

Spring-neap variation on sediment reworking with organic matter contents by a polychaete, *Perinereis aibuhitensis*, in the intertidal sediments of the Gomso Bay, Korea

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The tidal cycle of the spring and neap tide is one of the most important factors influencing benthic organism sediment reworking and sediment characteristics during bioturbation. This study was designed to evaluate sediment reworking rate differences of *Perinereis aibuhitensis* based on quantification of its pellet production and the ratio of organic matter reduction due to its feeding during spring and neap tide surveys. The organic matter concentration, especially nitrogen, was much higher at all sediment depths in spring tide than in neap tide, due to differences in organic matter supply by tidal cycle. The carbon reduction ratio was unclear in both tides due to differences in reduction ratio at each sediment depth, whereas a clear nitrogen reduction ratio was observed at all sediment depths in spring tide, with mean values of 39% and 25% in daytime and nighttime, respectively. The daily pellet production was much higher in spring tide than neap tide, which strongly depended on organic matter concentrations. The sediment reworking rate based on the pellet production of *Perinereis* was also much higher in spring tide (0.009 mm d⁻¹) than neap tide (0.002 mm d⁻¹), with the overall sediment reworking rate of this species being 20 mm yr⁻¹ based on its density in the study area.