



Resource utilization and trophic position of nematodes and harpacticoid copepods in and adjacent to *Zostera noltii* beds

A.-M. Vafeiadou^{1,2}, P. Materatski³, H. Adão⁴, M. De Troch¹, and T. Moens¹

¹Ghent University, Marine Biology Lab, Department of Biology, Krijgslaan 281/S8, 9000 Ghent, Belgium

²Aristotle University of Thessaloniki, School of Biology, Department of Zoology, 54124 Thessaloniki, Greece

³University of Évora, School of Sciences and Technology, NemaLab c/o IMAR, Apartado 94, 7002-554 Évora, Portugal

⁴University of Évora, School of Sciences and Technology, CO-CIEMAR c/o NemaLab, Apartado 94, 7002-554 Évora, Portugal

Correspondence to: A.-M. Vafeiadou (annamaria.vafeiadou@ugent.be)

Received: 2 December 2013 – Published in Biogeosciences Discuss.: 21 January 2014

Revised: 12 May 2014 – Accepted: 20 June 2014 – Published: 31 July 2014

Abstract. This study examines the resource use and trophic position of nematodes and harpacticoid copepods at the genus/species level in an estuarine food web in *Zostera noltii* beds and in adjacent bare sediments using the natural abundance of stable carbon and nitrogen isotopes. Microphytobenthos and/or epiphytes are among the main resources of most taxa, but seagrass detritus and sediment particulate organic matter contribute as well to meiobenthos nutrition, which are also available in deeper sediment layers and in unvegetated patches close to seagrass beds. A predominant dependence on chemoautotrophic bacteria was demonstrated for the nematode genus *Terschellingia* and the copepod family Cletodidae. A predatory feeding mode is illustrated for *Paracomesoma* and other Comesomatidae, which were previously considered first-level consumers (deposit feeders) according to their buccal morphology. The considerable variation found in both resource use and trophic level among nematode genera from the same feeding type, and even among congeneric nematode species, shows that the interpretation of nematode feeding ecology based purely on mouth morphology should be avoided.

well as critical food resources and habitats for many others (Walker et al., 2001). Seagrass beds typically support higher biodiversity and faunal abundance compared to the adjacent unvegetated areas (Edgar et al., 1994) due to both increased food supply and reduced predation risks (Heck et al., 1989; Ferrell and Bell, 1991). Furthermore, they strongly influence the associated fauna by modifying hydrodynamics (Fonseca and Fisher, 1986) and by altering the energy flux either directly, through release of dissolved organic carbon into the water column, or indirectly, by contributing to the detritus pool after decomposition (Boström and Bonsdorff, 1997).

Several studies during the last decade have used natural stable isotope ratios to elucidate the principal food sources of macrobenthos in seagrass beds, stressing the importance of seagrass-associated sources and/or microphytobenthos (MPB) (Lepoint et al., 2000; Kharlamenko et al., 2001; Moncreiff and Sullivan, 2001; Baeta et al., 2009; Carlier et al., 2009; Lebreton et al., 2011; Ouisse et al., 2012; Vafeiadou et al., 2013a). Less information is available for meiobenthos resource utilization in seagrass beds (Vizzini et al., 2000b, 2002a; Baeta et al., 2009; Leduc et al., 2009; Lebreton et al., 2011, 2012), with none of the studies including meiofauna at the level of feeding types, families, genera or species. The few studies using natural isotope abundances to unravel food resources of coastal meiofauna at this level (Carman and Fry, 2002; Moens et al., 2002, 2005, 2013; Rzeznik-Orignac et al., 2008) do not examine seagrass habitats.

1 Introduction

Seagrass meadows form unique, productive and highly diverse ecosystems throughout the world (Hemminga and Duarte, 2000). They stabilize and enrich sediments, and provide breeding and nursery grounds for various organisms as