INVESTIGATING THE THERMOREGULATORY ROLE OF SEDIMENTARY HOOD STRUCTURE IN FIDDLER CRABS

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Constructed structures may be honest signals in animal communication. These structures directly or indirectly can change the environment, creating suitable microhabitats for organisms in response to selection pressures. In this context, fiddler crabs are burrowing crustaceans where many species build above ground biogenic structures. Among a varied shape of sedimentary structures, hoods are a half-dome shaped structures built by some fiddler crab males during low tide over the entrance of their burrows. We investigated the thermoregulatory function of hood structures built by *Leptuca leptodactyla*. We measured the internal temperature of hooded and non-hooded burrows at different depths (burrow entrance, 2, 4 and 8 cm) during five sunny days with low spring tides. Males with hooded and non-hooded burrows also had their carapace, burrow entrance (until 2 cm) and soil surface temperature surrounding the burrow measured. Surface activity of male crabs with hooded or non-hooded burrows was video recorded, quantified and them compared. We found that hooded burrows have milder temperatures than non-hooded burrows up to 2 cm depth. However, temperature did not vary in layers deeper than 2 cm. Nevertheless, males with hooded burrows had lower body temperature, being positively correlated with soil surface temperature. Behavioral responses did not showed differences in the time that males spent on soil surface (outside the burrow) nor below the burrow entrance (possible mechanisms of thermoregulation) between hooded or non-hooded burrows. This study shows no clear evidence that the hood sedimentary structures have a thermoregulatory role. Furthermore, the lower body temperature of crabs with hooded burrows may be modulated by traits other than sedimentary structures, such as carapace color plasticity. In *Leptuca leptodactyla* the hood structure may have evolved to elicit behavioral functions above-ground due their attractiveness and conspicuousness (e.g., female attraction or landmark orientation).

Keywords: thermoregulatory function, sedimentary structures, *Leptuca*. 

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