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On the issue of areas closure to protect vulnerable marine habitats in the NAFO Regulatory Area

By

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Introduction

In the last years the questions of adverse impact of fishery on vulnerable marine habitats in the North-West Atlantic (NWA) have been actively discussed by NAFO. Resolving of these questions becomes urgent in the light of UNGA Resolution which calls on Governments and Regional Fisheries Management Organizations (RFMO) to play a substantial role in addressing the impacts of bottom fisheries on vulnerable marine ecosystems (VMEs).

As an initial step to protect VMEs in 2006 NAFO decided to close for bottom fishery 4 seamount areas.

In 2007 at the 29th NAFO meeting, based on the data of coldwater coral distribution provided by Canadian scientists (Figure 1), NAFO closed for bottom fishery the considerable part of the southwest Grand Bank.

At the Intersessional NAFO meeting (April-May 2008) all Contracting Parties with vessels involved in bottom fishing activities in 1987-2007 were required not later than the 2008 submit comprehensive footprint maps of existing fishing areas to the NAFO Secretariat. Maps shall be based on VMS data and expressed in as precise spatial and temporal resolution as possible.

Maps submitted by Contracting Parties will be compiled with the purpose to identify existing and new fishing areas, as well as to establish Conservation and Management Measures to prevent significant adverse impacts on VMEs and the long-term sustainability of deep sea fish stocks.

Taking into account the lack of vulnerable habitats distribution data, and also the importance of these data for fishery in NWA, the specialists from PINRO performed the search and analysis of Russian research and fishery data in the Grand Bank and Flemish Cap areas. The most important results of that work are presented in the given Working Document. The main objective of the Working Paper is to update database of coldwater coral and other VMEs distribution.

Material and Methods

To prepare the presented working document used were:

- reports and materials provided by NAFO observers on Russian fishing vessels in 2000-2008;
- data compiled by skippers of Russian fishing vessels in 1999-2008;
- fishery descriptions of the Newfoundland area for 50-60's;
- Russian fishery maps for 1970-80's;
- fisheries and biological data from PINRO database for 2000-2007;
- report of ICES WGDEC 2008;
- foreign publications.

Before 2006 Russia did not carry out special investigation of VMEs in NWA. Coral and sponges species were collected irregularly without species identification during fishing, exploratory and research trips. Only records of coral and sponges catches were made.

Since 2007 data on vulnerable marine habitats collected by NAFO observes onboard Russian vessels has included:

- records of coral and other vulnerable bottom species in bycatch without species identification;
- records of trawl hooks location and degree of gear damage by corals.

Fishing fleet location was used also as an indicator of coral presence/absence. The data on first trawl set coordinates from PINRO database provided by NAFO observers were used to map fishing areas with specific directed fisheries for Greenland halibut and redfish separately. Data were mapped for Greenland halibut fishery in NAFO Div. 3LMNO and redfish fishery in NAFO Div. 3O separately. Mapped data were selected in accordance with fish distribution pattern: for the Greenland halibut fishery, data on tows at depths between 500-1500 m were used, while for the redfish fishery we used data on a depth range of 250-1000 m. The part of filtered error data consisted 1% of all data collected.

Collected data supposed to use for definition:

- the limits of coral distribution areas;
- coral community abundance/density;
- coral biological status (dead/alive)

In 1950-60's the positions of Russian vessels were determined with the astronomical method, in 1970-80's by using radio-navigation systems «Loran-C» and «Dekka», in 2000-2008 - satellite-navigation systems GPS. Besides, accuracy of data on coral and sponge distribution collected in 1950-80's was limited to their positioning accuracy that fishery maps and figures in Fishery Descriptions could have provided.

Results

Historical data from Russian (Soviet) surveys and fishery (Anon. 1967) shows local corals and sponges communities to occur on the southeastern and southwestern slope of Flemish Cap between 46°10'- 47°00' N, and on its north slope between 48°10'- 48°20' N in waters deeper than 500 m (Figure 2). The coral and sponges colonies on the northeastern slope of Grand Bank occur between 47°10'-47°40' N at the depth range 360-370 m. On the southeastern slope of Grand Bank corals and sponge communities were found between 44°30'- 45°30' N in a depth range of 400 to 600 m (Figure 3).

Data from Russian observers in 2000-2007 indicated that in the Greenland halibut fishery in the NAFO Div. 3LMNO (depth 500-1500 m), Russian trawlers made 6100 tows as minimum (Figures 2 and 3), on redfish trawling in the NAFO Div. 3O (depth 250-1000 m) – no less than 5000 tows were made (Figures 4). In the Greenland halibut fishery tows were the most frequent in a depth range of 800 to 1200 m; in the redfish fishery tows predominantly covered 300-600 m depths.

Russian fisheries observers (2007 and beginning of 2008) have reported an absence of coral bycatch in across all the abovementioned fishing areas. The reliability of PINRO data concerning the spatial distribution of fishing effort in the NAFO Regulatory Area and absence of bycatch of corals in 2000-2008 was confirmed by skippers of Russian fishing vessels.

Discussion

In accordance with Canadian data, nearly all of the coral species found off Newfoundland occur in waters deeper than 150 m (Figure 1). The southwest Grand Bank exhibited peak areas of coral abundance and diversity, as the Cape Chidley, East of Hudson Strait, Southeastern Baffin Shelf areas (Edinger *et al.* 2007).

Besides corals communities (soft corals, cup corals and sea pens) occur along the north side of the Flemish Cap. There is no data available on coral distribution in the south of the Flemish Cap, and at the depth more than 1400 m across all NAFO Regulatory Area (Edinger *et al.* 2007).

Russian historical data on cold-water coral distribution on Grand Bank and Flemish Cap displayed in Fishery description (Anon. 1967) and on fishery maps are in a fairly good correspondence with Canadian data. However, due to limited data and low precise of the area identification, this information is not highly representative.

In the WGDEC report 2008 showed that coral distribution on the southwest Grand Bank extends beyond the limits of the currently closed area and also embraced waters less than 400 m deep (ICES 2008). Based on this data it was proposed to enlarge the currently closed area to shallow waters and close bottom fishing from the depth of 200 m downwards almost on the whole southwestern slope of the Grand Bank. Moreover, with reference to Edinger *et al.* (2007) investigations and additional data collected by these scientists, some more areas with cold-water coral presence (including Flemish Pass) was recommended for potential closure as high priority areas for conservation (Figure 1).

At the same time WGDEC report mentioned that the question of the role that the NAFO 30 current closure plays in the conservation of coral communities in the NWA is difficult to answer, given a lack of knowledge regarding population connectivity across the NAFO region. The precise placement of closure areas limits for the protection of cold-water corals and other VMEs in other parts in the NAFO Regulatory Area is problematic in the absence of data (ICES 2008).

It is well known that due to the high gear damage fishery vessels try not to work in the areas with coral colonies (ICES 2005). Therefore the fact of high fishery activity in the Flemish Pass area and southwest Grand Bank area, which recommended for closure, shows the evidence here relatively long damage-free trawl ways free of coral concentrations.

Conclusions

The material provided by Russian observers and fishery results show the existence in the NAFO Regulatory Area some bottom fishery areas free of coral communities. These data provided an opportunity to continue of bottom fishery without significant adverse impact on VMEs. At the same time precise determination of fishery areas boundaries has to be based on reliable scientific and fishery data about the coldwater coral and other of VMEs distribution. In this connection it is obvious an importance of sample collection by observers on fishery vessels and further researches by analogy with Spain multidisciplinary surveys on Hatton bank (Duran Munoz *et al.* 2008).

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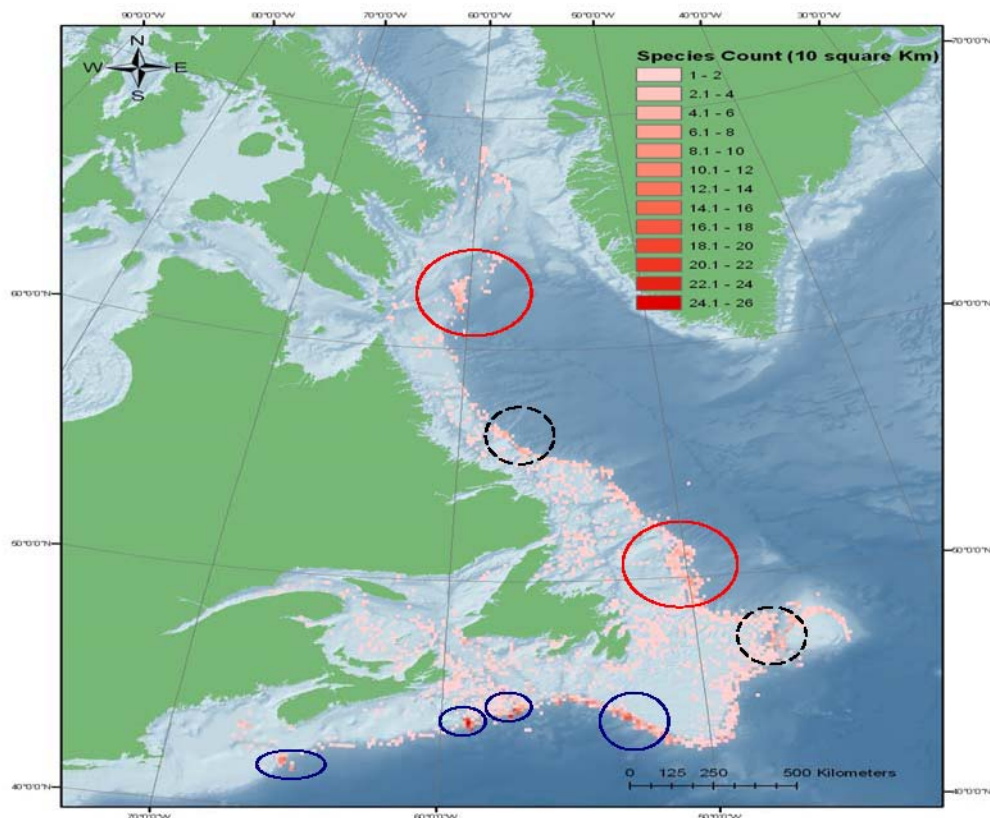


Figure 1. Number of coral species recorded per 10 square kilometers box in Atlantic Canada. Red circles indicate priority areas for coral conservation suggested by Edinger *et al.* (2007), blue circles indicate areas currently closed to protect corals and black dashed line circles indicate other potential areas of coral VMEs (from ICES 2008).

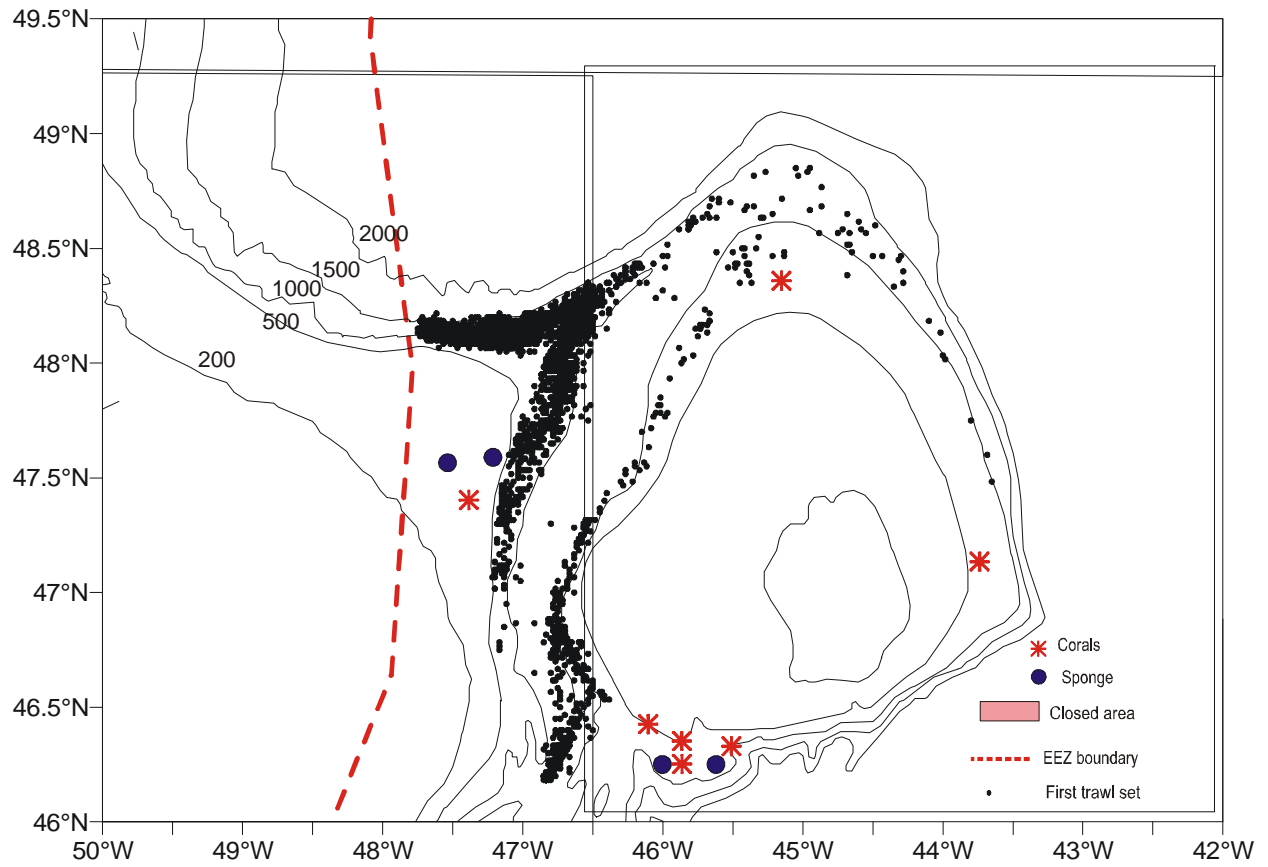


Figure 2. Russian fleet location on Greenland halibut fishery in the NAFO Div. 3LM by observers data (2000-2008) and corals/sponges occurrence by Russian fishery maps and description data

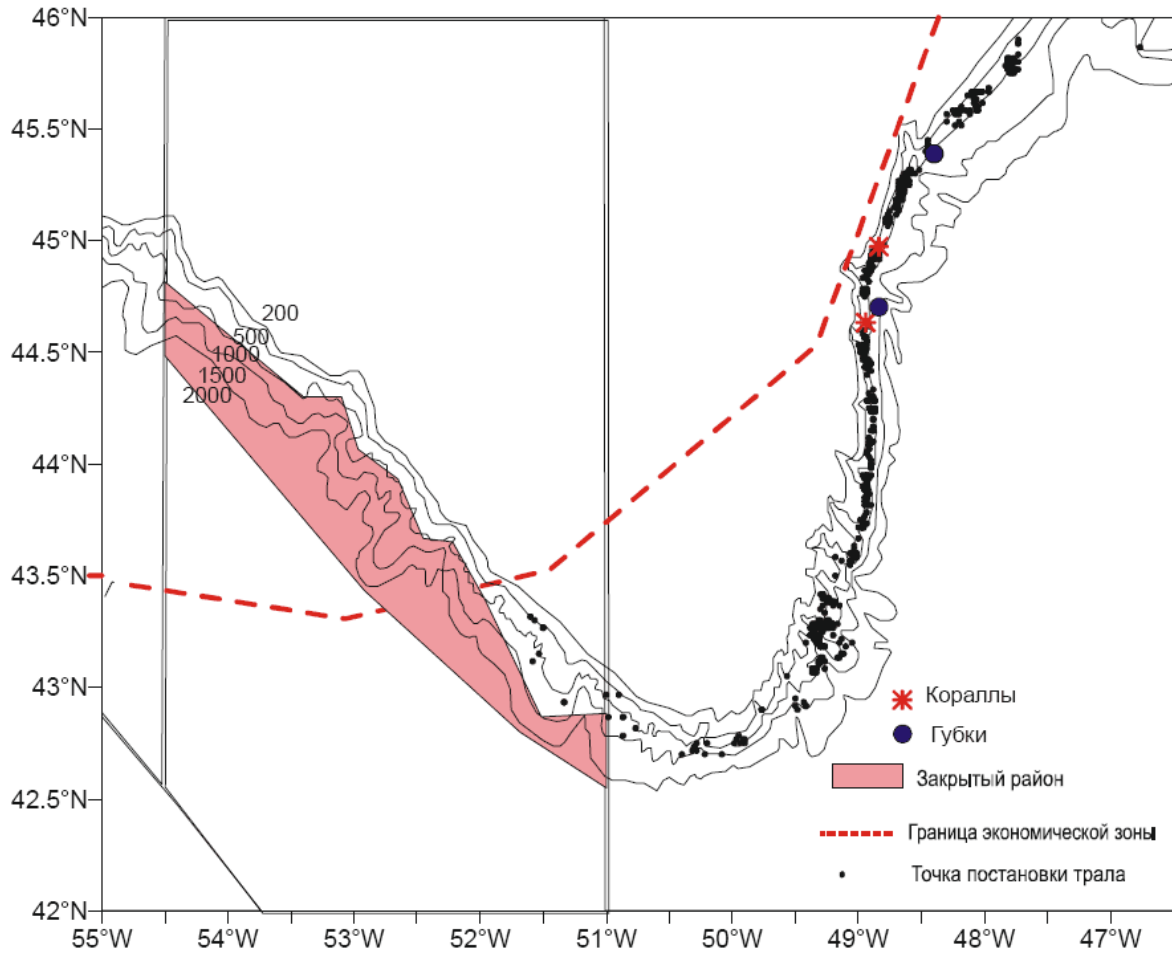


Figure 3. Russian fleet location on Greenland halibut fishery in NAFO Div. 3NO by observers data (2000-2008) and corals/sponges occurrence by Russian fishery maps and description data

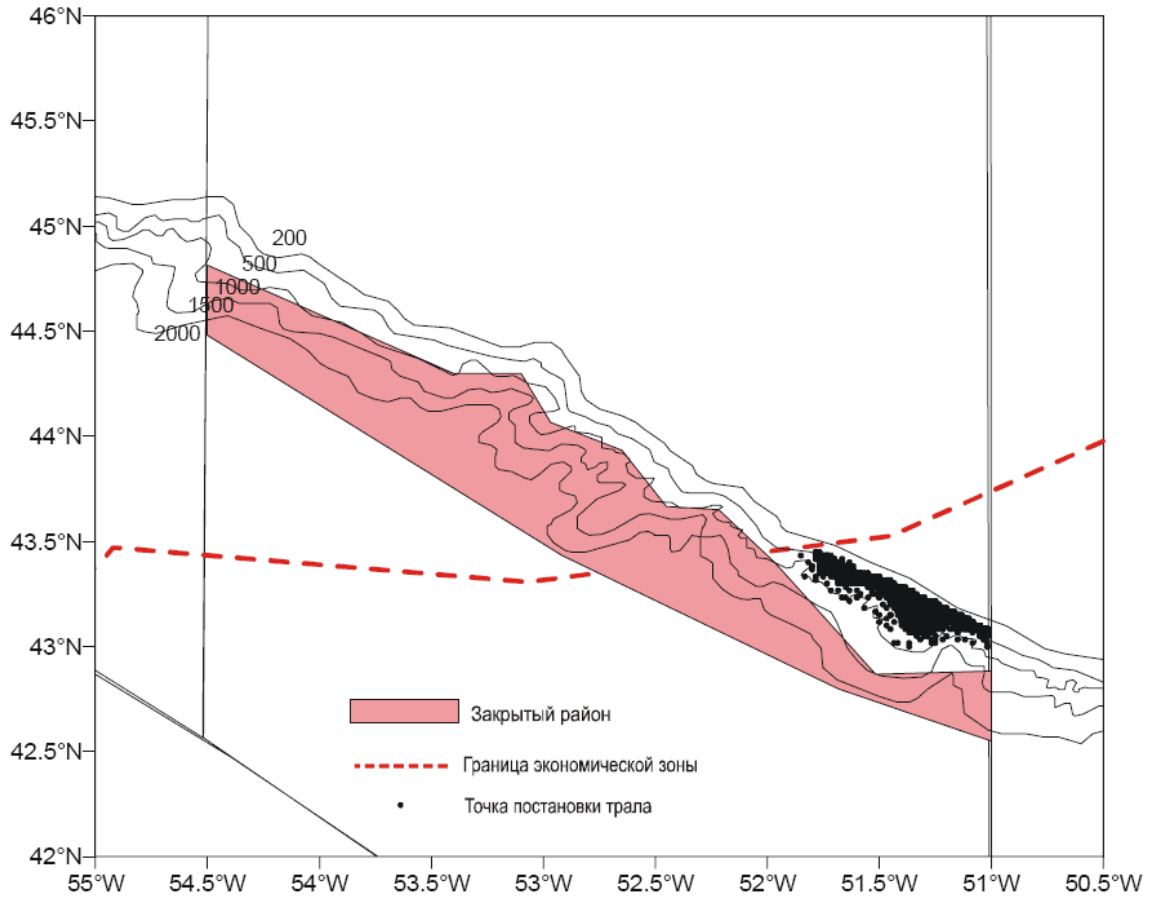


Figure 4. Russian fleet location on redfish fishery in the NAFO Div. 3O by observes data (2000-2007) and corals/sponges occurrence by Russian fishery maps and description data