Caribbean Marine Science

April 2008

Official Newsletter of the AMLC
Published Spring and Fall

Contents

Association News

From the Editors' desk

Our greetings to all the AMLC members. We are starting the next stage of the AMLC after celebrating our 50th year anniversary in 2007. We would like to encourage our members and collaborators to continue with their support to the Association and to participate actively in our future development.

We would like to extend our thanks to Dr. Bernhard Riegl from the National Coral Reef Institute at NOVA SE University and the Organizing Committee of the upcoming 11th International Coral Reef Symposium in Ft. Lauderdale, Fl. USA for their kind invitation and organization of our forthcoming Executive Board Meeting in July 12th. A short laboratory profile is presented on page 2 for your information and if you want more details, please go to their website.

There are several short summaries of interesting articles in our General Interest section with the corresponding internet links and/or source e-mail contact address if you would like to have access to the full article or report. Information on several course offerings for this summer and Fall are included in our Summer course section for our student members to check out.

Future Meetings of the AMLC

2008 - The Executive Board Meeting will be immediately following the 11th International Coral Reef Symposium, hosted by NOVA University in Ft. Lauderdale, Florida. The meeting is scheduled for 9:00 a.m. to 5:00 p.m. on Saturday July 12th, 2008 in Room 113 of the Greater Ft. Lauderdale, Broward County Convention Center, which is the same venue as the ICRS. Make your arrangements soon! We remind you all that all members are welcome to attend and participate in these meetings. Only Board members vote on issues, but open participation and discussion are encouraged!

2009 - Scientific Conference – This meeting is scheduled for Monday-Friday, May 25-29, 2009 in Dominica. Sascha Steiner at ITME will host the meeting and serve as that year's AMLC President.

AMLC List Server

The purpose of the AMLC list server is to facilitate communication and foster collaboration between and among our members. We hope all AMLC members will take advantage of this service – if you have any news, requests, or questions to distribute to the membership, just send a message to the email address below. On-line discussions among members concerning Caribbean marine issues are encouraged.

Don't be shy! The list server address is: members@lists.amlc-carib.org

Only AMLC members in good standing can post to the list. Messages not from a subscribed member will not be accepted. Current AMLC members are automatically subscribed with the list controlled by Dr. David Wilson, AMLC's Membership Director, and new members are added as they join AMLC. The newsletter will be circulated electronically through our list server, which insures delivery and control over who receives the mailing.

As always, we request contributions for the Newsletter from our members and readers. We have a very diverse membership involved in many different areas of research. Your Newsletter is an efficient way of sharing information about your projects, or even better, finding help or cooperation from other members of the Association.

Ernesto Weil and Isabel Urreiztieta, Editors. Steve LeGore Contributing Editor.

Profile

Nova Southeastern University Oceanographic Center.

The Nova Southeastern University Oceanographic Center (NSUOC) via its Institute of Marine and Coastal Studies offers the M.S. degree in Marine Biology, Marine Environmental Science and in Coastal Zone Management. The Ph.D. degree in Oceanography and Marine Biology is also offered. Operating on a 12-week quarter-term system, courses are held in the evening for the convenience of working students and professionals. Flexible distance learning courses are also available for general interest, for undergraduate or graduate credit, or as components of the four-course Graduate Certificate in Coastal Studies and the Graduate Certificate in Climate Change. The M.S. degree in Coastal Zone Management is also available via distance learning. A joint program with the undergraduate center on NSU's main campus in Davie offers the B.S. degree in Biology (pre-medical), Marine Biology and in Environmental Sciences/Studies.

Integral components of the Oceanographic Center include the National Coral Reef Institute (NCRI) and the Guy Harvey Research Institute (GHRI). NCRI was established by Congressional mandate in 1998. NCRI's primary objective is the assessment, monitoring, and restoration of coral reefs through basic and applied research and through training and education. GHRI conducts high quality, solution-oriented basic and applied scientific research needed for effective conservation, biodiversity maintenance, restoration, and understanding of the world's wild fishes. The GHRI also provides advanced scientific training to US and international students who will serve as future stewards of the health of our oceans.

Center faculty (15), staff (25), and graduate students (100) pursue research in biological, geological and physical oceanography. Areas of interest include coral reef studies, benthic ecology, marine biodiversity, marine fisheries, calcification of invertebrates, marine microbiology, molecular ecology and evolution, wetlands ecology, modeling of large-scale ocean circulation, coastal dynamics, and ocean-atmosphere coupling.

The Oceanographic Center campus of NSU is situated approximately 12 miles due east of the NSU 300 acre main campus. The OC campus comprises 10 acres of land on the ocean side of Port Everglades. NSU OC has a large marina, and its location affords immediate access to the Gulf Stream and the Atlantic Ocean. Research vessels include a 38-foot Bertram and several smaller boats. There are three main buildings and several modulars. The main buildings contain a conference room, classrooms, warehouse bay staging area, GIS laboratory/workstation area, electron microscopy laboratory, darkroom, machine shop, electronics laboratory, computer center, wetlab/classroom, coral workshop, filtered seawater facility, flowthrough seawater tanks, working biology laboratories and additional offices. Modulars contain classrooms, laboratories, offices, and meeting rooms. The Center's William Springer Richardson Library contains 3,000 books and 105 active and 33 inactive periodicals. For faculty and student computing, the Oceanographic Center has approximately 140 PC's on a LAN connected to main campus and the Internet.

The student computer lab has 15 individual computer stations with networked computers connected to laser and inkjet printers. Various peripherals throughout the Center include an HP 1055C large format poster printer, color flatbed scanners, and assorted imaging software and hardware. "The Center is linked to the Internet and NSU main campus via a AT&T MetroEthernet circuit with a bandwidth of 10mbs that is burstable up to 100mbs if needed." A wireless network allows indoor and outdoor access to the Internet from any location at the Center.

Contact: Dr. Richard Dodge, Dean, Nova Southeastern University Oceanographic Center, 8000 North Ocean Drive, Dania Beach, FL 33004-3078; e-mail: imcs@nsu.nova.edu
website: www.nova.edu/ocean/

General Interest

Cruise Ship Pollution: Background, Laws and Regulations, and Key Issues

The cruise industry is a significant and growing contributor to the U.S.economy, providing more than $32 billion in benefits annually and generating more than 330,000 U.S. jobs, but also making the environmental impacts of its activities an issue to many. Although cruise ships represent a small fraction of the entire shipping industry worldwide, public attention to their environmental impacts comes in part from the fact that cruise ships are highly visible and in part because of the industry's desire to promote a positive image. Cruise ships carrying several thousand passengers and crew have been compared to "floating cities," and the volume of wastes that they produce is comparably large, consisting of sewage; wastewater from sinks, showers, and galleys (graywater); hazardous wastes; solid waste; oily bilge water; ballast water; and air pollution. The waste streams generated by cruise ships are governed by a number of international protocols (especially MARPOL) and U.S. domestic laws (including the Clean Water Act and the Act to Prevent Pollution from Ships), regulations, and standards, but there is no single law or rule. Some cruise ship waste streams appear to be well regulated, such as solid wastes (garbage and plastics) and bilge water. But there is overlap of some areas, and there are gaps in others. Some, such as graywater and ballast water, are not regulated (except in the Great Lakes), and concern is increasing about the impacts of these discharges on public health and the environment. In other areas, regulations apply, but critics argue that they are not stringent enough to address the problem — for example, with respect to standards for sewage discharges.

Environmental advocates have raised concerns about the adequacy of existing laws for managing these wastes, and they contend that enforcement is weak.
In 2000, Congress enacted legislation restricting cruise ship discharges in U.S. navigable waters within the state of Alaska. California, Alaska, and Maine have enacted state-specific laws concerning cruise ship pollution, and a few other states have entered into voluntary agreements with industry to address management of cruise ship discharges. Meanwhile, the cruise industry has voluntarily undertaken initiatives to improve pollution prevention, by adopting waste management guidelines and procedures and researching new technologies. Concerns about cruise ship pollution raise issues for Congress in three broad areas: adequacy of laws and regulations, research needs, and oversight and enforcement of existing requirements. Legislation to regulate cruise ship discharges of sewage, graywater, and bilge water nationally was introduced in the 109th Congress, but there was no further congressional action.

This report describes the several types of waste streams that cruise ships may discharge and emit. It identifies the complex body of international and

domestic laws that address pollution from cruise ships. It then describes federal and state legislative activity concerning cruise ships in Alaskan waters and activities in a few other states, as well as current industry initiatives to manage cruise ship pollution. Issues for Congress are discussed.

Source: Claudia Copeland
Specialist in Resources and Environmental Policy
Resources, Science, and Industry Division

Full article may be accessed at :
http://www.ncseonline.org/NLE/CRSreports/07Dec/RL32450.pdf

Researchers Calculate Costs, Propose Benefits of High Seas Marine Reserves

A team of fisheries researchers at the University of British Columbia has called for the establishment of a network of no-take marine protected areas on the high seas. In a paper in the journal *Marine Ecology Progress Series*, the researchers provide what they say is the first global, economically supported analysis of the impact on fisheries of establishing such areas outside of territorially defined waters, and conclude that closure to fisheries of 20 percent of waters on the high seas might lead to the loss of only 1.8 percent of the current global reported marine fisheries catch.

In the paper, Ussif Rashid Sumaila and colleagues note that many of the fisheries in "crisis" today are located within countries' 200-mile Exclusive Economic Zones (EEZs). Fisheries outside of this zone, they say, have yet to reach the same state. However, as fisheries move further offshore in response to declining catches caused by overfishing or more restrictive quotas, overfishing is becoming evident on the high seas, particularly in deep waters. Sumaila and colleagues state that logistical, legal and financial difficulties with monitoring and enforcement under current management regimes have prevented sustainable fishing on the high seas. Rather, the researchers propose that a portion should be set aside as marine reserves that are fully protected from fishing. The researchers' data show that between 1989 and 2002, an average of 8.9 percent of the annual global marine fish catch was taken from the high seas. Therefore based on the values of catches and landings of global fisheries, the authors state, "closing 10, 20, 50, or 100 percent of the high seas to fishing may lead to losses of between 0.9 and 8.9 percent of current marine capture fisheries catch per year." Sumaila and colleagues further calculated that, in terms of total revenue, this loss would to amount to $1.35 to $13.5 billion a year, much of it in tuna, swordfish and small pelagic fisheries. Despite such initial economic losses, the authors assert that their proposal contains several considerable benefits, including reduced likelihood of overfishing, insurance against management errors in fished areas and the protection of fish and habitat species for as yet unrealized nonconsumptive uses. Even so, they recognize that the proposal would encounter challenges and obstacles, not the least of which is that, for many nations, concern over short-term losses would outweigh recognition of potential long-term benefits. An additional issue would be the question of which areas to close to fishing, although they propose that recent studies identifying large seamounts and clusters of seamounts globally, as well as evaluations of fishing efforts worldwide, could be used as a basis for "quantitative and rigorous" evaluations of prime candidates for high seas marine reserves.

Source: Sumaila, U.R., *et al.* 2007. Potential costs and benefits of marine reserves on the high seas. *Marine Ecology Progress Series* **345:** 305-310.

Contact: Ussif Rashid Sumaila, Fisheries Centre, University of British Columbia, Vancouver, British Columbia, Canada
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E-mail: r.sumaila@fisheries.ubc.ca

E. coli Found for First Time in Antarctic Wildlife

"There is growing international concern about harmful pathogens being introduced accidentally into Antarctica by human activities," note the authors of a paper in the journal *Polar Biology*. "Such microbial pollution could result in infectious disease outbreaks and high mortality among sensitive, colonial-breeding Antarctic wildlife." In recent years, surveys in the region have detected pathogens such as *Salmonella* in Antarctic wildlife. Jorge Hernandez of the University of Kalmar in Sweden and colleagues collected rectal swabs from 33 Antarctic fur seal pups at a rookery in the South Shetland Islands, just off the Antarctic Peninsula. Samples from two of the pups showed the

presence of *Escherichia coli*—both the first such recorded presence in Antarctic wildlife and the first in pinnipeds.

The authors propose a number of pathways by which the pathogen could have been introduced into a seemingly pristine Antarctic environment. It could have spread from contaminated food or sewage from land runoff or from cruise ships and fishing vessels that frequent the area. Previous studies have found *Salmonella* and *Campylobacter jejuni* bacteria in wildlife breeding sites close to scientific bases. The Antarctic Treaty requires treatment of human waste and sewage, but only for populations greater than 30 people. Once a population has become infected, humans can spread the infection unwittingly. For example, fecal pathogens can be transported by footwear that has been in contact with fecal material from an infected population.

They also propose that seabirds breeding in proximity to fur seals might feed in enriched waters near sewage outlets and bring the infection back with them, spreading the pathogen by foraging and defecating in the fur seal colonies. Additionally, individual fur seals and seabirds might wander to lower latitudes near South America and introduce the microorganism on their return.

The authors state that nothing indicates that either Antarctic fur seals or any Antarctic species would likely suffer higher mortality as a result of *E. coli* infection. However, they conclude that the organism's discovery "in this remote, relatively pristine wilderness is distressing, for it suggests that the nations of the world are still not doing enough to protect Antarctic wildlife from exotic pathogens."

Source: Hernandez, J., *et al*. 2007. Enteropathogenic *Escherichia coli* (EPEC) in Antarctic fur seals *Arctocephalus gazelle*. *Polar Biology* **30:** 1227-1229.
Contact: Jorge Hernandez, University of Kalmar, Sweden.
E-mail: Jorge.hernandez@hik.se.

ENVIRONMENT-VENEZUELA: Farewell, Trawl-Fishing

Trawl-fishing is on its way out in Venezuela, amid demonstrations by artisanal fisherman who support the new law as amended by President Hugo Chávez.

"Trawling is killing off fish species. In our case, we fish with hooks, catch a 'pargo' (sea bream), try again, catch a 'mero' (grouper), and clean them as we go. We used to fill the boats in a single night, but for years now that hasn't happened, and sometimes we come back empty-handed," Manuel González told IPS. González is a veteran member of the Fishers' Association of Río Caribe, a town on the Caribbean coast 550 km northeast of Caracas.

Groups of fisherman have been organizing marches in the capital, some of them driving trucks carrying their boats, to show their support for the Law on Fisheries and Aquaculture, amended by Chávez in March by a decree-law banning trawl-fishing. Before the amendment, the previous law promulgated by Chávez in 2001 only prohibited trawling less than six miles (10 km) from the mainland or less than 10 miles (16 km) from island shores. But the amended law bans trawl-fishing in all Venezuelan waters, where González said "Italian and Spanish ships used to trawl, not only Venezuelan fishing vessels." At a march in Caracas last Thursday, Franklin Hernández of the Socialist Fishers' Front in the state of Sucre, where Río Caribe is located, said that "we artisanal fisherman are the ones who really supply the country. There will be no shortage of fish, and we support the new law 100 percent."

After another demonstration in Puerto La Cruz, 300 km east of Caracas, Adrián Carías, spokesman for the fisherman of Los Cocos, told IPS that "when this law comes into force we'll start seeing better catches, and those who stand to gain are the people, because when there are lots of fish of all sorts, prices will come down." Agriculture Minister Elías Jaua said that "banning trawling will not cause shortages, because small-scale artisanal fisherman supply 70 percent of production, and industrial fishing 30 percent, but trawl-fishing provides only six percent of the total." However, statistics from the Industrial Trawl-Fishing Association (AVIPA) indicate that its members supply 70,000 tons of fish a year. According to the Agriculture Ministry, the total catch in Venezuela in 2007 was 267,000 tons. "The cheapest fish species for the consumer are supplied by trawl-fishing, so closing down our activity will affect the availability of the product and people's pocketbooks," AVIPA spokesman Damiano Mitrano told IPS.

A total of 263 trawling vessels fish in Venezuelan waters, and they have not put out to sea since the law was decreed nearly a month ago. "The jobs of 6,500 people in the industry and some 26,000 indirect workers are at risk," said Luis Guilarte, port manager in the eastern city of Cumaná. The new law provides for a one-year transition period, until March 2009, for the trawling companies and their ships to change over to other activities. "It will be difficult, our hands are tied. Other activities that we could convert to are banned by international conventions or require more time, financial help and other support from the state," Medrano said.

Gilberto Giménez, head of the Socialist Institute for Fisheries and Aquaculture (INSOPESCA), a state regulatory body, said he would issue provisional six-month licenses to trawlers during the transition period. However, only a handful of trawling ships have been granted permits since the law was amended. "The reason for the new law is ecological. In Venezuela, trawlers damage over 68,000 square km of seabed a year. The United Nations Food and Agriculture Organization (FAO) warns that if this continues, marine species will be wiped out by 2048," Giménez said. World's oceans are overfished, and the ones facing the greatest threats are close to coastlines. The global fish catch has stagnated at between 85 and 95 million tons a year over recent decades, a sign that marine reserves are overexploited. Jaua said that "the ban on industrial trawling was requested by artisanal fisherman, fish farmers, environmental groups and academics concerned with the preservation of marine and river resources, and it is in keeping with global trends."

"Industrial trawlers have the opportunity to convert to other forms of fishing that are less environmentally aggressive. If they do not, the state can absorb about 700 workers in a new mixed fishing enterprise we are establishing with Cuba," which will include processing plants, he added. the new law stipulates that fishers must hand over five percent of their catch, free, to state and community institutions running nutrition programs. Giving free fish to poor members of the community is a traditional custom among fisherman on the Caribbean shores of Venezuela. It also grants the state power to fix the prices of fish products along the entire sales and distribution chain. For more than 20 years, retail prices for the best fish species in Venezuela have been considerably higher than for beef. Sardines cost just over two dollars a kilo, and other economical kinds of fish cost between four and eight dollars, but sea bream or grouper is priced at above 20 dollars a kilo.

Source: Humberto Márquez Caracas (IPS)

Climate Change and Invasive Species

Invasive species are one of the leading causes of degraded ecological condition and ecosystem services, and climate change has the potential to interact with this stressor through multiple mechanisms. OW and OPPTS are concerned with aquatic invasive species (AIS) in multiple arenas, including ballast water and NPDES permits, TMDLs and impaired waters, economic consequences, and pesticide usage for control. AIS are also used as biological indicators to measure ecosystem condition.

This report reviews available literature on climate-change effects on aquatic invasive species (AIS) and examines state-level AIS management activities. Data on management activities came from publicly available information, was analyzed with respect to climate-change effects, and was reviewed by managers. This report also analyzes state and regional AIS management plans to determine their capacity to incorporate information on changing conditions generally, and climate change specifically.

The report concludes that further scientific research and data collection are needed in order to equip managers with the tools and information necessary to conduct effective AIS management in the context of climatic change.The report is intended for managers and scientists working with AIS to provide them with information on the potential effects of climate change on AIS, strategies for adapting their management to accomodate these environmental changes, and highlight further research needs and gaps.

Full report is available at:
http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=188305

Source: U.S. EPA. Climate Change and Aquatic Invasive Species. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-08/014, 2008

Caribbean *Acropora* Restoration Network

An invitation was recently posted in the Internet:

Dear friends,
I have created the "Caribbean *Acropora* Restoration Network" Yahoo group site, and you are invited to join, if interested. However, the site is reserved for those actively engaged in working with the threatened *Acropora cervicornis* and *A. palmata* corals and the viable hybrid *A. prolifera* and their conservation and restoration. This would possibly include scientists, educators, potential donors, government officials, and of course the very important field volunteers and MPA managers that the work so much depends on.

Please contribute to the group by spreading the news to those you feel would be interested and if you do join, by posting documents and messages that may be of use to others working on *A. cervicornis* and *A. palmata* conservation and restoration, but understand that we do need to keep it focused on a core of active workers. I plan to announce the group on Coral List Serve, but not until the core group has had a chance to form.

I have posted some initial documents in the files and photos section, and I plan to add more. Just click on the file and photo headings at the right to explore what is available Hopefull through the messages section we can discuss problems and solutions, methods, etc.. to accelerate the work throughout the region. (Caribbean in this context is used only to exclude the IndoPacific region- it includes Mesoamerica and the Atlantic).

The group can NOT be accessed by the general public, and all group members on joining must agree to honor the intellectual property of the others, citing documents properly, and getting permission before using photos ot data in publications and summary or comparison reports. Therefore please mark you posted files and photos with your name. If you like create a file with your name on it: eg: Rose G., Utila restoration photos, or the like.

Hopefully some good information exchanges will take place through this group and key collaborations and partnerships will also develop, as we work to rescue these precious coral species from what looks to otherwise be their impending extinction. There is still hope, but only if we act now. The survival of not only these two coral species but of the coral reefs of the Caribbean is at stake.

Thank you So much for being part of this effort! Don't forget to post relevant documents and photos in the files, and to email the group when important information, questions, or new findings are available. Documentos y mensajes en español son bienvenidos!

I hope this is timely and that it works to assist us all!

Thank You! Muchas Gracias!

Austin Bowden-Kerby
Group Moderator
Coral Gardens-Living Reefs
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Imagery for Everyone…
Timeline Set to Release Entire USGS Landsat Archive at No Charge.

RESTON, VA – The USGS Landsat archive is an unequaled 35-year record of the Earth's surface that is valuable for a broad range of uses, ranging from climate change science to forest management to emergency response, plus countless other user applications. Under a transition toward a National Land Imaging Program sponsored by the Secretary of the Interior, the USGS is pursuing an aggressive schedule to provide users with electronic access to any Landsat scene held in the USGS-managed national archive of global scenes dating back to Landsat 1, launched in 1972. By February 2009, any archive scene selected by a user – with no restriction on cloud cover – will be processed automatically to a standard product recipe, using such parameters as the Universe Transverse Mercator projection, and staged for electronic retrieval. In addition, newly acquired

scenes meeting a cloud cover threshold of 20% or below will be processed to the standard recipe and placed on line for at least six months, after which they will remain available for selection from the archive.

Newly acquired, minimally cloudy Landsat 7 Enhanced Thematic Mapper Plus (ETM+) data covering North America and Africa are already being distributed by the USGS over the Internet at no charge, with expansion to full global coverage of incoming Landsat 7 data to be completed by July 2008 (see timeline below). The full archive of historical Landsat 7 ETM+ data acquired by the USGS since launch in 1999 will become available for selection and downloading by the end of September 2008. At that time, all Landsat 7 data purchasing options from the USGS, wherein users pay for on-demand processing to various parameters will be discontinued.

By the end of December of 2008, both incoming Landsat 5 Thematic Mapper (TM) data and all Landsat 5 TM data acquired by the USGS since launch (1984) will become available, with all Landsat 4 TM (1982-1985) and Landsat 1-5 Multi-Spectral Scanner (MSS) (1972-1994) data becoming available by the end of January 2009. All Landsat data purchasing options from the USGS will be discontinued by February 2009, once the entire Landsat archive can be accessed at no charge.

Landsat scenes can be previewed and downloaded using the USGS Global Visualization Viewer at http://glovis.usgs.gov [under "Select Collection" choose Landsat archive: L7 SLC-off (2003-present)]. Scenes can also be selected using the USGS Earth Explorer tool at http://earthexplorer.usgs.gov [under "Select Your Dataset" choose Landsat Archive: L7 SLC-off (2003-present)]. For further information on Landsat satellites and products, see http://landsat.usgs.gov

Meetings & Conferences

Caribbean Environment Forum – 23-27 June 2008 at the Grenada Trade Center, Grand Anse, Grenada

The meeting is organized by the Caribbean Environmental Health Institute, the Grenada Solid Waste Management Authority, GEF, GEF-IWCAM, U.S. Centers for Disease Control, and Clean Islands International. The organizers expect key Caribbean stakeholders to gather for discussions of issues and experiences related to environment and development, with a focus on sustainable development. For further information please contact:

CEF 4 Secretariat, Caribbean Environmental Health Institute (CEHI), P.O. Box 1111, Castries, Saint Lucia, Tel = (758) 452-2501/1412; Fax = (758) 453-2721; email = cef4@cehi.org.lc URL = www.cehi.org.lc

34th Scientific Meeting of the AMLC

2009 – The 34th Scientific Meeting of the AMLC will be hosted by Sascha Steiner of the Institute for Tropical Marine Ecology, Inc. on the island of Dominica. The dates have been established as Monday-Friday May 25-29, 2009. The 2009 Executive Board Meeting is scheduled for Sunday, May 24th at 9:00 AM.

Course Offerings

The Smithsonian Tropical Research Institute (STRI) offers a short course in Tropical Field Phycology
July 2008

Dates: 9-23, 2008
Location: Bocas Research Station, Bocas del Toro, Panamá.

Registration Fee: $500 (fellowships are available).
Instructors: Dr. Brian Wysor, Roger Williams College; Dr. Wilson Freshwater, University of North Carolina, Wilmington; Dr. Suzanne Fredericq, University of Louisiana in Lafayette.
Organizer: Rachel Collin, STRI
Application: This course is directed toward graduate students and advance Licenciado candidates and will be conducted in English. Please email your CV, 1 letter of recommendation, and a 1-2 page statement explaining your background and reasons for taking the course, to Rebecca Rissanen at RissanenJ@si.edu before March 1, 2008. Limit 12 students. For more information see http://striweb.si.edu/taxonomy/

Tropical Island Ecosystems: Ecology and Conservation. Eleuthera, The Bahamas
July 30th - August 12th, 2008

The Cape Eleuthera Institute (www.ceibahamas.org), Eleuthera, the Bahamas, is offering undergraduate students and interested professionals a 12 day course in a unique and dynamic environment. Students will:

a. gain an understanding of the natural history of tropical islands through studies in a number of coastal and terrestrial environments including patch reefs, seagrass beds, mangrove flats and forests.

b. encounter a broad range of flora and fauna, with emphasis on shark, bonefish, lionfish, and Caribbean long-spined sea urchin ecology.

c. examine how agriculture, aquaculture, fisheries, and tourism-based development have presented major challenges to island ecosystems.

d. be introduced to various conservation practices conducted through research, sustainable coastal resource management, and marine protected areas.
Located on a sustainably designed campus, this course will be devoted to learning through field exercises and excursions (snorkeling, diving, and boat tours), lectures, and student-lead seminar presentations. The course centers around a three day exploration of the entire island of Eleuthera, providing ample opportunities to observe a variety of ecosystems, the local culture, and examples of anthropogenic disturbance and socioeconomic issues. Non-certified and certified scuba divers will be accepted onto the course. Those not certified have the option to gain their PADI Open Water SCUBA certification, which will require arrival two days prior to course start date to complete training and theory.

Instructors: Annabelle Oronti M.S, Offshore Aquaculture Program, Aaron Shultz, M.S, Flats Ecology Program, Edward Brooks, PhD candidate, Shark Program, Colleen O'Brien M.S, Agricultural Systems Manager

Participation cost: US$ 1,800 for certified divers or those not wanting to dive. US$ 2,200 for participants wishing to gain PADI certification. Cost includes US$ 500 non-refundable admission fee. I**ncludes**:
Course tuition - Accommodations and meals - PADI SCUBA Certification course (excluding manual)- Vehicle and boat transportation to field / dive excursions/airport - Reading materials.
Flights and taxes not included.

Please contact annabelleoronti@ceibahamas.org Tel. 1 609 945 0710 for more information.

Mote Marine Lab – Advanced courses - 2008

Advanced Courses in Tropical Marine Sciences are offered on specialized topics by experts in the topic areas. Past courses include Shark Biology (1995), Coral Reef Ecology (1996), Reproduction and Recruitment of Tropical Marine Fishes (1998), Diseases of Corals and Other Reef Organisms (1997 - 2007), Coral Tissue Slide Reading (2004 - 2007), Coral Succession (2006), Ecology and Taxonomy of Marine Sponges (2006), and Applied Techniques in Restoration Ecology (2007). The courses are designed for advanced undergraduates, graduate students, or professionals. Current courses offered in 2008 will include:

Coral Tissue Slide Reading-August 3-8, 2008

This 5-day workshop focuses on the histology or microscopic anatomy of scleractinian corals, gorgonians, and other Cnidaria to support studies on their ecology, physiology, reproduction, biochemistry, systematics, molecular biology/ genetics,

immunology, embryology, and pathology. Topics covered include histology; diseases; sample collection, preservation, processing, and histoslide preparation (lecture and discussion only, no laboratory); and interpretation of tissue sections from healthy and diseased specimens using light microscopy. Participants can bring histoslides from their own research to share with the group and discuss with Dr. Peters. This year, the longer workshop will permit Dr. Peters to also present material from the Advanced Coral Tissue Slide Reading Workshop to be held after the 11th International Coral Reef Symposium, so that newcomers to the field will receive background training and examine current case studies.

Instructor: Esther Peters – Ph.D Tetra Tech Inc.

Prerequisites: College-level biology courses are required, and courses in invertebrate zoology, microbiology, ecology, chemistry, biochemistry, physiology, histology, or marine sciences will be very helpful. SCUBA certification is required for those wishing to dive, and applicants will need to meet Mote's standards for "temporary diver" status.

Costs: The course fee of **$900** includes all course materials, accommodations, meals (dinner, 8/3 through breakfast on 8/8), boat costs, SCUBA tanks and weights. Participants need to arrange travel to and from the facility, and should bring their own mask, snorkel, fins, and weight belt, as well as a regulator and BCD(if diving). Equipment rentals can be arranged if required. With advanced notice, pick up and drop off at the Key West International Airport by Mote staff can be arranged.

Diseases of Corals and Other Reef Organisms. August 9 – 17. 2008

This course will introduce students to the field of pathobiology of marine organisms. The focus of lectures, dives, and laboratory sessions will be on diseases affecting hard corals, but diseases of other reef organisms will also be discussed. Methods of studying diseases will include collection of field monitoring data and physiological, histological and microbiological techniques. The course will provide students with a state-of-the-art overview of reef pathobiology, experience with relevant techniques, and an understanding of the need for a multidisciplinary approach to its study. This course is limited to 14 participants.

Instructors: Esther C. Peters, Ph.D., Tetra Tech, Inc. Robert Jonas, Ph.D., George Mason Univ., and Thomas Cuba, Ph.D., Delta-Seven Inc.

Prerequisites: College-level biology courses are required, and courses in invertebrate zoology, microbiology, ecology, chemistry, biochemistry, physiology, histology, or marine sciences will be very helpful. SCUBA certification is required, and applicants will need to meet Mote's standards for "temporary diver" status.

Costs: The course fee of **$1400.00** includes all course materials, accommodations, meals (dinner, 8/9 through breakfast on 8/17), boat costs, SCUBA tanks and weights. Participants should bring their own mask, snorkel, fins, regulator, BCD, and weight belt (rentals can be arranged if required). With advanced notice, pick up and drop off at the Key West International Airport may be arrange

Completed applications can be mailed or faxed to the address and number below, or you can complete the .doc version of the application by typing in the fields, saving as a Word document, then e-mail it to Lauren Waters (lauren.waters@delta-seven.com) at:

Delta-Seven Inc.
PO Box 3241
St. Petersburg, FL 33731
(727) 823-2443
(727) 550-2513 (fax)

2008 Coral Reef Research Internship at the Little Cayman Research Centre

College Credit offered through Rutgers University, Institute of Marine and Coastal Science

The Central Caribbean Marine Institute (CCMI) is currently accepting students into our summer Coral Reef Research program. This field intensive program provides a research internship framework for students who want experience conducting research while also learning ecology and conservation principles. Participants explore the functional groups of reef organisms, learn about ecologic successions, principals of reef resiliency, sustainability, and

essential theories of marine protection and management.

Students work in teams on field research project to explore the successes and failures of marine protection. The Long-Term Assessment and Monitoring Program (LAMP) at the Little Cayman Research Centre is the framework for many of our population and habitat field studies. Students complete a team research poster that may be published or presented at a national or international conference.

REGISTER NOW.

Course dates: July 12-August 03, 2008
Qualifications: Open to undergraduate and graduate students and to professionals with a strong interest in marine ecology and conservation.
SCUBA divers and non-divers are accepted into the program.
Application deadline: March 1, 2008 and continues until the program is full.
Students are encouraged to apply early.
Credit: 4 Credits in Tropical Marine Conservation are provided by Rutgers University, Institute of Marine and Coastal Science.
Program Goals: Enhance student research training, increase the interest in coral reef science and conservation, and provide useful data to assist in our long-term ecosystem research.

For over 10 years, CCMI has been providing leadership in field-oriented marine ecology & conservation education so that students gain an understanding of critical issues facing tropical marine ecosystems.

Through our undergraduate and graduate programs, CCMI is training a new generation of leaders, researchers, resource, and policy managers. Please announce this to your students.

More information at the CCMI web site
http://www.reefresearch.org/ccmi_website/edufield/edufield_02.htm.
You will find a link there to the Rutgers Study Abroad Office, where you can apply.
Contact: info@reefresearch.org
Central Caribbean Marine Institute
PO Box 1461
Princeton, NJ 08540
Little Cayman Research Centre
North Coast Road
Little Cayman, Cayman Islands

Bermuda Institute of Ocean Sciences – Fall course fellowships

The Bermuda Institute of Ocean Sciences is offering Undergraduate Fellowships in Marine Science, Oceanography and Global Climate Change during the Fall semester. FALL SEMESTER: Tentative dates are September 3 to November 26, 2008

The Bermuda Institute for Ocean Sciences has received National Science Foundation Research Experiences for Undergraduates (REU) funding to support 8 fellowships for undergraduate student research at BIOS during the 2008 fall* semester (TENTATIVE DATES: arrive on September 3, 2008 - depart on November 26, 2008). Students will design and conduct independent projects under faculty supervision within several research areas including (see website for more details http://www.bios.edu/education/reu.html):

* Biology, chemistry and physics of the open ocean
* Biology, physiology and biochemistry of reef building corals and reef ecosystems
* Aspects of the molecular biology of marine organisms
* Environmental chemistry of Bermuda's atmosphere and inshore waters
* Effects and consequences of global environmental change

Eligibility and Terms of Fellowship
Students who have completed at least two years of undergraduate study and will still be undergraduates in the fall of 2008 are eligible to apply. Minorities and women are especially encouraged. Applicants must be U.S. citizens or permanent residents. We encourage all successful applicants to arrange for independent study credit through their home institutions.

Each successful REU applicant will receive a stipend of approximately $360 per week less the costs of room and board (a special REU rate of $250 per

week). Students will reside on the BIOS campus. Travel expenses will be covered by the REU program.

Applications and Further Information
You can apply to BIOS's REU program by downloading an application form from our website http://www.bios.edu/education/reu.html (in Word format) and e-mailing, faxing or mailing your completed application to the address listed on the form. If you have difficulty with the form, you can contact BIOS's Education Department at mailto:education-at-bios.edu>education@bios.edu or telephone (1-441)
297 1880 ext 217

If you have any other questions about the program or BIOS, please e-mail Dr Gerry Plumley at Gerald.Plumley@bios.edu

Applications will be accepted until the program is full. Initial selection of participants will begin May 30, 2008.

Students will arrive on September 3 and will begin work on September 4. Work will end on November 25, with students departing on November 26. THESE ARE TENTATIVE DATES.

Fellowships for Interdisciplinary MPhil Research at UWI on Caribbean Marine Resource Governance

The University of the West Indies (UWI) Centre for Resource Management and Environmental Studies (CERMES) at the Cave Hill Campus in Barbados is offering two MPhil degree fellowships for full time interdisciplinary research on marine resource governance in the Eastern Caribbean available for 2007/08 and 2008/09 academic years. Each fellowship provides BBD$ 35,000 (US$ 17,500) per year for two years. The fellowships are associated with the CERMES research project on "Marine Resource Governance in the Eastern Caribbean" (MarGov project). Before contacting us, persons interested in this opportunity should first visit www.cavehill.uwi.edu/cermes/margov_profile.html for information on the project. The focus is on examining coastal and marine resource governance at national and local levels in OECS countries and Barbados primarily using concepts from complex adaptive systems and network analysis.

Persons should also determine if they satisfy the UWI requirements for admission to an MPhil degree. Refer to the UWI school or Graduate Studies and Research "Manual of procedures for graduate diplomas & degrees" available at www.uwi.edu/documents/pdfs/Manual_Of_Procedures_2005.pdf or consult the School directly. The minimum admission requirement for an MPhil programme is an Upper Second Class Honours first degree or its equivalent.

CERMES will consider persons with natural science, social science or interdisciplinary first degrees. Preference will be for degrees that included marine resource studies and for candidates familiar with Caribbean countries. Candidates in an MPhil programme are required to register for some graduate courses, but this degree is awarded primarily on the basis of a research thesis. Strong research and fieldwork skills are essentials. The UWI Graduate Studies process for application to do an MPhil will apply.

Persons who are both interested and eligible may contact the project with an expression of interest, a recent CV and a copy of their academic transcript. Email the project at margov.project@cavehill.uwi.edu

Change of Address

MOVING? To ensure that you continue to receive *Caribbean Marine Science*, notification of upcoming AMLC meetings and other AMLC information, please fill out the following change of address form and mail it to the address below, or send the information by e-mail to David Wilson at the e-mail address below.

Dr. David Wilson
Australia Fisheries Management Authority
506/16 Moore Street
Canberra Ciry, ACT 2601
Australia
davetroywilson@gmail.com

Name & Title

_____

Institution/Association

_____

Address _____
_____

_____

Telephone _____
FAX _____
E-mail_____

Dues

Individual membership dues for 2008-2009 are $25.00 due in June 2008. You can make your payment with Dr. David Wilson, AMLC's Membership Director, who can be contacted by e-mail at: davetroywilson@gmail.com. If you attended the St. Thomas meeting, your membership fee for the two years of 2007-09 was included in the registration fee. If you did not attend the meeting, please remit your dues as discussed here. You may also help AMLC with a donation membership contribution if you wish; the schedule for these is presented below. Student dues are still $5 per year.

The AMLC can accept credit cards payments (Visa, MasterCard or American Express) for AMLC dues. A 5% service charge will be added to credit card payments. Checks must be in U.S. dollars, from U.S. banks (or a U.S. dollars bank draft), made out to "AMLC", and sent to Laurie Richardson (address on next page).

Name & Title

_____

Institution/Association

_____

Billing Address _____

_____

Telephone_____
FAX _____
E-mail_____
Scientific interests _____

_____

Membership Options: Student (US$5.00)_____ Regular (US$25.00)____Sponsor(US$30.00)___ Sustaining Member (US$50.00)_____ and Patron (US$100.00)_____.
My check (bank draft) is enclosed for US$_____ OR Please charge US$_____ to my Visa ( ) Mastercard ( ) (Charge will include an additional 5% to cover handling expense)
Card # _____
Expiration Date_____
Cardholder_____
Billing Address_____
Signature _____

AMLC Background & Goals

The Association of Marine Laboratories of the Caribbean (AMLC) was founded in 1957 by marine researchers with interests in the marine science of the tropical Atlantic and Caribbean. Founded primarily as a scientific organization, the strength of the AMLC lies in the diversity of its member laboratories and the extensive expertise of its membership. Institutional, individual scientist and student memberships are available.

Biannual AMLC scientific meetings are hosted by member laboratories actively conducting marine research in the Caribbean. The host laboratory arranges facilities for research presentations, and logistical arrangements. The AMLC has no designated official language so researchers are free to make their presentations in their native language.

Caribbean Marine Science, published twice per year in English and Spanish, is the newsletter of the AMLC and informs members of AMLC activities, pertinent events, and relevant research.

The purpose of the AMLC is to advance common interest in the marine sciences by:

a. Assisting and initiating cooperative research and education programs
b. Providing for a for exchange of scientific and technical information
c. Fostering personal and official relations among members
d. Publishing the proceedings of scientific meetings and a newsletter

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Contributions to the AMLC Newsletter:
All members of the AMLC (individual and laboratory) are encouraged to send relevant news items at any time, to the newsletter. Relevant news items include, but are not limited to: new facilities, faculty/staff changes, positions available, research programs and initiatives, publications of general interest, awards, visiting scientist opportunities, and education programs. Submitted items should be sent to the AMLC newsletter office by the end of February for inclusion in the Spring issue, and by the end of September for the Fall issue.

Please send your information and comments to:

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