Seagrass 'Neptune balls' bundle plastic waste

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With no help from humans, seagrass balls may collect nearly 900 million plastic items in the Mediterranean alone every year

Underwater seagrass in coastal areas appear to trap bits of plastic in natural bundles of fibre known as "Neptune balls," researchers said Thursday.

With no help from humans, the swaying plants—anchored to shallow seabeds—may collect nearly 900 million plastic items in the Mediterranean alone every year, they reported in the journal *Scientific Reports*.

"We show that plastic debris in the seafloor can be trapped in seagrass remains, eventually leaving the marine environment through beaching," lead author Anna Sanchez-Vidal, a marine biologist at the University of Barcelona, told AFP.

This accidental cleanup "represents a continuous purge of plastic debris out of the sea," she added.

Add pollution control, then, to the long list of services that seagrass provides—for ocean ecosystems, and the humans that live near the water's edge.

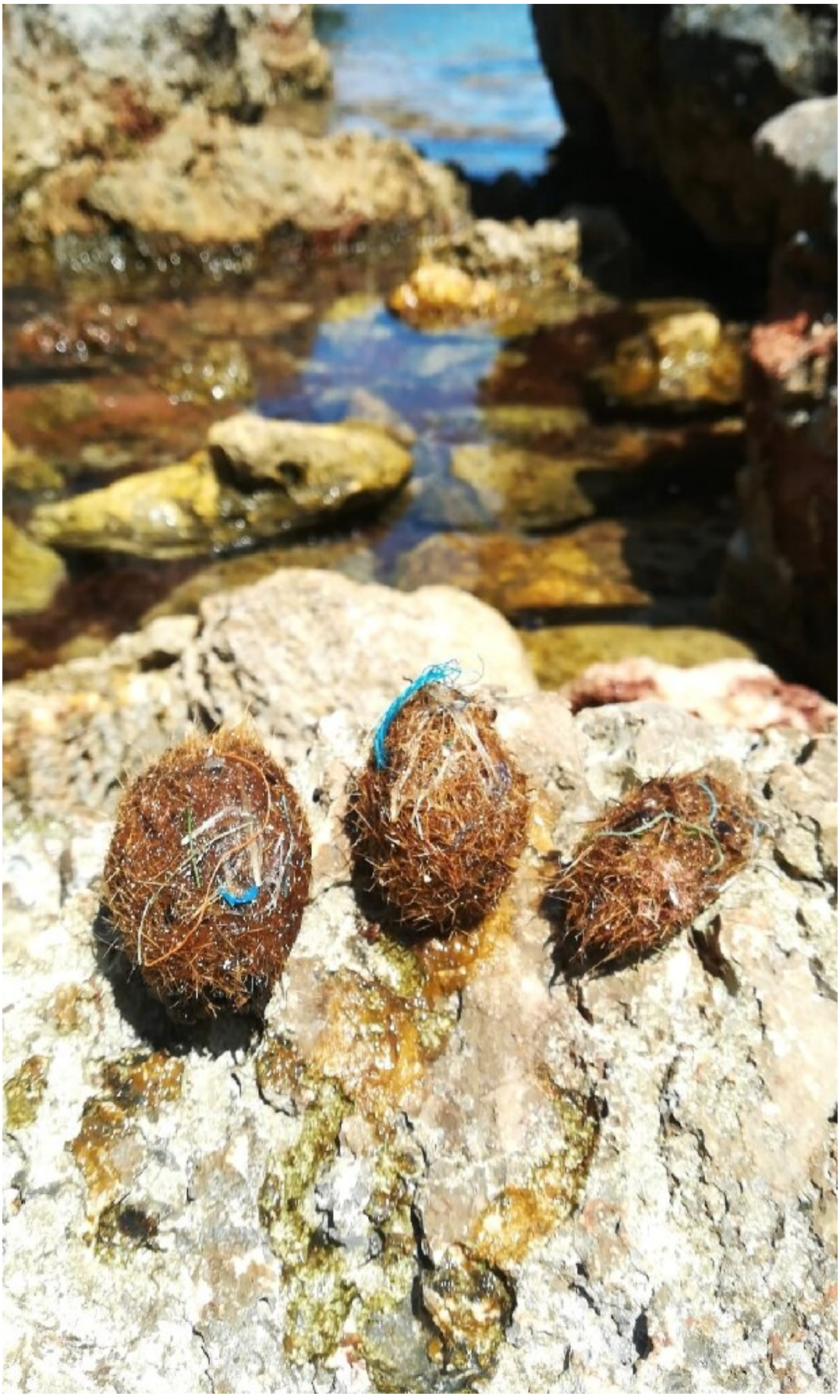
There are some 70 species of marine seagrass, grouped in several families of flowering plants that—originally on land—recolonised the ocean some 80 to 100 million years ago.

Growing from the Arctic to the tropics, most species have long, grass-like leaves that can form vast underwater meadows.

They are more than just pretty, however.

They play a vital role in improving water quality, absorb CO_2 and exude oxygen, and are a natural nursery and refuge for hundreds of species of fish.

They are also the foundation of coastal food webs.



In 2018 and 2019, researchers counted the number of plastic particles found in seaballs that had washed up on four beaches in Mallorca, Spain

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By anchoring shallow waters, they help prevent beach erosion, and dampen the impact of destructive storm surges.

To better understand the plastic bundling capabilities of seagrass, Sanchez-Vidal and her team studied a species found only in the Mediterranean Sea, Posidonia oceanica.

In 2018 and 2019, they counted the number of plastic particles found in seaballs that had washed up on four beaches in Mallorca, Spain, which has large seagrass meadows offshore.

There was plastic debris in half of the loose seagrass leaf samples, up to 600 bits per kilo of leaves.

Only 17 percent of the tighter bundled seagrass fibre known as Neptune balls contained plastic, but at a much higher density—nearly 1,500 pieces per kilo of seaball.

Using estimates of seagrass fibre production in the Mediterranean, the researchers worked up an estimate of how much plastic might be filtered in the entire basin.

The oval orbs—the shape of a rugby ball—forms from the base of leaves that have been shredded by the action of ocean currents but remain

attached to stems, called rhizomes.

As they are slowly buried by sedimentation, the damaged leaf sheaths form stiff fibres that intertwine into a ball, collecting plastic in the process.

"We don't know where they travel," said Sanchez-Vidal. "We only know that some of them are beached during storms."

More information: Seagrasses provide a novel ecosystem service by trapping marine plastics, *Scientific Reports* (2021). DOI: 10.1038/s41598-020-79370-3