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Calanoid Copepod Behavior in Thin Layer Shear Flows: Freshwater Versus Marine A.N. SKIPPER, D.R. WEBSTER, J. YEN, Georgia Tech — Marine copepods have been shown to behaviorally respond to vertical gradients of horizontal velocity and aggregate around thin layers. The current study addresses whether a freshwater copepod from an alpine lake demonstrates similar behavior response. *Hesperodiatomus shoshone* is often the greatest biomass in alpine lakes and is the dominant zooplankton predator within its environment. The hypothesis is that *H. shoshone* responds to vertical gradients of horizontal velocity, which are associated with river outflows from alpine lakes, with fine-scale changes in swimming kinematics. The two calanoid copepods studied here, *H. shoshone* (freshwater) and *Calanus finmarchicus* (marine), are of similar size (2 – 4 mm), have similar morphologies, and utilize cruising as their primary swimming mode. The two animals differ not only in environment, but also in diet; *H. shoshone* is a carnivore, whereas *C. finmarchicus* is an herbivore. A laminar, planar jet (Bickley) was used in the laboratory to simulate a free shear flow. Particle image velocimetry (PIV) quantified the flow field. The marine species changed its swimming behavior significantly (increased swimming speed and turning frequency) and spent more time in the layer (40% vs. 70%) from control to treatment. In contrast, the freshwater species exhibited very few changes in either swimming behavior or residence time. Swimming kinematics and residence time results were also similar between males and females. Unlike the marine copepod, the results suggest the environmental flow structure is unimportant to the freshwater species.

D.R. Webster
Georgia Tech

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