THE SECRET LIFE OF *COROPHIUM VOLUTATOR,* AN IMPORTANT BIOTURBATOR ON MUDFLATS

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Corophium volutator is an important species in mudflats all over the world. This species occurs in the upper intertidal zone on the edge mudflat-saltmarsh. *Corophium* lives in U-shaped burrows in the upper 5 cm of the sediment. It feeds mainly on microphytobenthos, especially diatoms, which it scrapes off the surface into its burrow with its big second antenna. Filter feeding is an alternative way of feeding. *Corophium* can reach very high densities (10.000-100.000 ind.m^{-2}), especially in the period May-October. When present in such high densities, the activities of the different individuals should have an impact on the biogeophysical habitat.

Bioturbation (sediment mixing or disturbance) of *Corophium volutator* has an important impact on the sedimentary conditions. Objective of this research is to quantify and qualify the bioturbation effect of *Corophium*. A first step was made by observing the behaviour of *Corophium volutator* and by obtaining a time allocation of the different activities during the tidal cycle. Splitting the overall activity in subactivities could help to clarify the exact effect of *Corophium* on its geophysical environment.

Observations were made in a temperature controlled climate room at 15°C, 12h light/12h dark. Animals and sediment were collected in the field and put in a tidal aquarium with a 3h high tide period and a 9h low tide period, just as *in situ*. The tidal cycle was divided in 12 hours and we observed each hour as many individuals as possible, each for 5 minutes. This was repeated 5 times for every hour in 1 replica and 2 replicas were done, which means 120 hours of observation both on the surface as well as in the sediment.

Surface activities consisted of feeding, walking, fighting for an occupied burrow, ventilating the burrow (dust clouds), burrowing, resting/sitting on the surface, resting with only antennae out of burrow and swimming. Underground activities consisted of ventilation (beating with pleopods), feeding, cleaning the burrow, walking up and down the burrow, turning, tamping and sitting/resting.

Surface activities were mainly concentrated during high tide and two to three hours after high tide, with a minimum to no activity four to eight hours after high tide. The hour before high tide the surface activity increased slightly. Underground activities are also concentrated during high tide and the first hours after high tide but walking in the burrow and ventilating are seen during the entire tidal cycle.