

Seasonal Variations in Phytoplankton Community Structure in the Gulf of Maine near Cape Ann, MA
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Phytoplankton are primary producers that support marine ecosystems including oceanic fisheries around the world. However, rapid growth of some phytoplankton species can result in harmful algal blooms which are toxic to fish, shellfish, birds, marine animals and humans. Therefore, monitoring and understanding changes in the species composition of phytoplankton populations provides information critical to the development of healthy marine ecosystems and coastal communities.

Phytoplankton taxa contain a characteristic composition of pigments in their chloroplasts such that each taxon displays a unique absorption spectrum. These pigments ultimately pass their absorbed energy to chlorophyll, which fluoresce proportional to the magnitude of the transmitted energy. Consequently, phytoplankton taxa fluoresce with varying intensities in response to different wavelengths of light due to variations in pigment concentration and composition.