SEARCULAR
Circular Solutions for Fishing Gears

RESULTS SUMMARY

Performance of eco-designed biodegradable dFADs at sea

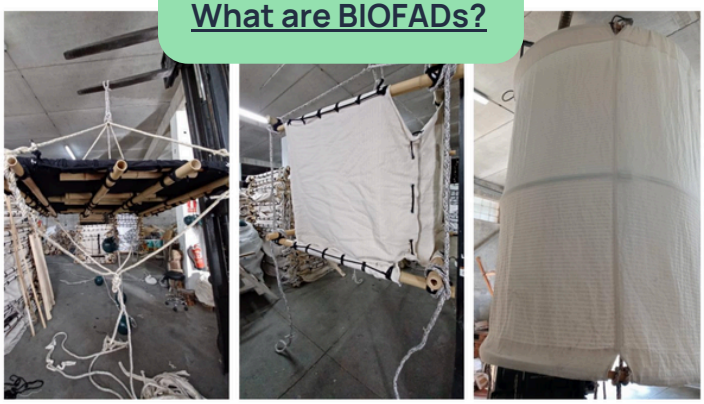
SEARCULAR set out to reduce marine litter and support fisheries in meeting new regulations for biodegradable gear and devices by developing sustainable alternatives to conventional plastic-based drifting Fish Aggregating Devices (dFADs). This summary provides an overview of how SEARCULAR has tested the performance of its biodegradable dFADs (BIOFADs) at sea, using an iterative and collaborative approach to validate these innovative device designs.

Background

Under new regulations, tuna Regional Fisheries Management Organisations (RFMOs) have set a directive to transition away from plastic, non-biodegradable dFADs, helping to reduce entanglement risk and accumulation impacts in sensitive marine habitats and ecosystems.

In support of this transition and to make a tangible reduction in fisheries-related marine plastic pollution, SEARCULAR have worked closely with industry partners to design and develop three BIOFAD models: the 'Deep-tail', 'Cage', and 'Cylinder' designs. All three SEARCULAR BIOFAD models are 100% biodegradable, replacing plastic and metal components found in conventional dFADs with natural alternatives like bamboo, cotton canvas and ropes, and by using Paulownia wood for floats.

What are BIOFADs?



SEARCULAR's BIOFAD models (Left to Right): 1. Deep-tail, 2. Cage-type, and 3. Cylindrical

Our Research

To validate these three BIOFAD models, SEARCULAR assessed their structural performance, durability, degradation patterns, and drift characteristics under real sea conditions. The first stage of this iterative testing and development process included putting the BIOFAD models to the test in the Mediterranean Sea. Positively, these models achieved a 6.5 month lifespan, which is compatible with operational requirements for tuna fisheries. The trials also helped identify targeted areas for modifications to improve the overall performance and integrity of the prototypes.

SEARCULAR has also undertaken a commercial-scale validation of the BIOFAD models in the Indian Ocean. In this trial, 150 BIOFADs are being deployed in tuna purse-seine fisheries for evaluation, and early signs have shown that dFADs constructed with biodegradable materials are viable and can support the transition away from non-biodegradable devices.

What's next?

The results of these sea trials will provide evidence of technical feasibility; early results indicate that the material and structural improvements made to the models following Mediterranean trials have been successful. Other results will go on to support further phases of commercial-scale testing and validation for Indian Ocean fisheries.

SEARCULAR aims to reduce marine litter and microplastic pollution originating from European fisheries. This report presents the work and outcomes of Work Package 3 (Deliverable D3.3). More information about our work on biodegradable FADs can be found on our website.

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