Captain's Corner

The NMEA Conference is coming! SCMEA is excited and proud to be hosting the National Marine Educators Association conference in Charleston this August. This is truly a unique opportunity. I hope you will be able to make it to the conference, even if only for a day or two. The conference planning committee has put together a superb program, and I would like to commend the conference co-chairs, Wendy Allen and Paula Keener-Chavis, for their tireless efforts in coordinating this process. I couldn't begin to do the job they have done. Find out more inside, or check out the SCMEA webpage for additional information.

Speaking of conferences, our president-elect, Carmelina Livingston, has been busy making plans for the next SCMEA conference in spring, 2000. Remember, with the NMEA conference in August, we have decided to run next year's SCMEA conference in the spring instead of the fall. The conference will be at the historic Penn Center in Beaufort County, March 30-April 2. Carmelina is already working on some creative ideas, so mark those dates on your calendar and start thinking about a presentation idea of your own!

At the 1998 fall conference, we identified "fisheries" as a theme for SCMEA teachers in the coming year. George Sedberry, a fisheries biologist with SCDNR's Marine Resources Division, gave an outstanding presentation at the fall conference, and many of you have told me how impressed you were by his talk. Please take the time to read Dr. Sedberry's article inside on marine reef fish management problems in the Southeast. I hope you will be able to incorporate a unit on this important issue into your classes. Effective management begins with education!

Well, it looks like Julie Cliff has done it again. In the last newsletter, I congratulated her as our marine educator of the year. This time, she has lead her talented team of Wando High School students to a victory at the regional competition for the National Ocean Sciences Bowl and then onward to win 3rd (out of 250 teams) at the national competition in Washington, D.C. Julie, it's only polite to let other people win some awards, too! I have some of Julie's former students in my undergraduate marine science courses, and they're still singing her praises years later. Congratulations to all the many teachers and students who participated in this year's competition.

Finally, let me end on a personal note. I have recently joined the ranks of parenthood and have subjected the SCMEA board and everyone else I know to the rantings of a proud pappa. As a new father, my appreciation for the role of teachers has grown even greater than before (as has my appreciation for diapers that fit). Educators are so important! I cannot think of a more honorable profession. I hope you will take the time to pause and congratulate yourself on a job well done and to recognize the difference you make in the world. This really is an exciting time for marine educators in our state, with the national conference this summer, the South Carolina Aquarium opening within the year, the Ripley’s Aquarium and the National Ocean Sciences Bowl both enjoying their second successful year, and a sense that marine researchers and teachers are working together more and more. Get involved! Ride the wave!

Until next time,
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SCMEA Conference
Spring 2000

Mark your calendar for the SCMEA Spring 2000 conference at the Penn Center in St. Helena Island, near Beaufort, South Carolina on March 30th - April 2nd (and you've guessed right - it will be a 4-day conference!). It's the millennium conference and it promises to be both educational and lots of fun with field trips, workshops, sessions, night-time excursions, lots of food, Ocean Olympics, and even a game of Ocean Jeopardy. Any input or ideas for this special conference, please contact Carmelina Livingston, SCMEA President Elect at (843) 849-2815 or email: clivin@awod.com. Look forward to seeing you there!

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SCMEA Bulletin Board

NMEA Conference
The National Marine Educators Association annual conference is coming August 6 - 11 to the College of Charleston. Registration will be limited, so get your applications in early to reserve your spot! Please consider volunteering to assist the steering committee with numerous tasks during that week. See page 7 for details.

Reminder!
The deadline for the Fall issue of SeaScripts is July 1, 1999. Please send all newsletter contributions to Arla Jessen at jessen@ mindspring.com.

SCMEA Board Meetings
Please join us for our next SCMEA Board meeting during the NMEA conference on August 9th from 4:00 - 5:00 at the Lightsey Conference Center, College of Charleston.

Our fall meeting will be Saturday, October 9th at Dewees Island. Catch the 10:00 AM ferry and make a day of it! Lunch will be provided. Contact Rob Young (843) 349-2277 if you plan to attend and for directions.

Marine Educator of the Year
Application deadline for nominations of the SCMEA Marine Educator of the Year award has been moved to January 15th due to changes in conference scheduling. Please be thinking of who you would like to nominate and look for applications in the fall newsletter.

Auction Items Needed
A huge factor in making this year's national conference a success will be having numerous quality items available for auction. Please contact Robin Stine at 843-953-8057 if you have items you would like to donate or know of someone with relevant goods or services that she may contact.

Lowcountry Hall of Science and Math
College of Charleston has a new facility to assist teachers with improving math and science literacy. The Lowcountry Hall of Science and Math has a resource center and computer lab available to all educators. For more information contact the director, Leslie Sautter at 843-953-7847.
Marine Reef Fish Management Problems in the Southeastern Atlantic States  by George Sedberry, SC DNR

Fishes are a renewable natural resource because they reproduce and replace themselves. Harvesting of fish by commercial and recreational fishermen is a desired use of these natural resources but the trick is to determine how many can be removed without affecting the ability of the population to sustain itself. We want to have fish for food, but we must leave enough individuals in the ocean to produce future generations. Fishes should be harvested before they die of old age (that would be considered a waste of the resource), but they should live long enough to reproduce a number of times to insure that there is another generation.

At the Marine Resources Research Institute in Charleston, we are engaged in research and monitoring aimed at determining the "status of the stocks" of reef fish populations off the coast of South Carolina and adjacent states. In determining the status of the stocks, we attempt to estimate the abundance of fish in a population and determine the number of individuals that can be removed from the population without harming it. Our studies indicate that some species are over-fished.

Reef fishes present some difficult fishery management problems. The reef fish complex is diverse, consisting of snappers, groupers, porgies, grunts and other families of fishes, with over 70 species in the Snapper/Grouper Complex. This Complex is managed as a unit by the South Atlantic Fishery Management Council in Charleston, which develops and implements management plans for fishery species in federal waters (more than three miles offshore). Because of the diversity of species, the complexity of life history patterns, and the levels of fishing pressure, the management of the many species that occur on reefs off South Carolina is a complex task.

The fishery off South Carolina is not a single species fishery, so traditional management methods may not work. Instead, the fishery off South Carolina is considered to be multi-species because many species of slow-growing reef fishes are caught whenever fishing occurs. Fishing gear cannot target only one species because many different species occupy a single area of reef habitat. As a result, when single-species management plans are applied to reef fish, they do not work because the species that one is trying to conserve continue to be caught. Even if fishermen make an effort to release these fishes they may still die. For example, Nassau grouper and jewfish have been severely over-fished in the U.S. and elsewhere, and fishermen in the U.S. are no longer allowed to retain these species. However, these two species continue to be caught, because they occur in a diverse assemblage of reef fishes, and fishermen are continuing to target other members of that assemblage (other groupers or snappers). Although fishes such as Nassau grouper and jewfish must be released, they often suffer irreversible trauma by being caught, and may not survive. Traditional management measures such as minimum sizes and closure of the fishery don't work if the species and smaller sizes continue to be caught as "bycatch" and die as other species are targeted.

In addition to being very diverse, reef fishes have complex life histories that make them more easily subjected to over-fishing. Many of them are very large (a jewfish can reach 700 lbs), grow slowly, are long lived and mature late in life. It takes a long time to replace a large, old grouper. Because these fish mature late in life, they often reach marketable size before they have matured and spawned for the first time. Removing fish from the population before they are mature and reproduce even once is a precursor for disaster. Fishes that mature late in life have survived many years before spawning. They have the genetic makeup that insures this survival, and by spawning late in life they pass these survival genes along to the next generation. Removing these fish before they are caught removes those fishes that have the best genetic makeup.

Fishes produce eggs in proportion to their body size. A red snapper that is 62 cm long produces as many eggs as 212 red snappers that are 42 cm long. Traditional fishery management plans use minimum sizes, which allow fish to mature and spawn once before being caught. However this practice (and the desire by fishermen to catch large fishes) results in the biggest genetically fit individuals, which produce the most eggs, being removed from the population. It is like killing the goose that lays the golden eggs.

A solution to these management problems may lie in the concept of the Marine Fishery Reserve. These would be designated areas of the ocean where fishing would not be allowed, and would be similar to terrestrial parks that are protected from hunting and logging. These reserves would allow populations of fishes to grow under natural conditions, and would protect a portion of the population that could produce future generations of fish. Fish larvae disperse in the plankton, and it might be possible to enhance fisheries outside of the reserve, if a sufficient number of spawners are protected inside the reserve. Further study is needed to determine the effect of reserves on fish populations outside of the reserves.

For additional information on reef fishes and their life history and management, see the web sites on page 4, or contact George Sedberry at the SC DNR, P.O. Box 12539, Charleston SC, 29422-2539 or 843-762-5045 or sedberryg@mrd.dnr.state.sc.us.
**Marine Happenings**

**Hawaii Trip**
Spring Break 2000 includes 4 islands April 14 – 24 for $2495 all inclusive. High school students and adults. Please contact Julie Clift for more information at 843-849-8367.

**Galapagos/Ecuador Trip**
Late June 2000. One week in Ecuador and the Amazon, one week Galapagos Islands cruise. Approximately $2850 all inclusive. Six day extension to Machu Picchu, Peru additional $1200. Contact Julie Clift (843-849-8367) or Arla Jessen (843-886-8211) for more information.

**Fishes of North Inlet Estuary**
Tour Baruch Marine Lab near Georgetown and assist reserve scientist as they take measurements and pull a seine. At the lab, everyone helps sort, identify and measure the collection of fishes, shrimps and crabs. The program is free and limited to 10 people ages 10 and up. Pre-register by phoning 843-546-6219.

**Turtle Fest’99 at Cypress Gardens**
Turtles from around the world will be present for programs, activities and events for all ages. Contact Ken or Carolyn for more information at 843-553-0575.

**Sea Camp**
University of Georgia Marine Extension Services offers environmental, hands-on, one week camp sessions June 21 - July 30 on Skidaway Island. Campers involved in marine biology/coastal ecology experiences (ages 6 – 16). Please contact Melanie Melancon at 912-599-2496 or melmel@uga.edu.

**Coastal Appreciation Programs**
June 15 – August 7
Enjoy educational and fun natural history programs throughout the summer. Learn about whales, sharks and sea turtles, catch fish and crabs, search for shells, touch a snake and more. Contact Myrtle Beach State Park at 843-238-0874

**Marine Fisheries Web Sites:**
http://www.skio.peachnet.edu/noaa/grnm5.html
This is the Grays Reef National Marine Sanctuary home page, with links to other marine sanctuaries and fisheries conservation programs. Includes links to educational sites offering posters and materials for curricula.

http://www.hmu.auckland.ac.nz:8001/sanctuary/
This site describes marine reserves in New Zealand, with links to other reserve and fish conservation sites. This site has a nifty marine reserve simulator that allows one to manipulate fishing pressure and see the effects on fish population size, spawning, recruitment or extinction.

http://www.octopus.gma.org
Live satellite transmissions from student research projects at Grovers Reef Marine Reserve, during the week of 19 - 28 March. Underwater video, still photos.

http://biogeo.nos.noaa.gov/saehf/
This is the National Ocean Survey Essential Fish Habitat site for the southeastern U.S. It includes descriptions of SCDNR reef fish sampling and results.

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**South Carolina Aquarium Launches Conservation Programs**

From swordfish to sargassum to salamanders, the South Carolina Aquarium is initiating its conservation education programs in advance of opening. Working with SCMEA member, Kathy Gillespie's Earthforce class from Springfield Elementary, the Aquarium joined with the Pew Charitable Trust's Seaweb program to raise public awareness of the ocean fisheries dilemma. Kathy was inspired to participate in this effort as a direct result of SCMEA's 1998 conference presentation on fisheries issues. Her class' efforts were covered in the Wall Street Journal's southeast section and in the Charleston Post and Courier.

The South Carolina Aquarium's ocean conservation program is entitled "Seaworthy," and will continue to develop as the Aquarium staff grows. The watershed conservation efforts of the Aquarium, through a program entitled "Sweetwater," will grow as well. Seeking partnerships and synergy with other programs in the region is a key goal of the Aquarium's program efforts, so if you have ideas, please let us know!

The aquarium building is over 80% complete. In the meantime, we are hiring staff and moving into tiny cubicles to accommodate our growth. Late in the summer, there will be at least three positions hired in the education department: multimedia manager and education specialists. Watch the Aquarium's web page for information: http://www.scaquarium.org.
The National Ocean Sciences Bowl
Wando High School Places Third
by Thomas Perkins, Post and Courier

Five self-described “nerds on spring break” from Wando High School in Mt. Pleasant took national honors in Washington on April 12, winning third place among 250 high schools at the National Ocean Sciences Bowl. The Wando team is composed of two juniors and three seniors: Justin Sellers, 16; Jack Deslippe, 16; and Jeremy Zimmerman, Shawn Malone and Greg Kinkade, all 18. Their coach Julie Cliff, teaches honors marine science. She also coaches the academic team and sponsors the marine biology club at school. She has taught for 25 years at Wando and is the South Carolina Marine Educator Teacher of Year for 1998 – 1999.

After they arrived in Washington on April 8, the five students and Cliff toured the capital for the first part of the weekend, looking at monuments and visiting museums such as the Smithsonian’s National Air and Space Museum. The Charleston County School Board helped fund the trip through its Laura Brown Fund for national competitions. The group also visited the Baltimore Aquarium for both leisure and study. “After 10 or 15 minutes, other people followed us around asking questions because there weren’t any tour guides available.”

On Saturday, April 10, the group checked into the Kellogg Conference Center at Gallaudet University where the competition was held. Wando was among 18 teams that advanced to the D.C. finals by winning their regional competitions in February. The regional competitions featured 1,200 students representing 250 high schools. They went through two days of preliminary round-robin matches, double-elimination rounds and final rounds. Each round lasted approximately 30 minutes. Wando was undefeated through the first round-robin match and through the first two double-elimination rounds.

Defending champion Lexington High School (Massachusetts) won first place and full scholarships to participate in the Secretary of the Navy’s Engineering and Science Residential Program for six weeks at the University of Southern Mississippi. Mount Carmel High School of San Diego took second place and earned partial scholarships to participate in the Sea Education’s SEA Semester program for undergraduates. Wando and fourth-place finalist Mission San Jose High School of San Jose, California received plaques and limited-edition posters by artist Ron Zaneveld.

“The competition dealt with chemical, physical, biological and geological oceanography,” said Cliff. “Some of our students had knowledge in all four areas, while some of them were better in specific subjects.” The captain, Shawn Malone, is just brilliant when it comes to any science, social studies or geography.” Wando’s success formula deviated from that of the competitors, who could be found in the halls cramming for each round. Each of the teammates stressed the key to competing was to not get too uptight. “This is how we did it,” explained Sellers. “We had fun, and we didn’t take it too seriously – just enough to do well.” The team members brought a much-needed sense of humor to the competition. “ Nerds On Spring Break” was their rewrite of the National Ocean Sciences Bowl’s acronym, NOSB.

Team members extracurricular activities include the academic quiz bowl team, chess club, book club and the marine biology club along with serious affinities for Star Trek and video games. The team members would appear to unabashedly fit the “nerd” stereotype, were it not for their sense of humor. “We were definitely the most social team,” said another. Cliff remembered that on the first night during dinner, the five team members seated themselves at five different tables in order to meet their opponents. “I met a teacher from northern Oregon, and we’re going to try to set up an exchange next year if I can find someone who can donate some plane tickets,” said Cliff. At least two of the seniors have decided to attend the College of Charleston next year. The two remaining junior team members are already recruiting classmates for next year’s competition.
Flotsam and Jetsam

By Robert Hendrickson, The Ocean Almanac

Although the famous pair “flotsam and jetsam” is almost inseparable today, the words were formerly distinctly different legal terms for types of wreckage found in the sea. Flotsam, from the Old French word floater, meaning “to float,” referred to the goods or parts of a wreck that were found floating on the sea and were said to belong to the Crown. Jetsam, which could be claimed by the lord of the manor, derived from the French word jeter, meaning “to throw out,” and referred to cargo or equipment purposely thrown overboard, or jettisoned, in order to lighten a ship in an emergency. Jetsam wasn’t floating goods, but could be considered flotsam if it was between the high and low water lines, because no one could tell if it had been jettisoned there or had floated there. Another term, lagan referred to jetsam lying at the bottom of the sea but usually marked with a buoy in order to be found again by the ship’s owners, and any goods found in the sea were called findals, including the abandoned ship, or derelict, itself. Today the metaphor “flotsam and jetsam” is used mainly in cliches like “the flotsam and jetsam of life” – the remains of human “shipwrecks.”

The Other Titanic

By Robert Hendrickson, The Ocean Almanac

There is a remarkable precedent for the Titanic sinking – in fiction. Back in 1898 Morgan Robertson had written a popular novel entitled Futility, which told of a great “unsinkable” luxury liner named the Titan that sank on her maiden voyage after hitting an iceberg and lost almost all her passengers because there weren’t enough lifeboats aboard. The amazing similarities between the Titan and Titanic disasters, called by some a near-perfect example of “promnesia” (or the memory of the future) on Robertson’s part, are best shown in the chart below:

<table>
<thead>
<tr>
<th></th>
<th>Titan</th>
<th>Titanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship tonnage</td>
<td>75,000</td>
<td>66,000</td>
</tr>
<tr>
<td>Propellers</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Speed at impact</td>
<td>25 knots</td>
<td>23 knots</td>
</tr>
<tr>
<td>Passengers</td>
<td>3,000</td>
<td>2,207</td>
</tr>
<tr>
<td>Lifeboats</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>Month of sinking</td>
<td>April</td>
<td>April</td>
</tr>
</tbody>
</table>

Amazingly, ships were not required by federal law to have enough lifeboats for all passengers on board until after the Titanic disaster of 1912.
NMEA Conference Volunteers Needed

The National Marine Educators Association’s annual conference will take place this August 6 – 11 at the College of Charleston. Volunteers are greatly needed to assist with many aspects of the conference, including hospitality booths and concurrent session moderators. Those who volunteer for the entire day will be attending the conference as “non-registrants” for that day. This may be an excellent opportunity for you to attend a portion of a national conference (we encourage you to register as a full participant), network with other marine educators and catch a few sessions or symposia at no registration cost for that day. Special events and fieldtrips are not included. Please contact Robin Sheek at 843-881-4110 for hospitality and Leslie Sautter at 843-953-7847 for concurrent session volunteer positions.

Become a Member of the South Carolina Marine Educators Association
Join a group of dedicated teachers, naturalists, scientists and others interested in studying and teaching about the world of water, both fresh and salt. SCMEA provides a communication network for members to share information and ideas through newsletters and an annual statewide conference. Membership dues are $10.00 a year and include three newsletters, a discount on the registration fee for the annual conference, and an opportunity to interact with some of the most dynamic educators in the state!

Name: __________________________________ Place of Employment: __________________________________

Address: ___________________________________________ Street or PO Box: ________________

City: ________________ State: ________________ Zip: ________________

Home Number: __________ Work Number: __________ Email: __________

_____ One year - $10 _____ Three years - $25 _____ Five years - $40

Please send completed form with payment (make checks payable to SCMEA) to:
Phil Astwood, Treasurer, SCMEA, Center for Science Education, University of South Carolina, Columbia, SC 29208.

Join the National Marine Educators Association
Begin to network with educators around the country sharing a common love and concern for our water world. Membership benefits include a subscription to Current: The Journal of Marine Education, the newsletter, NMEA News; and registration discounts for some of the best annual conferences you will ever attend!

Name: __________________________________ Occupation: ________________________________

Address: ___________________________________________ Street or PO Box: ________________

City: ________________ State: ________________ Zip: ________________

Individual Memberships
Active membership: Any person who supports the goals of NMEA.

_____ Active, 1 yr - $40

_____ Active, 2 yrs - $78

_____ Active, 3 yrs - $118

Chapter Affiliate: Any person who belongs to a regional chapter (i.e., SCMEA). Chapter: ____________________________

_____ Affiliate, 1 yr - $35

_____ Affiliate, 2 yrs - $68

_____ Affiliate, 3 yrs - $103

Please make check payable to NMEA and mail to:
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PO Box 1470, Ocean Springs, MS 39566-1470
National Marine Educators Association
Annual Conference

Exploring Our Coastal Heritage:
A Voyage Through Cultures, Lands, and Seas

August 6 - 11, 1999
Charleston, South Carolina

Explore our coastal heritage in southern style in historic Charleston by the sea! Expansive salt marshes, meandering tidal creeks, remote barrier islands, old cobblestone streets, former rice plantations, and gullah-speaking sweetgrass basket weavers create a magnificent backdrop to this special NMEA conference that will long be remembered. Hosted at the College of Charleston, established in 1770, the conference promises excellent concurrent sessions, dynamic guest speakers, field trips to unique ecological and historic locations, great southern cuisine, and of course, the brand new South Carolina Aquarium!

To receive a copy of the conference brochure with registration material, please contact our conference co-chairs:

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