
Woods Hole Oceanographic Institution
Biology Department Seminar



Thursday, June 2, 2016
Redfield Auditorium – 12:00 Noon

**Winter chilling induces synchronous spring
germination by *Alexandrium fundyense* cysts
in the Nauset Marsh System**

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Recurrent springtime blooms of *Alexandrium fundyense* cause near annual shellfishing closures due to paralytic shellfish poisoning in the Nauset Marsh system on Cape Cod. These blooms are inoculated through the germination of benthic resting cysts, a process that is regulated by both endogenous and exogenous factors that are not fully understood. Experiments were conducted to determine how cysts respond to the severity of winter and to document their natural germination rhythm. Data were then used to formulate a simple germination model. Much like terrestrial plant seeds, *A. fundyense* cysts in Nauset have a winter chilling requirement, meaning they must attain a minimum threshold to emerge from dormancy in the spring. Responses to climatological variability during our three study years are used to demonstrate that a quantifiable amount of chilling is needed to synchronize the cyst seedbed. This conceptual model, rooted in horticultural science and formulated for Nauset, can be used to predict the phenology of *A. fundyense* cyst germination in other years and other habitats.