EF.21

Salgado, Cristina[1]*; Encalada, Andrea*[2]*; Cássio, Fernanda*[3]*; Pascoal, Claudia*[3]*; Graça, Manuel*[1]

[1]*IMAR-CMA, Department of Life Sciences, University of Coimbra, P.O. Box 346, 31-41 Coimbra, Portugal;* [2]*Laboratorio de Ecología Acuática, Universidad San Francisco de Quito, Ecuador;* [3]*Centre of Molecular and Environmental Biology (CBMA), Department of Biology, University of Minho, Campus de Gualtar, 471-57 Braga Portugal*

MICROBIAL DECOMPOSITION ALONG AN ALTITUDINAL GRADIENT IN TROPICAL AND TEMPERATE STREAMS

Biological processes tend to increase with the temperature; therefore, higher metabolic rates are expected at lower latitudes and altitudes. We hypothesized that temperature regulates the microbial leaf litter decomposition along latitudinal and altitudinal gradients. This hypothesis was tested in two latitudes: Ecuador (tropical ecosystem at 0ºLat) and Colorado US (temperate ecosystem at 40ºN) and along altitudinal gradients from 1600 to 3800 m in the tropical zone and from 2000 to 3195 m in the temperate ecosystem. Fine mesh bags (0.5 mm) containing native alder leaves from tropical (Alnus acuminata Kunth) and temperate (Alnus incana (L.) Moench) streams were incubated in five locations along each altitudinal gradient for 28 days (Ecuador) and 60 days (Colorado). Contrary to our hypothesis, decomposition rates (k) were faster at higher latitudes (Colorado). However, in both zones, decomposition decreased with increased altitude. Even when temperature seems to play a pivotal role driving microbial decomposition (altitude), variables related to local geographical conditions (e.g. identity and biomass of decomposers and nutrient availability) are very important to understand the dynamic of litter decomposition.

AMWQ.11

Sámano, María L.*; Pérez, María L.; Claramunt, Íñigo; García, Andrés*

Environmental Hydraulics Institute "IH Cantabria", University of Cantabria

WATER-SEDIMENT DIFFUSIVE PROCESSES IN ESTUARIES UNDER HEAVY INDUSTRIAL PRESSURE

The industrial pressure suffered by the Ría de San Martín de la Arena estuary (northern Spain) has been leaving a pollution record at its sediments for decades. Thus, high concentrations of many heavy metals (especially zinc) and some organic compounds are found at the surface sediments of this estuary. In this sense, the sediment acts as a continuous internal source of pollutants due to diffusive processes derived from the concentration gradient between the interstitial water at the solid particles of the sediment and the water column bottom. These diffusive processes are especially important for ecosystems as they may control the microorganisms absorption rates of the pollutants and, hence, their bioavailability. The aim of this work is to contribute to the water quality management strategies enhancement at these zones, going more deeply into the study of the diffusive processes which take place between the water and the sediment through a double approach: the experimental practice and the numerical simulation.

On the one hand, the experimental obtained results exhibited the buffering capacity of the system and allowed the determination of the required time for the mass transfer processes to reach an equilibrium state. Furthermore, the diffusion velocity of zinc within this system was approximately assessed. On the other hand, the modeled results demonstrated the strong influence of the background concentration of zinc at the sediment whereas a negligible influence of that background concentration of zinc at the water column was also revealed.

Although the benthic bed by itself has been identified as the most important and continuous source of contaminant substances to this estuary, a strict compliance with the industrial discharge authorizations' specifications must be observed in order to prevent the continuous accumulation of pollutants at the sediments. In this context, the most effective management actions will be those applicable directly to the benthic bed.

AEBC.6

Sánchez, Marta

Doñana Biological Station-CSIC

WHY JOIN GROUPS? LESSONS FROM PARASITE-MANIPULATED ARTEMIA

Grouping behaviours (e.g. schooling, shoaling and swarming) are commonly explicated through adaptivemhypotheses such as protection against predation, access to mates or improved foraging. However, the hypothesis that aggregation can result from manipulation by parasites to increase their transmission has never been demonstrated. We investigated this hypothesis using natural populations of two crustacean hosts (Artemia franciscana and Artemia parthenogenetica) infected with one cestode and two microsporidian parasites.

We found that swarming propensity increased in cestode-infected hosts and that red colour intensity was higher in swarming compared with non-swarming infected hosts. These effects likely result in increased cestode transmission to its final avian host. Furthermore, we found that microsporidian-infected hosts had both increased swarming propensity and surfacing behaviour. Finally, we demonstrated using experimental infections that these concurrent manipulations result in increased spore transmission to new hosts. Hence, this study suggests that parasites can play a prominent role in host grouping behaviours.