Prevalence of the parasites *Sacculina carcini* on *Liocarcinus holsatus* and *Peltogaster paguri* on *Pagurus bernhardus* in the Belgian part of the North Sea

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Sacculina carcini and *Peltogaster paguri* are rhizocephalan parasites on common swimming crab *Liocarcinus holsatus* and common hermit crab *Pagurus bernhardus*, respectively. The order Rhizocephala consists of parasitic barnacles with an extremely reduced morphology. Hosts are attacked by female cyprid larvae, which form an internal root-system (the interna), that eventually can evaginate an external reproductive body (the externa) on which male cyprid larvae may settle. After male settlement, the externa matures and several batches of parasitic nauplii larvae are released. The externa occupies the same place as embryos in ovigerous females, and thus mimic a brood of eggs, for which both male and female hosts will tend to as if it was their own. The effects of infection on the host include cessation of moulting, modifications of the secondary sexual characteristics and infertility.

Seven years of epibenthos trawling data from various stations in the Belgian part of the North Sea (BPNS) were used to evaluate the prevalence of both parasites on their respective hosts. Differences in infection rates were examined between years (2006 to 2012), seasons (spring vs. autumn), distance from the shore, and three human pressures (impact vs. reference sites for sand extraction, dredge disposal and offshore wind energy development). For *Sacculina carcini* also gender and size preference were analyzed.

Over the seven years sampling period, a total of 20,158 *L. holsatus* and 43,114 *P. bernhardus* individuals were examined for the presence of externae. *Sacculina carcini* externae were found on 676 crab individuals (or 3.35% of the flying crab population). *Peltogaster paguri* externae were found on 161 hermit crab individuals (i.e. 0.37% of the hermit crab population in the BPNS). A higher percentage might have been infected with internae, but this was not examined as only quick visual screenings of parasites were made. For both host species there was a significant difference in infection percentage between the consecutive years and between the seasons, with higher infection rates in 2006-2007, and in spring. *Sacculina carcini* showed no preference for specific crab sizes, but a significant preference for female crabs was found. No significant difference was observed between near-shore, mid-shore and off-shore samples. Also, no significant differences were noted in infection percentages between impact and reference samples for the three human pressures.

In summary, we found substantial variation in infection rates, which seemed mostly determined by natural interannual and seasonal differences, and by host-specific preferences of the parasites. We found no evidence that human activities have an influence on the infection rates.