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All the Scuba Scouts on board the Gulfstream Eagle *on the first evening. Top row left: Jennifer Wall, Ben Prueitt, Santanna Manning, Taylor Parker, Savanna Manning, Mac Bunbury, Alex Pfeffer; Bottom row left: Collin Olson, Brian Wall, Jim Garrison, L J Russo, Evan Olson.*

Young Divers, Underwater Science, and SHARKS!

A Recipe for Disaster, or an Extremely Accomplished Mission?

By Jennifer Dupont

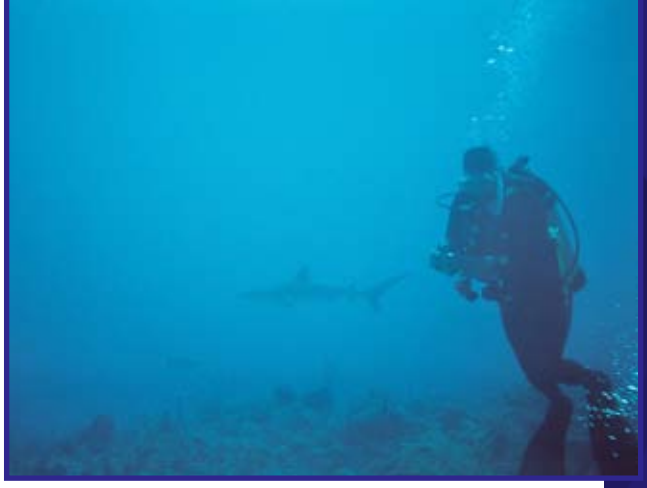
Sharks circle the dive platform as we try to convince the kids to jump on in!

There was an eclectic group of about 30 people congregated at the Tiki Hut Waterfront Grill on a balmy June evening in Riviera Beach, Florida, as I strolled up along with two of my colleagues from the University of South Florida College of Marine Science, Dr. Chris Moses and David Palandro. We quickly took stock of the situation and counted the 12 kids, 3 film crew members, and 5 adult chaperones that were about to join us for a week of intense dive training and scientific instruction aboard the 100 foot live-aboard vessel, the *Gulfstream Eagle.* The rest of the crowd consisted of worried parents and family members who frantically went over last-minute checklists, fretted over shark attacks and jellyfish, and tearfully hugged their kids good-bye and reluctantly left them in our (extremely capable!) hands.

The kids are part of an organization called the Scuba Scouts of Tampa Bay, USA. The group was formed in 2001 and consists of middle to high school aged students from all over the St. Petersburg–Tampa area with a shared interest in exploring the ocean through SCUBA diving. Their levels of experience range from newly certified open water divers to Advanced, Nitrox, and SLAM certified divers. They have logged hundreds of hours underwater running video, taking pictures, collecting fish and coral data, and assisting in numerous underwater science projects. They have experienced the murky waters of Tampa Bay, the crystal-clear waters of numerous Florida springs, stepped foot inside *Aquarius,* and fought a ripping current offshore in the Gulf of Mexico. Now it was time for them to hit the Bahamas.

Mac Bunbury, Evan Olson, and Alex Pfeffer are suited up and ready to dive into the clear waters of the Bahamas.

After trekking across the Gulfstream during the early morning hours, we cleared customs at the West End of Grand Bahama Island at around noon and began to prepare for our first dive in the Ba-



Lieutenant Wong, one of the leaders, unsuspectingly fiddles with his camera as a shark swims on by.

hamas. We divided the kids into groups of four with designated group leaders who were responsible for making sure that all team members had their gear properly assembled and streamlined with clips and octo holders and that all necessary science equipment (quadrats, transects, video cameras, digital cameras, clipboards, datasheets, and pencils) was carried to complete the assigned tasks. At each site, one group was responsible for conducting fish counts using the Bohnsack method, the second group assessed coral cover using AGRRA protocols, and the third group mapped the geomorphology of the reef using depth measurements and underwater drawings.

Chris, Dave, and I taught the necessary methods, but we refrained from helping the students as they struggled to juggle their clipboards, pencils, and quadrats (and sometimes their buddy's equipment that was haphazardly thrown at them throughout the course of a dive). We tracked the kids' progress carefully and briefed, debriefed, and double-debriefed every dive, nitpicking the students' underwater form, ability to handle equipment, accuracy of data, and overall leadership and group skills. The transformation from the beginning to the end of the week of diving was truly amazing.

During the first day of diving, I learned to anticipate the inevitable falling quadrat or meter stick, the loss of a pencil, or the data sheet slowly drifting away in the current. On the second day, the kids had mastered the art of carrying equipment, but another confounding factor interrupted our picture-perfect science dive…the arrival of SHARKS! The eyes in the kids'masks were wide with desperation as the reef and lemon sharks circled their transect line for the first time. All thoughts of data collection were thrown out the window as their survival instinct kicked in. Incredibly, by the third dive with sharks, the kids acclimated and began to see them as just another fish (almost!) and data collection resumed with gusto.

Throughout the week, the kids were put to the test as we helped them progress to more advanced certifications. We led the kids in navigation dives on flat, barren, sandy patches; dove down to about 90 ft for their deep dive, and took them on two night dives to complete their advanced open water certification. Those 15 years of age and above struggled (with many complaints) through the Nitrox class and earned their certification. When we stepped foot off the *Gulfstream Eagle* at the end of the week, each one of the kids had logged 20+ dives, increased their level of certification, collected numerous underwater images, videoed countless reefs, collected fish and coral cover data, dived a blue hole, swum with sharks, turtles, and rays, and experienced the Junkanoo festival, a distinctive part of Bahamian culture and heritage. Chris, Dave, and I cannot get over the transition in many of the Scuba Scouts from beginning divers focused purely on the mechanisms of SCUBA diving to divers focused on completing scientific tasks and methods that were assigned to them.

Jennifer Wall and Jim Garrison carry quadrats and meter sticks for AGRRA surveys.

The Scuba Scouts will continue to work on numerous funded projects, including the monitoring of mitigation modules placed in Tampa Bay and offshore state waters by Gulfstream Natural Gas Systems. The Scuba Scouts employ methods similar to the Coral Reef Environmental Monitoring Program (CREMP) in order to assess the coral, sponge, and algal cover on the limestone modules. We are currently applying for membership in AAUS for the senior divers in the program so that the students may begin to assist in numerous ongoing University research projects throughout the state of Florida and eventually throughout the country. The Scuba Scouts are a unique group of extremely capable ocean explorers with boundless enthusiasm for the underwater world. We hope you'll be hearing from us again soon as we continue to pursue an even broader range of exciting new projects.

For further information contact Jennifer Dupont, PhD Student at the University of South Florida, jdupont@marine.usf.edu

Four O. esmarki *individuals at East Pinnacles off Santa Rosa Island in 60 fsw.*

The Smooth Brittle Star

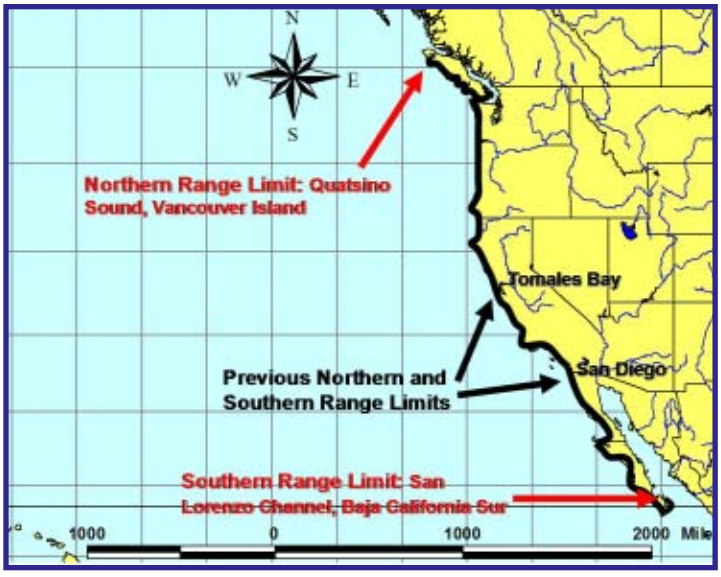
Hidden critter along the Pacific coast

By Rhea Presiado

Dr. Rhea Presiado and her scientific diver husband, Tim before a dive survey for O. esmarki *at San Miguel Beach in Ensenada, Baja California.*

If you have ever descended into the cold waters of Puget Sound, the nutrient-rich kelp forests at the California Channel Islands, or the clear tropical water of the Sea of Cortez, chances are you missed something. Most SCUBA divers (even those conducting scientific surveys) often overlook one creature entirely, because it lives under large rocks, and ledges. It takes considerable effort and care to investigate the world of under-rock biota via SCUBA, but it is well worth the effort. One interesting under-rock organism that is usually unnoticed on dive surveys is a cryptic echinoderm, the smooth brittle star, *Ophioplocus esmarki.*

Brittle stars are similar to sea stars, with five separate arms radiating out from a central disk. The smooth brittle star's name is somewhat of a misnomer. Although it is indeed smooth (its spines are very short, and its dorsal surface is flat), it is not very brittle. Recent research by Dr. Rhea Presiado at the University of Wisconsin–Platteville on *O. esmarki*'s species range, abundance, and distribution found that this elusive brittle star is indeed much more common and widespread than was previously thought. *O. esmarki*'s geographic range was extended 1,353 miles north of its published range limit to Quatsino Sound, Vancouver Island. The southern range limit was extended 1,185 miles south to the San Lorenzo Channel in the Sea of Cortez. Within this range, *O. esmarki* is most common in Southern California and Northern Baja California.



Recent range extensions for the smooth brittle star.

Divers carefully looking under rocks will see that *O. esmarki* is highly mobile and uses its arms like oars to push itself across the sea floor and under rocks. Its flat, smooth body enables it to squeeze under large boulders and into cracks, and although they do not have "eyes," new research

suggests that their central disk may function as a compound eye allowing them to sense shadows and escape predators. They feed on small prey and detritus by extending their arms out from the undersides of rocks, a clue to divers and predacious fish about their presence. They are often found in groups of 2–8 individuals under rocks, and like kangaroos, *O. esmarki* brood their eggs internally in a pouch until they develop into juvenile stars and crawl out.

So where should you dive to ensure an *O. esmarki* sighting? The largest populations that are easily accessible via SCUBA are at Refugio State Beach in Goleta, California; Cavern Point off Santa Cruz Island; and San Miguel Beach in Ensenada, Baja California. You will find them under large rocks and cobbles set in course sand (not fine sand, where you will instead find the ringed brittle star *Ophionereis annulata*) often at moderate depths of 5–30 fsw. They are a sand-colored or tan circular disk with no stripes or spots and have very short spines. Next time you are on a research dive, or diving recreationally along the Pacific coast, keep your eyes peeled for *O. esmarki.* If you are lucky enough to spot this shy creature, especially at or beyond the newly published range limits, make a note of number of individuals, their location, and depth and e-mail Dr. Presiado at presiador@uwplatt.edu.

Collection of O. esmarki *individuals via SCUBA for range study.*

Dr. Rhea Presiado, an Assistant Professor of Geography at the University of Wisconsin–Platteville and her scientific diver husband, Tim, conducted 52 surveys on SCUBA for O. esmarki *along the Pacific coast from the Puget Sound south to the Sea of Cortez in 2004–2006.*

QUICK! JOIN THE RAFFLE!

Stunning Anemone Picture Raffle

By Alma Wagner

We are rapidly approaching our closing date for this beautiful anemone picture! August 30th! Please log on and purchase your raffle tickets today!

Raffle Prize is a 16" x 20" Matted and Framed photo by Vernon DiPietro.

Photo description:"Giant Plumose Anemone" Limited edition, number 03 of 750.

The Giant Plumose Anemone lives up to its name, being the tallest anemone in the world—20 inches-plus is common in the Pacific Northwest where this anemone lives. I captured this image in Hood Canal,Washington, at a depth of about 40 fsw, using a Nikonos V, 35-mm lens with a short extension, on Kodak E100GX professional slide film. The image was reproduced from a digital scan of the original film.

About the Photographer:

Vernon DiPietro has been a PADI-certified diver since 1984 and has been a volunteer diver and dive shift captain at the Oregon Coast Aquarium in Newport, Oregon, since 2002. In the 8th grade, he became interested in photography while doing odd jobs for a professional photographer in his neighborhood. His travels have taken him to Attu Island at the end of the Aleutian Chain in Alaska,the Bering Sea, Prince William Sound and Southeast Alaska. The wildlife throughout the Northwest provides much of his subject matter, but he also has an affinity for ships and trains and all things heavy. Most recently he photographed Great White Sharks off Guadalupe Island, Mexico. Currently, his photos are showing at Sublime Gallery in Florence, Oregon. He proudly wears the "badge" of having never dived in warm water.

DiPietro is retired from the Coast Guard and lives on the Oregon coast.

Accomplishments of an AAUS Scholarship Recipient

By Brandon Puckett, North Carolina State University

I graduated with honors (magna cum laude) from North Carolina State University in 2002 with a B.S. in environmental science–ecology. As an undergraduate, I sampled several scientific disciplines (natural resources, forestry, and zoology) through internship and volunteer opportunities. I became captivated with aquatic ecology as an assistant—don't be fooled here; I jumped at the opportunity—on a striped bass bioenergetics project and a mark-recapture study in Trinidad, WI. In addition to conducting research in the beautiful streams of Trinidad's rainforest floor while keeping a safe distance from the feared fer-de-lance viper, my four-week stay in Trinidad was capped by an amazing dive on Kariwak reef in the beautiful blue water off the coast of Trinidad's island neighbor, Tobago.

Handling a summer flounder caught in a bottom trawl during a juvenile bluefish survey off the coast of Ocean City, Maryland.

After completing my undergraduate work, I enrolled in the Master of Science program in Marine, Estuarine, and Environmental Science at the University of Maryland. As a Maryland Sea Grant Fellow, I spent most of my time at Chesapeake Biological Laboratory (CBL) while conducting research on age, growth, and recruitment of the charismatic—if not just plain savory—Chesapeake Bay blue crab. During this time, I received several awards for the dissemination of this research, including best presentation at the 135th annual American Fisheries Society (AFS) Meeting in Anchorage, AK, and second place and third place for presentations at divisional and chapter meetings AFS meetings. While at CBL, I served as Graduate Student Organization representative and as a member of the student fisheries society. I was also able to dabble in the work of others—always with permission, of course—assisting on a variety of projects including juvenile bluefish ecology and fishery-independent multispecies surveys.

My transition from M.S. to Ph.D programs was rapid; I defended my thesis on a Friday, loaded my possessions on Saturday, moved back to Raleigh on Sunday and started coursework at North Carolina State University, for the second time, on Monday. Under the tutelage of Dr. David Eggleston in Marine, Earth, and Atmospheric Sciences (MEAS), I quickly changed my research focus from blue crabs to eastern oysters. I am currently conducting research on the metapopulation dynamics of oyster sanctuaries (no-take zones of constructed reefs) in Pamlico Sound, NC. By coupling population dynamics with hydrodynamic modeling, I hope to determine the relative importance of local demographics, larval transport, and connectivity on the persistence of oyster sanctuaries in Pamlico Sound.

The highlight of my thesis research was the use of a biochemical—rather than size-based—approach to estimate age and growth of juvenile blue crabs. To do so, I measured the amount of a fluorescent pigment called lipofuscin that accumulates in neural tissue—such as eyestalks—as crabs age. Photograph by Skip Brown.

Fortunately for me, my dissertation project is dive intensive, with mark-recapture and quadrat sampling of oysters requiring extensive bottom time. I am a certified AAUS and NAUI scientific diver, NAUI rescue diver, NAUI NITROX diver, and CPR/AED/First Aid provider. At times, the visibility during these dives leaves something to be desired, but, when visible, one can't help but notice the incredible abundance of life (e.g., sheepshead, spadefish, blue crabs, gobies, skilletfish, blenny) inhabiting oyster reefs.

Ultimately, my research will provide an impetus for investigating whether existing oyster sanctuaries are sufficient in number, size, and spatial configuration to ensure metapopulation persistence and to restore North Carolina's oyster population. From a socioeconomic perspective, oyster restoration would revitalize the historically significant recreational and commercial oyster fisheries in North Carolina. Perhaps more importantly, are the ecological benefits of oyster restoration that would (1) increase complex structural habitat for many fishes, crabs, and benthic invertebrates, (2) enhance biodiversity, and (3) improve water quality—and visibility—by reducing suspended sediments and nutrients.

In addition to conducting research and coursework, I am currently serving as an executive member for the student fisheries society and as vice president of the Marine, Earth, and Atmospheric Sciences Graduate Student Association. It's been a great deal of work along the way, but right now, I wouldn't trade it for, say, a dive in the blue waters of—only one guess allowed here—Tobago.

AAUS SCHOLARSHIP RECIPIENT

Molecular Phylogenetic Analysis of USVI *Porites*

By Matt Lucas

AAUS Sholarship Recipient

Research Summary

This research intends to develop molecular methods to begin establishing a phylogeny for a scleractinian coral, *Porites.* The family Poritidae is an important component of Caribbean coral reefs as well as those worldwide (Veron 2000). Because intraspecific and interspecific morphologies overlap, the taxonomic history is unclear (Potts *et al.* 1993). In this study, the central hypothesis to be tested is that branching morphotypes (*P. porites, P. furcata,* and *P. divaricata*) are three genetically distinct species that exist in the Caribbean. The data collected in regard to the branching morphotypes will be compiled and compared with genetic data from *Porites* massive morphotypes (*P. branneri* and *P. astreoides*). The genetic data from massive morphotypes are currently being collected at the University of the Virgin Islands, St. Thomas. If morphological hypotheses support molecular data, then the following results are expected:

1) The molecular phylogeny will include two major clades, one comprised of branching morphotypes and the other of encrusting to massive morphotypes.

2) Within the clade comprised of massive morphotypes, all samples of *P. astreoides* will form one clade.

3) Within the clade comprised of massive morphotypes, *P. branneri* will form a monophyletic clade, separate from *P. astreoides.*

4) Within the clade comprised of branching morphotypes, *P. porites, P. furcata,* and *P. divaricata* will each form a monophyletic clade.

The overall objectives are to 1) obtain DNA sequences with published primers from two nuclear ribosomal gene regions (ITS 1 and ITS2, 2) evaluate the utility of molecular data for differentiating USVI *Porites,* and 3) obtain DNA sequences from the control region of mitochondrial gene region by developing PCR primers. Thus, two independent gene regions will be used to generate molecular phylogenies; morphometric analysis of all corals will be used for taxonomic identification. These analyses will resolve whether molecular data confirm morphological descriptions of USVI *Porites.* These data will also be used to establish a molecular phylogeny for all Caribbean *Porities* for future study. This study focuses on the theme of Biodiversity in the Coral Reef Environment in the VI–EPSCoR "Biocomplexity in Caribbean Coral Reefs" (personal communication, Dr. Sandra Romano).

Matt Lucas is a graduate student at Southeast Missouri State University who will be studying abroad for the fall 2006 term at the University of the Virgin Islands (Dr. Sandra Romano). Data from this project will be used for his Masters Thesis at Southeast Missouri State University.

Diving the Red Sea

Travels of the North American Rolex Scholar of 2006

By Michelle Fetzer

The past few months have been a combination of hard work, educational experiences, and fantastic diving. My first trip was to Wilmington, NC, where I took a Scientific Diving Course instructed by former Scholar Doug Kesling. While in NC, I stayed with 2002 North American Scholar Stef Misner and her husband Ian, which allowed me to get the inside scoop on what the Scholarship year is really like. This course introduced me to the demands and techniques of scientific diving, something I hope to do a lot of during this year and in the future. Through class time and actual dives, I learned about diving physics, medical aspects of diving, hazmat training, underwater navigation, underwater survey methods, dive rescue, *Aquarius,* and more. *Aquarius* is a fascinating facility, which I hope to visit later in the year. This course was very educational, teaching me how to be comfortable while multitasking underwater. When you are running wreck reels, taking water samples, sending artifacts to the surface using lift bags, taking measurements—all this while also shooting video—your diving must be second nature to you. As this was my first time using my new underwater videocamera, it was a bit more challenging than I had expected. Realizing that I needed more practice with it, I decided to travel to Sharm El Sheikh, Egypt, where I would receive video training.

UNCW Dive Class participants

On the way to Egypt, I first stopped in London and met up with Della Ní Chíobháin, the 2006 European Scholar, who would be traveling to Egypt with me. We stayed with Phoebe Rudomino-Dusiacka, the 2004 European Scholar. Phoebe took us to see her work at Pinewood Studios, where we went diving in the tank of the Underwater Stage. It was fascinating to see how an indoor pool can become an outdoor lake, or even an ocean, in a movie. We even had small roles in a documentary the studio was filming. After seeing what the underwater film industry is like, it was time to travel to Wessex Archaeology so Della could discuss wrecks. To round out our week, we attended a presentation by Dr. Alex Mustard, a renowned underwater photographer and marine biologist. This presentation, entitled "Getting to know the diversity of life on a coral reef: Sur-

vival strategies," showed many interesting behaviors of marine life.

After the week in London, it was time to head to Egypt. We got right down to business, diving in the Red Sea the day after our arrival and practicing shooting video. After a few weeks there, my video skills improved immensely. The diving wasn't so bad either, allowing me to see marine life that I had until then seen only in pictures. Taking a short break from our video training, Della and I traveled to Dahab, where we were taking an Advanced Nitrox course provided by Bart Bellemans and Poseidon Divers. The trouble of carrying a twin set and stage bottles through the crashing surf was well worth it, for the skills I learned from this course have made me a better diver. As part of the course, we dived the famous Blue Hole, a dive that would make any tech diver jealous.

Our time in Egypt was quickly coming to an end, but we managed to squeeze in a visit to the hyperbaric chamber. It was fascinating to go inside the chamber and see how everything works, but I hope I never have to go inside as a patient. And last but not least—what trip to Egypt would be complete without a ride on a camel, provided by local Bedouin children.

After a whirlwind of activities, I am now back at home, planning my next trip. Now that I have learned the techniques of scientific diving, and how to shoot and edit video, it is time to concentrate on marine research. There are many marine labs I want to visit and researchers I wish to work with. The challenge now will be trying to fit them all in. *—Thanks to Steve Jones for the splendid Red Sea photographs!*

UNCW'S Coastal Ocean Research and Monitoring Program

By Jennifer Dorton (dortonj@uncw.edu)

The Coastal Ocean Research and Monitoring Program (CORMP), a NOAA-funded initiative located at the UNC–Wilmington Center for Marine Science, has deployed four weather and oceanographic buoys and two pier-based monitoring stations in southeastern North Carolina. Data transmitted in nearly real-time from the buoys is beneficial to CORMP research, which focuses on water quality, benthic ecology, coastal geology and ocean optics, and remote sensing but is also vital for marine operations and weather forecasting for the southeastern North Carolina coastal waters.

Each of the four buoys transmits weather and oceanographic observations via Iridium and GOES satellite. Core weather data include air temperature, barometric pressure, wind speed, direction and gust, solar radiation, and humidity. Oceanographic data includes surface and bottom currentsand surface and bottom water temperature, salinity, and turbidity. Two of the buoys, LEJ2 and LEJ3, which were both built by NOAA's National Data Buoy Center, also transmit standard wave data, including significant wave height, direction, and period.

The CORMP pier moorings, located at Wrightsville Beach (ILM1) and Oak Island (OCP1), provide beach-goers with a first-hand look at water and weather conditions. Instruments for the pier stations are placed on the ocean floor approximately 900 feet from the end of the pier and are then hardwired back to the pier. Displays in the pier houses inform beach-goers and pier fishermen about the current conditions. NOAA's National Weather Service–Wilmington Forecast Office incorporates the oceanographic data gathered at the pier sites into their rip-current prediction system so they can issue timely rip-current warnings for area beaches.

CORMP realizes that everyone from commercial fishermen, recreational boaters and beachgoers can benefit from the data being collected from these buoys and piers. Our goal is to educate boaters so they know where the buoys are located and how to access the data provided. Accurate weather and sea-state data is valuable to boater safety and helps mariners make more informed boating decisions before even leaving the dock. All CORMP data, real-time and archived, can be found at www.cormp.org.

Reevaluating Claims of Parapatric Speciation in *Halichoeres bivittatus*

By Dan Warren, Teresa Iglesias, and Colleen Young

The mechanisms by which new species arise (a process called speciation) are of great interest to evolutionary biologists and constitute a very active field of research. Until fairly recently, it was widely held that most or all speciation was due to allopatry, whereby impassable geographic barriers to gene flow arise and divide previously continuous species into multiple non-interbreeding groups. This view has come into question in recent years, however, as both theoretical and empirical research have lent support to the possibility of other modes of speciation that do not require geographic isolation. As yet, very little information exists about the relative frequencies of different modes of speciation in the natural world.

The diversity of coral reef fishes is well known to almost any diver who has spent time in tropical waters. In terms of both species richness and morphological variation, these systems are one of nature's most appealing and fascinating phenomena. However, the processes behind this diversity are still poorly understood. Allopatric speciation may initially seem like a poor explanation for this diversity, as many reef organisms possess pelagic larvae that are capable of traveling vast distances prior to recruitment. However, historical conditions in sea level and oceanic current regimes may have formed geographic barriers necessary for allopatric speciation, and currently it is unclear how often the potential for long distance larval dispersal is realized. For these and other reasons, allopatric speciation has long been assumed by many to be the dominant mode of speciation in marine environments.

Recently, a paper by Rocha et al (2005) documented a case of either incipient or recent speciation in the slippery dick wrasse, *Halichoeres bivittatus.* In this study, the mitochondrial cytochrome B gene was sequenced for fish collected throughout the Caribbean. The authors found that there were two distinct sequences (haplotypes) at this genetic locus that were interpreted to represent a deep divergence within the population. These haplotypes showed significant spatial segregation, which

was interpreted as an indicator of a possible cryptic speciation event. Furthermore, they suggested that the proposed speciation event was due to ecological differentiation between the two purported species; fish from northern inshore areas of the Gulf of Mexico were exclusively of one haplotype, whereas fish collected from deep in the Caribbean were exclusively of the other haplotype. It was suggested that this is indicative of speciation based on tolerance for different temperature regimes. In further support of this idea, they found that the two haplotypes displayed incomplete but significant ecological segregation in areas where they came into contact (Bermuda and the Florida Keys). In both of these areas, individuals with the northern inshore haplotype were found to dominate in areas with more broadly variable temperature regimes than those of the tropical haplotype.

Our intent was to investigate the nature of this speciation event further, and to determine more precisely the nature of the ecological segregation between the two species and the mechanisms that keep the two (morphologically indistinguishable) species reproductively isolated from each other in areas where they overlap. As a preliminary step, we attempted to reconfirm the pattern seen in Rocha et al (2005). To do this, we collected samples from habitats in the Florida Keys similar to those examined in the original study, as well as a habitat type (shallow grass beds) that was not sampled in the previous study. These samples were collected in a series of boat and shore dives made from Keys Marine Lab in Long Key, FL.

We extend a special "Thank you!" to all AAUS members who contribute to the graduate research scholarship program. This research would not have been possible without your generosity.

After we returned to UC–Davis, we sequenced the cytochrome B locus for the fish that we had collected. We also developed primers for a fast-evolving nuclear locus in these fish, S7 intron 1, with the hope of confirming the pattern of spatial and habitat segregation using a gene that segregates independently of cytochrome B. This locus turned out to have too little variation to be useful for analysis, but the primer we developed may be useful to other investigators doing phylogenetic studies in this genus. We were able to sequence several dozen fish from each habitat type, and in the end we had a larger sample size than the original study. We found the same two haplotypes that were seen in the original study, in approximately equal frequencies. Unfortunately, we were unable to find any significant habitat segregation in the Florida Keys using the same statistical tests that were used in the Rocha et al. study, despite having almost double their sample size. This calls into question the ecological nature of speciation in this system, if indeed speciation has occurred.

In order to address the question of whether or not speciation has occurred or is currently underway, we borrowed from Peter Wainwright specimens of *H. bivittatus* from northern Florida, the Bahamas, and Belize. The results obtained from these specimens are ambiguous. In northern Florida, we see approximately equal numbers of each haplotype. This stands in sharp contrast to the Rocha et al. study, which found only one haplotype in this area. In the Bahamas, we found one haplotype exclusively, but sample size was very small (n = 5). The Bahamas fish were of the northern inshore type rather than the tropical haplotype, so this result (assuming that further sampling supports it) runs counter to the expectation from the original study. The only significant result that is in partial agreement with the scenario proposed by Rocha et al. is that from Belize; the putative tropical haplotype is much more plentiful in this region. In contrast to their results, however, we do find a few individuals of the "northern" haplotype in this area as well.

Although we feel that we can safely reject the ecological segregation proposed by Rocha et al. in this system, further work is needed to establish whether or not speciation is occurring in this system. The Belize and Bahamas results suggest that something of interest may be occurring in this system despite being incompatible with the speciation scenario proposed by Rocha et al. More sampling in the Bahamas and the southern Caribbean is underway, and we hope that this issue will be resolved soon.

This research was presented at the meeting of the Society for Integrative and Comparative Biology in January of 2006. Portions of this research that were not covered by the AAUS fellowship were funded by grants from the Population Biology Graduate Group at UC–Davis and by the Daphne and Ted Pengelley Graduate Research Fellowship. The authors thank the excellent staff at Keys Marine Lab in Long Key, FL. We also thank Peter Wainwright and Michael Turelli for valuable input, financial support, and guidance, as well as Henry Fastenau and UC–Davis' wonderful SCUBA program. We are also very grateful to Maya Metrikin and Catherine Southard for their excellent and tireless work in the laboratory and to Sergey Nuzhdin for allowing us the use of his lab space.

*A kelp bass (*Paralabrax clathratus*) is counted and patiently poses for size estimation along a mid-water transect. –J. Ugoretz, DFG*

California Marine Life Protection Act and Marine Protected Areas

By John Ugoretz and David Osorio, California Department of Fish and Game

In the late 1990s, the California Legislature responded to declines in marine resources with legislation to protect the ocean. Among other laws, the 1999 Marine Life Protection Act (MLPA, California Fish and Game Code, sections 2850 to 2863) aims to protect California's marine life and habitats through a network of marine protected areas (MPAs). The MLPA seeks to improve MPAs through a Marine Life Protection Program, a comprehensive master plan, and a public process established to implement the MLPA on a regional basis.

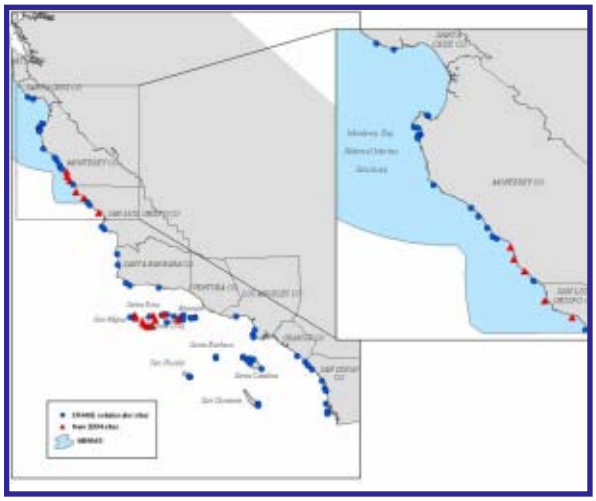
The MLPA states that "marine life reserves" (defined as no-take areas) are essential elements of an MPA system. It recognizes that no-take reserves "protect habitat and ecosystems, conserve biological diversity, provide a sanctuary for fish and other sea life, enhance recreational and educational opportunities, provide a reference point against which scientists can measure changes elsewhere in the marine environment, and may help rebuild depleted fisheries." (Subsection 2851(f), FGC). The MLPA emphasizes the need for monitoring, which will include scuba surveys.

Benthic fish survey. Divers measure and record fishes along a twenty-four 30 m transects at each site. Photo: J. Friewald, PISCO.

Goals of the Marine Life Protection Program

The MLPA master plan must include recommendations for a network of MPAs with "an improved marine life reserve component." (Subsection 2853(c)(1), FGC). The MLPA establishes six goals for the Marine Life Protection Program:

- To protect the natural diversity and abundance of marine life and the structure, function, and integrity of marine ecosystems;
- To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted;
- To improve recreational, educational, and study opportunities provided by marine ecosystems that are subject to minimal human disturbance and to manage these uses in a manner consistent with protecting biodiversity;
- To protect marine natural heritage, including representative and unique marine life habitats in California waters, for its intrinsic value;
- To ensure that California's MPAs have clearly defined objectives, effective management measures, and adequate enforcement, and are based on sound scientific guidelines;
- To ensure that the state's MPAs are designed and managed, to the extent possible, as a network



Sites surveyed using CRANE fish and invertebrate protocol. Red denotes sites new for 2004. Prepared by California Department of Fish and Game.

These goals serve as the foundation for the Marine Life Protection Act Initiative, a public process established to implement the MLPA on a regional basis.

The Central Coast Study

Between October 2004 and March 2006, the Department of Fish and Game, in cooperation with outside partners in an effort known as the MLPA Initiative, examined a preliminary study region along California's central coast between Pigeon Point (San Mateo County) in the north and Point Conception (Santa Barbara County) in the south. Activities included compiling information on habitats and uses, convening a working group of more than 50 people, and holding public meetings. Oversight was provided by a blue-ribbon task force appointed by Mike Chrisman, California's Secretary for Resources.

The working group developed a range of MPA proposals, and the task force forwarded a preferred package to the Department for consideration. The Department reviewed the package and developed a preferred alternative, which was delivered to the California Fish and Game Commission on June 22, 2006. The Department's preferred alternative includes 26 MPAs covering an area of about 208 square miles, which represents approximately 18% of state waters within the Central Coast region. Of this, less than half (12 MPAs) are no-take state marine reserves covering an area of about 93 square miles or approximately 8 % of state waters within the central coast. The Commission heard testimony on the preferred alternative in August and should select a final plan for establishing MPAs in the central coast region late in the month.

Diving Surveys of MPAs

The Department already participates in scuba surveys of MPAs and other nearshore areas. The Cooperative Research and Assessment of Nearshore Ecosystems (CRANE) program includes divers from the Department of Fish and Game, various universities, private organizations, and government programs. CRANE collaborators developed a common field protocol for surveying invertebrates and fish that was modeled on techniques used by the University of California affiliates of the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO). Scuba surveys inside and outside MPAs will help provide necessary information on how the areas are performing and whether management goals are being met.

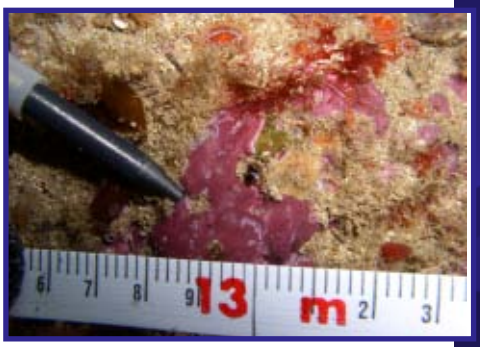
CRANE scuba surveys measure abundance, size, and species composition of fish and invertebrates. Replicate transects are allocated among depth zones (up to 20 m deep) and are deployed randomly at the sites.

- Finfish size structure and density data are collected using 2m × 2m × 30m "bottom" transects and 2m × 2m × 30m "mid-water" transects at each site (48 replicates).
- Benthic invertebrates, giant kelp (*Macrocystis pyrifera*), and other select macroalgae are counted along 2m × 30m swath transects (12 replicates).
- Uniform point contact (UPC) sampling is used to determine benthic cover and substrate characteristics. UPC data collected include substratum type, habitat relief, and organisms attached to the substratum every meter along the 30m transect (12 replicates).

The CRANE program has been implemented throughout central and southern California both inside and outside existing MPAs and will be used to monitor new MPAs implemented pursuant to the MLPA. Continuation of monitoring at several current sites and future expansion of the program depends upon funding availability but will likely help provide important data for the management of California's valuable living marine resources.

For more information on the Department's efforts to implement the Marine Life Protection Act and a report on the CRANE program, see our Web site at www.dfg.ca.gov/mrd/mlpa and www.dfg.ca.gov/mrd/fir

—John Ugoretz is the Nearshore Ecosystem/MLPA Coordinator for the California Department of Fish and Game and member of the Department's Diving Safety Board. Dave Osorio is the Department of Fish and Game's Diving Safety Officer and a field biologist.



Uniform Point Contact sampling methodology characterizes the substrate type, relief, and benthic organisms. In this photo, the 13th meter is categorized as encrusting coraline algae. Photo: J. Ugoretz, DFG

EPA Region 10 Dive Team

30 Years of Protecting Northwestern Waterways

By Sean Sheldrake

Public Safety Diving; assisting in the Columbia Shuttle Recovery

Characterizing the extent of creosote pools, Wyckoff, Eagle Harbor, WA

Sharks looking for a meal; Alaska Seafood Outfall Inspection

Surface sediment sampling near a Wyckoff Treatment Plant, Eagle Harbor, WA

Eelgrass survey

Typical decontamination rinse for polluted water work, Portland, OR

EPA has a number of dive teams throughout the country that perform scientific diving services for the Agency. The Region 10 Dive Team has been around since EPA's inception more than 30 years ago. The team covers a wide area, from cold, marine Alaskan waters, to warmer inland lakes and rivers in Washington, Idaho and Oregon.

In a given field season, the dive team may be asked to perform two or three projects a month.

Projects include inspections of cleanup remedies, such as sediment caps, to ensure that they are not eroding away. Divers sometimes evaluate changes in local kelp beds and algal communities. Work also includes surveys used for design purposes. For example, at the Wyckoff former wood-treatment facility on Bainbridge Island, Washington, divers delineated the boundaries of creosote seeping into Eagle Harbor and sampled sediment to help characterize pollution.

The team has also conducted criminal investigation work. In recent years, Region 10 divers documented illegal harvesting of an ancient forest in Lake Washington. The forest slid into the lake during a massive earthquake some 800 years ago. Underwater photos, video and mapping helped lead to a criminal conviction.

Everyone on the team loves to dive, despite the conditions under which they are often called upon to do so. For example, tasks often must be accomplished in zero visibility, communicating with the diver's "buddy" only through line signals. Once divers complete their underwater task and climb up out of the water with their 100 pounds of gear, they commonly undergo decontamination as most tasks take place in polluted water.

While performing compliance inspections at seafood packing discharges, divers run the risk of being mistaken as a meal by passing sharks hoping for a choice piece of salmon to come down the pipe. Dive team members must perform a "day job" in their respective offices, diving for the Agency as a collateral duty often on their own time. Divers on the team come from varied backgrounds in biology, oceanography, engineering, and marine ecology. Each one must pass fairly intensive physical and classroom training to become an EPA diver.

Region 10 divers, based in Seattle, work in Superfund, the Office of Water, Ecosystems and Communities, Pesticides, and the Office of Environmental Assessment. More information on the EPA Region 10 Dive Team, including videos from several projects, may be found on their Web site:
http://yosemite.epa.gov/r10/oea.nsf/webpage/dive+team

—Sean Sheldrake is a DSO with EPA Region 10 Dive Team, USEPA Environmental Cleanup Office, Seattle WA

Message to ISRS Members

from Richard B. Aronson, ISRS Vice President

Each year, The Ocean Conservancy and ISRS co-fund a program of fellowships for graduate studies in coral reef science. Competition was fierce this year—more than 80 proposals were submitted. On behalf of ISRS President Nick Polunin, I am pleased to announce the winners of this year's ISRS/TOC Graduate Fellowships in Coral Reef Science, listed below:

Wade Cooper, University of Miami, USA; *Quantifying the effects of site quality on settlement and early post-settlement dynamics in Scleractinians;* **Annika Noreen**, Southern Cross University, Australia; *Corals at the extreme: connectivity and population dynamics of reef-building corals in subtropical eastern Australia;* **Carlos Toledo-Hernandez**, University of Puerto Rico; *Fungal community associated with diseased and healthy* Gorgonia ventalina, *the role of temperature stress and demographic consequences of aspergillosis to* G. ventalina *colonies;* **Karin Ulstrup**, University of Technology, Sydney, Australia; *Bleaching resilience of* Acropora *spp. associating with two phylogenetically different algal endosymbionts;* **Sheila Walsh**, Scripps Institution of Oceanography, USA; *Do predator-dominated coral reefs have higher fish biomass and potential harvest due to changes in growth rates?;* **Anabella Zuluaga-Montero**, University of Puerto Rico; *Aspergillosis in sea fans: phylogenetic relationship among* Aspergillus *strains and patterns of prevalence.*

We are grateful to The Ocean Conservancy for their continuing support of deserving students of coral reef science. I would like to add my personal thanks to ISRS Recording Secretary Rob van Woesik and his fellowships committee for reviewing the proposals.

Diving a Dream

Hello, fellow colleagues and Diving a Dream supporters,

As many of you know, Matthew Johnston just recently became the first ventilator-dependent quadriplegic to scuba dive in open water (for a news clip, visit http://www.weau.com/news/headlines/3185621.html) This was made possible through your generous support, thoughts, well-wishes, and donations. For those new to the project, Matt is a 29-year-old from Minnesota who has been pursuing scuba despite the limitations he faces because of muscular dystrophy.

The project has been successful in advancing research related to muscular dystrophy, underwater technology, and evolving adaptive scuba programs. Matt is the first person with muscular dystrophy who has been certified to dive under Scuba Diving International's new adaptive scuba program, "Scubility."

The beat goes on…and we need your support to reach yet another history-making moment in the underwater world: Matt will make an ocean dive in November!!! We need your support to make this a success. To learn more about supporting the project, visit www.divingadream.org/HowTohelp.html.

Thank you for your support!

Deep DISCOUNTS from DAN

AAUS is a business member of DAN, the Divers Alert Network. One of the opportunities for AAUS Organizational Members who wish to order instructional material at reduced prices from DAN is to join as an "Additional Location Business Member." The fee for this program is $50 per year, and each OM that signs up will get 2 free individual membership coupons (worth $29 each), their own listing in the DAN online Dive Business Directory, and their own account number under which to collect referral points, in addition to substantial DAN product discounts. This opportunity will replace an earlier program where OMs could purchase material under the AAUS membership without signing up as an Additional Location Business Member. If you choose not to sign up your OM as an Additional Location Business Member, you will still qualify for instructor discounts on instructional material on your own, but the discounts as an Additional Location Business Member are more favorable.

For more details or to sign up as an Additional Location Business Member, contact
Laura Johnson, DAN Business Membership
1-877-532-6776 x 251 or 919-684-2948 x 251; Fax 919-490-6630

FROM THE PRESIDENT

"What I did on my summer vacation."

Don't we all wish we had time for a summer vacation! Or maybe we just need to *make* the time; which brings me to my point in this installment of this column…. AAUS could really benefit by more of our membership making the time to pay attention and participate in Academy business. I know, I know, the summer is the busy season; we all need to make hay while the sun shines and the "real job" takes precedence over volunteer work like AAUS. But many hands make light work, and I can tell you from experience that we could stand a few more hands.

AAUS has always been administered by a dedicated few, and for the most part the work has gotten done, at least at some level. However, as with any volunteer work, burnout becomes a problem. The current crop of AAUS volunteers is working diligently to address the needs of the Academy, but we need your help and input in addressing some of the issues on our collective plate.

A major issue is having you go on the AAUS Web site, www.aaus.org, and update your information in the AAUS database. This takes only a few minutes, and you will be happier in the long run if you go ahead and do it because before too many more moons go by, we are going to cull the deadwood by deleting un-updated records. This new online platform offers some very powerful tools, but as with any database, it is only as good as the information entered into it. Maintaining the quality of your information is your responsibility. Without going into too much detail here, I would remind you that there are two broad classifications of AAUS Membership; Organizational and Individual. Those of you associated with and responsible for OM records need to keep in mind the fact that updating your individual record is only part of the job; your OM record requires maintenance too, and the login is different. Touch base with Membership or the AAUS Office if you have access questions.

Along with this record review, we need those of you who haven't already done so to pay your dues! Transitioning the AAUS Office from Nahant to Dauphin Island and moving to a new database system has put us a little behind on chasing dues payments, but the office wheels are finding purchase: you will find yourself or your organization out of the AAUS fold if you wait too much longer to address this issue. The same holds true with submission of statistics, updating of dive manuals, and other requirements for maintaining organizational membership in the Academy. We need you to step up and take care of your own house.

We also need your help in supporting the Student Scholarship Program. This support can come in many forms—volunteering to review proposals, assisting the Scholarship Committee with fund raising ideas and projects, publicizing the scholarship with your students, passing around the link to raffles and other fund raising mechanisms to people who might be interested, and kicking in a few bucks to assist the next generation of diving scientist in finding their start.

On the other end of the career spectrum is the AAUS Awards Program. Participation here costs you nothing but the time it takes to nominate people you feel deserve recognition.

It's also not too early to contact Rick Gomez, rgomez@rsmas.miami.edu, or Bill Precht, BPrecht@pbsj.com, about that presentation you want to give at the 2007 Symposium in Miami. The proceedings are peer reviewed, and it's always easier to justify travel money for meetings where you are presenting. Just in case you are too snowed-under to produce something for 2007—Christian McDonald is coordinating the meeting at Scripps in 2008 and would love to hear from you.

Lastly, I want to implore you to become vocal on the topics related to long-term directions for the Academy. One of the major goals of my term as President is to identify our future direction. To do this requires your help. Questions related to DSO Certifications, AAUS-generated emergency-care training programs, nationally recognized Scientific Diver certifications, and other associated issues are being pushed forward for AAUS Board consideration. Your opportunity to be part of building consensus on these subjects is now. These topics will be acted upon before I leave office, and the current Board would like your input.

Editor's Corner

Walt Jaap

Summer is upon us and the field work is at maximum effort, at least in this venue. In our area (west coast of Florida), as the water warms, the incidents with lost divers are also increasing. This past week, an individual diving off a private vessel disappeared (according to the local newspaper) on a scheduled 40-minute dive. The searchers (Coast Guard, County Sheriff staff, and Fish and Wildlife Conservation Commission officers) have not found a trace of this diver. Based on the article in the paper, it appears that the dive buddy did not maintain a reasonable contact with the missing diver. It is often the situation while working on research projects that the diving-buddy rules are stretched to absurd limits to maximize the sampling efficiency or to finish a job that has fallen behind schedule. I am as culpable as any other DSO in making decisions that could come back to haunt my conscience. Let it be said that as professionals, we are responsible for our own lives and those of others; be cognizant that managing risks in diving operations is your responsibility. We are all prone to cut the corners at times; ladies and gentlemen, weigh the consequences in making your decisions.

A History Lesson

Boyles Gas Law is a fundamental of diving physics. Any introductory class teaches about this law and how pressure and volume have an inverse proportional relationship. Robert Boyle was born in 1627 in Ireland, the son of the Earle of Cork. Educated in Switzerland and Italy, he was fascinated with the work of the Greek philosopher Empedocles. Empedocles proved that air was real; he took a vase, placed it upside down in the sea, and noted that a portion of the vase interior remained dry, indicating that air took up space. Boyle returned to England (Oxford and London) and took up the scientific study of air. He acquired an air-vacuum pump (Machina Boylena) built by Robert Hooke (a pioneer in microscope studies). Boyle experimented with his air pump. A lung bladder from a lamb was filled with air and placed within a glass vessel. The pump was used to remove air from the vessel, and the lung bladder expanded. The more air was removed from the vessel, the more the lung swelled. Today we demonstrate this physical gas law with a balloon in a vacuum chamber. Although we credit this finding to Robert Boyle, Boyle credited Richard Towneley (1629–1707) with the air pressure discovery, calling it Towneley's hypothesis. Towneley collected air in a low valley using a glass tube with air over a column of mercury. Towneley carried his tube up a 1,000-ft-high hill. The altitude change resulted in an expansion of the air column, pushing the mercury downward. The next time you are reviewing Boyle's Law, give a little credit to Richard Towneley.

Information above is from Adam Hart-Davis, 2000. *Chain reactions: pioneers of British science and technology and the stories that link them.* National Portrait Gallery Publications, London. 192 pp.

Live free and enjoy the planet!

2006 AAUS Election

Congratulations to Dr. Neal Pollock!

On behalf of the AAUS BOD and the AAUS membership, I would like to congratulate Dr. Neal Pollock for securing the position of "Elected Director" on the AAUS Board of Directors. Neal's term on the AAUS BOD will begin on 01 January 2007 and run through 31 December 2009.

I also thank each candidate as well as all of the AAUS voting members for their participation. The actual vote count is available upon request.

—Bill Dent, AAUS Nominating Committee Chair

Are You Going to DEMA in Orlando, Florida, 2006?

AAUS will have space in the Nitrox Technologies, Inc., Booth. Please stop by for AAUS updates and information.

Special thanks to Bob and Cindy Olson, Nitrox Technologies, Inc., AAUS Corporate Sponsor. They are great folks, and Bob makes some very fine wine & beer. http://www.nitroxtech.com

CROSSING THE BAR

David Bright

David Bright spanned the world's oceans, donning scuba tanks and a wetsuit to study shipwrecks. From sunken military vessels to the *Empress of Ireland,* a rusticle-covered tomb in Canada's frigid St. Lawrence River, the 49-year-old Flemington man made thousands of dives. A leading researcher on underwater exploration, he was one of the few to see the *Titanic* up close, traveling three miles down in a submersible in 2003 and again last year.

But no sunken ship captured Bright's imagination quite like the *Andrea Doria*. The Italian luxury liner, 225 feet beneath the Atlantic Ocean's surface, is known as the Mount Everest of dives because of its many dangers, and Bright had conquered it. Again and again. He made more than 120 trips to the 697-foot liner, becoming one of the world's foremost authorities on the ship.

On Saturday, the *Andrea Doria* claimed Bright, as it has so many other divers over the years. The Coast Guard said Bright resurfaced from a dive to the vessel with decompression sickness, more commonly known as the bends, late Saturday afternoon and went into cardiac arrest. He died a short time later at a hospital on Cape Cod, MA. The *Andrea Doria* lies about 50 miles southeast of Nantucket.

"This is tragic, but we are so grateful he was doing what he loved on the boat he loved so much," said Michelle Bright, 21, one of Bright's three children.

Bright's latest dives were in preparation for the 50th anniver sary of the *Andrea Doria*'s sinking, on July 25, 1956. He was the founder and director of the *Andrea Doria* Survivor Reunion Committee, which had organized an event to be held later this month on Long Island.

Michelle Bright said her father set out Thursday with plans to dive that day, Friday and Saturday. She said family members were still awaiting word on precisely what went wrong.

The *Andrea Doria,* the most elegant cruise ship of its time, sank after colliding with the Swedish liner *Stockholm,* killing 51 of the 1,700 people aboard.

Divers have been enchanted by it ever since, but it is one of the world's deadlier wrecks, having claimed dozens of divers over the years. Five died at the wreck site in 1998 and 1999 alone.

The 10-deck vessel landed on its starboard side, and divers easily become disoriented in the silt- laden water. Some hallways and rooms have partially collapsed, proving ample opportunity to get snagged. Currents frequently shift.

"It's an upside-down world," Bright said in a 1991 interview with *The Star-Ledger.* "The ceilings and floors are your walls, and your walls and your floors are your ceilings. … It can be very scary down there." Because of the ship's depth, divers require a special mixture in their tanks, and explorers typically have only 20 minutes' time at the wreck before they must make for the surface. That in itself is perilous.

To prevent decompression sickness, divers must stop at various stages on the way up. How Bright, a highly experienced diver, succumbed to decompression sickness was not immediately known. "What a shock," said Alfred S. McLaren, a retired nuclear submarine captain who worked with Bright on one of the *Titanic* expeditions. "He's made so many dives on the *Andrea Doria.* He's the expert."

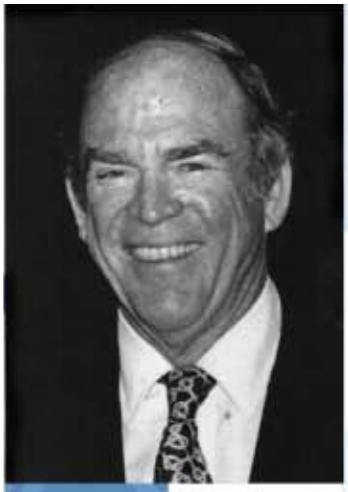
Diving on the wreck since 1986, Bright had amassed one of the largest collections of *Andrea Doria* artifacts, from dishes and silverware to unopened bottles of wine. One of two *Andrea Doria* lifeboats he owns sits on his front lawn in Flemington. "He loved the history of the ship, and he thought it was just so beautiful," said Bright's daughter Heather, 18. A 6-foot model of the *Andrea Doria* dominates the family living room, she said. Other memorabilia are scattered throughout the house.

But Bright's expertise stretched far beyond the *Andrea Doria.* A native of Niagara Falls, NY, he began scuba diving at age 13. Over the years, he grew into a leading shipwreck historian who contributed to dozens of television documentaries. He also lectured frequently on ship exploration. For two years, he worked with the National Oceanic and Atmospheric Administration on the exploration of the wreck of the Civil War ironclad USS *Monitor.*

In addition to his daughters, Bright is survived by his wife, Elaine, and a son, Matthew, 19.

David Bright was an AAUS member. AAUS expresses condolences to the family of David Bright.

—*Obituary Information compiled from* Underwater Times.



To Our Friends of the Perry Institute for Marine Science

With deep sadness we want you to know that John H. Perry, Jr. passed away on Tuesday, May 16, 2006. His incredible journey and his legacy will forever be remembered. We have been blessed by Mr. Perry's presence, his insight, fortitude, and vision in bringing together talents, technology and science for the benefit of humankind. The legacy of John H. Perry, Jr., will forever be integral to the mission of the Perry Institute.

"I want the Institute to do outstanding marine scientific research as it has in the past but more of it and better. It gives me great satisfaction to know that, as we enter the next century, work that I have begun will be carried on toward new horizons." *John H. Perry, Jr.*

The Perry Family requests that any donations in honor of John H. Perry, Jr., be given to the Perry Institute for Marine Science. The Institute was founded by Mr. Perry in 1970 and continues as a public not-for-profit organization based in Florida. Our mission is to conduct and support innovative research and education that advance stewardship of our oceans and coastal ecosystems.

For more information, please contact:
Perry Institute for Marine Science
100 North US Hwy. 1, Suite 202
Jupiter, FL 33477
Email: pims@perryinstitute.org
Web: www.perryinstitute.org

For notices and articles follow the links below:
The Palm Beach Post ~ Obituary & Guest Book
The Palm Beach Daily News ~ Obituary

Oregon Zoo Otter News

By Karen Rifenbury, Sea Otter Lead, Oregon Zoo

Thelma, the Oregon Zoo's 8-year-old female southern sea otter, was implanted with birth control (deslorelin) in December of 2005. Because space is lacking in the aquariums, it was decided that Thelma and her partner, Eddie, should not have a second pup. In order to monitor Thelma's hormone levels, keepers taught her to defecate on command. Fecal samples are collected in a net twice each week and sent to researcher Dr. Shawn Larson at the Seattle Aquarium. There is limited information addressing hormonal changes in sea otters on deslorelin.

During this endocrinology study, Dr. Larson will be studying Thelma's fecal samples along with samples from two other female sea otters also on deslorelin in hopes that we can learn more.

Karen Rifenbury, Sea Otter Lead, collecting the fecal sample.

Organizational Representatives—Ensure That Your Voice is Heard!

Included as a benefit to Organizational Members (OM) of AAUS is the opportunity to designate two (2) members of your Diving Control Board as Organizational Representatives. Provided they meet the requirements, these 'OM Reps' are awarded Full Voting Membership and given the opportunity to vote in AAUS elections and other business. All other members of the DCB are awarded either Full Non-Voting or Associate Member status, as appropriate.

In most cases, the individuals chosen as OM Reps qualify as Full Voting Members; however, some Organizations choose OM Reps who do not qualify for this level of membership. In these cases, the OM Rep will not be allowed to vote and will thereby reduce the participation of that OM. Although the decision is ultimately yours to make, it is in the best interests of your organization to designate OM Representatives that qualify as Full Voting Members of the Academy. Requirements for Full Voting Members and their respective database fields can be found in the previous edition of *The Slate* and in the membership area at www.aaus.org. Please contact us if you have any questions regarding your OM Profile. Thank you. *—AAUS Membership Committee*

AAUS Scientific Diving Lifetime Achievement Award Nominations

By Doug Kesling, AAUS Director, Award Chair

This award is presented annually to an individual from the scientific diving community who has made a significant contribution in advancing underwater science and technology. Open to anyone in the scientific diving community. Nominated by the AAUS General Membership. Voted and approved by the Past Presidents of AAUS and Past Award Recipients. Current BOD Members are not eligible during their term of office.

Past recipients are John (Jack) Randall, PhD, 2005; Sylvia A. Earle, PhD, 2004; Mark and Diane Littler, PhD, 2003 Co-Recipients; Paul K. Dayton, PhD, 2002; Wheeler J. North, PhD, 2001, in Memoriam; J. Morgan Wells, PhD, 2000.

Current list of nominees for the Class of 2006 are Eugenie Clark, Gerald Wellington, Walter Jaap, Charles Birkeland, Andy Rechnitzer (in memoriam), Dick Cooper, Peter Glynn, Michael S. Foster, Bill High.

Additional nominees for consideration in 2006 are being requested.

Please provide complete information for each nominee, as follows:

2006 AWARD NOMINEE, NAME, ADDRESS, PHONE, E-MAIL, JPEG PICTURE, IF AVAILABLE, AS AN ATTACHMENT, NOMINATORS NAME, CANDIDATE BIO, and AWARD JUSTIFICATION.

Please respond with your nomination via e-mail to Keslingd@uncw.edu by October 16, 2006, 11:59 pm PST.

RECALL RECALL RECALL

Suunto Dive Computers D9, D6

WASHINGTON, DC—The US Consumer Product Safety Commission, in cooperation with the firm named below, today announced a voluntary recall of the following consumer product. Consumers should stop using recalled products immediately unless otherwise instructed.

Name of Product: **Suunto D9 and D6 Model Wristop Dive Computers**

Units: About 3,900

Manufacturer: Suunto Oy, of Finland

Hazard: These dive computers could incorrectly track dive time, which could cause incorrect calculation of decompression requirements. This could lead to decompression sickness.

Incidents/Injuries: None reported

Description: The D9 and D6 diving instruments are advanced, gas-switching, multi-mode, decompression dive wristop computers. The products included are the **D9 model with serial numbers 62102582 and below; and the D6 model with serial numbers 62103693 and below.** The serial number is located on the side of the product. The model number is located on the back of the product.

Sold at Diving specialty shops nationwide, as well as various Web sites, from September 2004 through June 2006 for about $1,275 for the D9 (without wireless transmitter) and $900 for the D6.

Manufactured In: Finland

Remedy: Consumers should only use these dive computers with backup instrumentation. Consumers should bring the recalled units to the nearest authorized Suunto dealer for a software update to correct the problem. A free battery replacement and pressure testing will be provided as part of the free software update service. All updated products will be marked with an indelible white dot on the back of the unit, or with an engraved "U" near the serial number.

Consumer Contact: For additional information and a list of authorized retailers, visit Suunto's Web site at www.suunto.com, call Suunto at (800) 543-9124 between 8 am and 4 pm ET Monday through Thursday, and between 8 am and 12 pm Friday, or e-mail the firm at SuuntoD9-D6@nordictelecenter.fi

Oceanic Worldwide Versa Pro revision 2A Dive Computers

SAN LEANDRO, CA—In cooperation with the US Consumer Product Safety Commission (CPSC), Oceanic Worldwide of San Leandro, California, is voluntarily recalling Oceanic Versa Pro revision 2A Digital Dive Computers. While operating in the User Selected Digital Gauge Mode, displayed Elapsed Dive Time can be in excess of actual elapsed time.

Oceanic has received a report of two Versa Pro revision 2A units that experienced the offset time displayed while operating in User Selected Digital Gauge Mode. No injuries have been reported.

Oceanic Versa Pro 2A Dive Computers subject to the recall are only the revision 2A units that have serial numbers 12000 through 18176. The serial number is located on the side of the module. It can be viewed after the front button is depressed to activate the unit, then held depressed until the Diagnostic Mode screen completes its countdown. The Serial Number screen will appear displaying the module's SN and software firmware revision (r2A). The unit will shut off when the button is released.

During March 2003 and April 2006, authorized Oceanic dealers sold Versa Pro 2A modules in wrist and console-mount configurations that were manufactured between March 21, 2003, and February 7, 2005. The units were priced between $429 and $639, depending on the configuration with other instruments.

Consumers should immediately discontinue further use of Versa Pro 2A Dive Computers for User Selected Digital Gauge Mode operation (as a Depth Gauge/Timer) and take it to any Authorized Oceanic Dealer, or return it directly to the factory for an Upgrade to Versa Pro revision 2B.

Should you have any questions, please contact our toll-free Recall Helpline at 888-854-4960 or locally at 510-562-0500 between 8 am and 5 pm Monday through Friday PST.

AAUS 2007 Annual Symposium

University of Miami/ Rosenstiel School of Marine and Atmospheric Sciences • March 6–10, 2007

Workshops and Activities, 3/6–7

The 2007 Symposium will be held in sunny south Florida at the University of Miami. 2007's workshops and activities offer something for everyone.

Trimix diving and adding helium to breathing mixtures have become tools for some diving scientists over the past 5–10 years. In response to this trend, an "Introduction to Helium Diving" workshop is being offered. This workshop has been designed to give DSOs and other supervisory diving scientists a better understanding of the use of helium in a breathing mixture. Workshop participants will take part in a classroom session that will cover various topics such as the pros and cons of using helium, helium decompression, and gear configuration. Participants will then take part in a pool session to work on u/w techniques and gain experience in the equipment used for this type of diving. To round out this workshop, participants will dive using Trimix in order to gain first-hand knowledge and experience with this breathing gas. This workshop is limited to 8 participants. Prerequisites are being a current OM DSO or being recommended by an OM DSO, and having clearance from your OM DCB or administrator to participate in this workshop. Cost for this workshop is $250.00 (includes everything but the willingness to learn). This workshop will be conducted on March 6–7.

For those of you who have been given boating responsibilities, Bob Weismann, DSO at Florida International University, will be leading a workshop and discussion on March 7 about a variety of issues related to these programs. The various topics covered will include starting a program from scratch, training curriculums, and general supervision. There is no maximum number of students for this workshop. Cost TBA. Check the AAUS website for developing details.

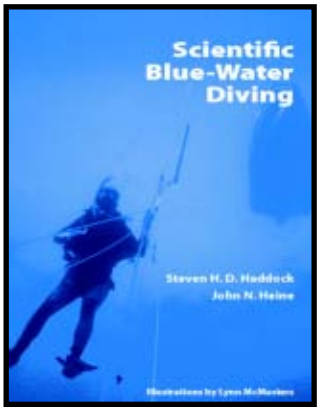
Having a productive experience at the Symposium is always a goal of attendees. To maximize attendee productiveness, we have worked with Professional Scuba Inspectors (PSI) to offer a cylinder visual inspector course. This course is perfect for people who are responsible for care and maintenance of SCUBA cylinders. During this 8-hour course participants will learn a step-by-step process to effectively inspect and evaluate high-pressure cylinders. Participants who complete this workshop will be certified through PSI as a Cylinder Visual Inspector. The minimum number of participants to have this workshop is 6, and the maximum number is 20. Cost for this course is $250.00 (includes everything but an open mind). Please register with PSI online at their Web site at http://www.psicylinders.com/.

Symposium attendees who would like to shed the 7–10-mm wetsuits and drysuits and take advantage of the south Florida weather will have the opportunity to do so on the 7th. There will be two two-tank dives arranged for those of you who would like to play a little while in Miami. The locations and profiles will be worked out later, but we will try to come up with something for every diving interest. Cost for these dives will be approx. $35–50.

Stop by the AAUS website at http://www.aaus.org for the latest on the workshops. *—Rick Riera-Gomez*

California Sea Grant Publication

Scientific Blue-Water Diving—California Sea Grant Publication No. T-057
Steven H. D. Haddock and John N. Heine

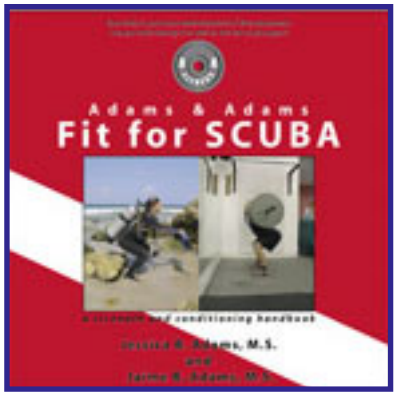


This book is a revision of *Blue Water Diving Guidelines,* originally published by California Sea Grant in 1986, and is the result of research supported in part by the Moss Landing Marine Laboratories, the David and Lucile Packard Foundation, NOAA and the National Sea Grant College Program. Contributors to this book include Larry Madin, Tom Frazer, Langdon Quetin, and Lynn McMasters. Printed on water-repellent stock and plastic spiral-bound.

Price of $13 includes postage and sales tax. Ask about quantity discounts. Make checks payable to University of California Regents. Mail your check and request to California Sea Grant Communications, UCSD, 9500 Gilman Drive, Dept. 0232, La Jolla, CA 92093-0232

Fax request with your name and address to 858-453-2948, and we will ship your order with an invoice. Questions? Leave a message at 858-534-4446.

Get "Fit for SCUBA"!



Jessica and Jaime Adams are graduate students, exercise physiologists, and dive instructors who have created a fitness program designed specifically for scuba divers. *Fit for SCUBA* is currently available for sale at www.bbotw.com and will soon be available for purchase through Divers Alert Network. Groups can purchase quantities of five or more books at a 40% discount ($8.97) from www.bbotw.com.

Divers are concerned with safety; they have buddies, follow dive plans, keep dive logs, and complete routine gear maintenance. However, many divers neglect their most vital piece of equipment…their bodies.

Because of common misconceptions, scuba diving has been highly ignored by the fitness industry. Dive gear alone places an additional load on the body. The physical demands of entries and exits must also be considered. Above all, scuba divers must always be physically and mentally prepared for challenging conditions that may arise in this dynamic underwater world. This is of particular importance to divers handling extra equipment in and out of the water.

Fit for SCUBA is a tool for becoming a safer, more fit and productive diver. The simple instructions and illustrations in this manual can help improve diver fitness. Participating in a fitness program may improve diver's confidence, and quality of life. The authors have provided a fitness plan for divers to follow at home or in the gym. This program should be a part of every diver's daily routine, regardless of location.

A proper fitness program will prepare divers to more effectively deal with the challenges that may arise during a dive. Improved muscular strength will minimize the stress of pre- and post-dive equipment handling. Entries and exits will also be completed with greater ease. Increased muscular and cardiovascular efficiency may improve diving comfort and confidence. Improved strength, flexibility, and balance will add comfort to maneuvering around a rocking boat, particularly when wearing your gear. Divers will benefit from increased confidence in personal capabilities. This will allow for more work and play to be safely accomplished underwater.

This fitness program has been developed with the needs of scuba divers, in mind. Strength is developed in areas of the body that are utilized during a dive. *Fit for SCUBA* provides guidelines for divers to create a fitness programs that meet the needs of each diver. No single fitness program exists that will be successful for each diver. This book provides the tools to create a program that will fit individual lifestyles and yield the desired results. A successful fitness program takes planning as well as commitment, just like a successful dive!

Advanced Scientific Diving Workshop Proceedings

By Mike Dardeau

Last year, the Board of Directors agreed to co-sponsor a workshop on Advanced Scientific Diving with the Smithsonian, NOAA–National Undersea Research Program and NOAA–National Marine Sanctuaries Program. Early in 2006, at the Smithsonian Institution, experts on deep-diving technology met to discuss its application to scientific diving in the 130–300 ft. range. The resulting proceedings—containing 22 papers on various approaches to extending working depths for scientists ranging from mixed-gas, surface-supplied diving systems to underwater habitats—has generously been made available to AAUS by the co-sponsors. Highlights include a very nice timeline of the history of diving by Glen Egstrom, an evaluation of dive computers for deep diving by Karl Huggins, NOAA's experience with technical diving by Doug Kesling, AAUS deep-diving standards by Bill Dent, and the use of waystation surface-supplied air by Mike Lang. Single copies have been sent to each Organizational Member. Additional copies are available for $30 plus shipping and handling at www.aaus.org.

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Guide for Contributors to *THE SLATE*

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Tan or navy. AAUS logo on front. One size, adjustable back-strap. $10.

Domestic shipping per item
Golf shirt–$5. Denim shirt–$6. Hats–$3. Multiple items–$6.
To purchase: send order and cash, check, money order, or Visa info to AAUS, 101 Bienville Blvd., Dauphin Island, AL 36528 Fax: 251-861-7540.

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Each member is entitled to one three-line classified ad per calendar year *at no charge*. Additional classified ads are $10 per three lines. Ads for sale of equipment, jobs, opportunities to dive on projects, and the like are suggested.

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