

P3.12***Mnemiopsis leidyi* swarms shape microbial microhabitat conditions in the coastal waters of the north-eastern Adriatic**

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Abstract

Seasonal blooms of invasive ctenophore *Mnemiopsis leidyi* have become a regular phenomenon in the north-eastern Adriatic (NEA), threatening the pelagic food web and potentially altering the ecosystem dynamics.

We hypothesise that ctenophore blooms can trigger substantial changes in carbon compounds and nutrient availability, leading to structural changes in the microbial community. Thus, we analysed the response of the microbial community *in situ* – inside and outside of *M. leidyi* swarms, from August-December 2020 in the coastal waters of Rovinj-Rovigno, NEA.

Ctenophora abundance was enumerated by visual census. Heterotrophic prokaryotes (HP), cyanobacteria (CB) and heterotrophic nanoflagellates (HNF) were counted by epifluorescence microscopy. Total prokaryotic community composition was determined after eDNA isolation, amplification of 16S rRNA marker gene (V1-V3 region) performed on Illumina MiSeq. Data were analysed using QIIME2 processing pipeline, with taxonomic classification at the order level using SILVA database. Nutrients (orthophosphate, nitrate, nitrite, ammonia, total N and P) were determined spectrophotometrically, dissolved organic carbon (DOC) was measured by standard HTO method and its surface-active fraction by electrochemistry.

Ctenophora in swarms ranged from 20-400 *M. leidyi*/m³. Microbial abundances, nutrients and carbon content displayed consistently higher concentrations within swarms. Prokaryotic community structure did not show statistically significant differences between the swarms and controls, yet, in most swarms, the shares of Alphaproteobacteria Rhodobacterales increased while Puniceispirillales, Rhodospirillales, SAR11 clade and Gammaproteobacteria SAR86 clade moderately decreased.

In conclusion, *M. leidyi* swarms can alter microhabitat conditions stimulating the growth of HP through increased availability of highly labile and surface-active DOC and CB by the release of ammonia, nitrate and orthophosphate. HNF abundances increase with the higher availability of their prey (HP and CB). The prokaryotic community structure displayed only mild changes, probably due to the episodic nature of the swarm formations impeding a consistent bacterial succession.

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Keywords

Mnemiopsis leidyi, microbial community, organic carbon, nutrients