

New insights in the structuring role of *Lanice conchilega* reefs in intertidal food webs: a focus on epi- and hyperbenthos

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In recent years, the interest in disentangling food webs in marine environments is growing due to an increasing demand for a sustainable use of aquatic resources. Moreover, the presence of healthy and abundant food webs is crucial to ensure the survival of species. Monitoring the status and the trends of marine food webs is essential in order to collect information needed to assess the current situation and implement the necessary conservation measures. A marine species which was shown to be very useful within a conservation context is *Lanice conchilega*. This tube-building polychaete can form dense populations, often called biogenic reefs, which promote macrobenthic community change and constitute feeding grounds for secondary consumers such as flatfish and waders.

Although *L. conchilega* is studied quite elaborately, up to now little or no attention has been paid to the entire intertidal epi- and hyperbenthic communities associated with the reefs. Therefore, this is to our knowledge - the first study which focusses on the effect of *L. conchilega* reefs on the entire associated benthic assemblage (*i.e.* including the macro-, epi- and hyperbenthic community) over a larger geographic scale. All three communities were sampled within a *L. conchilega* reef and control area at two locations in France: the bay of the Mont Saint-Michel (BMSM) and Boulogne-sur-Mer (Boulogne).

Independent of the geographical location, the *L. conchilega* reef structures all three associated benthic communities, although the extent of the structuring effect varies between them. We suggest that this is due to the differential dependency of the macro-, epi-, and hyperbenthic communities to the seafloor. The macrobenthic community, which is most intimately connected with the sediment, is most notably affected by the presence of *L. conchilega*, while the hyperbenthos of the lower water column is the least structured by the reef. The increased abundances of animals in all three benthic reef communities attract and sustain higher trophic levels such as (commercial) fish and wader. Hence, *L. conchilega* reefs do not only affect abundances and diversity but they substantially steer the structure of the intertidal sandy beach food web including benthic, pelagic and air-borne components. Moreover, the reef effect is applicable on a larger geographical scale, which is an important finding towards the implementation of widespread conservation measures in the future.