THE PLANKTON NEWS

THE NEWSLETTER OF THE SOUTHEAST PHYTOPLANKTON MONITORING NETWORK

Volume 3, Issue 2 November 2004

Ciguateric Barracuda Caught Off the Coast of Charleston

A case of Ciguatera Fish Poisoning (CFP) from a barracuda caught in South Carolina waters was reported in early August 2004. A Summerville, SC couple became ill with symptoms suggestive of CFP after eating a barracuda that was caught during a charter fishing trip in late July. The barracuda was caught 50 miles offshore from Charleston, SC.

The remaining cooked barracuda filet was given to the SC Department of Natural Resources (DNR) and NOAA's Marine Biotoxins Program for toxin analysis. In mid-August, researchers from the Marine Biotoxins Program confirmed the presence of Ciguatoxin (a neurotoxin produced by a reef-dwelling dinoflagellate called *Gambierdiscus toxicus*) in the flesh of the barracuda. The amount of toxin present in one serving of filet was 200 picograms, a million times smaller than a grain of table salt. Remarkably, this tiny amount was twice the amount necessary to cause illness in an adult.

Continued on page 2

Gambierdiscus toxicus

Image taken with a light microscope

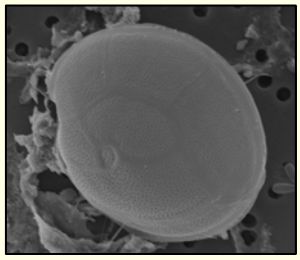


Image taken with a scanning electron microscope (SEM)

Inside This Issue

SouthEast Portal to Ocean Research for Teachers (SE-PORT): From Watersheds to Oyster Beds

SEPMN and SE-COSEE will be hosting a teachers' workshop entitled "*SE-PORT: From Watersheds to Oyster Beds.*" The goal of this workshop is to connect teachers with ocean science researchers to bring new ideas, techniques, and materials to the students in the classroom. There will be presentations by researchers from the SC Department of Natural Resources Oyster Restoration Program and NOAA's Southeast Phytoplankton Monitoring Network (SEPMN).

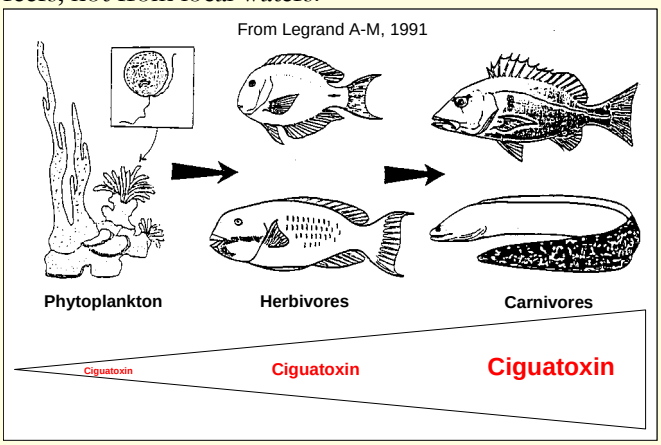
This day will be filled with fun activities, take home materials, new ideas, food, and door prizes galore! Teachers from Berkeley, Charleston, and Dorchester Counties can earn continuing education units for participation in this workshop.

Date & Time: November 13, 2004; 8:30 am – 3:00 pm
Location: Hollings Marine Laboratory, Fort Johnson Road, Charleston, SC
Maximum Enrollment: 20 Middle & High School Teachers

Registration Information: Julie Cahill at Julie.Cahill@noaa.gov or 843-762-8832 **OR** Wendy Perry at Wendy.Perry@noaa.gov or 843-762-8830
Check out our website to view the agenda.

Ciguatoxin Fish Poisoning, Continued from page 1

Gambierdiscus toxicus attaches to the plants that grow on tropical reefs. The dinoflagellate is consumed by small herbivorous (plant-eating) fish, invertebrates, and crustaceans. Ciguatoxin becomes more concentrated, or **biomagnifies,** in carnivorous reef fish such as barracuda, snapper, and grouper as they feed on herbivorous fish. Ultimately, the larger fish will have high concentrations of the toxin from the consumption of many smaller organisms. Unlike most bacteria, Ciguatoxin can not be destroyed by cooking or cutting it out of the fish. If a person is unfortunate to eat a ciguatoxic fish, he or she will become sick. CFP in our region occurs very rarely; typically one poisoning occurs every several years. When CFP does occur, it is usually from fish caught in coral reefs; not from local waters.



Researchers from the Marine Biotoxins Program are developing a blood test for doctors to use in the hospital to test for Ciguatoxins. Researchers are also trying to discover how the dinoflagellates produce the toxins and what impacts they have on the health of the marine community and people.

What we do know is that Ciguatoxin can affect people differently (i.e. the Summerville couple mentioned earlier in this article). The husband suffered minor gastrointestinal effects and was released from the hospital after 24 hours; however, the wife suffered from neurological effects and remained hospitalized for several weeks. Some of the symptoms of Ciguatera Fish Poisoning include: nausea, vomiting, numbness of extremities, muscle and joint pain, blurred vision, & reversal of temperature sensation. In severe cases, the effects can last for months to years, but the poisoning is not lethal. Currently, there is no cure for CFP.

This particular case alarmed state and federal health and wildlife officials because most of the previous reported Ciguatera Fish Poisoning cases in the U.S. have been traced to fish caught in Florida and Hawaii. Experts now believe that the barracuda may be migrating up the Atlantic coast during summer months. Scientists recommend using caution when eating reef fish.

SEPMN to Be Presented at International Conference on Harmful Algae

In November 2004, Steve Morton, Program leader of SEPMN, along with 8 additional NOAA Marine Biotoxins Program members will attend the XIth International Conference on Harmful Algae in Cape Town, South Africa.

Steve Morton will present the Southeast Phytoplankton Monitoring Network (SEPMN), using the data generated by our volunteers. A great deal of interest was shown by other states and countries to begin phytoplankton monitoring networks similar to SEPMN. South Carolina is marked by the one of the nation's highest rates of coastal growth, and recent widespread red tides in SC estuaries have been documented. The volunteer monitoring element has developed a network that provides early warning of harmful algae bloom (HAB) formation.

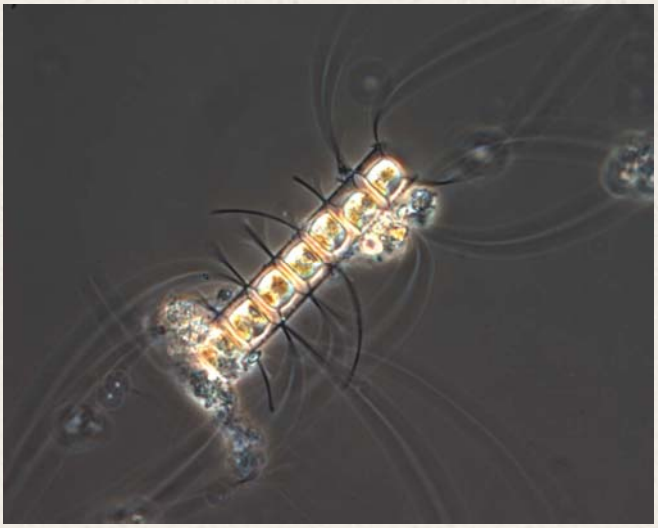
Way to go SEPMN volunteers! Thanks to you all for your hard work and dedication to make these presentations possible.

Welcome to our New Outreach Specialist!

SEPMN would like to welcome our new outreach specialist. Julie Cahill comes to SEPMN from the Louisiana University Marine Consortium (LUMCON), where she was an educator and the Center for Ocean Science Education Excellence (COSEE) representative for Louisiana. Julie was born in Cortland, NY and received her bachelor's degree in marine biology at Roger Williams University (RWU) in Bristol, Rhode Island. She has worked as a marine educator for the past 10 years in 5 different states. SEPMN is excited to have Julie as part of our staff!

Chaetoceros Bloom In Bass Pond

Kiawah Island Community Association, Inc. reported their second bloom of the season. On August 5, 2004, Norm Shea and Carrie Manson reported a *Chaetoceros* bloom in Bass Pond on Kiawah Island, SC. SEPMN staff followed up the report with a site visit and found that the phytoplankton bloom was visible to the naked eye. There were no noted fish kills or changes in water color; however, the salinity was high at 37 parts per thousand. Other species noted in the sample include a small number of *Nitzschia* and dinoflagellates called *Karlodinium*. The light microscope image of *Chaetoceros* was taken at 400x magnification using phase contrast.



Web Site Additions

Our web site will be undergoing changes in the next few months. From volunteer recommendations, we will be adding pictures of individual species at different magnification powers. We will also add pictures of zooplankton and other species that might look like the phytoplankton that we are trying to identify.

We have been updating our home page on a monthly basis, so please visit each month for new information. Other web site changes will include: monitoring techniques, new lesson plans, new GIS map layouts, data charts and graphs, and more!

Our web site address is:
http://www.chbr.noaa.gov/CoastalResearch/SEPMN/index.htm

***Coscinodiscus* spp.**

Our web master has notified us that the online data entry is functioning! If you have problems entering data online, please note the date and time of data entry and notify Wendy as soon as possible. You still have the option of sending in your data sheets via email, snail mail, or fax.

Reminder: Notify SEPMN staff by phone and email if you see an algal bloom!

New Volunteer Groups

SEPMN is still growing with a new total of 52 sites in South Carolina and Georgia. We hope to have North Carolina actively monitoring by January 2005. Plans are under way to add Maryland next year as well. Welcome to our new volunteer groups:

- First Baptist Church School, Mt. Pleasant, SC
- St. John's High School, Johns Island, SC
- Coastal Carolina University, Conway, SC

Calendar of Events

South Carolina Science Council (SC²)
29th Annual Conference
Fashion-A-Phyto
North Charleston, South Carolina
Novermber 3 – 5, 2004

North Carolina Science Teachers Association
36th Annual Professional Development Institute
NC recruitment for SEPMN
Greensboro, North Carolina
November 10 – 12, 2004

South Carolina SE-PORT
SE-PORT: From Watersheds to Oyster Beds
Hollings Marine Laboratory
Charleston, South Carolina
November 13, 2004

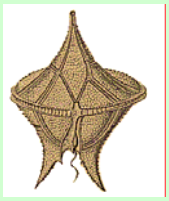
11th International Conference on Harmful Algae
Cape Town, South Africa
November 15 – 19, 2004

Georgia SE-PORT
Crooked River State Park
St. Mary's Island, Georgia
January 20 – 21, 2004

Phytoplankton Art Contest!

Teachers!! Tell your students to get out their paper and pencils and draw their favorite phytoplankton! We would like to find out how well the students can draw. Please submit your best phytoplankton drawing to us. Students can use colored pencils if they like. For this contest, we will be looking at how detailed the students can get with phytoplankton. In the next issue of Plankton News, we will feature the winning entry. We will also add the drawing to our website to start an Art Gallery. Entry deadline is December 20, 2004. If we get enough entries, we will keep the contest going all year and add competitions for sculptures, paintings, and other artistic creations!

You can send your artwork by mail to:



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MIC-D Microscopes Presented To SEPMN Volunteers

As some of our volunteers already know, we have loaned out 15 MIC-D scopes in the last 2 months. We don't have enough for everyone so the groups that have been with the network for at least 1 year and consistently submit data sheets are likely candidates. We still have 15 more MIC-Ds to distribute. If your group would like to receive a microscope, please make sure you submit your data sheets regularly.

Keep up the great work! Your group could be the next recipient of this amazing digital microscope.

Information about the MIC-D

Excellent all-around performance in digital format: MIC-D offers an exciting new way to observe the natural world!

Instead of individual observation through an ordinary eye piece, the MIC-D concept is to display the image on the monitor of a personal computer linked to the microscope by USB cable connection.

Because the MIC-D observation images are digital, processing them is quick and easy. Users can store, discard, or edit their images, print them out, post them on a website, attach them to an email or include them in a report.

For additional information, visit the website:
www.mic-d.com

Outreach Activities

Below are fun educational resources for teachers and students that correspond with articles published in this newsletter. Activities focus on Food Webs, Bioaccumulation, and Algal Blooms.

Who Eats Who?
http://www.aquarium.usm.edu/coralreef/36.pdf

Weave a Food Web
http://www.aquarium.usm.edu/coralreef/37.pdf

Where Do Coral Reefs Grow?
http://www.aquarium.usm.edu/coralreef/36.pdf

Building a Bloom
http://www.bigelow.org/edhab/building_bloom.html

Tracing the Toxins
http://www.bigelow.org/edhab/tracing_toxins.html

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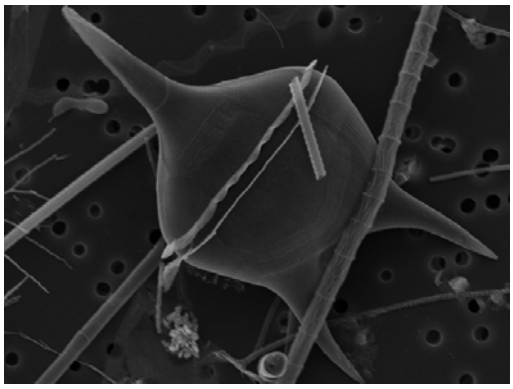
Species Spotlight
Protoperidinium sp.

Species Introduction

The heterotrophic dinoflagellate *Protoperidinium* species *(spp.)* cannot produce their own food by photosynthesis; they are predators that "eat" other small organisms. *Protoperidinium spp.* has a very recognizable shape and prominent posterior spines. The dinoflagellate has 2 flagella: one loops around the middle (transverse flagellum) and the other trails behind the organism like a rudder (longitudinal flagellum). There are about 114 species of *Protoperidinium spp.* and can be found all over the world. *Protoperidinium crassipes* has been found off the coast of Ireland and has been associated with Azaspiracid Shellfish Poisoning.



This photo was taken with our Scanning electron microscope (SEM) by Laurinda Smith

Who found the First *Protoperidinium*?

Protoperidinium pellucidum was described by Russian scientist R.S. Bergh in 1881. *(Original publication: Bergh, R.S. (1882). Der Organismus der Cilioflagellaten.* Morphol. Jb. *7: 177-288.)*

Protoperidinium has been on the SEPMN species list since the beginning of the program in January 2001. To date, no blooms of *Protoperidinium* have been reported in South Carolina or Georgia.

Be sure to check the next issue of ***The Plankton News*** *for another new "Species Spotlight"!*

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