

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART A: GENERAL

1. NAME OF RESEARCH SHIP: "G.O. Sars" CRUISE NO. 2021 107

2. DATES OF CRUISE From: 31. July 2021 To: 10. August 2021

3. OPERATING AUTHORITY: Institute of Marine Research
P.O. Box 1870 Nordnes
N-5024 BERGEN, NORWAY

TELEPHONE: 47-55238500
TELEFAX: NA
TELEX: NA

4. OWNER
(if different from no. 3)

5. PARTICULARS OF SHIP: Name: "G.O. Sars"
Nationality: Norwegian

Overall length: 77.50 m

Maximum draught: 7.50 m

Net tonnage: NT = 1220 (GT = 4067 brt)

Propulsion: Diesel electric, 8 100 kw

Call sign: LMEL

Registration port and number: Bergen, Norway IMO 9260316
(if registered fishing vessel)

6. CREW Name of master: Svein-Roger Fredheim/ John Gerhard Aasen

Number of crew: 16

7. SCIENTIFIC PERSONNEL Name and address of scientist in charge:
Julian M. Burgos (project leader, cruise leader)

Tel/telex/fax no.: (354) 5752037 (354) 6942483

No. of scientists: 8 scientists, 2 technicians, 1 student

8. GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE (with reference to latitude and longitude)

Denmark Strait, between Iceland and Greenland

65° N - 69° N
31° W - 23° W

9. BRIEF DESCRIPTION OF PURPOSE OF CRUISE

The cruise is part of the project BENCHMARK (Benthics Habitats in Denmark Strait). The objectives of the cruise are to describe the benthic fauna in Denmark Strait, with a particular focus on VME (Vulnerable Marine Ecosystems) indicator taxa, and to characterise water mass properties and flow structure across the Denmark Strait.

10. DATES AND NAMES OF INTENDED PORTS OF CALL

Reykjavik, Iceland, July 31, 2021
Reykjavik, Iceland, August 10, 2021

11. ANY SPECIAL REQUIREMENTS AT PORTS OF CALL

No.

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART B: DETAIL

1. NAME OF RESEARCH SHIP: "G.O. Sars" CRUISE NO. 2021 107

2. DATES OF CRUISE From: 1. August 2021 To: 10. August 2021

3. a) PURPOSE OF RESEARCH

Our primary objective is to collect underwater video and photographs to characterise the composition and distribution of epibenthic fauna in the Denmark Strait, with a particular focus on taxa considered indicators of Vulnerable Marine Ecosystems. We aim to carry out dives using an ROV (Remotely Operated Vehicle) in at least 23 stations located along three transects running in a NW-SE direction across the Denmark Strait.

Specific aims of the project are:

1) Obtain baseline information on the distribution and composition of benthic ecosystems (including biota and sediment types), contributing to the mapping of benthic habitats on Greenlandic and Icelandic waters in general, and to the identification of potential Vulnerable Marine Ecosystems in particular.

2) Survey water mass properties (temperature, salinity, nutrients) and flow structure across the Denmark Strait, contributing to the characterisation of currents in Denmark Strait and providing baseline information to understand the distribution patterns of benthic taxa.

3) Collect high-resolution bathymetry and backscatter data using a multibeam echosounder in selected locations.

b) GENERAL OPERATIONAL METHODS (including full description of any fish gear, trawl type, mesh size, etc.)

During the cruise the following operations will be made:

1. Underwater video transects using the Remotely Operated Vehicle (ROV) "Ægir". Transects will be carried out in approximately 21 stations. Each transect will be approximately 1 km long. Video and photographs will be obtained during the transect. In addition, samples of benthic macrofauna will be taken for taxonomic

identification.

2. Collection of high resolution bathymetry and backscatter data using a multibeam echosounder, in case no previously collected data is available.
3. Conductivity-Temperature-Depth (CTD) measurements using a SBE 911+ system.
4. Water samples at 12 depths for measuring salinity, nutrients and other parameters.
5. During transit, current velocity data will be collected with an ADCP (Acoustic Doppler Current Profiler)

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

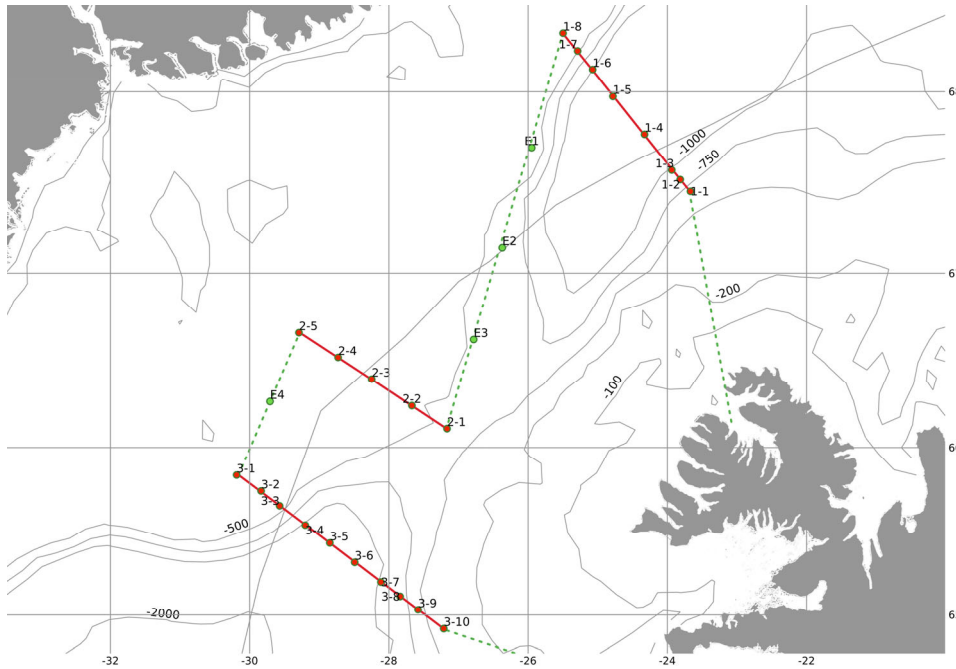


Figure 1. The survey plan includes a total of 21 stations (red circles), placed along three transects bisecting the Denmark Strait (red lines). Four additional stations (green circles) will be added if time avails. Activities in each station include: ROV dive, CTD cast, and multibeam mapping when necessary.

5. a) TYPES OF SAMPLES REQUIRED (e.g., geological/water/plankton/fish/radionuclide).

- Videos and photographs of epibenthic fauna.
- Specimens of epibenthic fauna for taxonomic identification.
- Water samples at different depths for direct measurement of salinity, nutrients, and other parameters.

- b) METHODS OF OBTAINING SAMPLES (e.g., dredging/coring/drilling/fishing, etc.).

- Video and photographs of the seabed will be obtained using the cameras installed on the ROV “Ægir”. Video will be collected continuously during each transect. Photographs will be taken at regular intervals and whenever an interesting feature is observed on the video.

- During the underwater video transects, a limited number of specimens of epibenthic megafauna (e.g sponges, corals) will be obtained using the ROV manipulators with the purpose of aiding the taxonomic identification of the fauna observed in the video and photographs.

- At each station up to 12 water samples will be obtained at regular depths, and close to the bottom (10-15 m above the seabed). Water samples will be used to measure nutrients and other parameters, and to correct conductivity (hence

inferred salinity) measured by the CTD system.

6. DETAILS OF MOORED EQUIPMENT

No moored equipment will be deployed during the present cruise.

Dates		<u>Description</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
<u>Laying</u>	<u>Recovery</u>				

7. ANY HAZARDOUS MATERIALS (chemicals/explosives/gases/radioactives, etc.) (Use separate sheet if necessary)

- | | |
|--|-----|
| a) <u>Type and trade name</u> | NIL |
| b) <u>Chemical content</u> (and formula) | NIL |
| c) <u>IMO IMDG code</u> (reference and UN no.) | NIL |
| d) <u>Quantity and method of storage on board</u> | NIL |
| e) <u>If explosives</u> give date(s) of detonation | NIL |

- Method of detonation
- Position of detonation
- Frequency of detonation
- Depth of detonation
- Size of explosive charge in kg.

8. DETAIL AND REFERENCE OF

a) Any relevant previous/future cruises

Surveys using underwater video and photographs to characterise benthic ecosystems are have been carried out by MFRI (Iceland) in the Icelandic waters of Denmark Strait in 2011, 2016 and 2017.

b) Any previously published research data relating to the proposed cruise

Burgos, J.M., Buhl-Mortensen, L., Buhl-Mortensen, P., Ólafsdóttir, S.H., Steingrund, P., Ragnarsson, S.Á., and Skagseth, Ø. 2020. Predicting the distribution of indicator taxa of Vulnerable Marine Ecosystems in the Arctic and Sub-arctic waters of the Nordic Seas. *Frontiers in Marine Science* 7:131. doi: 10.3389/fmars.202000131

9. NAMED AND ADDRESSES OF SCIENTISTS OF THE COASTAL STATE(S) IN WHOSE WATERS THE PROPOSED CRUISE TAKES PLACE WITH WHOM PREVIOUS CONTACT HAS BEEN MADE.

The following scientists from the coastal states will participate in the cruise:

- a) From the Marine and Freshwater Research Institute (Iceland): Julián M. Burgos, Steinunn H. Ólafsdóttir, Andreas Macrander, and Davíð Óðinsson.

Address:
Hafrannsóknastofnun, rannsókn- og ráðgjafarstofnun hafs og vatna/
Marine and Freshwater Research Institute
Fornubúðir 5, IS-220 Hafnarfjörður, Iceland

- b) From the Greenland Institute of Natural Resources: Martin Blicher and Nanette Hammeken Arboe.

Address:
Pinngortitaleriffik
Greenland Institute of Natural Resources
Kivioq 2

PO Box 570
3900 Nuuk
Greenland

10. STATE

a) Whether visits to the ship in port by scientists of the coastal state concerned will be acceptable (Yes/No)

Pending corona-measures.

b) Participation of an observer from the coastal state for any part of the cruise together with the dates and the ports for embarkation and disembarkation

No arrangements were made for an observer.

c) When research data from the intended cruise is likely to be made available to the coastal state and by what means.

Basic data available in cruise report about two months after the cruise. The full dataset will become public after an embargo of maximum two years. Data will be disseminated following EUROFLEETS+ data policy.

PART C. SCIENTIFIC EQUIPMENT

Complete the following table using a separate page for each coastal state

Coastal state: Iceland

Port call: Reykjavik, Iceland

Dates: 1. August – 10. August 2021

Indicate "YES or "NO"

				Distance from coast		
<u>List scientific work by function</u> e.g. Magnetometry Gravity Diving Seismics Seabed sampling Bathymetry Trawling Echo sounding Water sampling U/W TV Moored instr. Towed instr.	Water column including sediment sampling of the seabed	Fisheries research within fishing limits	Research concerning the natural resources of the continental shelf or its physical characteristics	Within 0-4 nm	Between 4-12 nm	Between 12-200 nm
Acoustic current profiler	0-500m	No	No	No	No	Yes
Water sampling	0-1300 m	No	No	No	No	Yes
CTD	0-1300 m	No	No	No	No	Yes

U/W video and photographs	Seabed at 300-1300 m	No	No	No	No	Yes
Sampling specimens for taxonomic identification	Seabed at 300-1300 m	No	No	No	No	Yes

Date: 10.03.2021

NB. IF ANY DETAILS ARE MATERIALLY CHANGED REGARDING DATES/AREA OF OPERATION AFTER THIS FORM HAS BEEN SUBMITTED, THE COASTAL STATE AUTHORITIES MUST BE NOTIFIED IMMEDIATELY.