

**National Marine Educators Association
2005 Conference
Registration is now open**

The theme of the National Marine Educators Association annual 2005 meeting, Kahului, Maui, July 11-16, 2005, is *Nana I Ke Kumu, Nana I Ke Kai – Look to the Source, Look to the Sea*. This looks to be an exciting conference. For more information, go to:
www.hawaii.edu/maui/oceania/NMEA05.html.



NMEA 2005
Kahului, Maui, Hawai'i
Nānā I Ke Kumu, Nānā I Ke Kai
Look to the Source, Look to the Sea

Captain's Quarters

Happy Spring fellow MAMEAns!

I am sure this note finds our teachers very busy finishing up the school year, our informal educators with schedules packed full of school groups, and many of us gearing up for various summer programs. As the season changes, there is a lot going on.

With the coming of the warm winds and blooming trees the MAMEA board presents a new look to your newsletter. Barry Fox and Kathy Siegfried have come up with a plan to rework the contents to better serve our membership. You'll find the following changes starting in this issue:

- A theme for each issue (including topical information and educational resources).
- Articles and photos from our members.
- Concise state representative information and program announcements.
- Four-page special topics insert once a year.

Please note this is your newsletter and thus, it needs YOUR input. What's going on in your school, informal education facility, or agency? Why not tell the membership about it? Barry will be putting a call out in each newsletter looking for articles and notes from you. Be sure to make your State Representative aware of any upcoming activities that should be highlighted for the membership so we can include it in the newsletter.

Additionally, the new committees mentioned in the last issue of Masthead are in full swing. If you are interested in joining a committee, take a look at the list on the back cover or on our website and contact the chair. He or she will be more than happy to get you involved.

On a final note, registration has begun for the 2005 NMEA conference in Maui! This is sure to be a spectacular conference and I hope to see a good representation from the Mid-Atlantic. Check out the exciting plans on the NMEA website at www.marine-ed.org.

Enjoy the spring and the coming of summer!

Susan Haynes
MAMEA President

A Note from the Newsletter Committee

Things don't stay the same for very long so we thought it was time to revisit the *Masthead* – looks, format, content. Kathy Siegfried and I want to provide the best possible mechanism for information exchange and program announcements for our membership. As Susan stated above, we're trying a new format with a special theme each issue. We need your input and suggestions for themes. Also, how about writing a brief article about a program or event involving you or your students or a great marine/aquatic education resource? You can get your students' pictures in the Masthead and they'd love to see their own words in print (ask them to write an article). We are looking forward to hearing from you.

Kathy Siegfried – Committee Chair

Barry Fox – Masthead Editor

2005 MAMEA Virginia Mini-Conference

Date: Thursday, June 23rd, 2005
Facility: The new and enlarged Virginia Living Museum in Newport News, VA
Event: Horseshoe Crab Spawning and Sleepover
Time: Begins at 2:00 p.m. on Thursday and ends at 9:00 a.m. Friday
Activities: Early afternoon - **ecology class** with Horseshoe Crab emphasis
Late afternoon and early evening - **canoeing trip**
Evening - **beach walk** with water activities
Late evening - **horseshoe spawning viewing** on Grandview Beach
Sleepover at the Virginia Living Museum
Breakfast and **touring the museum exhibits**
Food: Thursday dinner, snacks, Friday breakfast (included)
Cost: \$75.00 - includes a year's membership in MAMEA!!
Participants: **Limited to 34 so register early**
Contact: Jane Brown (NNGardenJane@aol.com) (757-595-4047)



Photo - <http://www.ocean.udel.edu/horseshoe-crab/History/biology.html>

This is the first theme issue for the Masthead. Being the editor, I had the “privilege” of picking the first theme. I thought about several – global warming, fish advisories, even the debate over the Mattaponi reservoir. But looking at a former issue of Masthead, it dawned on me – there it was, our mascot, the remarkable blue crab. So, without further adieu:



Beautiful Swimmers



© *Blue Crab Lament*

Get along little crabby, get along little crabby. Paddle your back swimmeret.
You have to walk sideways, and when you're crawlin', you walk on your pointed claw tips.
Scientists call you beautiful swimmer, *Callinectes sapidus*.
Quite frankly I'm puzzled of what they were thinkin' with a face only mother could love.
Yoodle-eh-hoo, yoodle-eh-ha
Some lipstick and rouge will make you a star.
You go through stages, zoea and megalops, then a juvenile crab.
You live in the grass beds feedin' and growin', changin' colors to blue-green from drab.
A sook is a female, a male is a jimmy, and he gets bigger than she.
The shape of the apron tells us the sexes and we use it to peel crabs to eat.
Yoodle-eh-ho, Yoodle-he-hoo
Lump meat is choice, but claw meat's good too.
A sponge is a female with eggs on her belly. A peeler's gettin' ready to shed.
A buster is molten'. A softshell's just finished, and a bruckram has hardened its head.
Males ready for matin' will cradle a female who's ripe and ready to molt.
We call this doubler, protectin' his lady, as the cycle of crab life unfolds.
Yoodle-eh-hoo, Yoodle-eh-plop
Blue crabs turn red when dropped in the pot.
We catch 'em with crab pots, dredges, and dip nets using cut bait and chicken necks too.
There's never a tellin' when they're appearin'. The crabs never give you a clue.
From the deck of a deadrise waterman work hard to bring the daily catch in.
From first light to late day, foul weather and salt spray, a few dollars is all they're makin'.
Yoodle-eh-hoo, Yoodle-eh-inch
Watch out for the claws cause they'll give you a pinch.
The blue crab's a tough one through storms and pollution, but I know it has its limits.
If we're not careful they'll pack their belongin's and head for some place way out west.
So tell your neighbors, friends, and relations take care of the Chesapeake Bay.
If we don't listen to these words of wisdom the blue crabs will sure go away.
Yoodle-eh-hoo, Yoodle-eh-flip
That's the end of the song. This is it.

Correct answers to the Blue Crab Quiz (page 3): 1. Chiton, 2. Sook, 3. Top shell, 4. Zoeae, 5. Instar, 6. Crustologist, 7. Males are blue, females red, 8. Carrying a load of eggs, 9. Beautiful swimmer, 10. Eelgrass beds.

Correct answers to blue crab graph questions (page 4): 1. 1993-94, 1959; 2. 1980s; 3. It increased sharply. 4. It decreased sharply due to over-harvest, loss of habitat, predation, etc. 5. They are injured, stressed, removed from protective cover, etc.

Blue Crab Quiz

(Bay Journal October 1998, Crab Capers)

1. A crab's exoskeleton is largely made of: A. Bone. B. Chiton. C. Cartilage. D. Crustean.
2. A sexually mature female crab is called a: A. She-crab. B. Crabbess. C. Sook. D. Clawdine.
3. The carapace is the crab's: A. Inner shell. B. Top shell. C. Bottom shell. D. Front claw.
4. Newly hatched crabs are called: A. Swimmerets. B. Crablets. C. Larvines. D. Zoeae.
5. The period between a crab's molts is called: A. Scrape. B. Punk. C. Instar. D. Megalops.
6. A scientist who studies crabs is called a: A. Crabbologist. B. Crustologist. C. Callinectologist. D. Carcinologist.
7. Which is true about blue crab claws: A. Males are blue, females blue; B. Males are red, females red;
C. Males are red, females blue; D. Males are blue, females red.
8. A sponge crab is a crab: A. That has just molted. B. With a soft shell.
C. That scraped mud off its shell. D. Carrying a load of eggs.
9. *Callinectes sapidus* means: A. Beautiful swimmer. B. Athletic claw. C. Blue crawler. D. Agile legs.
10. A blue crab's favored habitat is: A. Eelgrass beds. B. Freshwater marshes. C. Rocky bottoms. D. Sandy shorelines.

(Answers on page 2.)

Crab Facts

(Chesapeake Bay Program)

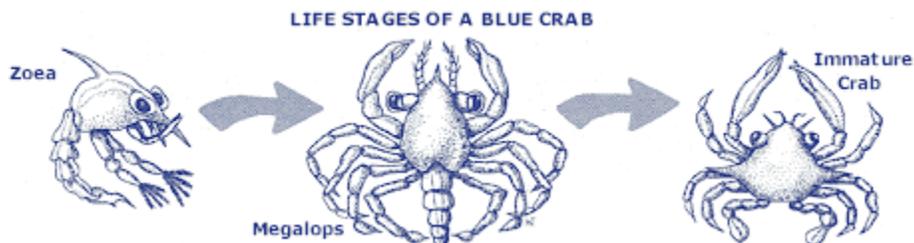
<http://www.chesapeakebay.net/baybio.htm>

The olive green-and-white 'blue crab' - so named for its brilliant blue claws - is a dominant benthic (bottom-dwelling) predator in the estuaries, lagoons and coastal habitats of the Western Atlantic, Caribbean and Gulf of Mexico.

- The blue crab is a 10-legged crustacean, related to shrimp, lobster and crayfish.
- It walks sideways using its three middle pairs of legs and uses its sharp front pincer claws to defend itself and grasp prey.
- The species earns part of its Latin name (*Callinectes*, in Greek, means 'beautiful swimmer') from the remaining pair of hind appendages, which are broad and flat like paddles and make the crab a remarkable swimmer indeed.
- The shape of its underside 'apron' can determine a crab's gender. The male crab's apron is shaped like an inverted 'T.' An adult female's apron is broad and rounded, while an immature female's is triangular. Red tips on the claws also indicate that the crab is female.
- A female carrying a cluster of orange eggs beneath her apron is known as a 'sponge crab' and is nearly ready to spawn.

The Blue Crab's Life Cycle

- Blue crab larvae, called zoea, are released by mature females (sponge crabs) into high salinity waters near the mouth of the Chesapeake Bay.
- Currents transport zoea along the continental shelf, where they develop for a period of 30 to 45 days, passing through seven or eight distinct stages. During this period, the shrimp-like zoea feed on plankton. .
- The zoea then develop into their post-larval stage called a megalops. They resemble tiny crayfish or lobster. Favorable wind and currents carry them into the Bay. They migrate vertically in response to light and tides and move into beds of submerged vegetation for food and protection.
- After 6 to 20 days, depending on salinity and temperature, the megalopae molt, producing the first crab stage. It is at this time that they become recognizable as miniature blue crabs.
- Blue crabs reach maturity at approximately 12 to 18 months of age.



Are We Really Singing the Blues?

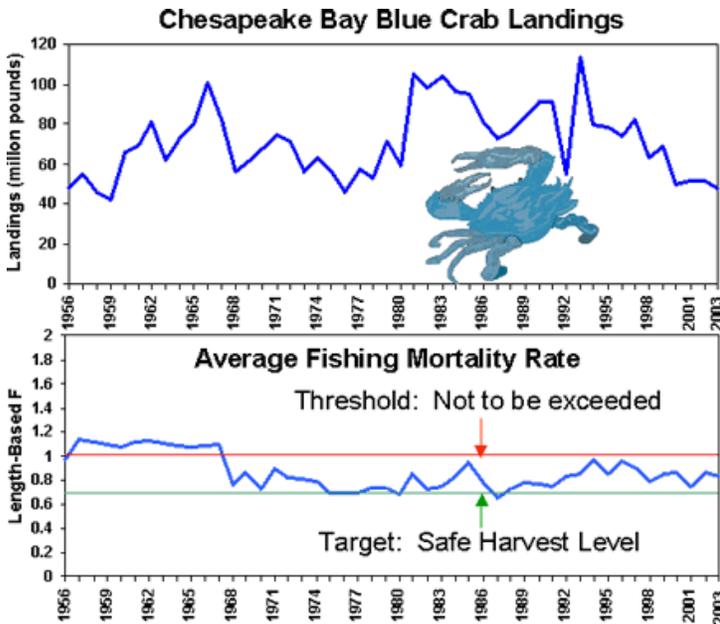
The blue crab (*Callinectes sapidus*) is in the news quite frequently. There is good news and there is bad news. Harvests are up. Harvests are down. Strippers are eating their belly full of young crabs. Females crabs are smaller than average. The harsh winter was hard on the crab population. The Chesapeake Bay crab sanctuary was established to protect spawning females. Virginia and Maryland revised their crab harvest regulations.

The Chesapeake Bay Program reported that the 2003 blue crab harvest in the Bay reached approximately 48 million pounds, which is below the long-term average and nearly sets an historic low. The three-year commercial bay-wide harvest average (2001-2003) of 50 million pounds is 32 percent below the long-term average (from

1968 to 2003) of about 73 million pounds annually, and this figure is considerably below prediction levels.

Recently the Maryland Department of Natural Resources (DNR) predicted one of the largest Chesapeake Bay blue crab catches in years. The 2005 dredge survey found the largest number of younger crabs in the bay since 1997 and the sixth largest since the survey began in 1990. Is this a sign of a crab comeback or another fluke in the crab population? Maryland commercial crabbers caught nearly 29 million pounds of crabs in 2004, making it the fourth consecutive year that crab harvests in Maryland have increased. The lowest catch in recent years came in 2000, when crabbers caught just 20 million pounds. However, the 2004 harvest was still far below the long-term average of 73 million pounds.

Answer the following questions about this graph from the Chesapeake Bay Program Web site.



1. In what year was the greatest amount of crabs harvested? _____; Least amount of crabs harvested? _____
2. As oyster harvests declined in the 1970s, waterman began harvesting more crabs. When did this start? _____
3. If more watermen were fishing with more crab pots, what happened to the crab harvest? (See 1980s)

4. What has happened to the crab harvest since 1995?
What do you think is the cause? _____

5. Why do you think many young or under-sized crabs do not survive after being captured and released?

(Answers on page 2.)

Find out what the following "crab" terms mean. This may take some searching. (Try reading *Beautiful Swimmers* by William Warner. Boston: Little Brown, 1976 and the poem on page 2.)

Pink Sign	Buckram	Doubler	She-crab	Peeler
Soft-shell	Jimmy	Sook	Sponge Crab	Buster

Blue Crab WEB Sites

Bridge Ocean Sciences Education Center: <http://www.vims.edu/bridge/bluecrabworkshop2.pdf>
 Maryland Sea Grant: <http://www.mdsg.umd.edu/crabs/index.html>, <http://www.mdsg.umd.edu/crabs/links.html>
 Virginia Institute of Marine Science: <http://www.vims.edu/adv/ed/crab/>
 Bay Journal: <http://www.bayjournal.com/article.cfm?article=1845>
 Maryland Blue crab: http://www.skipjack.net/le_shore/crab/crab.html



Maryland (Kathy Siegfried)

The National Aquarium in Baltimore is recruiting community volunteers to partner in the restoration of two degraded islands by planting marsh grasses that will help insure added site stability, reduce the potential for erosion, and provide habitat for wildlife. If you are interested in participating in the following conservation events, please email conserve@aquaria.org.

- **Poplar Island - Talbot County: (June 16 – 26)**
Poplar Island is located in the upper Chesapeake Bay about 34 miles south of Baltimore near Talbot County. Once a thriving 1,000-acre community, the island has fallen victim to erosion.
- **Barren Island - Dorchester County (Sept. 8-13)**
Barren Island, which is part of the Chesapeake Marshlands National Wildlife Refuge Complex, is located twelve miles south of the Choptank River in the Chesapeake Bay. Barren Island is one of the few remaining islands in the Bay and it is eroding at a rapid

rate. The Friends of Blackwater will also assist in monitoring previously planted areas of the Island.

Teacher Workshop July 25-29, 2005

Chesapeake 2000: Incorporating the Chesapeake Bay Agreement into the Classroom

This course offers K-12 teachers the opportunity to combine University-based research and data with the Chesapeake Bay 2000 agreement. This course will give teachers field and lab-based experiences in living resources, habitat/ water quality protection and restoration, sound land use practices and environmental stewardship. Teachers will receive the equipment, resource materials and hands-on experiences to perform lab-based activities in their classroom. Contact: Jackie Takacs, Marine Specialist, Maryland Sea Grant Extension Chesapeake Biological Laboratory, P.O. 38, Solomons, MD 20688; 410-326-7356, Takacs@cbl.umces.edu.

NORTH CAROLINA (Patricia Hay)

New Phytoplankton Sampling Teams In NC:

www.chbr.noaa.gov/CoastalResearch/SEPMN/index.htm
In early February, staff from the SouthEast Phytoplankton Monitoring Network (SEPMN) traveled along the North Carolina coast conducting training sessions for educators who were interested in having their students join the network. So far, nine coastal schools and groups have begun sampling, identifying phytoplankton, and reporting their species and numbers to the network's Web site. Carteret Community College Aquaculture Department, a new SEPMN group, offers tours of their hatchery. Algal, oyster and clam cultures and brood stock are up and running. Contact: Philip "Skip" Kemp, kemps@carteret.edu or visit <http://main2.carteret.edu/~kemps>.

NC Sea Grant offers workshop opportunities throughout the year. Check their website for educational opportunities, curriculum materials, and directed links to other marine education opportunities. Visit www.ncseagrant.org or contact Terri Kirby-Hathaway terrikh@csi.northcarolina.edu.

The NC Aquarium at Fort Fisher

- *Understanding Marine Protected Areas* (July 8 from 9:00 a.m. to 4:30 p.m.)
The free workshop provides training and information of the basic principles and general issues surrounding MPAs. Registration is required and is limited to 30 participants. Contact Danielle Wallace at 910-458-7468 or danielle.wallace@ncmail.net or Peggy Sloan at 910-458-8259, ext. 230 or peggy.sloan@ncmail.net. Workshop includes admissions to the aquarium exhibits area, lunch, and workshop materials.
- Sea Oat Planting (June 2, 9:00 a.m. – 4:00 p.m.)

Volunteers are needed to help plant 15,000 sea oat seedlings as part of a joint restoration project on the property adjacent to the aquarium. Contact: Lisa Stutz: 458-8259, ext. 232, or lisa.stutz@ncmail.net.

- Celebrate World Ocean Day
On June 7 and 9 the public can register for a guided tour of Masonboro Island. On June 8 the aquarium will host a special dinner and evening lecture by Karen Eckert, Director of WIDECAST and international expert on marine turtle conservation. Contact: Danielle Wallace, 458-7468 or danielle.wallace@ncmail.net.
- Project WET and Streamwatch (July 26, 8:30 a.m. - 5:30 p.m.)

This is hands-on curriculum training for all interested educators. Contact: Danielle Wallace, 910-458-7468 or Danielle.Wallace@ncmail.net

- *Water Ways" - Preventing polluted runoff* (August 4 – 5, 9:00 a.m. – 4:00 p.m.)

This limited workshop is designed for teacher leaders willing to share resources with coworkers and use resources from the workshop in their classrooms. A groundwater flow model and teacher guide, as well as food and a small stipend will be provided. Workshop is limited to eight participants. Contact: Peggy Sloan at 458-8259, ext. 230. Peggy.Sloan@ncmail.net

North Carolina Aquarium Internships

The North Carolina Aquarium at Roanoke Island has internships available in the husbandry and education departments for summer 2005. They also have seasonal positions within the education department. For details call 252 473-3494. <http://www.ncaquariums.com/>

North Carolina Maritime Museum

- Blackbeard week (June 6 – 11)

Attend a week of programming on Blackbeard and his flagship, *Queen Anne's Revenge*. Movies, videos, slide lectures, and children's activities feature pirates, Blackbeard, and the *Queen Anne's Revenge*. The week culminates with a Blackbeard Symposium of presentations and a tour of the museum's artifact repository.

- Summer Programs

Get your feet wet during environmental programs and field trips to barrier and estuarine islands, on-board collecting cruises, and seining to sample marine life. Some programs are applicable for the NC Environmental Education Certification. Adults interested in boats and boating may enjoy classes in boat building, sailing, traditional boat handling, and sea kayaking. For a complete listing of programs, visit:

www.ah.dcr.state.nc.us/sections/maritime.

North Carolina National Estuarine Research Reserve

Summer public field trips to the Rachel Carson site begin in June. Contact the Reserve at 252-728-2170. Past field trip events on *EstuaryLive* will be archived online for folks wanting to watch sessions at a later date. Visit

www.ncnerr.org.

North Carolina Coastal Federation - Citizens Working Together for a Healthy Coast

The North Carolina Coastal Federation (NCCF) is the state's largest nonprofit organization working to restore and protect the coast. The NCCF headquarters is located at 3609 Highway 24 in Ocean between Morehead City and Swansboro and open Monday through Friday from 8:30 a.m. to 5 p.m. The headquarters includes NCCF's main offices, the Cape Lookout Coastkeeper office, a gift shop, Nature Library, Weber Seashell Exhibit, Learning Center, and adjoining nature trail. Teachers planning for the fall should look at the curriculum materials and long-term educational programs that will give students an action-oriented perspective on marine science and habitat restoration. For more information call 252-393-8185 or check out NCCF's website at www.nccoast.org and <http://www.nccoast.org/publication.htm> (publications).

Summer Programs include:

- Beach Walks with a Coastkeeper every Wednesday, June 22 – Aug. 31

Pea Island National Wildlife Refuge and Bird Island - To register, call Jan DeBlieu at 252-473-1607, hatteraskeeper@nccoast.org or Ted Wilgisat 910-790-3275, coastkeeper-cf@nccoast.org.

- Barrier Island Ecology every Tuesdays and Thursdays, June 7 -August 11
Cape Lookout National Seashore - Please wear comfortable walking shoes, clothing, and appropriate sun-gear. Programs are free and start from the lighthouse at 11:00 a.m. and 1:00 p.m.
- Fish with the Coastkeeper (June 24, July 2, 22, August 5, 19, September 3, 23, October 7, 28)
Cape Lookout National Seashore - We have poles and bait, but bring your own if you like. An adult must accompany participants 13 and younger during this program. You must sign up and the program is limited to 15 participants. Call or sign up at Harker's Island Visitor Center. 252-728-2250
- Hike A Coastal Trail - NCCF manages two beautiful nature trails, and both are open during daylight hours. The Patsy Pond Trail is located in Ocean in the Croatan National Forest near NCCF's headquarters. Home to red-cockaded woodpeckers and carnivorous plants, there are three trails ranging from ¾ to 2 miles. The Hoop Pole Creek Nature Trail meanders through a 31-acre reserve. Globally imperiled maritime forests and eight other distinct habitats highlight the ¾ mile trail located next to Atlantic Station in Atlantic Beach off Hwy 58.

Coastal Legacy Workshop for Teachers – NC, SC, GA

Coastal Legacy, a weeklong professional development event, offered by the Center for Ocean Sciences Education Excellence Southeast, will help you integrate Sea Island culture and heritage into your science and mathematics instruction. The workshop will be held July 25-30, 2005 on St. Helena Island, South Carolina. Teachers will explore South Carolina and Georgian coastal habitats, land use, geology, and geography of the Southeast region, in the context of the Gullah/Geechee culture. Teachers will receive educational resources and lessons, access to scientists and community leaders, and opportunities to be regional leaders.

<http://www.scseagrant.org/se-cosee/education.htm>

Virginia

(Jane Brown)

The Science of Biological Invasions: Profile of the invasive veined Rapa whelk

June 28-29, 2005, 8:30 a.m. – 5:00 p.m.

Virginia Institute of Marine Science, Gloucester Point, VA

The Rapa whelk, a large Asian predatory snail that has invaded the Chesapeake Bay, is the focus of intensive studies at the Virginia Institute of Marine Science. This workshop is designed to give educators an opportunity to experience current Chesapeake Bay science. Concepts and activities are correlated to learning standards in biology and earth science. Participants will get an

introduction to the science of biological invasions; learn details of Rapa whelk biology and zoogeography; work with VIMS scientists to collect data; and receive new hands-on, standards-correlated activities and teaching resources. The Chesapeake Bay Restoration Fund Advisory Committee, VIMS Department of Fisheries Science, the VIMS Molluscan Ecology Program and Virginia Sea Grant support this workshop. Contact: Vicki Clark (vclark@vims.edu) or Juliana Harding (jharding@vims.edu). For registration information, visit: <http://www.vims.edu/mollusc/education/vortex.html#schedule>.

Blue Crab Bowl - 2005

In a cliffhanger race, the Chesapeake Bay Governor's School-Warsaw Campus, emerged the champion in the 2005 Blue Crab Bowl, held February 12 at the Virginia Institute of Marine Science at Gloucester Point, VA. Eighty students from 15 high schools spent the day in heated competition, testing their knowledge of ocean science. Winners included: Chesapeake Bay Governor's School, Warsaw (First Place), Bishop Sullivan Catholic High School (Second Place), Maury High School (Third Place), and Fauquier High School (Fourth Place). The first place winner will represent Virginia, facing 24 other regional champions, at the 8th Annual National Ocean Sciences Bowl (NOSB[®]), April 23-25 in Biloxi, Mississippi. Whether their teams placed or not, students participating in the Blue Crab Bowl agreed that they were inspired to learn about the science of the ocean. Teachers reported that the event enhanced their students' interest in the marine sciences and gave them a sense of achievement. The Blue Crab Bowl is a cooperative effort between Old Dominion University and the Virginia Institute of Marine Science. More than 60 faculty, staff and graduate students from both institutions donated many hours of their time to ensure the success of this exciting event.

Check out the Virginia and National contests at <http://www.vims.edu/adv/bcb/> and <http://core.cast.msstate.edu/nosb.html>.

Water Quality Teacher Workshop

There will be free, two-day water quality workshops for teachers at VIMS in Gloucester on July 25-26 and August 1-2. Training will include water quality indicators, classroom activities that use water quality data from the York River to answer applied marine science questions and Internet resources. Investigate water quality during a canoe trip on the second day. Visit www.vims.edu/cbnerr/ or contact Bob Carroll at bcarroll@vims.edu, 804-684-7526.

Schoolyard Habitat Workshop:

This is a free teacher workshop at VIMS in Gloucester on July 11 – 13, 2005. Learn how to turn unused portions of your schoolyard into an area that attracts wildlife, helps protect the Chesapeake Bay and can be used as an outdoor classroom. For details visit www.vims.edu/cbnerr/ or contact Bob Carroll at bcarroll@vims.edu, 804-684-7526.

Washington D.C.

(Bill Simpkins)

The Smithsonian's National Museum of Natural

History, in conjunction with **NOAA**, is currently designing and planning a new exhibit hall, "Ocean Hall" set to open in the fall of 2008. On February 14-15, 2005, several members of MAMEA were amongst the 100 participants in the "Ocean Hall Education and Outreach Summit". Many influential people involved in ocean science education were a part of the team. The goal of the summit was to help identify goals and objectives for the

educational component of the Ocean Hall. The new Ocean Hall promises to be a great educational exhibit to inform the general public about the issues facing today's ocean. For more information regarding the Ocean Hall you can contact MAMEA member and Education Specialist for Ocean Hall, Sharon Cooper. Information about the Summit can be found at www.mnh.si.edu/ocean/education.

Check These Out

Catch the SEACOOS Wave!

Visit the Southeast Atlantic Coastal Ocean Observation System (SEACOOS) Virtual Waves Classroom and check out the new waves poster. Learn about the properties of waves through the glossary and other resources on this website. The website includes information about research, news, and a *Community and Classrooms* link to the waves classroom and teacher workshop information. The site provides access to real time wave data, lessons plans, and a four-color *Making Waves* poster with concepts such as "Anatomy of a Wave," "What Causes Ocean Waves?" and more. www.seacoos.org

Let the River Run Silver Again! How One School Helped Return the American Shad to the Potomac River. Sandy Burk. 2005. McDonald and Woodward Publishing, Granville, Ohio (740-321-1140) (www.mwpubco.com/LetRiverRunSilver.htm)

Tsunami Education Web Sites

- Asia Society K-12 Teacher's Resource Site: <http://www.askasia.org/tsunami/>
- Gross Point Public School System: <http://www.gpschools.org/ci/tsunami.htm>
- National Science Teachers Association: http://science.nsta.org/nstaexpress/nstaexpress_2004_01_10_tsunami.htm
- NOAA Intergovernmental Oceanographic Commission: http://www.prh.noaa.gov/itic/library/pubs/curriculum/tsunami_curriculum.html

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Be sure to:

- Save October 14 – 15 for the Annual MAMEA Conference in beautiful Beaufort, NC. More details are coming.
- Apply for a MAMEA mini-grant or award (www.MAMEA.org).
- Get involved with a MAMEA committee.
- Consider submitting an article for the Masthead.