Hello fellow marine and atmospheric science enthusiasts!

Welcome to the first issue of *Wave* the departmental magazine that has it all. Want to know what your friends are doing post-graduation? Check out *Alumni Sounding*. What about the amazing things your friends are doing right now? You’ll find that in the next issue under *Stellar Students*. Want to keep up with current events in marine and atmospheric science? We have that, too. Getting a little worried about the weather reports? Flip to *Hurricane Watch*, where we will keep you updated with news in meteorology. And how about an easy way to organize your extracurricular marine and atmospheric activities? There’s a calendar in here to do just that.

*Wave* is your way to stay connected with all the cool things going on around you in the world of marine and atmospheric science. As *Wave* is run entirely by students, we encourage you to submit your photographs and articles about topics you find interesting. Likewise, if you think one of your friends is a “Stellar Student” nominate them to be featured in the next issue. *Wave* will be a common link between Rho Rho Rho, Scuba Club, UMAC, Atmospheric Science Club, and Marine Mammal Stranding Team, which means we’ll be sure to let you know about any upcoming events that are happening for any of the clubs. We even have a section called *Into the Abyss*, just in case you need a quick and fun pick-me-up.

As we are all environmentally conscious, *Wave* will be published on the department website to save paper and an email will be sent out to notify you when a new issue has been published. This is the pilot issue of *Wave* and we are hoping to publish once or twice a semester, but to do this we need student participation. If you have any questions, comments or are interested in writing for our next issue, e-mail us at MSCWave@gmail.com. We hope that you enjoy reading *Wave* as much as we have enjoyed creating it!

Swimcerely,
Natalie Kraft & Kasey Cantwell

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Cover Photo: Queen Angelfish grazing on the algae, Bonaire, Netherlands Antilles – Natalie Kraft
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Making Waves

Departmental News

Announcing a special Study Abroad program in the Galapagos. The semester will take place at the University of Miami’s field station on the islands. Every couple weeks, different faculty members from UM will be flying down to teach a two week long, intensive class varying from Galapagos Biology to Marine Ecology to Conservation Biology and Geology. This semester will be a once in a life time experience. For more information contact: Dr. Sarah Meltzoff – smeltzoff@rsmas.miami.edu.

Sign up for an advising appointment online at: http://rhino.cox.miami.edu/dagr/index.php?ggroup=msc&sstart=20091026
Registration for classes begins on November 9th, you can register online, without a PIN, if you have earned more than 30 credits at UM, excluding any credits you transferred in with.

Seniors please be sure to turn in your senior credit check to Ginger ASAP.

Students and two professors take a break from collecting data to pose for a shot while in Dominica last spring as part of MSC 325

Photo Credit: Evan D'Alessandro

The Marine Science Department is now doing a direct exchange program with University of Southampton. Talk to your advisor if you are interested.

Saltwater Semester classes will be offered this year, however students are not required to take the entire suite of courses as in the past. Check the upper level biology course listings for specific class offerings.

There are still a few more spots available for MBF 514: Tropical Marine Biology, which travels to Bimini, Bahamas during the winter intersession. Students will earn 3 credits that will be applied to the spring semester. If you are interested contact Dr. Gruber at sgruber@rsmas.miami.edu.
I’d like to say I’ve been on a boat since graduation last May, living it up on the high seas, but the truth is far less entertaining. For the past several months I’ve been stuck behind a desk in an office building in the frigid northeast. I’m working on a biology Ph.D at Penn State, and while I do enjoy being close to home and watching the leaves change colors after so many seasonless semesters in Miami, I miss the subtropical climate more than I ever thought possible. Case in point: I’m writing this piece while recovering from strep throat and a nasty viral infection. You know the last time I was seriously sick like this? Over four years ago. You do the math.

But I came to Penn State despite the terrible weather and risk of disease because my advisor, Iliana Baums (who started off doing undergrad work with Dr. Glynn in the ‘90’s) studies the molecular ecology of coral reefs in general and *Acropora palmata*, the endangered Elkhorn coral, in particular. Though we’re based in Pennsylvania, we travel throughout the Caribbean during the summer field season. This year I ended up in Puerto Rico for three weeks. In a nutshell, we’re studying the adaptive potential of corals imperiled by rising sea surface temperatures.

I focus on the establishment of the coral-algal symbiosis. *A. palmata* is a great study organism because its larvae don’t inherit their symbionts from the parent like some species, making experimental manipulation relatively easy, and it releases gametes directly into the water column during a predictable time every year. In Puerto Rico, we donned SCUBA gear every night and collected these gametes in mesh nets (for those of you taking MSC 201, the ‘gold-bag’ training actually paid off! For everyone else, why aren’t you taking MSC 201? It’s one of the best classes UM has to offer!).

*Continued on page 6.*
Continued from page 5-

Afterwards, we stayed up all night first separating the eggs from the sperm, then performing crosses from different parents, then placing the fertilized eggs in various temperature treatments and sampling them periodically. That way we could tease out temporal, temperature, and genetic effects on gene expression and larval survival. I also exposed each treatment to a ‘soup’ of two different symbiont strains in equal proportions. Using microsatellite markers I will (hopefully) be able to see if the larvae took up the competing strains differentially in response to temperature changes. This is the project I proposed for the NSF Graduate Research Fellowship (www.nsfgrfp.org), which anyone considering graduate school should apply for. The Department of Energy just announced an even more lucrative fellowship program, which you should also check out www.scied.science.doe.gov/SCGF They are hard to get but they are definitely worth the effort.

Field work is not without its fair share of risks. For much of the time, we were worried that our corals wouldn’t spawn. They held out until almost the last day. Then when we were rearing them, the threat of a hurricane almost forced us to shut things down prematurely. Equipment kept failing left and right, and rogue environmentalists seriously thought we were there to hurt the coral. It was quite an adventure! If you’re interested in reading further about the Puerto Rico trip, you should visit the blog (www.personal.psu.edu/jep295/blogs/puertorico2009/blog/), where we have pictures and video of the whole team in action.

I am reaching my page limit, so before I sign off, a final piece of advice: take advantage of everything Miami has to offer. You’re so lucky to be a part of the best marine science program in the country—don’t turn down any opportunities to get out there and explore. You’ll regret it when winter finally arrives.
Club News and Calendar

ATMO Club meets every other Thursday in the Ungar Building, room 506. Meetings start between 7:00 and 7:30 pm. Check out their extensive list of internships and other information on their website: http://www6.miami.edu/studorgs/atmoclub/index.html

MMST meets every other week on Monday nights at 8:00 pm in the Marine Science Lab, Cox 184. For more information contact Ramiro Barbuzano at mmstcanes@gmail.com

Rho Rho Rho meets every other week 8:00-9:00 pm in Cox 145. They are hosting Ocean Kids again this year on November 14th, see page 10. For more information see their website: penguin.bio.miami.edu/rhorhorho

Scuba Club meets every Tuesday from 8:30-9:30 pm in the UC Ballrooms. They also have dives planned for every weekend for the rest of the semester - see the calendar on the next page. If you need forms for upcoming dives, you can find copies in their mailbox in the MSC office Cox 182. This semester they will be hosting a camping trip to the FL Keys, December 5th-7th. Check out their website: UMScuba.org

UMAC meets every Tuesday from 7:00 -8:00 pm in the MSC Lab, Cox 184. The winners from their Underwater Photography Contest can be found on page 14 be sure to check it out for some beautiful pictures. Contact them at UMAquariumClub@gmail.com or check out their website www.UMAquariumClub.weebly.com
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On November 14, 2009, F.I.N.SEA Foundation, the Rosenstiel School of Marine and Atmospheric Science, and University of Miami undergraduate conservation and marine science organizations will be hosting the second annual “Ocean Kids” day for 200, local, at-risk, minority elementary school students. The event, to be held at the University of Miami Coral Gables campus, seeks to both educate and inspire others about the ocean and to generate environmental awareness and stewardship in the community.

Approximately 50% of elementary students in Florida qualify for the federally sponsored program of free and reduced lunch. Due to a variety of factors, including low socio-economic status, many Miami-Dade students are at risk for poor academic standing and dropping out. Ocean Kids day hopes to foster confidence and pride, and ultimately empower children to become leaders in their communities and effect positive change in the natural world.

“The second annual Ocean Kids event is going to provide a source of inspiration and passion for learning to deserving, young students and create a sense of unity between disparate Miami communities. After the extraordinary success of last year's inaugural event, we are reaching out to twice as many schools and students this year. University of Miami students have dedicated an insurmountable amount of energy, time, and creativity into making this event one of the most powerful and unforgettable days of these children’s lives.”—Jill Richardson, Rosenstiel School of Marine and Atmospheric Science.

Future Interests in Nature and the Sea (F.I.N.SEA) Foundation is a non-profit 501(c)(3) organization with a mission to offer at-risk children hands-on, experiential, marine science learning adventures, while simultaneously fostering environmental awareness. Rho Rho Rho and The Marine Mammal Stranding Team (UM student organizations) will be coordinating this project with F.I.N.SEA Foundation. Anyone interested in helping should contact the Assistant Chair of the event, Sara Johnson at sara.johnson987@hotmail.com.
A paper published in the journal *Science* on October 16th, 2009 describes a surprising relationship between two microbes and possible implications for the global nitrogen cycle. The researchers studied sediment from 1800ft-deep methane seeps in the Eel River Basin, off the coast of northern California. Within the sediment they observed a community of microbes consisting of two widely divergent organisms. A bacterium reduces sulfate to sulfide, while an archaean oxidizes methane. While these metabolic pathways are widely known among microbes, the research also revealed a new, unexpected ability. The archaean was not only fixing Nitrogen, but sharing it with the neighboring bacteria! Using fluorescent in situ hybridization to visualize the different cells, $^{15}$N isotope labeling to track Nitrogen metabolism, and a powerful Nanometer Secondary Ion Mass Spectrometer (which can resolve chemical differences between points separated by only 50 nanometers), they demonstrated that both the archaea and bacteria incorporated $^{15}$N into their biomass. After $^{15}$N isotope incubation, the archaea contained significant concentrations of labeled nitrogen, and the bacteria contained lesser amounts. The reason for sharing the fixed nitrogen is still unclear. Although the archaea need the symbiotic bacteria in order to survive, it is not known whether the bacteria need to receive nitrogen from the archaea. For details see Dekas et al. “Deep-Sea Archaea Fix and Share Nitrogen in Methane-Consuming Microbial Consortia” *Science* 16 Oct 2009.

The implications of this nitrogen-fixing ability highlight a new role for the methane seep community as a nitrogen source in nutrient budgets. Though these communities have already been identified as a methane sink, this new label may explain the mystery of the missing nitrogen in the global nitrogen balance. Current analyses of nitrogen flow come up with a shortage of biologically available nitrogen compared to what is being used. Scientists are searching for more sources of nitrogen in an effort to balance the budget. Studies like this are helping to reveal undiscovered biotic and abiotic sources and sinks of nitrogen, along with other elements such as carbon and sulfur, whose budgets are also currently unbalanced. As the lead author, Anne Dekas states, "These results suggest that these assumptions may need to be reevaluated, and that there could be more nitrogen-fixing organisms in other unexpected environments. Together, these previously overlooked sources of nitrogen may be an important component in the marine nitrogen inventory."

The Year of the Tank
Kasey Cantwell ‘10

2009 marks the year when half of the world’s seafood is grown by aquaculture. As the world’s population grows and natural fisheries approach the brink of collapse we are turning more and more to conserving our resources and looking to aquaculture to help supply the world’s seafood demand.

Several facilities have begun expanding their aquaculture programs, including the National Oceanic and Atmospheric Administration (NOAA), who recently enacted a 10-year plan to revolutionize the American seafood industry and reduce the nation’s impact on the ocean. The plan includes advanced development of commercial marine aquaculture and the replenishment of wild fish stock.

Recently UMAC visited the Mote Marine Lab aquaculture facility. Unique to this facility is its use not only for research into better techniques for aquaculture, but also as a commercial entity that funds the research. At Mote, the primary interest is in four species of economically important fish: Snook, Redfish, Palmetto, and Sturgeon. With Snook, the researchers faced an unexpected problem - individuals tend to eat others of comparable size! This makes it very difficult to maintain large quantities of fish in holding tanks. This forced scientists to get creative. They tried heavy current, more frequent feedings, and lower water levels, but they haven’t found the solution yet.

Another challenge that Mote faces is the difficulty of raising marine animals away from the coastline, as it is much more expensive and open water systems are notoriously harmful to the environment. The project they recently completed was growing redfish at low salinities in a completely contained system. They believe that this is the future of aquaculture as it can be successful several miles away from a shoreline.

Aquaculture is not only used for food, but also for ornamental purposes. In the aquarium trade, distributors are looking for better ways to accomplish two goals: to better meet production demands and to conserve the reefs that keep them in business. Oceans, Reefs and Aquariums (ORA) is one of the largest distributors of organisms produced via aquaculture in the world. Located a couple of hours north of Miami, in Fort Pierce, ORA is able to produce healthier, less aggressive fish and unique hybrids without depleting the ocean. Local aquarium stores often carry fish and coral from ORA because they are so popular with their customers for their robustness, longevity, and beautiful colors. So eat and stock your aquarium with aquaculture fish!
**ORA Snapshots - Clockwise from the top corner:** False Percula Clownfish are stored before being shipped out to aquarium stores. This tank alone contains hundreds of fish; Black Percula Clownfish exhibit behavior not seen in the wild: schooling into tight clusters in the absence of any other form of shelter; inside the packing facility of ORA, lights are specially designed to oscillate over tanks to conserve energy and avoid over-heating the tanks; coral species are grown in an outdoor facility - sunlight brings out the bright colors that naturally appear in the wild; Picasso Clownfish pioneered by ORA- one of the many unique fish exclusively created in their breeding program.

*Photo Credit - Brendan McDermott*
A Picture is Worth a Thousand Words

Kasey Cantwell, UMAC President

This past month, UMAC hosted its first annual underwater photography contest. The contest was open to all University of Miami undergraduates and had over 300 entries. The categories were: Macro, Wide Lens, Aquarium, and Overall. The Overall category was voted on by UMAC members and the favorite was chosen as the winner. The 1st place winners in every category will be on display for the next year in the Marine Science Office, Cox 182. Congratulations to all of the winners and thank you to every one who submitted their photos!

Macro

1st place: Nudibranch– Harris Moore

2nd Place: Cassiopeia– Chris Jehle

2nd Place: Shell Shocked– Chris Jehle

1st Place: Just Chillin’ - Kasey Cantwell

2nd Place: Sea Urchin– Harris Moore
Wide Lens

1st place: Life - Natalie Kraft

2nd place: Rappel – Natalie Kraft

2nd Place: Tripod – Hilary Street
Aquarium

1st Place: *Viewed* – Brendan McDermott

2nd Place: *I Dare You* - Coral Millican

2nd Place: *Window Between Worlds* – Hilary Street

1st Place: *Glass Menagerie* – Laura Rock
Overall

2nd Place: Reflections - Kasey Cantwell

1st place: Reef Squid at Night – Harris Moore
Dream Destinations

Barefoot in Bonaire

Natalie Kraft ‘11

A forerunner in marine conservation, the small island of Bonaire, located just north of Venezuela, recently celebrated its 30th anniversary of being a national marine park. For divers, this means some of the most beautiful reefs in the Caribbean just bursting with marine life. The longlure frogfish (this issue’s creature feature), considered rare to occasional through most of the Caribbean Sea is almost a sure thing in Bonaire’s clear water. Seahorses, eels, and hawksbill turtles are downright common. The real treat is up close encounters with spotted eagle rays, foraging in the sandy shallows or gliding by in the blue. You never have to go far to get a chance to see one as they are often found just off shore.

Known for its fantastic shore diving, Bonaire has 63 dive sites along its coast and another 26 on its satellite island, Klein Bonaire, only a short boat ride away. Great for divers of all levels, the shore entries are often very easy to maneuver and the reef crest is neither far nor deep. Underwater photography fanatics rejoice for the clear water and shallow depth lends to some excellent lighting. And for those of you who tend to drain a tank of air fast, the shallow depth helps extend bottom time, and you will have the prime viewing point for all sorts of wild life at 30 feet. Continued on page 19.
One of the many longsnouted seahorses that can be found in Bonaire- keep your eyes open!
Continued from page 17-

Two of the best night dives on the island are at the Town Pier and the Salt Pier. Both require a local dive guide and special permission to dive for safety purposes – wouldn’t want to get hit by a cargo ship now would you? – but are worth every second. The piers may look like underwater junkyards, but don’t judge on your first impression! The dive sites are absolutely teeming with interesting critters! Frogfish, moray eels, octopuses, seahorses, and even the occasional stingray can be found roaming through the pylons. The Town Pier is especially famous for its night-blooming Orange Cup Coral (Tubastrea coccinea) that was introduced to the Caribbean in the 1940s and has spread widely since. However, preliminary studies are showing that the cup coral may actually be benefiting many species by creating new habitats.

For divers seeking more thrilling dive experiences, the east side (windward) of Bonaire is known as the “Wild Side” and there are a few dive operations that run boats over there. And if you are worried about dive-related injuries, you can put your mind at ease on Bonaire as the island has its own hyperbaric chamber and suite of doctors familiar with dive medicine.
Local Dive-In
Kasey Cantwell ‘10

The USS General Hoyt S. Vandenberg was purposely sunk this summer making it one of the largest wrecks in the world. The board of Artificial Reefs of the Keys (ARK), responsible for the relocation and sinking of the Vandenberg has taken special precautions to ensure the safety of those who dive her. Special passages have been cut throughout the ship and permanent guide lines secured in place, as well as hooks that divers can loop their own reels around. Local dive shops have waterproof maps that are provided to divers, which include hints to a secret scavenger hunt on the back.

However, if you are planning to go on this dive you should be an Advanced Diver- many dive shops will not take you out to the ship unless you are. This is due to the depth of the wreck and the advanced nature of wreck dives in general. Penetrating a wreck can be very dangerous and has claimed the lives of many divers over the years. The Vandenberg has several levels of openings – from beginner swim-throughs to difficult multi-stage infiltration. Be sure that you have the right equipment and are properly trained. Be safe and have fun!

Site: The Vandenberg
Location: Just off of Key West
Depth: 60-120 Ft
Level: Advanced
On the evening of Saturday, October 17, a male bottle-nose dolphin (*Tursiops truncatus*) stranded on North Miami Beach and was dead by the time of stranding. Ramiro Barbuzano, President of MMST, and Alex DeSchmidt, last year's MMST president, went to the scene to identify the animal and were present for the necropsy the next day. The cause of death is still unknown, but parasites were found throughout the dolphin's tissues, indicating disease. Oftentimes, when dolphins or whales are very sick, they will become disoriented and may strand or move into very shallow water.

This was an interesting adventure for MMST because almost all of the strandings that we have been a part of have happened in the springtime. Does this mean that there will be a higher number of strandings this year? No one really knows. But we will be prepared!

Marine Mammal Stranding Team is an organization dedicated to the rescue, rehabilitation, and release of marine mammals. We are closely involved with Marine Mammal Conservancy and Marine Animal Rescue Society and are notified as soon as these organizations get word of a stranding. We are also trained to respond during stranding events. We raise awareness about marine conservation and education. If you are interested in joining MMST, our meetings are every other Monday at 8 p.m. in Cox 184. Please come and see what we are all about!

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**Did you know?**

On average there are over 200 stranded marine mammals in Florida (NOAA)

*This picture, taken by Ramiro Barbuzano, shows the grace and elegance of marine mammals that MMST strive to preserve through their actions in the community*
Planning to study abroad can be an overwhelming experience, whether it means traveling to a country where English is not the official language or studying in a country so remote that you are not likely to see family or old friends for a full semester. For me, studying abroad in Australia was a difficult decision to make. I must admit that it may not be unusual for a Marine Science major to want to study in Australia, but my experiences in the land down-under turned out to be as exceptional as the country itself! It is important to note that instead of studying at James Cook University in Townsville, Queensland, I studied at the University of Wollongong, in Wollongong, New South Wales. Wollongong is only about 90 miles south of Sydney, and the difference between this area and Townsville is immediately apparent. After stepping out of the Sydney Airport on July 13th I noticed a marquee scrolling the current temperature, a crisp 4º Celsius. Was I ready for this? Would this be fun? I was too tired from traveling to be sure. After being shuttled by bus from the airport to my dorm at University of Wollongong, I sat at the foot of my bed and tried to let the whole experience hit me. The feeling never came, so I walked outside (it was still only about 7a.m.) to see where I would be living for the next four months. I oriented myself and as a marine science major, naturally, I walked straight towards the coast. Only ten minutes walk away from my dorm was an empty, beautiful beach with consistent, six foot, perfectly breaking waves. Much of the anxiety began to melt away. Making friends was easy, and I made some wonderful memories and shared many fun and hilarious experiences with my new friends. I also had the opportunity to take a few good classes at Uni! In Marine and Terrestrial Ecology, we took field trips to every major environment near the school and enjoyed our handful of projects, rather than suffering through them. Continued on page 24.
The life on the Great Barrier Reef is amazing and accessible. It would be absolutely foolish to go to Australia without spending time snorkeling or SCUBA diving on the reefs.
In my free time I got to see the vast array of climates, terrain, and lives that Australia encompasses. From the vineyards of Hunter Valley to the Great Barrier Reef in Queensland to the arid and open Outback, there is no shortage of natural beauty in Australia. Best of all, all of these environments are readily accessible from centrally located Wollongong! When planning to travel abroad, one is certain to get anxious, scared or overwhelmed at some point. I definitely questioned whether I thought I was making a good decision several times. Ultimately, we are all extremely fortunate to attend an institution like University of Miami and have opportunities that aren’t available to everyone our age and certainly weren’t available to our parents at our age. By seizing the opportunity to immerse oneself in another culture, even if it is “just Australia” (I have heard this before), you adding a unique spice to your cumulative life soup. These life experiences may prove to be some of the best memories of your entire life.

*Top 5 things to do before arriving:*

1) Read up on the basic history of whatever country you are studying in. 2) Plan your schedule carefully ahead of time. 3) Familiarize yourself with the local transportation system. 4) Establish a budget for yourself and be sure to overestimate to cover unexpected things. 5) Have fun, but be safe. There is a pretty broad line between having a good time and being stupid. It really doesn't matter how "epic" your night was if you were robbed at a train station or worse. Decisions that you make in one country can potentially follow you for the rest of your life.
A Scholar in Paradise

Lisa McManus ‘10

I love it when people ask me what I did this summer. I always try hard not to gloat, but it’s impossible to keep from smiling when I reply that I was in Hawaii all summer as a paid marine biology intern. It just sounds too perfect. And you know what, it really was. Freshmen and sophomores should follow this advice: apply for the NOAA Hollings Scholarship. The program awards approximately 100 scholarships each year to current sophomores majoring in a science that supports the mission of the National Oceanic and Atmospheric Administration (NOAA). I found that the two most represented groups of students were marine science and meteorology majors, although there are several other majors that are acceptable as well. As a Hollings Scholar, you receive funding during your junior and senior years of approximately $8000 per year. The most amazing part, however, is that the summer in between consists of a 10-week internship at any NOAA facility to work on a project. This means that a Scholar could go to just about any U.S. state or territory as long as they find a NOAA employee to be their mentor. During the internship, the Scholar receives a bi-weekly stipend of $1300. Those that choose an internship site more than 50 miles away from their permanent residence receive an extra $150 per week in order to help cover living expenses. It goes without saying that not only is this one of the more generous scholarships out there available to marine science students, but it also provides an incredible opportunity for real-world experience as a government employee. I chose to go to Hawaii because, well, it’s Hawaii. (Did I mention that airfare is completely paid for?) Although the Hollings program sends out a list of potential mentors and projects, it would behoove a Scholar to contact NOAA employees that aren’t on this list to find a “better fit.” I ended up working at the Coral Reef Ecosystem Division of the Pacific Islands Fisheries Science Center in Honolulu. My office was at the Kewalo Research Facility, which just happened to be the site of some of the best surfing on the South Shore of Oahu (My lunch breaks were often spent watching surf competitions). Continued on page 27.
I took full advantage of my time in Hawaii by getting in the water as much as I could. This picture was taken at Hanauma Bay, the most famous snorkeling spot on Oahu. The reef literally starts right off of the beach! It was a great spot to see the Humuhumunukunukuapua'a, Hawaii's state fish.
Continued from page 25-

The best part? It was a trailer park! Most people at that facility were in their late 20’s and early 30’s, and everyone was always nice and helpful, particularly my “trailer-mates,” who were always willing to answer any random questions I had.

The project I worked on involved Autonomous Reef Monitoring Structures (ARMS), which are structures designed to attract cryptic invertebrates — think of a typical coral settlement plate but with several layers. I was in charge of updating and streamlining the processing protocol for the ARMS units, which consists of photography, identification, and preservation. I actually processed two units that had been deployed off of Oahu for approximately two years, and there were all sorts of cool things growing and crawling all over them, from sponges to crabs to nudibranchs. For my senior thesis, my mentor sent me 15 of the units that have been deployed off of Hollywood Beach, FL, and I plan to retrieve a certain number every few months to look at the succession and diversity patterns of the cryptic invertebrate community of the area.

The website for the NOAA Hollings Program is http://www.oesd.noaa.gov/Hollings_info.html. The program should begin accepting applications relatively soon, and the deadline for next year’s application is in February. If anyone has questions or would like any tips for the application, please e-mail me and I would love to help in any way I can: lmcmanus47@yahoo.com.

Clockwise: A NOAA employee and I are cleaning off one of the ARMS, this was an urchin we found in one of the ARM units; one of our ARM units off of Hollywood Beach.
One of the most interesting and unique classes offered here at Miami is MSC 201: Research Diving. This class not only introduces students to how to be good science divers, but also teaches them skills that will enable them to become better divers in general. In a sense, it adds more tools to their “diving toolbox.” Research diving is a bit of a commitment however, as Classes are about 1.5-2 hours and pool sessions are also about 1.5-2 hours, twice a week. But students taking the class get to go diving just about every weekend and also spend a long weekend at the University’s special archaeological site- Little Salt Spring.

This class is a must-take for any future scientist planning on doing any kind of underwater research or study. Once the class is completed, students are granted an AAUS (American Academy of Underwater Sciences) authorization, which allows students to go diving for many academic institutions, and it looks very good on any résumé. Also, after completion, undergraduates can assist graduate students looking for an extra diver to help with their research. I’ll be honest, I would never turn down a day of diving on a boat for free. If you want a super fun class, take Research Diving!

My experiences with research diving have taken me all over the place! I first started working in the Dive Safety Office at RSMAS when I was a sophomore and got involved in several projects. I assisted a graduate student in Belize, collecting sediment samples and exploring several patch reefs. Then, I helped Dr. John Gifford with an underwater archaeology project on the 27m ledge at Little Salt Spring, which was funded by National Geographic. The really cool part is that I definitely get to be involved in a little of everything. Being a science diver really opens you up for a lot of neat opportunities. I was also able to participate in a class this past spring that required the science diver authorization and took place in Dominica. In Dominica, the class conducted several types of scientific surveys on the reef systems - it sure beat any other class! Being a science diver has also taught me the techniques to allow me to collect data for my own senior thesis, which is really unique because all my data has been collected completely by me!
How I Spent My Summer...

I worked at the National Marine Fisheries Service Auke Bay Laboratory in Juneau, Alaska as part of the Hollings Program. I looked at relative mortality of longline caught and released sablefish (*Anoplopoma fimbria*) in order to estimate the mortality of this species when caught in other longline fisheries. I also participated in a two week leg of a sablefish survey in the Gulf of Alaska aboard a commercial fishing vessel.

-Megan Stachura ’10

I did an internship with Mote Marine Lab working on coral reef restoration. I also completed the research on my senior thesis comparing the reefs in Florida to those in Dominica (West Indies).

-Kasey Cantwell ’10

I traveled through the wilds of China to learn about the Uyghurs. I lived in yurts, camel trekked to the Taklamakan Desert, and got dysentery. Then I flew to South Africa to intern with Oceans Research and helped with their population ecology studies of the White Sharks in Mossel Bay.

-Ty Medaris ’09

At the beginning of the summer I worked with Dr. Ginsburg in the Exumas, Bahamas assisting in Stromatolite research. For the rest of the summer I worked with Dr. Diego Lirman doing research throughout South Florida on patch reefs, sea grass communities, coral restoration in the lab's nursery, and establishing a database for Counterpart on restoration techniques throughout the Caribbean (which involved traveling to some countries to survey their Acropora populations).

-Caitlin Hill ’11

I worked for Oceans and Human Health here in Miami

-Matt Phillips ’10

This summer I spent my second field season at SUNY, Stony Brook’s Southampton campus on Long Island, NY finishing up data collection and analysis for a project I began last year as part of my United States National Science Foundation Undergraduate Research Fellowship. I was looking at the ability of the gastropod *Crepidula fornicata* to suspension feed in the presence of cultured, as well as wild, populations of the brown tide alga *Aureococcus anophagefferens*.

-Erica Towle ’10
The Longlure Frogfish is an unusual member of reef society with several adaptations allowing it to be a better predator. Rather short and fat, the longlure frogfish is found only on the coral reefs of the Caribbean Sea. Color can range from white to yellow to red and even to dark brown and black.

It has modified scales called “dermal spicules” give the longlure frogfish a skin texture resembling that of a frog or toad, which is where the common name is derived. The species name *Antennarius multiocellatus* is Latin for “many eye-like spots,” referring to the small dark spots found speckled over the entire body. The variable skin color and rough texture make the longlure frogfish an ideal candidate to camouflage against sponges, which is where it is most often found. The fins of a longlure frogfish differ in many ways from the majority of other fish throughout the world’s oceans. Like its relative the anglerfish, the first dorsal fin of the longlure frogfish is an elongated illicium or “lure” – thus completing the origins of the common name. The longlure frogfish uses its illicium much like a fishing pole, luring its prey close to its large, upturned mouth. Once the prey is close enough, the longlure frogfish extends its jaw and sucks in its prey in approximately a sixth of a second. The mouth is designed to allow the longlure frogfish to swallow prey larger than itself. A longlure frogfish primarily eats small fish but has been known to eat crustaceans as well. One of the most unique characteristics of the frogfish family, which is excellently displayed in the longlure frogfish is that the pectoral fins are actually more like modified legs. Instead of swimming, frogfish “walk” or “hop” short distances through the water over the reef.

*Source: MarineBio.com*
Entering the Abyss

abyss [uh-bis] ---noun
1. a deep, immeasurable space, gulf, or cavity; vast chasm
2. anything profound, unfathomable, or infinite

Courtesy of Dictionary.com

Revamping Halloween: AQUATIC STYLE

1. No one’s afraid of ghosts and goblins anymore.
   Maybe a goblin shark. Jellies and creepy fish are more realistic, so change up those decorations. Using plastic bags or saran wrap, partially inflate and tie off a head or body. Then attach long strips with tape for tentacles and fins. Perfect for doorways or hanging from the ceiling. Spray with sparkles or colored spray paint to enhance the effects under a black light for a Halloween rave effect, or float them in your pool.

2. How many ghosts, nurses, or vamped up profession costumes can you spot in the Grove?
   Every year, we all get lured into these costumes. This year it’s time to change it up. Maybe not with a head to toe Nemo costume, but get some friends to go as a school of dead fish—fish hooks and all. The possibilities of this are endless. Or take a new AQUATIC twist on old costumes. Go as a ghost of a mermaid or zombie mermaid. Go as a reincarnated King Triton (Little Mermaid) with a grim reaper sickle. And if all else fails, go as a pirate.

3. Blood is overdone.
   At least for punch colors. Get blue fruit punch or blue food coloring and create a dark blue punch or some murky bluish grey color.

4. Fake eyeballs?
   We’ve all seen the candy eyeballs in drinks and punches. If you’re changing the punch color, you’ve got to change everything. Freeze fish-shaped or jelly-shaped ice cubes. Let them float in the blue punch.

5. Take pity on your dog or cat: DON’T DRESS THEM UP!
   But why not highlight your fish tank? Add a black light and make your fish, plants, or coral glow. No one wants to see your dog dressed as a bumblebee, but they’ll probably be pretty impressed by your glowing tank.

Goblin Shark, Mitsukurina owstoni – Photo Credit: Discovery Channel

Steph Chaston ‘11
This shot was taken in 2007 when I worked at Seacamp on Big Pine Key. I have hundreds of pictures from that summer of the most beautiful sunsets I have ever seen.—Kasey Cantwell