DOES CLAW-WAVING DISPLAY HELP THERMOREGULATION IN FIDDLER CRABS?

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Male fiddler crabs exhibit a sexual dimorphism characterized by one enlarged claw. This major claw is used during waving display, which is more intense in the presence of females and has a primary function on sexual selection of fiddler crabs. Additionally, it is used as a competition signal to territory defense. Considering that the major claw can act as a heat sink, the waving display may also help on temperature control of fiddler crabs during heat stress exposed in an intertidal environment. But, this secondary function was not investigated previously. In this sense, we aimed to evaluate the claw-waving display effects on body temperature of two fiddler crab species *Leptuca leptodactyla* and *L. uruguayensis*. Observations were made at Itaguapé River, Bertioga and Portinho, Praia Grande, São Paulo, Brazil. Males (adult and intact) were observed at diurnal low tides with different air temperatures for 10 minutes (n=24). We quantified the claw-waving display and the duration of the following behaviors: foraging, reproductive (waving display, agonistic interaction and burrow maintenance), and thermoregulatory behaviors (e.g. seating and burrow retreat). At the end of the observations, air and ground temperature were measured. The internal major claw and body temperature of the crab were measured, inserting the thermo-sensor of the digital thermometer into the major claw and body cavity, through the posterior margin of carapace. The luminosity and air humidity were measured in the area at 5 random points, prior and at the end of the observations. Data were analyzed using a GLM with number of display as the dependent variable, species and temperature of crab, ground and air as predictors. The influence of environment temperature in crab's temperature was analyzed with a GLM, with the former as predictors and temperature of the body as the dependent variable. The number of display increased with increase on crab's internal temperature. Also, the body temperature was affected by the temperature of the ground. The reproductive behavior, mainly waving display, had an effect on body temperature and may have a secondary function helping on temperature maintenance when crabs are exposed to heat stress. Others thermoregulatory behaviors, such as seat, line down and burrow retreat were also observed despite less frequent.

Keywords: crab, *Leptuca* sp., thermoregulation, thermoregulatory behavior, waving display.