

Community cascades in a marine pelagic food web controlled by the non-visual apex predator *Mnemiopsis leidyi* - DTU Orbit (09/11/2017)

Community cascades in a marine pelagic food web controlled by the non-visual apex predator *Mnemiopsis leidyi*

Trophic cascades are a ubiquitous feature of many terrestrial and fresh-water food webs, but have been difficult to demonstrate in marine systems with multispecies trophic levels. Here we describe significant trophic cascades in an open coastal planktonic ecosystem exposed to an introduced top predator. The ctenophore *Mnemiopsis leidyi* was monitored for an 8-year period concurrent with measures of the food web structure of the plankton and strong trophic cascades were evident. In the 5 years when *M. leidyi* were found, their target prey (grazing copepods) were reduced 5-fold and the primary producers doubled their biomass when released from the grazing pressure. The increased phytoplankton biomass could unequivocally be assigned to grazing release since concurrent measurements of primary production did not differ between years with or without *M. leidyi*. Copepod biomass prior to the mass occurrence of the ctenophore was important. The years without *M. leidyi* had significantly higher biomass of copepods in July, the month preceding the outburst of the ctenophore. The profound changes of the pelagic ecosystem faced with a non-selective apex predator shows that marine communities are not exceptions from trophic cascade mechanisms.

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