



Multi-species *Pseudo-nitzschia* bloom in North Carolina!

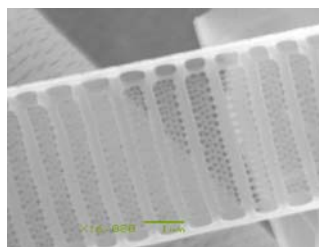
First time identification of toxic *Pseudo-nitzschia* bloom in North Carolina water alerts coastal managers to potential HAB event.

In November 2006, a multi-species bloom of *Pseudo-nitzschia* was observed by volunteer student monitors from First Flight High School and the College of the Albemarle. Preserved and live samples were sent to the Marine Biotoxins Program in Charleston. Using scanning electron microscopy (SEM), these samples were positively identified as *Pseudo-nitzschia pungens*, *P. multiseries*, and *P. pseudodelicatissima*.

Analysis of the samples, using LC-MS/MS techniques, detected the toxin domoic acid (DA). The bloom contained 0.9ng DA/mL of seawater, while the oysters collected during the bloom contained 9.6ng/g. This is approximately 3,000 times *less than* the regulatory limit. However, it makes this the first report of domoic acid from the Southeastern region of the United States.

The identification of this multi-species, toxic bloom in North Carolina's waters is another example where the SEPMN volunteer monitoring program is useful in developing a species list and record of distribution patterns, as well as alerting NOAA scientists to the presence of harmful species.

The toxin domoic acid can contribute to the human health syndrome known as Amnesic Shellfish Poisoning (ASP). The June 2005 Plankton News describes in detail how the Marine Biotoxins Program tests samples for toxicity.



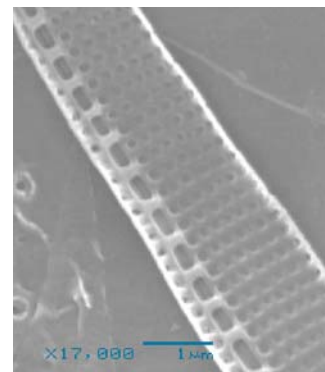
Pseudo-nitzschia multiseries

24°C, and winds were light out of the east. The group reported that the water was thick and dark, with lots of bait fish present. An incoming cold front dropped the air temperature 5°C in 10 minutes.

This is the second *Pseudo-nitzschia pseudodelicatissima* bloom that First Flight has observed.

November 1st: Duck, NC

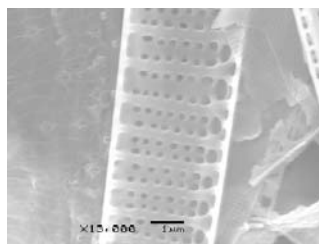
The First Flight High School group, from Kill Devil Hills, collected their sample from the Army Corps of Engineers FRF Pier. Environmental conditions for that day were as follows: salinity = 33 ppt, water temperature = 20°C, air temperature =



Pseudo-nitzschia pseudodelicatissima

November 6th: Manteo, NC

Marcella Turnois, from the College of the Albemarle, collected her sample from the Bonner Bridge at Oregon Inlet. Environmental conditions for that day were as follows: salinity = 31 ppt, water temperature = 15°C, air temperature = 16°C, and winds were light out of the northwest. The tide was coming in, and the water looked clear with a slight yellowish tint.



Pseudo-nitzschia pungens

This is the first *Pseudo-nitzschia* bloom observed by the College of the Albemarle.

In This Issue...

- *Pseudo-nitzschia* bloom in North Carolina
- Dr. Morton's Research Update
- Volunteer Snapshots and Mystery Plankton
- New Website and ArcIMS/GIS Database
- SEPMN Expansion: Virgin and Hawaiian Islands
- Volunteer Spotlight: Doris Cohrs
- SEPMN Bulletin Board
 - 2nd Annual Microscopy Workshop
 - Best Wishes to Wendy
 - Plankton News Now Electronic

Update from Dr. Morton



Dr. Steve Morton and Dr. Rajan at the ICHA in Denmark

Happy New Year to everyone! I have been asked by the Environmental Research and Wildlife Development Agency of the United Arab Emirates to assist in the project titled "Investigation of Harmful Algal Blooms in Abu Dhabi waters". This study is the first of its kind in the region; to date basic data on phytoplankton composition and abundance is lacking. I was

asked by Dr. Anbiah Rajan to assist his program in species identification and data analysis. Besides phytoplankton ecology, the program will collect physical oceanographic and hydrographic parameter along with seawater nutrient and metal composition. Samples sent to my laboratory will be analyzed using the scanning electron microscope. Since this region of the world has not been examined, we anticipate a number of new species are waiting to be discovered.

In September I traveled to Copenhagen, Denmark to attend the 12th International Conference on Harmful Algae (<http://www.bi.ku.dk/hab/>). At this conference, the phytoplankton monitoring program was presented to this international audience. The poster "Utilization of Volunteers to Monitor Harmful Algal Blooms in the Southeastern Coast of the United States" can be found on the SEPMN website.



Thanks again for the participation of each group that makes this program possible.

~ Dr. Steve Morton

Plankton News

Published by the
Southeast Phytoplankton Monitoring Network

For more information or to submit an article, contact:

Jeff Paternoster
843-762-8657
jeff.paternoster@noaa.gov
Fax: 843-762-8700

Visit us on the web at:
<http://chbr.noaa.gov/pmn>

Student Volunteer Snapshots



Buist Academy
Charleston, SC
Teacher: Nancy Parson
7th Grade Science
Shem Creek
Volunteer since 2001

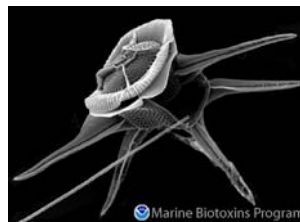
Myrtle Beach High School
Myrtle Beach, SC
Teacher: Bev Cottingham
Biology II
14th Avenue Pier
New Volunteer



Terry Parker High School
Jacksonville, FL
Teacher: Deb Lepper
AP Environmental Science
Sister's Creek
Volunteer since 2005



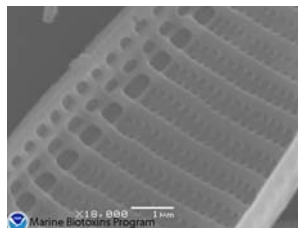
Mystery Plankton Contest



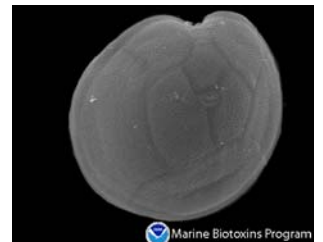
August/September
Ornithocercus magnificus
Many guessed *Dinophysis*!



October
Ceratiocortus horrida
Congrats to Amanda Leister from Myrtle Beach State Park



November
Pseudo-nitzschia australis
Lots identified *Pseudo-nitzschia*, but no one got the species!



December
Gambierdiscus toxicus
Congrats to Amanda Leister from Myrtle Beach State Park

SEPMN On-line

New Website (<http://www.chbr.noaa.gov/pmn>)



We are excited to announce the launch of our website redesign. Thank you to all who provided feedback on the flow of the site as well as the aesthetic aspects. Your feedback was very useful. Please take time to explore all of the resources available to you on the site. Some exciting new additions include:

Home - Mystery Plankton

Volunteers are encouraged to submit a guess as to the genus/species. The earlier you email your answer, the more chances you have of winning. A new piece of the image is revealed each week. Check out other contests under the 'Volunteers' tab.

Volunteers - Practice ID

Refresh or test your identification skills. There are 6 slides with multiple phytoplankton. See if you can identify what's in each slide.

Resources - Image Gallery

Check out volunteer submitted images as well as SEPMN light microscope and SEM images of species monitored.

**Mystery Plankton:
Can you ID this phytoplankter?**



A new piece of the puzzle will be revealed each week. Winner will be drawn at the end of the month from all correct entries. Only one entry per month.

Please view the [full contest rules](#).
Entry Deadline: January 31st 11:00am EST
[Submit Answer](#)

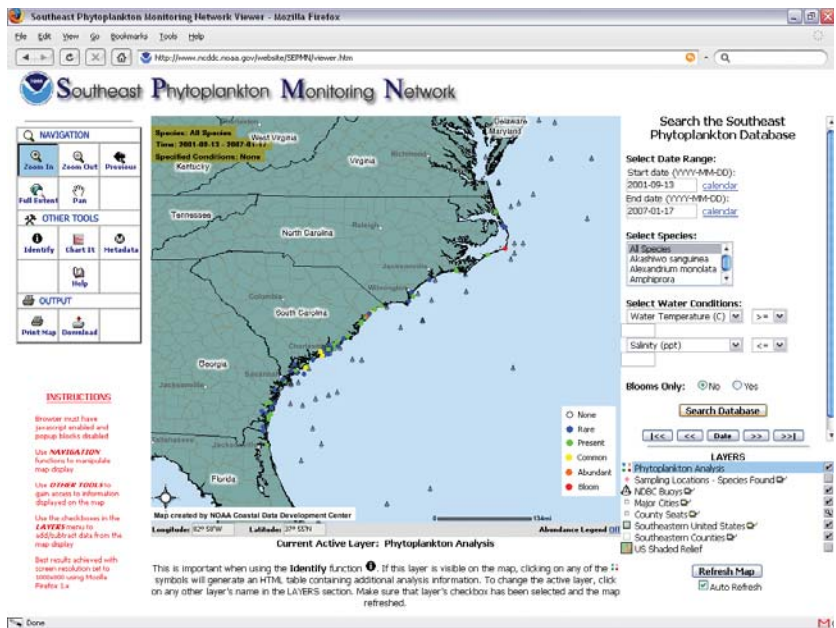
ArcIMS (<https://groups.ncddc.noaa.gov/SEPMN>)

Exciting mapping capabilities can be found under the 'Data' tab or going directly to the above URL. In addition to the GIS map, secure group collaboration, information sharing, event calendar and bulletin board can be found on this section of the SEPMN site.

For the best map interaction:

- Use Mozilla Firefox 1.x
- Enable pop-ups and java script
- Set the screen resolution to 1000 x 800
- Use NAVIGATION to manipulate the map
- Use OTHER TOOLS to access data point information
- Use LAYERS to add/subtract data from the map display

Be sure to check out the postings on the bulletin board and the SEPMN Calendar of Events to see what exciting things the monitoring network is doing. A data submission user guide is posted in the forum area of the ArcIMS site and on the main SEPMN site under Volunteers-Data/ID Sheets. If you have questions please contact Jeff Paternoster or Kimberly Nowocin.



SEPMN collaborated with the National Coastal Data Development Center (NCDDC) in Mississippi in order to bring an all-encompassing visual aspect to the volunteer collected data. Many thanks are extended to the NCDDC, Dr. Scott Cross, David Sallis and the many others who made this SEPMN goal, a realization. Visit www.ncddc.noaa.gov for more information on NCDDC.

SEPMN Expansion

the Virgin Islands (by Thea Monsion)



Hello from St. Thomas, where the weather is warm and the plankton are beautiful! Our small monitoring team at Coral World Ocean Park is led by Thea Monsion and Kristen Jetzke. Having monitored for SEPMN in Georgia at a previous job, I contacted SEPMN to see if we could set something up here and luckily we were able to.

We tow weekly and are always excited to see what we can find. Our location is Coki Point, which is on the northeast side of St. Thomas (the Atlantic side). We would like to expand this into an educational program once we learn all the local species and get a better idea of the trends, but for now our interest is on the effect on our fish. Coral World has an open system which means all of our exhibits have a water supply coming directly from the ocean. Whatever is in the ocean is in our tanks with our fish, so it's interesting to see what is out there.

Another interesting aspect in this area is *Gambierdiscus toxicus*. St. Thomas has a large number of residents and tourists affected by ciguatera each year and we would love to help participate in finding trends with the blooms so that we can better understand it. Not only that, but with the recent rise in temperatures and coral die offs, it's important to monitor the changes to see the true pattern. Thanks to Jeff and Dr. Morton for identifying our "mystery" samples!



the Hawaiian Islands (by Jenny Holen)



Aloha from Hawaii and the West Hawaii Explorations Academy. Our monitoring team is led by Jenny Holen along with about 10 high school students (with more joining every week). Samples are collected from the Honokohau Harbor Fuel Dock, which is on the west side of the big island.

We go out every Monday to get a sample and then students analyze it during the week when they have time. We have our own plankton laboratory with 5 microscopes and a MIC-D digital scope. The students seem to be very excited about the project, and they are always asking if they can go to the lab and count plankton! *That's crazy* since we are an outdoor charter school (that's right...our school has no

"normal" buildings) that is focused on marine science inquiry based projects. All writing essays come from student or teacher directed projects. Hence, we are writing and learning a lot about plankton, HABs, and the effects on the marine ecosystem.

This past September I was a NOAA Teacher at Sea participant who helped with research on Hawaiian billfish larvae and collecting plankton samples off the Big Island. I am using a lot of that knowledge and enthusiasm I gained from the Teacher at Sea program with the SEPMN phytoplankton project.



Spirit of South Carolina Tall Ship



The Spirit of South Carolina's Education Director, Sarah Piwinski, met with SEPMN staff in November to discuss establishing a partnership. The ship, part of the South Carolina Maritime Heritage Foundation, has the mission: "To offer a unique educational platform for students in the Palmetto state." One of the project outcomes is to "increase environmental awareness and vital scientific research of our oceans and coastal communities." To help accomplish this, students on the ship will be collecting and identifying phytoplankton and submitting the data to SEPMN. While most samples will be collected in and around the Charleston Harbor, there are plans for extended trips out in the Atlantic. SEPMN looks forward to working with the South

Carolina Maritime Heritage Foundation in this endeavor. To find more information about upcoming education programs or to follow the completion of the ship, visit their website at <http://www.scmaritime.org>.

Volunteer Spotlight: Doris Cohrs, Sapelo Island

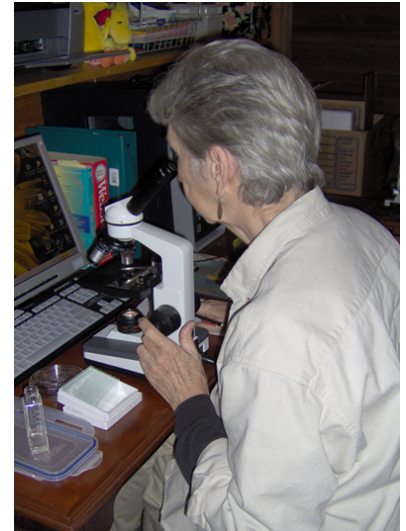


You may know her as Doris Cohrs or as the “Phyto Goddess.” She earned the title from her dedicated monitoring of Sapelo Island’s Post Office Creek. Located along the southern Georgia coast, Sapelo Island is Georgia’s fourth largest barrier island and home to the University of Georgia’s Marine Institute. Doris is a member of the Friends of Sapelo (FOS), a non-profit volunteer organization that was created to support the research, education, and outreach mission of the Sapelo Island National Estuarine Research Reserve (SINERR).

For the past three years, Doris has collected a weekly sample from Post Office Creek off a floating dock. But getting to the dock is no ordinary task. Every Wednesday, Doris takes the 8:30 am ferry over to Sapelo Island, a 20 minute trip (10 minutes shorter now thanks to the new ferry)! Once on the island, Doris hitches a ride to the science center where she performs her tow, but the ferry doesn’t depart for the mainland until noon. So for the next two and a half hours Doris works to escape the wrath of the no-see-ums by “bugging” Brooke and the rest of the SINEER staff. Once back on the mainland, Doris heads deep into the woods to “Midge Manor” (her and Don’s passive solar home) to have lunch with the neighborhood raccoons. Then it’s upstairs to the “lab” to analyze and count the sample.

“I’ve spent over 30 years as a bander of migratory songbirds, and fully appreciate the usefulness of ‘citizen science.’ I’m not a professor of anything, but much of the data I have helped collect over the years has been of use to the scientific community, at no cost to them. So when that enthusiastic, fantastic marine educator, Margaret Olsen, made us aware of the opportunity to learn something new by becoming a phyto-hunter, I jumped at the chance. It has been a challenge to segue from songbirds to microorganisms and I’m constantly finding unidentifiable ‘things,’ sending pictures of them to Steve and Jeff with large question marks attached. They are very patient with me, thank goodness!”

“I sincerely hope that my small effort in monitoring the health of one of our precious estuarine waterways is providing useful baseline data, so that years from now someone else will know for sure what is the ‘normal’ distribution of various phytoplankton species. This program is of great value! Teachers that participate with their classes are doing what I consider the really important part, educating our youngsters and making them aware that they are the guardians of our natural world. But it’s also nice to know that older retired folks can lend a helping hand, too.”



It’s interesting to go along with Doris to collect a sample since everyone at the dock knows Doris and is expecting to see her each Wednesday. DNR Mate of the *Katie Underwood*, Mark, put it best when asked to describe Doris. “Perfect, Beautiful, Sweet, Kind...” was his response. Whether it’s sunny or cloudy, hot or cold, calm or rough waters, buggy or bug-free, Doris makes the trip to Sapelo Island each week with a smile and a witty comment when she returns to submit her data (even after counting hundreds, sometimes thousands of *Amphiprora*!) And now the “Phyto Goddess” has earned a new nickname, from a prison pen pal she’s been writing and teaching plankton to for the past three years. He calls her “*Looks at Water.*” Doris, thanks from NOAA and SEPMN for looking at the water of Sapelo Island.

“Another pleasant morning on Sapelo, despite the bane of my existence, biting midges!
They even invaded my Bug Baffler shirt and hood!”

~ Words of Wisdom from a Doris Data Sheet

SEPMN Bulletin Board: What's Happening



March 9, 2007 Microscopy Workshop Hollings Marine Lab, Charleston, SC

Mark your calendars and reserve a spot! Space is LIMITED!

It's time for the 2nd Annual Microscopy Workshop! Come refresh your microscope techniques and learn about new technologies that you can bring back to the classroom. Dr. Steve Morton will be the key presenter and there will be hands-on activities for you to use in your classroom along with microscopy take home materials. There will be enough microscopes provided for everyone to work with one, but bring your personal or school microscope to work with if you like. Dress is causal, but you must wear closed-toed shoes. Contact Jeff Paternoster if you are interested in attending! Workshop will run from 9:00 - 5:00, with lunch being served.



Best Wishes to Wendy Wicke

Kayaking with Charleston County

Most volunteers know that Wendy has paddled on to different career waters. She is currently the Outdoor Recreation Coordinator for the Charleston County Park and Recreation Commission. For 3 years Wendy helped develop the SEPMN program and its volunteer base. Wendy is greatly missed by everyone!



Conserving Natural Resources

Plankton News now delivered via e-mail

To help reduce paper usage, the Plankton News is now being sent out to volunteers electronically. If you need a hard copy of the newsletter, please e-mail Jeff Paternoster at jeff.paternoster@noaa.gov. A reminder that all previous issues of the Plankton News are archived on the SEPMN website.

Southeast Phytoplankton Monitoring Network
219 Fort Johnson Road
Charleston, SC 29412