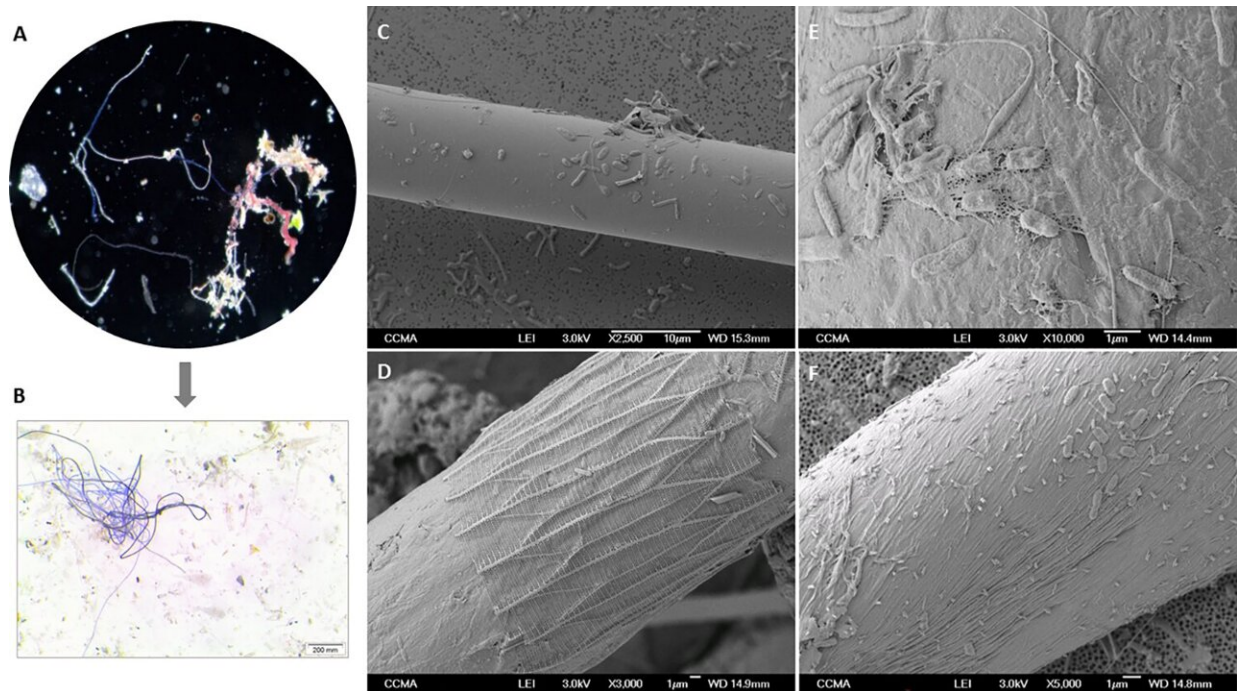


Microfibers in the Mediterranean Sea are floating homes for bacteria

November 30 2022



Photomicrograph of floating fibers collected from the coastal zone of the northwestern Mediterranean (A), and scanning electron microscopy (SEM) images of their bacterial communities (B), with elongated and rounded cells as well as Extracellular Polymeric Substances (EPS) (C-F). Credit: Pedrotti et al., 2022, *PLOS ONE*, CC-BY 4.0 (creativecommons.org/licenses/by/4.0/)

Almost 200 species of bacteria colonize microfibers in the Mediterranean Sea, including one that causes food poisoning in humans,

according to a new study led by Maria Luiza Pedrotti of Sorbonne Université, published November 30 in the open-access journal *PLOS ONE*.

Synthetic and natural microfibers from plastic pollution, the textile industry and fishing activities have increased dramatically in the environment, becoming the most common type of particles in the ocean. These microfibers likely pose a threat to aquatic ecosystems and [human health](#), because once they become colonized by microorganisms, they smell like food and are consumed by [marine organisms](#). Due to their persistence, the microfibers likely build up in marine organisms as they move through the [food chain](#).

To find out what types of bacteria live on floating microfibers, researchers used advanced microscopy techniques and DNA sequencing to identify microorganisms living on microfibers collected from the northwestern Mediterranean Sea. They discovered that more than 2,600 cells on average live on each microfiber. These cells belong to 195 bacterial species, including *Vibrio parahaemolyticus*, a potentially dangerous bacterium that causes [food poisoning](#) from seafood.

This new study is the first to report the presence of pathogenic *Vibrio* species on microfibers in the Mediterranean Sea. The discovery is important for assessing [health risks](#), because the bacterium's presence can be a threat to bathing and seafood consumption.

The study also raises the question of the environmental risk of microfibers. The increasing amount of persistent plastic waste in the environment may be transporting dangerous bacteria and other pollutants throughout the ocean, thus increasing the risk of contamination compared to short-lived natural particles, such as wood or sediments.

Maria Luiza Pedrotti adds: "The role of climate change also has an

influence on the spread of this potentially pathogenic bacteria. Studies have shown that temperature has a significant correlation with the increase of *Vibrio* spp and the emergence of infections. At the time we found this vibrio, coastal summer temperatures ranged from 25.2-26.5°C, while this year, at the same location, they reached 29°C."

More information: *Vibrio* spp and other potential pathogenic bacteria associated to microfibers in the North-Western Mediterranean Sea, *PLoS ONE* (2022). [DOI: 10.1371/journal.pone.0275284](https://doi.org/10.1371/journal.pone.0275284)

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