Symbiont Density, Chlorophyll a, and Color Intensity of Aposymbiotic and Symbiotic Colonies of the Temperate Coral *Oculina arbuscula* on the N.C. Coast

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Corals are the foundation of reef ecosystems that are instrumental to the health and abundance of a vast diversity of marine life. Anthropogenic increases in atmospheric carbon dioxide have led to rising ocean temperatures, which are correlated with decreasing symbiont density and chlorophyll *a* (chl*a*) levels. Extreme levels of temperature stress can cause coral bleaching or complete loss of symbionts. Facultatively symbiotic corals, like *Oculina arbuscula*, can survive without symbionts by relying more on heterotrophic carbon and are thus useful models to study the physiological effects of coral bleaching. This study measured the natural variation in color intensity, symbiont density, and chl*a* content between symbiotic and aposymbiotic colonies of the temperate coral *Oculina arbuscula*. Colonies of *O. arbuscula* were collected from Radio Island, NC, and symbiont density, chl*a*, and color intensity were quantified. We found that symbiont density and chlorophyll *a* were significantly lower, and color intensity was brighter in aposymbiotic colonies, and these trends varied across seasons. These results demonstrate fluctuation in symbiont density, chl*a* per cell, and color intensity in *O. arbuscula* based on symbiotic state, and could help improve our understanding of the effects of climate change-induced bleaching on coral reefs.