

3.) Abstract

Project Title: MERHAB: Training Course on the Identification of Harmful Algae in United States Marine Waters

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Total Proposed Cost: Total Project Cost (without shiptime): Year 1: \$219,488; Year 2: \$213,360; Year 3: \$212,691; Project Total: \$645,539. Total Shiptime Cost: Year 1: \$1,050; Year 2: \$1,050; Year 3: \$1,050; Project Total: \$3,150, Total Project Cost (with shiptime): Year 1: \$220,538; Year 2: \$214,410; Year 3: \$213,741; Project Total: \$648,689

Budget Period: September 1, 2015 – August 31, 2018

Introduction and Rationale: Effective monitoring and management of harmful algal blooms (HABs) relies on accurate and timely identification of the species involved. The classic method of detection is microscopic examination for HA species based on morphological characteristics. Other non-traditional tools for species identification are genetic probes, optical pattern recognition systems, and similar technologies under development for fixed and mobile platforms. The rapidly expanding HA taxonomy field, retirement of many ‘classical’ taxonomists, lack of dedicated U. S. HA taxonomic and identification training programs, and increased use of non-traditional methods of HA identification all contribute to an increasing need for comprehensive training in identification and taxonomic for U.S. HA managers, scientists and technicians.

Objectives: 1) Provide expert training and certificate of proficiency in HA identification to increase the number of U.S. HA analysts providing accurate and timely data to managers for management decisions; 2) establish course material for an ongoing U.S. HAB identification and taxonomy class; and 3) provide familiarity with alternate identification technologies. **Approach:** Annual training programs, for a three year period, will consist of web-based, pre-course preparatory module and a 2 week intensive course in which classic HA identification and taxonomy will be taught, with several specialized lectures on newer HAB identification and quantification methodologies. The course will first be open to local, state and federal government workers involved in all aspects of HAB management and research, then graduate students and others involved in HAB research, for a total of 14 participants per course. Course content will consist of training material handouts, lectures, hands-on demonstrations with live and preserved species and demonstrations of methods for collection, treatment of samples, enumeration and culturing techniques. HA species from the Bacillariophyceae, Dinophyceae, Prymnesiophyceae, Raphidophyceae, Dictyochophyceae and marine Cyanophyceae will be the focus, with many either in the Provasoli-Guillard National Center for Marine Algae and Microbiota or available from the instructors. Over 70 of the known HA species will be demonstrated with morphologically similar species for purposes of comparison and differentiation, with a shifting annual focus between the three NOAA HAB regions. Certificates of proficiency will be provided for successful completion of the course. Students will be encouraged to continue their learning and networking between fellow students and instructors facilitated through a dedicated course listserv. **Work to be completed:** Development of three HA web-based, pre-course preparatory modules and regionally focused identification and taxonomy courses, with post-completion certificates given to successful students. A guide to the course will be prepared as a handout and made available on a website at the end of the 3rd year to assist with transitioning the class to a biannual course offered through the Bigelow Laboratory summer course series.