



tropical marine ecology & conservation

Photo by Kyle McBurnie

**"Information, whether it supports or contradicts an idea, is what drives science forward."**

**Bjorn Nelson**

**Journal of Negative Results in Biomedicine.**

NEWSLETTER

Issue # 17 - Spring 2011

**Did you know?**

Find out more about the Caribbean Reef Squid from one of our students this semester.

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**Cultural Excursions**

A look at the many different field trips our students embark on.

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**Faculty and Alumni**

Get a glimpse of the life of a former CIEE student and some job openings at the research station.

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**DID YOU KNOW? - BY LEAH HARPER**



Photo by Kyle McBurnie



Photo by Kyle McBurnie



Photo by Kyle McBurnie

Squid can communicate by changing colors! Their nervous systems control chromatophores, which are pigment-containing and light-reflecting cells. These cells allow squid to rapidly alter the color and pattern of their skin. Squid are social creatures that are so skilled at communicating that they are actually able to send separate messages to the squid to their right and the squid to their left! Caribbean Reef Squid are able to convey readiness to mate, sexual identification, alarm, and other messages through these colorful cues. Furthermore, squid also have a layer of cells called iridophores, which produce polarized iridescent light. Squid eyes are sensitive to polarized light, but their predators cannot see it. Because squid also use their iridescence to signal each other, this means that they are able to send secret messages without being detected by other animals! The combination of iridophores and chromatophores allows squid to effectively camouflage to their surroundings.

A few other fun facts: Caribbean Reef Squid consume, on average, 30-60% of their body weight every day in small fish, molluscs, and crustaceans; they die immediately after they reproduce; they have the largest eye to body ratio in the animal kingdom.

Leah Harper is a junior studying biology at the University of Pittsburgh.



Leah Harper



Rincon Church



Bonairean Dinner



Rincon walking tour

Over the past months, the students have traversed the island on a number of field trips. For Conservation Biology, they explored the unique landscape and biodiversity of Washington-Slaagbaai National Park with Dr. Toth and visited the island's cobia aquaculture facility. For the Culture course, they ventured into Rincon, the oldest town of the ABC islands, where they learned about traditional music, housing, and cultivation at the Mangazina di Rei culture museum. Soldachi Tours also took the students on a walking tour of Rincon, followed by a traditional dinner at a local family's home, and later to join the full moon Papiamentu storytelling session. Most recently the students went with Outdoor Bonaire to explore a limestone cave. Needless to say, the schedule has been busy, but learning through first-hand experiences is one of the most valuable components to studying abroad!



Dr. Toth explains



Caving fieldtrip



Windward side of Bonaire



Cobia Aquaculture Facility

### Cobia Aquaculture Facility

Cobia is a native fish of the Atlantic, however it does not occur in the waters around Bonaire. The Cobia is ordered as fingerlings and grown over the course of seven or eight months before being sold to restaurants. The seawater in the tanks is recycled through a bio-filter system in order to minimize waste products and thus environmental impact.



Alison (left) with her lacrosse teammates



Alison rehabilitating a ruddy duck

Alison Masyr (Oberlin College):

Last summer I worked in a bird rehabilitation center specializing in marine birds. I learned a lot about wild animal care and individual birds species. It was so interesting to see that each species has its own personality and each member has its own idiosyncrasies that fit within the range of the species. Now I am a senior embarking on my final two months of college. I am a part-time student this semester since I need very few credits. I'm in a great seminar on emerging infectious diseases and just did an hour-long presentation on dengue fever. I just got my paper from Bonaire published in a peer-reviewed journal for undergraduates. Currently, I am in the middle of lacrosse season. We just got back from a spring break trip to Virginia. I am also interning at a local nature reservation in their raptor center. I'm learning about how to care for a very different kind of bird.

Next year, I plan to take a break from school. Ideally I would like to spend the time skiing, but I'm not sure how that will pan out. At the moment, I intend to apply to dental school. So, assuming that's still what I want to do once I've gotten all the application components together, hopefully I will be on my way to becoming a dentist.

*(Alison Masyr was a student at CIEE Research Station Bonaire during the Fall 2009 semester.)*

Volume 21, Issue 4, April 2011

# JYI Journal of Young Investigators

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## Traditional datu cactus (*Ritterocereus griseus*) fences reduce run-off rates and transport of sediment and nutrients on hillsides in Bonaire, Dutch Caribbean

Volume 21, Issue 4 on 01 April 2011  
 Alison Masyr  
 Oberlin College  
 Advisor: Rita Peachey  
 CIEE Research Station Bonaire

**Abstract**

Most reef building corals require seawater with low nutrients and sediment loads to thrive. On coral reefs around the world, increases in run-off and its constituent pollutants are damaging and killing reef building corals due to poor coastal zone management practices. In the marine environment, mangroves provide protection for coral reefs by filtering sediments and absorbing nutrients from run-off. On Bonaire, *Ritterocereus griseus*, a common cactus species, has the potential to act as a natural filter, analogous to mangroves in the marine environment, on hillsides where run-off is problematic. This research sought to determine the amounts of run-off, phosphate and sediment transported down-slope of plots with cactus fences and plots without fences. Experimental plots with cactus fence were compared to plots without cacti by utilizing simulated rainfall and catching the run-off to measure the difference in volume, phosphate and sediment loads between plots. This study determined that *R. griseus* reduces the volume of run-off and the amount of sediment and nutrients transported down-slope. The use of cactus fences could increase the resilience on Bonaire's reefs by decreasing sediment and nutrient inputs to near shore waters and are a sustainable resource on the small island.

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In April 2011 Alison's independent research project was published in an online journal 'JYI Journal of Young Investigators'.

**Mission:** "JYI is a unique endeavor to improve undergraduate training by providing innovative, high-quality educational experiences for undergraduates and by providing undergraduates with a venue for participating in the entire scientific enterprise. To accomplish these ends, JYI's primary focus is the operation of its peer-reviewed research journal and its program in science journalism." ([www.jyi.org](http://www.jyi.org))

This is the first CIEE student project that has been published! All students have the opportunity to publish the work they did here in Bonaire.

Congratulations on your publication Alison!

## CIEE JOB ANNOUNCEMENTS

### Tropical Marine Conservation Biology Faculty

### Coral Reef Ecology Internships Fall 2011

To apply, a cover letter and a CV with 3 references and a letter of recommendation from one of the references should be emailed to Dr. Rita Peachey ([rpeachey@ciee.org](mailto:rpeachey@ciee.org)) by the deadline. For more information about the program and facilities, go to [www.cieebonaire.org](http://www.cieebonaire.org).