



INSTITUTIONEN FÖR MARINA VETENSKAPER TJÄRNÖ MARINA LABORATORIUM

Fiskeridirektoratet

Toktrapport 17.10.2023, 18.01.2024-31.12.2024, Jnr. 23/14227

Cruise summary report RV Nereus 2024

Ship: RV Nereus, Call sign: SKTD

Type of ship: Research vessel

Cruise: 17.10.2023, 18.01.2024-31.12.2024, Jnr. 23/14227

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:

Nadjeđa Espinel Velasco (NEV)

Cruise dates and activities at the Tisler reef:

Date	PI	Latitude	Longitude	Depth (m)	Fieldwork
2024-11-21	NEV	58°59'7	10°58'2	117–127	Coral sampling*
2024-12-13	NEV	58°59'7	10°58'1	97–121	Coral sampling*

* All necessary permits were in place: the Ytre Hvaler National Park Board 13.10.2023, sak 2023-48, Jnr. 2019/48047-8; Miljødirektoratet, CITES export permits 24NO-0047-EX, and 24NO-0048-EX; and the Swedish Board of Agriculture, CITES import permits Dnr: 4.10.18-15191/2024, 4.10.18-15192/2024.

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.

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 2021–2026. Diego Moreno Moran, PI Rhian Waller.

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. 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. We aim to publish all data and results from our studies in peer-reviewed scientific articles.

Recent publications from these projects include:

Rakka M, Carreiro-Silva M, Larsson A I (2025). Adverse effects of ocean acidification on embryonic survival in the cold-water coral *Desmophyllum pertusum*. *Invertebrate Biology* **144**(1) (26 June 2025). DOI: 10.71161/ivb.144.1.2024.00001

Strömberg S M, Larsson A I (2025). Field trials testing material composition and surface complexity and the effects on benthic faunal recruitment at a Cold-Water Coral reef site. *Frontiers in Environmental Science* **13**:1561412. DOI: 10.3389/fenvs.2025.1561412

Strömberg S M, Rossi M, Vonderscher P, Larsson A I (2025). Settling assays testing the substrate preference of larvae of the cold-water coral *Desmophyllum pertusum* (syn. *Lophelia pertusa*). *Frontiers in Environmental Science* **13**: 1561433. DOI: 10.3389/fenvs.2025.1561433

Paulsrud E, Grosse M, Larsson A I, Espinel-Velasco N (2026). Delayed feeding onset in cold-water coral larvae: First evidence of microalgal ingestion in *Desmophyllum pertusum* revealed by fluorescence microscopy. *Coral reefs* **45**: 955–962. DOI: 10.1007/s00338-025-02789-5

Moreno-Moran D, Acevedo-Romo I, Häussermann V, Försterra G, Havenhand J N, Larsson A I, Waller R G (2026) In vitro experimentation shows species-specific fertilisation strategies in two structurally distinct *Desmophyllum* cold-water coral species. *Coral Reefs* <https://doi.org/10.1007/s00338-026-02908-w>

Tjärnö 2026-09-25
Ann Larsson