

NOTIFICATION OF PROPOSED RESEARCH CRUISE

PART A: GENERAL

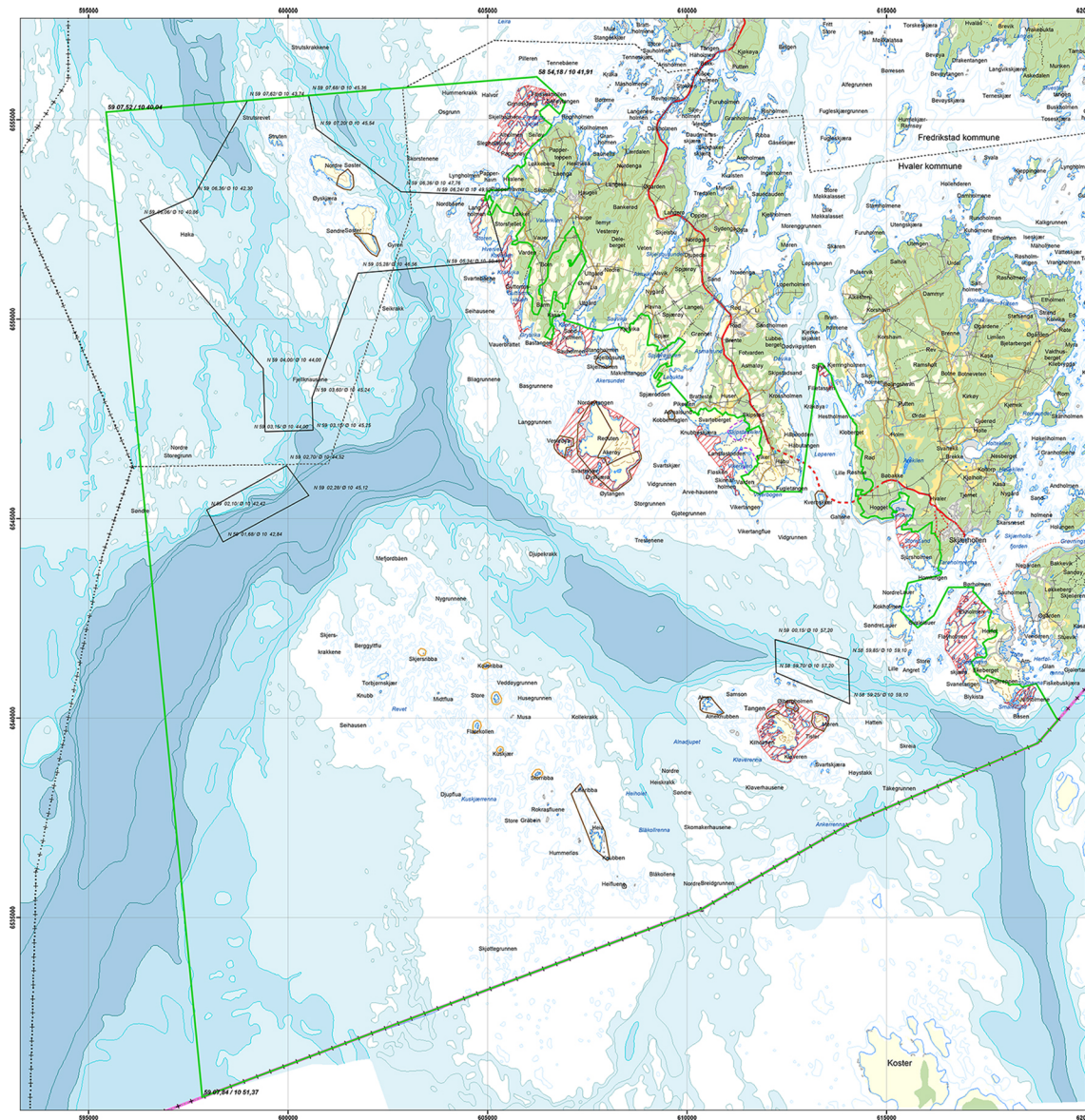
1.	<u>NAME OF RESEARCH SHIP:</u> RV Nereus	<u>CRUISE NO.</u> 2019
2.	<u>DATES OF CRUISE</u>	From 2019-01-01 To 2019-12-31
3.	<u>OPERATING AUTHORITY:</u> Tjärnö marina laboratorium, Göteborgs universitet, Strömstad, Sverige	
	<u>TELEPHONE:</u>	+46 31 7869600
	<u>TELEFAX:</u>	+46 31 7861333
	<u>TELEX:</u>	
4.	<u>OWNER</u> (if different from no. 3)	
5.	<u>PARTICULARS OF SHIP:</u>	
	Name:	R/V Nereus
	Nationality:	Swedish
	Overall length: (in metres)	15.5
	Maximum draught: (in metres)	1.8
	Net tonnage:	18
	Propulsion e.g. diesel/steam:	diesel
	Call sign:	SKTD
	Registration port and number (if registered fishing vessel)	
6.	<u>CREW</u>	
	Name of master:	Carl-Henrik Gustafsson, Mikael Nilsson
	Number of crew:	2
7.	<u>SCIENTIFIC PERSONNEL</u>	
	Name and address of scientist in charge:	Ann Larsson, Inst. för marina vetenskaper, Göteborgs universitet, Tjärnö marina laboratorium, S-45296 Strömstad, Sverige
	Tel/telex/fax no.:	Tel +46 31 7869613
	No. of scientists:	1-4
8.	<u>GEOGRAPHICAL AREA IN WHICH SHIP WILL OPERATE</u> (with reference to latitude and longitude) Polygon 59°07.52N, 10°40.04E; 59°07.84N, 10°51.37E; 58°58.64N, 11°03.98E; 58°54.18N, 10°41.91E;	

9.	<p><u>BRIEF DESCRIPTION OF PURPOSE OF CRUISE</u></p> <p>1. Sampling of maximum of 5 kg of <i>Lophelia pertusa</i> from the Tisler reef during the period of 190101-191231. The corals will be used for reproductive and larval studies aiming to assess the effects of environmental stressors and future climate change on reproductive success, larval dispersal and recruitment of new coral.</p> <p>2. Deployment of measurement equipment (current meters) in coral reef areas. The measurements will be used to model the effects of distance between coral colonies on fertilisation success.</p> <p>3. Vertical profiling of currents and turbulence by lowering of instruments from ship. The measurements will be used as input to and validation of a biophysical model of <i>Lophelia pertusa</i> larval dispersal in the Skagerrak.</p> <p>Permits (Cites) for export from Norway and import to Sweden of <i>L. pertusa</i> will be applied for from the Norwegian Miljødirektoratet and the Swedish Jordbruksverket. Permission for sampling of <i>L. pertusa</i> and to anchor and deploy instruments in the Ytre Hvaler National Park has been applied for from the Nasjonalparkstyret through the Nasjonalparkforvalter Monika Olssen. Decision on our application will be taken during their next board meeting 180928 shortly after which this research cruise application will be complemented with their decision.</p>
10.	<p><u>DATES AND NAMES OF INTENDED PORTS OF CALL</u></p> <p>The ship will not visit any ports</p>
11.	<p><u>ANY SPECIAL REQUIREMENTS AT PORTS OF CALL</u></p>

NOTIFICATION OF PROPOSED RESEARCH CRUISE

1. PART B: DETAILS

1.	<u>NAME OF RESEARCH SHIP</u> RV Nereus	<u>CRUISE NO.</u> 2019	
2.	<u>DATES OF CRUISE</u>	From 2019-01-01	To 2019-12-31
3.	a) <u>PURPOSE OF RESEARCH</u> 1. Assess the effects of environmental stressors and future climate change on reproductive success, larval dispersal and recruitment of new <i>Lophelia pertusa</i> coral. 2. Assess the effects of <i>Lophelia pertusa</i> coral colony fragmentation (distance between male and female colonies) on fertilisation rate (embryos formed). 3. Model the transport of <i>Lophelia pertusa</i> larvae into and out from the Koster-Hvaler area and among reef sites within the area.		
	b) <u>GENERAL OPERATIONAL METHODS</u> (including full description of any fish gear, trawl type, mesh size, etc.) 1. <i>Lophelia pertusa</i> will be collected from the Tisler reef using a Remotely Operated Vehicle (ROV) equipped with a video camera and a manipulator arm for careful sampling of corals. The equipment ensures damage to surrounding coral framework is kept to a minimum. The collected coral nubbins will be transported to Tjämnö Marine Laboratory and be kept in aquaria for further research. 2. Deployment of measurement equipment (current meters) in coral reef areas. The deployment will be ROV-assisted to minimise damage to live coral and skeletal remains. Based on these measurements of currents and turbulence, the effect of distance between mature male and female colonies on fertilisation rate will be studied using numerical modelling. 3. Vertical profiling of currents and turbulence by lowering of instruments from ship. The measurements will be used as input to and validation of the biophysical models of larval dispersal.		
4.	<u>ATTACH CHART</u> Polygon 59°07.52N, 10°40.04E; 59°07.84N, 10°51.37E; 58°58.64N, 11°03.98E; 58°54.18N, 10°41.91E;		



5.	<p>a) <u>TYPES OF SAMPLES REQUIRED</u> (e.g., geological/water/plankton/fish/radionuclide) Live <i>Lophelia pertusa</i> corals</p>
6.	<p>b) <u>METHODS OF OBTAINING SAMPLES</u> (e.g., dredging/coring/drilling/fishing, etc. When using fishing gear, indicate fish stocks being worked, quantity of each species required, and quantity of fish to be retained on board).</p> <p><i>Lophelia pertusa</i> will be collected from the Tisler reef using a Remotely Operated Vehicle (ROV) equipped with a video camera and a manipulator arm for careful sampling of corals. The equipment ensures damage to surrounding coral framework is kept to a minimum. The collected mass of corals will be a maximum of 5 kg in total.</p> <p>Permits (Cites) for export from Norway and import to Sweden of <i>L. pertusa</i> will be applied for from the Norwegian Miljødirektoratet and the Swedish Jordbruksverket. Permission for sampling of <i>L. pertusa</i> and to anchor and deploy instruments in the Ytre Hvaler National Park has been applied for from the Nasjonalparkstyret through the Nasjonalparkforvalter Monika Olssen. Decision on our application will be taken during their next board meeting 180928 shortly after which this research cruise application will be complemented with their decision.</p>

<u>Dates Laying</u>	<u>Recovery</u>	<u>Description</u>	<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>
2019	2019	Current meters	70-150 m	58°54.18-59°07.84	10°40.04-11°03.98
7.	<u>ANY HAZARDOUS MATERIALS</u> (chemicals/explosives/gases/radioactives, etc.) (Use separate sheet if necessary)				
	a) <u>Type and trade name</u>				
	b) <u>Chemical content</u> (and formula)				
	c) <u>IMO IMDG code</u> (reference and UN no.)				
	d) <u>Quantity and method of storage on board</u>				
	e) <u>If explosives</u> give dates of detonation				
	Method of detonation				
	Position of detonation				
	Position of detonation				
	Frequency of detonation				
	Depth of detonation				
	Size of explosive charge in kg.				
8.	<u>DETAIL AND REFERENCE OF</u>				
	a) <u>Any relevant previous/future cruises</u> Cruises made by R/V Lophelia and R/V Nereus 2014 and by R/V Lophelia 2015, both ships operated by University of Gothenburg and the Sven Lovén Centre for Marine Sciences-Tjärnö, now called Tjärnö Marine Laboratory. The cruises aimed at collecting data related to cold-water coral ecology and <i>Lophelia pertusa</i> corals for further research in the laboratory.				
	b) <u>Any previously published research data relating to the proposed cruise</u> Strömberg S M, Larsson A I (2017). Larval behavior and longevity in the cold-water coral <i>Lophelia pertusa</i> indicate potential for long distance dispersal. <i>Frontiers in Marine Science</i> 4:411. doi: 10.3389/fmars.2017.00411 Larsson A I, Järnegren J, Strömberg S M, Dahl M P, Lundälv T, Brooke S (2014) Embryogenesis and larval biology of the cold-water coral <i>Lophelia pertusa</i> . <i>PLoS ONE</i> 9(7): e102222				
9.	<u>NAMES AND ADDRESSES OF SCIENTISTS OF THE COASTAL STATE(S) IN WHOSE WATERS THE PROPOSED CRUISE TAKES PLACE WITH WHOM PREVIOUS CONTACT HAS BEEN MADE</u> Jan Helge Fosså and Pål Buhl-Mortenssen, Havforskningsinstituttet Bergen				
10.	<u>STATE</u>				
	a) <u>Whether visits to the ship in port by scientists of the coastal state concerned will be acceptable</u> (Yes/No) The ship will not visit any ports				
	b) <u>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</u>				

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

Research data will be published as peer-reviewed scientific articles and will be attached to future cruise reports submitted to the Fiskeridirektoratet.

Raw data of measurements of current profiles and bottom currents can also be provided.

PART C. SCIENTIFIC EQUIPMENT

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

Coastal state

Port of call

Dates 2019

Indicate "YES" or "NO"

<u>List scientific work by function</u> e.g.	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	DISTANCE FROM COAST		
				Within 4 nm	Between 4-12 nm	Between 12-200 nm
Magnetometry						
Gravity						
Diving						
Seismics						
Seabed sampling	Yes			Yes		
Bathymetry						
Trawling						
Echo sounding	Yes but not for scientific purposes			Yes but not for scientific purposes		
Water sampling						
U/W TV	Yes			Yes		
Moored instr.	Yes			Yes		
Towed instr.						

Ann Gunn

(On behalf of the Principal Scientist)

Dated 180830

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