

Plankton swim against the current

12 December 2017

Zooplankton are often considered to be a passive source of food for fish and other aquatic animals. But at least one of their representatives, the millimetre-sized copepod (*Eurytemora affinis*), moves purposefully in turbulent water with "jumps." This fact was discovered by a team of researchers led by Markus Holzner, holder of an SNSF professorship at ETH Zurich. "These jumps enable the plankton to hunt their prey and the males to catch a female," explains Holzner.

Provided by Swiss National Science Foundation

The researchers observed the copepods in a turbulence generator – a type of aquarium in which the water is swirled around by counter-rotating discs. High-speed cameras recorded the movements. The images were analysed by a computer program developed by a group at the Institute of Environmental Engineering at ETH.

Fluorescent particles reveal turbulence

Several cameras were used to track the exact position in space of each copepod and determine its orientation. Small plastic particles that fluoresced under laser light enabled the flow to be observed at any point, while the speed of each copepod could be calculated relative to the flow.

The researchers were thus able to show that the zooplankton can actively move in turbulent water. "This enables the copepods to remain together in a swarm, which is particularly important for their reproduction," according to Holzner. The findings are important for the understanding of [aquatic ecosystems](#). "Fish farms might also be able to adapt the flows accordingly so that the food intake is ideally set up for the fish."

More information: François-Gaël Michalec et al. Zooplankton can actively adjust their motility to turbulent flow, *Proceedings of the National Academy of Sciences* (2017). [DOI: 10.1073/pnas.1708888114](https://doi.org/10.1073/pnas.1708888114)

APA citation: Plankton swim against the current (2017, December 12) retrieved 13 June 2021 from <https://phys.org/news/2017-12-plankton-current.html>

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