

# Research discovers an increasing risk of invasive species colonization on marine debris

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The accumulation of marine debris occurs especially near highly populated cities or tourist destinations. Credit: Dr. Gunasekaran Kannan

A study conducted along the Southeast coast of India has unearthed a pressing environmental concern: the increasing risk of invasive species colonization on marine debris.

The research, published in [\*Marine Pollution Bulletin\*](#), delves into the critical interplay between [plastic pollution](#) and the introduction of non-indigenous organisms into Indian waters.

In recent years, the surge in anthropogenic litter in the ocean has provided an extensive array of substrates for [marine organisms](#) to colonize. This accumulation of [marine debris](#), especially near highly populated cities or [tourist destinations](#), has inadvertently become a vector for the transport of fouling organisms, leading to far-reaching ecological and economic consequences.

To carry out the study, the research team, led by the Institut de Ciències del Mar (ICM-CSIC) and the Sathyabama Institute of Science and Technology in collaboration with the University of Barcelona (UB), the Abdelmalek Essaadi University (UAE) and the University of Oslo (UiO), embarked on a comprehensive examination of fouling organisms on various types of stranded litter, including [plastic](#), glass, rubber, foam sponge, cloth, metal, and wood.

Their meticulous efforts unfolded a startling reality: a total of 3,130 specimens/colonies belonging to seven phyla and representing 17 species.

## **Traveling on marine debris**

The results unveil the presence of the invasive mussel *Mytella strigata*, attached in high density groups to fishing nets. "This discovery emphasizes the significant role of marine litter in facilitating the spread of invasive species, potentially disrupting the ecological balance of

Indian waters," explains Dr. Gunasekaran Kannan, the first author of the study.

"Litter items with high buoyancy, such as bottles, buoys and [plastic bags](#) supported abundant macroinvertebrate assemblages, suggesting the potential for long distance transport," continues Dr. Kannan.

Among the most commonly found organisms associated with marine litter were the cosmopolitan bryozoans *Jellyella tuberculata* and *J. eburnea*, the barnacles *Lepas anserifera*, *Amphibalanus amphitrite*, and *Amphibalanus* sp., and the oysters *Saccostrea cucullata* and *Magallana bilineata*.

## **Combating plastic pollution**

This research is the first documentation of marine litter as a vector for species dispersal in India.

"The results highlight the increasing risk of invasive species colonization on plastics along the southeast coast of India. This is particularly worrying at a time when plastics are becoming a more and more common substrate for marine organisms, especially in India, which is one of the top countries contributing most to ocean plastic pollution. Our study thus serves as a call to immediate action to address plastic pollution and its related threats in India," explains Dr. Blanca Figuerola, a member of the Medrecover Group and the last author of the study.

"The dominance of plastic in the fouled marine litter is evident, representing 75.5% of the fouled litter items found," says Dr. Anna Sanchez-Vidal, associate professor in the UB Department of Earth and Ocean Dynamics, member of the UB's Marine Geosciences Consolidated Research Group and co-author of the study.

"Effective waste prevention and management, education, and awareness campaigns are imperative to mitigate the introduction of invasive species via marine litter. Local and global stakeholders must come together to address this critical issue and protect the fragile marine ecosystems along India's southeast coast," adds Dr. Sanchez-Vidal.

The team have already warned that plastic debris in the sea were contributing to the introduction and transport of non-native marine species in the Catalan coast in a recent [study](#).

Given this scenario, the experts decided to expand their research in other regions in collaboration with other universities and research centers, which has allowed them to publish this latest work.

"[These] kind of studies are also effective for early detecting invasive species. However, prioritizing international cooperation to coordinate efforts aimed at reducing the proliferation of floating plastics is essential, ultimately curbing the risk of invasive [species](#) transportation between oceans," concludes Dr. Figuerola.

**More information:** Gunasekaran Kannan et al, Increasing risk of invasions by organisms on marine debris in the Southeast coast of India, *Marine Pollution Bulletin* (2023). [DOI: 10.1016/j.marpolbul.2023.115469](#)

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