European Commission

4th May 2020
Issue 541

Subscribe to free bi-weekly News Alert.

Source:
Ulman, A.; Ferrario, J.; Forcada, A. et al. (2019). Alien species spreading via biofouling on recreational vessels in the Mediterranean SeaJournal of Applied Ecology. 56(12): 2620-2629. DOI:10.1111/1365-2664.13502

Contact:
aylinh.ulman@unipv.it

Read more about:
Biodiversity, Emerging Risks, Marine ecosystems

To cite this article/service:
"Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

Science for Environment Policy

Routine monitoring of Mediterranean boats and marinas could help protect ecosystems from invasive alien species

A survey of over 600 private boats docked in marinas throughout the Mediterranean showed that 71% are carrying non-indigenous species. In certain cases, non-indigenous species can become 'invasive' and have enormous and long-lasting impacts on ecosystems. The findings suggest that a common monitoring strategy may be necessary to prevent further disruptions to natural ecosystems.

The Mediterranean Sea is a marine biodiversity hotspot, inhabited by over 17 000 species. The sea's sunny climate and beautiful coastlines makes it a popular destination for private boats and yachts, which flock to its numerous marinas from April to November each year. But these boats, which originate from all over the world, bring with them non-indigenous species, which, if they become invasive, can disrupt ecosystems, threaten biodiversity and harm aquaculture operations.

Alien, or non-indigenous, species can include plants, algae and jellyfish, and animals such as worms, crabs and barnacles, all of which can attach to the underside of boats in a process known as biofouling. Previous studies have shown that invasive species are the largest cause of animal and plant extinctions over the last 500 years, yet despite this there are currently no regulations in the Mediterranean governing the transmission of non-indigenous species (NIS) through boats, although the issue is currently under consideration by the International Maritime Organization (IMO)[1].

To better understand how NIS are brought into the Mediterranean, scientists examined the hulls of over 600 private boats docked in 25 marinas across the Mediterranean, from France to Cyprus. They also surveyed the owners of the boats to find out how long they had been travelling, where they had previously been and the last time they cleaned and/or painted their vessels.

They found that 71% of the boats tested carried at least one NIS, with snorkellers finding non-indigenous annelids, molluscs, tunicates, crustaceans and bryozoans on the hulls, ladders and propellers of the surveyed yachts. One vessel contained as many as 11 NIS. In contrast, studies from the northeast Pacific Ocean show that only 25% of recreational vessels carry NIS. The number of NIS identified by this study is likely to be a conservative estimate, since microbes and algae were not examined.

Boats with the highest number of NIS were smaller vessels (which tend to travel at slower cruising speeds), which had not been professionally cleaned for a long time. Boats that had docked in eastern Mediterranean marinas also contained more NIS, suggesting that this is a high-risk area for the spread of NIS, mostly due to its proximity to the Suez Canal, a major vector in introducing new species from the Indo-Pacific seas and the Red Sea. Interestingly, colonisation of NIS occurred rapidly, with mobile species such as crustaceans, appearing just days after boats had been cleaned.

Continued on next page

European Commission

Subscribe to free bi-weekly News Alert.

Source:

Ulman, A.; Ferrario, J.; Forcada, A. et al. (2019). Alien species spreading via biofouling on recreational vessels in the Mediterranean SeaJournal of Applied Ecology. 56(12): 2620-2629. DOI:10.1111/1365-2664.13502

Contact:

aylinh.ulman@unipv.it

Read more about:

Biodiversity, Emerging Risks, Marine ecosystems

Science for Environment Policy

Routine monitoring of Mediterranean boats and marinas could help protect ecosystems from invasive alien species *(continued)*

The study provides strong evidence that the richness of NIS present on yachts, coupled with their extensive travel, has caused the spread of NIS to marinas around the Mediterranean. The study found that marinas contained a greater diversity of NIS than boats, probably because they are visited by many yachts from different regions. For example, Karpaz Gate Marina in Cyprus had only been in operation for four years at the time of sampling, and was already hosting 17 NIS, which probably arrived via recreational boats as this marina is far from other sources of introductions (such as ports and aquaculture sites).

Early detection of a non-indigenous species is important to be able to stop it from becoming invasive in local environments. To counteract the spread of NIS, the researchers recommend that in the future both marinas and vessels are routinely monitored for new species. Ideally all 22 countries bordering the basin would follow a common strategy, including screening all incoming vessels from new countries, especially those emanating from high-risk areas. This would echo the approach of other countries. New Zealand requires all incoming vessels to be free of biofouling; Australia also has guidelines for biofouling and in-water cleaning for recreational vessels; and, in the United States, California recently issued a regulation to minimise biofouling.

Boats entering through European canals and the Turkish Straits travel through fresh- and/or much lower salinity water, and NIS on board would have a much lower chance of survival. As such, policymakers may wish to focus initially on entrances via the higher-risk Strait of Gibraltar and Suez Canal, ensuring that effective screening techniques and applicable quarantine measures are in place for incoming vessels.

In addition, the researchers recommend that boats undergo frequent cleaning, especially in inaccessible and often overlooked metallic areas such as ladders and propellers, where invasive species are known to accumulate.

1. International Maritime Organization: http://www.imo.org/en/Pages/Default.aspx