

The Nauplius. ©

Volume XVII, Number 1

Fall 2005



NAUPLIUS NOTATIONS



Well, it's official. I'm no longer SENEME President. There is, however, the final responsibility of writing my last President's letter for the newsletter. The hard part is condensing everything I would like to say this fall into one letter. 2005 has been a busy year for SENEME members but there are a few items I'd like to highlight.

First, a big Congratulations to Thaxter Tewksbury! At the NMEA Conference in Hawaii this summer, he received the James Centorino Award for distinguished performance in marine education. He also was announced as the new President-Elect of NMEA. I would also like to congratulate our 2005 SENEME Award winners, both of whom have been longtime SENEME members. This year's Lifetime Member Award went to Ralph Yulo, and the recipient of our first Marine Educator of the Year Award was Lance Arnold.

I would like to give a special thanks to Elizabeth Gibbs and Thaxter Tewksbury. Elizabeth has just completed a **very** long tenure as SENEME's Membership Secretary, and Thaxter has finally been relieved of all SENEME Presidential duties after many, many years. Elizabeth and Thaxter have contributed so much to making SENEME the strong organization that it is today. I would also like to thank Carla Schneider who is departing the Board, and we wish her well in Virginia. Lauren Donnelly will now be the SENEME representative from SoundWaters, and we welcome her to the Board.

Unfortunately, I do have some sad news to share. At the end of August, we lost a great friend to SENEME, Mark Johnen who was the husband of our Treasurer, Jill Johnen. Many of you had the fortune to meet Mark at some of our SENEME events where he was known help out on the grill. His bright smile will be greatly missed.

Lastly, what would my final President's letter be without a flying squirrel story? All I will say is there is nothing like being awakened at 4:00 in the morning by your son saying, "Mommy, there's a squirrel in my laundry basket!"

Thanks to everyone for your support. I hope to see you at one of the SENEME events in 2006 and hope you all have a great holiday season!!

Donna R. Dione, SENEME President



SENEME Board of Directors 2005-2006

**President/Scholarships & Awards Committee
Co-Chair**

Lauren Rader
Project Oceanology, Groton, CT

President-Elect/Membership Committee Chair

Heather Blankenstein
Schooner, Inc., New Haven, CT

**Past-President/Nominating Committee
Chair/Newsletter Editor**

Donna Dione
Deep River, CT

Treasurer

Jill Johnen
URI Office of Marine Programs, Narragansett, RI

Recording Secretary/Editorial Assistant

Julie Ainsworth
Madison, CT

Membership Secretary

Christine Kirch
West Warwick High School, West Warwick, RI

**Chapter Representative/Development
Committee Chair**

Diana Payne
Connecticut Sea Grant, Groton, CT

Webmaster

Jenna Carlson
Ocean Technology Foundation, Groton, CT

Scholarships & Awards Committee Co-Chair

Amy Ferland
The Maritime Aquarium at Norwalk, Norwalk, CT

Editorial Assistants

Katrina Barrett
Mystic Aquarium & IFE, Mystic, CT

Cathi Lepore

Westbrook Middle School, Westbrook, CT

Members-At-Large

Elizabeth Gibbs
Thompson Middle School, Newport, RI

Lauren Hinrichs

SoundWaters, Stamford, CT

Thaxter Tewksbury

Project Oceanology, Groton, CT

**SENEME ORGANIZATIONAL
MEMBERS**

*Mystic Aquarium & Institute for
Exploration, SoundWaters, Schooner, Inc.,
Project Oceanology, The Maritime
Aquarium at Norwalk and URI Office of
Marine Programs*

Thank you for your support!!

SENEME LIFE MEMBERS

2002 Find Pedersen

2003 Mickey Weiss

2004 Thaxter Tewksbury

2005 Ralph Yulo

**MARINE EDUCATOR OF THE YEAR
2005 Lance Arnold**

The Nautilus is the newsletter of the Southeastern New England Marine Educators Association (SENEME) and is published three times per year for members of SENEME. Submissions including (but not limited to) articles, activities to share, student projects, pictures of SENEME members in action, recipes, other organization's announcements and Bulletin Board items are welcome for all issues. The opinions expressed by authors published in this newsletter do not necessarily reflect the views of SENEME and all its Board members. SENEME is not responsible for any typographical errors that may occur within this publication. Permission is granted by SENEME for readers to make copies of newsletter items for their own, non-commercial use.

Please send submissions and suggestions to Donna R. Dione, 146 Essex Street, Deep River, CT 06417-1901; e-mail: senemeboard@yahoo.com; or fax: 860-526-8392. When sending items via computer disk or e-mail, it is helpful to have them typed in Microsoft Word, in the font of "Times New Roman, size 10". All disks and pictures will be returned.

The deadline for the Winter issue is January 20, 2006 with items for the Bulletin Board dated for events occurring after March 1, 2006.

.....

FROM THE BOARD ROOM.....

Project Oceanology hosted the annual SENEME Coals on the Coast on August 26, 2005. Approximately 25 SENEME members and their families gathered for an evening of delicious grilled food and desserts, followed by a beautiful sunset cruise on-board the *R/V Enviro-Lab II*. A great time was had by all! Next year's event will be hosted by Schooner, Inc. on Friday, August 25, 2006 with a cruise on-board the Schooner, *Quinnipiack*.

SAVE THE DATE!!!! SENEME will once again be sponsoring the Long Island Sound Educators Conference, to be held on Friday, March 31, 2006 at the Maritime Aquarium in Norwalk, CT. This is an excellent opportunity for educators to share ideas and experiences about Long Island Sound. Keep your eyes open for the Call for Presenters and Exhibitors. For more info, contact Lauren Rader at ocean10@uconnvm.uconn.edu or Amy Ferland at aferland@maritimeaquarium.org.

The Board is currently looking for members who might be interested in joining a committee. There are openings on the Scholarships & Awards, Development and Membership & Public Relations Committees. Committee members are not required to attend SENEME Board meetings and much of the committee work will be done via email. If you are interested in joining, please contact the SENEME Board at senemeboard@yahoo.com.

CONGRATULATIONS

The Scholarship and Awards Committee is proud to announce the winners of the 2005 Marine Educator of the Year and Life Member Awards.

- SENEME Marine Educator of the Year was awarded to Lance Arnold. Lance received this award for his "effective and innovative teaching, as well as distinguished performance by an educator." Lance recently retired after more than 30 years of teaching at Tolland High School in CT. While at Tolland, Lance coached the Ocean Science Bowl team, leading one team to the National Finals. He is an active SENEME member and past board member.
- SENEME Life Member, the highest recognition SENEME offers, was awarded to Ralph Yulo. Ralph received this award for his "distinguished career in teaching, research or service in marine education." Ralph's accomplishments are too numerous to list, but are highlighted by his establishment of the Science Education program at ECSU where he is a Professor Emeritus. When asked about Ralph Yulo's service to marine education - most people recall his fondness of telling jokes, how he always has a hand lens with him, and how he poetically guides his students through the beauty of a salt marsh. Ralph's most important contribution could be the mentorship and inspiration he gives to all educators.

Funding for scholarships and awards is generated by the Silent Auction held at the annual Fall Conference. Money raised allows SENEME to fund these awards as well as awards for Science Fair winners in CT and RI and supporting scholarships and a mini-grant for classroom teachers. Please contact Lauren Rader (ocean10@uconnvm.uconn.edu) with further questions or for application or nomination forms.

Another Successful SENEME Auction!!

Thanks to the generous contributions of those listed below, the Second Annual SENEME Auction was another great success. We raised \$400 that will go towards our Scholarships & Awards Fund. Auction Chair Donna Dione gratefully acknowledges the following individuals and organizations:

Diane Adams, Keith Ainsworth, Esq., Katrina Barrett, Rosemarie Buote, Donna Dione, Connecticut Association of Biology Teachers (Eileen Roark), Mystic Aquarium & Institute for Exploration (Kathy Hoy, Stephany Hessler), Project Oceanology (Thaxter Tewksbury), Schooner, Inc. (Heather Blankenstein), SUNY Maritime College (Amanda Clear) and the U.S. Coast Guard Academy (Lisa Drake)

OCEAN LITERACY

What does it mean to be ocean literate? Why do I as an educator care that my students be ocean literate? How do I justify ocean education in light of new frameworks and standards? Answers to these questions, and maybe more, just got a little easier...Participants in the SENEME Fall Conference received an important educational tool in their registration packet - an Ocean Literacy Guide.

An Ad Hoc Committee of approximately 100 members representing the ocean science and education communities (including: the National Geographic Society, NOAA, COSEE and NMEA) gathered for an on-line symposium in October 2004 to develop guidelines for an ocean literate society. The committee developed 7 Essential Principles with associated Fundamental Concepts and then linked these with the National Science Education Content Standards. The Essential Principles are as follows:

- a) The Earth has one big ocean with many features.
- b) The ocean and life in the ocean shape the features of the Earth.
- c) The ocean is a major influence on weather and climate.
- d) The ocean makes Earth habitable.
- e) The ocean supports a great diversity of life and ecosystems.
- f) The ocean and humans are inextricably interconnected.
- g) The ocean is largely unexplored.

The Ocean Literacy Guide is a work in progress, but it has received endorsements by both the AZA and The Ocean Project. For further information about the committee, the symposium, or the Ocean Literacy Guide visit the College of Exploration website (www.coexploration.org) or if you are interested in receiving your own copy of the Ocean Literacy Guide, contact Lauren Rader (ocean10@uconnvm.uconn.edu).

ARMADA Project- Research and Mentoring Experiences for Teachers



The University of Rhode Island's Office of Marine Programs is now accepting applications for the ARMADA Project- Research and Mentoring Experiences for Teachers. The ARMADA Project provides K-12 teachers an opportunity to actively participate in ocean, polar, and environmental science research and peer mentoring.

Selected Master Teachers (with five or more years teaching experience) are paired with leading scientists and participate in shipboard, field, or laboratory research with all expenses paid. Research experiences will take place during the summer, although there may be opportunities during the school year. Upon completion of their research experience, Master Teachers develop ways to bring the fruits of their research experiences, including scientific data, methodologies, and technology into their classrooms. They share their experiences by mentoring new teachers in their school district and by presenting their results at the National Science Teachers Association National Conventions.

The ARMADA Project has involved teachers in research experiences all over the world. Past experiences include taking part in the largest North Pacific humpback whale study in the waters off the coast of Alaska, investigating the impacts of global change in the Arctic Ocean, monitoring and assessing tidal creeks in South Carolina, studying the impact of human activity on dusky dolphins in New Zealand, exploring the seafloor off the coast of Sumatra to better understand the forces that led to the 2004 Asian tsunami, water circulation studies in the Norwegian Sea, and a variety of ecosystem monitoring projects in the Bay of Fundy, Narragansett Bay, Gulf of Maine, Stellwagen Bank, Western Shelf of Florida, Sargasso Sea, Bahamas, Alaska, and Block Island Sound. See www.armadaproject.org for more information on past research experiences.

Application deadline is February 6, 2006

For more information about teacher qualifications, responsibilities, and to download an application see the ARMADA Project website www.armadaproject.org or contact Andrea Kecskes at 401-874-6211 or armada@gso.uri.edu.

News from NMEA: From National Awards to Natural Disasters

By Diana Payne, SENEME Chapter Representative to NMEA

It was a remarkable summer / fall for the National Marine Educators Association (NMEA). The 2005 annual conference was held July 11-16 in Kahului, Maui and drew a large number of SENEME members. Following the Board meeting, the conference kicked off with two days of field trips to explore the "Valley Isle", followed by three days of concurrent sessions. A variety of morning keynote speakers began each day. The NMEA International Committee held a post conference meeting and attracted NMEA members from as far away as Australia and New Zealand. Evening events included a luau, dinner and a self-guided tour of the Maui Ocean Center, and an evening boat trip sponsored by the Pacific Whale Foundation (go to <http://www.susanleachsnyder.com/History2005.html> for highlights). It was great to see some faces from the past (I think particularly of Andrew Zint, who suited up as the *Race to Hell Gate* devil as we previewed NMEA 2002 in Victoria, BC) mingling with NMEA newcomers and veterans.

One of the proudest moments for SENEME came on the last evening of the conference. Our own Thaxter Tewksbury, Director of Project Oceanology and SENEME Past President, was selected to receive the James Centorino Award. This award is given for "distinguished performance in marine education by professionals who are not classroom teachers." The following is an excerpt from the nomination letter:

The James Centorino Award is given in memory of a person who was dedicated to inspiring others to give of themselves to make known the world of water, both fresh and salt. Thaxter Tewksbury embodies the spirit in which this award is given. He inspires his co-workers, his fellow SENEME and NMEA members, those he touches through his work at Project O, and his family with his smile, his sense of humor, and his love of the marine and aquatic environment. He is truly deserving of recognition by his friends and colleagues in the National Marine Educators Association through the 2005 James Centorino Award.

That's two years in a row for SENEME members receiving NMEA awards (Linda Livolsi received the 2004 Marine Educator Award)! The next round of award nominations is due in May 2006. Please visit the NMEA award web site <http://www.marine-ed.org/nomform.pdf> and nominate another deserving member of our chapter!

I mentioned in the last newsletter that Thaxter had been nominated to run for NMEA President Elect. I am proud to announce that Thaxter won the election (by the narrowest of margins), and has begun to serve his year as NMEA President Elect (he also saved The Pike from certain destruction at the hands of Pele at this year's conference). His term as President will begin at the close of the 2006 NMEA Conference in New York. Next time you see Thaxter, be sure to congratulate him and ask him if has the NMEA coin. Believe it or not, the race was so close it came down to a coin flip! I expect that **this** is a good enough reason for SENEME members to become NMEA members and VOTE!

We are fortunate in New England to have been spared a significant natural disaster (did you know that a recent study found that Storrs, CT is the safest place to be in the US to avoid a natural disaster?). The NMEA National Office, housed in Biloxi, Mississippi, was not so fortunate this year. As Hurricane Katrina pummeled the Gulf Coast, NMEA Administrative Assistant, Johnette Bosarge, and NMEA Membership Secretary, Dr. Sharon Walker, brought home what they could. Upon returning to the site, Sharon, Johnette and other staff members at the J.L. Scott Aquarium salvaged some items prior to demolition. In Sharon's own words:

...it is with much regret to share with you the Scott Aquarium was "completely gutted" with a "piece" of the second floor remaining. On September 14 at 5:10 p.m., the remaining MEC&A facility was designated for demolition (note: the first two days of September, we were able to remove about 12 vans of resources, via a 55-gallon garbage can and rope from the second floor balcony prior to being told we could not safely enter and/or exit the facility, so we had to leave five classrooms and many, many resources which were all salvageable with the exception of safely egressing and ingressing the facility).... Now, for some good news....the new MEC&A has been relocated to the Director's former home (approx. 3,000 sq. ft.) on the GCRL Campus (47 acres) in Ocean Springs and this fall, we will be taking many of our Academic Year Programs "on the road," once we obtain some replacement vehicles and educational resources...

Sharon, Johnette and many NMEA members are helping to rebuild the archives of *Current* and NMEA newsletters (the latest is online <http://www.marine-ed.org/nmeanews.pdf>). I'll provide an update of the status of the National Office following the mid-year Board meeting at NSTA in Anaheim. I'll also provide more information on the NMEA 2006 Conference in New York <http://nysmea.org/con06/>. See you there!

Editors Note: Thanks to COSEE-NE (sponsor of our Spring/Summer 2005 newsletter) for the following lesson plan.

The Influence of Carbon Dioxide on Algae Growth

The first objective of this experiment is to show that increased atmospheric concentrations of carbon dioxide, CO₂, can stimulate algae growth. The second objective of this experiment is to demonstrate to middle school students that dissolved CO₂ can move from one liquid reservoir through the air to another liquid reservoir.

This experiment uses a liquid reservoir in a closed system that can be manipulated to change the amount of CO₂ in the air. The closed system incorporates a beaker of fresh water algae, *Closterium*, in growth media sitting inside a 1/2 gal container partially filled with a water reservoir (Figure 1A). Once the system is set up, *Closterium* algae is grown in the presence of light from a fluorescent light bulb on 12 hours light-dark cycle. Additionally, the system can be set up to collect oxygen gas released from the algae by adding a glass funnel and an inverted test tube filled with growth media (Figure 1B).

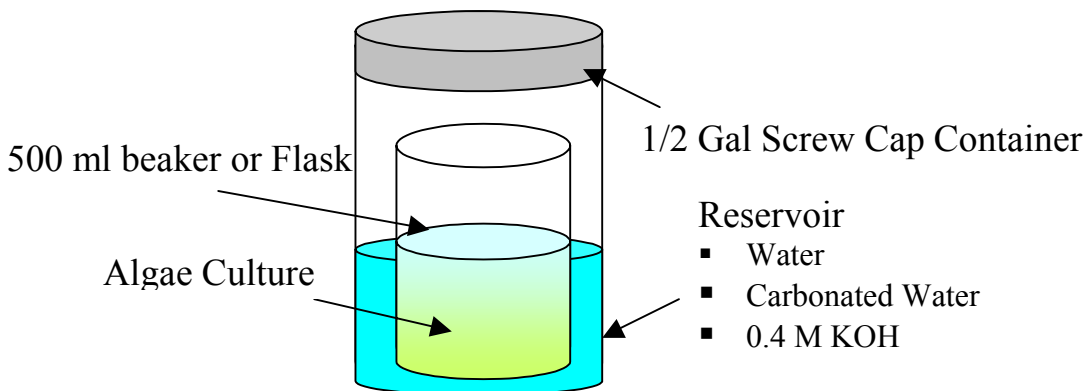


Figure 1A: Closed system for showing the affect of carbon dioxide on algae growth.

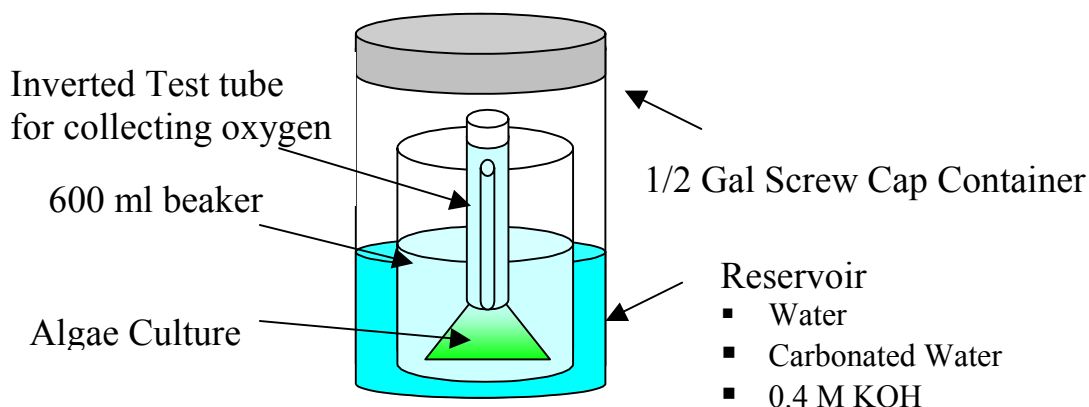
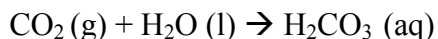


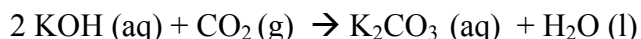
Figure 1B: Closed system for collecting release of oxygen gas by algae.

The experiment consists minimally of three groups; 1) the normal control with a reservoir of distilled water, 2) the experimental group with a reservoir of carbonated water, and 3) the

negative control with a reservoir of 0.4 M potassium hydroxide. The normal control of distilled water represents the natural condition of dissolved gases in water. The experimental group is a 1:2 mixture of bottled carbonated water to distilled water, which is enriched with CO₂ gas. The negative control with 0.4 M potassium hydroxide depletes the air of any CO₂ and shows that some CO₂ is required for algae growth. Carbon dioxide reacts with water to form carbonic acid.



Potassium hydroxide reacts with carbon dioxide, CO₂, to form K₂CO₃(s).



The presence of KOH effectively removes CO₂ from the atmosphere of the closed system. This activity requires an adult to set up the experiment, because of the glassware manipulations and the basic potassium hydroxide. In our classes, we had the students make hypotheses, observe the algae cultures, conduct parallel simulations, collect and analyze data.

Materials

- (6) ½ gallon Rubbermaid® plastic containers with lids
- (3) 600 ml glass beakers
- (3) 500 ml glass flasks
- (3) glass funnels
- (3) 12 milliliter glass test tubes
- (36) 15 milliliter glass test tubes
- (3) test tube racks
- 2.0 liter distilled water
- 0.5 liter of carbonated water
- 1.2 liter 0.4 Molar potassium hydroxide solution
- 1 tube 50X Alga-Gro® : (Carolina Biological Supply #HT-15-3751)
- 10-15-10 Plant Food
- Closterium Algae: (Carolina Biological Supply #HT-15-2115)
- Parafilm
- Plastic wrap
- Glass marking pen
- Fluorescent light
- Electric timer

Experimental Setup

A week prior to setting up the experiment, establish under artificial or natural light an actively growing *Closterium* algae culture in 100 ml of 1X Alga-Grow medium.

The day before the experiment, obtain carbonated water, make 0.4 M potassium hydroxide (26.9 g of KOH in 1.2 L of distilled water), and clean glass beakers. Beakers for culturing the algae were washed with dish soap and then rinsed three times with distilled water to insure that contaminants would not inhibit algae growth.

Algae Growth System

The day of the experimental setup for algae growth, label each of three large plastic containers: normal control, experimental group, and negative control. Into the normal control container, transfer 600 ml of distilled water. Into the experimental group container, transfer 200 ml of fresh carbonated water and 400 ml of distilled water. Into the negative control container, transfer 600 ml of 0.4 M KOH solution. Set up the algae cultures by labeling each of

three glass 600 ml beakers normal control, experimental group, and negative control. Fill each beaker with 400 ml of Algal-Gro medium. Add 1 drop of 10-15-10 plant fertilizer. Before transferring the algae, stir vigorously to suspend the algae and then transfer 30 ml of actively growing algae to each beaker. Carefully place the beaker inside the large plastic container, close the lid, and seal tightly with parafilm. Place the cultures next to a fluorescent light on a 12 hour on/off electric timer. Let the cultures grow for 7 to 10 days.

Oxygen Collection System

To collect oxygen gas, the set up is basically the same except after transferring the algae to the beaker wait 10 minutes for the algae to settle to the bottom. Slowly submerge an inverted glass funnel into each algae culture until the funnel rests on the bottom of the beaker. Make sure the glass stem is partially submerged beneath the growth medium. Next, fill a test tube completely to the top with growth medium, stretch the parafilm over the opening, and tightly wrap the parafilm around the side of the test tube. Invert the tube and there should be no air bubbles inside the tube, or leakage. Place the inverted tube with parafilm over the glass stem, quickly and carefully puncture the parafilm, and place the opening of the test tube beneath the surface of the medium. There should be a column of growth medium with a minimum amount of air. Mark the amount of air in the tube with a waterproof pen. Close the container and wrap with parafilm. Repeat for the other two groups and place in front of a light source. Also, let the cultures grow for 7 to 10 days.

Data Collection

Students observed the color intensity of the growing cultures and recorded their observations on data sheets. After about a week, the students conducted two simulations of serial dilutions of food color and filtration. First, to prepare the students for limiting serial dilutions, students serially diluted out green food color by powers of 10. The students were given four 15 milliliter test tubes and instructed to transfer 9 milliliters of water into each test tube. The students were then given a test tube with 10 drops of green food color diluted in 10 milliliters of water. The students were instructed to remove 1 milliliter from the concentrated food color, transfer to the first of the four test tubes, and mix thoroughly. The students repeated this process by removing 1 milliliter from the test tube they just prepared and transferring it to the next test tube. This process was continued until the food color disappeared. The students were able to see with each 1:9 dilution, the color intensity of the dye decreased until it disappeared.

Limiting serial dilutions were done to determine the number of algae growing in each container. Limiting serial dilutions employs power of ten dilutions to determine the number of algae per milliliter in the culture. At about the same time the students are doing their serial dilutions, 12 test tubes are labeled and filled with 9 milliliters of Alga-Gro medium for each group. Remove one milliliter with a bulb pipette from the algae culture, dilute in the first test tube, and mix. Next, remove one milliliter from the test tube containing the algae that was just diluted and transfer to the second test tube. Repeat this process through the next 12 test tubes. When finished, lightly wrap the top of the test tubes with plastic wrap to prevent dust and spores from entering the culture. Place the cultures in front of the light source for 7-10 days. The cultures can be observed every other day to see if the algae are growing in the cultures.

Next, the students filtered prepared cultures of algae to see how different amounts of growing algae will produce different color intensities on filter paper. Students were given circular filter paper and shown how to fold it into a cone. Groups were given 10 milliliters of undiluted algae culture, 10 milliliters 1:3 diluted algae culture, 10 milliliters 1:10 diluted algae

culture, and 10 milliliters 1:100 diluted algae culture. The students then label their filter paper and filter the algae through their filter paper cones.

The amount of oxygen gas released by each culture was determined by removing the lid from the container. Before removing the inverted test tube, a marker for writing on glass is used to mark the change in gas volume on the test tube. The test tube is then removed from the inverted funnel, allowing any remaining growth medium to be poured out. The volume of the gas is represented by finding the volume of water that is added back into the test tube at the pre-marked lines.

Results

The students observed that the experimental group with carbonated water grew better as the cultures were greener and produced more oxygen. The negative control of 0.4 M KOH had little detectable algae growth or oxygen gas production. The serial diluted cultures indicated that the experimental group had 1×10^9 algae per milliliter of growth medium, compare to 1×10^7 algae per milliliter for the normal control and 1×10^5 algae per milliliter for the negative control. The amount of oxygen gas collected also correlated with algae growth with 1.6 milliliter for the experimental group, compared to 0.6 milliliter for the normal control and no oxygen for the negative control. Each group was filtered and the qualitatively supported the above findings.

Table 1: Summary of Experimental Results

	<i>Normal</i>	<i>Experimental</i>	<i>Negative</i>
<i>Growing Algae Color Intensity</i>	<i>Green</i>	<i>Dark Green</i>	<i>Light Green</i>
<i>Algae Concentration (Cells/ml)</i>	1×10^7	1×10^9	1×10^5
<i>Oxygen Gas (ml)</i>	0.6	1.6	0
<i>Filter Algae Color Intensity</i>	+++	+++++	+

Conclusion

This experimental system shows the positive influence carbon dioxide has on algae growth. It shows that carbon dioxide dissolved in water can diffuse out of water into the atmosphere of the closed system and into the growth medium of the algae culture. The increased amount of carbon dioxide had a positive growth affect on the closterium algae has evidenced by Table 1. It produced 100-times more algae per milliliter than did the normal control. In addition, the system shows the essential requirement for carbon dioxide for algae growth. The potassium hydroxide solution removes carbon dioxide from the air by forming $K_2CO_3(s)$, which inhibits algae photosynthesis. This system allows students to see that CO_2 is essential for photosynthesis and has positive influence on algae growth.

The above procedure was developed with support from Bob Chen, Ph.D. of OSEI-2, NE-COSEE, Dan Repeta, Ph.D; Marine Chemistry & Geochemistry Department, Woods Hole Oceanographic Institution, and Curtis Olsen; Department of Environmental, Coastal, and Ocean Sciences (ECOS) of UMass-Boston. The procedure was developed by Pamela Drouin, Michelle Falcon and David J. Welty, Ph.D. of the Fairhaven Public Schools and Cheryl Belknap, Curriculum Director- Ocean Studies Curriculum at the Atlantis Charter School in Fall River.

Mystic Aquarium and Institute for Exploration

2005 Outstanding Teacher of the Year

Mystic Aquarium and Institute for Exploration honored Amy O'Neal with its 2005 Outstanding Teacher of the Year Award! Amy grew up in West Hartford, CT and graduated from Smith College where she majored in Biology and minored in the Marine Sciences. She was able to explore many different facets of marine science through a variety of internships. One summer was spent in Gloucester, MA aboard a whale watching vessel collecting data on humpback whale behavior and population. Another was spent interning with Mystic Aquarium teaching classes and outdoor summer camps. She also spent time working with the CT DEP on the LIS Water Quality Monitoring Program. But her travels eventually led her back to the Aquarium where she worked for 5 years as a Grant Program Coordinator, the Outreach Coordinator and finally the JASON Project Coordinator. Amy then decided to pursue her love of teaching and completed the Alternate Route to Certification course. She held her first teaching job at East Hampton Middle School then moved to her current position at East Lyme Middle School as an 8th grade science teacher. Lucky for us, she still remains linked to the Aquarium as a part-time Instructor during the summer camp season.

It was as the JASON Project Coordinator that Amy gathered knowledge and excitement about underwater remote technology. She carried this interest to her students this year with the creation of the Underwater Remotely Operated Vehicle or ROV Project at East Lyme Middle School. The project challenged students to design and construct their own ROVs and remote control switch boxes from PVC piping, small electric motors, toggle switches, and basic wiring materials such as lamp and phone cord. The project supported ongoing lessons on electricity, buoyancy and Newton's Laws of Motion. The students were involved in every aspect of construction from creating the blue prints, cutting and drilling the PVC to the soldering and wiring of the motors. Each ROV design was unique and reflected the ideas and work of each team. One team of 5 students was additionally selected to design a slightly more elaborate underwater ROV for a competition held at the University of Rhode Island in April.

The culminating activity for the Underwater ROV Project took place at East Lyme High School where students tested and demonstrated their ROVs to an audience of family, friends and students. The celebration day included guest speaker Dr. Robert Ballard who delivered a presentation on the importance of underwater remote technology.

Amy is a dedicated, gifted teacher full of enthusiasm and excitement. And we are so happy to honor her as this year's Outstanding Teacher of the Year!

Aloha from Rapture Marine Expeditions!

The **RAPTURE** is a 149-foot custom Education & Research Expedition vessel, specifically built for multi-day educational and retreat programs.

Have your organization come aboard the nation's premier research/expedition vessel. **RAPTURE** has filmed multiple documentaries and is outfitted with state of the art science equipment. Expeditions can include snorkeling, diving, hiking and kayaking, as well as science labs to potentially discover new species. **RAPTURE** is an incredible platform to bring your group together in a safe environment for hands-on learning. Our main focus is to provide hands-on marine education to school groups as well as immerse students in our oceans. Rapture Marine Expeditions is a non-profit organization and provides marine education trips for groups, lasting three to seven days for grade levels 6th through college level. We are open for all schools, public and private, to join in this incredible experience.

Up to 140 guests can be immersed in a truly awe-inspiring environment. **RAPTURE** operates in the Channel Islands and Santa Catalina Island off the California coast and the entire Hawaiian Island chain. For more information on our spectacular research trips, videos, how your school or organization can book a trip, or sponsorship information please visit us at: WWW.RAPTUREMARINE.ORG

For Hawaii expeditions please call: 808-988-2800 or e-mail: bill@rapturemarine.org.
For California expeditions please call: 1-888-WHALES5 or mark@rapturemarine.org.



BULLETIN BOARD



MYSTIC AQUARIUM & INSTITUTE FOR EXPLORATION

Tales of Exploration Week – February 18-26, 2006

A perfect adventure during winter vacation! Bring the entire family to enjoy and celebrate the spirit of exploration and reading at Mystic Aquarium & Institute for Exploration. The winners of the Read Across America story contest will be announced! For more information about the contest or the week, contact Mystic Aquarium & Institute for Exploration at 860-572-5955 ext. 520.

Whale Workshop

CEU's provided, \$35

Saturday, January 21, 2006, 9:00 am – 2:00 pm

Teachers, grades K-12

Enthrall your students by teaching them about dolphins and whales. Learn about the biology of cetaceans (whales, dolphins and porpoises), their unique evolutionary adaptations, how we care for them here and the many environmental issues affecting their survival in the wild. Get an up-close look at a beluga for a better understanding of their physiology and hear about the exciting cetacean research and breeding challenges we face. Participate in engaging classroom activities appropriate for all ages and leave with useful materials to share with your students.

The ABC's of Dolphins' Workshop

CEU's provided, \$35

Saturday, February 4, 2006, 9:00 am – 2:00 pm

Teachers, grades K-12

There's no better way to learn dolphin 'ABC's' - Acoustics, Behavior, Communication - than from the enthusiastic researchers at the Dolphin Communication Project. Join them as they share with you what the team at DCP has learned from their underwater work with dolphins. They'll show some of their data analysis on dolphin acoustics, behavior and communication topics from the ongoing research of various dolphin populations around the world, followed by some terrific dolphin data activities to share with your students.

NEW! Seal Workshop & Seal Watch

CEU's provided

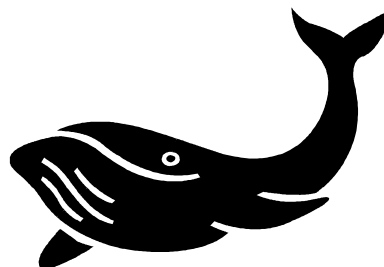
Saturday, March 18, 2006 approx. 9:00 am – 3:00 pm

\$40 for adults, \$25 for children ages 6-12. Includes Aquarium admission, classroom seal program & tour, and Seal Watch

Teachers, grades K-12 and families

Did you know that in any given year Mystic Aquarium responds to at least 50 reports of stranded marine mammals? And that the vast majority of these are seals? Join us at Mystic Aquarium as we familiarize ourselves with seals - their basic anatomy, physiology and unique adaptations. See our stranding facilities and get a sense of how our response operation works. Then, come with us as we climb aboard and head out on Fishers Island Sound to see seals in their natural habitat, basking on rocks during low tide. What a fantastic day devoted to understanding and appreciating our local pinnipeds.

Please call Reservations at 860-572-5922 ext. 520 to register for the above workshops.





BULLETIN BOARD



SCHOONER, INC.

FREE TEACHER WORKSHOPS

With funding from the NewAlliance Foundation, Schooner, Inc. will present teachers with a new approach to the *Project Soundwise* curriculum, offering free workshops and educational resources to teachers in the Greater New Haven area. Workshops will offer new activity handouts, access to classroom resources, and for those who qualify, Continuing Education Credits, all at no cost. These free workshops, covering materials for grades five through eight, are scheduled to take place on Tuesday, December 13, 2005 and Tuesday, January 24, 2006, from 5:30 pm to 7:30 pm at Schooner Inc. located in New Haven. Please contact Schooner at 203-865-1737 or educator@schoonerinc.org to reserve your spot for the program.

URI'S NARRAGANSETT BAY CLASSROOM

Global Environmental Change Education - (OCG 508, 3 graduate credits)

Explore the science issues related to human impact on environmental systems as well as social, political, and economic systems that affect the environment. Projects include development of inquiry-based activities for use in the classroom.

Where and When: Coastal Institute, URI Narragansett Bay Campus. Nine classroom sessions beginning March 8, 2006 – Wednesdays March 8, 15, 22, and 29; April 12 and 26; and May 3, 10, and 17, 4:00 - 6:30 pm AND two Saturday field sessions, May 6 and 13, 9:00 am – 3:00 pm.

Fee: \$495 per person (additional \$100 fee paid separately to CCE if requesting credit). Registration through the Narragansett Bay Classroom is required (call 401-874-6211 to register- do not register through e-Campus). Purchase of reading materials is required.

Mark your calendar for this year's Charles and Marie Fish Lecture in Oceanography.

Tuesday, December 13, 2005

Noon

Coastal Institute Auditorium, URI Narragansett Bay Campus

Divine Wind: The History and Science of Hurricanes

Dr. Kerry Emanuel

Massachusetts Institute of Technology

Dr. Kerry Emanuel, a professor of atmospheric science, has been on the MIT faculty since 1981, after spending three years as a faculty member at UCLA. Professor Emanuel's research interests focus on tropical meteorology and climate, with a specialty in hurricane physics. His interests also include cumulus convection, and advanced methods of sampling the atmosphere to aid numerical weather prediction. He is the author or co-author of more than 100 peer-reviewed scientific papers, and two books, including *Divine Wind: The History and Science of Hurricanes*, recently released by Oxford University Press and aimed at a general audience. His public lecture will focus on the science and prediction of hurricanes as well as hurricanes in history, especially as they have affected the U.S. and New England. He will also discuss how scientists estimate the long-term risk of hurricanes in New England, and conclude with insights into how global warming might affect hurricane activity.

A booksigning for *Divine Wind: The History of Science and Hurricanes* will follow the lecture.

This lecture is FREE and open to the public. Seating is on a first-come, first-served basis. Call the Office of Marine Programs for information or directions, 401-874-6211 or visit omp.gso.uri.edu and click on the December "Calendar of Events."

DATES TO REMEMBER



- March 31, 2006 Long Island Sound Educators Conference, Norwalk, CT, 8:00 am – 4:00 pm
- July 15-21, 2006 NMEA 2006 – Long Island University, Brooklyn, NY
- August 25, 2006 Coals on the Coast – Schooner, Inc., New Haven, CT
- October 14, 2006 SENEME Fall Conference & Annual Meeting, Avery Point, CT

OUTDOOR CLASSROOM GRANT PROGRAM

The Outdoor Classroom Grant Program is a partnership of the Lowe's Charitable and Educational Foundation, International Paper and the International Paper Foundation, and NATIONAL GEOGRAPHIC EXPLORER classroom magazine. Lowe's will provide more than \$200,000 in outdoor classroom grants to benefit public schools nationwide.

Teachers may apply for grants up to \$2,000 by visiting www.Lowes.com/outdoorclassroom. (If you don't have access to the web, contact Rebecca Winn, Partnerships Coordinator, International Paper, 901-419-2001.) For school districts with major outdoor classroom projects, grants may be awarded for up to \$20,000. All K-12 public schools in the United States (except Puerto Rico) are eligible to apply for a grant. Applications will be reviewed three times a year: September –December notified mid January, January-April notified mid May, and May-August notified mid September.

SENEME
c/o Project Oceanology
1084 Shennecossett Rd.
Avery Point
Groton, CT 06340

20th Anniversary



1983-2003



