

Meeting Report for the Hypoxia Response Workshop
Baruch Institute Kimbel Center, Georgetown, South Carolina
July 7, 2005

Summary of Discussion:

To follow up on the Long Bay Hypoxia Study workshop that was held on June 14th, 2005, a second workshop was held on July 7th to define a coordinated response plan for any future hypoxia events within Long Bay. A list of attendees is attached as Appendix 1.

Braxton Davis opened the meeting, the focus of discussion centering on a draft response plan flow chart consisting of four response phases. The flow chart is supplemented by a more detailed word document. Both are attached as Appendix 2.

There was considerable discussion regarding Phase 1, the triggers for initiating the Phase 3 initial sampling response. Attention was brought to the availability, and importance, of anecdotal and other records of historical fish kills and unusual fish behavior (including high landings). DNR reported that Dean Cain was reviewing his records from the past 10 plus years for indications of unusual activity. However, it was noted that based on interviews with “old timers” on the piers, there is apparently no anecdotal evidence for such a major event in previous years.

Other potential sources of fish related data were suggested including the MRFSS data from NOAA Fisheries (NMFS) and information from commercial fishermen, including enlisting them to provide early warnings. Commercial fishermen in Calabash were noted as potentially a good source of anecdotal information. Regarding the NMFS data, it was noted that although the MRFSS is known to be quite patchy, it did pick up last year’s high catches of flounder so may be able to provide relevant historical information.

In addition to fish, it was pointed out that it is very important to consider marine species other than fish, such as invertebrates, that might be affected by a hypoxia event. Unusual reports such as seabird mortality, diminished nesting success in sea turtles, etc. are also important events to be aware of. It was further suggested that a literature search be conducted to establish DO and temperature thresholds for benthic marine species.

Algal blooms are another important trigger for considering an initial sampling response. A formal link should be established between the contacts at Caro-COOPS and those that receive the HABS reports at the South Carolina Algal Ecology Lab (Alan Lewitus and Laura Mason).

The other key response triggers may be derived from instrument measurements, either at the piers or further offshore (e.g. bottom temperature data from the Caro-COOPS buoy located 5 km from shore). In addition to what currently is in place, it was noted that: the DO probe for Springmaid Pier has been ordered and will hopefully be deployed in the near future; the Pier operators for all of the piers are very supportive of having

temperature gauges installed (potentially by DNR; especially if the information is web accessible); and SCDHEC-OCRM has funded a series of Dataflow transects w/ profiles to be conducted by CCU. This summer there will be at least three two-day cruises. Day 1 will be between Winyah Bay and Little River Inlet and day 2 the reverse. Cruises will be conducted between 0.3 and 3 km offshore. 16 vertical profiles will be run at 3 km. The multisonde can take measurements every 3 seconds (to capacity) and records a GPS reading with every data measurement. If a hypoxia event is identified, an immediate dataflow cruise will be initiated.

An important reporting and informational asset that has been overlooked is the general public. For example it was noted that there are 4 fishing clubs in the area as well as SCUBA clubs that could be significant sources of observations of unusual activity in the coastal waters. Education and outreach with these and other groups could be of great benefit to the monitoring effort.

An informational flyer that is in the planning stage will help to address communication and education with not only the public resource users, but would also be a good tool for use by the Coast Guard and by DHEC and DNR staff receiving event reports. DNR noted that on many levels it is already working on improving communication, education, and cooperation with the public. In addition they are working to improve communication between the various agency divisions to ensure that unusual event reports are effectively relayed internally. They also offered to work on outreach and communications with the Coast Guard, particularly as relates to reporting needs in the Hypoxia flyer.

The Hypoxia flyer is intended to be distributed to pier operators, enforcement and management agencies (e.g. Coast Guard, DHEC, DNR) and other user groups that may be good and timely sources of reports of unusual phenomenon in the coastal environment. It is anticipated that the flyer will include a brief introduction to the coastal hypoxia study, the definition of what a hypoxia event is, what to look for (i.e. unusual fish behavior and/or landings, invertebrate mortality, discolored water), and contact information (DNR fish kill line). It was suggested that relevant species and the magnitude of a citing (e.g. number of fish) be defined to avoid excessive reporting. The flyer would also serve as a document from which call responders could derive questions to ask of callers to serve as a filter for reports.

A suggestion was made that response efforts be coordinated with other states. In particular it was recommended that other states' monitoring initiatives be investigated as this could be helpful to developing the Long Bay monitoring project. Specific examples that were noted include Georgia, Oregon, and New Jersey. It was further suggested that the development of a communication system between adjacent states (NC and GA) could be beneficial from an early warning perspective.

There was good response for volunteers for Phase 3, or initial sampling response. CCU, DHEC, the NI-WB NERR, and DNR have all agreed to be on stand-by to respond, if available, to a call for shoreline/pier sampling efforts needed to substantiate an alert call and to justify the initiation of a full scale hypoxia event sampling response (phase 4).

Both CCU and DHEC noted the possibility of a student hire for the summer, both of whom might be able to contribute to such an effort. In addition, DHEC noted that it might be possible to use some of the funds that they have committed to the USGS to send a Conway-based USGS employee to collect the data. DHEC further noted that if the trigger is a fish kill (reported to their hotline), their standard response includes DO measurements. It was also suggested that city water/sewer management agencies might be able to participate in the initial sampling effort. The Waccamaw Regional Council of Governments offered to facilitate this interaction with local governments.

Regarding Phase 4, the full sampling response, there was considerable concern voiced about ensuring the consideration of disparate data, provision of a unified public/media response (that is, the public affairs/relations component needs to be addressed rapidly and with a consistent message – it may be prudent to establish a point of contact for this task), and a well coordinated (non-duplicative) sampling effort. It was suggested that, if feasible, there be a central “incident commander” to coordinate and facilitate the event response, including monitoring the data in order to make real-time decisions. It was further noted that although the hypoxia list serve is a valuable mechanism to disperse data and to communicate with each other, e-mail cannot be relied upon to coordinate a response.

Lists of available equipment (including instruments and vessels) and personnel, as well as points of contact information will be available on the Long Bay Ecosystem Management website to help facilitate communications and response efforts.

Other suggestions included: organizing the response effort in terms of types of measurements needed and by geographic area; and the addition of an emergency fund raising effort to the event response (tapping into existing emergency funds from various sources).

Future Steps:

- Flags for possible hypoxic conditions (oceanographic patterns and conditions, precipitation, meteorological conditions) that could set up a “pre-alert” – instills the capacity for precautionary measures to be put in place prior to a full blown event.

Action items that will be addressed directly following the Response Workshop:

- Develop and Implement the Hypoxia List Serve
- Distribute “Availability” Survey (equipment, expertise, point of contact information, etc.)
- Rapid decreases in DO, unusual fish behaviors, and other triggers need to be fleshed out; temperature and DO ranges need to be defined.
- Development and distribution of Coastal Hypoxia Study informational flyer.

Appendix 1

First Name	Last Name	Affiliation
Paul	Drewes	USGS - Conway Office
Dave	Gordon	USFWS - Charleston, Coastal Program
Anna	Toline	NERR (NI-WB)
Elizabeth	Vonkolnitz	OCRM - DHEC
Fred	Earnhardt	DHEC (region 6) - Environ. Quality Control
Larry	Ragsdale	DHEC (region 6)
Dave	Chestnut	DHEC (Columbia) - Bureau of Water
Ron	Tata	DHEC
Eric	Koepfler	CCU
Erik	Smith	NERR (NI-WB)
Braxton	Davis	Baruch Institute - USC
Emily	McDonald	USC/OCRM
Denise	Sanger	DHEC - OCRM Director - Waccamaw Council of Governments
Jan	Davis	DNR - Office of Fisheries Management
Mel	Bell	Baruch Institute - USC
Rebecca	Shuford	DNR - Office of Fisheries Management
Kris	Reynolds	DNR/Baruch
Alan	Lewitus	SC Sea Grant
Dan	Hitchcock	CCU
Susan	Libes	USGS (Columbia)
Paul	Conrads	DNR
Dean	Cain	