



Caribbean Marine Science



May 2009

Official Newsletter of the AMLC Published Spring and Fall

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Association News

From the Editors' desk

Our greetings to all AMLC members. We are ready for our upcoming Scientific meeting next week in Dominica. The program looks fine and highly informative with over 50 oral presentations and 40 posters. A profile of the Institute of Tropical Marine Ecology (ITME), our host institution in Dominica, is included in this issue, as are some travel advice tips.

In this issue you will find interesting articles on the Caribbean lionfish problem, climatic effects of strong hurricanes that kill millions of trees in their paths, the unexpected recovery of a bleaching-damaged reef in Australia, marine protected areas in the wrong place, and how new military technologies can help protect goliath grouper populations. All appear in our General Interest section. There is information on several course offerings for this coming summer and fall, new book releases and future workshops.

Travel information: Melville Hall International Airport is located on the East coast of Dominica near the town of Marigot. It takes about an hour to cross the island along the trans-insular "Imperial Road" into Roseau. This trip takes you through forest reserves and you will be passing by the Morne Trois Pitons National Park (UNESCO World Heritage Site). The roads are narrow, steep and winding. Participants are responsible for their transfer from the airport to the hotel and back. The regulated transfer fares are Eastern Caribbean Dollars 65.00 (US\$ 25.00) for "Taxis" (minibuses), and as long as there is more than one passenger in the bus, each passenger is to pay no more than the \$25.00 set fee. Please inform the drivers to which hotel you need to go. Have a good trip! Meeting participants are invited to look for representatives of Choice Taxi (Mr. Ben Senhouse) for their transfers. Choice Taxi has been informed of the event."

Please be advised that the **Transportation Security Administration (TSA)** has instituted new rules and procedures that require airlines to present the TSA with certain specific identity information for all passengers. The TSA has branded these new requirements **TSA SECURE FLIGHT**, which goes into effect on 15 MAY. The purpose of this program is for the US government to pre-screen airline passengers against its No-Fly list 72 hours prior to boarding.

On May 15, airlines will be required to provide the full name of each passenger to the TSA. Your name, as it appears on your reservation, must match the ID you will be presenting to check-in EXACTLY. If your ID contains your middle initial or name, your reservation must also reflect such. This only applies to reservations made on or after May 15th. As your Frequent Flyer Number must also match your

reservation name to get flight credit, you may need to contact the airline and have your account name changed to match the ID you will be using.

On August 15th, airlines will be required to provide the TSA with your date of birth and gender for all domestic flights.

On October 31, airlines will be required to provide the TSA with your date of birth and gender for all international flights entering or leaving the US.

We encourage our members and collaborators to continue their support to the Association and to participate actively in our future development. There will be elections for new officers during the meeting and that we are still open for nominations for the Vice-President, Treasurer and Membership Director and Member-at-Large positions. Please send your nominations to Ernesto Weil (eweil@caribe.net).

Future Meetings of the AMLC

2009 - Scientific Conference – This meeting is scheduled for Monday-Friday, May 25-29, 2009 in Dominica. Sascha Steiner at ITME will host the meeting as this year's AMLC President. Our next Scientific meeting venue will be decided by our Executive Board in Dominica.

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 ensures delivery and control over who receives the mailing.

As always, we request news 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.

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

Profile

The Institute for Tropical Marine Ecology Inc. (ITME)

The Institute for Tropical Marine Ecology Inc. (ITME) was established as a mission-oriented organization in 1999, focusing on the biological investigation of tropical marine environments, specifically in regions where such activities had not been carried out or only marginally. Dominica has been the base of operations for ITME's first major endeavor (www.itme.org/missiondom.htm), to generate and compile environmental data relevant to local resource interests in a publicly accessible manner (www.itme.org/marinehabitats)—in hopes of facilitating future environmental monitoring and research ventures.

During its Dominica mission, ITME has also provided academic programs and research training in marine biology. Operations were centered at the ITME Field Station, located in the west-coast village of Mahaut (www.itme.org/facilities.htm). In addition to housing and training students, ITME served a variety of visiting researchers (incl. terrestrial biologist, geologists, archaeologists and anthropologists), graduate students and university groups over the years.



General Interest

Lionfish invasion: super predator threatens Caribbean coral reefs fish.

Indo-Pacific lionfish are rapidly invading the waters of the Caribbean and tropical Atlantic. Due to their population explosion and aggressive behavior, some researchers believe that lionfish have the potential to become one of history's most disastrous marine invasions by drastically reducing the abundance of coral reef fishes and leaving behind a devastated ecosystem. Dr. Mark Hixon and his team from Oregon State University with support from NOAA's Undersea Research Program (NURP) have embarked on the first studies to measure the severity of the crisis posed by this invasive predator.

The lionfish, native to the Indo-Pacific region, have infiltrated their way into the Caribbean. Their introduction is believed to be a result of hurricanes and tank releases during the early 1990's. They have been spotted along the eastern seaboard—spanning as far north as Rhode Island to as far south as Columbia. Protected by venomous spines, lionfish are voracious and effective predators. When hunting, they herd and corner their prey using their pectoral fins, then quickly strike and swallow their prey whole. With few known natural predators, the lionfish may pose a major threat to coral reef ecosystems in the Caribbean region by decreasing survival of a wide range of native reef animals via both predation and competition. While native grouper may prey on lionfish, they have been overfished and therefore unlikely to significantly reduce the effects of invasive lionfish on coral reef communities.

In the last several years, members of Dr. Mark Hixon's lab working at the NURP Caribbean Marine Research Center at Lee Stocking Island (LSI), a field station at the southwestern end of Exuma Sound, Bahamas, have documented increasingly frequent sightings of lionfish. These findings have provided an unprecedented opportunity to study the ecological interactions of lionfish with Caribbean coral reef fish communities from the very beginning of the invasion. In the summer of 2005, they found their first lionfish

Its academic programs, offered in the form of 4-week and 12-week terms, have attracted students from 14 nations. Community outreach initiatives have spanned a broad spectrum of activities including, but not limited to, the dissemination of environmental information via public lectures, printed media, radio and television programs, and also in conjunction with community training, local museum enhancement, academic sponsorships and assistance in curriculum development (www.itme.org/community.htm).

Upon request of the Dominican government, ITME has also regularly contributed to the development of environmental policy. As an institutional member of the Association of Marine Laboratories of the Caribbean since 2005, ITME is completing its current mission by hosting the 34th Scientific Conference of the AMLC to be held in Roseau, May 25-29 2009.



Researcher Mark Albins documenting a lionfish in the Bahamas. Photo credit: Mark Albins, University of Oregon State

near LSI. Between the fall of 2006 and summer of 2007, the lionfish population in the Bahamas increased substantially. During the summer of 2007, over 100 lionfish were spotted around LSI signifying a rapid expansion within the Bahamas.

PhD student Mark Albins of Hixon's team devised a controlled experiment testing the effects of lionfish on native fish communities by documenting the recruitment of newly settled reef fishes on 20 patch reefs near LSI: 10 reefs with a lionfish and 10 reefs without. Fish censuses were conducted at one week intervals for five weeks. Recruitment was significantly lower on lionfish reefs than on control reefs at the end of the experiment. On one occasion, a lionfish was observed consuming 20 small wrasses during a 30 minute period.

It was not unusual to observe lionfish consuming prey up to 2/3 of its own length. Results of the experiment show that lionfish significantly reduce the net recruitment of coral reef fishes by an estimated 80%. The huge reduction in recruitment is due to predation and may eventually result in substantial, negative ecosystem-wide consequences. It is also important to note that lionfish have the potential to act synergistically with other existing stressors, such as climate change, overfishing, and pollution, making this invasion of particular concern for the future of Atlantic coral reefs.

While complete eradication does not seem realistic, affected nations are encouraged to initiate targeted lionfish control efforts as soon as possible, including

targeted fisheries (lionfish flesh is tasty and cooking denatures the spine venom). Efforts to reduce densities of lionfish at key locations may help to lessen their ecological impacts. Recovering and maintaining healthy populations of potential native predators of lionfish, such as large grouper and sharks, may also help reduce the deleterious effects of these voracious invasive predators.

Hixon's team will return to the Bahamas this summer and thereafter to conduct further field experiments, field observations, and laboratory experiments to answer important questions regarding the invasion and how lionfish interact both directly and indirectly with native Bahamian reef fish and invertebrate communities. They will also work in the Pacific Ocean to understand what naturally controls lionfish abundance in their native range.

By: Mark Hixon, Mark Albins, and Tori Redinger

Climatic effects of tree-killing hurricanes

Storm damage returns millions of metric tons of carbon dioxide back to the atmosphere each year. Hurricanes and tropical storms kill or damage, on average, about 97 million trees per year. Regions shown in red experience tropical-storm-strength winds about once every three years; those colored green suffer such storm-related winds, on average, less than once each century. Hurricanes and tropical storms kill or damage millions of trees in the United States each year, and that fallen wood and vegetation decomposes, returning more than 90 million metric tons of carbon dioxide to the atmosphere annually, researchers report.

Since 1851, hurricanes or tropical storms have caused damage along the Atlantic seaboard or Gulf Coast in every year except one. These storms, besides causing innumerable deaths and destroying human-built structures, have repeatedly pummeled wide swaths of coastal forests as well as large numbers of inland trees, says Hongcheng Zeng, an ecological geographer at the University of Windsor in Canada.

To assess the effect of this damage on carbon storage in U.S. forests, Zeng, then at Tulane University in New Orleans, and his colleagues used a computer

model that estimates wind-related tree mortality across 5-kilometer-by-5-kilometer grid cells. The researchers then inputted information about the paths and strengths of the hurricanes and tropical storms that struck the lower 48 states from 1851 to 2000. During that time, on average, hurricanes and tropical storms killed or damaged about 97 million trees annually and caused forests to lose about 53 million metric tons of biomass each year. That wood and vegetation will eventually decompose and release about 92 million metric tons of carbon dioxide into the atmosphere, Zeng and his colleagues report online April 27 in the Proceedings of the National Academy of Sciences.

The researchers found, however, that forests suffered much more damage before 1900 than afterward. From 1851 to 1900, storms killed or damaged an average of about 147 million trees each year. But from 1900 to 2000, storms killed or damaged only 72 million trees - about half the damage seen pre-1900. The difference stems largely from changes in land use through time, such as conversion of forests to fields, but can also be attributed in part to an unusual spate of storms that struck the United States late in the 19th century, Zeng notes.

From 1851 to 2000, hurricanes and tropical storms affected forests from central Texas to New England - a swath that covers about 1.75 million square kilometers - but particularly afflicted the southeastern United States, the researchers note. About 1 percent of the total area studied experienced hurricane-force winds, on average, at least once every 50 years.

"This is a good study," says Maria Uriarte, a forest ecologist at Columbia University. In 2007, her team reported on the effects of hurricanes and tropical storms on the forests in New England, but until now "no one has really done this sort of study on such a large scale," she notes. Occasional disturbances to ecosystems - such as hurricanes and tropical storms, wildfires and insect infestations provide "an additional, unpredictable dimension of climate-ecosystem interactions" that most climate models don't include, says Steven Running, a forest ecologist at the University of Montana in Missoula.

And the effects of those interactions can be substantial: Previous studies have suggested that all

together, U.S. forests lock away between 110 million and 150 million tons of carbon each year. Compare that, however, with the damage caused by Hurricane Katrina in 2005. The decomposition of trees killed or damaged by that storm alone will return more than 105 million tons of carbon, or 385 million tons of carbon dioxide, to the atmosphere in the years to come, analyses suggest.

Moreover, for areas very near the coastline, the new study may drastically underestimate a storm's effect on forests, says Kam-biu Liu, a coastal scientist at Louisiana State University in Baton Rouge. In a 2005 survey of Alabama's Gulf State Park, just east of where Hurricane Ivan roared ashore the previous year, about 44 percent of the trees were killed by the storm. Oddly, most of those trees remained standing, and many had no broken limbs. That observation, plus the fact that many of the dead trees were rooted in low ground, hints that the trees were killed not by wind but by saltwater forced onshore during the hurricane's storm surge, Liu and his colleagues report in an upcoming special issue of the Journal of Coastal Research.

*By Sid Perkins - Web edition : Monday, April 27th, 2009
Island Resources Foundation
1718 "P" St NW, # T-4 Washington, DC 20036*

Doom and boom: Incredible recovery of a reef from the 2006 bleaching event.

QUEENSLAND, Australia -- Marine scientists say they are astonished at the spectacular recovery of certain coral reefs in Australia's Great Barrier Reef Marine Park from a devastating coral bleaching event in 2006. That year high sea temperatures caused massive and severe coral bleaching in the Keppel Islands, in the southern part of the Great Barrier Reef. The damaged reefs were quickly smothered by a single species of seaweed – an event that can spell the total loss of the corals. A lucky combination of rare circumstances meant the reefs were able to achieve spectacular recovery, with abundant corals re-established in a single year, said Dr. Diaz-Pulido, from the Centre for Marine Studies at the University of Queensland and the ARC Centre of Excellence for Coral Reef Studies (CoECRS).

“The unexpected recovery was due to a combination of previously-underestimated ecological mechanisms, with three critical factors becoming into play, the first was the exceptionally high regrowth of fragments of surviving coral tissue. The second was an unusual seasonal dieback of seaweeds, and the third was the presence of a highly competitive coral species which was able to outgrow the seaweed”. He added, “this also all happened in the context of a well-protected marine area and moderately good water quality”.

Dr. S. Dove, also from CoECSR and UQ, said the “the exceptional aspect was that corals recovered by rapidly re-growing from surviving tissues. Recovery of corals is usually thought to depend on sexual reproduction and the settlement and growth of new corals arriving from other reefs. This study demonstrated that for fast-growing coral species, asexual reproduction is a vital component of reef resilience”.

The fact that this was a well-protected reserve must be emphasized, specially nowadays when coral reefs globally are being increasingly damaged by mass bleaching, diseases, anthropogenic factors and climate change. “This study suggest that managing local stresses that affect reefs, such as overfishing, declining water quality, etc. can have a big influence on the trajectory of reefs under rapid global change”, said Dr. O. Hoegh-Gulberg from the same institution. Understanding the different mechanisms of resilience is critical for reef management under climate change.

*You can read the ms. in PLoS ONE
Underwatertimes.com News Service*

Protection zones in the wrong place – can they prevent coral reef collapse?

Conservation zones are in the wrong place to protect vulnerable coral reefs from the effects of global warming, an international team of scientists warned today. Now the team led jointly by Newcastle University and the Wildlife Conservation Society, New York say that urgent action is needed to prevent the collapse of this important marine ecosystem. The research, published in the journal PLoS ONE, is the largest study of its kind to have been carried out, covering 66 sites across seven countries and spanning

over a decade in the Indian Ocean. Current protection zones or CENo-take areas¹ (NTAs) were set up to protect fish in the late 1960s and early 1970s, before climate change was a major issue. The team which comprises of experts from the UK, Australia, the US, Sweden and France found the small-scale zones were not working to protect coral reefs against the effects of climate change.

They conclude that while the existing zones should not be removed, new areas are needed in the right place to protect corals against the effects of rising temperatures. And they say that managing the system as a whole is crucial if coral reef communities are to have any hope of surviving the effects of global warming. Lead researcher Nick Graham, of Newcastle University's School of Marine Science and Technology, said: We need a whole new approach and we need to act now.³ Our research shows that many of the world's existing no-take areas are in the wrong places. New protected zones are needed that focus on areas identified as escaping or recovering well from climate change impacts. But a major focus needs to be shifted towards increasing the resilience of the system as a whole that means reducing as many other locally derived threats as possible. Coral dies when it is put under stress so what we need to be doing is reducing the direct human impact such as over-fishing, pollution and sedimentation across the whole area.

By removing all these other stresses we are giving the coral the best chance of surviving and recovering from any changes in temperature that may occur as a result of global warming. Previous work by the team focused on the long-term impact of the 1998 event where global warming caused Indian Ocean surface temperatures to increase to unprecedented and sustained levels, killing off (or bleaching) more than 90 per cent of the inner Seychelles coral.

Although many areas are showing signs of long-term degradation, Mr. Graham said it was positive to see that some locations either escaped the impact or have recovered. This provides the key to conserving coral reefs in the face of climate change,² he says. ³We are not suggesting that we scrap the existing NTAs in terms of protecting fish stocks they have been quite successful. But they are not effective against global warming and in order to ensure the long-term survival

of this rich marine community, that is what we need to address.

Press Release Issued by Newcastle University Press Office

U.S. Military technology protects critically endangered goliath grouper. High tech sonogram finds baby giants tucked away in mangrove nurseries.

Fort Pierce, Florida - November 19, 2008 - The Ocean Research & Conservation Association (ORCA) and its collaborators announced today the world's first use of an acoustic underwater camera to survey juveniles of goliath grouper in mangrove habitats.

Goliath grouper, *Epinephelus itajara*, currently is listed as critically endangered by the IUCN (International Union for the Conservation of Nature). The largest grouper fish in the Atlantic Ocean, goliaths can exceed six feet (2 meters) in length, weigh more than 1,000 pounds and can live more than 40 years. Juveniles (up to 3 feet, or 1 meter in length) spend almost the first decade of their lives in red mangrove nurseries.

ORCA adjunct scientist Dr. Sarah Frias-Torres and her colleagues at the University of Miami successfully demonstrated how this camera system, originally developed for the U.S. Department of Defense, can be used to conduct visual underwater surveys to evaluate the recovery of the species in the US (where it is protected) or the decline of the species in the Caribbean (where protection is lacking). In the past, such observations were often hindered by murky waters and low visibility typical of red mangrove habitat.

Similar to the sophisticated sonar of dolphins, the acoustic camera (referred to as DIDSON, or dual-frequency sonar) can "see" individual fish species and habitat by using sound waves, without the need of light or good visibility conditions. The resulting image resembles a medical prenatal ultrasound used for monitoring the development of human babies. In a way, it is an ultrasound of Mother Nature. "This technology allows me to see where human eyes can't," said Dr. Sarah Frias-Torres, ORCA adjunct scientist and lead author of the study. "It's important to be able to show how the babies hide in the

mangrove roots, because it provides critical information for protecting the species and a much stronger argument for protecting the habitat."

The study was conducted in the fringing red mangrove shorelines of the Florida Keys National Marine Sanctuary. This technique has previously been used to monitor salmon migrations entering rivers and detecting fish under ice.. This is the first time this system has been used in mangrove habitat.

Coastal mangroves are an important nursery and habitat for many fish and invertebrate species that eventually migrate to nearby coral reefs. Mangrove habitat is often threatened by coastal development and pollution. DIDSON offers great potential to complement underwater fish surveys in low visibility conditions, due to high turbidity, or during nocturnal surveys. "This is a wonderful example of how cutting edge technology can be used to protect the ocean and the species that live there," said Dr. Edith Widder, ORCA president and senior scientist.

The research was funded by NOAA's Coral Reef Conservation Program, and conducted by researchers from the Ocean Research & Conservation Association (ORCA) and the University of Miami's Rosenstiel School of Marine and Atmospheric Sciences.

The full scientific article can be seen here:

<http://www.int-res.com/articles/esr2008/theme/Goliath/goliathpp4.pdf>

Learn more about ORCA's innovative conservation technologies at www.teamorca.org

*Sarah Frias-Torres, Ph.D.
Marine Conservation Biologist
ORCA, Fort Pierce, Florida USA*

The Ocean Research & Conservation Association (ORCA) is dedicated to the study and protection of marine ecosystems and the species they sustain through the development of innovative technologies and science based conservation action. An IRS 501(c)(3) nonprofit corporation, ORCA operates from two Florida locations: the Duerr Laboratory for Marine Conservation housed within the Indian River State College on the Fort Pierce Inlet and ORCA's Conservation Technology Center in Port St. Lucie.

Meetings & Workshops

Responses of Coral Holobionts under the Impact of Climate Change

Please find the website link of coming workshop on "Responses of Coral Holobionts under the Impact of Climate Change: Symbiont Diversity, Coral Bleaching, Diseases, and Ocean Acidification", which will be held on June 22-23, 2009, in Academia Sinica, Taipei, Taiwan.

(<http://coral.biodiv.tw/2009/cht/Default.aspx>)

Three languages, Mandarin, English, and Japanese version, are available. There is no registration fee for the workshop. Poster presentation is welcome. For detail, please visit the website.

Allen Chen, PhD

Biodiversity Research Centre

Academia Sinica, Taiwan

e-mail: cac@gate.sinica.edu.tw

ph: 886-2-27899549/886-930073637

Development and Application of Gene Expression Biomarkers of Coral Stress and Disease (July 24-31, 2009)

Mote Marine Laboratory's Tropical Research Laboratory is pleased to announce the addition of a new workshop to the schedule for advanced courses this summer to be held at the Summerland Key, Florida, facility:

This 8-day course is for professional scientists and graduate students interested in gene expression analysis as a diagnostic tool for coral research.

Instructor: Mikhail "Misha" Matz, University of Texas at Austin. The URL below will take you to the home page for all courses:

http://isurus.mote.org/Keys/adv_courses_2009.phtml

And these URLs link to the individual courses:

http://isurus.mote.org/Keys/biomarker_workshop_2009.phtml
<cid:part1.04040408.01060400@verizon.net>
http://isurus.mote.org/Keys/slide_workshop_2009.phtml
http://isurus.mote.org/Keys/disease_workshop_2009.phtml

Spaces are still available in the Coral Tissue Slide Reading Workshop and Diseases of Corals and Other Reef Organisms course!

Download application forms from these sites. Questions about the biomarker course should be directed to Dr. Matz (matz@mail.texas.edu) or the slide reading or disease courses directed to Dr. Peters (epeters2@gmu.edu), about registration to Stillwater Research Group (SRG@delta-seven.com), and about the diving program to Erich Bartels (ebartels@mote.org).

Course Offerings

Bermuda Institute of Ocean Sciences

The Bermuda Institute of Ocean Sciences (BIOS) is pleased to announce a Coral Reef Ecology field course offering in Bermuda in July 2009.

Course dates: 12 July to 1 August, 2009

Course instructor: Dr. Samantha de Putron, BIOS

Qualifications: Open to undergraduates and graduate students with strong academic credentials, and to teachers and professionals. The course is open only to SCUBA divers.

Application deadline: March 13, 2009 for first round of admissions and scholarship decisions. Later applications will also receive consideration on a space-available basis.

Scholarships and financial aid AVAILABLE and are based on academic background/performance and demonstrated need. Full scholarships are rare and

only available in exceptional circumstances. We encourage students to apply for other sources of funding that BIOS can supplement or match. Travel and SCUBA equipment are NOT included under any circumstance. Some scholarships and financial aid are open to all nationalities. We particularly encourage Canadian and UK students to apply, as there are specific funding sources for these students.

More information of the Coral Reef Ecology summer course is below and also can be found at: http://www.bios.edu/education/coral_reef_ecology.html

Application form available at: <http://www.bios.edu/education/scapp.html>

For further information please contact: education@bios.edu

Course summary:The Coral Reef Ecology summer course at BIOS exposes the student to the reef ecosystem at all organizational levels, from physiological ecology through population biology, community structure to ecosystem dynamics, and ends with consideration of human impacts and climate change. The course has a large practical component, and the field surveys along with complementary laboratory analysis provide training in many techniques commonly used in coral reef research. The integrated course is comprised of lectures, required reading, laboratory exercises and field surveys. The lectures cover a broad range of relevant topics in coral reef ecology that are supplemented by readings from the primary literature with attention given to active areas of research. The course is divided into 20 lectures (1 to 1.25 hours long), 9 field trips (4 hours each), 6 lab sessions (4-5 hours each), 6 precepts (1 hour each), 3 or 4 seminars by BIOS scientists on current research, a take home written exam, and an afternoon of oral presentations. An additional 10-15 hours is taken to complete the working-group analyses and presentations.

The lab work is focused on training in practical techniques:

- separation of coral tissue from skeleton
- fractionation by centrifugation
- enumeration of zooxanthellae with a haemocytometer
- chlorophyll analysis
- determination of coral surface area
- coral

growth determination using a buoyant weighing technique

Various field techniques and subsequent lab analyses are used repetitively at different sites so that each student has the opportunity to become familiar with the following methods:

- video-taping of reef transects to assess community structure
- quantification of reef fish community structure using a visual census method
- quadrat sampling of reef algae, sorting, identification and dry weight biomass estimation
- quadrat sampling and measurement of juvenile corals to construct size/frequency curves
- quantification of parrotfish and surgeonfish feeding rates and social interactions

The laboratory and field work are synthesized as final oral presentations that are based on a typical format for presenting scientific results to an audience and so are designed to provide experience in communicating science.

Coral tissue slide reading workshop (July 26-31, 2009)

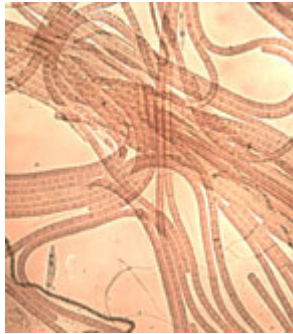
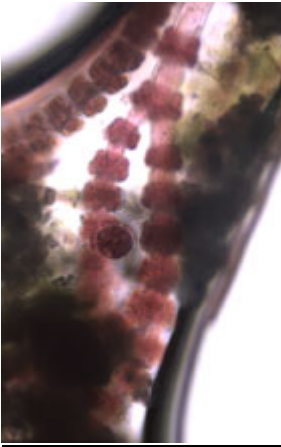
For professional scientists and graduate students interested in the histology or microscopic anatomy of scleractinian corals, gorgonians, and other Cnidaria.

Instructor: Esther C. Peters, Ph.D., George Mason University

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.

Lectures alternate with individual and group slide reading sessions using the laboratory's 4 student microscopes and Olympus with imaging

capabilities. Students may also bring their own laptops (other computers will also be available) to learn how to access the Coral Disease and Health Consortium's virtual slide collection. Two half-day field trips to snorkel or dive at Looe Reef are also included. This course will be limited to 8 individuals.



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. You need to clear your dive status with MOTE.

Costs: The course fee of **\$1000** includes all course materials, accommodations, meals (dinner, 7/26 through breakfast on 7/31), 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 may be arranged.

Download application forms from these sites. Questions about the courses should be directed to Dr. Esther Peters (epeters2@gmu.edu), about registration to Stillwater Research Group (SRG@delta-seven.com), and about the diving program to Erich Bartels (ebartels@mote.org)

Institute of Marine & Coastal Sciences, Rutgers University – Summer programs - 2009

Tropical Marine Conservation - July 19 - August 07, 2009

4 Undergraduate or Graduate Credits from the Institute of Marine & Coastal Sciences, Rutgers University.

This program provides a research internship framework that involves marine ecology and conservation principles. Participants conduct coral reef ecosystem field research with a principal investigator.

As part of 10 years of active research by the Central Caribbean Marine Institute (CCMI), students are engaged in data collection at one of the world's most beautiful coral reefs surrounding Little Cayman and the Bloody Bay Marine Park. CCMI invites students to help in this important work to understand the major declines in reef communities and to become aware of conservation practices. The program goals are to enhance student research training, increase the interest in coral reef science and conservation, and to provide useful data to assist CCMI in our long-term ecosystem research.

Students prepare for marine conservation research by learning principles of sustainability, essential theories of marine protection and management, and by reviewing case studies. Students work in teams on field research projects that explore the successes and failures of marine protection and complete a joint research poster that may be published or presented at a national or international conference.

Admission is rolling and spaces do fill up. Applying early is best. To learn more and to see The Little Cayman Research Centre <http://www.reefresearch.org> <<http://www.reefresearch.org/>>

Destination Setting

Students work and live at the Little Cayman Research Center. This new field station, which overlooks the Caribbean Sea, has dormitory style rooms, three flowing sea water laboratories, large classroom and is equipped for biological and ecological studies,. We serve three full meals each day. Our bath house is the

first model of sustainable development for the Cayman Islands. Little Cayman is consistently ranked as the best diving destination in the Caribbean because of the stunning reef walls, shallow reef structures, and large undersea life, including sea turtles and the endangered Nassau grouper.

Registration and affiliated University:

Undergraduate and graduate course credit is offered through the Rutgers University Institute of Marine & Coastal Sciences and the Rutgers Study Abroad (Cayman Islands) program. All registration requirements and payment for this course must be processed through Rutgers Study Abroad program.

Contact: Students may also email Rutgers at RU_Abroad@email.rutgers.edu or call 732-932-7787. Additional course information can be requested from CCMi's education officer at ccmiapplications@reefresearch.org.

SCUBA Divers are encouraged to apply but non-certified participants are also accepted.

New Books

Reef Restoration: Concepts and Guidelines

Simple advice on coral reef restoration for coastal managers, decision makers, technical advisors and others who may be involved in community-based reef restoration efforts. If you are involved in reef restoration it is important to be aware that there is still much uncertainty in the science underpinning restoration, not least due to the great complexity of reef ecosystems. Through the Coral Reef Targeted Research and Capacity Building for Management (CRTR) Program, much scientific research is currently underway world-wide to address these knowledge gaps, and improve our understanding of what reef restoration interventions can and cannot achieve. Despite these uncertainties, there are many useful lessons to be learned from previous work. *Reef Restoration: Concepts and Guidelines* seeks to summarize such lessons in a succinct form for practitioners to help identify what works, what

doesn't and what new techniques are on the horizon to enable goals and expectations to be set accordingly.

For more information contact:

Dr. Alasdair Edwards, Chair, CRTR

Restoration and Remediation Working Group on a.j.edwards@newcastle.ac.uk

Marine Biodiversity of Costa Rica, Central America

Ingo S. Wehrtmann and Jorge Cortés (Eds.)-2008

This volume, compiling and updating the marine biodiversity information of Costa Rica, consists of species lists, and comments on the state of knowledge of most taxonomical groups. It contains information about collections and experts for each taxonomic group as well as information gaps, thus serving as a starting point and basic reference for future research. Although focusing on Costa Rica, the book provides an overview of marine species diversity of Central America. This full color book with over 100 color illustrations should stimulate marine research in the region, and will be an asset for students and researchers as well as decision makers and conservation managers dealing with the sustainable use of marine and coastal areas.

Approx. 550 p. 118 illus. in color., Hardcover Monographiae Biologicae, Volume 86 - \$ 149.00

Coral Disease Handbook, guidelines for assessment, monitoring and management

L. Raymundo, C.S. Cough and D. Harvell (Eds), 2008.

Produced by the Disease working group of the GEF-WB Coral Reef Targeted Research and Capacity Building Project, this book compiles all the experiences researchers have gathered during several years of field work with coral reef diseases.

The manual is intended for researchers, managers and students alike and presents a general introduction to infectious diseases in corals-what they are, why they are a growing problem, and what is currently understood about them. It also presents a look at the current global patterns and hotspots in regard to coral

diseases, decision trees for disease and other health problem identification, extensive discussion on field protocols, assessments, measuring disease dynamics and impacts, the role of global sea water warming and decreasing water quality, and management issues and potential actions.

The manual and two sets of comprehensive underwater ID cards for both the Indo-Pacific and Atlantic-Caribbean coral reef diseases can be purchased from CRTR program at the University of Queensland, Australia. info@gefcoral.org and www.gefcoral.org

Proceedings of the International Cyanide Detection Testing Workshop

NOAA has released the Proceedings of the International Cyanide Detection Testing Workshop. This report summarizes the outcomes of a meeting held in Florida in February, 2008, on the current status of field and laboratory tests that are available or could be developed to detect the presence of cyanide in marine ornamental fish at points of collection, export, and import. The Executive Summary includes nine specific recommendations needed to develop and implement cyanide testing in countries of export and import. The proceedings provide the framework to move forward in implementing networks of cyanide-detection laboratories. Such networks would advance international efforts to enforce bans on this type of fishing and help reduce this illegal and unsustainable fishery's presence in the aquarium trade.

The Proceedings of the International Cyanide Detection Testing Workshop are available for download on the NOAA Coral Reef Conservation Program website (<http://coralreef.noaa.gov/>) or direct (http://coralreef.noaa.gov/Library/Publications/cyanide_doc.pdf). There are a limited number of hard copies available upon request for those who cannot download the PDF version.

The illegal use of cyanide to capture live reef fish for both the food industry and the aquarium trade is widespread in the Asia-Pacific region and leads not only to high mortality rates of the captured fish, but damages and kills corals and other reef organisms. Without effective testing methods, enforcement of anti-cyanide fishing laws has proved difficult. The

International Cyanide Detection Testing Workshop was one component of a series of initiatives implemented by the NOAA Coral Reef Conservation Program to address this destructive practice. Participants from the United States, Indonesia, the Philippines, and Vietnam included government representatives, NGOs, academic institutions, marine aquarium industry representatives, fisheries and law enforcement agencies, forensic laboratories, and CITES Parties.

For additional information or to obtain hard copies please contact:
Glynnis Roberts, NOAA NMFS, Coral Reef Conservation Program, at Glynnis.Roberts@noaa.gov

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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 City, ACT 2601
Australia
amlc.membershipdirector@gmail.com

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Dues

Individual membership dues for 2009-2010 are \$25.00 due in June 2009. You can make your payment with Dr. David Wilson, AMLC's Membership Director, who can be contacted by e-mail at: amlc.membershipdirector@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 card payments online at www.amlc-carib.org. 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).

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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

2009-09 AMLC Officers

Executive Director

Dr. Steve LeGore
LeGore Env. Assoc. Inc.
2804 Gulf Drive N
Holmes Beach, FL
34217, USA
(473) 444-4176
slegore@mindspring.com

Vice President

Dr. Ernesto Weil
Department of Marine
Sciences - UPR
PO BOX 908
Lajas, PR 00667
eweil@caribe.net

Membership Director

Dr. David Wilson
Australian Fish Mgmt Auth
506/16 Moore St
Canberra City, ACT 2601
Australia
davetroywilcon@gmail.com

Newsletter Editors

Dr. Ernesto Weil - Isabel Weil
Dept. of Marine Sciences
U. of Puerto Rico
PO BOX 908, Lajas
Puerto Rico 00667. USA
(787) 899-2048 x241
FAX (787) 899-5500
eweil@caribe.net

President

Dr. Sascha Steiner
Director ITME
Commonwealth of
Dominica
admin@itme.org

Treasurer

Dr. Laurie Richardson
Dept. of Biology
Florida International U.
Miami, FL 33199 USA
(305) 348-1988
richardl@fiu.edu

Members-at-Large

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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:

Dr. Ernesto Weil
Department of Marine Sciences
University of Puerto Rico
P.O. Box 908
Lajas, Puerto Rico, 00667.
FAX: (787) 899-5500/2630.
E-mail: eweil@caribe.net

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Editorial Office:

Department of Marine Sciences
University of Puerto Rico
P.O. Box 908
Lajas, Puerto Rico, 00667.
Tel: (787) 899-2048 x 241.
FAX: (787) 899-5500/2630
E-mail: eweil@caribe.net
