

# Seagrass 'Neptune balls' sieve millions of plastic particles from water, study finds

**Researchers counted particles in seaballs that washed up on beaches in Spain**



An underwater view of a *Posidonia oceanica* seagrass meadow in the Mediterranean sea that may help catch plastic pollution in the water. Photograph: Jordi Regas/University of Barcelona/AFP/Getty

*Agence France-Presse*

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Underwater seagrass in coastal areas appear to trap plastic pollution in natural bundles of fibre known as “Neptune balls”, researchers have found.

With no help from humans, the swaying plants – anchored to shallow seabeds – may collect nearly 900m plastic items in the Mediterranean alone every year, a study reported in the journal *Scientific Reports* said.

“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 clean-up “represents a continuous purge of plastic debris out of the sea,” she added.

The study adds to the long list of services that seagrass provides – for ocean ecosystems, and the humans who live near the water’s edge. They play a vital role in improving water quality, absorb CO<sub>2</sub> 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.

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

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

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

It is unclear if collecting the plastic damages the seagrass itself.



The plastic-riddled 'Neptune balls'.

Photograph: Marta Veny/UNIVERSITY OF BARCELONA/AFP/Getty Images

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 kilogram of leaves.

Only 17% of the tighter bundled seagrass fibre known as Neptune balls contained plastic, but at a much higher density – nearly 1,500 pieces per kilogram 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 – form 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.”

In 2018 WWF estimated that in a matter of weeks over the holiday season in the Mediterranean, the rise in plastic marine pollution **contributed to around 150m tonnes of plastic in the ocean.**