Proceedings of the 10th International Conference on Fisheries and Aquaculture 2024 Vol. 10, Issue 2, 2024, pp.01-05

ISSN 2386-1282 online
DOI: https://doi.org/10.17501/2513258.2024.1021

# CRITIQUE OF GLOBAL POLICIES: MICROPLASTICS IN FISHING AND AQUACULTURE, ASSESSING STRENGHTS AND LIMITATIONS

Piermarini R.[1*] Matiddi M.[1] Valente T1 Gioacchini G[2] Di Rienzo L[3] Zarrillo T[4]. L. Ciaralli[5] Silvestri C[1]

[1]*Italian Institute for Enviromental Protection and Research ISPRA, Italy*
[2]*Department of Life and Enviromental Science, Polytechnic Univesity of Marche, Italy*
[3]*Experimental Zooprophylactic Institute of Abruzzo and Molise "G. Caporale" (IZSAM), Italy*
[4]*Capitoline Superintendence of Cultural Heritage, Italy*
[5]*Department of Biology, University of Naples Federico II*

## Abstract

The escalation of marine litter, particularly microplastics originating from fishing and aquaculture activities, poses a significant threat to global ocean health and aquatic ecosystems. Despite growing awareness, the implementation of effective regulations and strategies to address this issue remains fragmented on a global scale. This article critically evaluates existing policies and proposes comprehensive strategies aimed at mitigating microplastic pollution in the fishing and aquaculture sectors. Drawing upon legislative databases, relevant literature, and expert recommendations, the article highlights the strengths and limitations of current approaches while advocating for a unified global effort towards sustainable marine resource management.

**Keywords:** Aquaculture, microplastic, legislation, fishing industry, marine pollution

## Introduction

The issue of marine litter is progressively gaining attention within the spheres of fishing and aquaculture. Specifically, marine litter originating from maritime activities, such as fishing and aquaculture, has not undergone comprehensive quantitative assessment, and its contribution to the overall plastic burden in the global ocean remains inadequately comprehended. The problem of plastic and microplastic ingestion by fish is also increasingly concerning the fishing and aquaculture sectors due to the potential economic ramifications. The global implementation of regulations prohibiting the release of microplastics into the marine environment remains fragmented. To tackle this challenge, the establishment of international legal frameworks through a unified global effort holds the potential to provide a comprehensive solution. Meanwhile, individual countries should adopt stringent legislation concerning microplastic release. the imperative to comprehend and address marine litter derived from fishing and aquaculture activities, alongside the pervasive plastic contamination and microplastic ingestion by marine organisms, necessitates a unified global effort. As the fishing and aquaculture sectors grapple with the multifaceted repercussions of plastic pollution, collaborative initiatives and

*Corresponding Authors' Email: *Raffaella.piermarini@isprambiente.it

comprehensive policy reforms become vital in steering us towards a more sustainable and pristine aquatic environment

## 2. Materials and Methods

This study analyzed legislative databases and relevant literature to examine countries' bans on microplastics and plastic bags. Data from sources such as Wang (2022), Anagnosti et al. (2021), and Yingying (2022) were utilized to assess the global implementation of regulations and identify gaps in current approaches.

## 3. Results and Discussion

Analysis of legislative databases and relevant literature revealed significant disparities in the global implementation of regulations addressing microplastic pollution originating from fishing and aquaculture activities. The examination of the "Map of current state policies against microbeads" highlights the varied regulatory landscape across different regions. Countries such as Canada, the United States, and a majority of European nations have implemented legislation aimed at abolishing microbeads in various products. Interestingly, India, China, New Zealand, and Thailand have also enacted laws targeting microbeads, indicating a global recognition of the need to address this specific source of microplastic pollution. However, notable gaps in policy implementation exist in other regions, underscoring the fragmented approach to addressing microplastic pollution on a global scale.

Similarly, the "Map of current state policies against plastic bags" depicts a widespread adoption of legislation aimed at abolishing single-use plastic bags across various regions. Countries such as Canada, certain states in the United States, parts of Europe, Australia, New Zealand, China, India, various Asian countries, several African nations including Madagascar, and countries in South America have implemented policies targeting the use of plastic bags. This comprehensive regulatory response reflects a global consensus on the urgency of reducing plastic bag consumption and its detrimental impact on marine ecosystems. However, despite these efforts, disparities in policy implementation persist, highlighting the need for further collaboration and harmonization of regulations to effectively address the issue of plastic pollution.

This fragmented approach underscores the urgent need for a unified global effort to address the issue of microplastic pollution in the fishing and aquaculture sectors. In particular, the establishment of international legal frameworks could provide a more cohesive and effective approach to combating microplastic pollution on a global scale. However, in the absence of such global initiatives, individual countries must take proactive measures to adopt stringent legislation aimed at mitigating the release of microplastics into the marine environment. By implementing comprehensive policies and regulations,

we can work towards safeguarding marine ecosystems and ensuring the sustainability of fisheries and aquaculture practices for future generations.

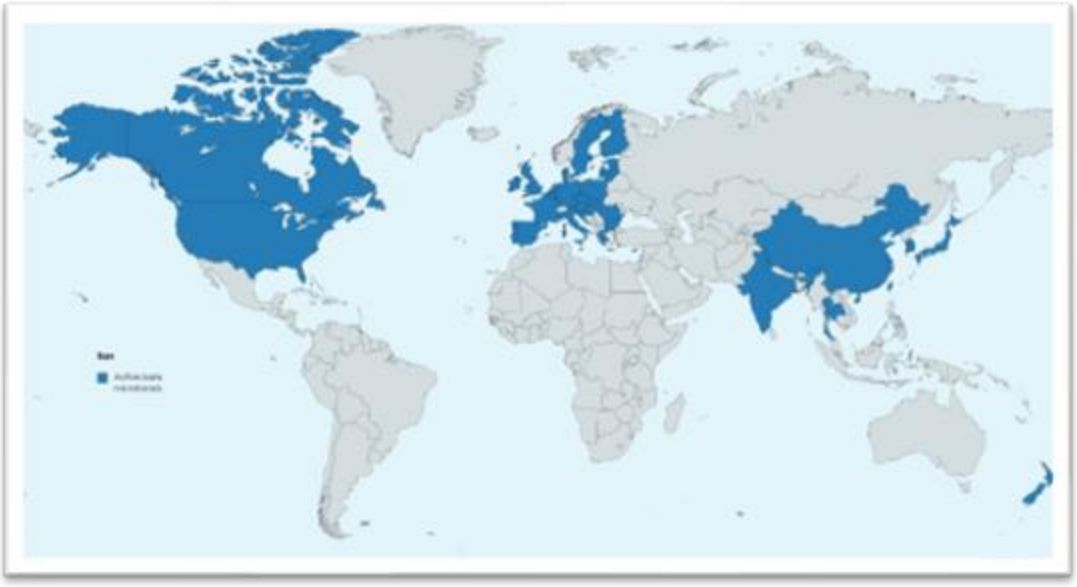

*Figure. 1:. Map of current state policies against microbeads Blue color:active bans*

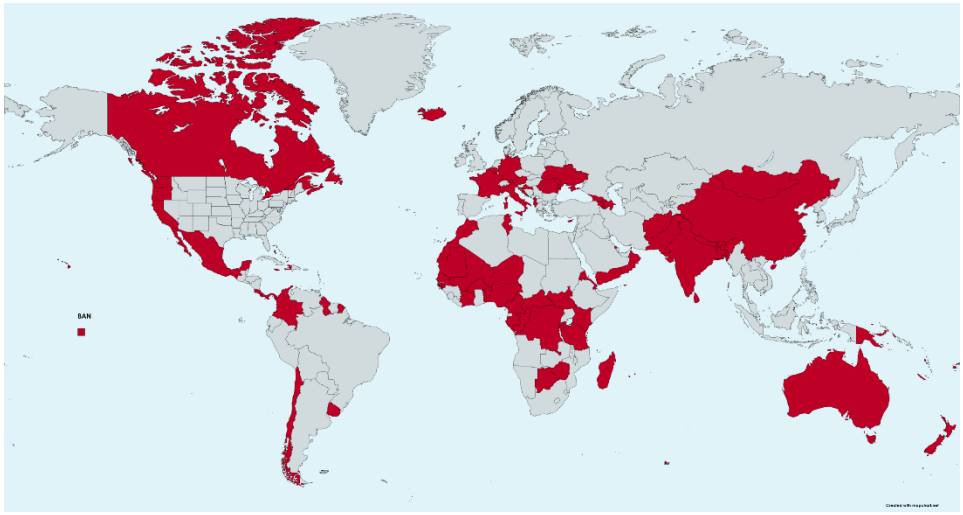


*Figure. 2:. Map of current state policies against plastic bags Red color:active bans*

## 4. Conclusion

In conclusion, the imperative to comprehend and address marine litter derived from fishing and aquaculture activities, alongside the pervasive plastic contamination and microplastic ingestion by marine organisms, necessitates a unified global effort. As the fishing and aquaculture sectors grapple with the multifaceted repercussions of plastic pollution, collaborative initiatives and comprehensive

policy reforms become vital in steering us towards a more sustainable and pristine aquatic environment. The recommended policy measures in the fisheries and aquaculture sector could be:

1. Assessing and monitoring the concentration of microplastics in both wild fisheries and aquaculture products (fish and seafood).

2. Banning toxic chemicals in fishing gear, as well as in complex synthetic compositions.

3. Mandating the marking of fishing gear to reduce the discarding of nets and to enable the localization, identification, recovery, and reuse of waste gear, in line with the FAO voluntary guidelines

4. Mandating the systematic reporting of lost fishing and aquaculture gear to public authorities to facilitate data collection and recovery of lost gear.

5. Encouraging technological innovation for the development of low-impact solutions for systematic tracking of large fishing gear which is more prone to loss and drifting. Similar tracking systems should be mandated for aquaculture gear and facilities.

6. Introducing tax incentives for professional fishers who are part of 'Fishing For Litter' schemes in Europe. These programs must not incentivize active but rather passive fishing for litter activities.

7. Supporting circular business models enabling value retention through reuse, repair, and remanufacturing before recycling.

8. Subsidizing the recycling of ghost nets and other ALDFG into predetermined standard products, provided they do not contribute to spreading toxic chemicals

9. Conducting risk assessment for all plastic material retrieved from the ocean before it is recycled.

10. Promoting the circular design of fishing gear via the use of low-impact, sustainable, and durable materials as well as of natural fibers or ceramic in fishing gear, traps, and pots.

These recommendations offer a framework for tangible actions aimed at mitigating microplastic pollution in the fishing and aquaculture sector and promoting more sustainable management of marine resources.

**Declaration of Interest Statement**

The authors declare that they have no conflict of interests.

**References**

Anagnosti, L., et al. (2021). Worldwide actions against plastic pollution from microbeads and microplastic in cosmetics: Focusing on European policies. Marine Pollution Bulletin, 162, 111883. https://doi.org/10.1016/j.marpolbul.2020.111883

Ecos. (2022). Legislation tackle microplastic pollution position paper.

Jung, D. (2023). An international legal framework for marine plastic pollution. In The Environmental Rule of Law for Oceans (pp. 46-57). https://doi.org/10.1017/9781009253741.008

Wang, S. (2022). International law-making process of combating plastic pollution: Status quo, debates, and prospects. Marine Policy, 147, 105376. https://doi.org/10.1016/j.marpol.2022.105376

Xanthos, D., & Walker, T. R. (2017). International policies to reduce plastic marine pollution from single-use plastics: A review. Marine Pollution Bulletin, 118, 17-26. https://doi.org/10.1016/j.marpolbul.2017.02.048

Yingying, L. (2022). Legislation and policy on pollution prevention and control of marine microplastic. Water, 14(18), 2790. https://doi.org/10.3390/w14182790