%) felt that more financial incentives could and should be introduced at the local level, such as environmental discounts and lower rental costs for marinas making more environmentally friendly choices, more expensive fees for marinas that do not make such choices, and financial support from the municipality for clean-up, scrapping of biocidal hull paint and waste disposal.

Engagement and knowledge-sharing

Twenty-two percent of the respondents considered that the commitment and willingness of the marinas' management, members and/or guests was the main incentive for marinas to become more sustainable (Table 30). Interest at the individual level in protecting the local environment and increased knowledge about how best to do so has led to the fact that it is now in the interest of many marinas to reduce their negative environmental impact.

Many respondents (23%) also felt that much more could and should be done in this area. What they requested was municipal information initiatives aimed directly at boat owners with the aim of creating greater environmental awareness. Many also felt that more needed to be done to create commitment among politicians and actors in the boating industry. An important key to success that was mentioned was highlighting positive examples of recreational marinas in the municipality. Another was following up on information campaigns with supervision, training programmes, discussion forums and local collaboration platforms.

Innovation and infrastructure

Fifteen percent of the respondents felt that local infrastructure and innovation in the boating industry drove action to promote improving the coastal environment (Table 30). Half of the respondents identified pump-out stations for sewage water specifically, but many also identified boat washers, more sustainable service and repair solutions, hazardous waste and recycling stations, and safe disposal of chemicals and oil spills as examples of existing local incentives.

More incentives for marinas to prioritise the introduction of more sustainable infrastructure could and should be taken at the local level, according to 10% of respondents. Most suggestions for what could be done at the municipal level related to waste management, pump-out stations for sewage water and alternative boat washing methods. In order for such facilities to have a minimal negative environmental impact while keeping costs down for the many marinas with limited finances, several respondents said that infrastructure should be installed together with other neighbouring marinas and with the support of the municipality.

Legal and regulatory requirements

Twenty-one percent of the respondents emphasised that existing regulations provide incentives for a sustainable transition (Table 30). When it comes to regulations at local level, local requirements, water quality regulations and internal marina regulations were mentioned as examples. Most regulations governing the environmental work of recreational marinas are based on national environmental and waste legislation, and compliance is to be reviewed through municipal environmental supervision. Only 5% felt that more could and should be done in the area at municipal level. What the respondents felt the municipality could do better included introducing more local regulations relating to issues such as maintenance, disposal, storage and decontamination.

Cooperation

Just under 2% of the respondents stated that collaboration between municipality and county, between municipality and marina, and between local businesses incentivised sustainability work at present (Table 30). Nine percent gave examples of what could and should be done more within this area, and the examples fell within a few different areas. For example, several respondents said that more inspection and supervision guidance, more effective self-monitoring and

establishing common environmental plans and environmental policies should be done in collaboration between the supervisory authority and recreational marinas. The differences in inspection between municipalities and counties were described as having created an imbalance and a lack of consensus, resulting in a lack of incentives in parts of the country. Another area where collaboration was requested was within infrastructure, where the respondents pointed out the need for more joint facilities owned and managed by several marinas together. The respondents also requested better functioning networks of actors at the local level, in which information, knowledge and local developments could be shared, and measures could be planned jointly.

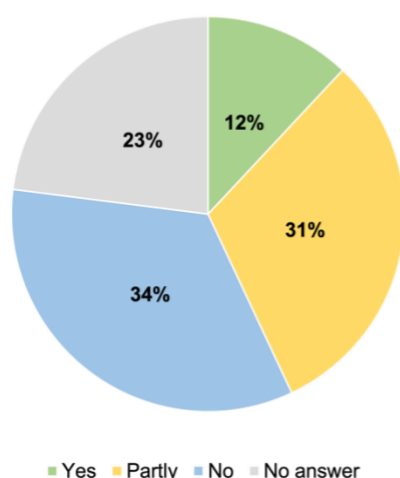
Supervision

Only 18% felt that municipal inspections were an important motivation for recreational marinas in their environmental work (Table 30). As respondents from several inspection authorities did not consider inspection to be an important incentive, their responses may possibly be interpreted as inspection have been taking place too rarely, not focusing on sensitive areas, or not having made marinas fully understand their responsibility for effective environmental work.

As the supervisory authority's work is both advisory and controlling, the recurring inspection and supervision process contributes to increased knowledge among those involved. Fourteen percent responded that inspection and supervision is an area that should be developed, which requires more resources and greater priority to be given to the inspection work within the municipalities than was the case at the time. This is a surprisingly low proportion, especially considering that it was representatives from the supervisory authorities who answered the questions. The answers can possibly be interpreted as meaning that when the question was asked, the respondents considered that enough was already being done within inspection and supervision. Another interpretation is that the respondents considered that it was primarily in other areas that incentives could be created and made effective.

In the follow-up survey, just under half (47%) of the supervisory authorities said they had developed collaborations with other municipalities relating to the planning of future inspections at recreational marinas (see for example Environmental Cooperation Västra Götaland/Halland County, 2017; Environmental Cooperation Stockholm County, 2015). It has previously been highlighted by recreational marinas that inspections vary greatly in frequency and scope, depending on the municipality in which the recreational marina is located. In addition, the municipalities' definitions of what constitutes recreational marinas vary, which risks creating asymmetry in the inspection work (see Chapter 1). These differences can be overcome through increased cooperation between inspection authorities. However, only 25% of the authorities represented in the follow-up survey considered that they had sufficient resources (including personnel) to be able to carry out inspections of recreational marinas in the next few years (Figure 31). About 34% thought that they had partially sufficient resources. Increased cooperation between municipalities conducting inspection and supervision can be one way to make these activities more efficient. A support tool to facilitate self-monitoring at the marinas could potentially also contribute to simpler and faster inspection process.

A) Collaboration with other municipalities on inspection and supervision



B) Enough resources for inspection and supervision

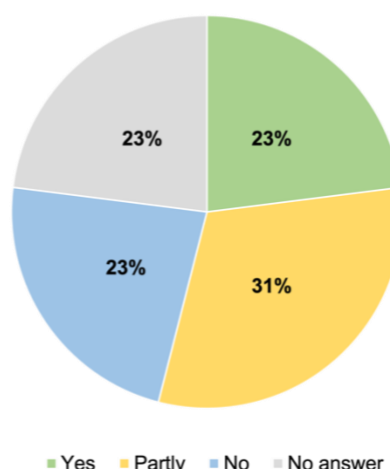


Figure 31. The environmental and health protection inspectors' distribution of responses (%) to the question of whether there is cooperation with other municipalities on the planning and implementation of future inspections and supervisions of recreational marinas; B) Percentage distribution of the survey responses to the question of whether inspectors consider that they have sufficient resources (including personnel) needed to keep up with inspections of marinas in the coming years.

REGIONAL LEVEL

A large proportion (44%) of respondents could not identify any existing regional incentives to encourage marinas to reduce their negative climate impact. This was probably because they found it difficult to know what these might be, or because they felt that there are no such incentives. Just as many experienced that they could not give any examples of what should/could be developed at regional level to achieve such a purpose, and described this as being due to not knowing which opportunities exist at the regional level.

Table 25. Percentage distribution of incentives at regional level that officials believe exist today, and what should/could be developed further.

REGIONAL INCENTIVE AREA	EXISTING TODAY	SHOULD/COULD BE DEVELOPED
ECONOMY & FINANCE	8%	11%
COMMITMENT & KNOWLEDGE	12%	14%
INNOVATION & INFRASTRUCTURE	0%	3%
LEGAL REQUIREMENTS & REGULATIONS	16%	6%
COOPERATION & SUPERVISION	15%	14%

Economy and financing

The possibility of applying for LOVA grants (local water management projects) from county administrative boards was described by 8% of the respondents as providing incentives for marinas to work with environmental issues and develop more sustainable routines (Table 31). All incentives highlighted by the respondents linked to economy and financing concerned LOVA grants. Eleven percent, however, believed that there was a need for more economic incentives initiated at regional level, which should consist of more grants and financial support for those taking active measures to reduce their negative environmental impact. It should be emphasised here that LOVA grants cannot be obtained to stop something that is prohibited by law, such as polluting boat maintenance.

Engagement and knowledge-sharing

Twelve percent of the respondents considered dissemination of knowledge to increase engagement among boat owners and marinas to be central, and that this was one of the most important initiatives at regional level (Table 31). The majority said that guidelines and the dissemination of information on good water quality and beach area protection has given those involved with marinas more knowledge to act. However, 14% pointed out that more needs to be done in this area and that counties have a responsibility to take more incentive measures. Suggestions for what they should invest in mainly concerned information campaigns with the aim of increasing awareness of the marine environment among boat users, marinas and politicians.

Innovation and infrastructure

None of the respondents identified existing regional incentives within the area of sustainable innovation and infrastructure. However, a small proportion (3%) felt that the counties could contribute more to this area by sharing good examples and offering clearer guidance on alternative approaches that are sustainable from a regional perspective (Table 31).

Legal and regulatory requirements

Sixteen percent of the respondents said that regional environmental quality standards, regional regulations and boating industry organisations' requirements are important incentives to encourage marinas to work with environmental issues (Table 31). Few (6%), however, felt that it was at the regional level that legal requirements and regulations should be developed further. Those who considered that the county had a role to play within the area said that this role primarily consisted of conveying to the national legislator that clearer regulations are requested by supervisory authorities and marinas.

Cooperation/supervision

When it comes to collaboration, 15% of the respondents considered that such incentives can be found at the regional level, for example in networks between different municipalities (environmental collaboration) as well as inspection and supervision projects carried out by several municipalities together (Table 31). For this reason, collaboration and supervision are presented under the same heading in this section. However, 14% of the municipalities considered that this area could and should be developed further, including initiating larger inspection projects and issuing regional inspection guidelines. The respondents also identified the need for more regional cooperation to identify smart infrastructure solutions, conduct more network meetings and create a common regional agenda with clear goals and guidelines.

An important viewpoint that became visible through the follow-up survey was that many environmental inspectors wanted more concrete inspection guidance to be able to carry out inspections effectively. The area of supervision was considered overwhelming for many smaller municipalities that lacked their own environmental lawyers and specialist knowledge. Within environmental cooperation projects in Stockholm, Västra Götaland and Halland, guiding documents have been produced in the form of short information texts linked to different areas of inspection and checklists to facilitate the inspection and supervision work within the municipalities (see Environmental Cooperation Stockholm, 2017; Environmental Cooperation Västra Götaland, 2005; Västra Götaland County Administrative Board, 2019; Environmental Cooperation Halland County and Västra Götaland County, 2017). The idea of these documents is that the inspectors should feel more secure in their supervisory role when inspecting recreational marinas, and that the supervision should become more transparent and more predictable for the marinas. Based on the environmental and health protection inspectors' responses in the follow-up survey, this information does not seem to be sufficiently available or recognised by all municipalities. A digital support platform that clearly structures and guides the marinas in their self-monitoring work would probably also assist the municipal supervisory authorities in their work. The digital support platform could also include information material and guidance to facilitate dialogue between the marinas and the supervisory authorities.

NATIONAL LEVEL

Thirty-two percent of the respondents could not give any examples or considered there to be no incentives for a sustainable transition of leisure boating at national level. Nor did the majority describe what they saw as potential future national incentives. A possible explanation for this could be that all respondents were local environmental inspectors, unit managers and coordinators, which could mean that they did not work with national issues related to leisure boating and therefore did not have knowledge of national incentives. The rest identified six areas of action that either existed at the time of the survey or that they felt could/should be developed in the future, with legislation and regulation being by far the largest category.

Table 26. Percentage distribution of incentives at national level that officials believe exist today and what should/could be developed further.

NATIONAL INCENTIVE AREA	EXISTING TODAY	SHOULD/COULD BE DEVELOPED
ECONOMY & FINANCE	7%	20%
COMMITMENT & KNOWLEDGE	10%	12%
INNOVATION & INFRASTRUCTURE	2%	5%
LEGAL & REGULATORY REQUIREMENTS	31%	20%
COOPERATION	11%	9%
SUPERVISION	0%	3%

Economy and finance

Seven percent of the respondents believed that LOVA grants for actions such as conducting surveys, decontamination measures and disposing of abandoned boats and wrecks had so far functioned as a means for marinas to work to decrease their negative environmental impact

(Table 32). Twenty percent, however, believed that more could be done in the form of targeted support and grants, tax deductions for more environmentally friendly alternatives, increased costs for boat owners with the most environmentally hazardous boats, and help with financing soil decontamination. The majority of the respondents said that receiving LOVA grants was an important driving force for recreational marinas, and believed that the grants need to be increased and be easier for marinas to obtain in the future.

Engagement and knowledge-sharing

Ten percent of the respondents thought that there are national incentives to increase awareness of the coastal environment, water quality and biodiversity, which leads boat owners to make more environmentally conscious choices (Table 32). None of them highlighted any specific national initiative, but said that research plays an important role in the dissemination of knowledge. Twelve percent felt that more can be done at national level to increase awareness among all leisure boat stakeholders. Examples of initiatives mentioned were national inspection projects and education campaigns highlighting one specific issue at a time, dissemination of knowledge about environmental risks at marinas, and more research on what it is necessary to ban and/or phase out.

Innovation and infrastructure

A small proportion (2%) thought that there are incentives at national level within the area of innovation and infrastructure (Table 32). Respondents pointed to phasing out two-stroke engines and promoting more environmentally friendly fuels and antifouling hull paints. Five percent of the respondents gave suggestions on how further incentives in this area could and should be implemented. They mentioned a national system for the disposal of abandoned wrecks, a national initiative for more environmentally friendly boat fuels, more clean-up methods for the removal of biocide paints and a boat owner register to facilitate the management of liability issues related to pollution from leisure boats.

Legal and regulatory requirements

Thirty-one percent of the respondents indicated that existing legal requirements create reasons for marinas to act to reduce their environmental impact (Table 32). General environmental consideration rules in the Environmental Code, bans on biocide paints and laws on waste and chemicals were highlighted as examples, alongside environmental quality standards and environmental objectives at international level that shape how national legislation and regulations are drafted. Twenty percent, however, felt that more should be done in this area. The respondents called for clearer legislation in terms of guiding values, strict deadlines for product phase-out, legal requirements for leisure boat inspection and a total ban on materials and products that are harmful to aquatic organisms. Several of the respondents described how the national legislation is currently drafted in a way that does not consider the reality, for example by not prohibiting boats painted with biocidal anti-fouling paint from being moved to other waters that may constitute drinking water sources. The respondents called for clearer regulations and guidelines so that decisions on levels for decontamination, scrapping, etc. are not arbitrary and differ from municipality to municipality.

Cooperation

Eleven percent of the respondents answered that the current cooperation between different actors gives marinas incentives to work for a sustainable transition (Table 32). Several pointed to the current cooperation between the boating industry organisations and such environmental work that is planned, evaluated and developed by several actors together (e.g. supervisory guidance, environmental cooperation projects, information campaigns, etc.). Nine percent identified a need for development in the same areas to improve and expand the guidelines, develop common definitions and approaches, and create areas of cooperation between different actors working for a sustainable transition of leisure boating. They emphasised that national authorities have a great responsibility to initiate such collaborative work.

Supervision

The first questionnaire to the municipalities asked which incentives the municipalities see for marinas to improve their environmental work, divided up into local, regional and national levels. The responses revealed a need for more guidance and financial contributions to municipalities and counties, primarily from central national authorities.

The follow-up survey of environmental protection inspectors revealed that many perceived parts of inspection and supervision of recreational marinas as complicated and demanding a lot of knowledge. They pointed out a need for national guidance in several inspection areas, a desire for knowledge-increasing training initiatives for local inspectors, and common tools to create greater consensus on how inspection and supervision should be carried out. Inspectors in smaller municipalities were described as often having many other inspection areas and therefore finding it more difficult to keep up to date with the latest research, laws, regulations and current practices within the area of recreational marinas. Possible incentives mentioned included more guidance for dealing with the inspection of contaminated sites, reference values for the assessment of old boat hull paints and recommendations for appropriate protective measures when removing anti-fouling boat hull paints with biocides, dealing with sunken boats and abandoned wrecks, and guidance for inspecting sewage water management and littering.

SUMMARY OF INCENTIVES

In the municipalities, the respondents identified incentives in all areas for recreational marinas to reduce their negative environmental impact. They thought that most driving forces are currently established through *legal requirements and regulations*, where municipal regulations, regional environmental quality standards and national regulations lead to marinas working towards a sustainable transition. However, more could and should be done in this area. For example, more *financial support and funding* was requested. According to the municipality representatives, the least had been done so far within *innovation and infrastructure*. One possible reason for these answers could be that most respondents answered based on the public sector they worked within. It is likely that the overall responses would have been different if, for example, private actors in innovation and infrastructure answered the same question. It is also possible that the respondents felt that innovation drivers should emerge from the private sector. In general, however, it can be said that few answers from the municipalities were optimistic, partly because the respondents identified very few existing incentives in several areas and few that could/should be developed. Whether this was due to the way the questions were asked, the fact that the municipalities did not believe it is possible to create incentives to reduce the negative environmental impact of leisure

boating or something else entirely is difficult to say based on the data.

Where more could and should be done overall was, according to the respondents, within incentives for increased *commitment and knowledge* at marinas. According to the respondents, the municipal responsibility is – and should be – extensive when it comes to conveying and disseminating information. At the same time, they identified that actors at both regional and national levels have an important function in gathering available knowledge, so that local actors then can share this information. This illustrates how the need for *collaboration* exists in all areas and cannot in practice be limited to a separate incentives category in the way it is presented here for pedagogical reasons. This is particularly clear within the area of *inspection and supervision*, as virtually all proposals for incentives at regional and national levels were about working together to make inspection work more efficient and uniform.

In the report Sustainable Boat Life (Hållbart båtliv, Gipperth and Sjöholm, 2021), which presents the views of eight municipalities in the Bohuslän province regarding the need for environmental measures in leisure boating, similar areas for future incentive measures were highlighted as in the above study (1. information and knowledge, 2. waste and wastewater management, 3. pollution, 4. utilisation of boats, 5. infrastructure and 6. supervision and other long-term planning). In the report, the Bohuslän representatives were given the opportunity to discuss the need for measures in more detail, and some differences can be noted compared with the Eko Marina studies. For example, the Bohuslän municipalities seemed to consider local actors as more central in the work on infrastructure than the respondents in the Eko Maria study did. It is within the area of infrastructure that most of the proposed measures were identified in the Sustainable Boat Life report, in which collaboration among actors at all levels was repeatedly described as a necessity in the sustainable transition process. However, the Bohuslän municipalities did not think that it should be up to local actors to drive innovation in infrastructure, which may indicate that the opinions of respondents in the two different studies do not differ entirely. When it comes to information and knowledge dissemination, there were also great similarities in the descriptions between the 109 municipalities in Eko Marina's study and the respondents from the Sustainable Boat Life report. What was requested by the respondents in both was regionally and nationally compiled information material and campaigns for the municipalities to disseminate within the local stakeholder system.

THE PROJECT GROUP'S REFLECTIONS ON INCENTIVES

To create national incentives for regular inspections, all recreational marinas – regardless of their size or type of organisational form – should be *subject to notification/registration*. It is important that marinas – regardless of how they are operated – can plan and implement the environmental self-monitoring required by law to avoid causing environmental damage or health hazards. This would further lead to a more predictable and clarified allocation of the responsibility for self-monitoring at the marina. Risks and risk-reducing measures would then be identified as early as during the notification/registration process, and conditions would be clarified when it comes to aspects such as necessary protective measures, preparedness and required self-monitoring.

It is important that the risk assessment of all environmentally hazardous parts of the marina's operations is integrated into the decision on annual inspection fees, so that operations with poor self-monitoring systems and high risks of emissions receive more frequent visits and higher inspection fees than those with good self-monitoring systems and little risk of causing serious

environmental damage or harm to human health. For example, marinas that allow biocide-based boat hull paints and that do not clean the wash water from the washing plate or boat washer should have a higher inspection fee than those marinas that only allow biocide-free boats or those that clean the wash water from the washing plate or boat washer when necessary. Today, it is almost the opposite. For example, marinas that have pump-out stations for sewage water pay both a notification fee when installing the stations and a special supervision fee for the inspection of the stations, while those that do not have pump-out stations for sewage water do not pay anything.

Regardless of whether or not recreational marinas become notifiable and registered, the distribution of supervisory responsibilities between central and municipal authorities needs to be *investigated* and *clarified* so that requirements and decisions on necessary measures and facilities can be coordinated and better integrated into municipal supervision. Areas in which such clarifications are crucial concerns include handling sewage water, managing prohibited boat hull paints, handling hazardous waste, decisions on discharges in relation to established environmental quality standards in water, and supervision and management of wrecks.

CHAPTER 7: THE SUSTAINABLE RECREATIONAL MARINA OF THE FUTURE

This final part of the report presents a picture of what the Swedish recreational marina of the future could look like and to what extent an eco-label and a digital tool for self-monitoring could be integrated in such a marina's environmental work. The chapter begins by describing the leisure boat industry's overall description of the sustainable marina of the future, based on discussions that took place during the 2021 Swedish National Boat Environment Conference. This is followed by a discussion consisting of the project group's assessment of what is necessary to achieve the goal of a sustainable transition for leisure boating, and what role and purpose a digital tool for self-monitoring and the possibility of obtaining an eco-label for marinas could play in the work towards that goal. The chapter ends with a summary of this report and a look ahead to what remains to be done to put Eko Marina into practice.

DIFFERENT ACTORS' COMMON VIEW ON THE FUTURE OF RECREATIONAL MARINAS

On 26–27 October 2021, SBU, the Swedish Institute for the Marine Environment and the Swedish Agency for Marine and Water Management arranged a National Boat Environment Conference with participants from the leisure boating industry, community marinas, municipalities, county administrative boards, universities and other authorities. The idea was that the conference would constitute a meeting place between practice and theory where discussions about problems, ideas and solutions for sustainable leisure boating would take place (Swedish Institute for the Marine Environment, 2021). During the conference, the participants were given the opportunity to discuss what the sustainable marina of the future could look like. These discussions took place in groups consisting of people with different perspectives and roles in leisure boating, and the groups presented their picture of the sustainable marina of the future to each other.

Geographical location

On the question of how recreational marinas are and should be located, two different pictures were presented by the groups. Some groups considered it preferable to develop fewer but larger marinas (located in deeper waters) and thus concentrate certain types of impact such as shading of the seabed to fewer coastal areas, which would require rebuilding and potentially some relocating of existing marinas. Others emphasised the importance of looking after existing marinas to avoid expansion as far as possible. The question was discussed in detail, and illustrated both the theoretical and practical difficulties that exist – the ability to assess which alternative is most advantageous from an overall sustainability point of view, and how potential relocations could be implemented and how these relocations would affect existing marinas.

Construction

Some groups underscored the need to plan the constructions of marinas more effectively. One suggestion was to reposition leisure boats in the marina area by placing all motorised boats that risk stirring up sediments further out in the marina, where it is often deeper. Other suggestions related to the construction of berths, where jetty options that allow free water circulation and avoid shading were described as more favourable than, for example, floating docks, and the

benefits of more moorings at buoy were emphasised.

Infrastructure

All groups described the marina of the future as having access to a variety of different types of infrastructure, such as wash-down pads, recycling stations, ramps, charging facilities with renewable electricity for electric motors, boat pools, proximity to public transport and the possibility of storing boats on land when not in use. To make the marina a hub for people with and without access to their own leisure boats, several groups also pointed out the need for other types of infrastructure than those usually associated with boating. Suggestions included sports facilities, playgrounds and caravan parks, which could contribute to a more vibrant coastal community.

Economy

Some groups described the marina of the future as having greater access to financial resources to work with sustainability issues than is the case today. Examples for making this possible included the introduction of a sustainability fund, increased LOVA grants and scrapping premiums.

Legal and regulatory requirements

Several groups discussed the need for leisure boating to be regulated in a way that forces different stakeholders to act. One example of this was introducing producer responsibility so that recycling and the circular economy become a focus and a natural part of the leisure boating industry. Another example was reintroducing boat registers, which could overcome the problem of abandoned boats and wrecks, deliberate or negligent discharges, and the use of banned biocide paints. It was emphasised that the purpose of a boat register would not be to provide a basis for taxation, but to get boat owners to declare and take their environmental responsibility. The introduction of a mandatory boating licence and training for all boat users was also proposed.

Eco-labelling

About half of the groups pointed out that the sustainable marina of the future will have an environmental label that signals to boat users what environmental work is being carried out at the marina, and ensures that the marina actively and continuously works with sustainability.

THE PROJECT GROUP'S REFLECTIONS ON STAKEHOLDERS' PERCEPTIONS

The stakeholders' overall picture of the future marina describes a recreational marina that in many ways looks very different from the marinas represented in Eko Marina III's survey. Even though it is very valuable to set high and ambitious goals, it is also important to reflect on the reality and the direction of development. The mapping carried out in this project, which aimed to create a clearer picture of recreational marinas in Sweden, constitutes a basis for planning transition work that is anchored in practice and creates a better understanding of current developments at Sweden's recreational marinas.

The survey showed that many of the country's recreational marinas were 41–70 years old. However, new marinas continue to be added and there was a clear correlation between age and size, with the older marinas being larger, which indicates that marinas are continuing to expand in both number and size (see Chapter 2). Although many leisure boating actors identify a need to relocate and/or streamline the number of berths to stop harmful expansion, the trend seems to be

going in the opposite direction. Even if such a trend could be reversed, the fact remains that 25% of Sweden's recreational marinas, according to Eko Marina's inventory, are found in municipalities which only have a sea coastline (see Chapter 2). Relocating and merging marinas on the same seacoast is possibly one answer to the challenges related to shading, impact in shallow water areas, etc., but for a quarter of Sweden's marinas that are located in lakes and therefore cannot be merged into larger hubs, we must attempt to imagine other alternatives.

Furthermore, many marinas are run in a form of ownership (non-profit association) and size (2–100 berths) that would make it economically challenging to offer a large amount of infrastructure in the marina area. Since the proportion of available infrastructure increases as the marina becomes larger, it may be difficult to create better-equipped marinas and at the same time avoid expansion. It can also be assumed that it will be very difficult for non-profit organisations with small financial margins to match the above-described picture of the marina of the future, which requires more financial support and possibly also significant changes in how marina activities are conducted. It is not reasonable to expect volunteers to succeed in operating major recreational marinas with the goal of making coastal communities flourish. If this is deemed to be a reasonable expectation of the recreational marina of the future, it can be assumed that marinas run in non-profit form will be reorganised, or that such marinas will be forced to close.

However, several parts of the above-described picture of the marina of the future should be possible to implement. Regardless of size, age and form of ownership, it can be assumed, for example, that many marinas have the opportunity to re-plan the placement of boats at the marina in order to avoid sediment turbidity as far as possible (and also to reduce the need for dredging around the jetties). This is probably already done at many marinas today, but perhaps more due to the fact that larger boats are often physically unable to enter the inner parts marinas than due to considerations for the coastal environment. However, according to the marina survey conducted within this project, the marinas are generally also very shallow in their outer parts (see Chapter 2, Depth). This means that regardless of the location and purpose of individual boats, it is difficult for many boat users, with the current location of most marinas, *not* to create turbidity and disturb the ecosystems in shallow water areas.

When it comes to the choice of jetty options and alternative mooring locations (e.g. buoys), there is great potential for development. The presence of buoy sites was low at the time of the survey (see Chapter 2), but could be an option to implement at marinas in the future. The distribution between different types of jetties has not been investigated in this project (see instead Moksnes et al., 2019; Eriander et al., 2017), but it can be assumed that financial support for replacing jetties and information campaigns to increase knowledge about seabed shading and its effect on the aquatic environment are important pieces of the puzzle if the recreational marina of the future is to match the preferred alternative described by the leisure boating actors. The fact that various actors working on issues relating to recreational marinas (including industry actors) have such high ambitions obviously also means that the industry has a responsibility in terms of innovation and developing better jetty alternatives.

Many of the groups at the 2021 boating environment conference described the marina of the future as being eco-labelled. The project group interprets this as suggesting that several actors are interested in working with leisure boating issues for developing an eco-label for recreational marinas. Whether this consists of Eko Marina's digital support platform with an integrated eco-

labelling index remains to be seen. However, the project group wishes to emphasise the importance of any potential eco-label for marinas being designed in a way that makes it applicable and useful for *different* types of marinas. What the inventory and mapping in this project has shown is that there is a large target group for an eco-label, but where marinas look different and function very differently, and have different opportunities to meet the requirements of an eco-label. The ambition for Eko Marina's eco-labelling index and digital support platform has been to create a tool that meets the needs of this very heterogeneous group, where the overall goal is to support marinas in their long-term environmental work.

THE CONTINUED WORK ON THE EKO MARINA ECO-LABELLING TOOL

Since this report was originally published, the Eko Marina project has continued with parts IV and V. In this section, we summarise how the work has continued and what remains to be done.

In short, for Eko Marina's digital support platform and eco-labelling index to become a reality, development is required in two areas:

1. Finalisation of the digital tool (support platform) together with the leisure boating industry.
2. Legal analysis and planning related to storing and sharing data and developing digital quality systems (third party certification).

Developing a digital tool

In Eko Marina IV, the project group chose to address one track in depth (boat hull treatment with a focus on boat hull washing) to illustrate the potential and possible functions of the digital tool, which is briefly described in Chapter 5. The prototype needs to be further developed to cover several parts of the eco-labelling index and to include all the intended components (information videos, legal references, help texts, etc.) in all index areas, which has been discussed in this report. The tool – in the form of a prototype – was tested and evaluated in real life in cooperation with pilot marinas. This practical incorporation is central to the success of Eko Marina and its dissemination to other marinas.

As the National Boat Environment Conference clearly illustrated, many stakeholders wanted the same thing and had a common vision of the sustainable recreational marina of the future. However, they were still working on different fronts and in often different ways to achieve this vision. The boating industry organisations are examples of this, in that they all work in their own different digital systems (SBU's BAS system, Sweboat's membership system and RGS's intranet). At the same time, their members make up around 44% of Swedish recreational marinas.

To gain trust in the industry, Eko Marina's digital tools and further work should be interwoven with the different working methods of the boating industry organisations. The project group believes that ensuring support in practice depends on close cooperation with boating industry organisations, as such cooperation could ideally enable the finished product to be incorporated into and adapted in line with each organisation's existing systems.

Legal analysis and preparation of documentation

A digital support platform that contains information about marinas and possibly also their members need clear legal frameworks for all users to relate to. The legal work within Eko Marina

has so far focused on clarifying the marinas' responsibility regarding the requirements of environmental legislation. In the continued work, further analyses and the production, storage and sharing of documentation are required, but also, as mentioned in previous Eko Marina reports, a possible development towards an environmental quality standard.

Digital support platform

In Eko Marina V, IVL Swedish Environmental Research Institute together with SBU, SWEABOAT, RGS and the Swedish Agency for Marine and Water Management are developing a platform and a business plan during 2024 as the first steps towards realising the digital support platform. In the first step, the platform will have two main functions. One function will be an information portal open for everyone to access, in which the information will be verified by the Swedish Council for Sustainable Leisure Boating.³ Another function will be open access to a digital self-monitoring protocol, which will enable marinas and boating industry organisations to store their protocols digitally. The ambition is that this platform will be further developed step-by-step during the upcoming years.

³ The Swedish Council for Sustainable Leisure Boating (Båtmiljörådet) is an association where authorities and boating industry organisations working with the environmental issues of leisure boating can exchange information and experiences. The aim of the council is to create the right conditions for more environmentally friendly boating.

REFERENCES

- Blå Flagg ("Blue Flag") (2021) "Anläggningar", accessed 2021-11-25, <https://blaflagg.org/anlaggningar/>
- Bolagsverket ("Swedish Companies Registration Office") (2021) "Om verklig huvudman", accessed 2021-11-16, <https://bolagsverket.se/fo/foreningsformer/ekonomisk/huvudman-ekfor-1.14922>
- Båtmiljö (2021) "Välkommen båtägare", accessed 2021-11-15, <https://batmiljo.se/batliv/hosttips/>
- Eniro kartor (2021a) "Båtklubbar", accessed 2021-10-07, <https://kartor.eniro.se/s%C3%B6k/b%C3%A5tklubbar>
- Eniro kartor (2021b) "Gästhamnar", accessed 2021-10-07, <https://kartor.eniro.se/?c=64.825873,21.257172&z=10&q=%22g%C3%A4sthamn%22;yp>
- Eriander, L., Laas, K., Bergström, P., Gipperth, L., and Moksnes, P. O. (2017) "The effects of small-scale coastal development on the eelgrass (*Zostera marina* L.) distribution along the Swedish west coast Ecological impact and legal challenges", *Ocean and Coastal Management*, vol. 148, pp 182-194, <https://www.sciencedirect.com/science/article/abs/pii/S0964569117302247?via%3Dihub>
- Havs- och vattenmyndigheten ("The Swedish Agency for Marine and Water Management" or "SwAM") (2015) *Båtbottentvättning av fritidsbåtar - riktlinjer, reviderad upplaga 2015*, Report 2012:10, <https://www.havochvatten.se/download/18.add3e2114d2537f6a61189f1636960042705/rapport-2015-reviderade-riktlinjer-batbottentvatt.pdf>
- Havsmiljöinstitutet ("The Swedish Institute for the Marine Environment") (2021) "Framtidens hållbart båtliv 2021" accessed 2021-11-26, <https://havsmiljoinstitutet.se/seminarier/andraevenemang/hallbart-batliv-2021>
- Hellegren, H. (2014) "Båtplatser och hamnar i Kungälv kommun", <https://docplayer.se/313650-Batplatser-och-hamnar-i-kungalvs-kommun-juli-2014.html>
- Koroschetz, B., Sköld, S., Wrange, A-L., Jivén, K., Harrie, P (2020) "Miljömärkning av fritidsbåtshamnar - Underlag för ett miljömärkningssystem som syftar till att minska belastningen från fritidsbåtshamnar på den marina miljön", *Havsmiljöinstitutet*, Report nr. 2020:5, https://havsmiljoinstitutet.se/digitalAssets/1769/1769835_rapport-milj--m--rkning-fritidsb--tshamnar-final.pdf
- Koroschetz, B., Sköld, S., Wrange, A-L., Jivén, K., Harrie, P. (2021) "Eko Marina II - Fortsättningsprojekt av miljömärkning av fritidsbåtshamnar", *Havsmiljöinstitutet*, Report nr. 2021:2, https://havsmiljoinstitutet.se/digitalAssets/1787/1787960_eko-marina-ii_hmi_report_2021.2.pdf
- Kristinebergs båtklubb (2020) "Båtklubb eller marina?", accessed 2021-11-15) <https://www.kbk.a.se/batklubb-eller-marina>
- Länsstyrelsen i Skåne ("Country Administration Skåne") (2016) "Miljötillståndet i Skånes

marina småbåtshamnar - kartläggning av marina småbåtshamnar i Skåne”, Report 2016:27, Dnr 575-18402-2015, https://oresundsvand.dk/wp-content/uploads/2019/08/Miljotillstandet_i_Skanes_marina_smabatshamnar.pdf

Länsstyrelsen Västra Götaland (“County Administration Västra Götaland”) (2019) “Tillsynsstöd för hantering av förorenade områden vid uppställningsplatser för fritidsbåtar”, accessed 2021-11-28, <https://www.lansstyrelsen.se/download/18.6a69c17016a97bfe2df168a8/1560428958881/2019-30.pdf>

Miljöförbundet Blekinge Väst (2011) (The Environmental Association Blekinge Väst) “Inventering av fritidsbåtshamnar 2011”, Report 2021-01-31, Dnr 2021/3154, <https://www.miljovast.se/download/18.7a383bf01715da022e3282f/1586936578389/Rapport%20fr%C3%A5n%20inventering%20av%20fritidsb%C3%A5tshamnar.pdf>

Miljösamverkan Hallands län och Västra Götalands län (“Environmental Cooperation Halland County and Västra Götaland County”) (2017) “Handläggarstöd fritidsbåtshamnar, accessed 2021-11-29, <http://www.miljosamverkanvg.se/Sv/projekt-och-rapporter/miljofarlig-verksamhet/Documents/Handl%C3%A4ggarst%C3%B6d%20Fritidsb%C3%A5tshamnar-bildfix.pdf>

Miljösamverkan Stockholms län (“Environmental Cooperation Stockholm County”) (2017) “Tillsyn av fritidsbåtshamnar”, accessed 2021-11-28, <http://www.miljosamverkanstockholm.se/web/page.aspx?refid=97>

Miljösamverkan Västra Götaland (“Environmental Cooperation Västra Götaland County”) (2005) “Fritidsbåtshamnar - tillsynshandledning för miljökontoren”, <http://extra.lansstyrelsen.se/miljosamverkanvastragotaland/SiteCollectionDocuments/Projekt%20och%20rapporter/Milj%C3%B6farlig%20verksamhet/Fritidsb%C3%A5tshamnar/fritidsbatshamnar-handledning-bildfix.pdf>

Moksnes, P-O. et al. (2019) “Fritidsbåtars påverkan på grunda kustekosystem i Sverige”, *Havsmiljöinstitutet*, Report nr. 2019:3, https://havsmiljoinstitutet.se/digitalAssets/1746/1746703_fritidsbaatars_paaverkan_webb.pdf

Prop. 2008/09:170. *En sammanhållen svensk havspolitik* (bet. 2008/09: MJU29, rskr. 2008/09:299) (“Proposition 2008/09:17. A coherent Swedish maritime policy”). https://www.riksdagen.se/sv/dokument-lagar/arende/betankande/en-sammanhallen-svensk-havspolitik-mm_GW01MJU29/html

Ramböll (2018) ”Båtplatser och framtidens hamnar och båtliv”, 2018-03-23

Regeringens skrivelse 2009/10:213. *Åtgärder för levande hav*. (“Government Letter 2009/10:213. Actions for a living ocean”) <https://data.riksdagen.se/fil/C8DEFC61-D9C0-4E90-9757-20D97B776ECE>

Riksföreningen Gästhamnar Sverige (RGS) (2021) “Gästhamnsguiden 2021”, <https://en.calameo.com/artomatic/read/0009549380734f342874d?authid=bDTi7kl8ahzc>

Roombler (2021) “About Roombler”, accessed 2021-11-29, <https://www.roombler.com/about>

Statistiska Centralbyrån ("Statistics Sweden") (2013) Serie MI50 Strand- och kuststatistik. Published 27 June 2013. ISSN 1654-3963. URN:NBN:SE:SCB-2013-MI50SM1301_pdf

Sjöfartsverket ("Swedish Maritime Administration") (2002) *Sjöfartsverkets synpunkter med anledning av Svenska Kommunförbundets skrivelse "Sjöfartsverkets föreskrift om mottagning av avfall från fritidsbåtar och föreskrift om genomförande av Östersjöstrategin"* (Dnr 0602-02-01135)

Sjöfartsverket ("Swedish Maritime Administration") (2001) *Sjöfartsverkets föreskrifter om mottagning av avfall från fritidsbåtar* (SJÖFS 2001:13)
://sxx.se/system/files/filer/skrivelser_fran_myndigheter/beslut_avfallshant_010909.pdf

Skatteverket ("Swedish Tax Agency") (2021) "Villkor för att vara en allmännyttig ideell förening", accessed 2021-11-15,
<https://skatteverket.se/foreningar/driva/ideellforening/villkorforattvaraenallmannyttigideellforening.4.70ac421612e2a997f85800029958.html>

SOU 1966:33 *Friluftsliv i Sverige*, <https://lagen.nu/sou/1966:33>

SOU 2011:82 *Ny lag om åtgärder mot föroreningar från fartyg*,
<https://www.regeringen.se/rattsliga-dokument/statens-offentliga-utredningar/2011/12/sou-201182/>

Svenska Akademiens ordlista (SAOL) (2015) "Hamn", accessed 2021-09-24,
<https://svenska.se/saol/?hv=xnr179536>

Svenska Akademiens ordlista (SAOL) (2021) "Service", accessed 2021-09-23
<https://svenska.se/so/?sok=Service&pz=6#!>

Svenska båtunionen (SBU) (2021) "Båtklubbar", accessed 2021-10-07,
https://batunionen.se/medlem/batklubb/sok_batklubb/

Svenska gästhamnar (2021) "Sök via karta", accessed 2021-10-07:
<https://www.svenskagasthamnar.se/se/sok-via-karta/>

Svenska Kryssarklubben (2021) "Hamnar", accessed 2021-10-05, <https://www.sxx.se/bojar-hamnar-och-farleder/hamnar/>

Sveriges Havsmiljö (2021) "Sjöar och vattendrag", *Havsmiljöinstitutet*, accessed 2021-10-06,
"<https://www.sverigesvattenmiljo.se/undersoka-vattenmiljo/sjoar-och-vattendrag>

Sweboat (2014) "Fakta om båtlivet i Sverige",
<https://www.havochvatten.se/download/18.276e7ae81443563a7501cc9/1393418095428/fakta>

Sweboat (2021) "Medlemmar", accessed 2021-10-07, <https://foretag.sweboat.se/medlemmar.aspx>

Transportstyrelsen ("The Swedish Transport Agency") (2012) "Är hamnen en fritidsbåtshamn?", accessed 2021-09-23, <https://www.transportstyrelsen.se/sv/sjofart/Fritidsbatar/Batliv-miljo/Toalettavfall-fran-fritidsbat/Mottagning-av-avfall/Lathund-for-fritidsbathamnar/Ar-hamnen-en-fritidsbatshamn/>

Transportstyrelsen ("The Swedish Transport Agency") (2021) "Hamnkartan för fritidsbåtar", accessed 2021-10-07, <https://hamnkartan.azurewebsites.net/>

Transportstyrelsen ("The Swedish Transport Agency") (2024) "Båtlivsundersökningen", accessed 2024-03-27, <https://www.transportstyrelsen.se/sv/sjofart/Fritidsbatar/batlivsundersokningen/>

Törnkvist, O., Klein, J., Vidisson, B., Häljestig, S., Katif, S., Nazerian, S., Rosengren, M., Giljam, C. (2020a) "Fysisk störning i grunda havsområden", *Metria AB*, <https://www.havochvatten.se/download/18.7d45de5c174e8f2dabe8afa3/1604908758378/rapport-2020-12-fysisk-storning-i-grunda-havsomraden.pdf>

Törnkvist, O., Klein, J., Vidisson, B., Häljestig, S., Katif, S., Nazerian, S., Rosengren, M., Giljam, C. (2020b) "Appendix C5: Kartläggning av småbåtshamnar", *Metria AB*, <https://www.havochvatten.se/download/18.26126a9e1777ad8f0585bdbc/1613206445965/appendix-C5-kartlaggning-av-smabatshamnar.pdf>

Upplev båtlivet (2020a) "Svenska båtunionen", accessed 2021-10-05, <https://www.upplevbatlivet.se/svenska-batunionen>

Upplev båtlivet (2020b) "Gästhamnar", accessed 2021-10-05, <https://www.upplevbatlivet.se/gasthamnar>

Wissler, A. (2002) "Synpunkter med anledning av Svenska Kommunförbundets skrivelse 'Sjöfartsverkets föreskrift om mottagning av avfall från fritidsbåtar och föreskrift om genomförande av Östersjöstrategin", Dnr 0602-02-01135

ANNEXES

ANNEX 1 – INVENTORY RESULTS: NUMBER OF RECREATIONAL MARINAS

Results from the inventory of Sweden's recreational marinas. Number of marinas per municipality and county and percentage of the total number of marinas identified.

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
BLEKINGE	127	4.8	-	-
Karlshamn	38	1.4	1.2	0.5
Karlskrona	36	1.4	0.5	0.2
Olofström	2	0.1	0.1	0.0
Ronneby	10	0.4	0.3	0.1
Sölvesborg	41	1.5	2.4	2.2
DALARNA	52	2.0	-	-
Avesta	3	0.1	0.1	0.1
Borlänge	2	0.1	0.0	0.0
Falun	9	0.3	0.2	0.0
Gagnef	0	0.0	0.0	0.0
Hedemora	2	0.1	0.1	0.0
Leksand	13	0.5	0.8	0.1
Ludvika	3	0.1	0.1	0.0
Malung-Sälen	0	0.0	0.0	0.0
Mora	10	0.4	0.5	0.0
Orsa	2	0.1	0.3	0.0
Rättvik	3	0.1	0.3	0.0
Smedjebacken	3	0.1	0.3	0.0
Säter	2	0.1	0.2	0.0
Vansbro	0	0.0	0.0	0.0
Älvdalen	0	0.0	0.0	0.0

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
GOTLAND	31	1.2	-	-
Gotland	31	1.2	0.5	0.2
GÄVLEBORG	88	3.3	-	-
Bollnäs	4	0.2	0.1	0.0
Gävle	20	0.8	0.2	0.1
Hofors	2	0.1	0.2	0.1
Hudiksvall	29	1.1	0.8	0.1
Ljusdal	1	0.0	0.1	0.0
Nordanstig	13	0.5	1.4	0.1
Ockelbo	1	0.0	0.2	0.0
Ovanåker	0	0.0	0.0	0.0
Sandviken	2	0.1	0.1	0.0
Söderhamn	16	0.6	0.6	0.1
HALLAND	121	4.6	-	-
Falkenberg	5	0.2	0.1	0.0
Halmstad	7	0.3	0.1	0.1
Hylte	0	0.0	0.0	0.0
Kungsbacka	88	3.3	1.0	1.1
Laholm	4	0.2	0.2	0.1
Varberg	17	0.6	0.3	0.2
JÄMTLAND	20	0.8	-	-
Mountain	2	0.1	0.3	0.0
Bräcke	1	0.0	0.2	0.0
Härjedalen	0	0.0	0.0	0.0
Krokom	3	0.1	0.2	0.0

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Ragunda	0	0.0	0.0	0.0
Strömsund	2	0.1	0.2	0.0
Åre	2	0.1	0.2	0.0
Östersund	10	0.4	0.2	0.1
JÖNKÖPING	24	0.9	-	-
Aneby	0	0.0	0.0	0.0
Eksjö	2	0.1	0.1	0.0
Gislaved	1	0.0	0.0	0.0
Gnosjö	2	0.1	0.2	0.0
Habo	2	0.1	0.2	0.1
Jönköping	7	0.3	0.0	0.1
Mullsjö	0	0.0	0.0	0.0
Nässjö	0	0.0	0.0	0.0
Sävsjö	1	0.0	0.1	0.0
Tranås	6	0.2	0.3	0.2
Vaggeryd	0	0.0	0.0	0.0
Vetlanda	4	0.2	0.1	0.0
Värnamo	1	0.0	0.0	0.0
KALMAR	76	2.9	-	-
Borgholm	8	0.3	0.7	0.2
Emmaboda	0	0.0	0.0	0.0
Hultsfred	0	0.0	0.0	0.0
Högsby	0	0.0	0.0	0.0
squid	19	0.7	0.3	0.2
Mönsterås	11	0.4	0.8	0.1
Mörbylånga	6	0.2	0.4	0.2

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Nybro	0	0.0	0.0	0.0
Oskarshamn	11	0.4	0.4	0.0
Torsås	2	0.1	0.3	0.1
Vimmerby	0	0.0	0.0	0.0
Västervik	19	0.7	0.5	0.1
KRONOBERG	24	0.9	-	-
Alvesta	0	0.0	0.0	0.0
Lessebo	1	0.0	0.1	0.0
Ljungby	6	0.2	0.2	0.0
Markaryd	1	0.0	0.1	0.0
Tingsryd	0	0.0	0.0	0.0
Uppvidinge	0	0.0	0.0	0.0
Växjö	13	0.5	0.1	0.1
Älmhult	3	0.2	0.2	0.0
NORRBOTTEN	122	4.6	-	-
Arjeplog	1	0.0	0.4	0.0
Arvidsjaur	0	0.0	0.0	0.0
Boden	2	0.1	0.1	0.0
Gällivare	0	0.0	0.0	0.0
Haparanda	13	0.5	1.4	0.1
Jokkmokk	0	0.0	0.0	0.0
Kalix	25	0.9	1.6	0.1
Kiruna	0	0.0	0.0	0.0
Luleå	57	2.1	0.7	0.2
Pajala	0	0.0	0.0	0.0
Piteå	24	0.9	0.6	0.1

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Älvsbyn	0	0.0	0.0	0.0
Överkalix	0	0.0	0.0	0.0
Övertorneå	0	0.0	0.0	0.0
SKÅNE	100	3.8	-	-
Bjuv	0	0.0	0.0	0.0
Bromölla	3	0.1	0.2	0.2
Burlöv	0	0.0	0.0	0.0
Båstad	9	0.3	0.6	0.5
Eslöv	0	0.0	0.0	0.0
Helsingborg	5	0.2	0.0	0.3
Hässleholm	0	0.0	0.0	0.0
Höganäs	11	0.4	0.4	0.9
Hörby	0	0.0	0.0	0.0
Höör	8	0.3	0.5	0.5
Klippan	0	0.0	0.0	0.0
Kristianstad	7	0.3	0.1	0.1
Kävlinge	2	0.1	0.1	0.2
Landskrona	12	0.5	0.3	0.9
Lomma	3	0.1	0.1	0.5
Lund	3	0.1	0.0	0.1
Malmö	8	0.3	0.0	0.5
Osby	1	0.0	0.1	0.0
Perstorp	0	0.0	0.0	0.0
Simrishamn	8	0.3	0.4	0.5
Sjöbo	3	0.1	0.2	0.1
scrubber	2	0.1	0.1	0.2
Staffanstorp	0	0.0	0.0	0.0

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Svalöv	0	0.0	0.0	0.0
Svedala	0	0.0	0.0	0.0
Tomelilla	0	0.0	0.0	0.0
Trelleborg	3	0.1	0.1	0.2
Vellinge	3	0.1	0.1	0.2
Ystad	2	0.1	0.1	0.1
Åstorp	0	0.0	0.0	0.0
Ängelholm	4	0.2	0.1	0.1
Örkelljunga	0	0.0	0.0	0.0
Östra Göinge	3	0.1	0.2	0.1
STOCKHOLM	633	23.9	-	-
Botkyrka	12	0.5	0.1	0.7
Danderyd	11	0.4	0.3	3.2
Ekerö	24	0.9	0.8	0.6
Haninge	35	1.3	0.4	0.2
Huddinge	10	0.4	0.1	0.9
Järfälla	7	0.3	0.1	1.9
Lidingö	18	0.7	0.4	2.2
Nacka	38	1.4	0.4	1.7
Norrtälje	59	2.2	0.9	0.1
Nykvarn	2	0.1	0.2	0.1
Nynäshamn	19	0.7	0.7	0.2
Salem	0	0.0	0.0	0.0
Sigtuna	5	0.2	0.1	0.3
Sollentuna	4	0.2	0.1	0.9
Solna	7	0.3	0.1	2.9
Stockholm	90	3.4	0.1	4.3

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Sundbyberg	0	0.0	0.0	0.0
Södertälje	36	1.4	0.4	0.5
Tyresö	27	1.0	0.6	1.6
Täby	4	0.2	0.1	0.9
Upplands Väsby	1	0.0	0.0	0.1
Upplands-Bro	5	0.2	0.2	0.2
Vallentuna	1	0.0	0.0	0.1
Vaxholm	31	1.2	2.6	1.4
Värmdö	148	5.6	3.3	0.4
Österåker	40	1.5	0.9	0.4
SÖDERMANLAND	117	4.4	-	-
Eskilstuna	47	1.8	0.4	0.7
Flen	3	0.1	0.2	0.0
Gnesta	2	0.1	0.2	0.0
Katrineholm	6	0.2	0.2	0.1
Nyköping	24	0.9	0.4	0.1
Oxelösund	10	0.4	0.8	0.4
Strängnäs	9	0.3	0.2	0.1
Trosa	16	0.6	1.1	0.3
Vingåker	0	0.0	0.0	
UPPSALA	130	4.9	-	-
Enköping	29	1.1	0.6	0.5
Heby	0	0.0	0.0	0.0
Håbo	12	0.5	0.5	0.9
Knivsta	0	0.0	0.0	0.0
Tierp	18	0.7	0.8	0.1

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Uppsala	5	0.2	0.0	0.1
Älvkarlebyn	10	0.4	1.1	0.2
Östhammar	54	2.0	2.4	0.2
VÄRMLAND	90	3.4	-	-
Arvika	6	0.2	0.2	0.0
Eda	2	0.1	0.2	0.0
Filipstad	2	0.1	0.2	0.0
Forshaga	1	0.0	0.1	0.0
Grums	6	0.2	0.7	0.2
Hagfors	0	0.0	0.0	0.0
Hammarö	10	0.4	0.6	0.4
Karlstad	27	1.0	0.3	0.2
Kil	1	0.0	0.1	0.0
Kristinehamn	13	0.5	0.5	0.1
Munkfors	0	0.0	0.0	0.0
Storfors	2	0.1	0.5	0.0
Sunne	2	0.1	0.2	0.0
Säffle	9	0.3	0.6	0.1
Torsby	1	0.0	0.1	0.0
Årjäng	8	0.3	0.8	0.0
VÄSTERBOTTEN	35	1.3	-	-
Bjurholm	0	0.0	0.0	0.0
Dorotea	0	0.0	0.0	0.0
Lycksele	0	0.0	0.0	0.0
Malå	0	0.0	0.0	0.0
Nordmaling	5	0.2	0.7	0.0

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Norsjö	0	0.0	0.0	0.0
Robertsfors	4	0.2	0.6	0.0
Skellefteå	6	0.2	0.1	0.0
Sorsele	0	0.0	0.0	0.0
Storuman	1	0.0	0.2	0.0
Umeå	16	0.6	0.1	0.1
Vilhelmina	3	0.1	0.5	0.0
Vindeln	0	0.0	0.0	0.0
Vännäs	0	0.0	0.0	0.0
Åsele	0	0.0	0.0	0.0
VÄSTERNORRLAND	88	3.3	-	-
Härnösand	9	0.3	0.4	0.1
Kramfors	25	0.9	1.4	0.1
Sollefteå	1	0.0	0.1	0.0
Sundsvall	14	0.5	0.1	0.0
Timrå	9	0.3	0.5	0.1
Ånge	0	0.0	0.0	0.0
Örnsköldsvik	30	1.1	0.5	0.1
VÄSTMANLAND	46	1.7	-	-
Arboga	3	0.1	0.2	0.1
Fagersta	1	0.0	0.1	0.0
Hallstahammar	3	0.1	0.2	0.3
Kungsör	4	0.2	0.5	0.5
Köping	11	0.4	0.4	0.3
Norberg	0	0.0	0.0	0.0
Sala	0	0.0	0.0	0.0

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Skinnskatteberg	1	0.0	0.2	0.0
Surahammar	3	0.1	0.3	0.1
Västerås	20	0.8	0.1	0.3
VÄSTRA GÖTALAND	609	22.9	-	-
Ale	4	0.2	0.1	0.1
Alingsås	3	0.1	0.1	0.1
Bengtsfors	7	0.3	0.7	0.0
Bollebygd	0	0.0	0.0	0.0
Borås	3	0.1	0.0	0.0
Dals-Ed	2	0.1	0.4	0.0
Essunga	0	0.0	0.0	0.0
Falköping	0	0.0	0.0	0.0
Färgelanda	1	0.0	0.1	0.0
Grästorps	1	0.0	0.2	0.1
Gullspång	2	0.1	0.4	0.1
Gothenburg	133	5.0	0.2	1.3
Götene	5	0.2	0.4	0.2
Herrljunga	0	0.0	0.0	0.0
Hjo	2	0.1	0.2	0.1
Härryda	2	0.1	0.1	0.1
Karlsborg	13	0.5	1.9	0.3
Kungälv	46	1.7	1.0	0.6
Lerum	7	0.3	0.2	0.2
Lidköping	9	0.3	0.2	0.1
Lilla Edet	2	0.1	0.1	0.1
Lysekil	60	2.3	4.2	1.1
Mariestad	15	0.6	0.6	0.2

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
Mark	3	0.1	0.1	0.0
Mellerud	7	0.3	0.8	0.1
Munkedal	3	0.1	0.3	0.0
Mölnadal	1	0.0	0.0	0.1
Orust	40	1.5	2.6	0.5
Partille	0	0.0	0.0	0.0
Skara	1	0.0	0.1	0.0
Skövde	0	0.0	0.0	0.0
Sotenäs	14	0.5	1.5	0.3
Stenungsund	17	0.6	0.6	0.6
Strömstad	52	2.0	3.9	0.6
Svenljunga	0	0.0	0.0	0.0
Tanum	36	1.4	2.8	0.2
Tibro	2	0.1	0.2	0.2
Tidaholm	0	0.0	0.0	0.0
Tjörn	33	1.2	2.0	0.5
Tranemo	0	0.0	0.0	0.0
Trollhättan	3	0.1	0.1	0.1
Töreboda	6	0.2	0.6	0.2
Uddevalla	24	0.9	0.4	0.4
Ulricehamn	6	0.2	0.2	0.1
Vara	0	0.0	0.0	0.0
Vårgårda	0	0.0	0.0	0.0
Vänersborg	8	0.3	0.2	0.1
Åmål	7	0.3	0.6	0.1
Öckerö	29	1.1	2.2	0.9

COUNTRY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL	NUMBER OF MARINAS PER 1K INHABITANTS	NUMBER OF MARINAS PER 10 KM COASTLINE
ÖREBRO	24	0.9	-	-
Askersund	7	0.3	0.6	0.1
Degerfors	0	0.0	0.0	0.0
Hallsberg	1	0.0	0.1	0.0
Hällefors	0	0.0	0.0	0.0
Karlskoga	4	0.2	0.1	0.1
Kumla	0	0.0	0.0	0.0
Laxå	0	0.0	0.0	0.0
Lekeberg	0	0.0	0.0	0.0
Lindesberg	5	0.2	0.2	0.0
Ljusnarsberg	1	0.0	0.2	0.0
Nora	3	0.1	0.3	0.0
Örebro	3	0.1	0.0	0.0
ÖSTERGÖTLAND	97	3.7	-	-
Boxholm	2	0.1	0.4	0.0
Finspång	2	0.1	0.1	0.0
Kinda	7	0.3	0.7	0.0
Linköping	18	0.7	0.1	0.2
Mjölby	0	0.0	0.0	0.0
Motala	14	0.5	0.3	0.2
Norrköping	21	0.8	0.1	0.1
Söderköping	12	0.2	0.8	0.1
Vadstena	4	0.2	0.5	0.2
Valdemarsvik	14	0.5	1.8	0.1
Ydre	1	0.0	0.3	0.0
Åtvidaberg	1	0.0	0.1	0.0
Ödeshög	1	0.0	0.2	0.0

ANNEX 2 – SURVEY RESULTS: NUMBER OF RECREATIONAL MARINAS

Results from received survey responses. The table shows the number of recreational marinas in the survey by municipality and county and the percentage they represent of the total number of marinas in the survey.

Municipalities marked in red show those that have marinas according to the inventory but are not included in the survey data.

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
BLEKINGE	20	4.3
Karlshamn	9	1.9
Karlskrona	4	0.9
Olofström	1	0.2
Ronneby	3	0.6
Sölvesborg	3	0.6
DALARNA	9	1.9
<i>Avesta</i>	<i>0</i>	<i>0</i>
<i>Borlänge</i>	<i>0</i>	<i>0</i>
Falun	2	0.4
Hedemora	1	0.2
Leksand	1	0.2
Ludvika	1	0.2
Mora	1	0.2
Orsa	1	0.2
<i>Rättvik</i>	<i>0</i>	<i>0</i>
<i>Smedjebacken</i>	<i>0</i>	<i>0</i>
Säter	2	0.4
GOTLAND	9	1.9
Gotland	9	1.9
GÄVLEBORG	13	2.8

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
<i>Bollnäs</i>	0	0
Gävle	3	0.6
<i>Hofors</i>	0	0
Hudiksvall	4	9
<i>Ljusdal</i>	0	0
Nordanstig	1	0.2
<i>Ockelbo</i>	0	0
<i>Sandviken</i>	0	0
Söderhamn	5	1.1
HALLAND	13	2.8
Falkenberg	2	0.4
Halmstad	3	0.6
Kungsbacka	5	1.1
<i>Laholm</i>	0	0
Varberg	3	0.6
JÄMTLAND	4	0.9
Mountain	1	0.2
<i>Bräcke</i>	0	0
Krokom	2	0.4
Östersund	1	0.2
JÖNKÖPING	4	0.9
<i>Eksjö</i>	0	0
<i>Gislaved</i>	0	0
<i>Gnosjö</i>	0	0
Habo	1	0.2
Jönköping	1	0.2

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
<i>Sävsjö</i>	0	0
Tranås	1	0.2
<i>Vetlanda</i>	0	0
Värnamo	1	0.2
KALMAR	11	2.4
<i>Borgholm</i>	0	0
squid	2	0.4
Mönsterås	1	0.2
<i>Mörbylånga</i>	0	0
Oskarshamn	1	0.2
Torsås	1	0.2
Västervik	6	1.3
KRONOBERG	5	1.1
<i>Alvesta</i>	0	0
Lessebo	1	0.2
<i>Ljungby</i>	0	0
Markaryd	4	0.9
<i>Tingsryd</i>	0	0
NORRBOTTEN	20	4.3
<i>Arjeplog</i>	0	0
Boden	1	0.2
Haparanda	2	0.4
Kalix	4	0.9
Luleå	10	2.2
Piteå	3	0.6

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
SKÅNE	25	5.4
Bromölla	2	0.4
<i>Båstad</i>	<i>0</i>	<i>0</i>
Helsingborg	3	0.6
Höganäs	3	0.6
<i>Höör</i>	<i>0</i>	<i>0</i>
Kristianstad	3	0.6
Kävlinge	1	0.2
Landskrona	3	0.6
Lomma	1	0.2
<i>Lund</i>	<i>0</i>	<i>0</i>
Malmö	3	0.6
<i>Osby</i>	<i>0</i>	<i>0</i>
<i>Simrishamn</i>	<i>0</i>	<i>0</i>
<i>Sjöbo</i>	<i>0</i>	<i>0</i>
<i>scrubber</i>	<i>0</i>	<i>0</i>
Trelleborg	1	0.2
Vellinge	1	0.2
Ystad	2	0.4
Ängelholm	2	0.4
<i>Östra Göinge</i>	<i>0</i>	<i>0</i>
STOCKHOLM	149	32.1
Botkyrka	3	0.6
Danderyd	6	1.3
Ekerö	4	0.9
Haninge	16	3.4
Huddinge	1	0.2
Järfälla	4	0.9

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
Lidingö	6	1.3
Nacka	9	1.9
Norrtälje	7	1.5
Nykvarn	0	0
Nynäshamn	7	1.5
Sigtuna	3	0.6
Sollentuna	3	0.6
Solna	3	0.6
Stockholm	35	7.5
Södertälje	8	1.7
Tyresö	5	1.1
Täby	1	0.2
Upplands Väsby	0	0
Upplands-Bro	2	0.4
Vallentuna	1	0.2
Vaxholm	8	1.7
Värmdö	12	2.6
Österåker	5	1.1
SÖDERMANLAND	25	5.4
Eskilstuna	4	0.9
Flen	2	0.4
Gnesta	1	0.2
Katrineholm	1	0.2
Nyköping	4	0.9
Oxelösund	2	0.4
Strängnäs	3	0.6
Trosa	8	1.7

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
UPPSALA COUNTY	15	3.2
Enköping	8	1.7
Håbo	3	0.6
Tierp	1	0.2
Uppsala	2	0.4
Älvkarleby	1	0.2
<i>Östhammar</i>	<i>0</i>	<i>0</i>
VÄRMLAND	9	1.9
Arvika	1	0.2
<i>Eda</i>	<i>0</i>	<i>0</i>
<i>Filipstad</i>	<i>0</i>	<i>0</i>
<i>Forshaga</i>	<i>0</i>	<i>0</i>
Grums	1	0.2
<i>Hammarö</i>	<i>0</i>	<i>0</i>
Karlstad	4	0.9
<i>Wedge</i>	<i>0</i>	<i>0</i>
<i>Kristinehamn</i>	<i>0</i>	<i>0</i>
<i>Storfors</i>	<i>0</i>	<i>0</i>
<i>Sunne</i>	<i>0</i>	<i>0</i>
Säffle	2	0.4
Torsby	1	0.2
<i>Årjäng</i>	<i>0</i>	<i>0</i>
VÄSTERBOTTEN	8	1.7
<i>Nordmaling</i>	<i>0</i>	<i>0</i>
<i>Robertsfors</i>	<i>0</i>	<i>0</i>
Skellefteå	4	0.9
<i>Storuman</i>	<i>0</i>	<i>0</i>

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
Umeå	3	0.6
Vilhelmina	1	0.2
VÄSTERNORRLAND	25	5.4
Härnösand	3	0.6
Kramfors	9	1.9
<i>Sollefteå</i>	0	0
Sundsvall	5	1.1
Timrå	1	0.2
Örnsköldsvik	7	1.5
VÄSTMANLAND	5	1.1
<i>Arboga</i>	0	0
<i>Fagersta</i>	0	0
Hallstahammar	1	0.2
<i>Kungsör</i>	0	0
Köping	1	0.2
<i>Skinnskatteberg</i>	0	0
<i>Surahammar</i>	0	0
Västerås	3	0.6
VÄSTRA GÖTALAND	78	16.8
Ale	2	0.4
<i>Alingsås</i>	0	0
Bengtsfors	3	0.6
<i>Borås</i>	0	0
<i>Dals-Ed</i>	0	0
Färgelanda	1	0.2
<i>Grästorp</i>	0	0

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
Gullspång	1	0.2
Gothenburg	7	1.5
Götene	3	0.6
Hjo	1	0.2
Härryda	1	0.2
Karlsborg	3	0.6
Kungälv	3	0.6
<i>Lerum</i>	<i>0</i>	<i>0</i>
Lidköping	3	0.6
<i>Lilla Edet</i>	<i>0</i>	<i>0</i>
Lysekil	4	0.9
Mariestad	2	0.4
<i>Mark</i>	<i>0</i>	<i>0</i>
Mellerud	2	0.4
Munkedal	1	0.2
<i>Mölnadal</i>	<i>0</i>	<i>0</i>
Orust	11	2.4
<i>Skara</i>	<i>0</i>	<i>0</i>
Sotenäs	1	0.2
Stenungsund	1	0.2
Strömstad	2	0.4
Tanum	3	0.6
<i>Tibro</i>	<i>0</i>	<i>0</i>
Tjörn	2	0.4
Trollhättan	1	0.2
<i>Töreboda</i>	<i>0</i>	<i>0</i>
Uddevalla	4	0.9
<i>Ulricehamn</i>	<i>0</i>	<i>0</i>
Vänersborg	2	0.4

COUNTY	NUMBER OF MARINAS	PERCENT OF THE NATIONAL TOTAL
Åmål	1	0.2
Öckerö	9	1.9
ÖREBRO	3	0.6
Askersund	1	0.2
<i>Hallsberg</i>	0	0
Karlskoga	1	0.2
<i>Lindesberg</i>	0	0
<i>Ljusnarsberg</i>	0	0
<i>Nora</i>	0	0
Örebro	1	0.2
ÖSTERGÖTLAND	14	3
<i>Boxholm</i>	0	0
<i>Finspång</i>	0	0
Kinda	1	0.2
Linköping	4	0.9
Motala	3	0.6
Norrköping	5	1.1
Söderköping	2	0.4
<i>Vadstena</i>	0	0
Valdemarsvik	3	0.6
<i>Ydre</i>	0	0
<i>Årvidaberg</i>	0	0
<i>Ödeshög</i>	0	0

ANNEX 3 – SURVEY QUESTIONNAIRE: RECREATIONAL MARINAS

The survey was answered by representatives of marinas.

This survey, which is about identifying opportunities and obstacles in the environmental work of recreational marinas, is sent out by the Swedish Institute for the Marine Environment and IVL Swedish Environmental Research Institute on behalf of the Swedish Agency for Marine and Water Management. The survey is sent to activities in Sweden that could conceivably fall under the definition of a recreational marinas and that are either associated with a boating industry organisation or that the country's municipalities have stated are found within their municipal borders. The responses from the survey have two purposes. Firstly, it will help us to gather information, as there is currently no comprehensive information on marina infrastructure and environmental work. They will also serve as a guide to the development of a digital “environmental support platform” – a tool that will guide and facilitate the environmental work of marinas and the responsibility for self-monitoring activities that could negatively affect the environment. The survey takes about 5 minutes to answer, and your answers are very valuable to us, as we want to create a digital tool that in the best possible way meets the needs and wishes of its users. The responses will be compiled into statistics within the framework of the “Eko Marina” project. The responses from each marina will not be shared publicly. For those who respond to the survey, we have gathered information on what is important to know about the responsibility of recreational marinas for the environment and the preventive work that harbour masters and operators at marinas need to keep track of. This provides a background to the questions in this survey. You can read more here: Swedish Institute for the Marine Environment: survey study regarding tools for recreational marinas.

The survey begins with some general questions about your marina and ends with some questions where we try to explore the potential interest in the tool that we plan to develop. All in all, the answers will give us a picture of the current situation in Swedish marinas and provide us with a valuable basis for the continued work on the digital support platform, which we hope could become valuable to you. We look forward to receiving your answers.

Chapter 1, section 2 of SJÖFS 2001:13 defines “recreational marinas” as “[...] a place or geographical area set up to provide services to recreational boats, but not small jetties and simple berths.”. For it to be a “service”, it is sufficient to enable boats to moor (Swedish Transport Agency). Examples of marinas are therefore community marinas and guest harbours that receive recreational boats. In this survey study, a marina is defined as a place that fulfils the following criteria:

- *Leisure boats are offered the opportunity to moor:*
 - *The berth(s) are offered to outsiders, customers, or members of an association for a fee (annual fee, daily fee, service cost, etc.), i.e. they are not just jetties for private use.*
1. *Do you consider that you conduct one or more activities that fall under the term “recreational marina” based on the above-mentioned criteria? (cross question)*
 - a. *Yes*

- b. No*
 - c. Don't know*
2. *What is the name of your marina? (open question)*
 3. *In which municipality is your marina located? (drop-down list of municipalities)*
 4. *How long have marina activities been conducted in the area where the marina is located? (cross question)*
 - a. <10 years*
 - b. 11-20 years*
 - c. 21-40 years*
 - d. 41-70 years*
 - e. >70 years*
 - f. Do not know.*
 5. *In what organisational form is your marina currently run? (tick box)*
 - a. Non-profit organisation*
 - b. Public benefit/municipal*
 - c. Economic association*
 - d. Sole proprietorship*
 - e. Limited company, AB*
 - f. Trading partnership, HB*
 - g. Other:*
 6. *How many berths are there in the marina (drop-down list with numbers)?*
 - a. On land for summer storage of boats (e.g. for boats on trailers)?*
 - b. On land for winter storage of boats?*
 - c. On jetty (both member berths and guest berths)?*
 - d. At buoy?*
 - e. For camper vans*

Can't give an exact figure? Feel free to make an estimate. Even if there is no exact figure or you don't know what it is, your estimate will help us to understand the approximate size of your marina.

7. *How deep/shallow is the marina on average in the inner part where boats are moored? (tick box)*
 - a. <1 m*

- b.** 1-1,5 m
- c.** 1.6-2 m
- d.** 2.1-3 m
- e.** 3.1-4 m
- f.** 4.1-5 m
- g.** 5.1-6 m
- h.** >6 m
- i.** Don't know.

8. *How deep/shallow is the marina on average in the outer part where boats are moored?*
(tick box)

- a.** <1 m
- b.** 1-1,5 m
- c.** 1.6-2 m
- d.** 2.1-3 m
- e.** 3.1-4 m
- f.** 4.1-5 m
- g.** 5.1-6 m
- h.** >6 m
- i.** Don't know.

9. *Which of the following is available in your marina? (tick box)*

- a.** Recycling station for household waste
- b.** Possibility to throw household waste
- c.** Environmental station for hazardous waste
- d.** Wash-down pad
- e.** Boat washer
- f.** Lifting/launching ramp
- g.** Lifting/launching crane
- h.** An environmental officer
- i.** An environmental policy
- j.** Guest berths
- k.** Toilet

- l. Shower*
- m. Pump-out stations for sewage water*
- n. Electrical outlets*
- o. Charging points for charging electric motors*
- p. Possibility to refill the water tank*
- q. Boat gas station*
- r. None of the above*

10. *If you have guest berths in the marina: Approximately how many guest harbour visits do you have on average (calculated in total number of day-night-day visits) in a year? (drop-down list, figures)*

11. *Which of the following operators are in close proximity to your marina? (<1 km) (tick box)*

- a. Restaurant*
- b. Camping*
- c. Hotel/hostel*
- d. Tourist information*
- e. Public transport station/stop*
- f. Housing company*
- g. Boat gas station*
- h. Boat club facility*
- i. Shipyard*
- j. Marina service*
- k. Boat builder*
- l. Boat dealer*
- m. Experience company*
- n. Diving centre*
- o. Boating school*
- p. Dredging company*
- q. Jetty supplier*
- r. Engine manufacturer*
- s. None of the above*

12. *How interesting would it be for you to have a digital tool (a mobile app) that can be used*

for (cross-question with answers on a scale of 1-5, where 1 = not at all interesting and 5 = very interesting)?

- a. Self-monitoring*
- b. Provide environmental information to members*
- c. Provide environmental information to guests*
- d. Collect information from members and guests*
- e. Advertise products and services that can facilitate compliance with laws, regulations and rules that can contribute to reducing environmental impact*
- f. Read/learn about what boat owners can do to reduce negative environmental impact.*

13. It is important for us that the environmental guide and the digital tool we plan to develop meet the needs of those who will use the tool. We will therefore include representatives from marinas in our reference group. Would this opportunity be interesting for your marina? (cross question)

- a. Yes*
- b. No*
- c. Maybe*

14. If yes on (13), in which way(s) would you like to participate and express your views (tick box)?

- a. Through workshops*
- b. In reference group meetings*
- c. In a more detailed survey*

15. Which role/function do you, the respondent, hold on behalf of your marina? (cross question)

- a. CEO of the marina*
- b. Marina employee*
- c. Chairperson of the board*
- d. Board member*
- e. Harbour Master*
- f. Landowner*
- g. Community marina member*
- h. Municipal official*
- i. Other:*

16. *Contact details (optional). By filling in your contact details below, you authorise the use of this data in accordance with the University of Gothenburg's application of the General Data Protection Regulation (GDPR) and supplementary legislation.*

Read more about this here: [Processing of personal data](#) (open question)

ANNEX 4 – SURVEY QUESTIONNAIRE: INSPECTION AUTHORITIES

The survey was answered by representatives from the inspection authorities.

The Swedish Institute for the Marine Environment and IVL Swedish Environmental Research Institute have been commissioned by the Swedish Agency for Marine and Water Management to make an inventory of the recreational marinas that exist in the country (both in the sea and lakes). This assignment is part of the Eko Marina project, within which a digital environmental support and eco-labelling for marinas is being developed. Your municipality has previously received a more comprehensive questionnaire for this project. The questionnaire aimed to collect information on the structure of municipal marinas. This form instead aims to identify all marinas in your municipality – i.e. list the names of both the marinas that are operated under municipal management and those that are not but are located within the municipality's borders. There is still a large number of unidentified marinas, and we need your help to find them. This form is sent to all municipalities in Sweden. The answers in the form have two purposes. Firstly, to collect information about which recreational marinas exist in Sweden today, and secondly, to evaluate whether you think there are or can be developed incentives to get marinas to reduce their environmental impact. Your answers will give us a valuable basis for our continued work on environmental management and eco-labelling. We look forward to receiving your responses.

Labelling and environmental support – what does it mean?

The overall aim of Eko Marina is for marinas to improve their environmental work and to make it easier for marinas to do the right thing. To achieve this, the project group is working on developing a digital support platform. The structure of the platform is largely based on an index suitable for all types of marinas – guest harbours, marinas run by non-profit organisations, as well as commercial marinas. The idea of the tool is to make it easier for marinas to plan, administer and document their environmental work. Supporting documentation with explanations and checklists for various criteria in the environmental index (for example, proposals for an environmental policy), action plans for various environmental problems (for example, for polluted areas), links and information on the marine environment, legal requirements and news that affect marinas and other things will be gathered in the digital tool. The idea is also that the support platform will offer a cloud storage for documentation, applications, and member lists that only the marina itself has access to, but which can be shared with municipalities and authorities on request in connection with inspection and supervision. For those who want to read more, previous reports from the project can be found here: [Eko Marina I – Basis for an eco-labelling system aimed at reducing the impact of marinas on the marine environment](#) and [Eko Marina II – Continuation project of eco-labelling for marinas](#).

Definition of a recreational marina

Chapter 1, section 2 of SJÖFS 2001:13 defines 'recreational marinas' as "[...] a place or geographical area established to provide service to recreational boats, but not small jetties and simple berths". In order for it to be a 'service', it is sufficient to enable boats to jetty (Transportstyrelsen). Examples of marinas are therefore marinas and guest harbours that receive recreational boats. In Eko Marina, a recreational marina is defined as a place that fulfils the following criteria:

- *Recreational boats are offered the opportunity to moor*
 - *The berth(s) are offered to outsiders, customers, or members of an association for a fee (annual fee, daily fee, service cost, etc.), i.e. they are not just jetties for private use.*
1. *Does the above definition correspond to your municipality's definition of 'recreational marinas'? (cross question)*
 - a. *Yes*
 - b. *No*
 - c. *Partially*
 2. *If partly or no, please describe what is different in your definition (open question).*
 3. *What is your municipality? (drop-down list of municipalities)*
 4. *List all activities within your municipality that fall under the definition of 'recreational marinas' below. One marina per row. (open question)*

Are there no marinas in your municipality? If so, write "We have no marinas" in the answer box.
 5. *What incentives do you think are currently in place for marinas to work to reduce their environmental impact? (open question)*
 - a. *At local level*
 - b. *At regional level*
 - c. *At national level*
 6. *What incentives do you think should/could be developed to encourage marinas to reduce their environmental impact? (open question)*
 - a. *At local level*
 - b. *At regional level*
 - c. *At national level*
 7. *What is the role/title of the respondent on behalf of your municipality? (open question)*
 8. *Contact details (optional). By filling in your contact details below, you authorise the use of this data in accordance with the University of Gothenburg's application of the General Data Protection Regulation (GDPR) and supplementary legislation. Read more about this here: [Processing of personal data.](#)*
 9. *Do you have any questions or comments for those of us working on the development of this environmental support and digital tool? (open question)*



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