

Abstract Submitted
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Copepod Behavior in “Cryptic Blooms” of Toxic Algae A.C. TRUE, D.R. WEBSTER, M.J. WEISSBURG, J. YEN, Georgia Tech — Copepods, *Acartia tonsa* and *Temora longicornis*, were exposed to thin layers of exudates from the toxic dinoflagellate *Karenia brevis* (1 - 10,000 cells/mL) (i.e. models of “cryptic blooms” of toxic phytoplankton). Planar laser-induced fluorescence (PLIF) was used to quantify the spatiotemporal structure of the layer allowing for correlation of behavioral responses with toxin levels. Both species explicitly avoided the exudate layer and the vicinity of the layer. Measures of path kinematics (swimming speed, turn frequency) by location (in-layer vs. out-of-layer) and exposure (pre-contact vs. post-contact) revealed some similarities, but also significant differences, in trends for each species. *A. tonsa* significantly increases swimming speed and swimming speed variability in the exudate layer and post-contact, whereas *T. longicornis* slightly increases both in-layer and slightly reduces both post-contact. Both species increase turn frequency in-layer and post-contact with increasing *K. brevis* exudate concentration. Path fractality indicates that *A. tonsa* trajectories became more diffuse/sinuuous and *T. longicornis* trajectories became more linear/ballistic (trending effects). Regression analyses revealed that the rate of change of behavior with increasing exudate concentration for *A. tonsa* was thrice to fifty times that of *T. longicornis*. Toxic *K. brevis* can essentially eliminate top-down grazer control, another sinister means by which it gains a competitive advantage over the local phytoplankton taxa.

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