

Motility of *Daphnia spinulata* as Affected by Solar Radiation Throughout an Annual Cycle in Mid-latitudes of Patagonia[†]

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ABSTRACT

During an annual cycle, *Daphnia spinulata* collected from a plankton community of Patagonia was exposed outdoors to assess the impact of recently received solar radiation on motility (*i.e.* swimming speed and gravitaxis). Individual values of these parameters were obtained by video recordings and image analysis at different time intervals during the day. Initial swimming speed varied throughout the year, and changes in speed during exposure were not significantly affected by any waveband used in our experimental design (*i.e.* PAB, 280–700 nm; PA, 320–700 nm; and P, 400–700 nm). Overall, most of the individuals swam downwards, regardless of the radiation treatment imposed to the samples. We found that multifactor interactions (*i.e.* not a single parameter explained more than 40% of the observed variability) explained most of our observations on motility parameters. These factors include not only solar radiation, but other physical (underwater radiation field and wind intensity) and biological parameters (food availability, presence of predators and congeners). Our findings indicate that the plankton dynamics in the study site is likely to be governed by a sum of factors which must be taken into account when considering solar radiation effects on aquatic ecosystems.

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