LIVING IN WARMED AND ACIDIFIED SEDIMENT: BEHAVIOURAL RESPONSES OF THE DEPOSIT FEEDING BIVALVE *SCROBICULARIA PLANA*

Ee Zin ONG[1,2], Mark BRIFFA[2], Tom MOENS[1], Sarah WOODIN[3], David WETHEY[3] and Carl VAN COLEN[1]

[1]Ghent University, Biology Department, Marine Biology Research Group, Krijgslaan 281 – S8, B 9000 Ghent, Belgium
[2]Marine Biology & Ecology Research Centre, Plymouth University, Plymouth PL4 8AA, UK
[3]Department of Biological Sciences, University of South Carolina, Columbia, South Carolina 29208, USA

e-mail: Ong.EeZin@UGent.be

Presentation type: ORAL

Estuarine biodiversity plays an important role in providing essential ecosystem services and functions; however, these habitats are increasingly threatened by multiple interactive stressors including ocean acidification and warming. The effects of acidification and warming may be additive, synergistic or antagonistic; therefore, it is crucial to investigate how these stressors will affect the behaviour of shallow water marine species such as the peppery furrow shell Scrobicularia plana. Behavioural changes (e.g. feeding, predation avoidance, competition among others) are likely to influence individual health, ultimately affecting the ecosystem services and functioning provided by the habitat. To fulfil the objective, we experimentally investigated the behaviour and condition of S. plana under current and future ocean scenario predicted by IPCC. Our experiment included warming and acidification under both single and combined stressor conditions. In order to capture the behaviour of S. plana (e.g. burrowing, manoeuvring, siphon relocation, expulsion of faeces and pseudofaeces) in the muddy sand sediment, we used non-destructive pressure sensors, which were inserted in sediment to obtain porewater pressure signals generated by their hydraulic activities. To identify the different pressure signals patterns generated, time lapse cameras were used to document the behaviour of *S. plana* on the sediment surface. By synchronising and analysing both porewater pressure signals and time lapse images, the activities of S. plana can be quantified and compared. Furthermore, we calculated the condition of S. plana as dry tissue weight divided by dry shell weight multiplied by 100. This index gives a realistic indication on the bivalve fitness at longer time scale than what can usually be studied under laboratory conditions. This experiment provides valuable information on how multiple interactive stressors affect the behaviour and condition of S. plana that might affect the diversity and functioning of shallow water ecosystems.