

Initiative moves into next phase

The South Carolina Task Group on Toxic Algae will continue its work under its new name: the South Carolina Task Group on Harmful Algae. Members recently reviewed their recent efforts, which Rick DeVoe, S.C. Sea Grant director and chair of the task group, calls “phase one” of the initiative.

“We’ve accomplished a great deal,” DeVoe said. “We have implemented all of our strategies to one extent or another, and we are now ready to propel the next phase into action.”

The task group formed in late 1997 in response to growing evidence that harmful algal blooms (HABs) were becoming a widespread pollution-related problem in the United States. Meanwhile, reports implicated the alga *Pfiesteria piscicida*, and several closely related species, in fish kills, fish disease, and public health problems in states to the south and north of South Carolina.

The Centers for Disease Control (CDC) has linked exposure to “heavy” doses of *Pfiesteria* toxin with a human illness called *Pfiesteria*-related Estuary Associated Syndrome (PEAS). Symptoms include skin disorders, respiratory irritation,

learning disorders, memory loss, and confusion. Physicians in some Mid-Atlantic states reported the onset of symptoms of watermen prior to documentation of fish kills and *Pfiesteria* blooms.

South Carolina task group members sought to find out whether harmful algae could be affecting South Carolina waters. The task group includes representatives from government agencies and universities, including the S.C. Sea Grant Consortium, S.C. Department of Natural Resources (DNR), the S.C. Department of Health and Environmental Control (DHEC),

The University of South Carolina (USC), Clemson University (CU), the Medical University of South Carolina (MUSC), the NOAA National Ocean Service (NOS-Charleston), the U.S. Geological Survey (USGS-Columbia), and several other key organizations.

One of the task group’s first goals was to develop a Harmful Algal Bloom Strategy. The Strategy’s goals are to:

- encourage joint activities and exchange of information about *Pfiesteria* and other harmful algal species
- develop guidance and contingency plans for protecting

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Web Sites on *Pfiesteria*

NC State University of Aquatic Botany Laboratory *Pfiesteria* Page:
www2.ncsu.edu/unity/lockers/project/aquatic_botany/pfiest.html

S.C. Department of Environmental Control:
www.state.sc.us/dhec/fspfies.htm

Woods Hole Oceanographic Institution:
www.redtide.whoi.edu/hab/

University System of Maryland:
www.mdsg.umd.edu/fish-health/pfiesteria

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human and ecosystem health from HABs

- develop joint proposals, in cooperation with ongoing regional and national research and outreach efforts, to support monitoring, research, and outreach programs in South Carolina

- and prevent HABs from becoming an environmental and human health problem in the state.

The strategy's program elements include a review and a synthesis of existing information about HABs; a monitoring program for HABs; a

HAB research program; assessment and modeling studies; protocols for identifying humans with PEAS; economic analyses; training workshops; and public outreach.

The task group has been successful in obtaining funding from DHEC, CDC, the ECOHAB program (Ecology and Oceanography of Harmful Algal Blooms), and the EPA (Environmental Protection Agency). And when officials from CDC visited South Carolina to follow up on the second year of CDC funding that they granted for the PEAS Surveillance and

Prevention Program (under the direction of task group member Robert Ball), they lauded the task group's accomplishments. "You're on the cutting edge," Larry Posey, one official, told them. He urged them to keep up their efforts.

Task group members remain committed to seeing all elements of their strategy expanded. But this takes money, so the task group is working on getting the necessary funding.

"We have every reason to be proud of our work," DeVoe says. "But we're still a long way away from where we want to be."

Update on Research on the Red Tide Dinoflagellate, *Scrippsiella carolinium*

Scrippsiella carolinium has bloomed once again in North Inlet estuary (Georgetown, SC) and Bulls Bay (McClellanville). The dinoflagellate was observed in North Inlet in mid-March, but did not reach "bloom" densities until early May (~200,000 cells/ml, orange-red colored water). *Scrippsiella* numbers decreased steadily since the bloom period, but the organism was still present in early June. The bloom was not as persistent as in 1998 and 1999, which may be related to this spring's dry weather.

Interestingly, another dinoflagellate, *Prorocentrum minimum*, has formed frequent and intensive red tides in the Chesapeake Bay this year, coincident with a wet spring in that region. Comparative studies

are ongoing between ECOHAB investigators in Maryland (Dr. Patricia Glibert, P.I.) and South Carolina (Task Group member, Dr. Alan Lewitus) to determine whether similar factors stimulate blooms of these two dinoflagellates. The researchers hypothesize that organic-rich nutrient loading following rain events can cause blooms of these species.

USC's Baruch Marine Laboratory (Georgetown, SC) is evaluating the *Scrippsiella* bloom in several ways. Kenneth Hayes is characterizing the spatial and temporal distribution of the organism, and its link to physical conditions and nutrient (organic and inorganic) concentrations. He combines the use of continuous monitoring devices and autosamplers (set to

collect water every three hours) to gain information on migration patterns of the dinoflagellate over tidal cycles, and the influence of water conditions on its distribution.

Bonnie Willis is conducting nutrient addition bioassays and nutrient uptake experiments to determine which type(s) of compounds potentially loaded into the estuary favor *Scrippsiella's* growth.

Michael Wetz is examining *Scrippsiella's* potential to cause adverse effects on shellfish. He will conduct bioassays to test whether additions of *Scrippsiella* or *Scrippsiella*-produced compounds (filtrate) reduce filtration rates of oysters and ribbed mussels.
