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Evaluating Satiated Copepod Behavioral Responses to Thin Layer Flow Structure AARON C. TRUE, DONALD R. WEBSTER, MARC J. WEISSBURG, JEANNETTE YEN, Georgia Tech — Zooplankton exploit a variety of chemical and fluid mechanical cues in foraging, mate-seeking, and habitat partitioning contexts. To examine the influence of environmental cues on zooplankton aggregations in coastal marine thin layers, a laboratory thin layer mimic was built. The apparatus uses a laminar, planar jet (the Bickley jet) to produce ecologically-relevant layers of chemical (beneficial and harmful phytoplankton) and fluid mechanical (shear strain rate) cues for zooplankton behavioral assays. Particle image velocimetry (PIV) and laser-induced fluorescence (LIF) were employed to fully quantify the spatial structure of the chemical and fluid mechanical cues, ensuring a close match to *in situ* conditions and allowing for investigations into threshold cue levels responsible for inducing behavioral responses. Evaluating the effect of hunger level on behavioral responses is particularly important for producing accurate individual-based simulations of zooplankton population dynamics. Behavioral assays with the calanoid copepod *Temora longicornis* have produced digitized trajectories and, subsequently, path kinematics. Observed behaviors include increased turn frequency and decreased relative swimming speed, which result in increased residence time in the free jet shear layer. Cue-induced individual behaviors have the potential to produce population-scale aggregations.

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