

The Rise of the Mixotroph *Noctiluca scintillans* in the Arabian Sea: Disruptive Impact on the Food Web in a Warmer World?

¹A. Mile, ²S. Thondapu, ³K. McKee, ³H. Gomes, ³J. Goes

¹Boston College, ²Peddie School, ³Lamont-Doherty Earth Observatory of Columbia University

Noctiluca's unique mixotrophic behavior allows the organism to proliferate during the winter monsoon in the Arabian Sea when convective mixing brings a large supply of nutrients into the euphotic layer, spurring growth of diatoms and dinoflagellates. To assess the mixotrophic behavior of the dinoflagellate *Noctiluca*, we conducted an experiment where we grew *Noctiluca* without prey to assess its growth supported solely by photosynthesis as well as with four different prey: *Peridinium* (dinoflagellate), *Phaeodactylum tricornutum* (diatom), *Thalassiosira*, (diatom) and *Pyramimonas* (green algae). By examining the growth of *Noctiluca* using indicators such as cell counts and the photosynthetic pigment Chlorophyll a (an indicator of phytoplankton biomass), we concluded that *Noctiluca* experiences high growth rates when it encounters preferred food sources, *Peridinium* and *P. tricornutum*. However, food alone does not enhance growth as light too is required for *Noctiluca* to bloom. Therefore, the combination of ample light and preferred food provides *Noctiluca* the ideal conditions to form blooms in winter in the Arabian Sea.