

Living apart-together: Microhabitat differentiation of cryptic nematode species in a saltmarsh habitat

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Coexistence of highly similar species is at odds with ecological theory of competition; coexistence, then, requires stabilizing mechanisms such as differences in ecological niche. In the bacterivore nematode *Litoditis marina* complex associated with macro-algae, four cryptic lineages (Pm I-IV) have been found to co-occur in the field along the south-western coast and estuaries of The Netherlands. Here we investigate the temporal and/or spatial niche differentiation in their natural environment using a qPCR-based detection and relative quantification method. We collected different algal species (i.e. two *Fucus* species and *Ulva* sp.) and separate algal structures (i.e. receptacula, thalli, non-fertile tips and bladders) at different sampling times and different months, to examine differences in microhabitat use between coexisting *L. marina* species. Results demonstrate that the cryptic species composition varied among different algal species and algal structures, which was also subject to temporal shifts. Pm I dominated on *Fucus* spp., Pm II showed dominance on *Ulva* sp. while Pm III overall had the lowest frequencies. Microhabitat partitioning was most pronounced between the two cryptic species which had similar microbiomes (Pm I and Pm II), and less so between the two species which had significantly different microbiomes (Pm I and Pm III), suggesting that species which share the same microhabitats may avoid competition through resource partitioning. The interplay of microhabitat differentiation and temporal dynamics among the cryptic species of *L. marina* implies that there is a complex interaction between biotic components and abiotic factors which contributes to their coexistence in the field.

Keywords: cryptic diversity; microhabitat use; temporal; spatial; qPCR