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The importance of bloom-forming *Mnemiopsis leidyi* for the biogeochemistry of invaded coastal marine ecosystems

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The effects of bloom-forming gelatinous zooplankton (hereinafter jellyfish) on the biogeochemistry of marine ecosystems are still largely unknown. Due to their high reproductive output and fast growth, some jellyfish form blooms when conditions are favourable, reaching high biomass within a short period of time. As these blooms decay, often abruptly, massive amounts of jellyfish organic matter (jelly-OM) are released to the surrounding system, causing perturbation to the ambient organic matter pool, hence re-structuring microbial community and thus affecting functioning and biogeochemical state of the marine ecosystem. Due to its high protein content and low C to N ratio jelly-OM supports rapid growth of opportunistic microbes, exhibiting high growth efficiency, with important implications for the re-cycling of jelly-OM. However, the C and N content of jelly-OM may vary and changes of jelly-OM stoichiometry can have important implications for dynamics of its surrounding system, in particularly, its end-consumers, microbial communities, who are true drivers of marine biogeochemical cycles. Thus, understanding the factors determining the chemical composition of jelly-OM is important to better understand the interaction between microbes and jelly-OM, which will allow us to accurately incorporate jelly-OM into biogeochemical budgets of a system. Hence, we analysed the biometry, chemical composition and fecundity of invasive ctenophore *Mnemiopsis leidyi* from the northern Adriatic, throughout their blooming season, from August until end of October 2021. Temperature decreased from around 25°C in August to around 17°C in October, while at the same time salinity increased from 34 to 38. During the period of *M. leidyi* bloom, concentration of Chl *a* increased from around 0.7 µg L^{-1} in summer to 1.2 µg L^{-1} in autumn. In total we conducted 6 fecundity experiments, each time using 5 individuals exhibiting similar biometric characteristics. The C to N ratio of ctenophores, with an average wet weight of 24.3 ± 7.8 g, was 4.5 ± 0.2 and did not exhibit changes over the studied period. The egg production ranged from 0 to 638 eggs per individuum, with 93 ± 12% hatched within first 48 hours. There was no clear correlation between egg production and C to N ratio of individuum. However, we did observe temperature effect; egg production was higher during periods of high temperatures (21-25°C) and hatching was lower and slower at lower temperature (in October, at 17°C). We observed an increase of individuals infected with parasites over the time of bloom development, which also correlated with lower egg production and percentage of hatched eggs. Our results importantly contribute to our understanding of the dynamics of jelly-OM as largely overlooked pool of organic matter, especially for coastal marine microbiomes.