



## Attachment to suspended particles may improve foraging and reduce predation risk for tintinnid ciliates

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**ABSTRACT:** We describe a new behavior of planktonic ciliates. The field-collected tintinnid *Eutintinnus inquilinus* attached with its lorica to a range of surfaces, including particulate aggregates. Most tintinnids remained attached with the aboral end of their lorica when well fed. On starvation, many tintinnids detached and resumed a free-swimming life. We hypothesize that the adhesive property of the lorica has evolved as an adaptation to attach to suspended aggregates or other seston particles. Attached *E. inquilinus* have a feeding rate that is 80% higher than freeswimming individuals because of the change in the fluid dynamics of the feeding current for attached *E. inquilinus*, which leads to steeper velocity gradients and higher flow rates close to the lorica. This mechanism will also operate for swimming suspension feeders attached to smaller particles that significantly increase the hydrodynamic drag. Selection for traits that enhance the velocity gradients in feeding currents of small plankton may be common and may partly shape behavioral patterns and functional morphology. When exposed to the calanoid copepod *Acartia clausi*, populations of *E. inquilinus* were less susceptible to predation than another *Eutintinnus* species of similar morphology but that were entirely free swimming.

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