

THE IMPORTANCE OF DIVERSITY ACROSS MULTIPLE TROPHIC LEVELS: A SUBTIDAL EXPERIMENT IN AN IRISH MARINE RESERVE

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Study Description

We often think of biodiversity as the total species richness of an ecosystem, but we should consider biodiversity across multiple trophic levels, given the importance of trophic structure for ecosystem functioning. Here, I manipulated the diversity of predators across multiple trophic levels in shallow subtidal cages. I found that antagonistic interactions limited the negative effects of the predators on the community and that any loss of multitrophic diversity led to food web simplification and reduction in ecosystem functioning. These results show how indirect interactions between predators on multiple trophic levels help to promote the complexity and functioning of natural systems.



Photo 1. Aerial view of Lough Hyne marine reserve, highlighting its sheltered nature due to a narrow connection to the open coast. Photo credit: John Rowlands.



Photo 2. To fish or not to fish: preparing to set some creel pots to capture the predators for the experiments. Photo credit: Malte Jochum.



Photo 3. Success! Green shore crabs (*Carcinus maenas*), ready to be added to treatments in the caging experiments. Photo credit: Malte Jochum.



Photo 4. Getting ready to set up the treatments and place the cages underwater in the marine reserve (left to right: Eoin O’Gorman, Jesús Fernandez, Maike Pohlmann). Photo credit: Claire Passarelli.

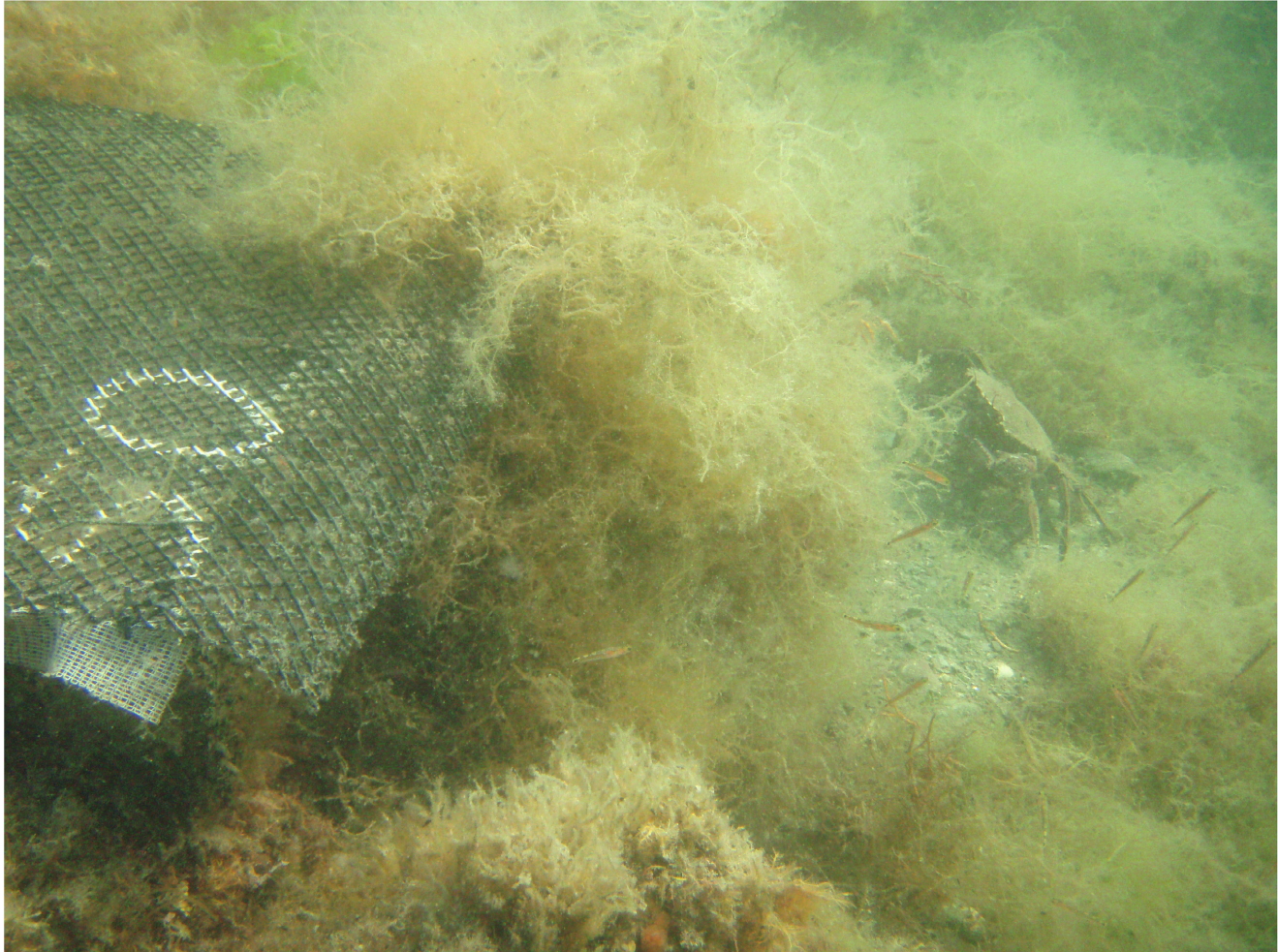


Photo 5. One of the cages used in the experiment is inspected underwater by a velvet swimming crab (*Necora puber*) and two-spot gobies (*Gobiusculus flavescens*). Photo credit: Marion Twomey.

These photographs illustrate the article “Multitrophic diversity sustains ecological complexity by dampening top-down control of a shallow marine benthic food web” by Eoin J O’Gorman published in *Ecology*. <https://doi.org/10.1002/ecy.3274>.