{rokbox title=|Cover of volume :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-impact-light-nutrient-harmful-bloom-forming-dinoflagellates-mena-et-al-2025-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-impact-light-nutrient-harmful-bloom-forming-dinoflagellates-mena-et-al-2025.jpg{/rokbox}

Catalina Mena, Marc Long, Ophélie Lorand, Pascale Malestroit, Emilie Rabiller, Jean-François Maguer, Stéphane L'helguen, Aurore Regaudie De Gioux, 2025. **Impact of light and nutrient availability on the phagotrophic activity of harmful bloom-forming dinoflagellates.**
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Abstract: Phagotrophy is a key nutritional mode for many bloom-forming dinoflagellates that can supplement their carbon and nutrient requirements. However, the environmental drivers and ecological relevance of phagotrophy in algal blooms are still poorly understood. This study evaluates the effect of light and nutrient availability on the phagotrophic activity of three common bloom-forming dinoflagellates (*Alexandrium minutum*, *Heterocapsa triquetra* and *Prorocentrum micans*) using three fluorescently labeled preys: bacteria, *Synechococcus* and the haptophyte *Isochrysis galbana* . The three dinoflagellates exhibited distinct responses to light and nutrient availability in terms of growth, cell size, prey ingestion and preference. *A. minutum* and *H. triquetra* showed higher cell-specific ingestion rates on bacteria (0.53 ± 0.13 and 1.64 ± 0.39 prey dinoflagellate−1 h−1, respectively) under co-limited nutrient and light availability, whereas *P. micans* showed higher ingestion on *Synechococcus* (0.93 ± 0.22 prey dinoflagellate−1 h−1) under low-light availability alone. However, the three dinoflagellates exhibited the highest carbon and nitrogen-specific ingestion rates when feeding on the larger prey *I. galbana* . Our findings indicate that phagotrophy could be of advantage in short periods of light or

nutrient limitation and may play different roles during the development of blooms, likely influencing the energy transfer through the food web.

Keywords: phagotrophy, mixotrophy, bloom-forming dinoflagellates, nutrient limitation, light limitation