Captain's Corner

Hello Again,

It is amazing how quickly the writing of "Sea Scripts" comes around. We still need new contributions of articles and activities for the newsletter. This organization is made up of such awesome teachers. It is a privilege for all of us on the board to serve you. Please take the time to write an article about an activity you use in your classroom or any article that you feel will make all of us better informed. You each have such a great impact on marine education throughout the state.

Great News! Cindy Rinkas has been awarded and will receive the "Outstanding National Marine Educator of the Year Award" at this summer's convention in Chicago. I can't imagine anyone more deserving than Cindy. She exemplifies what this organization is all about. Many accolades to Paula Keener-Chavis for her thoughtful and well researched nomination of Cindy. Some of the best teaching is done by teachers like Cindy who work in the public and private sectors at the pre-college level. Elementary teachers, with some exceptions, are the backbone of our organization. To those of you who are elementary teachers, sometimes I do not think you realize your contributions and are hesitant to have yourself nominated for the outstanding marine educator in the state. You should consider yourself eligible for the award! We have several scholarships and in many cases the same people have received them because only a few apply! I have heard many of you speak and am so impressed with all that you do in your classroom. You deserve many accolades!

Sarah Mitchell, along with the Georgia Association of Marine Educators, has put together an outstanding conference to be held in Savannah, Georgia. This year's conference is one of the most economical conferences we will ever have. We are attempting to include a book on the ecology of Jekyll Island and surrounding area for use at the conference. It is extremely well illustrated and chock-full of information. Most of the comments are adaptable to the South Carolina coast. Sarah has put together probably the most complete set of field trips that we have ever assembled. If all this is not enough to entice you to join us in Savannah, we are going to have a raffle for an all expense paid trip for 12 days to Ecuador and the Galapagos Islands from Miami, Florida. The cost of the trip is approximately $2,500. Sarah also has Dr. Eugene Odum as our keynote speaker. When I was in college, no comments please, he wrote the book which was considered the "bible" of ecology. His contributions to the field have been enormous. Come hear him speak!

We are still excited about establishing a web page! Leslie is working with the people at Sea Grant on devising a site.

It is very easy to set up, but we need your input to make the SCMEA web page as useful as possible. This is your home page and we need you to help us with your ideas.

We still have a lot of ground to cover for our national convention which will be held in Charleston in 1999. Please volunteer to help our co-chairs, Wendy Allen and Paula Keener-Chavis. We are still developing the idea of eco-outings. If you have any suggestions please give them to Julie Cliff, Fanya Paouri, or Lynn Corliss.

Once again, let me thank each of you for your participation in the finest organization of its type in the state. This is a credit to the quality of people who join us. I've heard from so many members that the conferences we offer provide them with a closeness of colleagues, great ideas for teaching, and easy access to sessions not available in larger organizations.

Please make plans to join us October 10-12 in Savannah, Georgia. Just think, someone is going to leave that meeting with a trip to the Galapagos Islands!

Captain, Fred
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SCMEA Bulletin Board

Conference Auction Items
The annual auction is the largest fund raiser of SCMEA - your donations are greatly needed and appreciated. Because of the joint conference with GAME, please be certain that you identify items you donate as coming from SC so that proceeds from the auction can be divided appropriately. See article on page 3 for more information about the conference in Savannah.

Reminders!
The deadline for the Winter issue of SeaScripts is November 15. Please send all newsletter contributions to Arla Lindsey Jessen (jessena@cofc.edu).

South Carolina Aquarium Update
The pile cap for the Ocean Tank at the SC Aquarium is being poured - a major structural unit and 97% of the total pilings have been completed. Vertical construction will now begin! Opening is still planned for 1999. Work on the aquarium education curriculum has begun. The Master Plan, the first of its kind created by SC educators with a team of consultants from the National Aquarium in Baltimore, will be ready to put into action later this summer.

Key Largo Field Trip
Does spending a week in Key Largo, learning marine science as you snorkel through seagrass beds, mangroves, and coral reefs sound enticing? In as effort to familiarize teachers with this terrific learning opportunity, and encourage you to take your own students on this trip, I am taking a group of educators to Key Largo next summer.

We'll drive in our own vehicles, leaving the morning of the Fourth of July. We'll caravan to Ft. Pierce, staying overnight. Sunday afternoon will find us walking the Anhinga Trail in the Everglades, and by Sunday evening we'll be established in our rooms at the Marine Lab in Key Largo. During the next week, we'll participate in a variety of snorkel trips, labs, and lectures relating to the seagrass beds, mangrove prop root systems, and coral reefs. At least three different coral reef trips, two mangrove trips, and a seagrass bed trip will give you plenty of water time, while labs and lectures provide the background content information to make the entire experience much more meaningful in a broader context.

I have reserved spaces for 42 participants. Students in grades rising fifth and above are eligible. The cost is approximately $560, which includes everything except transportation to and from Key Largo. A $100 nonrefundable deposit, per person, is required by December 1 to reserve your spot. Please call Cindy Renkas, (803) 795-9746 for more information!
1997 SCMEA/GAME Conference
"Coastal Connections"
Savannah, Georgia, October 10 - 12, 1997

Make plans to attend the 1997 SCMEA conference, "Coastal Connections," in Savannah, October 10 - 12. You will have the opportunity to discover coastal treasures for yourself and for your students including spectacular field trip sites, inspiring educational opportunities, and stimulating speakers. One of the reasons that we are able to offer so much for this year's conference is that we are joining forces with the Georgia Association of Marine Educators (GAME). SCMEA and GAME have formed an alliance just for this year's conference. The association of two state chapters of the National Marine Educators Association (NMEA) will multiply the marine science teaching adventures, expand field trip explorations, and add to the general revelry.

Conference registration is a bargain at approximately $70. Lodging will range in cost from $11.50 (rustic dorm-like room and breakfast) to approximately $59 (single or double) per night for a hotel room. You can also choose to stay at Savannah beach or in the Historic District.

Field trips during the conference will offer you the finest places for coastal ecology adventures. You can take a boat cruise to a spectacular and uninhabited barrier island, relax on one of the secluded beaches, explore a pristine maritime forest, or photograph coastal birds in the vast unspoiled marshes and estuaries. Spend your day strolling along a beautiful beach collecting seashells or hunt for fossils in areas known only by a few of the locals. You may be the one to find a giant tooth from a fossilized great white shark! The adventuresome can paddle a sea kayak from one barrier island beach to another, island hopping with the dolphins.

The conference will begin Friday with an array of field trips and workshops. Friday evening will feature Todd Ballantine, author of the truly indispensable coastal resource Tidelands Treasures, who will take us on an armchair journey featuring many of the coastal organisms that you have been wondering about for years. A wine and cheese social and a book signing session will offer a special time to meet the author.

Saturday's concurrent sessions will be held in the new Coastal Georgia Center, located in Savannah's beautiful Historic District. Dr. Eugene Odum, often called the "Father of Modern Ecology" will give the Keynote presentation. It is a rare treat to hear Dr. Odum and gain his clear insight on coastal ecology. This downtown center is near the foot of the Savannah River bridge, Highway 17 and I-16, which makes the conference convenient for a one-day trip. Saturday night, Fort Jackson will welcome us with cannon firings plus fife and drum music for a traditional low country dinner on the Savannah River. Sunday will offer half and full day field trips.

The conference will offer the best new classroom activities for K - 12 students and a cornucopia of hands-on teaching techniques. Additionally, scientists from the Skidaway Institute of Oceanography will provide presentations on ocean research conducted off Georgia and South Carolina. Learn the latest information about the role the oceans play in global warming, barrier island formation, beach erosion, and energy cycling in salt marshes.

For more information about the conference or ways to help, please contact Sarah Mitchell (912-589-2381 or smitchell@ocean.nos.noaa.gov). Please remember that although this conference is taking place in Georgia, it should be a joint effort by all. We hope to have the best turn out ever!
Marine Happenings

Galapagos Islands
Visit the Galapagos Islands for one week during Christmas 1998 aboard a 60' yacht, all inclusive, for $2395. Adults only. Contact Julie Cliff (803) 848-8367.

Hawaii Trip
This is a one week spring break trip (1998) for high school students to Kauai, Maui, and the Big Island. Costs are approximately $1345. Air fare is additional. Contact Julie Cliff (803) 848-8367.

Cypress Gardens Environmental Education Field Trips
Sept 8 - Nov 22
A hands-on science and nature learning experience focusing on native wildlife and swamp ecology. Several different and exciting classes are offered for each field trip. For Grades 1 - 8. Contact Ken Alfieri or Heidi Schneider (803) 553-0515 or (803) 553-1167.

SC Nature Based Tourism Association Annual Conference
November 5 - 7 for environmental educators, nature-based professionals, planners and government.
Contact Duane Kampe (803) 865-7722.

USCB Center for Coastal Ecology: “Dynamic Islands and Meandering Marshes”
September 27
Explore the movement of sand, water and mud with a USC Beaufort naturalist on Pritchards Island. Limit 15 people, no fee. Contact Lynn Corliss at (803) 521-4148.

October 4
Come walk with a USC Beaufort naturalist through the woods and learn about the traditional uses and ecology of plants. Limit: 15 people, no fee. Contact Lynn Corliss at (803) 521-4148.

Old Santee Canal State Park Fall Canoe Trips
Sept. 13 & 27; Oct. 11 & 25; and Nov. 8 and 22
Enjoy a canoe trip through historic Biggin Creek, headwater of the Cooper River. For all ages and experience levels. $10 per person. Contact Lee Lowder at (803) 899-5200.

Classroom Currents

Ocean Shower Curtain Mural
by Stephanie Gatton and Jodi McMillan, Charleston, SC
Try this as one of your culminating activities:
1. Have children draw a plant or animal onto paper.
2. Have children trace the picture with a black permanent marker.
3. Cut out the picture and tape onto the table or floor.
4. Place a plastic white shower curtain over the picture and have the children trace the picture with black sharpie marker onto the shower curtain.
5. Have children color the picture using colored pencils or permanent markers.

Variations:
• use a clear shower curtain
• use tempera paint to color the pictures on mural
• other murals themes: try the different zones of the ocean with the different animals and plants, rivers emptying into the ocean, or the different layers of the rainforest!

Creating Sand Dunes
by Barb Hawkins, via the Internet
Here is an activity which will help explain how sand dunes are formed and how different circumstances effect the movement of or formation of sand dunes:
1) Label two flat pans A and B.
2) Place 1.5 liters of sand in each.
3) In pan B arrange stones and grass in different areas throughout the sand.
4) Turn a 2-speed hair dryer on low speed. Hold it at a 45 degree angle, 10 cm from one end of pan A. Hold it for one minute. Record all observations.
Repeat with pan B.
5) Change to high speed on dryer. Hold it at a 45 degree angle, 10 cm from one end of pan A for one minute. Record the effect. Repeat with pan B.
6) Sketch a diagram of the appearance of the sand in each pan.
7) Level the sand in pans A and B. Repeat steps 3 - 5 for each, blowing the air for 3 minutes each time. Compare results. Relate results to the sand dunes on the beach.

Man Attacks Sharks!
by Fred James
Man has complained about shark attacks. Sure some of us end up in their digestive tract. And we always seem to raise such a fuss. But if the truth be known, we eat more of them than they eat of us!
Awesome Aquarium!
by Robin Rutherford, W.B. Goodwin Elementary SC Marine Education Grant Recipient

It has been an awesome experience having a salt-water tank in my classroom. Through the SCMEA Education Grant, I was fortunate enough to be able to purchase a 55 gallon salt water tank with a pump, hood, light and metal stand. Since I teach science lab classes at tan elementary school, this tank became a learning experience for many children at our school.

The salt water tank was set up but empty in our classroom on a Monday morning in October. As the third grade classes filed in for science lab that day, they began to make observations about the new aquarium in the classroom. We compared how this tank would be different from the freshwater tank that we already had in the lab. Then began the fist of many jobs that the children began to assume with our new tank. We filled it up with water. I decided that this tank would be filled with salt water from the Ashley River, which was not far from our school. I wanted it to be filled with local water so that the children could begin to realize the composition of our local salt water environments. Each child was part of two lines in front of the aquarium that made up a bucket brigade. They each took a large cup full of water from one of the eleven buckets of river water that my husband and I had filled the night before. They then made their way up the line to empty their cup in the aquarium and go back and start again at the end of the line. We made observations and inferences about the color and smell of the water. We tried to predict when the water would appear clear due to the action of the pump. The children also made an exciting discover. They found two small grass shrimp living in the river water! We were so excited when we released them into the tank and tried to watch them swim.

We brought these animals back to our classroom salt water tank to observe and classify. The students were amazed at how shrimp could swim, eat and maneuver. Most of the children had only seen shrimp as part of their dinner. The snail’s movements and eating habits in the tank were also interesting to watch. Often when a class would come into lab we would make a game of “Who can find the snail?”

Having the salt water tank helped get parents involved in our science lab marine activities. In January, a kindergarten parent brought in some live mud minnows and a baby blue crab for our tank. She also loaned us a stuffed spot-tail bass for a few weeks. All the science lab classes were able to observe and classify parts of a fish without the smell of dead fish or movement of live fish. Introducing mud minnows into the salt water tank made for some interesting events in the coming days. The students were able to observe a food chain in action. The shrimp ate the fish food and the mud minnows ate the shrimp. I also told them about how larger fish eat mud minnows in the rivers and oceans. Even though most children did not like to see the shrimp get killed, they began to understand how the marine plants and animals interact with and depend on each other.

In February, fourth-graders began studying the science process skills. They compared the salt water environment and other classroom environments in their science logs. They made observations, classifications, inferences and hypotheses about the environments. These students also wrote questions about the salt water tank made for some interesting events in the coming days. The students were able to observe a food chain in action. The shrimp ate the fish food and the mud minnows ate the shrimp. I also told them how larger fish eat mud minnows in the rivers and oceans. Even though most children did not like to see the shrimp get eaten, they began to understand how the marine plants and animals interact with and depend on each other.

Having this tank in my science lab has really meant a lot to the children as well as myself. It is just the beginning of many new water adventures to come. I plan to take the third graders to the river nearby to explore local plants and animals. Also, I’m hoping to take some classes to Folly Beach County Park in May to collect specimens for our tank. Every year, we’ll have new investigations and explorations thanks to the abundance of life in the local waters around our community. In addition, we’ll have great future field trips when the aquarium opens in 1999. Thank you so much for giving me this awesome opportunity.
Spined (Cartilagenous) Wonders - Sharks

by Fred James, Presbyterian College

In June, I was in Coral Gables Florida taking a course in tropical vegetation, when I started thinking about all the wonders beneath the sea. Having had the opportunity to swim with many beautiful animals my thoughts drifted toward my encounters with the amazing sharks. I have always been awed by the gracefulness with which they prowl the ocean realm.

In the Galapagos we have been surrounded by hammerhead sharks several feet long. They just looked at us and passed on their way! Shortly after this experience we cut up some fish for dinner and dropped the remains off of our diving platform and a group of Galapagos sharks almost jumped on the platform. It was truly a scary sight. Immediately one’s sense of wonder became a sense of fear. Once in the water away from all this blood and guts, the sharks seemed to consider us as just part of the environment! Never once have I felt threatened by sharks. I would be less than candid not to say that your blood will rush quicker through your body upon such an encounter. I have always taught my students to observe sharks in a non-threatening manner.

One of my greatest ambitions is to be able to observe the Great White Shark in its natural habitat. The size of these organisms are almost beyond my imagination. I will always remember, on one of the shark specials, where they place an inflated suit of a man on the open ocean. They had seeded the water with blood and I watched a great white come up and almost completely swallow the suit! A colleague of mine told me of being in a 20 foot dinghy pouring blood in the water to attract the great white shark in Baha, California. Suddenly he spotted a great white much larger than his boat. He immediately dropped to the bottom of his boat and literally prayed that he was not going to be the shark’s next meal!

We have always assumed that death was imminent when swimming with these types of sharks, but recent evidence indicates this might not be true. I saw a documentary where a famous wildlife photographer used an underwater submersible to get amazing pictures of these great white “beasts”! He noticed that the great white would attack the submersible as it stood still but quickly retreated when the robot moved toward the shark. This photographer developed the hypothesis that great whites might not attack if the person in the water exhibited aggressive behavior. He decided he was going to test his hypothesis by leaving his cage armed with a six foot rod which he proceeded to poke at the great white as it swam by! The shark seemed startled and moved away. The photographer continued to do this until some five sharks started to circle around him. He thought it might be the better part of wisdom to return to his cage!! This “experiment” seems to indicate that our knowledge of this fish is so incomplete. I must admit that I am not sure that I would have had the courage to explore the photographer’s hypothesis. I do know that more people are killed by crocodiles, elephants, and bees in one year than have been recorded for sharks in 100 years. Many times what appears to be a shark attack results from a drowning and the shark is recycling nature’s organic material, in this case a person. It reminds me of blaming termites for eating your house because they have been programmed for millions of years to turn over dead trees to recycle the material back into the ecosystem.

I am saddened by the often useless killing of this magnificent “Beast” and on his behalf I dedicate this poetic “Piece”!

Cindy Renkas Recognized as NMEA’s Outstanding Teacher for 1997

Each year, the National Marine Educators Association recognizes one teacher in the country for their outstanding contributions to marine and aquatic education. The award, entitled the NMEA Outstanding Teacher Award, was given this year to one of our own South Carolina Teachers - Cindy Renkas!

Cindy has always been fascinated by marine science and has taken advantage of every opportunity available to her to learn more about the discipline. This is evidenced by the fact that she works to not only excite her 240 science students in grades one through five about learning, but she also strives to excite parents by providing a variety of after-school, weekend, vacation and summer enrichment programs and trips, all of which require parental participation.

She is a regular presenter at annual professional conferences, including the South Carolina Science Council (State Chapter of the National Science Teachers Association) and the South Carolina Marine Educators Association. Cindy has served on the Board of Directors of SCMEA for a two-year term. Although her term has expired, she continues to be very much involved in the organization, attending Board Meetings and chairing annual conference committees. She was nominated and unanimously accepted by the South Carolina Marine Educators Association as the organization's first South Carolina Marine Educator of the Year in 1994 and has been an active member of NMEA for the past eight years. Cindy has been teaching marine science and general science since 1990 and has coordinated Family Science Enrichment programs since 1987. In addition to being a member of SCMEA and NMEA, Cindy is a member of the South Carolina Science Council and the National Science Teachers Association.

The NMEA brings together those interested in the study and enjoyment of the world of water. Affiliated with the NSTA, NMEA includes professionals with backgrounds in education, science, business, government, museums, aquariums, and marine research, among others. We are proud to have Cindy from our own state of South Carolina recognized as an Outstanding Teacher on a national level by NMEA!
Internship Position on Pritchards Island

The University of South Carolina Beaufort Center for Coastal Ecology is seeking an education intern for Pritchards Island programs. The position pays $150 per week plus room and board on the island. The main responsibilities are providing maximum safety of participants in conservation, education and research programs and assisting the island manager in shuttling these groups by boat. This position would also provide each group with an educational overview of the island’s history, rules and regulations and basic natural history. During slow periods the intern would provide logistical support to the USCB Center for Coastal Ecology program director and island manager. Dates are for March through August 1998. Deadline for applications is January 10th.

Qualifications Include:
1) Degree in marine or biological sciences
2) experience with coastal education programs
3) current certification in CPR and training in water safety or life guarding
4) confidence in handling and driving boats

To apply, send resume and list of references to:
Lynn Corliss - Program Director
USCB Center for Coastal Ecology
801 Carteret St.
Beaufort, SC 29901
803-521-4148 Work
803 521-4197 Home
Lcorliss@VM.SC.EDU

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: National Marine Educators Association
PO Box 1470, Ocean Springs, MS 39566-1470 SCMEA Spring ’97
Species Spotlight: Phytoplankton - The Bread and Butter of the Marine Food Web

by Beth Kostka, Gray’s Reef National Marine Sanctuary

The ocean is like soup, even at its clearest, it contains tiny particles called plankton. Plankton are microscopic, living plants and animals which drift with water currents as a means of locomotion. The word plankton is Greek meaning ‘wanderer’, emphasizing their drifting lifestyle. Included in the plankton assemblage are microscopic plant cells called phytoplankton or algae. Like land plants, phytoplankton use the sun’s energy to make their own food through photosynthesis. Photosynthesis is the process whereby CO₂ and water are consumed and broken down into ‘edible’ carbohydrates, water, and oxygen. As a result, algae need to stay within the sun-lit zone of the water column called the photic zone. Algae have minimal swimming ability, thus they maintain their position in the photic zone by maximizing their floating ability and their use of ocean currents.

Algae come in all shapes and sizes (i.e. stars, spirals, wheels, coke bottle shapes, bow ties, chains, and pinwheels). Often these tiny, elegant creatures appear like Christmas ornaments with glass bristles, hairs, spines, and extensions to their form. Features such as these are more than just beautiful, they increase the phytoplankton’s surface area-increasing the cell’s drag, decreasing its sinking rate, and aiding it to counteract the force of gravity. In addition to increased surface area through small sizes and morphological extensions, algae often store buoyant materials such as fats and oils to increase their ability to stay within the photic zone.

Algae are a source of food for a variety of marine life (i.e. zooplankton, clams, anchovies, sponges). They also provide oxygen to the surrounding water as a result of photosynthesis. Thus, an alga’s ability to maintain its position within the photic zone is extremely important—both as a source of food and oxygen to other marine organisms.

SCMEA

c/o Center for Science Education
University of South Carolina
Columbia, SC 29208

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