

Annex 3 – Conservation values and Marxan with Zones maps

Annex 3 contains conservation value maps based on benthic vegetation and animals, fish recruitment areas, wintering seabirds and haul-out sites for seals, as well as inputs and results to/from a Marxan with Zones analysis.

Conservation values

Conservation values based on benthic vegetation and animals, fish recruitment areas, wintering seabirds and haul-out seals.

Fig.	Name	File name
197	Macrobenthic biotopes	hano_conservation_values_veg.shp
198	Zoobenthic biotopes	hano_conservation_values_zoobenthos.shp
199	Coastal fish recruitment	hano_conservation_values_fish.shp
200	Wintering waterbirds	hano_conservation_values_birds.shp
201	Haul-out sites for seals	hano_conservation_values_seals.shp
202	Compiled conservation values	hano_conservation_values_sum.shp

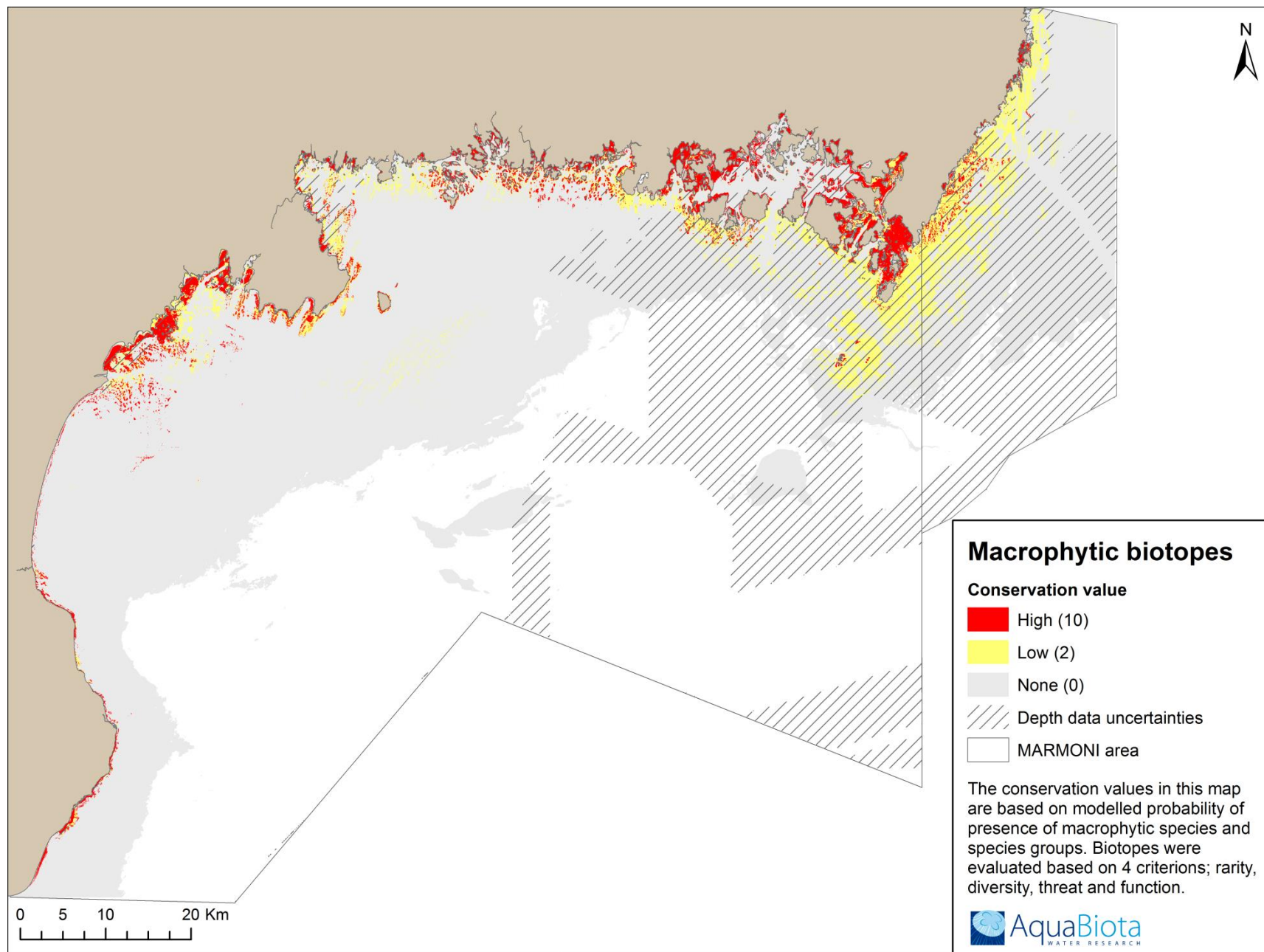


Figure 197. Conservation values, estimated on predicted coverage of benthic vegetation.

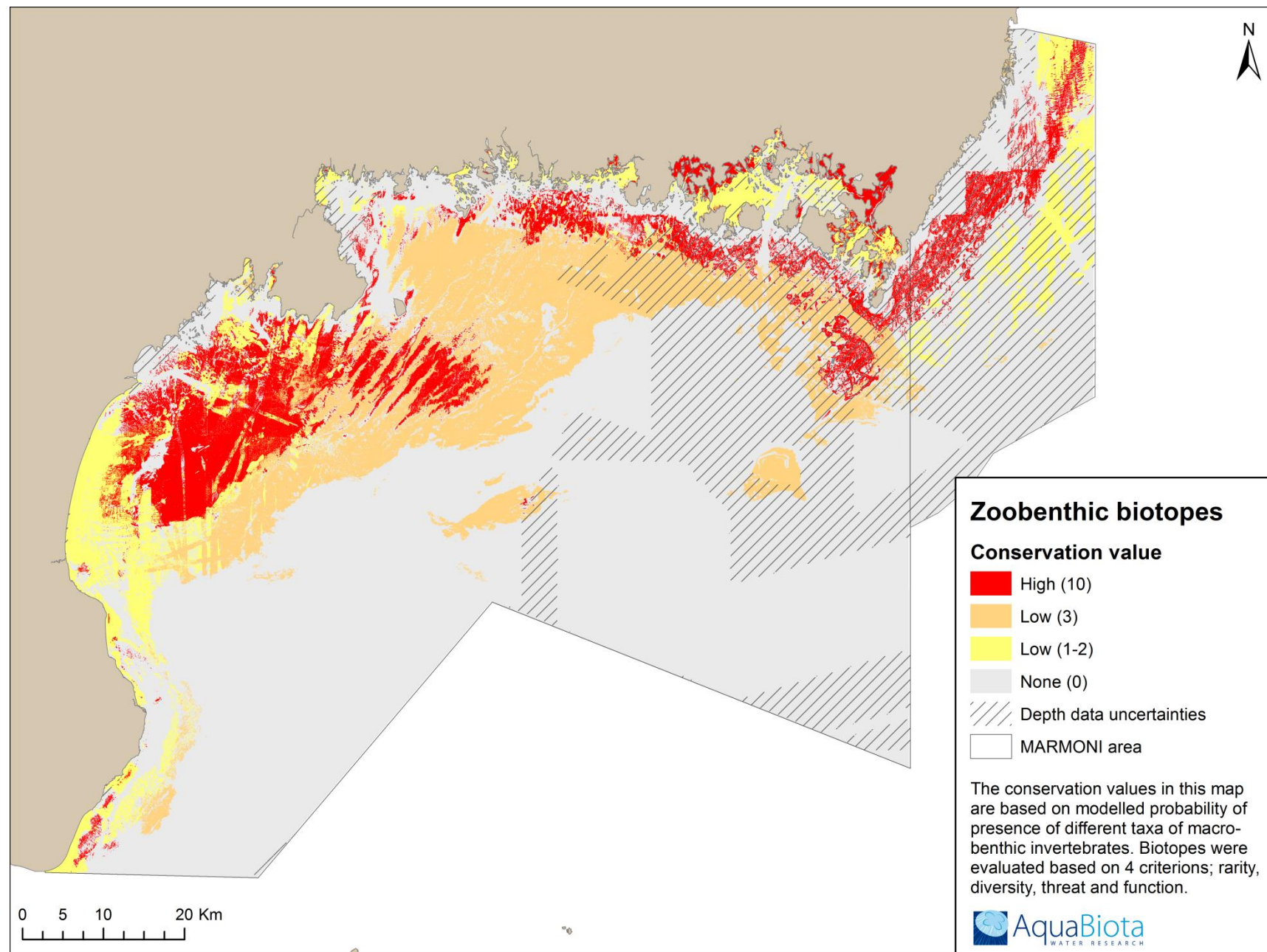


Figure 198. Conservation values, estimated on predicted coverage of zoobenthos.

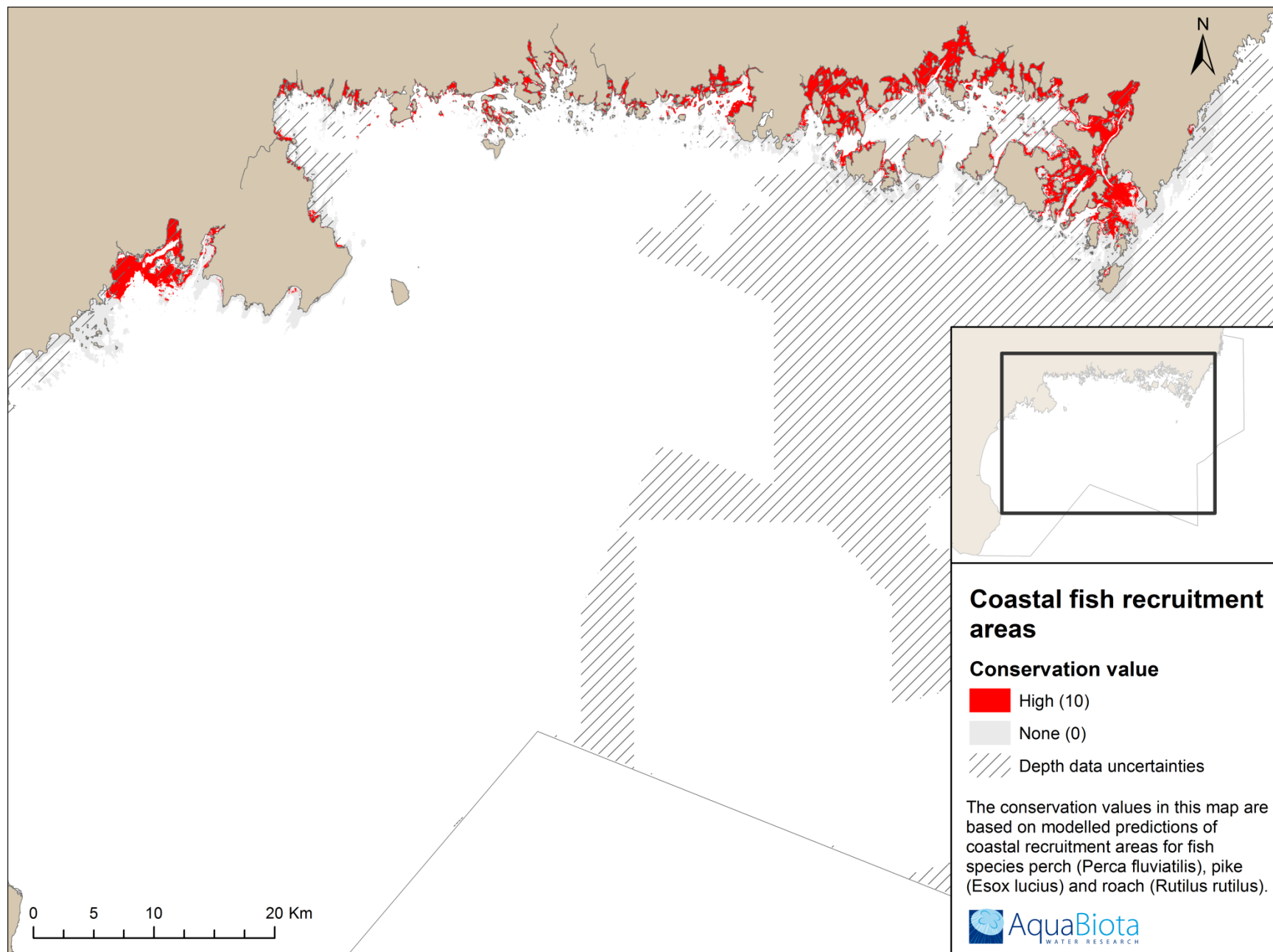


Figure 199. Conservation values based on coastal recruitment areas for perch, pike and roach.

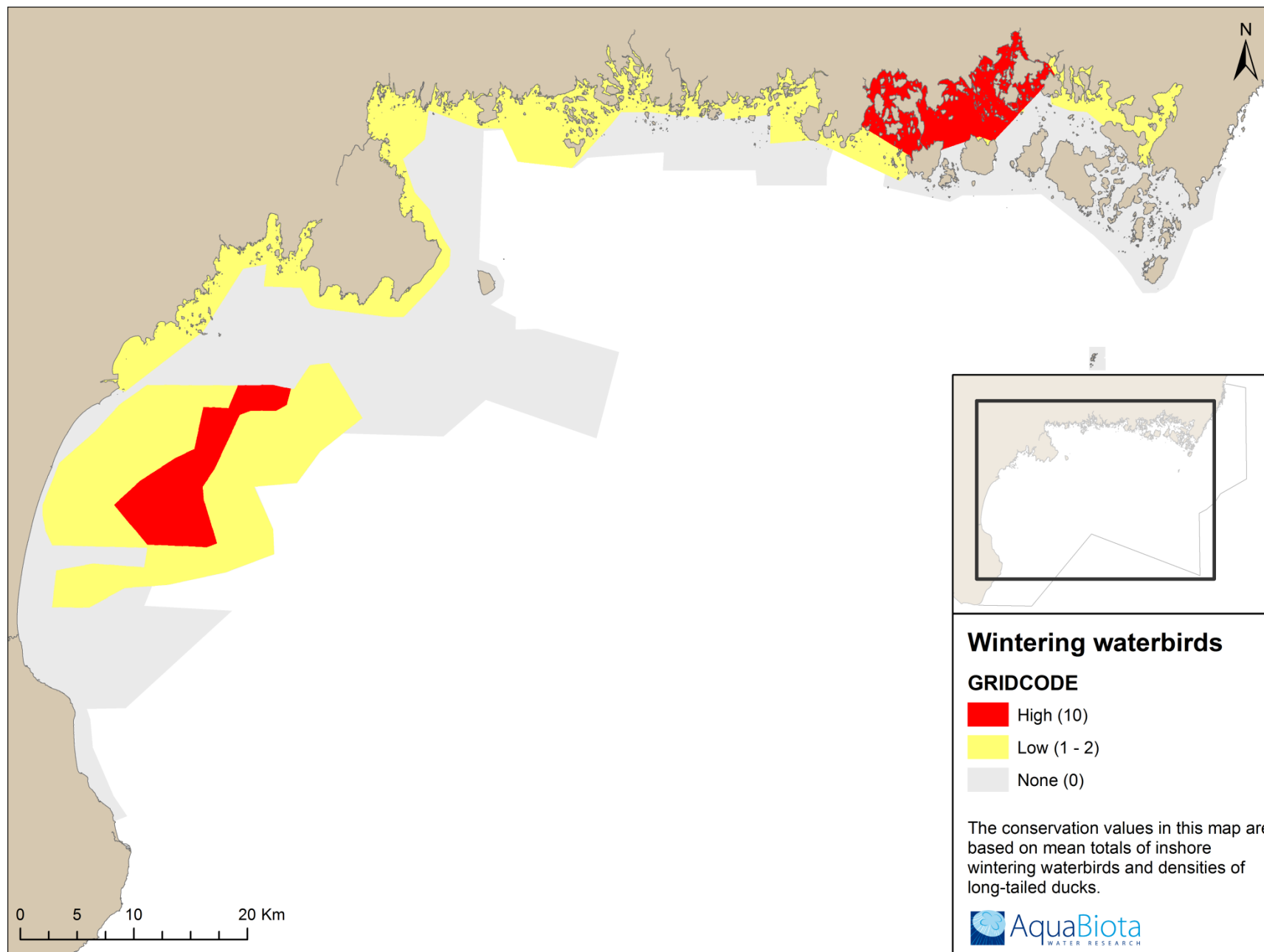


Figure 200. Conservation values assessed in Hanö Bight based on concentrations of wintering waterbirds.

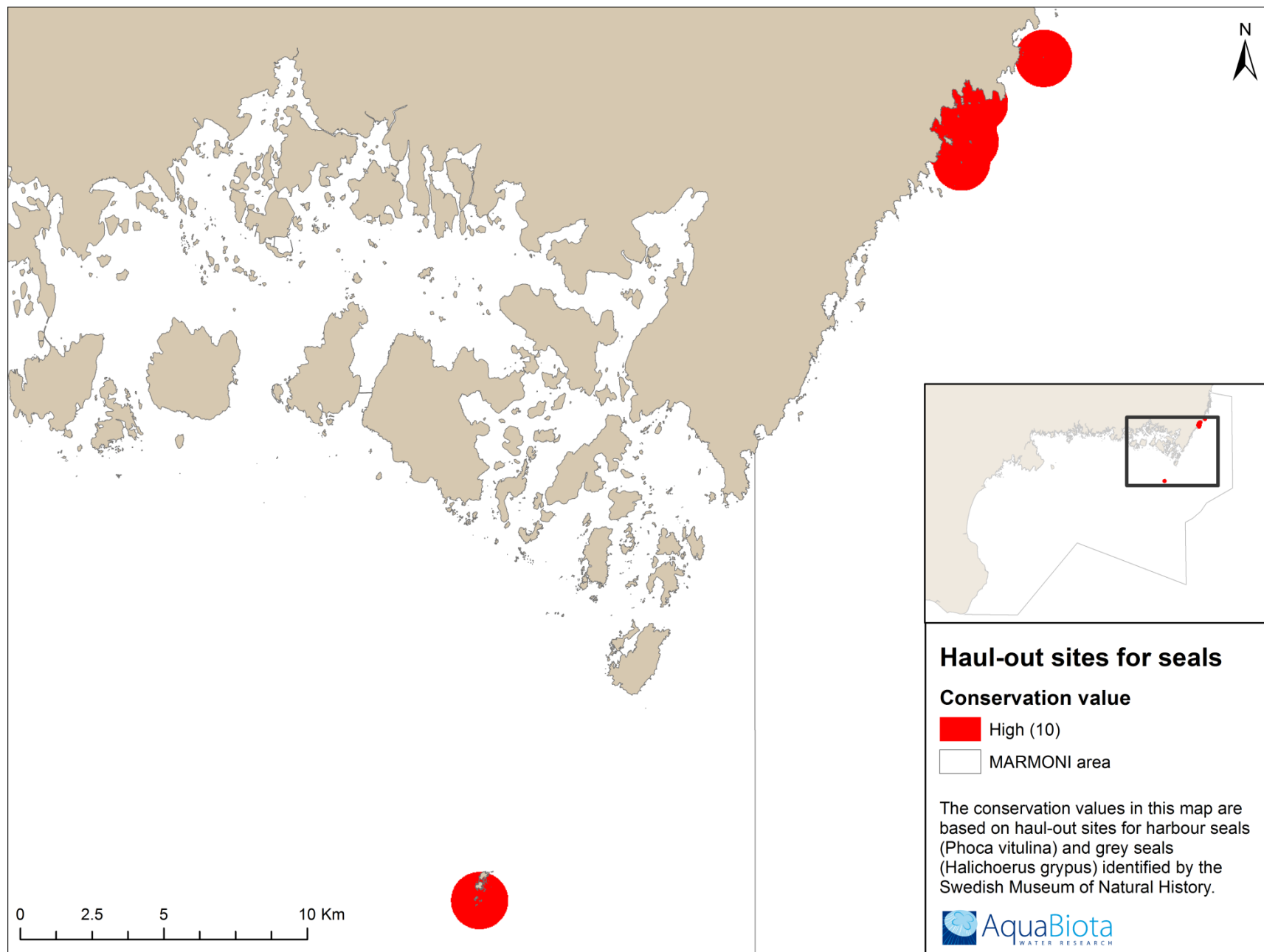


Figure 201. Conservation values in Hanö Bight based on restricted areas for gray and harbor seals.

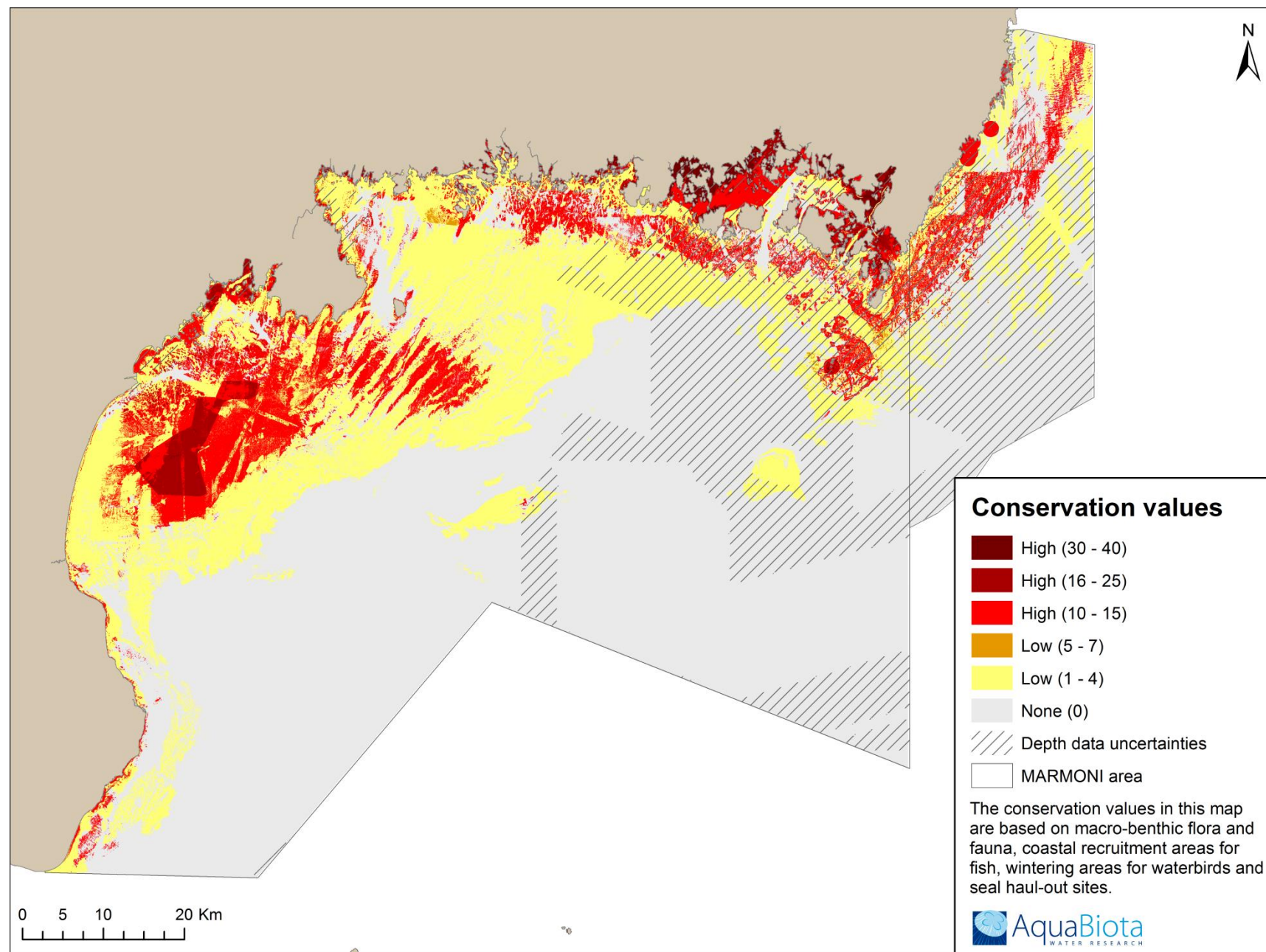


Figure 202. Conservation values in Hanö Bight and Blekinge County, based on densities of wintering waterbirds, important areas of importance for grey and harbour seals and predicted occurrences of coastal fish recruitment areas, benthic vegetation and zoobenthos.

Conservation values used in Marxan in Zones

Conservation value maps used as input to a Marxan with Zones analysis.

Fig.	Name
203	High or very high predicted probability of presence of toothed wrack (<i>Fucus serratus</i>)
204	High or very high predicted probability of over 25 % cover of red seaweed (<i>Furcellaria lumbricalis</i>)
205	High predicted probability of presence of red algae species (<i>Coccotylus truncates</i> / <i>Phyllophora pseudoceranoides</i>)
206	High or very high predicted probability of over 25 % cover of blue mussels (<i>Mytilus edulis</i>)
207	High or very high predicted probability of over ≥ 500 individuals/m ² of baltic clam (<i>Macoma balthica</i>)
208	High or very high predicted probability of over ≥ 300 individuals/m ² of polychaete species <i>Marenzelleria</i> spp.
209	High or very high predicted probability of over ≥ 300 individuals/m ² of crustaceans <i>Monoporeia affinis</i> / <i>Pontoporeia femorata</i>
210	High or very high predicted probability of over ≥ 100 individuals/m ² of crustaceans <i>Bathyporeia</i> spp.
211	Medium and high concentration (at least 20 individuals/km ²) area of wintering long-tailed ducks (<i>Clangula hyemalis</i>)

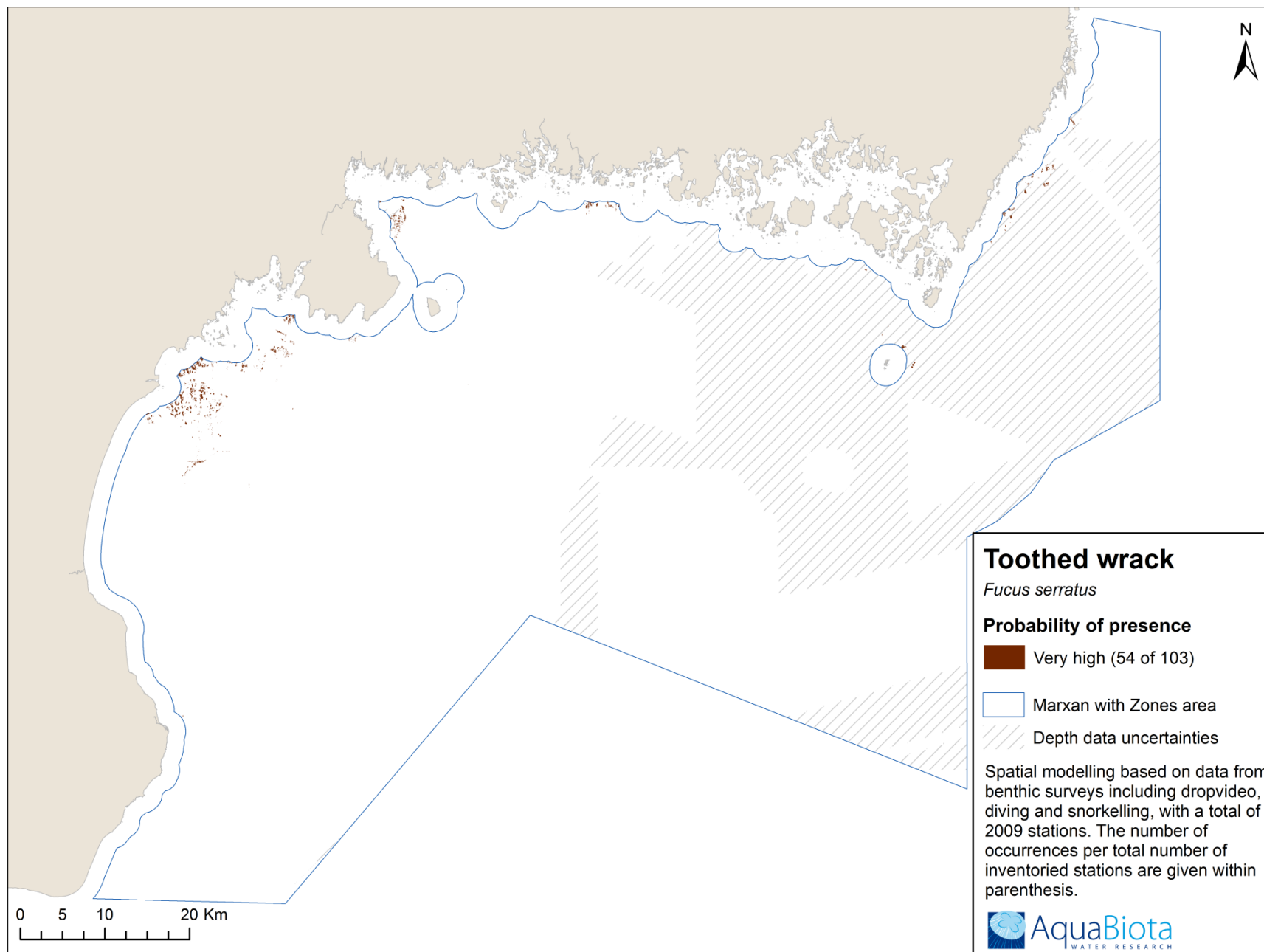


Figure 203. High or very high predicted probability of presence of toothed wrack (*Fucus serratus*).

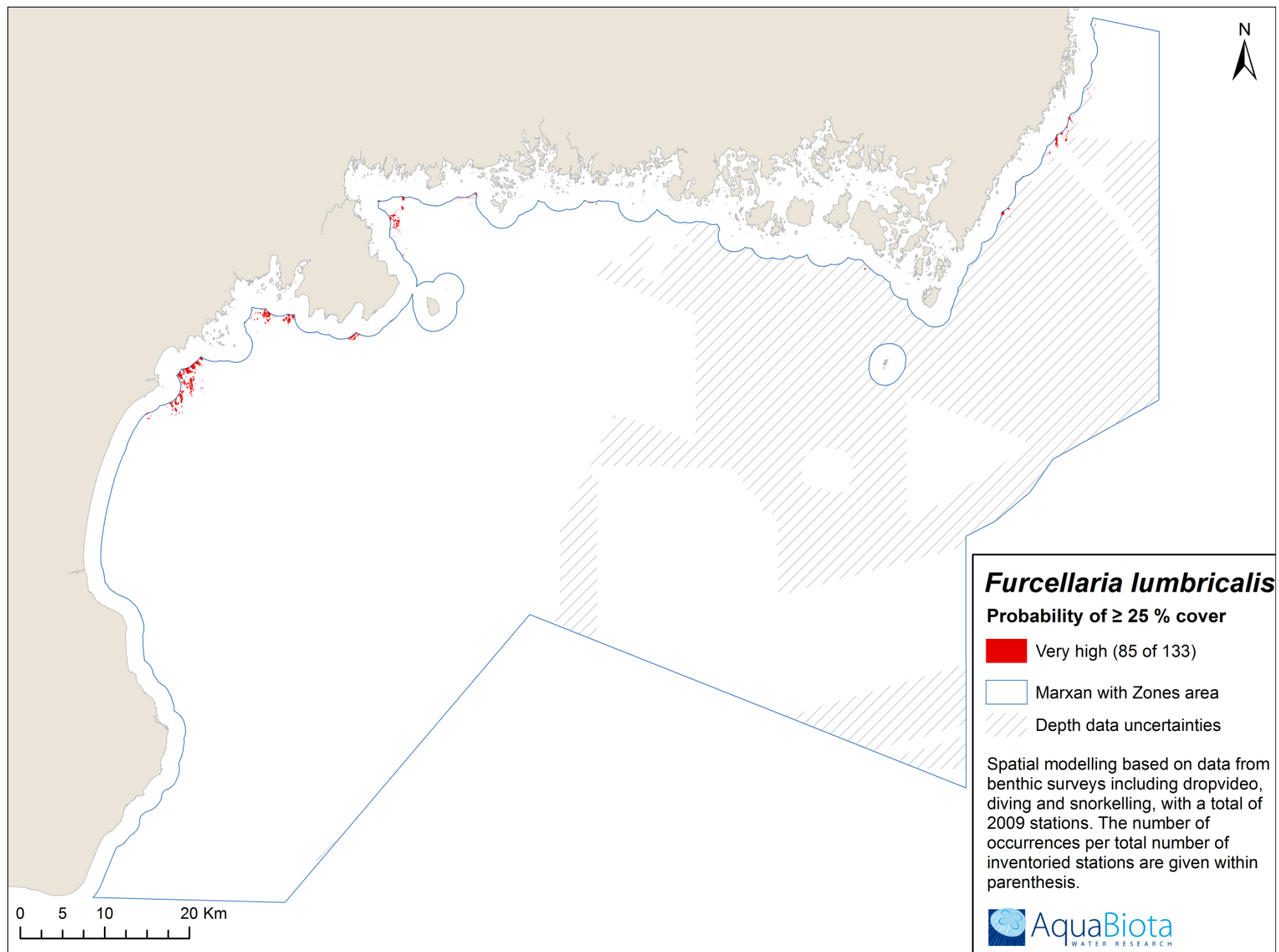


Figure 204. High or very high predicted probability of over 25 % cover of red seaweed (*Furcellaria lumbricalis*).

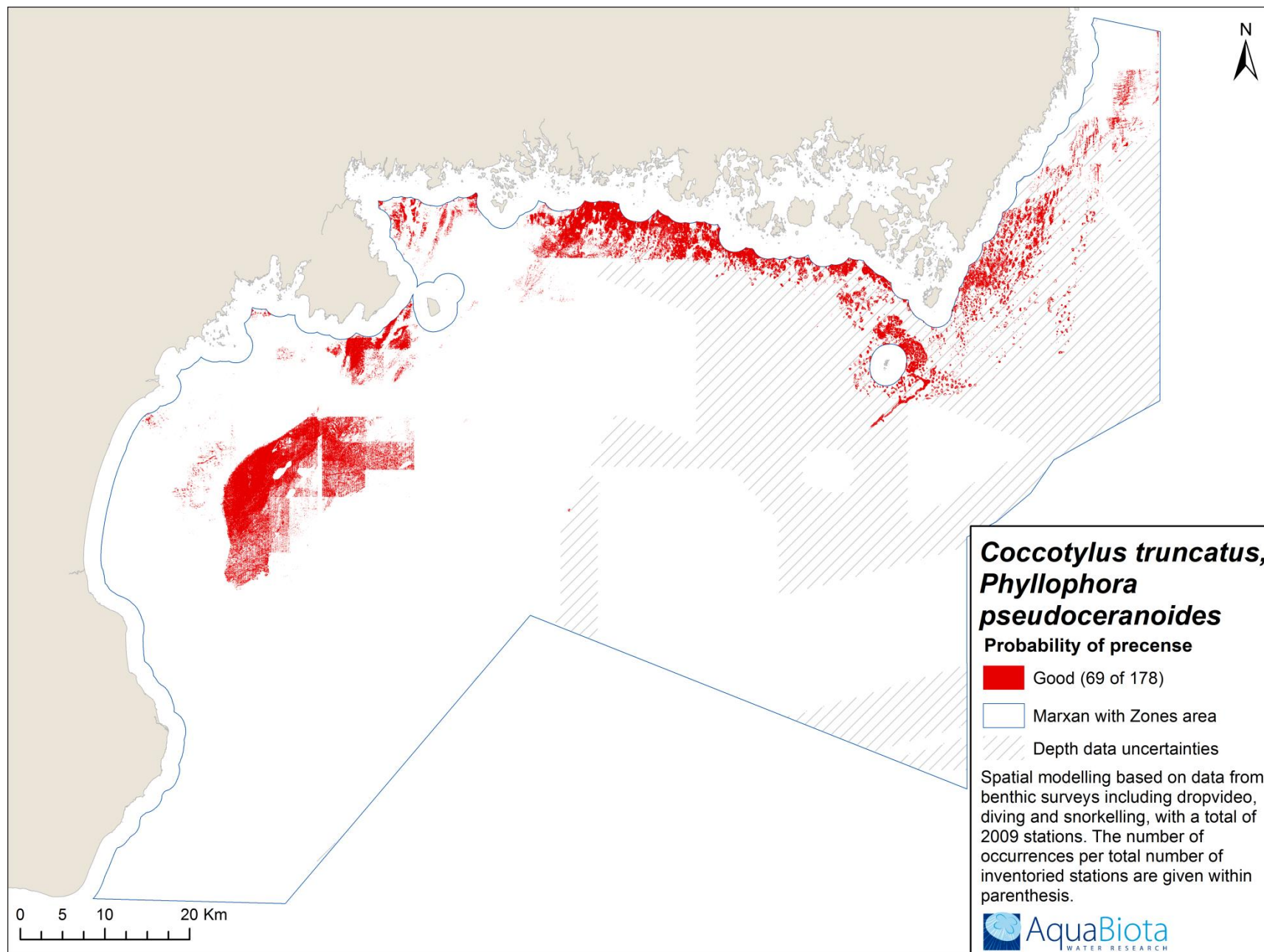


Figure 205. High predicted probability of presence of red algae species (*Coccotylus truncates* / *Phyllophora pseudoceranoides*).

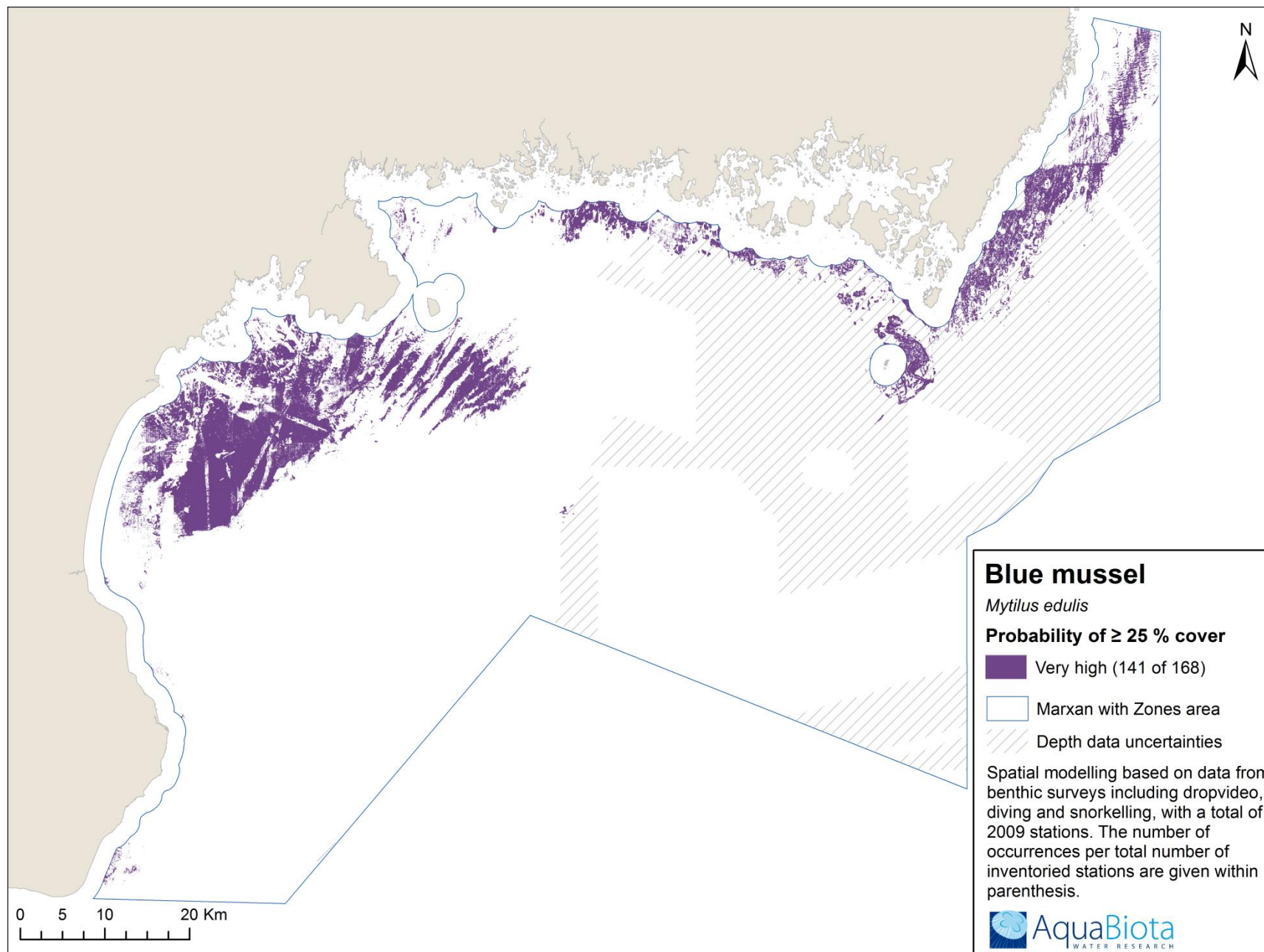


Figure 206. High or very high predicted probability of over 25 % cover of blue mussels (*Mytilus edulis*).

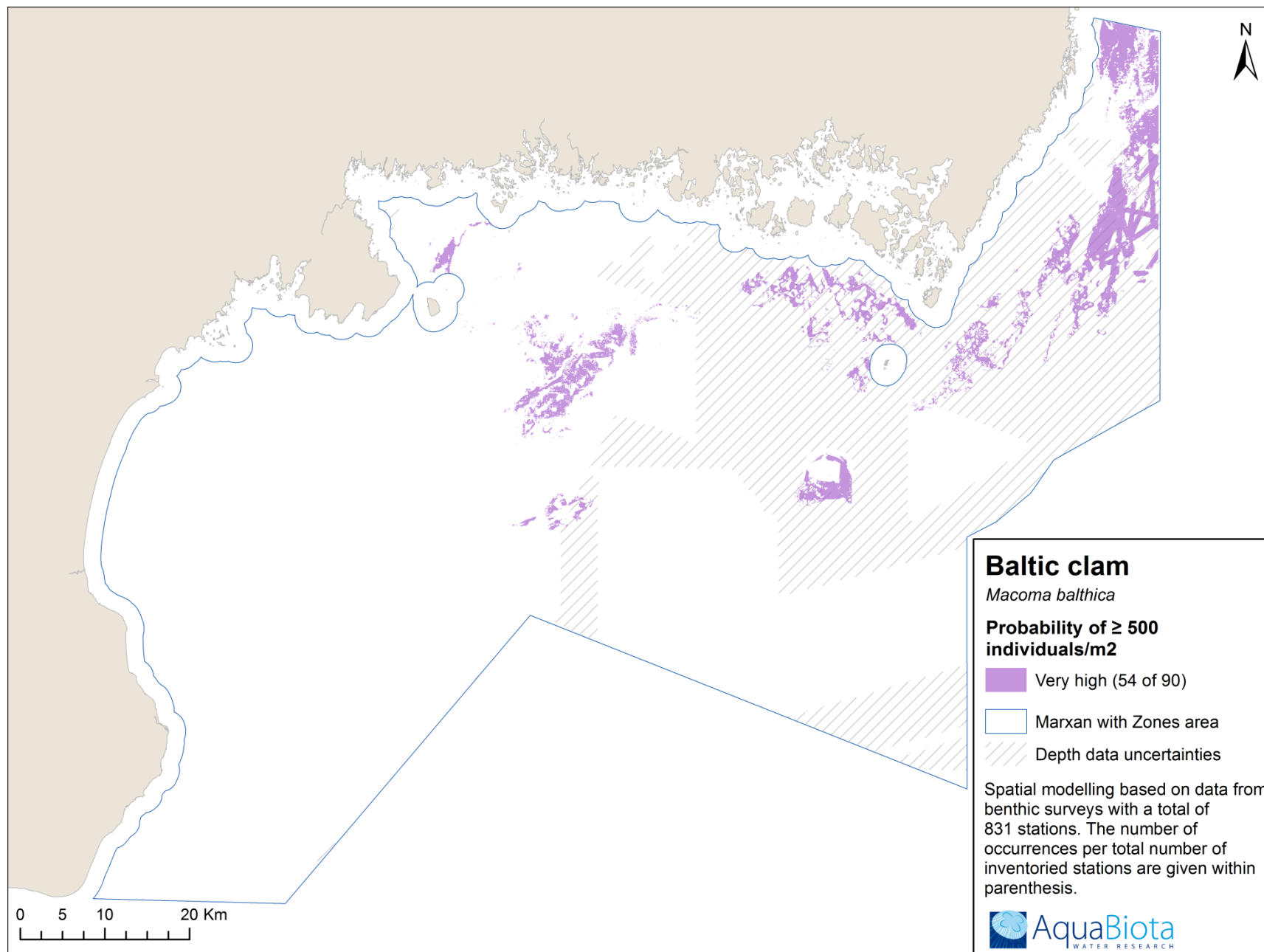


Figure 207. High or very high predicted probability of over ≥ 500 individuals/m² of baltic clam (*Macoma balthica*).

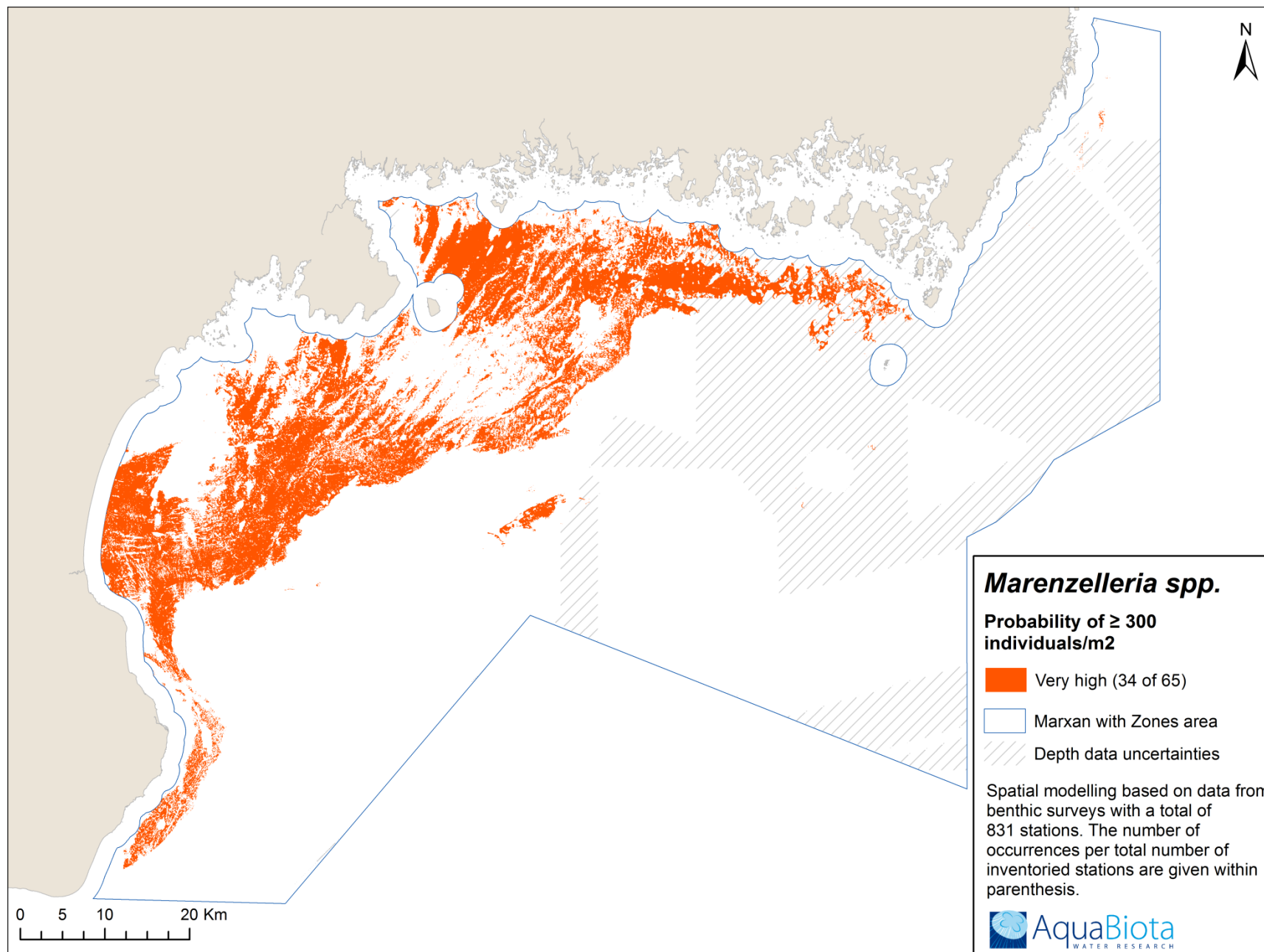


Figure 208. High or very high predicted probability of over ≥ 300 individuals/m² of polychaete species *Marenzelleria* spp.

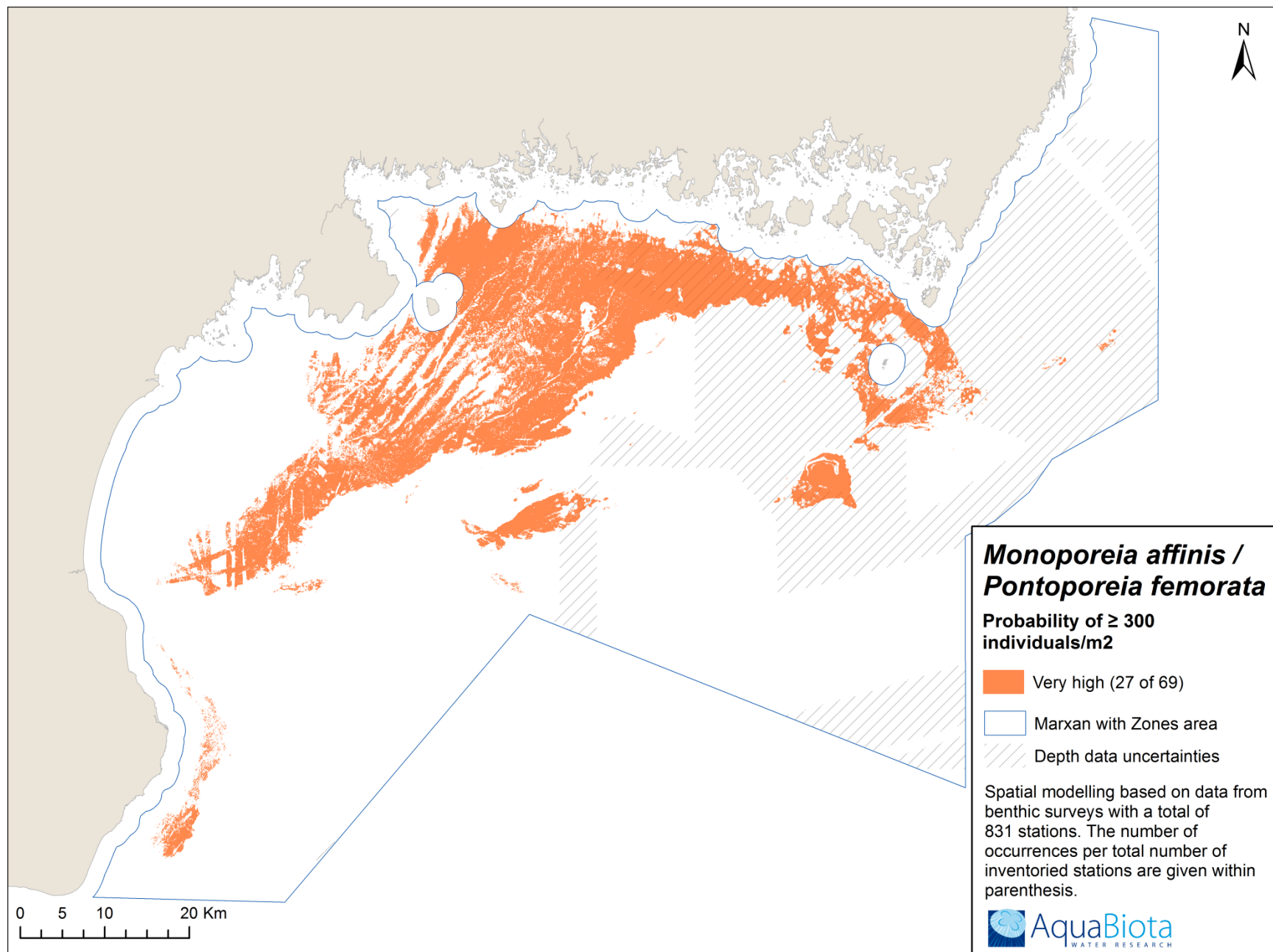


Figure 209. High or very high predicted probability of over ≥ 300 individuals/m² of crustaceans *Monoporeia affinis* / *Pontoporeia femorata*.

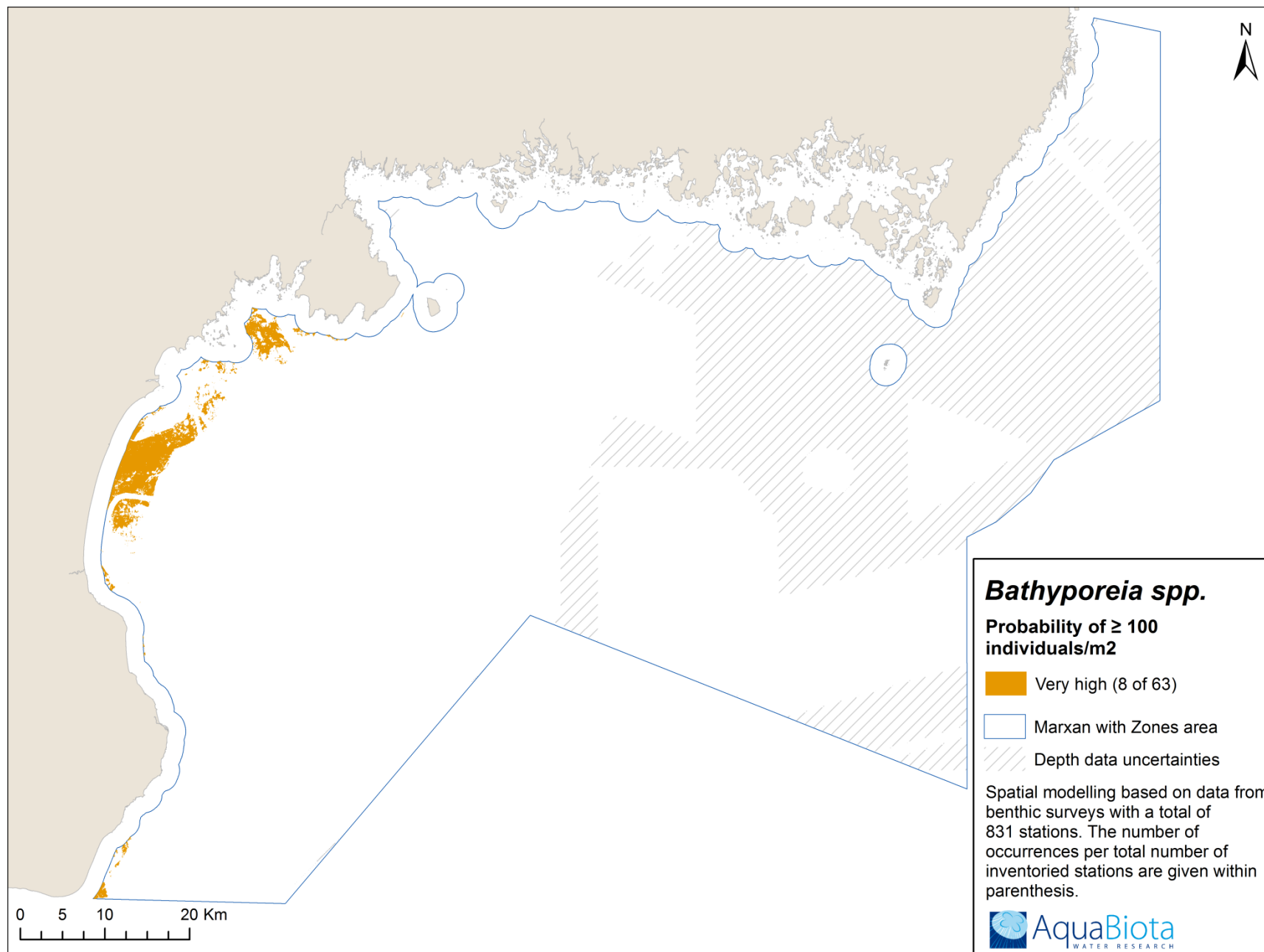


Figure 210. High or very high predicted probability of over ≥ 100 individuals/m² of crustaceans *Bathyporeia* spp.

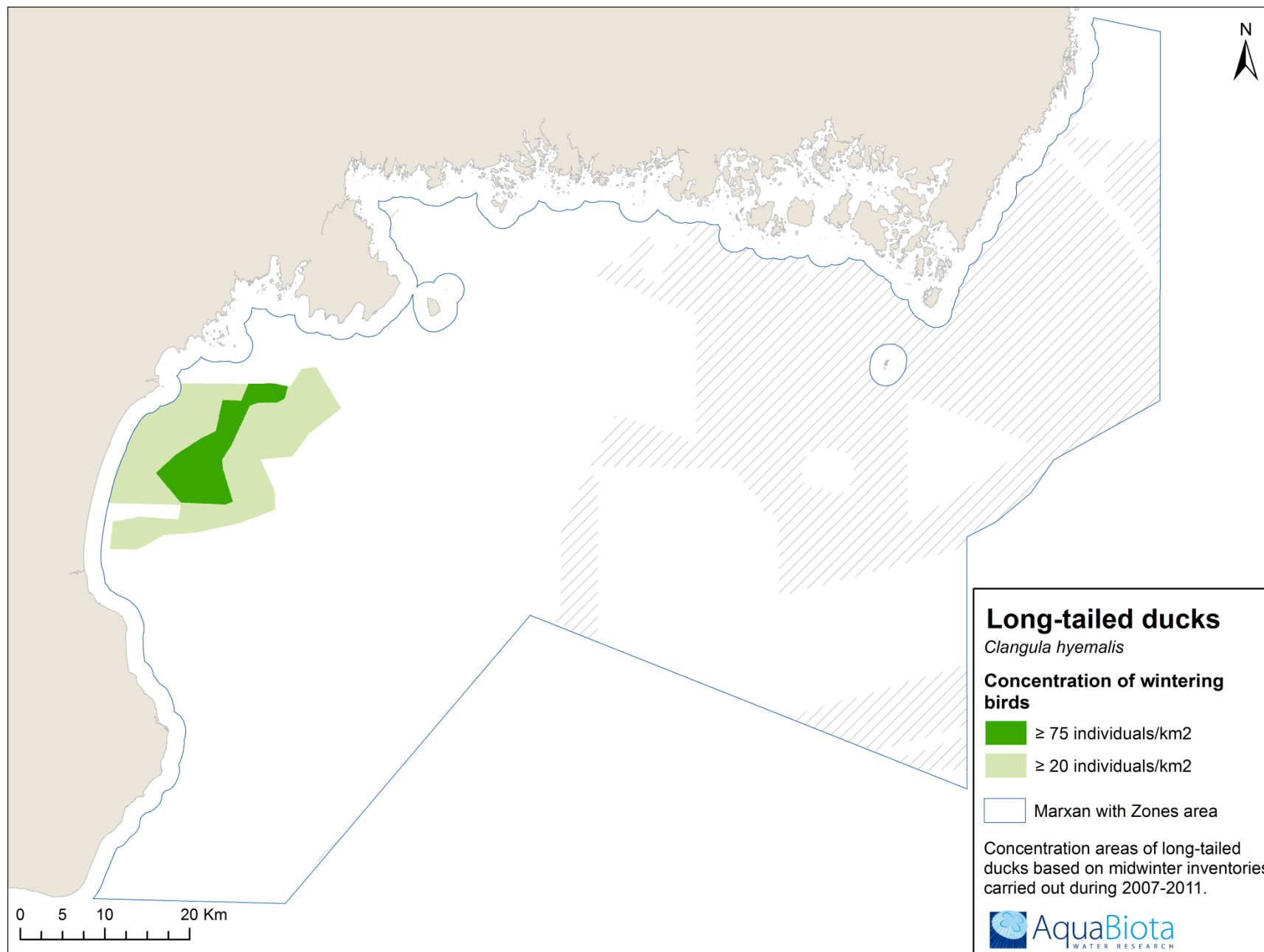


Figure 211. Concentration areas of wintering long-tailed ducks (*Clangula hyemalis*).

Activities

Activity maps used as input to a Marxan with Zones analysis.

Fig.	Name
212	Military activities
213	Marine traffic and anchorage sites
214	Wind farms
215	Fishing activities
216	Areas of national interest

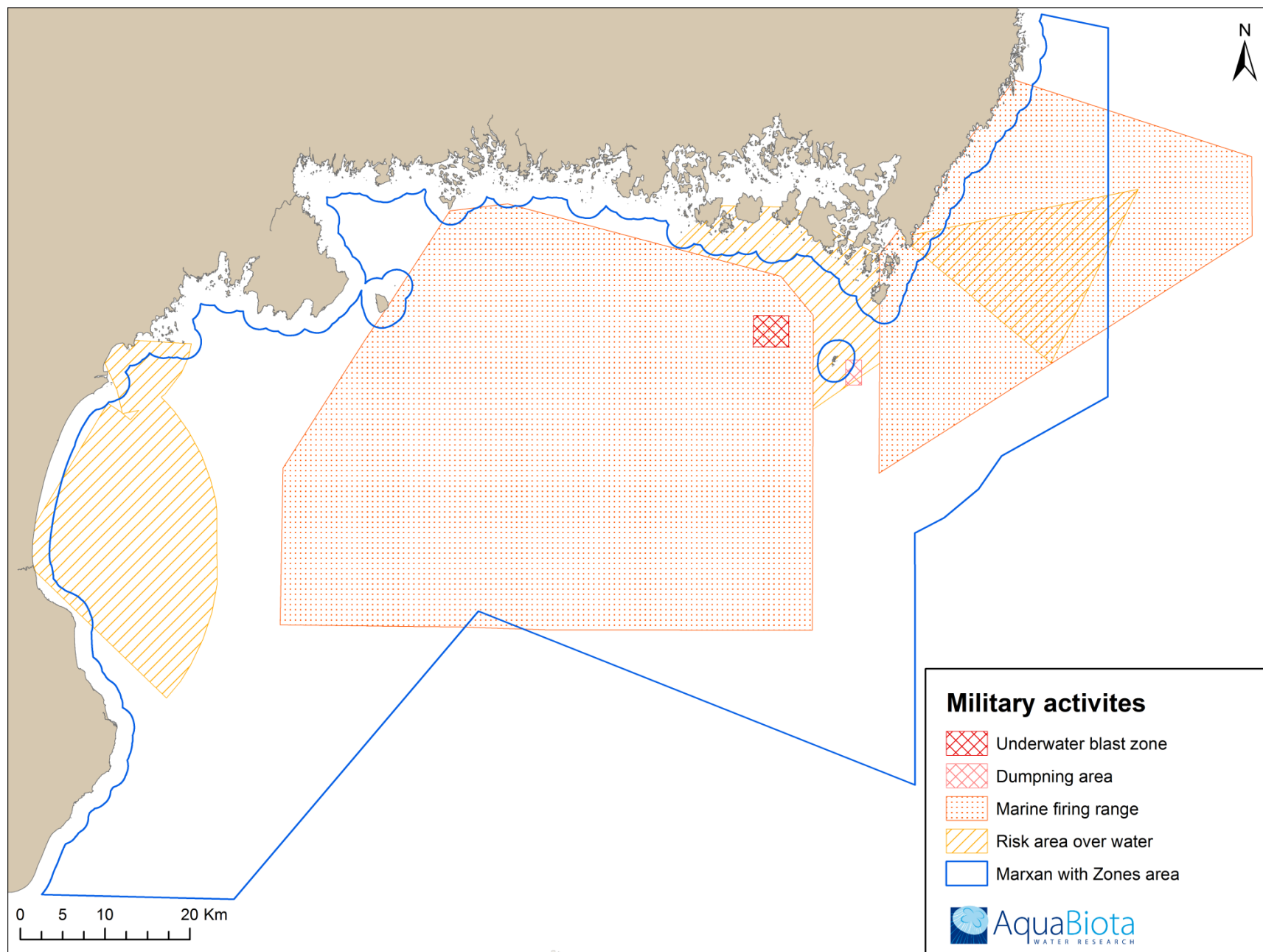


Figure 212. Areas designated for military activities.

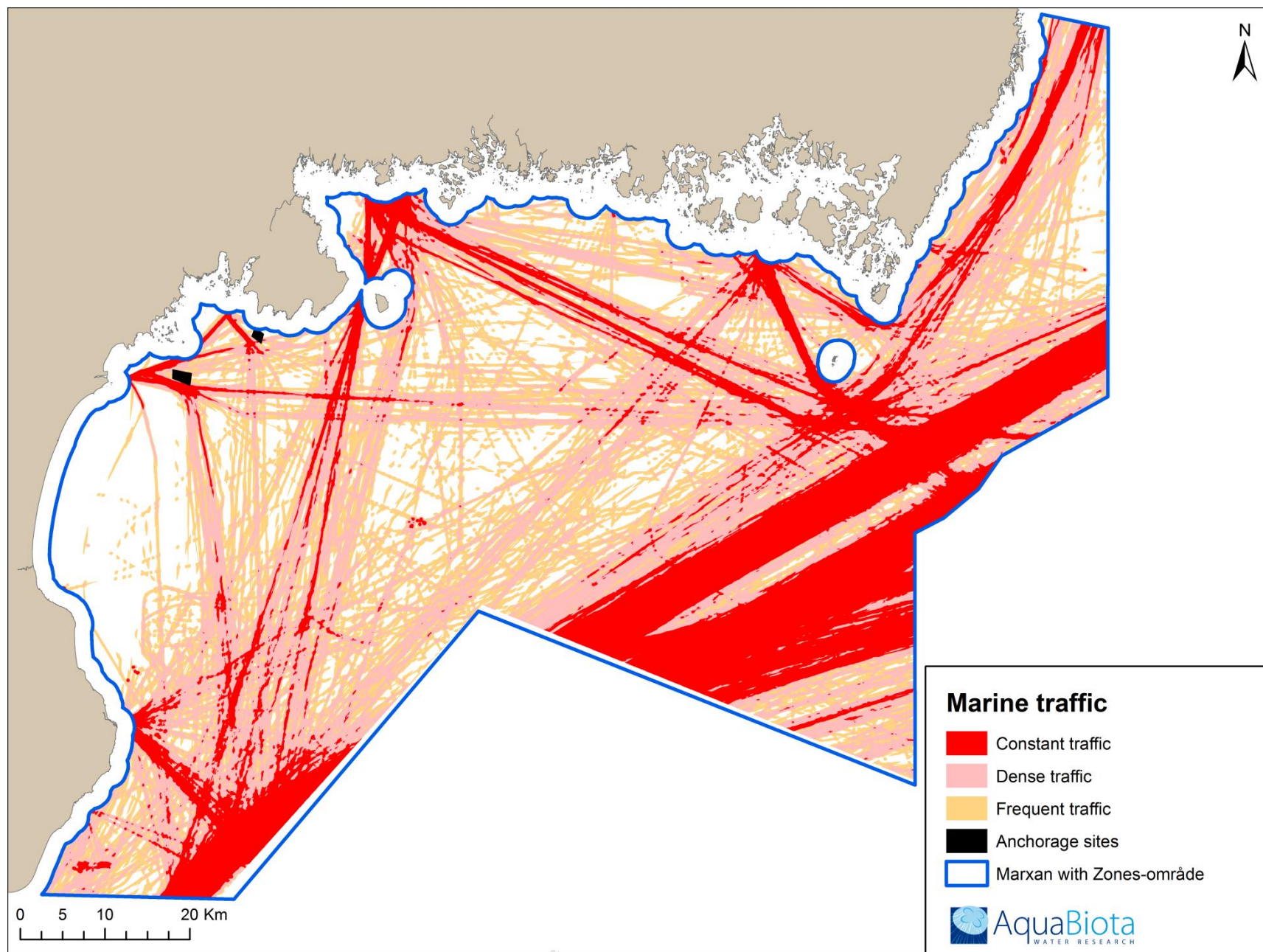


Figure 213. Marine traffic and anchorage sites.

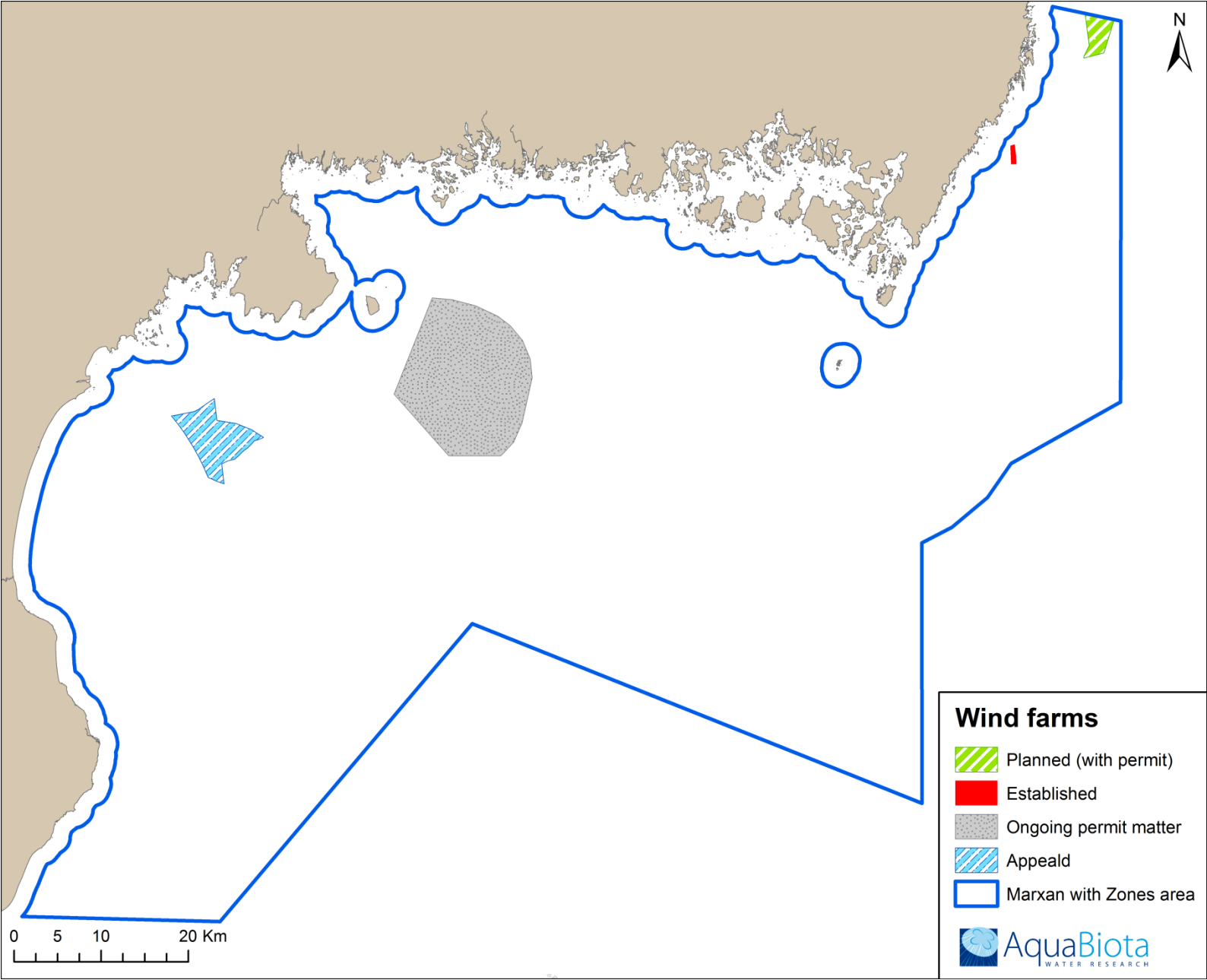


Figure 214. Wind farms.

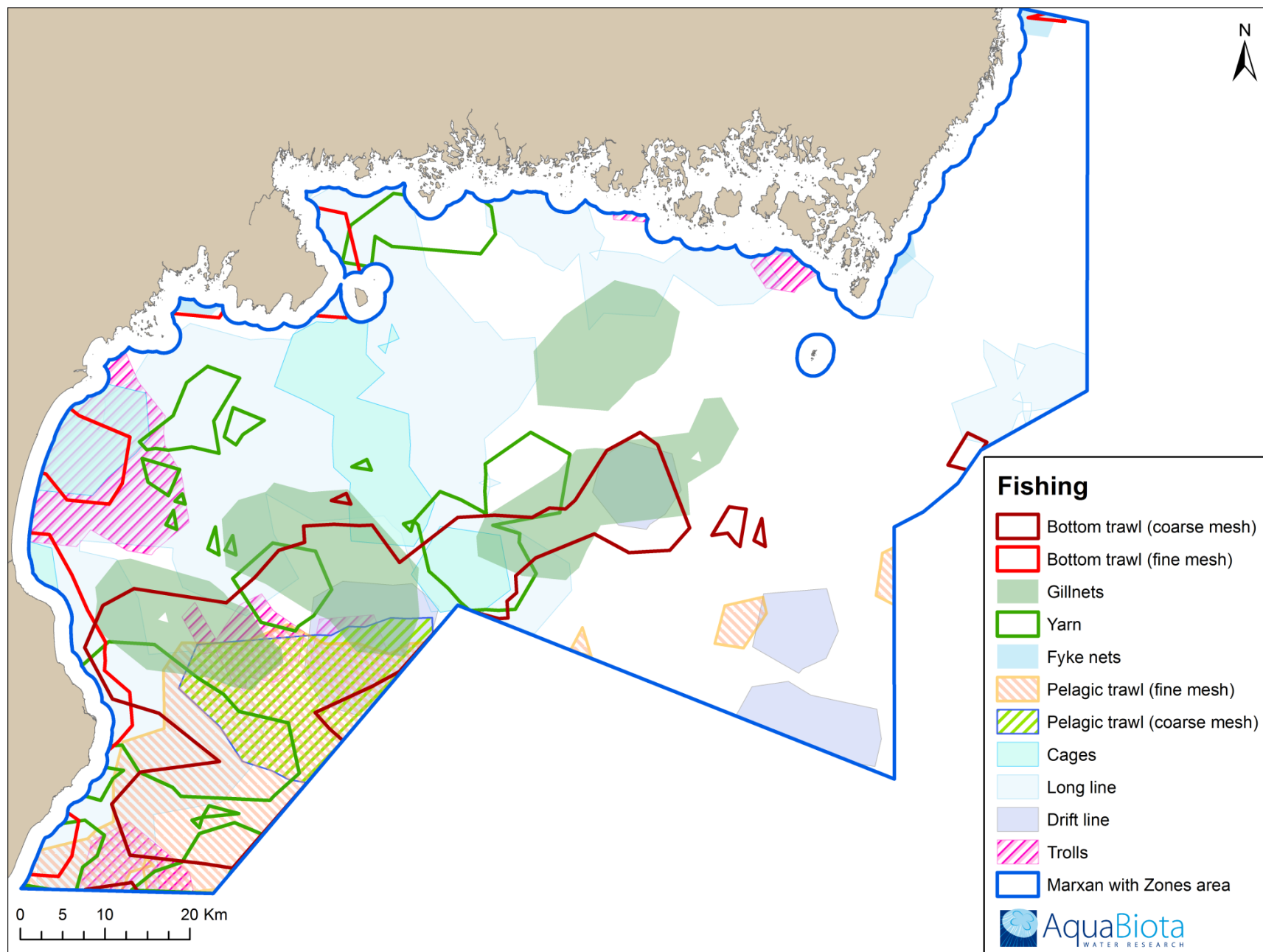


Figure 215. Fishing activities based on the mean landing data between year 2007 and 2009 and VMS positions.

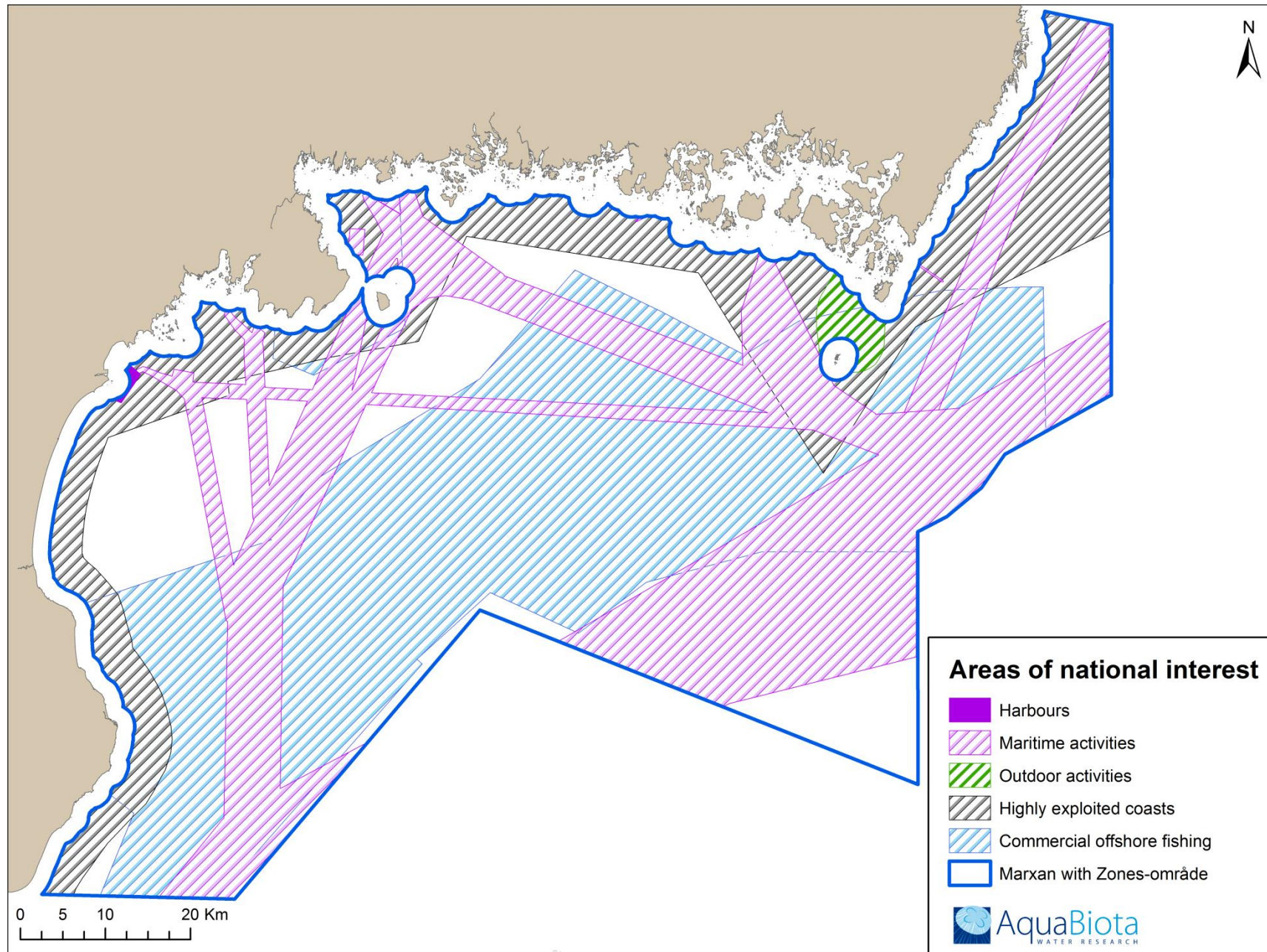


Figure 216. Areas of national interest.

Annex 4 - Bird analyses

Important bird areas in Hanö Bight

Leif Nilsson

In this study the importance of different areas for wintering birds in the inshore parts of Hanö Bight have been established based on the long-series of International Midwinter Counts undertaken in the area since 1969, whereas the importance for offshore wintering areas was established on seven aerial surveys during 2007 – 2012 (one year was surveyed twice). There are no data available to evaluate important staging areas for waterbirds during other parts of the non-breeding season.

Methods

Inshore areas

The evaluation of the importance of different inshore areas in Hanö Bight for wintering waterbirds was based on the long-term (since 1969 in Hanö Bight) series of Midwinter Counts (being part of the International Midwinter counts of Wetlands International). The Swedish coast was split into a large number of counting units during the censuses, which were covered from the ground by voluntary observers. In all about 150 – 175 units were covered in the part of Hanö Bight considered here. The counting units were of a size that ascertained that the entire counting unit could be covered in the same day. Counts were undertaken on the weekend in the middle of January.

For the evaluation of the importance of different areas for wintering waterbirds the small units were grouped into larger reference areas covering larger areas of similar habits within which the majority of the local birds appeared (cf. Fig. 1). For these reference areas the mean totals of all wintering waterbird were calculated for the ten year period 2004 – 2013 both separate for the different species and for the total waterbird community.

The areas were divided into groups of: over 2 000 but less than 5 000 birds/day; over 5 000 but less than 10 000 birds/day; and over 10 000 birds/day (i.e. a ten year average of total number of birds in the unit during a day in the middle of January).

To establish international importance of an area the criteria according to the Ramsaar convention was used (cf. The Waterbird Population Estimates (WPE) online database on www.wetlands.org).

Offshore areas

For the offshore areas the distribution of the dominating species, the Long-tailed Duck (*Clangula hyemalis*) was used to establish the importance of different wintering areas. On the basis of the aerial surveys undertaken in the MARMONI-project (Fig. 4) the densities of Long-tailed Ducks along the line transects have been calculated and classified in three classes: >5, >20 and >75 individuals per km². These estimates have then been used to draw the density polygons in Fig. 3.

Results

Inshore areas

The analysis presented here clearly shows that the inner parts of Hanö Bight are important for wintering waterbirds of a number of species. This does especially apply to the archipelago between Gö east of Ronneby and Karlskrona with extensive areas of shallow water and rich submerged vegetation with good food resources for the birds. Other important areas are found in the north-east corner of Skåne and in Pukavik. On the other hand smaller numbers of wintering birds were found on Listerlandet and around the larger islands in eastern Blekinge.

The inshore areas further south in Hanö Bight in the Skåne part have much smaller numbers of wintering birds, especially along the large sandy beaches.

One area (between Gö and Karlskrona) reached the criteria for International importance for the Tufted Duck and the Smew (Fig. 2).

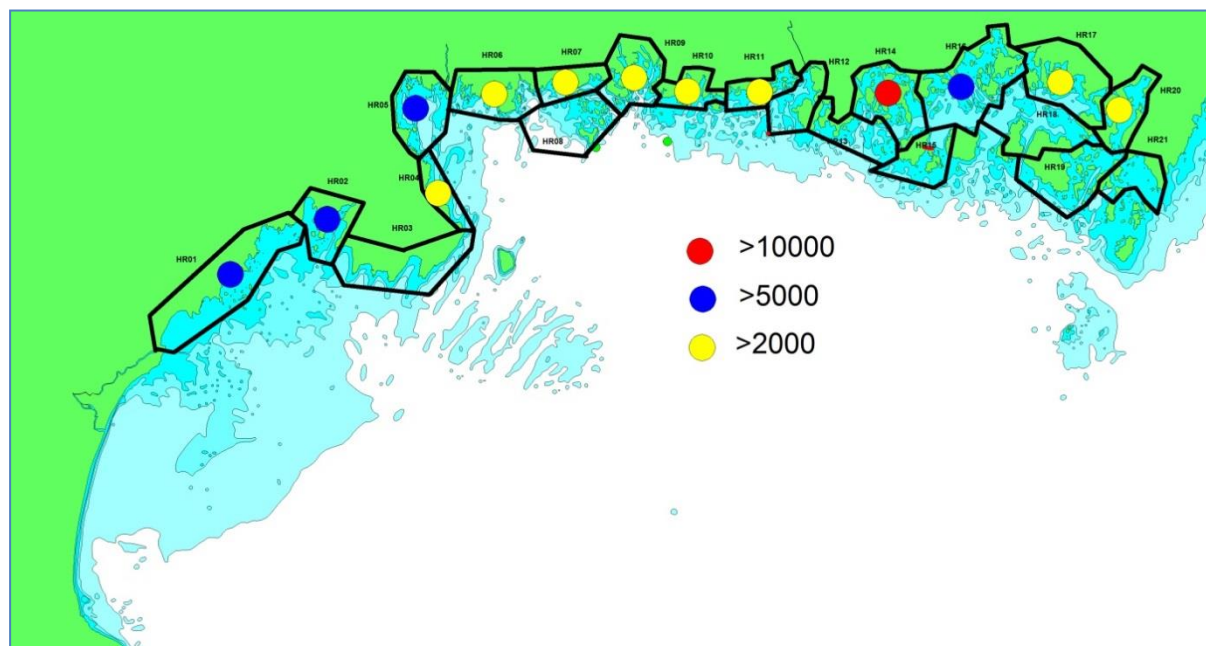


Fig. 1. Important areas for wintering waterbirds in the inshore areas of Hanö Bight based on the midwinter counts during 2004 – 2013. Colors show the mean number of wintering birds in the different polygons for the study period. Areas without a colour marking had means of less than 2000 birds.

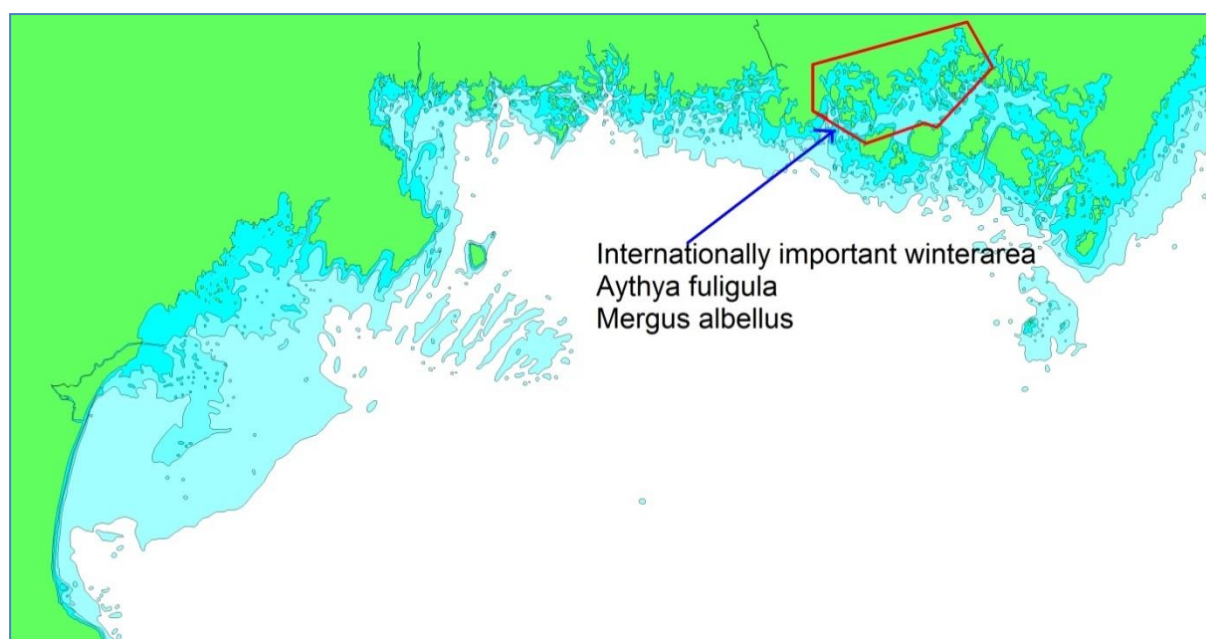


Fig. 2. The reference areas HR14 and HR16 have been put together as they form an internationally important area for Tufted Duck and Smew.

Offshore areas

In the offshore parts of Hanö Bight, the Long-tailed Ducks were spread over a large area, i.e. over most areas with a depth of less than 20 m. There was also much variation between different survey occasions.

When adding the different surveys together an area in the central part of Hanö Bight stands out as an important concentration area (Fig. 3); having a depth of about 10 m. The central part of the concentration area is called Kiviksbredan and being characterized by a lot of boulders and rich *Mytilus* fauna on the boulders.

Extensive surveys of Hanö Bight and other parts of the coasts of Skåne and Blekinge were undertaken with coastguard patrol boats during the period 1965-1975. The same central area in Hanö Bight was found to be a concentration area also during those years (Nilsson 1972).

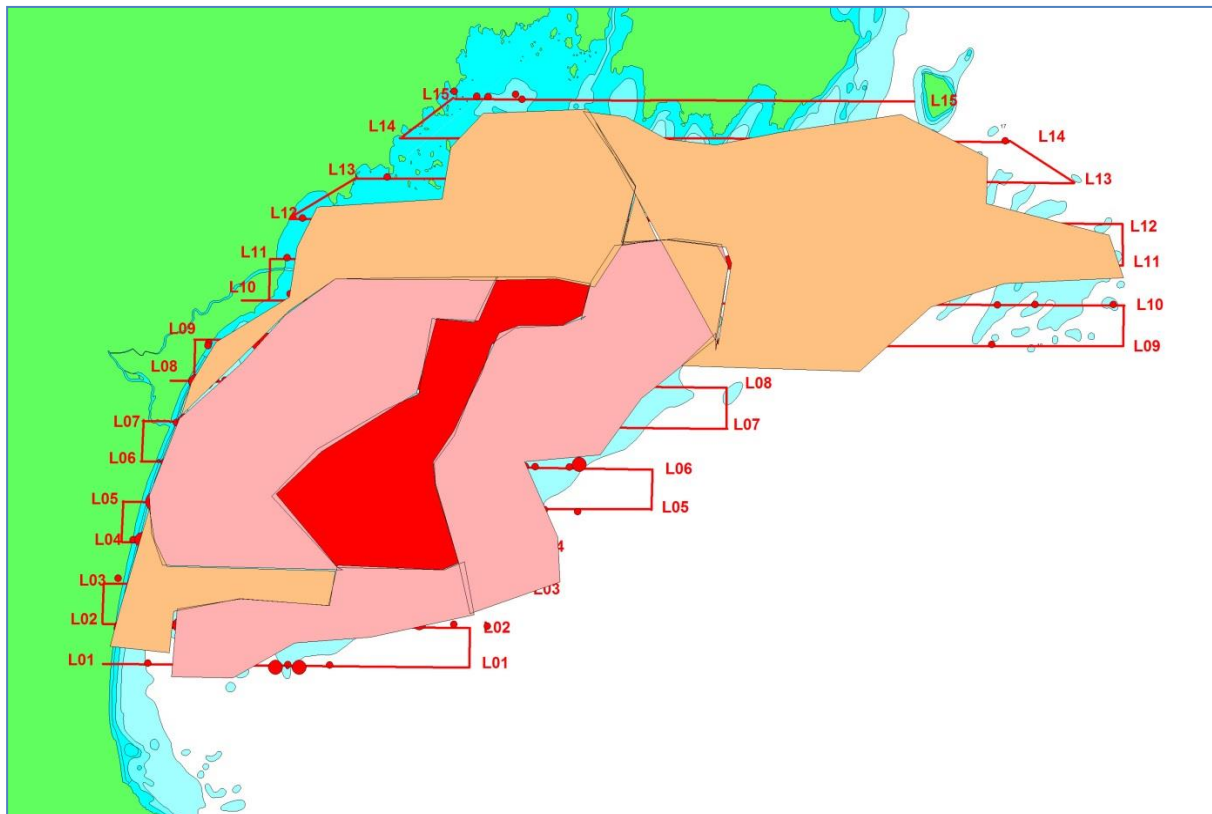


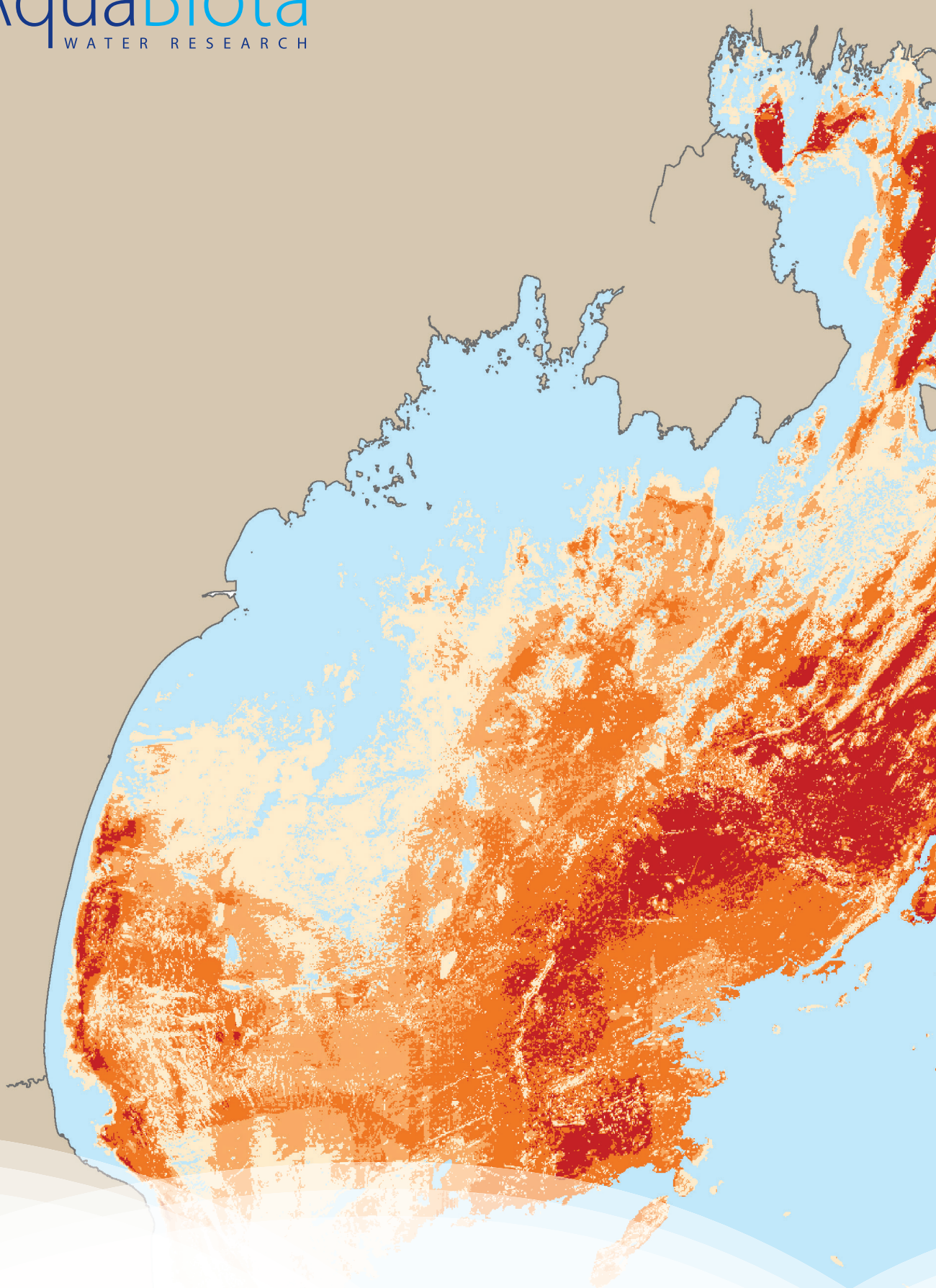
Fig. 3. Concentration areas for Long-tailed Ducks (*Clangula hyemalis*) in the offshore areas of Hanö Bight 2007-2012. Red=75 ind/km2 light red = 20 ind/km2 and brown= 5 ind/km2.

References

Nilsson, L. 1972. Habitat Selection, Food Choice and Feeding Habits of Diving Ducks in Coastal Waters of South Sweden during the Non-breeding Season. *Ornis Scandinavica* 3:55-78.



AquaBiota
WATER RESEARCH



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