

**RECOMMENDATIONS FROM THE WORKSHOP ON INGESTED MARINE LITTER MONITORING AND
ENTANGLEMENT EVIDENCES IN THE ACCOBAMS AREA
6-7 April 2024, Catania, Italy**

General recommendations

The Workshop:

Encouraged the ACCOBAMS Secretariat to look for opportunities to engage with the UNEA INC process which is working to conclude a new plastic treaty and, subsequently, engage with the treaty as appropriate.

Encouraged Parties to consider a process to develop best practice guidance for marine litter assessment.

Encouraged Parties to address FADs as a source of Marine Litter, noting “*Recommendation GFCM/46/2023/14 establishing a multiannual management plan for the sustainable exploitation of common dolphinfish in the Mediterranean Sea*”, IUCN motion 028 – “*For an improved management of drifting fish aggregating devices (FADs) in purse seine fisheries*”, and relevant Decisions of the 2024 Conference of the Parties to CMS.

Noting the increased evidence of impacts on cetaceans and other biota, **called on** Parties to urgently implement mitigation strategies for plastic wastes, including appropriate education programmes (including citizens and shore and offshore workers), and stopping discharges into the marine environment. Potential mitigation actions are detailed below.

Took note of the recommendations from the “ASCOBANS-ACCOBAMS Marine Debris workshop 15 April 2023, O Grove, Galicia, Spain” and, in particular, **reiterated** the recommendation to enhance awareness raising by communicating to other scientists, young people and other citizens, stakeholders and policy makers.

Also **reiterated** the recommendation from the “IWC Workshop on Marine Debris: The Way Forward, 3-5 December 2019, La Garriga, Catalonia, Spain” which emphasised that beach clean ups are important initiatives for data collection and public awareness, whilst not directly addressing the problem at source, and welcomed the progress made on this inter alia under the Barcelona Convention.

Noted with appreciation IWC Resolution 2022-1 on marine plastic pollution and **encouraged** further collaborative work between the IWC and ACCOBAMS on this issue.

Encouraged the monitoring of live entangled cetaceans (i.e. free-swimming individuals that have some sort of attached entanglement) and the establishment of a common protocol to assess and disentangle them where possible. Note was taken of the IWC work on this issue and, again, further collaborative work between the IWC and ACCOBAMS is encouraged.

The Workshop also **called for**:

- periodic workshops to update procedures and guidelines for stranding intervention, data collection, and post-mortem analyses to define transboundary best practices;
- training and exchange programmes to be organised to create a shared knowledge platform for marine litter impact assessment;
- the identification of means for the exchange of information, adopting common definitions and a common communication strategy between institutions, governmental bodies, and national focal points; and
- the identification of a coordination centre to promote the creation of a regional database between partners, the sharing of expertise, equipment, and knowledge, as well as working as a reference laboratory and sample collection to promote sharing of knowledge and data.

Data Collection Recommendations

The Workshop:

Encouraged ACCOBAMS Parties to adopt the standardized multi-tier protocol (ACCOBAMS/ASCOBANS, 2019¹; Corazzola et al. 2021²) for the analysis of marine litter (including microplastics) in stranded organisms, wherever possible;

Encouraged the sharing of knowledge, facilities, samples and data collection;

Noted it is important to further identify and standardize methodologies for micro/nano plastic analysis to properly compare data in the most affected areas and species; and

Noted, where possible and expertise and facilities allow, that it is important to analyse items smaller than 1 mm, which may represent the majority of plastic particles found in marine mammals.

Further Research Recommendations

The Workshop **encouraged**:

- a more coordinated effort to better understand the toxicological effect of macro and micro-litter ingestion in cetaceans (considering both chemical and physical effects);
- harmonization of a diagnostic methodology that includes:
 - evaluation of the presence of marine litter in marine mammals GIT (at least);
 - categorization and quantification of identified marine litter through and determination of polymers by spectroscopy technique (FT-IR);

¹ ACCOBAMS & ASCOBANS. Best practice on cetacean post mortem investigation and tissue sampling by Lonneke L. IJsseldijk, Andrew C. Brownlow & Sandro Mazzariol, **2019**

² Corazzola, G.; Bainsi, M.; Grattarola, C.; Panti, C.; Marcer, F.; Garibaldi, F.; Berio, E.; Mancusi, C.; Galli, M.; Mazzariol, S.; et al. Analysis of the Gastro-Intestinal Tract of Marine Mammals: A Multidisciplinary Approach with a New Multi-Sieves Tool. *Animals* **2021**, *11*, 1824. <https://doi.org/10.3390/ani11061824>

- detection of plastic additives
 - impact on microbiota; and
 - risk, impact and mortality indexes.
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- parties to further collaborate at a regional level between tissue banks, to facilitate the exchange of tissue samples for joint analyses and retrospective studies; and
 - the identification of hotspot areas for seasonal human activities-species risk analysis, noting ongoing work by the IWC on this issue.

Adriatic Sea-specific Recommendations

The Workshop **strongly recommended**:

- monitoring efforts on bottlenose dolphin-set net interactions;
- testing mitigation devices on set-net (gill nets); and
- creating a multi-level multidisciplinary model to identify hotspot risks.

Recommendations on New Techniques

The Workshop **encouraged**:

- the defining and development of new methods to evaluate the exposure to plastics and plastic additives in free-ranging organisms, including new approaches such as Omics, which could reveal the exposure to a plethora of stressors (microplastics, emerging chemicals, etc.) and drive the identification of new end-points (via e.g. Metabolomics, Transcriptomics, epigenetics);
- the use of new diagnostic techniques to understand the effects of cumulative stressors on cetaceans; and
- investigations into the potential ecotoxicological effects caused by the ingestion of marine litter both through biomarker identification and analysis on tissues of stranded marine mammals and *in vitro* experiments to assess the effects of micro- and nano-plastics through new technologies applied on cetacean cell lines, organoids and 'organ-on-chip' technology.

Recommendations on Indicator Species

The Workshop:

Recommended that cetacean species should be promoted as indicators for microplastics (*i.e.* fin whale, *Balaenoptera physalus*) and macro-litter pollution (*i.e.* sperm whale, *Physeter macrocephalus*, and goose-beaked whale, *Ziphius cavirostris*) at ACCOBAMS scale. *Tursiops* spp. could be used as indicators at sub-basin levels. This could include the use of indicator species within the IMAP candidate indicator 24 (EO10);

Noted the need for further consideration of indicator species for the Black Sea; and

Requested the Barcelona Convention to encourage the European Commission to adopt cetaceans as indicator species.

Recommendations on Prevention, Mitigation and Remediation Measures

The Workshop **identified** a number of mitigation measures that Parties and other relevant agencies can give consideration to.

Prevention Measures:

- Local Spatial/Temporal Management: Implement measures like soak time limits and gear length restrictions to prevent conflicts and reduce gear loss.
- Fishing Gear Marking: Encourage the use of identifiers for better traceability, reducing gear abandonment and unintended catches, while enhancing accountability.
- Public Awareness and Education: Support initiatives like the Blue Flag Programme and the Clean Seas Campaign to educate and engage communities in plastic pollution prevention.
- Design Innovation: Promote the design of fishing gear with built-in features to minimise loss and entanglement.
- Promote and utilise wherever possible *The Global Ghost Gear Initiative, 2021. Best Practice Framework for the Management of Fishing Gear: June 2021 Update* to prevent, mitigate and remediate Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG).

Mitigation Measures:

- Adoption of Biodegradable Materials: Encourage research into the durability, performance, and environmental impacts of biodegradable fishing gear, while addressing economic implications.
- Development of Gear with Minimisation Features: Advocate for the integration of escape panels and self-releasing mechanisms to minimise gear loss.

Remedial Measures:

- Reporting of Lost Gear: Emphasise the importance of reporting lost or abandoned fishing gear to enable timely retrieval efforts.
- Identification of Hot Spots: Support the use of technology such as sonar and transponders to locate marine litter and retrieve lost gear, enhancing mapping and tracking efforts.
- Retrieval Initiatives: Collaborate with organisations like Healthy Seas and Surfrider Foundation to conduct marine debris removal initiatives, focusing on hotspot areas and engaging local communities.

Recommendations for Addressing Challenges

- **Persistent Nature of Marine Debris:** Recognise the unique challenges posed by the Mediterranean's semi-enclosed nature and advocate for targeted cleanup and prevention efforts.
- **Funding and Resource Constraints:** Explore sustainable financing mechanisms and public-private partnerships to overcome funding constraints and support long-term mitigation initiatives.
- **Enhanced Regional Collaboration:** Advocate for enhanced collaboration among Mediterranean countries to develop integrated approaches and address the root causes of marine litter.
- **Incorporating Emerging Technologies:** Embrace emerging technologies and innovations to enhance monitoring, waste management, and sustainable practices in combating plastic pollution in the region.