Influence of habitat heterogeneity on the assemblages and shell use of hermit crabs (Anomura: Diogenidae)

Abstract

Background

Two contrasting intertidal habitats on the western Sabah coast (Malaysia), one is a rocky-sandy-mud flat at Sepangar (N6°02′18.57″; E116°06′40.07″) and the other is a mangrove foreshore at Sulaman (N6°15′33.00″; E116°18′49.80″), are characterized by substrate zonation and homogeneous substrate (mud), respectively. Hermit crabs are one of the most conspicuous benthic macrofauna at both sites. The study examined the influence of habitat heterogeneity on the assemblages and shell use pattern of hermit crabs.

Results

The heterogeneous intertidal flat at Sepangar (five species) supported a higher diversity and abundance of hermit crabs compared to Sulaman mangrove foreshore (two species). Hermit crabs at Sepangar used a greater variety of shells (30 species) compared to those at Sulaman (two species). Zonation of hermit crab species occurred at Sepangar where *Diogenes klaasi* dominated at the high-tide mark and two *Clibanarius* species (*C. striolatus* and *C. merguiensis*) dominated at the low-tide mark. Considerable overlap in habitat use (mid- and lower shore) occurred between *D. tumidus* and the two *Clibanarius* species which appeared to influence shell use pattern.

Conclusions

This study supports the work of others showing that structurally complex habitats will allow habitat partition among species thus explaining the greater diversity and abundance of hermit crabs. Such a heterogeneous habitat provides a wider choice of shells for the hermit crabs, minimizing interspecific competition for the available shell resources.