**Modeling Self-Shading of Light on Kelp Growth in Aquaculture Operations**

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Understanding the growth rate and nutrient recovery by kelp cultures has important marine biological implications. For example, recent work by our research group at Clarkson University, the University of Maine, and SINTEF Fisheries and Aquaculture is investigating kelp aquaculture as a means to recover nutrients from wastewater effluent plumes in coastal environments into a valuable biomass feedstock for many products. Current models for kelp growth place little emphasis on the way in which nearby plants shade one another. Self-shading may be a significant model feature, though, as light availability may impact the growth and composition of the kelp biomass, and thus the mixture of goods that may be derived. We seek to use differential equations among other modeling techniques to more accurately describe this aspect of kelp growth. This work will supplement a larger kelp growth model designed to create a more comprehensive description of the growth of kelp in coastal ecosystems.

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