



Performance of biodegradable seine ropes and conventional PE/PP ropes at sea



SEARCULAR has designed and developed a novel seine rope made from biodegradable polymers with a high abrasion resistance. These ropes were tested for six months onboard a commercial demersal seine fishing vessel to assess their technical feasibility, durability and operational performance.

Background

To reduce the environmental impact of microplastics released by the abrasion of traditional plastic rope, **SEARCULAR have developed the world's first seine rope made from biodegradable polymers.**

Following development and initial testing (**Outlined in D2.1**), the team undertook full scale tests aboard a commercial seine fishing vessel the 'Fortuna', Norway. The results of these trials provide valuable insights into how these innovative ropes fare in real-world conditions, and their fishing functionality and durability in colder climates such as Norwegian waters.



Left: MS Fortuna, the vessel aboard which the ropes were tested. © Jørgen Vollstad



Right: Comparison of the biodegradable seine ropes (white) and Danline ropes (blue) after the 6 month trial. © Anja Alvestad

SEARCULAR aims to reduce marine litter and microplastic pollution originating from European fisheries. This report presents the work and outcomes of Work Package 2 (Deliverable D2.2). More information about our work on [bio-seine ropes can be found on our website.](#)

Our Research

SEARCULAR's biodegradable seine ropes were tested for 6-months aboard the MS Fortuna, a vessel operating off the northwest and northern coast of Norway. The ropes were deployed 129 times over the 6-month period, and simultaneously deployed alongside traditional Danline (polyethylene (PE) / polypropylene (PP)) ropes for direct comparison. SEARCULAR's new ropes remained on board and exposed to typical at sea conditions when not in use.

The SEARCULAR team evaluated the gears abrasion and wear resistance, and overall functionality during normal fishing operations by:

- Measuring rope 'stretch' before and after trials
- Taking frequent calliper measurements of rope diameter onboard the vessel and at the end of the trial.
- Capturing 3D scans of the rope to measure the average cross-sectional diameter, cross-sectional area, and total segment volume.
- Visual inspections and photographic documentation.

Next steps

These field trials demonstrate the technical feasibility of producing and operating a biodegradable demersal seine rope under Norwegian commercial fishing conditions and present a successful first step in the transition to more sustainable fishing gear. Future research and field trials in different regions and sea conditions are required to further optimise these promising ropes.