Macrobenthic assemblages associated with *Lanice conchilega* populations under oyster farming influences: trophic approach using $\delta^{13}C$ and $\delta^{15}N$ natural stable isotopes.

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The terebellids tubiculous polychaete *Lanice conchilega* colonise coastal areas and is often associated with shellfish farming. Polychaete tubes are known to enhance local biodiversity as engineer species by modifying surface heterogeneity and creating habitat for numerous invertebrates. This species has strong colonisation capacities and is considered as invasive species by oyster farmers.

In this study, we examined infauna associated with *Lanice conchilega* tubes according tube density and/or presence of cultivated oysters. In France, oyster are reared off-bottom in culture bags on iron tables at a distance of ca. 50 cm from the sediment allowing benthic communities to colonize the substrate under them. We hypothesized that these two factors may influence trophic food web functioning – i.e. trophic competition, prey-predator interactions, diversity of trophic guilds etc. – and we used $\delta^{13}C$ and $\delta^{15}N$ natural stable isotopes compositions of organisms to analyse trophic food web within *L. conchilega* patches, under or at a distance of cultivated oysters.

We showed that *L. conchilega* individuals had not the same stable isotope signature when they were under oyster bags meaning that they probably had different feeding behaviour and diet in that case. We suggested that oysters feces and pseudofeces could be considered as organic matter source for suspension feeders. We also noted that trophic structure is much more equilibrated and richer in terms of trophic guild away from oyster bags: while all trophic guilds – i.e. suspension-feeders, surface deposit-feeders, sub-surface deposit-feeders, predators – are represented out of the tables, infauna associated with soft sediments under oyster bags are strongly dominated by predators. Nevertheless, we noted that isotope signature of predators – i.e. carnivorous – are widely dispersed in $\delta^{15}N$ range, indicating various feeding sources. One of our main conclusions is that analysis of feeding guilds using species abundances and diversity is not enough to understand trophic interactions and food

web complexity. We clearly show here the useful nature of stable isotope analysis in the investigation of food webs.

Key words. trophic diversity – food source partitioning – *Lanice conchilega* population – oyster bags – structural complexity