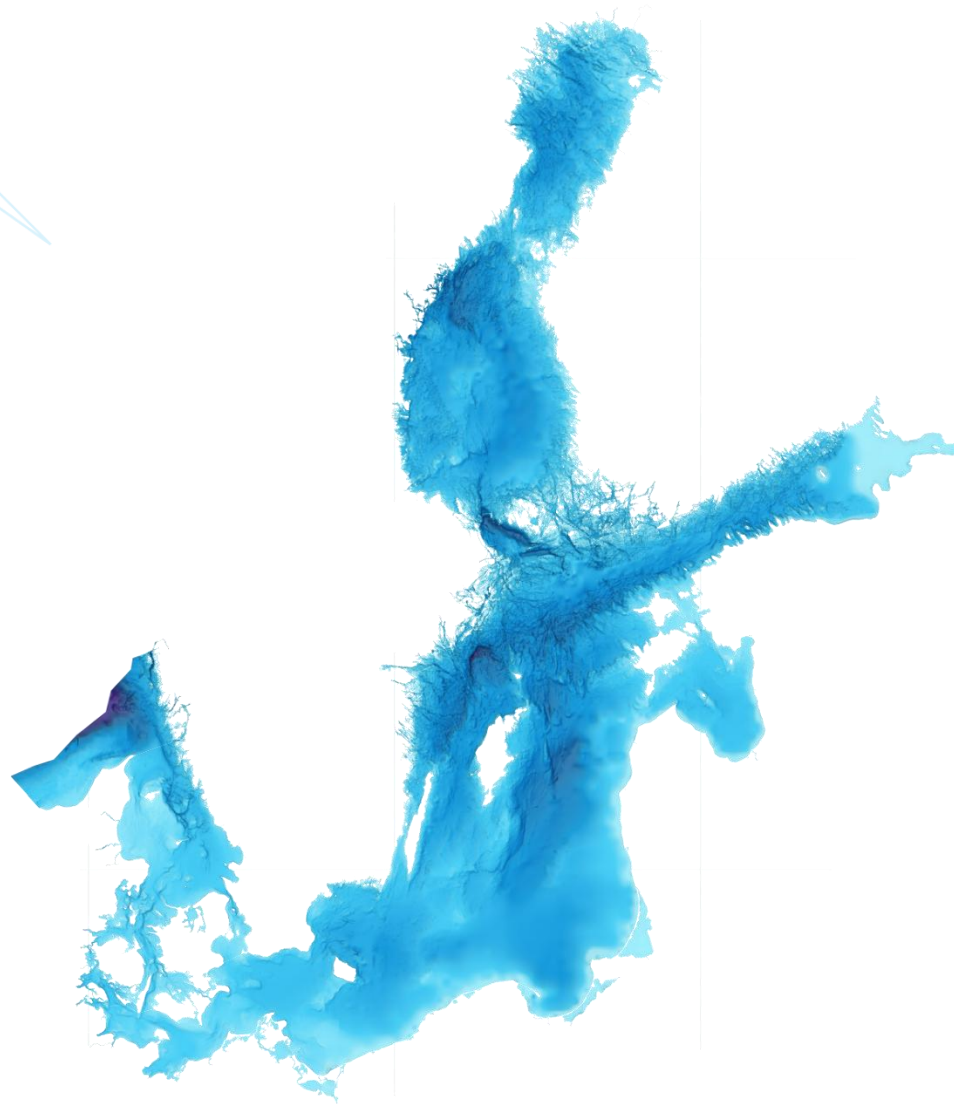


Surveying of Shallow Waters



Project Surveying of Shallow Waters

Assignment from the Swedish Civil Contingencies Agency

Perform a methodology study in order to find cost effective tools and methods for surveying shallow waters in the coastal zone as well as in lakes and rivers.

Shallow Waters is defined as from the shoreline down to 10m of depth.

A better cost estimation for the survey of the Swedish shallow areas is also to be developed based on the results of the tests and studies.

Background

National platform for prevention of Natural Disasters

Identified needs for high resolution depth data in the coastal zone:

- Flood modelling
- Erosion surveying
- Climate change adjustment
- Environmental Research and Mapping
- Diffusion of toxins
- Mapping of marine habitats
- Mapping of the marine heritage
- Geology

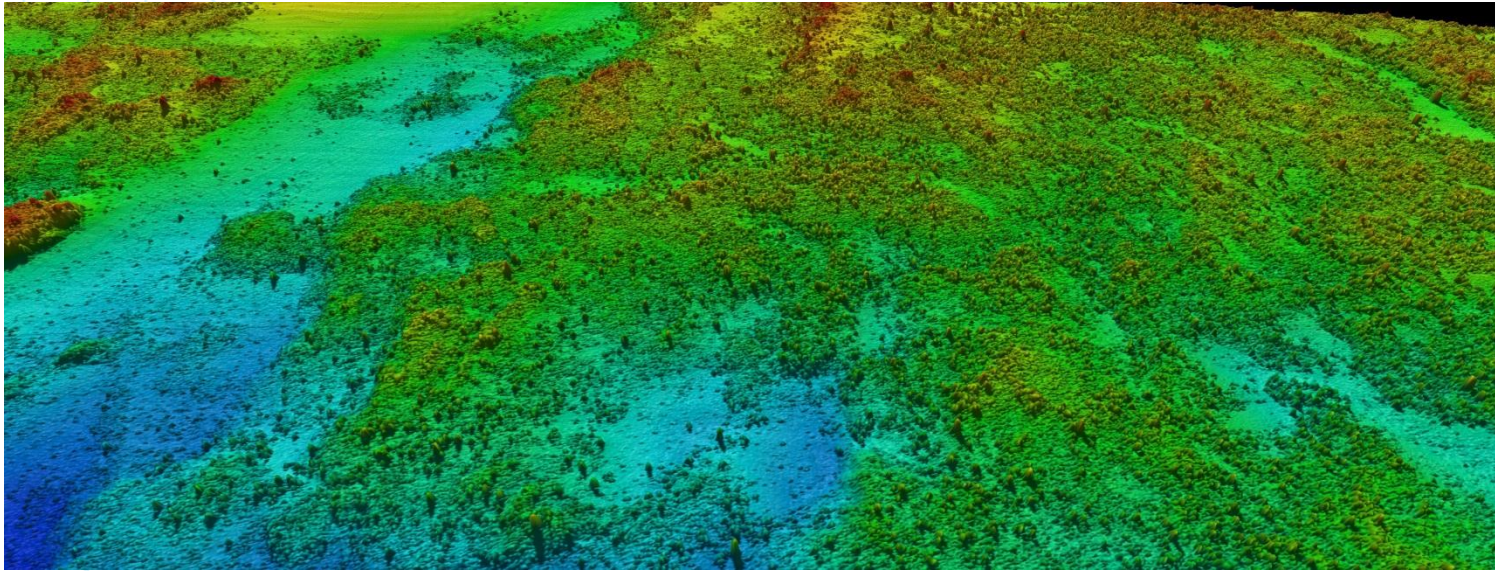
Less than 5 % of Swedish waters, shallower than 10 m, have been surveyed according to the IHO international standard.

Studies

- **Analyze different survey technics**
 - LIDAR, laser bathymetry
 - echo sounding, hydro acoustic
- **Practical studies will be performed on different hydro acoustic systems**
- **Analysis of capability of LIDAR will be based on already performed surveys in Sweden and in the neighboring countries**

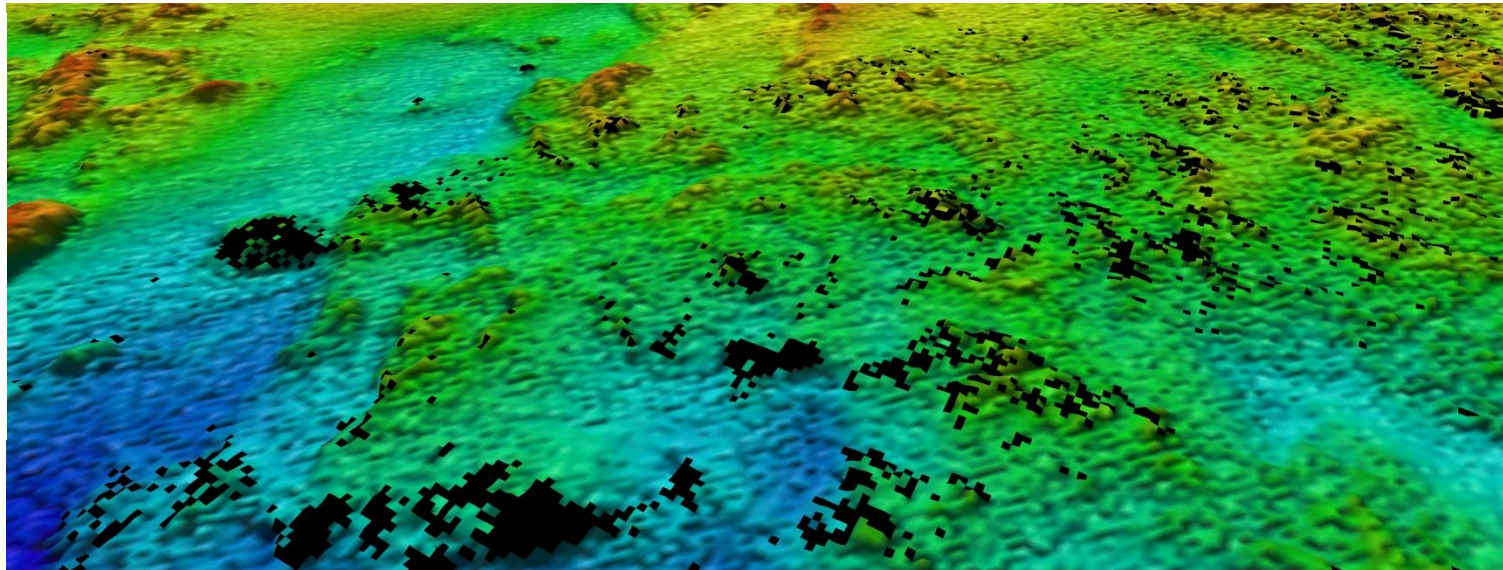
Previous experience in Sweden

Comparison of areas, approximately 1000 x 750 m, depth 2,5 - 11 m

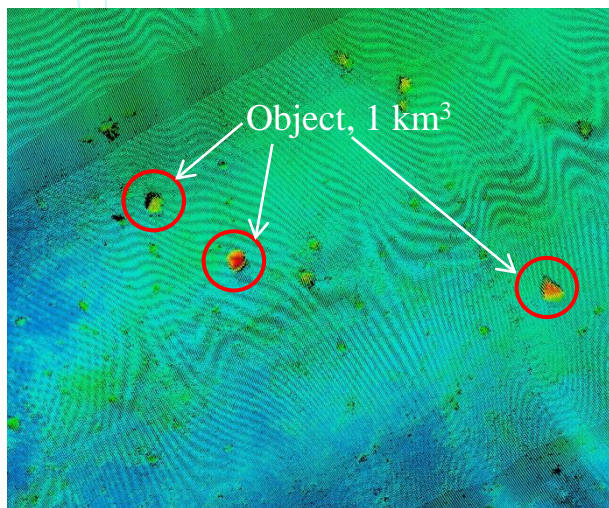


Multibeam, 1x1 m grid. Plenty of stones in the area.

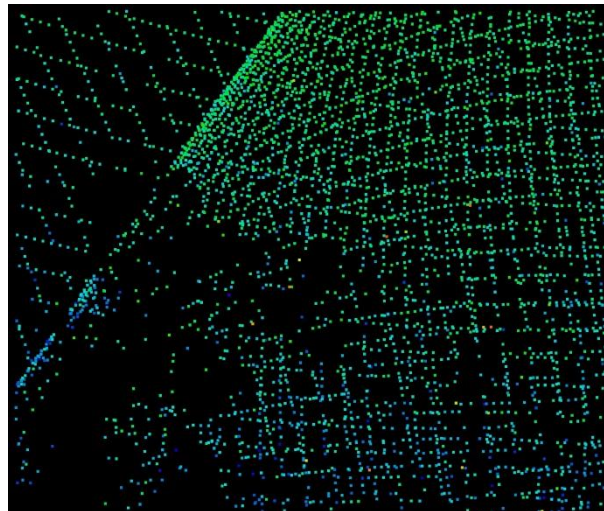
LIDAR (Hawkeye II), 5x5 m grid. In general the same image of the seafloor. However no stones/objects. Some gaps where the LIDAR system couldn't survey the seafloor.



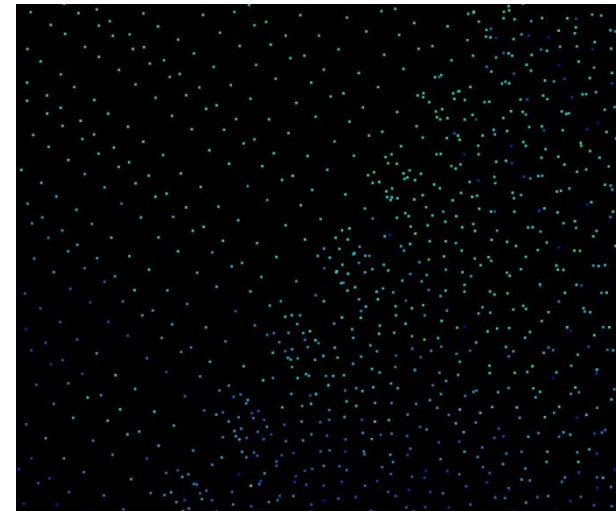
Comparison of point density an area of 40 x 40m, 4 – 5 m depth



Multibeam, view from above

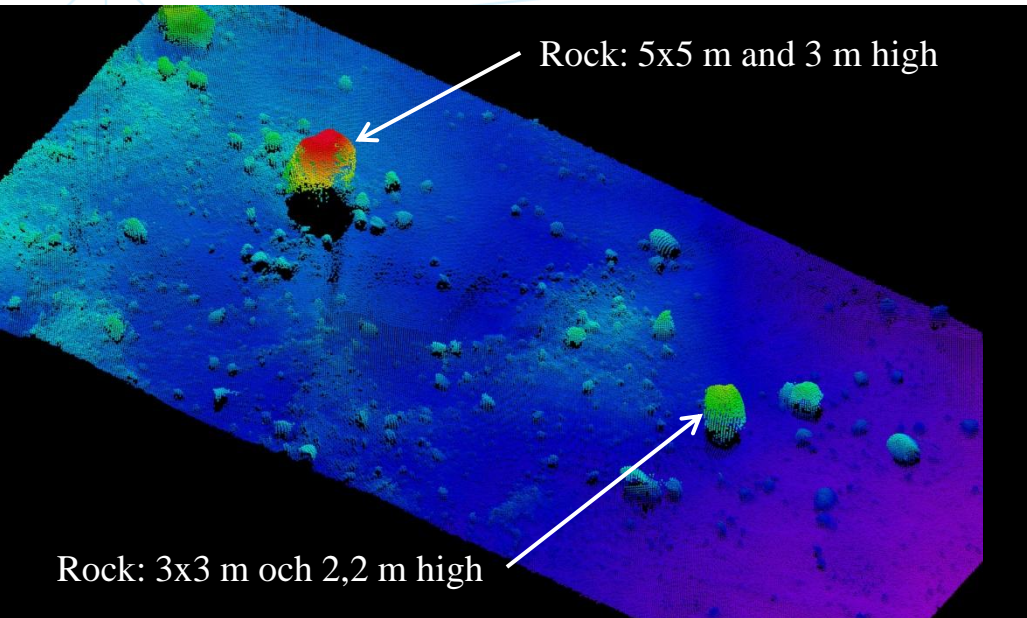


LIDAR (Chiroptera)

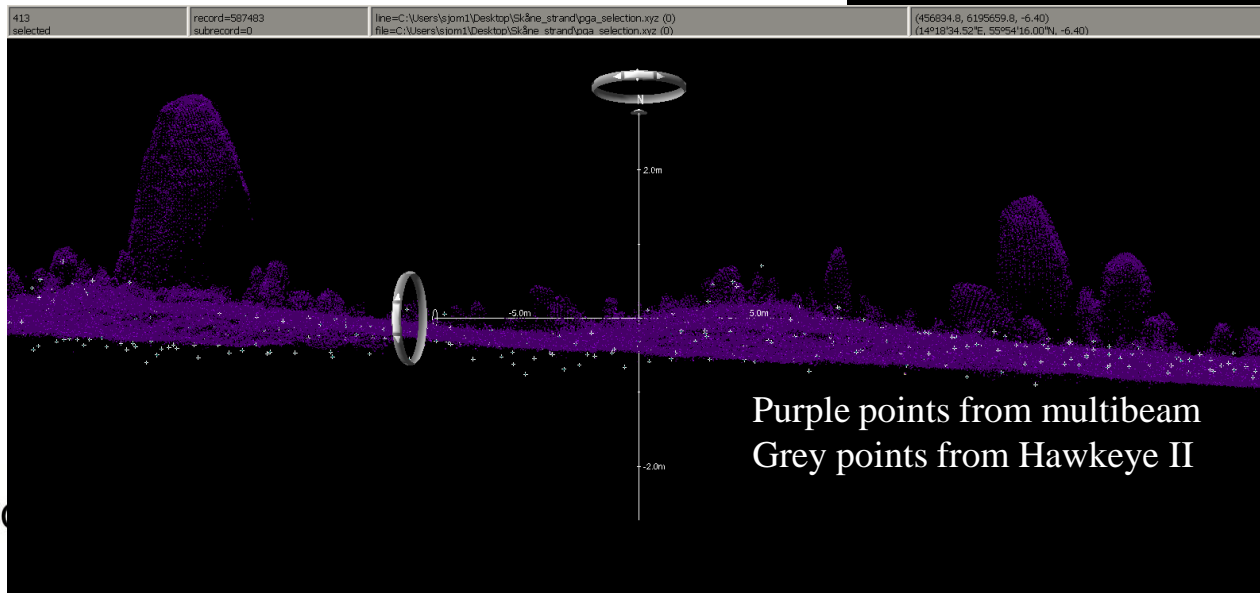
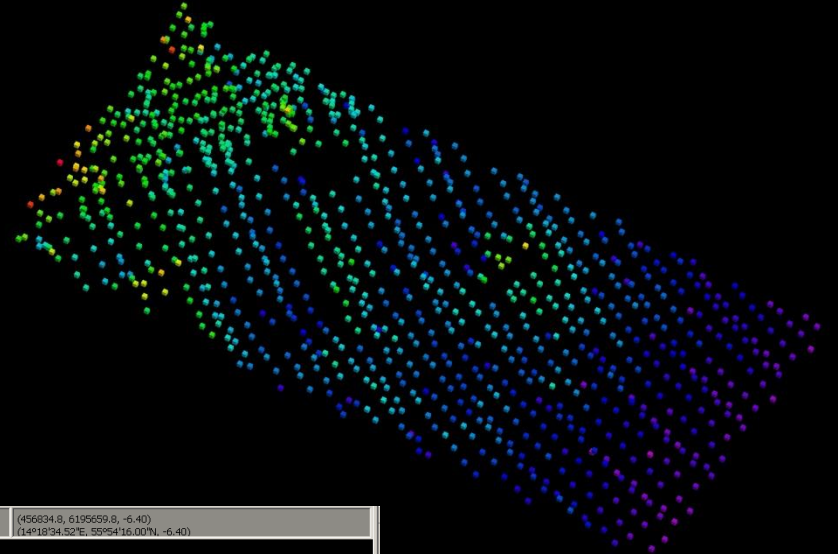


LIDAR (Hawkeye II)

Object detection LIDAR vs Multibeam



Multibeam
Mean depth: ca 6 m
Shallowest point: 2,75 m

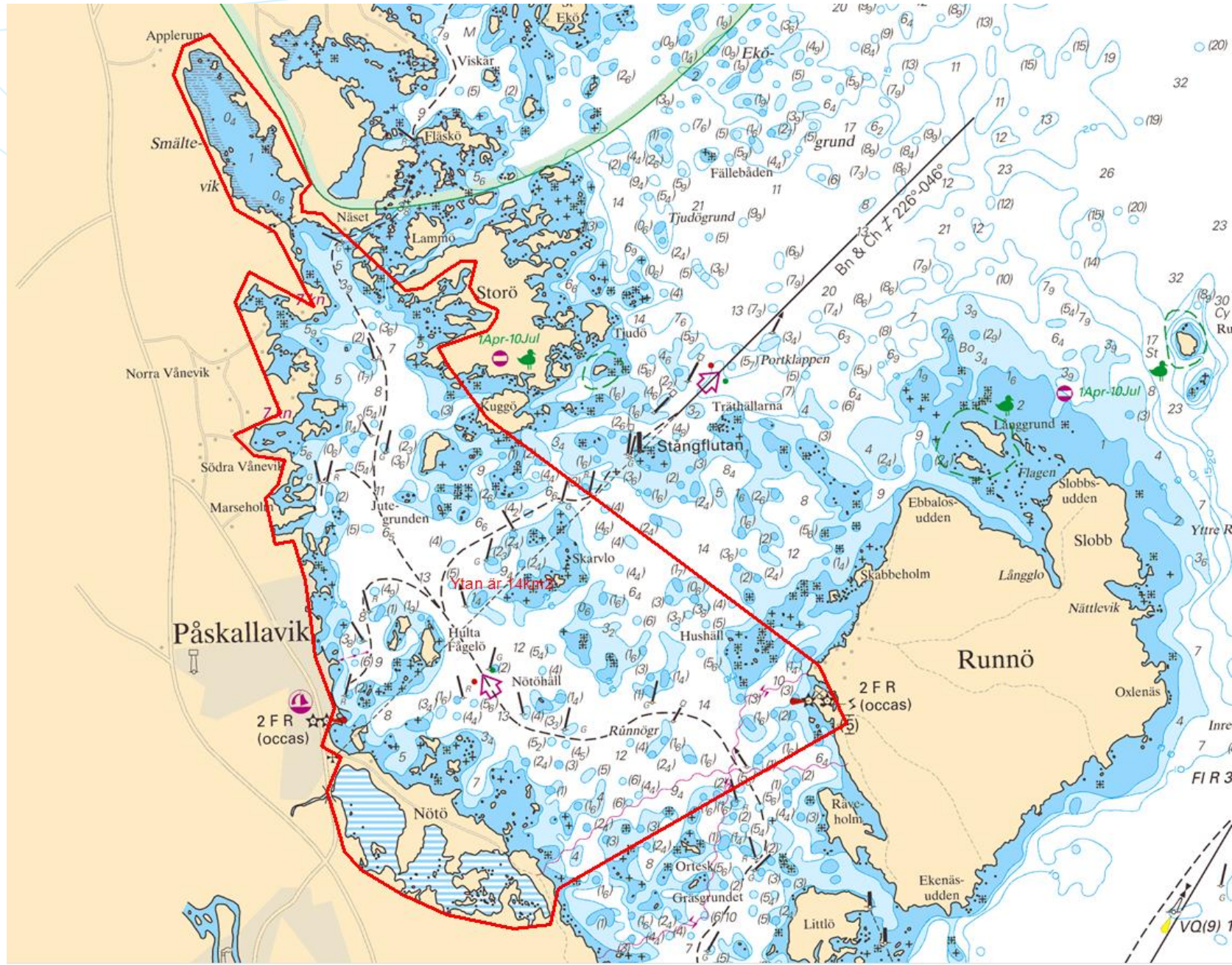


LIDAR (Hawkeye II)
Could not find any of
the rocks found with the
multibeam system.

-

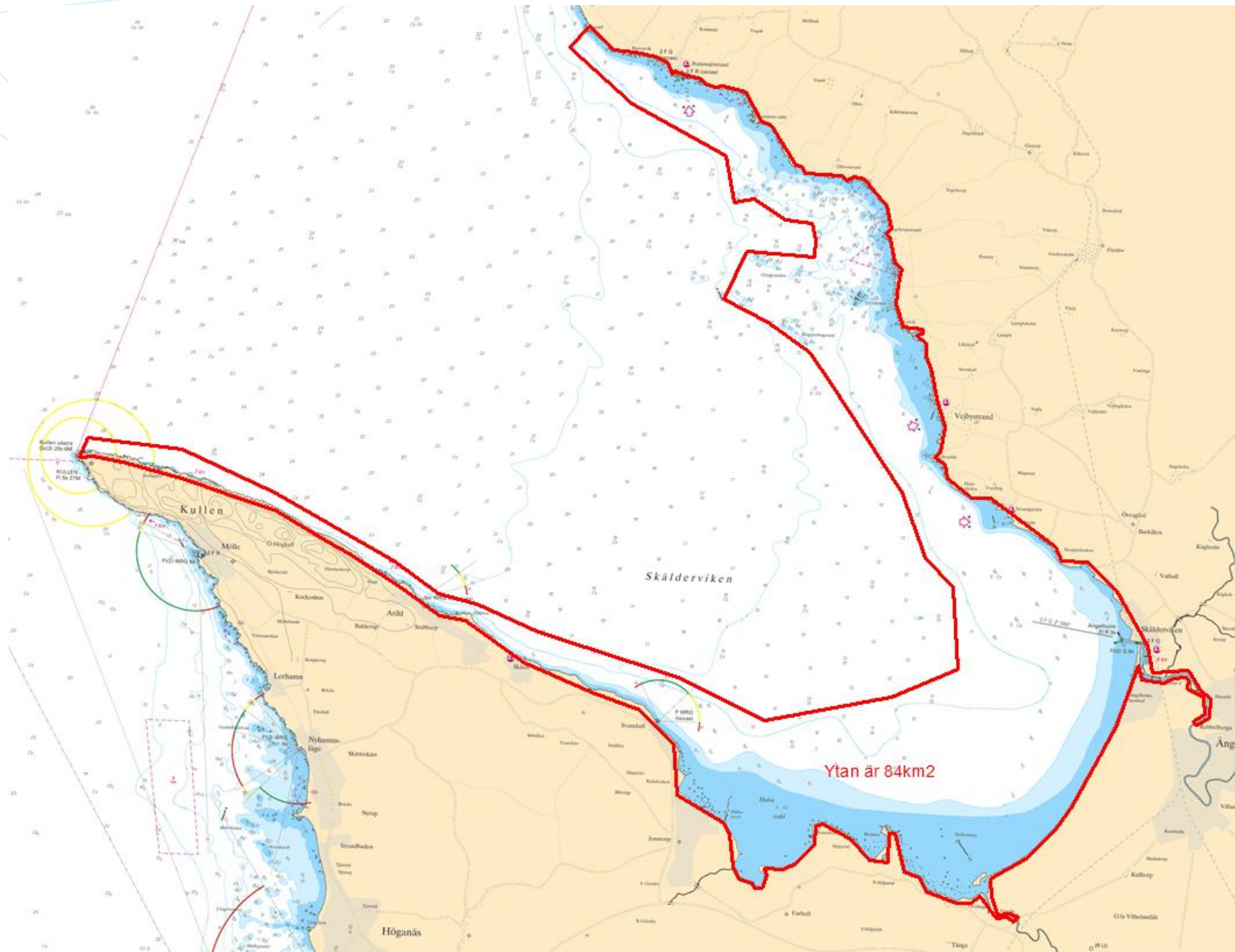
Påskallavik

14 km²



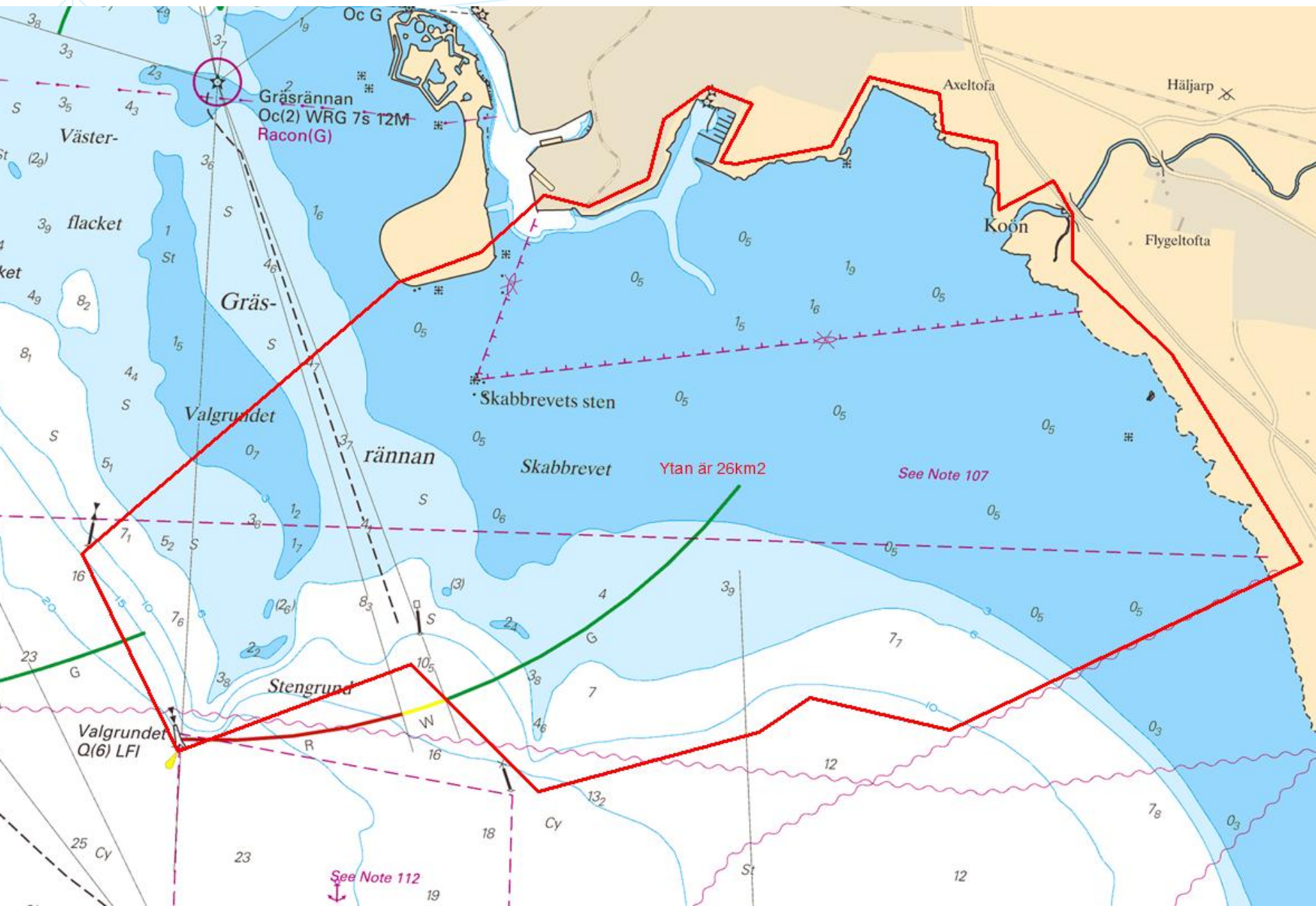
Skälderviken

84 km²



Skabbrevet

26 km²





**Thank you for your
attention!**

Questions?