

Why is green *Noctiluca* taking over the Arabian Sea? Assessing physiology with respect to N sources

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The Arabian Sea ecosystem has been affected by the extensive blooms of *Noctiluca scintillans* over the last two decades. Previous studies on *N. scintillans* have been performed in situ and not in a lab setting, which allows this study to isolate factors that contribute to *N. scintillans* blooms. This experiment studies the physiology of *N. scintillans* under three different concentrations of urea and ammonium chloride as nitrogen sources. The biomass of *Pedinomonas noctilucae*, the endosymbionts inside *N. scintillans*, was estimated through chlorophyll a measurements for up to 30 days. Images of *N. scintillans* cell were taken with a confocal microscope for each of the cultures to compare the relative size of the *N. scintillans* cells and endosymbiont populations. The results showed that *N. scintillans* and their endosymbionts grow better in f/20 culture media with additions of 28 and 56 $\mu\text{mol N/L}$ of ammonium chloride and 112 $\mu\text{mol N/L}$ of urea than in f/20 alone. Significant differences were found in the number of cells grown under different nitrogen sources and also between different concentrations within one source. Ammonium in windblown dust and urea in wastewater may both contribute to blooms of green *N. scintillans* in the Arabian Sea.