

Bees of the sea: Tiny crustaceans pollinate underwater plants

Turtle-grass can be spread by pollinators, not just the tides

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By Emily Benson

Seagrass pollen swirls around on currents and tides, but it turns out that the grains can also hitch a ride on tiny marine creatures. Underwater invertebrates can ferry pollen between flowers, in the same way that bees and other animals pollinate plants on land.

Seagrasses provide food and a habitat for everything from microscopic crustaceans to manatees, and stabilise coasts by anchoring sediment with their roots. They can propagate by cloning, or by sexual reproduction through the transfer of pollen from male to female flowers.

Until recently, scientists thought that their pollen was conveyed from bloom to bloom by water alone, without the help of pollinators, says Brigitta van Tussenbroek at the National Autonomous University of Mexico's marine science institute in Puerto Morelos. So van Tussenbroek and her colleagues were surprised when underwater video footage of a turtle-grass bed revealed hundreds of invertebrates, mostly small crustaceans, visiting flowers.

“We saw all of these animals coming in, and then we saw some of them carrying pollen,” says van Tussenbroek (see video below).



To see if the creatures could act as pollinators, the team added crustacean-containing seawater to laboratory aquariums containing male and female turtle-grass flowers, some of which already sported pollen grains.

Within 15 minutes, several extra grains appeared on the female blooms, whereas flowers in control tanks without invertebrates did not gain any pollen. In the absence of water movement, grain germination that would indicate successful pollination was frequent when marine invertebrates were present, but rare or non-existent without them.

Gooey and tasty

Pollinators are probably attracted to the tasty, gooey pollen masses that the male flowers produce. While the invertebrates chow down, some pollen probably sticks to their bodies and is then deposited when they later visit a female flower.

“That pollination by animals can occur adds an entirely new level of complexity to the system, and describes a very interesting plant-animal interaction that hasn’t really fully been described before,” says Kelly Darnell at The Water Institute of the Gulf, a non-profit research group in Baton Rouge, Louisiana.

Marine fauna carrying pollen grains

Van Tussenbroek, B. I. et al. Experimental evidence of pollination in marine flowers by invertebrate fauna. *Nat. Commun.* 7, 12980, DOI: 10.1038/ncomms12980 (2016)

So far, underwater pollinators have only been seen visiting turtle-grass, which has relatively large flowers. It would be interesting to see whether, for example, other plants with much smaller flowers can also be pollinated in this way, says Darnell.

It’s not clear how important invertebrate pollinators might be for other seagrass species. Nevertheless, expanding our basic knowledge of their biology is crucial in the face of a drastic worldwide decline in seagrasses, says Darnell.

“It’s important that we understand all aspects of the seagrass life cycle, including reproduction,” she says.

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