

An example of niche partitioning between *Dikerogammarus villosus* and other invasive and native gammarids: a field study

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ABSTRACT

The invasive gammarid Dikerogammarus villosus is known to be a strong predator preying voraciously on a wide array of prey organisms including other gammarids. Predation by D. villosus on other gammarids is regarded as a main reason which led to the elimination of native and invasive gammarids in many reaches of European streams. At several sites in the River Danube and in a Rhine tributary, D. villosus was found co-existing with other gammarids. We studied whether predatory D. villosus is spatially segregated from other gammarids which would reduce predatory interactions. Two sites were investigated, one in the Danube (site 1) where D. villosus co-existed with the invasives Echinogammarus ischnus and Dikerogammarus bispinosus and another site in a Rhine tributary (site 2) where D. villosus co-existed with the invasive gammarid Echinogammarus berilloni and two native gammarids, Gammarus pulex and Gammarus roeseli. At site 1, D. villosus was spatially segregated from E. ischnus but not from D. bispinosus; E. ischnus lived at the uppermost shoreline in boulder substrate while Dikerogammarus spp. lived in greater depth in stony to gravelly substrate. At site 2, D. villosus prevailed in greater depth and gravelly to stony substrate where Corbicula molluscs were present while the other species lived in near-shore areas in macrophytes. Our results suggest that co-existence of predatory D. villosus with gammarids is possible by niche partitioning and that high habitat complexity as at site 2 facilitates co-existence. The fact that at site 1 D. bispinosus occupied approximately the same spatial niche than D. villosus cannot be explained at present time.

Key words: Gammarids, invasive species, niche partitioning, Central Europe
