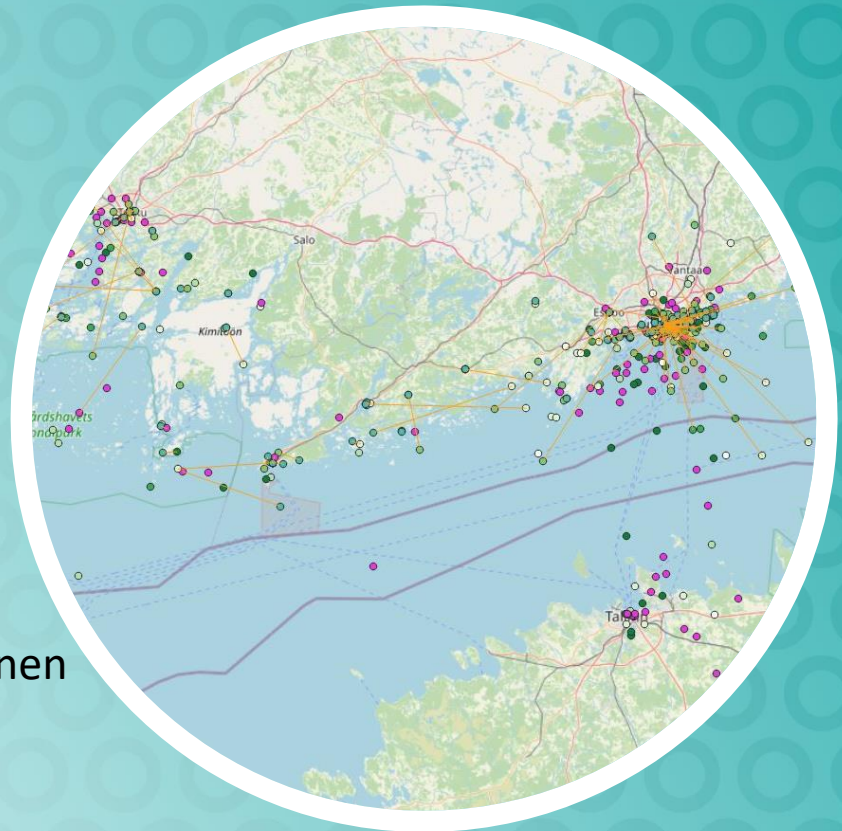


# Perceived vs modelled environment and cultural ecosystem services

-What to do with map answers and site names?-

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MAREA Final seminar, 2.11.2022



# Motivation

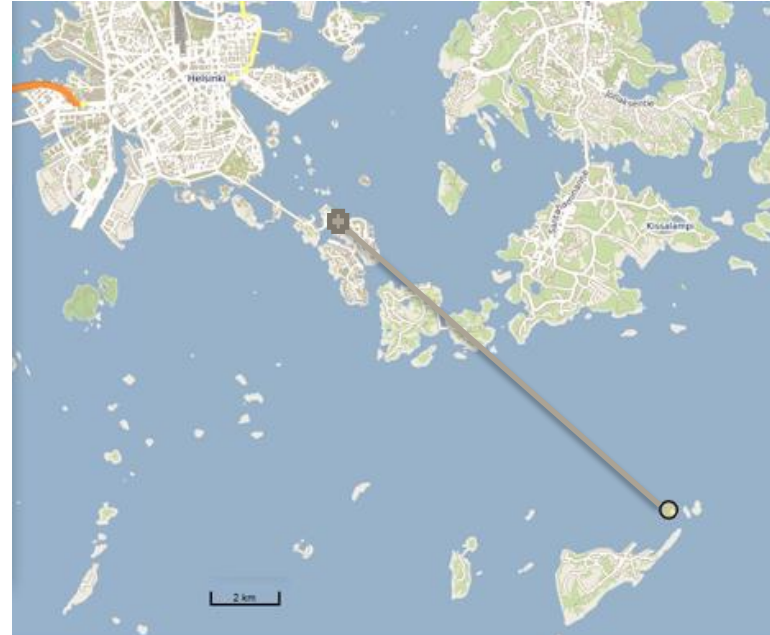
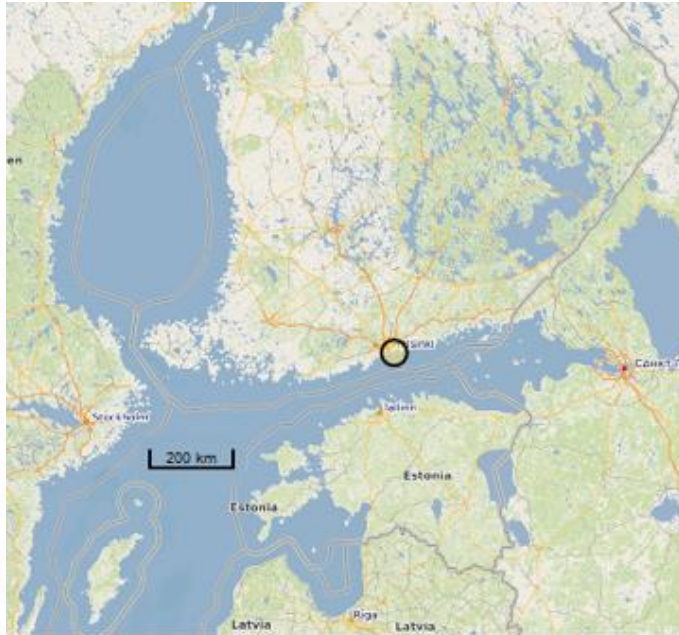
- Travel cost model allows one to study the effects of perceived environmental conditions and other factors on the number and value of recreational visits.
- How well does the perceived environment correspond with the actual/modelled environment?
- How would changes in the actual environmental conditions affect recreational visits, activities and their value?
- What would be the effects of policies to achieve GES or other policy goals on human wellbeing and perceptions of marine environment?
- What kind of common misconceptions are there about marine environment and its' condition?



# PGIS survey on recreational and cultural activities related to the Baltic Sea

- For Finland all together 992 survey answers on the most visited recreational marine/coastal sites.
- Respondents were asked to mark the site on the map or name the site.
  - 185 respondents only marked the site on the map
  - 443 respondents only named the site
  - 364 marked the site on the map and named the site
- Survey also included questions on the perceived environmental conditions and on the frequency of in situ cultural ecosystem service use at the site.

# How accurately do map answers represent actual locations of visited sites?

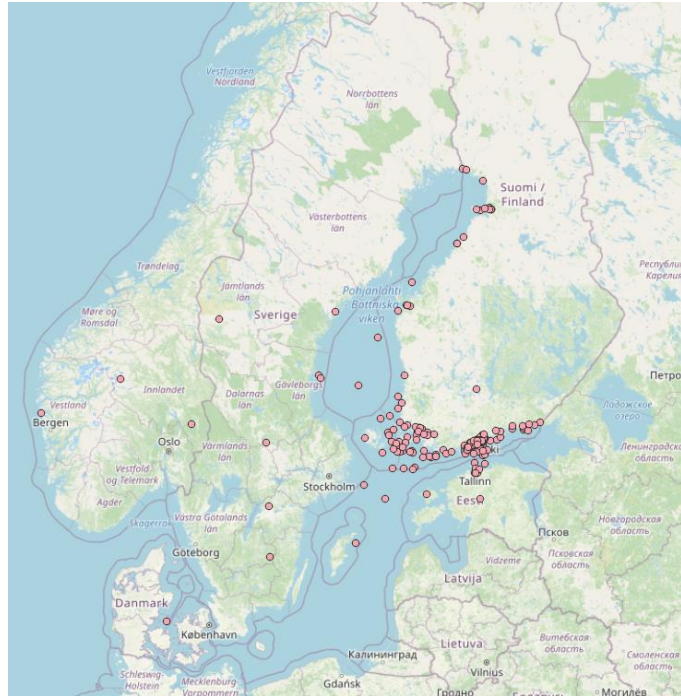


Using my laptop I tried to mark Suomenlinna (sea fortress in Helsinki) on the survey map without zooming in.



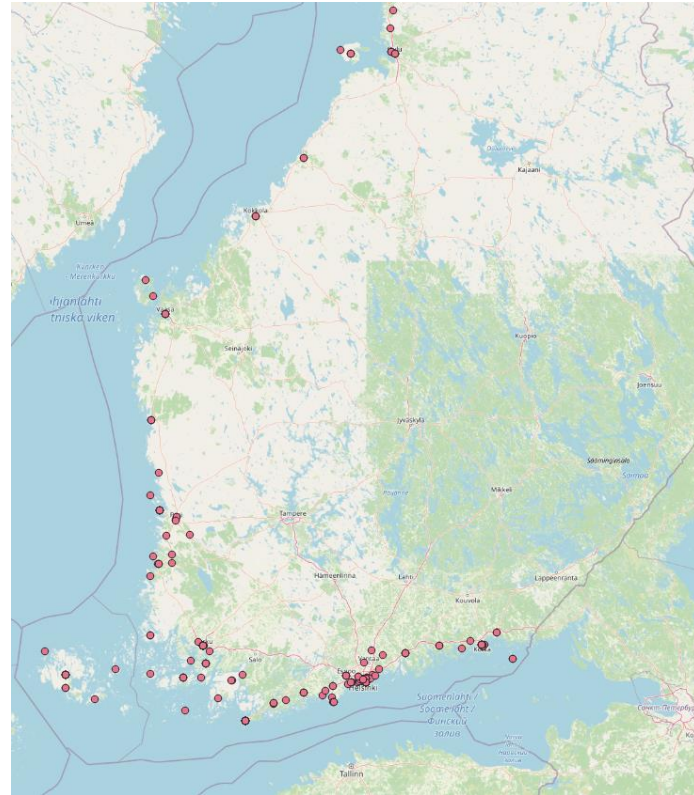
# Sites marked on the map only

- 185 respondents



# Only text answers

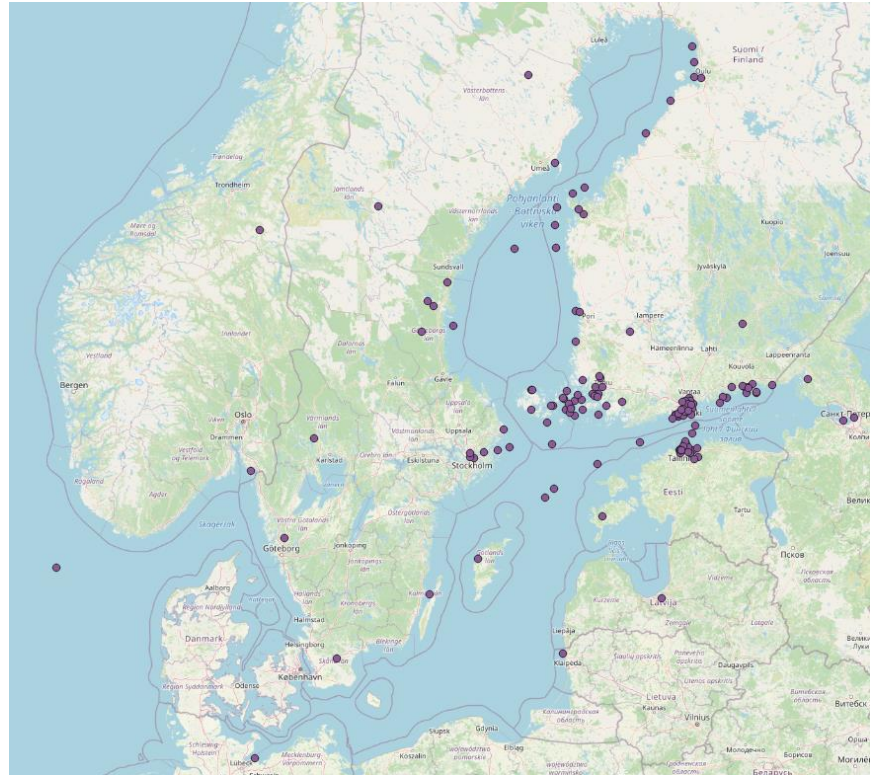
- 443 responses with only names of the sites
- Digitransit geocoding API was used to match the site names with actual names of places.
- Adequate matches were found for 252 site names.
- 191 inadequate or non-existent matches which cannot be presented on a map.



# Both map and text answers: no matches

- 364 respondents
- Matches were searched within 50 km radius of each marked recreational site using corresponding site names.
- Adequate match was not found within 50 km radius of the map answer location for 151 marked recreational sites and site names.

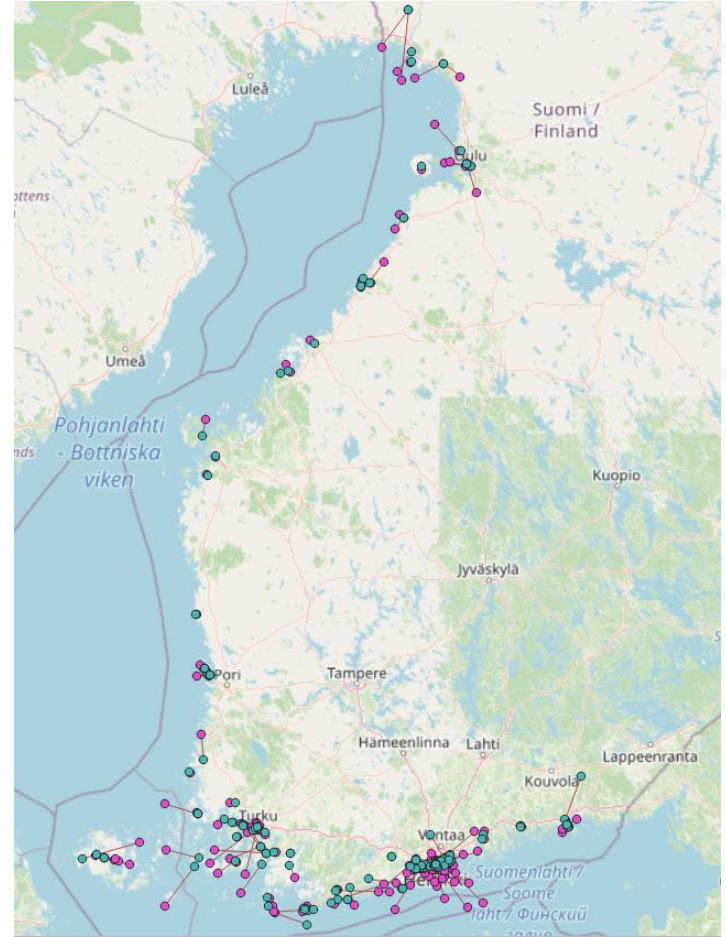
Marked recreational sites without match shown on the map.





# Both map and text answers: matches found

- Match within 50 km radius found for 213 marked recreational sites and corresponding site names.
- Average distance between marked and matched location with a maximum distance of 50 km is 9.5 km with a median of 3.8 km.
- Matches marked with cyan dots and marked sites with magenta dots.

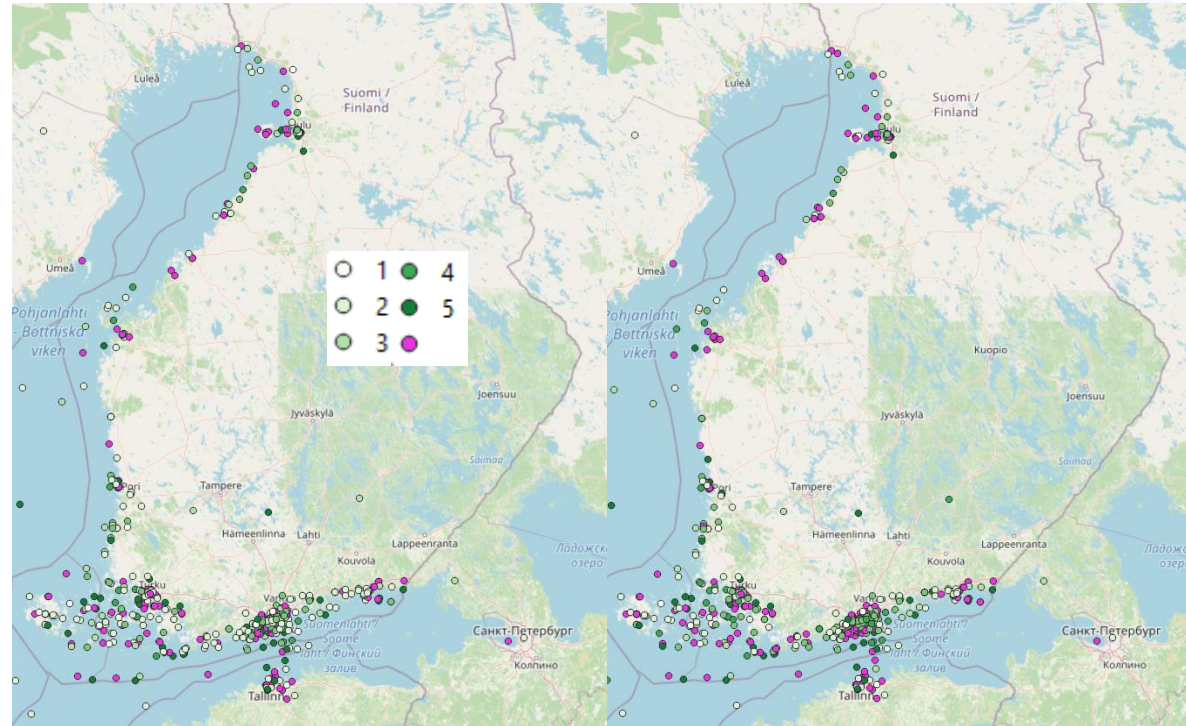




# Perceived environmental quality: Example Birds

21. How would you describe the abundance and diversity of the following animals and plants?

	High	Rather high	Rather low	Low	No appearance/ no species	Don't know or don't remember
Number of birds	1	2	3	4	5	
Number of bird species						
Number of fish						
Number of fish species						
Number of plants under the water						
Number of plant species under the water						
Number of plants on the shore						
Number of plant species on the shore						

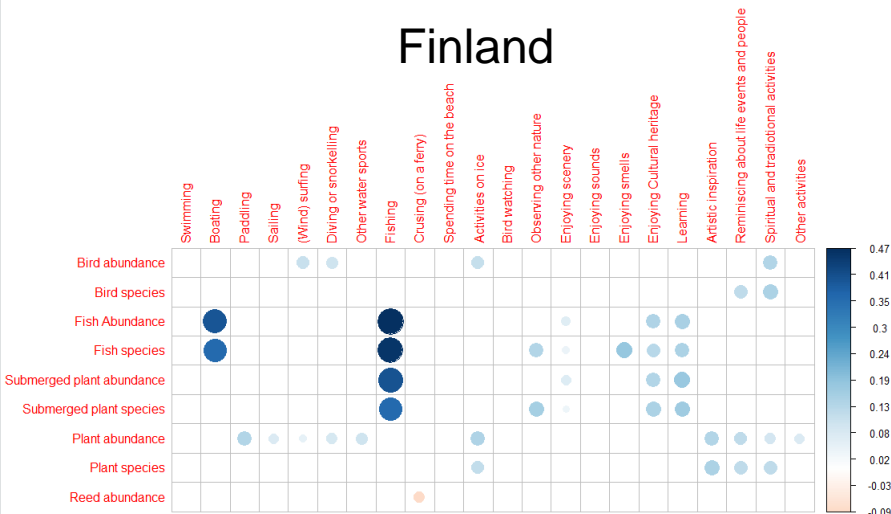


- Perceived Number of birds and bird species for all (992-191=801) locations presented in previous slides.

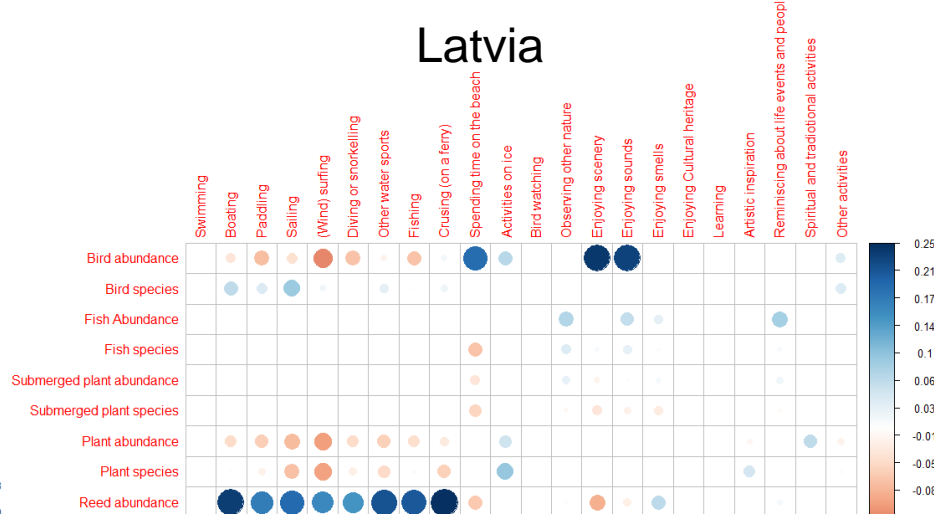
# Perceived environmental quality and use of map answers: concluding remarks

- Questions also on water quality, litter and reed cover.
- Answers are subjective and there are a lot of "I don't know"s.
- Regardless of what data (marked sites on map or site names) are used to define site coordinates for survey answers, there is a lot of uncertainty.
  - -> In most cases defined sites cannot be used to represent very accurate locations.
- Conditions on sites can perhaps be studied with respect to regional conditions of marine areas representing larger areas around defined sites ?

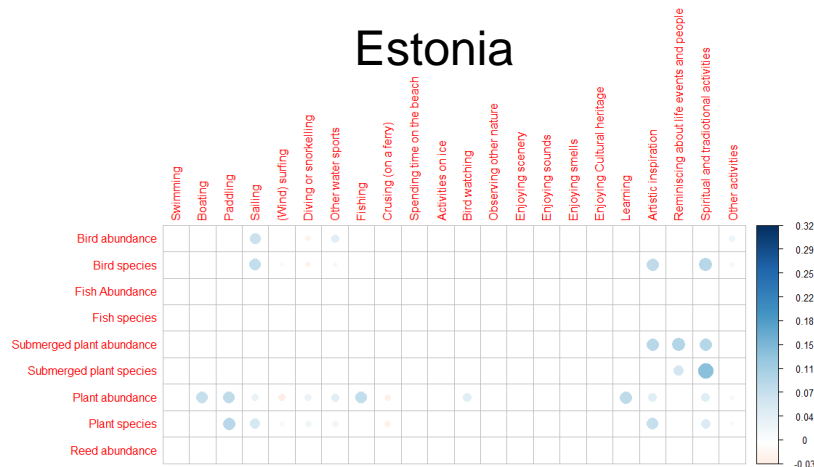
# Finland



# Latvia



# Estonia



- Significant ( $\leq 10\%$ ) Spearman correlations between perceived environmental conditions and stated frequency of in situ cultural ecosystem service use