



**INSTITUTIONEN FÖR MARINA VETENSKAPER
TJÄRNÖ MARINA LABORATORIUM**

Fiskeridirektoratet

Toktrapport 15.09.2022, 01.01.2023-31.12.2023, Jnr. 22/13333

Cruise summary report RV Nereus 2023

Ship: RV Nereus, Call sign: SKTD

Type of ship: Research vessel

Cruise: 15.09.2022, 01.01.2023-31.12.2023, Jnr. 22/13333

Operating authority:

Tjärnö Marine Laboratory, Tjärnö, University of Gothenburg, Sweden

Owner: University of Gothenburg, Sweden

Name of master: Peter Nilsson

Scientist in charge: Ann Larsson

Principal investigators:

Iga-Maria Nestorowicz (IMN)

Nadjejda Espinel Velasco (NEV)

Cruise dates and activities at the Tisler reef:

Date	PI	Latitude	Longitude	Depth (m)	Fieldwork
2023-01-19	IMN	58°59.78	10°57.82	126-128	Retrieval and deployment of ADCP and sediment trap
2023-04-21	IMN				Retrieval of instruments planned. Mission aborted, wind direction not allowing safe anchoring.
2023-04-24	IMN	58°59.78	10°57.82	126-128	Retrieval of ADCP and sediment trap.
2023-11-17	NEV	58°59.80	10°58.06	119-136	Coral sampling*

2023-12-01	NEV	58°59.71	10°57.22	113-123	Coral sampling*
2023-12-14	NEV	58°59.78	10°58.07	111-126	Coral sampling*.

* All necessary permits were in place: the Ytre Hvaler National Park Board 19.11.2021, sak 2021-26, Jnr. 2019/48047; Miljødirektoratet, CITES export permits 23NO-0041-EX, and 23NO-0042-EX; and the Swedish Board of Agriculture, CITES import permits Dnr: 4.10.18-17238/2023, 4.10.18-17239/2023.

Aim of the cruise

Corals and data from the cruise activities are used in the following projects:

LIFE Lophelia, Method development for cold-water coral reef habitat restoration with implementation in Kosterfjord-Väderöfjord, Sweden. 2019–2025, PI Ann Larsson.

Biophysical modelling of *Lophelia pertusa* larval dispersal in the Skagerrak. PhD-project 2018–, Vilhelm Fagerström, PI Göran Broström.

RESTORESEAS -nature-based tools to protect and restore biodiversity, Biodiversa Water JPI, 2022–2025. PI Ann Larsson

Reproductive biology of cold-water corals: Insights from fertilisation kinetics, ultrastructural morphology, and histological analysis. PhD-project 2021–2025. Diego Moreno Moran, PI Rhian Waller.

Cumulative impacts of climate change and human activities on cold-water coral communities in the Azores. 2022–2026. Anaïs Sires de Vilar, PIs Marina Carreiro Silva, Ann Larsson

The collected corals were used for studies of reproduction, embryo and larval development, larval behaviour and larval settlement during different experimental conditions in the laboratory. These studies were made within the LIFE Lophelia, and RESTORESEAS projects as well as the PhD-projects by Diego Moreno Moran and Anaïs Sires de Vilar. For example, the effects of pH, temperature, microplastics, mining particles and benthic sediments on embryo and larvae were tested as well as the effect of sperm concentration on fertilization success. Data on sperm concentration on release from polyps and sperm mobility was also gathered. For developing larvae, we tested feeding with different microalgae and when the larvae start to feed. For mature larvae we examined the effect of material composition and surface structure on settlement behaviour. Data from the current measurements and sediment traps are together with measurements from 2020-2022 currently being analyzed and prepared for publication within the LIFE Lophelia, RESTORESEAS and Biophysical modelling projects. We aim to publish all data and results from our studies in peer-reviewed scientific articles.

Tjärnö 2024-10-31
Ann Larsson