Mapping Vulnerable Marine Ecosystems and anthropogenic activities in Arctic and sub-Arctic waters (**NovasArc***)*

Report from meeting at the Institute of Marine Research in Bergen (Norway) 21-23 November 2016

Participants: Faroe (Havstovan (HS)): Petur Steingrund, Hjálmar Hátún (Skype 22/11), Iceland (Hafrannsoknastofnun (Hafro)): Steinunn Hilma Olafsdottir; Julian M Burgos, Norway (Havforskningsinstituttet (HI)): Pål Buhl-Mortensen (Skype 21-23), Lene Buhl-Mortensen; Øystein Skagseth (22/11).

Topics discussed

Identification guide for bycatch registration
Main responsibility (Pål and Steinunn)

User groups and guide development
Two main user groups were identified: fishermen and scientists at research institutes.

Fishermen will need a rough guide for bycatch reports from their trawling and longline activities. In Norway this kind of reporting will be tried by a reference fleet in spring 2017. Pål presented a guide and table that is under development for this purpose that can be extended to be relevant for the whole study area.

Research institutes will need a guide for identification of key VME species (sponges and corals) in relation to two activities:
- analysis of videos from visual mapping (ROV, video platform, or drop cam) and
- the identification of key VME species in bycatch from bottom trawl surveys.
Pål presented a guide developed for analysis of videos developed for mapping in Norway that will be developed to cover the whole study area. Steinunn presented an example of a guide for bycatch analysis from Icelandic waters that can be extended for use in the project area by additions from project partners. This year both Iceland and the Faroes reported bycatch from bottom trawl surveys from new areas. This year both Iceland and the Faroes reported bycatch from bottom trawl surveys from new areas as part of the project. VME distribution maps has been delivered from the Faroes.

Distribution of VMEs
Pål delivered available data from ICES WGDEC and will deliver data from surveys conducted by HI, these ar available at the database Sea2data. Lene, Steinunn and Pål will add data from literature. Literature will be distributed between these to avoid double labor.

Database/sheet format

An already existing database for coral species developed by HI and Hafro will be used. Five new columns should be added:

- Source information on presence of a VME
- What VME type the species represents, indicated by numbers assigned to the VMEs mapped by the project
- Abundance: column with unit; column with value
- Higher taxonomic level for convenient sorting.

Data sharing

Literature, results and other information can be shared/communicated using Dropbox or others source. Julian will set up a communication site and collide the data delivered in a database.

Oceanography (Hjalmar and Øystein)

Bottom temperature and salinity: Hjalmar (HS) presented available information from the new publication by Jochumsen et al 2016. Øystein (HI) informed that the data was available at the NICE database available at HI.

Bottom currents/connectedness models: Main currents at different depth strata for the whole area can be provided using 4 km ROMS model, this will be checked by Øystein. For local VME distribution model bottom currents should be modelled using Nordkyst 800m ROMs model or if partners are more familiar with other models (HICOM etc) they can be used. Depth strata based on major temperature discontinuity will be decided and models should be run for these depth layers.

Habitat suitability model

Should be available autumn 2017 based on common habitat requirement of a group of VME defining species and single species identified from statistical analysis of their distribution data and available environment information (depth, temperature, salinity, substratum, modelled near bottom current…).

Distribution of anthropogenic activities

VMEs and fishing data (VMS) does not need to be same scale. A new paper on fishing pressure that includes large parts of the study area has been published (Eigaard et al. 2016). If possible this data can be used with addition of fishing activity information from Iceland and the Faroes for the large-scale analysis. Local analysis of pressure/VME distribution patterns would benefit from as high resolution as possible. A possible approach could be the one used by Gerritsen (2010). Julian will look-into possibilities. Uncertainty maps will be provided based on sampling intensity.

Project website

Julian start creating a website and the acronym NovasArc was decided for the project.
It will be hosted Hafro and should initially include:
Project description; Preliminary results (maps etc); Photos presenting gear, VMEs, trawling effects.

Cruises 2017

Joint cruises for exchange of knowledge on VME mapping.
Norway: Three MAREANO cruises: 16/3-8/4; 7-29/8; 21/10 – 13/11
Faroes: Two cruise periods: 22/2 - 8/3 8-22/3 22-29/3; 2-16/8 16-26/8 6-13/9.
Iceland: Two cruise periods details lacking: June-July 2 weeks; October a month

Visual mapping is needed in Greenland and Faroe waters.
The available options are to: Build own camera, borrow video equipment or borrow boat with equipment. New gear "GoBenthic" - Specialized camera housing for GoProuse is a possibility for visual mapping at the Faroes, prize estimate 5000 Euro (https://www.tindie.com/products/GroupBinc/gobenthic-specialized-camera-housing-for-gopro/).
In 2018 Århus university will likely have a cruise in Faroe waters.

Workshops in 2017

Hafrannsoknastofnun in Rekjavik 30/1-3/2
Start at lunch Monday and end lunch Friday.
Main activity: VME and anthropogenic activity data gathering

Havstovan in Thorshavn 25-29/9
Start at lunch Monday and end lunch Friday.
Main activity: Modelling of VME distribution based on seabed and oceanographic data and produce distribution maps of anthropogenic activities.