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19 June 2015

TO:
President
Vice President
Heads of Delegation
All Contracting Parties

Reference: HOD 15/46

Proposed exploratory fisheries No.2 by the European Union – Notice of Intent

With reference to Recommendation 19:2014, please find attached a letter from the EU regarding a proposal for exploratory bottom pot fishing in the NEAFC Regulatory Area (international waters of the Barents Sea), which I am sure you will find self-explanatory.

Please note that this is a separate proposal from the one circulated on April 1, through HOD 14/32

Yours sincerely

Stefán Ásmundsson
Secretary

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR MARITIME AFFAIRS AND FISHERIES

ATLANTIC, OUTERMOST REGIONS AND ARCTIC
ADVISER NORWAY AND NEAFC

Brussels,
MARE C/AT

Mr Stefan Asmundsson
Secretary
North-East Atlantic Fisheries
Commission
22 Berners Street
London
W1T 3DY
UNITED KINGDOM

Subject: **Proposed exploratory fisheries No. 2 by the European Union – Notice of Intent**

Dear Mr Asmundsson,

Please find enclosed a copy of an assessment report on a proposal for exploratory bottom pot fishing in the NEAFC Regulatory Area (international waters of the Barents Sea – Loophole).

This proposal is submitted in line with Articles 6 and 7 of Recommendation 19:2014 and should be submitted to Contracting Parties, as well as to PECMAS, for review. Following this assessment, and should the Commission approve the project, it is the intention that exploratory bottom fisheries would start later in 2015.

In view of the fact that no PECMAS meeting is foreseen to take place before October 2015, and in accordance with Article 7 (3) of the Recommendation, the Union would request that PECMAS should undertake its evaluation of the submitted documentation through correspondence. In any case, this evaluation by PECMAS should be carried out within three months of the submission of the Notice of Intent and the Commission should either give or withhold its approval within 30 days of the subsequent advice from PECMAS.

Please let me know if there is any need for further clarification.

John Spencer
Head of Delegation
of the European Union

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POTENTIAL IMPACT OF CRUSTACEAN TRAPS ON BENTHIC HABITATS AND SPECIES OF VULNERABLE MARINE ECOSYSTEMS (VME) IN THE BARENTS SEA

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Dr. Andrius Šiaulys

Klaipeda, 2014

CONTENTS

Benthic habitats and species in the regulatory area 3

The extent of the regulatory area 3 is 10.276 km^2. This area was established by North East Atlantic Fisheries Commission (NEAFC) to protect VME in the Barents Sea (Fig. 1). According to the Norwegian Polar Data (http://geodata.npolar.no/#viewers) the seabed sediments of this area (Fig. 2) mainly consists of gravely sandy mud (56 %), followed by sandy mud (21 %), mud (14 %), gravely muddy sand (6 %), gravely sand and sandy gravel (3 %). The bottom temperature varied from -1.4 to 3.4 °C (with mean 0.3 ± 0.8 °C), and salinity varied from 33.9 to 35.0 PSU (with mean 34.9 ± 0.2 PSU) (Jørgensen et al., 2014).

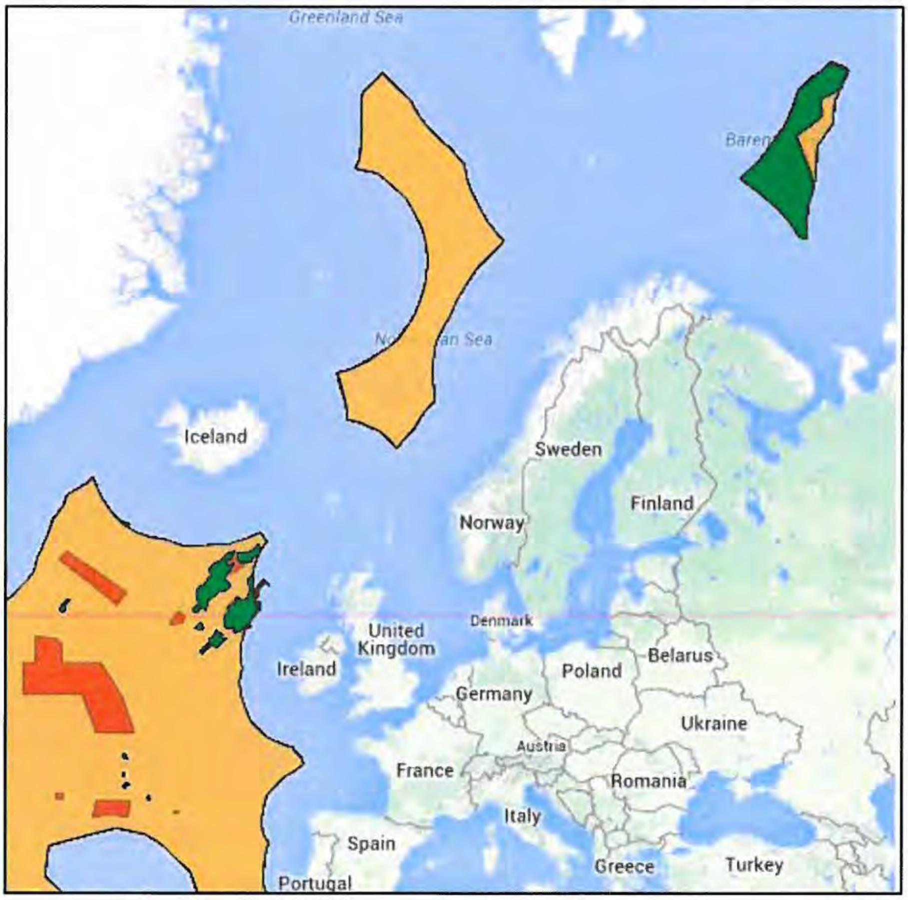

Figure 1. The map of NEAFC regulatory areas and all closures including regulatory area 3 (indicated by red color), areas closed to protect VME, Hatton Rockall Closures and the Haddock closed area, Blue Ling closure (seasonal, south of Iceland) and 13 areas defined as existing bottom fishing areas (http://www.neafc.org/page/closures).

According to earlier studies (Jørgensen et al., 2014) in the regulatory area 3, the number of benthic megafauna species ranged from 11 to 70 (with mean of 31 ± 10), their biomass – from 0.3 to 46.0 kg (with mean of 10.0 ± 6.1 kg) and abundance – from 66 to 7874 (with mean of 763 ± 881) in the regulatory area 3 (Jørgensen et al., 2014). The echinoderms *Strongylocentrotus spp.* and *Gorgonocephalus arcticus* together with the crangonid crustacean *Sabinea septemcarinata* made up

50 % of the biomass on average. The high abundance of Gorgonocephalus indicates strong current flow and high abundance of zooplankton in the near-bottom layer and a possible strong bentho-pelagic coupling in this area. Therefore, the echinoderms in the Barents Sea most likely play an important role in the redistribution and remineralization of the organic carbon reaching the seabed.

This region contained the largest snow crab (*Chionoecetes opilio*) population. Characteristic for this region were a relatively large population of the pennatulacean sea pen *Umbellula encrinus*, the isopod *Saduria sabini,* and the Nephtheidae (octocorallia) *Drifa glomerata*. Species that were specific for this region included the two Arcto-atlantic bathyal sea stars *Bathybiaster vexillifer* and *Tylaster willei*, the sea cucumbers *Molpadia arctica* (Arctic), the crustaceans *Cleippides quadricuspis* (Arctic) and *Eusirus holmi* (Arctic), and the gastropod *Propebela sp.*

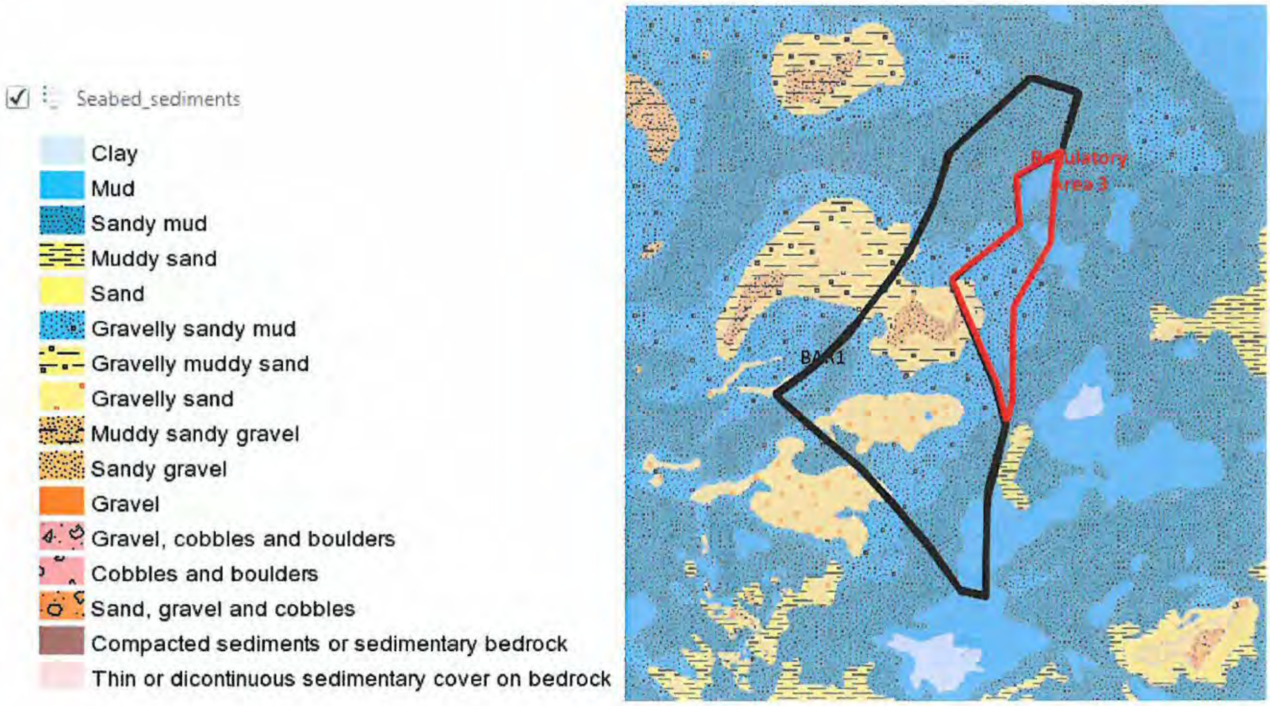

Figure 2. Seabed sediments in the regulatory area 3 in the Barents Sea (http://geodata.npolar.no/viewer).

VME benthic habitats and species in the regulatory area 3

According to the list of VME indicator species and habitats for the NEAFC regulatory area following "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" (Rec 19 2014: Protection of VME in NEAFC RA), there were found 22 taxa belonging to all VME habitat types (Table 1). The VME indicator species and habitats and their sensitivity to fishing activities are described from other seas according to different scientific references.

***Table 1**. The list of VME indicator species and habitats for the NEAFC regulatory area.*

VME Habitat type	Representative Taxa	Taxa found in the Barents Sea
1. Cold-water coral reef		
a. Lophelia pertusa reef	*Lophelia pertusa*	*Lophelia pertusa*
2. Coral garden		
b. Soft-bottom coral gardens		
ii. Cup-coral fields	*Caryophylliidae*	*Caryophyllia smithii*
iii. Cauliflower coral fields	*Nephtheidae*	*Drifa glomerata, Duva florida, Gersemia fruticosa, G. rubiformis*
3. Deep-sea sponge aggregations		
a. Other sponge aggregations	*Geodiidae*	*Geodia sp., G. barretti, G. macandrewii*
	Pachastrellidae	*Thenea muricata*
b. Hard-bottom sponge gardens	*Axinellidae*	*Phakellia sp., P. bowerbanki*
	Polymastiidae	*Polymastia sp., P. mammillaris, P. thielei, P. uberrima, Radiella sp., R. grimaldi, R. hemisphaericum, Sphaerotylus sp., Sphaerotylus aff. Borealis, Tentorium semisuberites*
	Tetillidae	*Tethya norvegica*
4. Seapen fields	*Pennatulidae*	*Umbellula encrinus*
5. Tube-dwelling anemone patches	*Cerianthidae*	*Cerianthus lloydi*
6. Mud- and sand-emergent fauna	*Antedontidae*	*Heliometra glacialis, Poliometra prolixa*

1. Cold-water coral reef

Lophelia pertusa is the most common habitat-forming, reef building cold-water coral (Freiwald et al., 2004). It forms bush-like colonies measuring several meters across and consisting of thousands of coral polyps (Fig. 3).

Figure 3. *Lophelia pertusa* and its global distribution (Peckett, 2003; Freiwald et al., 2004).

The full extent of the present geographic distribution of *L. pertusa* is still unknown. This coral has been found most frequently in the North Atlantic but has a cosmopolitan distribution (Peckett, 2003). *Lophelia pertusa* reefs provide a habitat for a variety of species and the living and dead coral skeletons provide a biodiversity 'hot spot' on the edge of the continental shelf. The implementation of the Habitats Directive to the limits of the EEZ and the adoption in 1998 of a new Annex to the OSPAR Convention (1992 Convention for the Protection of the Marine Environment of the North East Atlantic) may offer an opportunity to protect important deeper water or offshore habitats and species, such as *Lophelia pertusa*. The deep waters where *L. pertusa* reefs occur were undisturbed by human activity until recently. Fishing trawlers are now operating in the deeper water where *L. pertusa* occurs and causing damage to the reefs. Oil extraction from deeper waters may possibly cause damage to the reefs. Pots and traps may cause some harm also, when the pots are launched and hauled, however the degree of damage is much lower than that caused by the trawling (Freiwald et al., 2004).

2. Coral garden

There were found 5 benthic soft coral species belonging to the habitats of Cup and Cauliflower coral fields (Table 1). Most of them are found on sandy, muddy, or rocky habitats; also may attach themselves to hard parts or products of other organisms (Fig. 4).

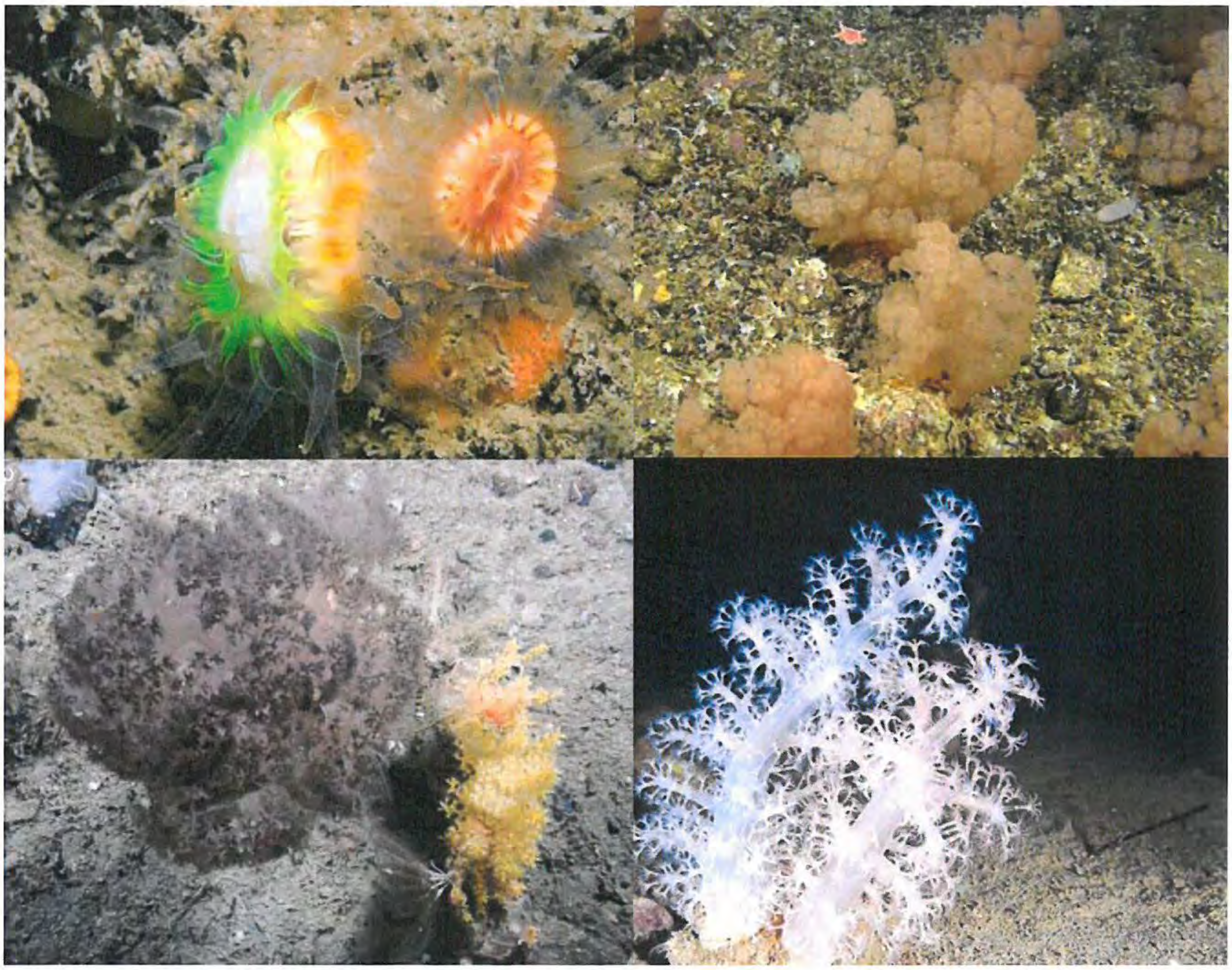

Figure 4. The soft-bottom corals: *Caryophyllia smithii*, *Drifa glomerata* [1], *Duva florida* [2], *Gersemia fruticosa* [3].

3. Deep-sea sponge aggregations

There were found 13 sponges species. Due to their upright structure, sponges are especially vulnerable to the impacts of bottom tending gear (OSPAR Convention, 2010). The degree of damage is crucial to evaluating the impact of this type of disturbance. Sponges have a certain ability to regenerate tissue, which depends upon the size of the wound and the size of the sponge, with larger sponges showing an increased ability for regeneration. Smaller sponges tend to be younger and age is complexed with size in determining recoverability. Juvenile sponges may not be able to regenerate tissue. Gross morphology also seems to influence regeneration ability and sponges with decreased morphological complexity are expected to regenerate less well than more complex forms. However, recoverability depends on the size of the wound relative to the amount of uninjured tissue and if this ratio is small, other factors may not be important. The key aspect of the wound in determining recovery rate is the wound perimeter, which positively correlate.

Figure 5. Deep-sea sponges: *Geodia barretti, G. macandrewii, Thenea muricata* [4], *Polymastia mammillaris* [5], *P. thielei* [6], *Radiella hemisphaericum* [7], *Tentorium semisuberites* [8]

4. Sea pen fields

There was found 1 sea pen species (Table 1). According to (Greathead et al., 2005) the population median of sea pen was significantly large in an area of low trawling intensity than in an area of higher trawling activity, therefore the intensity of trawl fishing may be a factor influencing the distribution of sea pen. From video material it appeared that a trawl may not completely remove all sea pen specimens in its path. It has been demonstrated that fishing by creels is not as damaging as trawling because sea pens can bend away from approaching creel pots. They can, therefore, avoid damage and re-anchor themselves after displacement. To some extent this may also be possible with trawl gear (Fig. 6).

5. Tube-dwelling anemone patches

There was found 1 anemone species (Table 1 and Fig. 6). *Cerianthus lloydii* is a brownish, tube-dwelling anemone up to 15 cm long (Avant, 2008). The mouth and tentacles project above the surface of the sand from the soft tube, which can be up to 40 cm long and is permanently buried. There are about 70 long tapering tentacles that may be brown, green or white and are often banded with darker brown. These tentacles cannot be fully retracted and surround many smaller inner tentacles that obscure the mouth. However the animal can retract into its tube if disturbed. Long lifespans and infrequent reproduction in some of the dominant mud-dwelling organisms in deeper water (tube-dwelling anemones) suggest that they would take years to recover from one-time disturbance and may never return to areas that are trawled frequently (Dorsey & Pederson, 1998).

Figure 6. Sea pens, tube-dwelling anemone, mud- and sand-emergent fauna: *Umbellula encrinus* [9], *Cerianthus lloydi* [10], *Heliometra glacialis* [11], *Poliometra prolixa* [12].

6. Mud- and sand-emergent fauna

There were found 2 mud- and sand-emergent fauna species (Table 1 and Fig. 6). *Heliometra glacialis* is relatively large, the length of rays can reach 35 cm. The species form large aggregations at depths of 150 to 600 m. The crinoid echinoderms are the only living echinoderms that may be stalked. Those commonly known as "sea lilies" retain a stalk throughout their lives and are sessile (attached to the substrate); those known as "feather stars" (order Comatulida), such as

Poliometra prolixa, retain a stalk through a post-larval pentacrinoid stage, but later lose the stalk and are able to move about (Messing & Dearborn, 1990). All living crinoids have flexible feather-like arms and show at least some evidence of pentamerous (5-part) radial symmetry. The arms bear reproductive organs as well as extensions of the water vascular system that serve for food capture and respiration. According to Collie et al. (2000) Burrowing anemones were much more prevalent at disturbed sites than undisturbed sites. Burrowing anemones should not be affected by disturbance because their tentacles are easily retracted to safety beneath the surface.

Potential impact of crustacean traps on VME benthic habitats and species

Towed fishing gears have been the main subject of studies on the environmental effects of fishing on non-target species, while generally, potting activities are assumed to cause little physical damage to non-target benthic species (Eno et al., 2001). However, there are indications, that pot fishing can harm benthic habitats in several ways. As described by Sheridan et al. (2005), when set or hauled, traps may physically damage hard and soft corals, sponges, seagrasses and macroalgae. While in place, traps may flatten structural components of corals as well as plants, leading to injury and reduced growth or death. If traps are set in strings or lines, the connecting lines may abrade or shear structures surrounding them, especially during storms, when damage may be caused by dragging traps and trap lines over the bottom. Lost traps could cause continuous habitat damage and bycatch until they degrade.

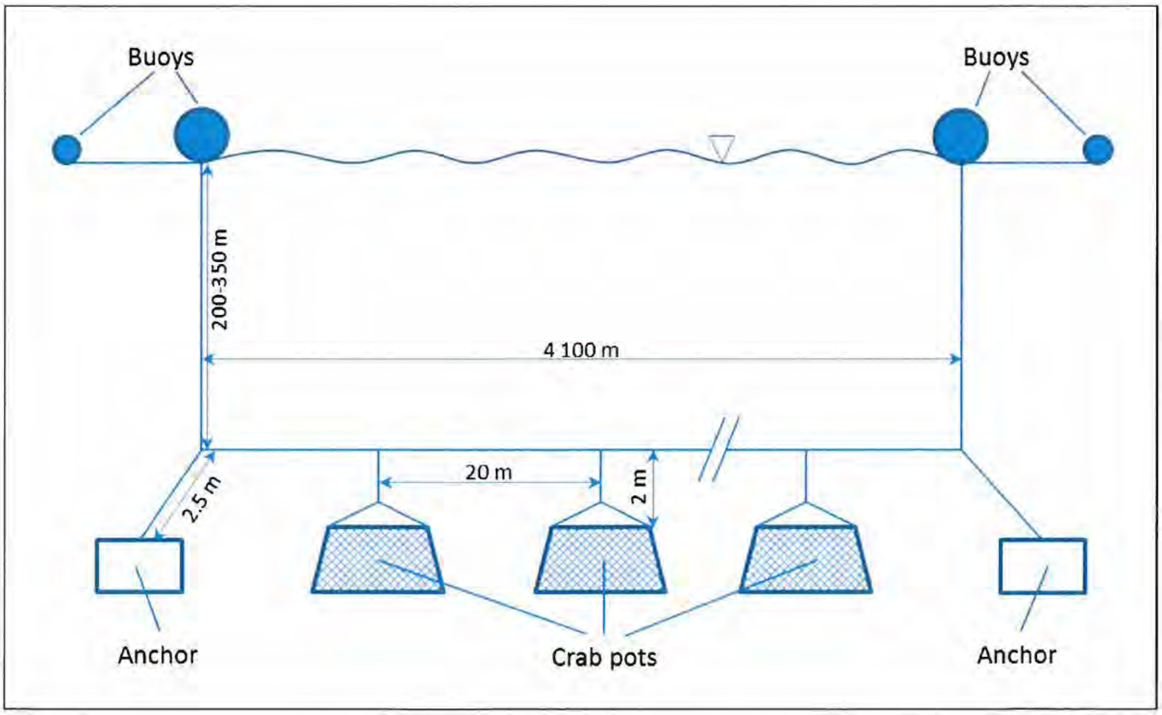

Figure 7. Schematic view of crab pot fishing gear.

The fishing gear usually consists of the line (approx. 4100 m long), held by two anchors (weight – 100 kg, dimensions – 850x1850x1850 mm). Along the main line 200 pots are attached by 2 m line in 20 m intervals (Fig. 7). The diameter of pots is 1050 mm, height – 600 mm, weight – 18 kg (Fig. 8). The net is made from polypropylene, mesh size 60x60 mm, the size of degradable escape vent – 400x500 mm.

Figure 8. Crab pot.

Since the fishing takes place in deep areas (170-320 m depths), there is no possible impact on underwater vegetation as it is not present that deep. Also, the abrasion of lines and pots is not likely even during storms, since the anchors holding the line and pots themselves are relatively heavy and are not moved on the bottom. Ghost fishing by the lost pots is minimized by degradable escape mechanism installed in every pot, while the frame of the lost pot could serve as a hard substrate for some benthic species, especially in soft bottoms.

The main impact of pot fishing is the direct damage of descending pots to erect and delicate benthic animals (Fig. 9). If the pot lands directly on top of a particular species, it can break it (if it's a hard coral), species can be smothered for the time pots are deployed and permanently detached from the substrate while hauling pots. Experiments had shown (Eno et al., 2001), that pots and creels being dropped and hauled have little or no immediate effect on several species that had previously been thought to be sensitive. In particular, sea pens bent away even before pots had made contact; this passive response appeared to be caused by the pressure wave travelling ahead of the dropping pot, which effectively prevented direct contact with their tips (Fig. 9). Another undocumented behavioral aspect is that, if relocated over suitable muddy substrate, sea pens resurrect themselves when uprooted.

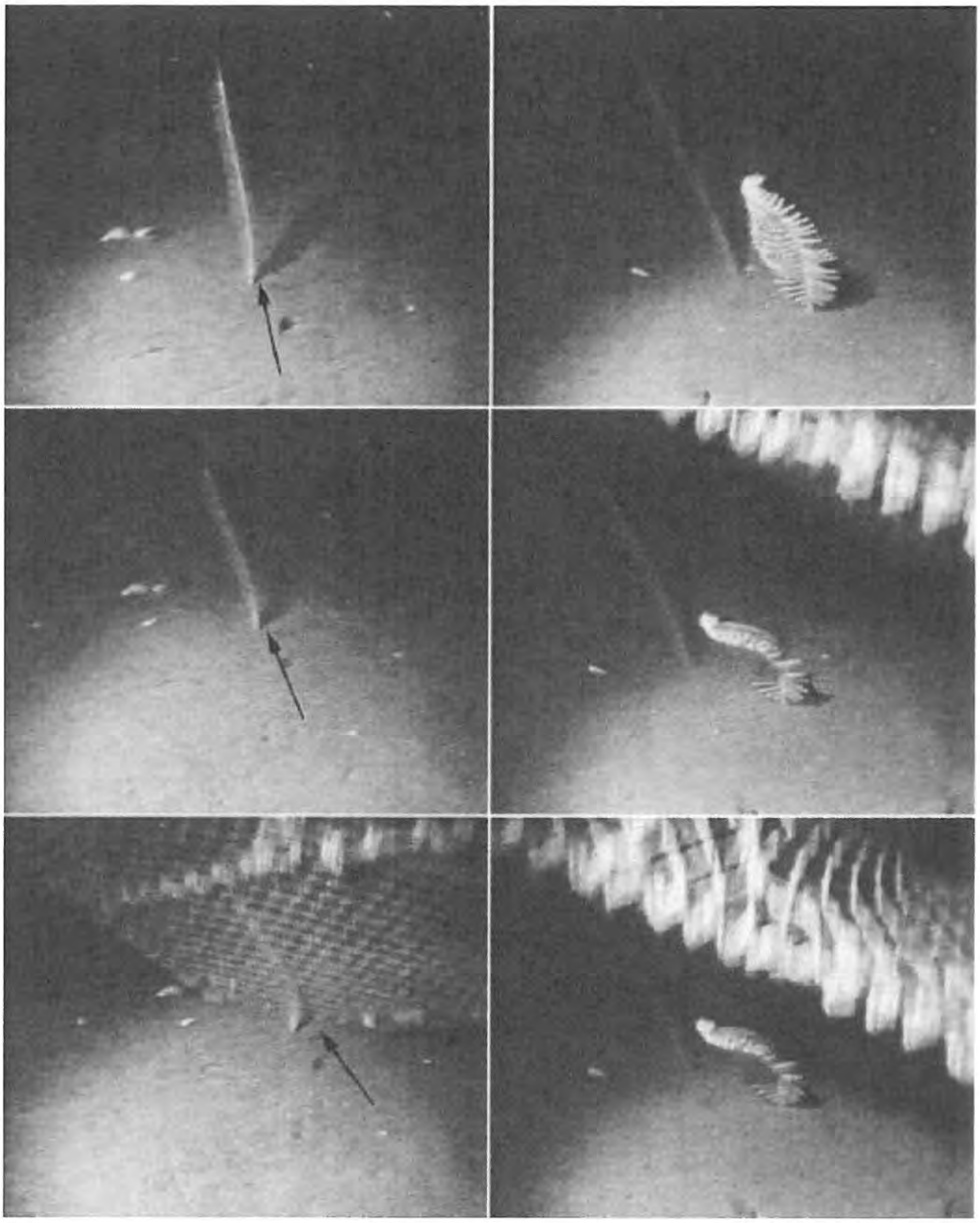

Figure 9. Sequence of photographs taken from diver-held video recordings showing creel descending on to (a) Virgularia and (b) Pennatula (Eno et al., 2001).

It is important to notice, that fished species – the snow crab *Chionoecetes opilio* is a non-indigenous species in the Barents Sea. In the Atlantic, the species is naturally distributed on the northwestern side (i.e. eastern Canada and west Greenland), while until recently, there have been no observations of snow crabs in eastern Atlantic (Alvsvag et al., 2009). In 1990s first occurrences of the snow crab in the eastern Barents Sea was reported, presumably introduced by ballast water (Fig. 10). By now there are scientific evidences that the snow crab population is successfully established in the Barents Sea, since a relatively high number of small juvenile crabs as well as adults are captured, including ovigerous females, what validates the existence of a self-reproducing population (Alvsvag et al., 2009).

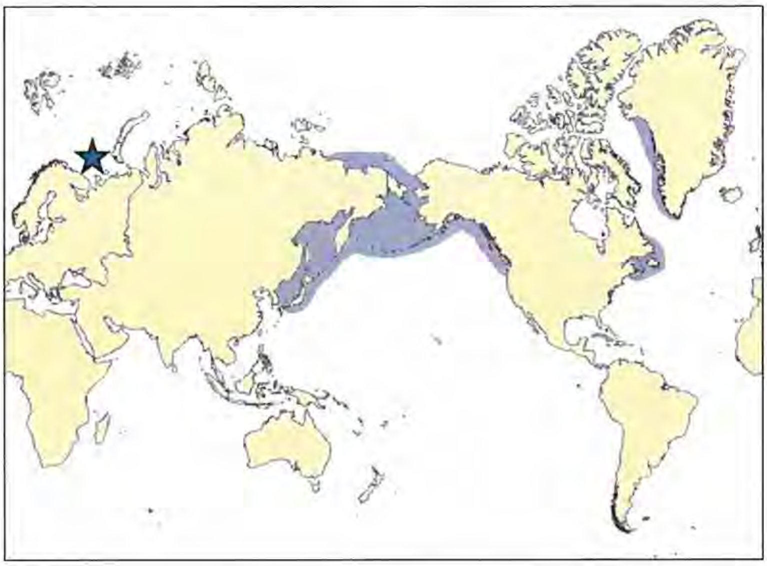

Figure 10. Natural distribution range of snow crab *Chionoecetes opilio*. * Indicates the observations of a new population in the northeastern Atlantic (Alvsvag et al., 2009).

The introduction of the red king crab to the Barents Sea from the north Pacific in 1960s despite commercial importance had adverse impact on local ecosystem and different habitats, significantly reducing biomass of local species (Falk-Petersen et al., 2011). Snow crabs can cause similar effects because of extensive feeding and similar diet composition – polychaetes, shrimps, crabs, smaller crustaceans, infaunal clams, demersal fish, echinoderms (Squires, 2003). Since there is no evidence of local predators controlling populations of both crab species, it can be assumed that crab fishing could regulate population size or at least reduce the impact on local habitats by the invaders.

As described above, potentially low impact of crustacean traps on VME benthic habitats and species could be confirmed by the results of crab fishing in the area "BAR 1", where were no records of any VME species attached or inside the trap. In respect to this and restricted information about the distribution of VME benthic habitats and species in the Barents Sea, the exploratory fishing in the regulatory area 3 is recommended, according to the "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" article 6.6 (Rec 19 2014: Protection of VME in NEAFC RA).

Vulnerable marine ecosystems data collection protocol for exploratory crab pot fishing

In accordance with "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" article 6.6 (Rec 19 2014: Protection of VME in NEAFC RA), scientific observers on fishing vessels in the Regulatory Area shall follow the protocol for VME data collection, which includes monitoring and identifying of VMEs indicating species on board, recording data on data sheets (Table 2) and digital camera with embedded GPS, collecting and providing samples for detailed analysis in the laboratory.

Scientific observer shall follow these guidelines:

1. At the arrival to the fishing site to retrieve a string of crab pots, the date, number of site, number of string, exact time, depth and geographic coordinates is recorded into the data sheet.
2. Visual inspection of retrieved crab pots. A retrieved crab pot is visually inspected for any VMEs indicator species stuck on or in the pot and documented by the digital photo camera with embedded GPS. While the crab catch is taken out of the pot, the observer takes samples of species (if any) for preliminary species composition and weight analysis.
3. After the preliminary analysis, collected biological material is put into the self-locking plastic bag, labeled with the number of site, number of string, date and time of collection and stored in the freezer for detailed laboratory analysis by scientific authorities.
4. At the end of the same string of pots, exact time, depth and geographic coordinates is recorded into the data sheet. The number of inspected pots on the string, the number of pots with VMEs indicating species present, the number of lost pots and the observer's name are also recorded.
5. At the end of a trip, data sheets, pictures and collected samples are provided to scientific institutions for detailed analysis on species composition, weight and spatial distribution. Finally, the assessment of VMEs spatial distribution is reported and the impact of a crab pot fishing event is estimated.

It is important to notice that the date and time (24-hour clock system) on the photo camera must be set correctly, GPS logger turned on, also the default name of a picture would include date and time. This will facilitate the association of data sheet entries, pictures of crab pots and biological samples. When the date and exact start and end time of a string retrieval is known (e.g. 08/11/2014 16:25-19:30), then all the pictures taken in this particular time range can be easily associated to the same string. As pictures are taken immediately after the retrieval of a crab pot, the geographic position of a pot on the string can be easily tracked back by the coordinates tagged with every picture. Furthermore, the label on the sample bag should also include exact time of pot retrieval (together with date, the number of fishing site and the number of string). That way biological samples are associated with representing pictures that provide visual information and, most importantly, coordinates of samples.

Having in mind that a single string contains 200 crab pots, 8 sets of strings on average are deployed per day and 20-30 sets of strings per fishing site, the reasonable amount of inspected pots should range at least from 10 to 20 per string (5-10 %) and 33-50 % of strings per fishing site, depending on weather conditions. Pots should be inspected at equal intervals along the string (i.e. every fifth pot) while inspected strings should cover the area of the fishing site proportionally. In case of high bycatch by the pot not intended for the inspection, the crew should inform the observer, who should take extra samples in that case.

Additional possibilities for monitoring VMEs. As the VMEs data collection for exploratory crab pot fishing will take place as described above, additional monitoring possibilities will be tested and implemented if successful. That includes autonomous video cameras attached to pots, filming the direct impact of submerging pots to benthic habitats and biota, and installment of a data recording echolot on a vessel for the assessment of topographic features of habitats along the string of pots.

***Table 2**. VME data collection protocol.*

Vessel name:
Gear type:
Start of trip:
End of trip:

Date	**Site No.**	**String No.**	**Latitude**		**Longitude**		**Time**		**Depth**		**No. of inspected pots**	**No. of pots with target species**	**Lost pots**	**Observer**
			Start	End	Start	End	Start	End	Start	End				

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ARCTIC FISHING

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART "A": GENERAL

1. NAME OF RESEARCH SHIP: *F/V ŽALGIRIS, F/V KARALIUS, F/V JŪROS VILKAS*

2. DATES OF CRUISE FROM: *As soon as permission will be granted, by appropriate institutions.*

3. OPERATING AUTHORITY: *UAB – ARCTIC FISHING, 302567657, ADRESS UKMERGĖS ST. 14, KLAIPĖDA LITHUANIA. TELEPHONE +370 698 12861, E-Mail dovydas@arcticfishing.lt*

4. OWNER: *UAB – ARCTIC FISHING, 302567657, ADRESS: UKMERGĖS ST. 14, KLAIPĖDA LITHUANIA, TELEPHONE +370 698 12861, E-Mail dovydas@arcticfishing.lt*

5. PARTICULARS OF SHIP:

5.1 F/V ŽALGIRIS, IMO 8016433	**5.2 F/V KARALIUS, IMO 7917733**	**5.3 F/V JŪROS VILKAS, IMO 7814632**
NATIONALITY: *LITHUANIA*	NATIONALITY: *LITHUANIA*	NATIONALITY: *LITHUANIA*
OVERALL LENGTH - *45.72 METRES*	OVERALL LENGTH – *50.66 METRES*	OVERALL LENGTH – *44.18 METRES*
NETT TONNAGE – *194t*	NETT TONNAGE – *291t*	NETT TONNAGE – *181t*
POPULSION: *DIESEL*	POPULSION: *DIESEL*	POPULSION: *DIESEL*
CALL SIGN - *LYAS*	CALL SIGN - *LYAJ*	CALL SIGN - *LYAL*
REGISTRATION PORT & NUMBER: *KLAIPĖDA 882*	REGISTRATION PORT & NUMBER: *KLAIPĖDA 873*	REGISTRATION PORT & NUMBER: *KLAIPĖDA 874*
NUMBER OF CREW: 28	NUMBER OF CREW: 28	NUMBER OF CREW: 28

6. SCIENTIFIC PERSONNEL

One scientific observer with basic training for data collection on every vessel.

7. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference in Latitude & Longitude):

East Atlantic, Barents Sea (see ANNEX 1).

8. BRIEF DESCRIPTION OF PURPOSE OF CRUISE: exploratory bottom fisheries in accordance with "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" (Rec 19 2014).

PART "B": GENERAL

1. NAME OF RESEARCH ORGANISATION:

Klaipeda University, Marine Science and Technology Centre

Herkaus Manto g. 84, Klaipeda, Lithuania, LT-92294

2. DATES OF RESEARCH FROM: *As soon as permission will be granted, by appropriate institutions.*

3.1. PURPOSE OF RESEARCH: The assessment of potential impact of crustacean traps on vulnerable marine benthic habitats and species in the regulatory area 3.

3.2 GENERAL OPERATIONAL METHODS (including full description of any fishing gear, trawl type, mesh size etc.):

The fishing gear consists of the line (approx. 4100 m long), held by two anchors (weight – 100 kg, dimensions – 850x1850x1850 mm). Along the main line, 200 pots are attached by 2 m line in 20 m intervals. The diameter of pots is 1050 mm, height – 600 mm, weight – 18 kg. The net is made from polypropylene, mesh size 60x60 mm, the size of degradable escape vent – 400x500 mm (see ANNEX 2).

4. ATTACH CHART showing (on an appropriate scale) the geographical area of the intended work, positions of intended stations, tracks of survey lines, positions of moored/seabed equipment, areas to be fished:

The positioning of research sites and survey lines is not possible in advance as the fishery will take place within the whole regulatory area 3 (see ANNEX 1), however the location of research sites will be recorded during the exploratory fishing and will be provided in the report.

5. SAMPLING:

In accordance with "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" article 6.6 (Rec 19 2014: Protection of VME in NEAFC RA), scientific observers on fishing vessels in the Regulatory Area shall follow the protocol for vulnerable marine ecosystems (VME) data collection, which includes monitoring and identifying of VMEs indicating species on board, recording data on data sheets and digital camera with embedded GPS, collecting and providing samples for detailed analysis in the laboratory. In parallel, additional possibilities (autonomous video cameras, data recording echolots) for monitoring VMEs will be tested and implemented if successful (see ANNEX 3 for full description).

6. ANY HAZARDOUS MATERIAL: (Chemicals/Explosives/Gases/Radioactive etc.):

No use of any hazardous material

7. NAMES AND ADDRESSES OF SCIENTISTS OF THE RESEARCH ORGANISATION:

Dr. Martynas Bucas, Dr. Andrius Siaulys.

Marine Science and Technology Centre, Klaipeda University, Herkaus Manto str. 84, LT-92294 Klaipeda, Lithuania; email: martynas.bucas@jmtc.ku.lt, andrius.siaulys@jmtc.ku.lt; tel.: +370 46 398843; fax.: +370 46 398845.

8. WHEN RESEARCH DATA FROM THE INTENDED CRUISE IS LIKELY TO BE MADE AVAILABLE TO THE RESEARCH ORGANISATION AND BY WHAT MEANS

Cruise report and results of this survey will be published in 2016 in project reports, which will be provided to the Secretary for circulation to ICES and to all other Contracting Parties.

PART "C": SCIENTIFIC EQUIPMENT

Equipment	Purpose
Digital photo camera with embedded GPS	Inspection and estimation of species stuck on fishing gear, documentation of sampling locations.
Weights	Biomass estimation of species stuck on fishing gear.
Autonomous video camera*	Inspection of direct impact of fishing gear on benthic habitats and species during deployment.
Data recording echolot*	The assessment of topographic features of habitats along the string of pots.

* will be tested and implemented if successful

Director ____________ Rimantas Gruzdys

LIETUVOS RESPUBLIKA UAB ARCTIC FISHING Company Ltd REPUBLIC OF LITHUANIA

UAB "ARCTIC FISHING"
Ukmergės g. 14 LT-92234 Klaipėda, Lietuva
Įmonės kodas: 302567657
PVM Kodas: LT100008588618

ANNEX 1

Coordinates and areas of the NEAFC RA 3 (XBS/Loophole) polygons (in WGS84 system):

Polygon 1

Longitude, °	Latitude, °
37,000	75,195
38,000	75,800
38,000	76,616
38,000	77,322
42,778	76,878
39,505	76,246
38,964	75,774
38,144	75,340
37,257	75,007
36,962	74,924

Area: 218919 km²

Polygon 2

Longitude, °	Latitude, °
42,843	75,782
42,780	75,420
41,988	74,781
41,734	74,063
41,374	73,646
41,199	73,292
40,911	72,945
40,735	72,098
40,104	72,207
40,561	72,173
40,592	72,623
40,669	73,087
41,016	73,398
41,286	73,736
40,998	74,105
39,585	75,080
42,066	75,573
42,044	76,006
43,046	76,123

Area: 159640 km²

Polygon 3

Longitude, °	Latitude, °
33,707	73,981
34,88	74,26
35,975	74,579
36,768	74,855
36,083	74,561
34,981	74,254
33,784	73,968

Area: 4139 km²

Polygon 4

Longitude, °	Latitude, °
43,978	76,814
43,944	76,796
43,545	76,835

Area: 213 km²

Polygon 5

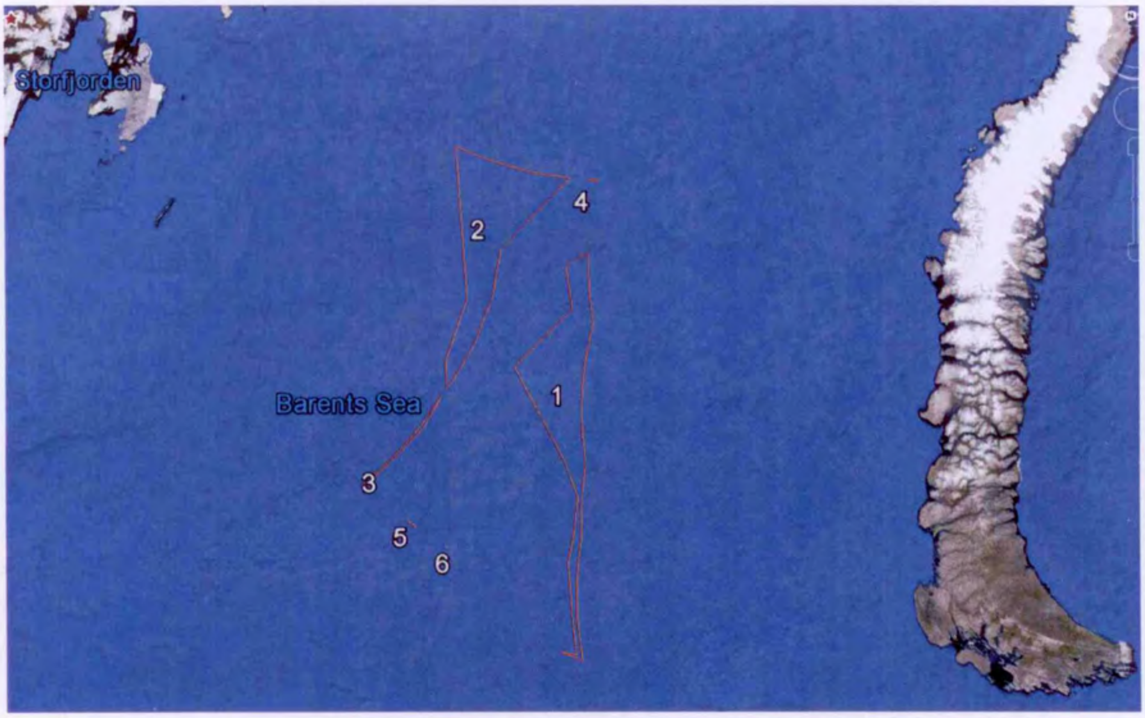
Longitude, °	Latitude, °
35,456	73,594
35,318	73,629
35,649	73,558

Area: 41 km²

Polygon 6

Longitude, °	Latitude, °
36,642	73,344
36,567	73,361
36,624	73,349

Area: 2 km²

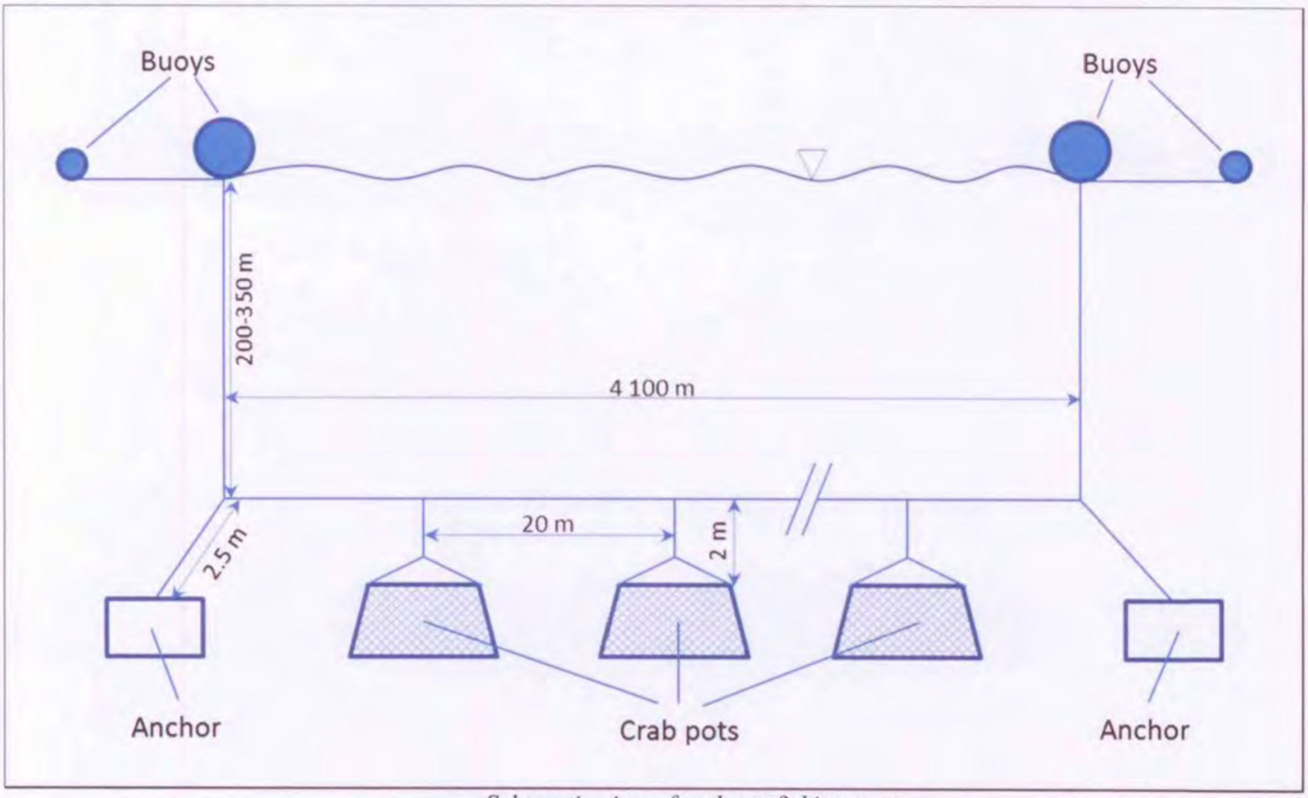


Polygons of the NEAFC regulatory area 3 (marked in red).

ANNEX 2

HARVERSTING PLAN FOR EXPLORATORY BOTTOM FISHERIES

The targeted species is a snow crab *Chionoecetes opilio*, in the Atlantic, the species is naturally distributed on the northwestern side (eastern Canada and west Greenland), but in 1990s appeared and settled in the Barents Sea.
The fishing gear consists of the line (approx. 4100 m long), held by two anchors (weight – 100 kg, dimensions – 850x1850x1850 mm). Along the main line 200 pots are attached by 2 m line in 20 m intervals. The diameter of pots is 1050 mm, height – 600 mm, weight – 18 kg. The net is made from polypropylene, mesh size 60x60 mm, the size of degradable escape vent – 400x500 mm.



Schematic view of crab pot fishing gear.

The fishing activity takes place every day, 8-9 months a year, where on average 8 strings of pots are being retrieved and 8 strings deployed per day by a single vessel. The fishing sites are not fixed to specific locations and are distributed within whole regulatory area 3.

ANNEX 3

DATA COLLECTION PLAN FOR EXPLORATORY BOTTOM FISHERIES

In accordance with Klaipeda University Marine Science and Technology Centre and "Recommendation on the protection of vulnerable marine ecosystems in the NEAFC Regulatory Area" article 6 (Rec 19 2014: Protection of VME in NEAFC RA http://www.neafc.org/system/files/Rec19-Protection-of-VMEs_0.pdf), scientific observers on fishing vessels in the Regulatory Area shall follow the protocol for vulnerable marine ecosystem (VME) data collection, which includes monitoring and identifying of VMEs indicating species on board, recording data on data sheets (Table 1) and digital camera with embedded GPS, collecting and providing samples for detailed analysis in the laboratory.

Scientific observer shall follow these guidelines:

1. At the arrival to the fishing site to retrieve a string of crab pots, the date, number of site, number of string, exact time, depth and geographic coordinates is recorded into the data sheet.
2. Visual inspection of retrieved crab pots. A retrieved crab pot is visually inspected for any VMEs indicator species stuck on or in the pot and documented by the digital photo camera with embedded GPS. While the crab catch is taken out of the pot, the observer takes samples of species (if any) for preliminary species composition and weight analysis.
3. After the preliminary analysis, collected biological material is put into the self-locking plastic bag, labeled with the number of site, number of string, date and time of collection and stored in the freezer for detailed laboratory analysis by scientific authorities.
4. At the end of the same string of pots, exact time, depth and geographic coordinates is recorded into the data sheet. The number of inspected pots on the string, the number of pots with VMEs indicating species present, the number of lost pots and the observer's name are also recorded.
5. At the end of a trip, data sheets, pictures and collected samples are provided to scientific institutions for detailed analysis on species composition, weight and spatial distribution. Finally, the assessment of VMEs spatial distribution is reported and the impact of a crab pot fishing event is estimated.

It is important to notice that the date and time (24-hour clock system) on the photo camera must be set correctly, GPS logger turned on, also the default name of a picture would include date and time. This will facilitate the association of data sheet entries, pictures of crab pots and biological samples. When the date and exact start and end time of a string retrieval is known (e.g. 08/11/2014 16:25-19:30), then all the pictures taken in this particular time range can be easily associated to the same string. As pictures are taken immediately after the retrieval of a crab pot, the geographic position of a pot on the string can be easily tracked back by the coordinates tagged with every picture. Furthermore, the label on the sample bag should also include exact time of pot retrieval (together with date, the number of fishing site and the number of string). That way biological samples are associated with representing pictures that provide visual information and, most importantly, coordinates of samples.

Having in mind that a single string contains 200 crab pots, 8 sets of strings on average are deployed per day and 20-30 sets of strings per fishing site, the reasonable amount of inspected pots should range at least from 10 to 20 per string (5-10 %) and 33-50 % of strings per fishing site, depending on weather conditions. Pots should be inspected at equal intervals along the string (i.e. every fifth pot) while inspected strings should cover the area of the fishing site proportionally. In case of high bycatch by the pot not intended for the inspection, the crew should inform the observer, who should take extra samples in that case.

Additional possibilities for monitoring VMEs. As the VMEs data collection for exploratory crab pot fishing will take place as described above, additional monitoring possibilities will be tested and implemented if successful. That includes autonomous video cameras attached to pots, filming the direct impact of submerging pots to benthic habitats and biota, and installment of a data recording echolot on a vessel for the assessment of topographic features of habitats along the string of pots.

VME data collection protocol.

Vessel name:
Gear type:
Start of trip:
End of trip:

Date	Site No.	String No.	Latitude Start	Latitude End	Longitude Start	Longitude End	Time Start	Time End	Depth Start	Depth End	No. of inspected pots	No. of pots with target species	Lost pots	Observer