E-SLATE

American Academy of Underwater Sciences (AAUS)

EDITORIAL BOARD NOTE – May 2010

Welcome to the May E-Slate. This month's issue is full of news, announcements, and special reports from the scientific dive community. Thank you for the submissions. Starting this month we are featuring an AAUS organizational member in the AAUS Member Spotlight. We would like to highlight a different OM each month. To have your institution profiled send a 250-500 word review of the dive program with images to aaus@disl.org. Finally, please note the new AAUS office number: 251-591-3775.

The E-Slate is a newsletter from and for the scientific dive community. We welcome news, announcements, job postings, new publications, and images of underwater work. Please email submissions to aaus@disl.org. Current and past issues of the E-Slate are available at www.aaus.org.

NEWS/ANNOUNCEMENTS

AAUS Member Spotlight - UNCW

The scientific diving program at the University of North Carolina Wilmington (UNCW) includes research divers with the Center for Marine Science as well as NOAA's Aquarius Reef Base (ARB) and the Cooperative Institute for Oceanographic Research Technology (CIOERT). Funded in 2010, CIOERT explores and studies the nation's ocean frontiers using innovation and cutting edge technologies. CIOERT is sponsored by the National Oceanic and Atmospheric Administration Office of Ocean Exploration and Research, and is headquartered at the Harbor Branch at Florida Atlantic University in Fort Pierce, FL. UNCW is the co-managing partner. CIOERT explorers and technologists address NOAA priorities within the following research themes: 1) develop advanced underwater technologies; 2) explore and research the frontier regions of the eastern US Continental Shelf and Slope; 3) improve the understanding of deep and shallow coral ecosystems; and 4) building ocean literacy through outreach activities and hand on experiences. CIOERT recently supported a field operation that featured advanced diving systems, e.g. Closed Circuit Rebreathers (eCCR's) to study living corals found in the Mesophotic Zones in the Caribbean.

AAUS Conrad Limbaugh Memorial Award

The AAUS Conrad Limbaugh Memorial Award is presented annually to an individual who has made a significant contribution in diving safety and diving leadership on behalf of the scientific diving community.

Conrad Limbaugh was an underwater naturalist and Chief Diving Officer for of Scripps Institution of Oceanography, where he directed the diving program. He was killed in a scuba diving accident in the Mediterranean on March 20, 1960. Limbaugh graduated from Whittier College in 1948 and did graduate work at the University of California at Los Angeles before going to Scripps Institution in 1950. He was largely responsible for developing the diver-training program at Scripps, as well as many research techniques used by marine scientists.

The 2008 AAUS Recipient of the Conrad Limbaugh Memorial Award for Scientific Diving Leadership is Doug Kesling. Mr. Kesling was presented the award at the 29th annual AAUS Symposium banquet on Saturday, March 27 at the Waikiki Aquarium in Honolulu, HI. Doug received a Bachelor of Nursing from Wright State University and a Master of Arts in Liberal Studies from UNCW. He came to UNCW in 1990 to help continue the Aquarius Undersea Research Laboratory (Aquarius Reef Base) diving program, using a seafloor saturation habitat system. He has firsthand experience living and working underwater, and is a senior habitat technician emeritus having lead three saturation diving missions in Aquarius in St. Croix, USVI, and twice while based in Key Largo, FL. Doug Kesling is currently manager of the Advanced Diving Technology Program at the Center for Marine Science, UNCW which has integrated into NOAA's new Cooperative Institute for Ocean Exploration, Research and Technology (CIOERT) also located at UNCW and FAU/Harbor Branch Oceanographic Institute. The new CIOERT will utilize submersibles, ROVs, AUVs, enriched air nitrox and trimix open-circuit diving technology and rebreathers in support of NOAA's marine research directives. His current duties at UNCW include the oversight of diving safety and technical diving training programs for visiting scientists with the CIOERT. He participates on at-sea research mission's annually as a diving supervisor and served as the Expedition Diving Safety Officer for the USS Monitor Expedition from 2000 to 2003. He currently serves as a member of the NOAA Diving Program Technical Advisory Panel. Doug continues to lead and train an era of new scientific divers by having established UNCW's Environmental Studies Program course, EVS-479

(Introduction to Research Diving) and serving as the course director and instructor for the past 12 years. He is a founding member of the Carolina Consortium for Scientific Diving. He is also a past recipient of the North American Rolex Scholarship from the Our World Underwater Scholarship Society (1983-84).

Doug stated *"It is with extreme pleasure and gratitude to be honored and included in ranks of the previous Conrad Limbaugh Memorial Award for Scientific Diving Leadership recipients, like Dr. Lee Somers, Jimmy Stewart, and Dr. Glen Egstrom whom have taught me so much about the value of strong leadership and diving safety. Thank you."*

AAUS Welcomes New OMs

AAUS is pleased to welcome Florida Institute of Technology and AMEGEN, Inc. as our newest OMs.

WHOI DSO Terry Rioux Retires After 30 Years

Well-known Woods Hole Oceanographic Institute (WHOI) Diving Safety Officer (DSO) Terry Rioux has retired after 30 years of service. Terry was appointed WHOI DSO in 1980 after serving as a First Class diver in the US Navy. WHOI was an early OM of AAUS and Terry continued their active involvement throughout his tenure. Terry served on the AAUS BOD as a Standards Committee chair and hosted the 1989 annual AAUS Symposium at WHOI. He also served on the National Science Foundation Office of Polar Programs Diving Control Board.

An active NAUI and DAN instructor, Terry was also a popular speaker at venues such as the Boston Sea Rovers and Beneath the Sea. AAUS presented Terry with a Service Award at his retirement party on April 1 at WHOI. For a spotlight article on Terry's tenure at WHOI visit http://www.whoi.edu/oceanus/viewArticle.do?id=71347.

Polluted Water Diving Online Planning Tools

Sean Sheldrake, Rob Pedersen, Alan Humphrey; USEPA

After the three part polluted water module in Honolulu, we received at least one request for more detailed information regarding available online tools for dive planning in consideration of polluted water possibilities. Unfortunately this could not be fully presented at the symposium due to time constraints, but will be contained in the proceedings and on the EPA websites below. These resources are useful in planning a polluted water dive, or to ensure that a dive you are planning is not a likely polluted water dive. The preponderance of information often leads EPA to upgrade protective measures, such as keeping the diver completely dry, use of decontamination, and medical monitoring and immunizations for divers frequenting polluted sites.

In any water near metropolitan areas, bacteria in the water column can be a problem from a variety of sources, including pet waste and sewage overflows. EPA's BEACHES Environmental Assessment and Coastal Health Program (BEACH) provides regular bacterial counts at popular marine (and Great Lakes) recreational sites. Information on sewer discharge location, overflow frequency, and publicly available bacterial count information can be a valuable dive planning tool. In addition, chemical and biological contaminant trends in the water column and sediment are available through NOAA's Mussel Watch Program. Outfalls can also discharge a variety of harmful chemicals to the dive site. EPA's Envirofacts database presents outfall location and data that can be of use in planning for worst case water quality at a particular dive site. In addition, a list of chemically impaired water bodies can be obtained from EPA's 303d list. Even use of up to date navigation charts can inform a dive plan with some level of outfall information. Many Superfund Sites are near or include bodies of water, which typically must be treated as polluted water dives. Most Superfund sites have some online chemical data available on the water column and/or sediment. Internet searches on fish advisories are also typically indicative of a polluted water body. Chemical and chemical effects data can be found through CAMEO and NIOSH resources for more polluted sites. Again, as noted in the conference presentations, EPA upgrades protective gear and protocols in planning for reasonable worst case scenarios when in the proximity of outfalls, rather than relying on real time testing proving pollution—or relying on lack of testing to justify lower levels of diver protection.

For EPA polluted water diving resources visit:
http://yosemite.epa.gov/r10/OEA.NSF/investigations/divepubs
SOPs for polluted water diving:
http://yosemite.epa.gov/r10/oea.nsf/Investigations/Dive+Team+Safety

Recap - Carteret County Dive Symposium

Research divers, divemasters, and dive officers from Duke University, North Carolina State University, the University of North Carolina at Chapel Hill, East Carolina University, the University of North Carolina at Wilmington, the North Carolina Aquarium, the NC Division of Marine Fisheries, the NC Dept. of Cultural Resources, the NMFS Southeast Fisheries Science Center, the Monitor National Marine Sanctuary, and the Center for Coastal Fisheries and Habitat Research (CCFHR) gathered at the North Carolina Aquarium in Pine Knoll Shores at the first annual Carteret County Research and Education Diving Symposium on February 26. Despite a relatively small year-round population, Carteret County North Carolina is home to over 100 highly trained research divers with expertise in areas as diverse as marine science, fishery science, underwater archeology, microbiology, and chemistry. These divers, all based in Carteret County or working in Carteret County and

nearby waters, gathered to present research results from projects that depend on diving support to be successfully accomplished. In addition, bonds formed between divers should allow these disparate agencies to find new ways to collaborate on future research missions, to share equipment and expertise, and to conduct joint operations, resulting in reduced costs, increase safety, or enhanced research results. For more information contact Roger Mays (252-728-8798 or roger.mays@noaa.gov.

CAUS Underwater Science Report

The latest Underwater Science Report published by the Canadian Association for Underwater Science (CAUS) is available at: http://www.caus.ca/news.htm.

AAUS 2010 ELECTION - CANDIDATE Q&A

The 2010 AAUS election opens May 1 and closes June 30. This year the academy will elect one Director-at-Large. The Director-at-Large will serve a three-year term starting January 1, 2011. The election is open to Full Voting Members (individual and OM Reps) in good standing (dues paid, etc.). Ballots are accessed via the AAUS website, www.aaus.org, by logging into your individual account, highlighting 'Community', selecting 'Polls', and clicking on '2010 AAUS BOD Election.'

Candidates were required to submit a biographical sketch or curriculum vitae and answer the following three questions.

1) In your vision, in what direction should AAUS be headed in the next decade? (Maximum 300 words)
2) Rank in order of importance the six focus areas listed in the AAUS Strategic Plan for 2008 through 2011 (administration, credibility, membership services, scholarship, standards & training, and statistics), provide comment on the items listed under each area, and describe a goal and strategy for meeting your top three ranked focus areas. (Maximum 600 words)
3) What relationships/networks/professional contacts/non-profit board experiences do you have that will benefit AAUS by having you on the AAUS BOD? (Maximum 300 words)

The Academy thanks the candidates for their willingness to serve AAUS and the scientific diving community. Following are the candidate's biographies and answers to the election questions.

PEMA KITAEFF

Diving Safety Officer/Marine Tech
Friday Harbor Labs
206-543-0876; pema@u.washington.edu

I became a certified diver at age 15 – I had saved my allowance for a while, and decided to spend it one summer on the NAUI certification course at the neighborhood dive shop where I grew up in Seattle. My first dozen or so dives were all spent in a 7mm farmer jane with matching beaver tail top, watching the flounder and ling cod and anemones of the Pacific Northwest. I became a divemaster six years after that, around the same time I graduated from college with a BS in Biology.

I used my degree and dive gear to do a variety of jobs on boats and in the water largely in Washington State, but also in Maine, the Red Sea, Seychelle Islands, and in Honduras, where I received my Instructor certification in 2003. A half a 2009, volume 3, issue 5, page eight years later, I started graduate school towards an MS in Marine Science from Western Washington University. So even now when I'm asked, "What did you get into first, the diving or the marine biology?" I'm not sure how to answer. Both paths came from the same fascination, and seemed to have been intertwined from the start.

I landed my current job as Dive Safety Officer at Friday Harbor Labs fresh from graduate school, and with the perspective of a student and researcher already engaged in scientific diving projects. But I've also been able to draw on some of the experience I gained in subtidal consulting work and recreational diving within Western Washington State, and – more importantly – on the connections I've been able to maintain from those sectors. I've found these relationships with other working divers in our local community to be good sources of information, and invaluable to the health of our University dive program. As a relatively new instructor, I feel particularly enthusiastic about teaching. My favorite course to conduct is Rescue, and I tend to encourage a good deal of role playing scenarios and repetition of skills practice.

As the Dive Safety Officer for Friday Harbor Labs, I oversee daily dive operations and facilities, regular safety education, assistance with special projects, and administration of the small boating program. During my first year as DSO – which overlapped with my last year as a graduate student in the field of algae – I acted as primary organizer and host at Friday Harbor for the Northwest Algal Symposium in 2007. I'm always interested in expanding my own horizons with respect to new places, new equipment, or new methods so that I'm better able to help students and scientists at Friday Harbor Labs to get their data underwater efficiently and safely. I also get the privilege of assisting and learning from Sam Sublett, the University of Washington DSO.

As an AAUS board member, I am interested in being involved in education and outreach, and would especially like to help with the new DSO training. I'd like to see AAUS continue to grow towards independence from recreational certifications, and serve as a strong network.

In your vision, in what direction should the AAUS be heading in the next decade?

In the coming decade, I hope to see ongoing efforts towards deepening the distinction between scientific and recreational diving and gaining a fuller recognition within the wider dive community. Ultimately, I expect this change to be accompanied by organizational training materials and certification cards (equivalent to a standard rescue or nitrox card).

It's been a pleasure – as well as an extremely useful tool – to interact at AAUS meetings with dive officers from other parts of the country or world and from other types of institutions. I would like to see this trend continue at AAUS by reaching out to new and more diverse members, and fostering more opportunities for site visits between DSO's for purposes of evaluation and sharing information. And as AAUS grows outward, more encouragement of meetings and networks at the regional level can help keep DSO's connected with one another and provide support close on-hand for those who may need it.

I also hope the near future brings an increased awareness about AAUS among scientists and administrators as a place to present research, and increased attendance at meetings among research divers who are not dive officers, but recognize AAUS as the best forum to share their results and ideas about underwater methods.

Because I have received such invaluable benefits from attending AAUS symposia and learning directly from other DSOs, I welcome the opportunity to serve as a board member. I see it as a way to contribute my time and energy towards supporting the growth and improvement scientific diving programs, while certainly becoming a more effective DSO myself.

Rank in order of importance the six focus areas listed in the AAUS Strategic Plan for 2008 through 2011 (administration, credibility, membership services, scholarship, standards & training, and statistics), provide comment on the items listed under each area, and describe a goal and strategy for meeting your top three ranked focus areas.

The first priority in my mind is membership services. These are the goals that seem to me to be most closely associated with specific dive safety officers' and individual programs' basic needs. The provision of web-based dive logging tools and scientific diver instruction training materials can not only serve to improve growing dive programs or help newer DSOs, it can also be used as justification for increased OM dues and perhaps for some institutions this may be a major argument for becoming a member of AAUS.

My second priority from this list is Standards and Training, and I believe the component goals that fall under this heading are closely linked to those listed under membership services. The development of a DSO training and certification program seems like the first step towards a general and standardized body of training materials for scientific diver instruction. I am very interested in being involved with the development and production of such materials, and I'm sure some of the content that is already being organized for the DSO certification program can be adapted for lesson plans targeting the scientific diver.

I also think the formalization of a self-audit process, and perhaps even informal audit that could be conducted by a visiting DSO from outside, will act to help the program being audited by identifying areas that need work. But it could also be viewed as another useful service provided to help each member organization that participates in an audit, while improving consistency and communication between member organizations.

One of the rewards of self-auditing and improved consistency with respect to adherence to high standards among OMs could be increased credibility –third priority on this list. Such credibility can serve to further distinguish AAUS from other diving agencies and groups, but could also act to bring individual AAUS divers and dive officers more recognition from the institutions that employ them. This is a goal that can be achieved by outreach in several directions at once – towards increased independence from recreational agencies with respect to the strength of our own standards, but also reaching out to other agencies to represent what we are and the important niche AAUS fills in the diving world. I would be especially interested in working on collaborative projects with other organizations, like DAN, that could be mutually beneficial.

Although I'm listing Administration as a fourth priority, the establishment of a full-time administrative assistant to AAUS is, of course, very important as is the increase of OM dues. Reaching out to other potential new members in my own region, as well as to new international members, can help achieve the goal of increasing the OM base.

Fifth, I think there are some exciting goals involved with AAUS Scholarship activities. Finding new ways to raise money for scholarships and increased publicity about scholarship opportunities can help expand this program.

Finally, Statistics is very important as a way to demonstrate our continued safety record as a group of divers and to show areas where we can improve. I would like to see a refinement of the incident submission and review criteria to make the process clearer, and to be sure we are learning as much as possible as a group from every incident that is experienced and reported.

What relationships/networks/professional contacts/non-profit board experiences do you have that will benefit AAUS by having you on the AAUS BOD?

I believe myself to be a good networker, mainly because I genuinely enjoy meeting other enthusiastic people and cooperating with them to accomplish big goals. I've worked for several non-profit and community-based organizations; the first was the Port Townsend Marine Science Center, a small interpretive aquarium in Washington State. While there, I collaborated in an effort to secure funds to renovate our facility, and researched ways to spend the money we received by talking to other similarly-sized facilities. I also communicated about our project to the Center's membership through articles and public programs.

More recently, as a graduate student in the field of phycology, I was the organizer and host for the 2007 Northwest Algal Society meeting held at Friday Harbor Labs. I found it to be a priceless experience orchestrating details and fielding the problems that arose both in the planning and execution stages of the meeting.

Currently, as DSO at Friday Harbor Labs, I am constantly striving towards better relationships with our community and within our institution to help our dive program function better. I'm proud of the connection we've formed between FHL and the dive shop on the small island where we're located; historically there had been mistrust, the dive shop owner and I have now established a solid line of communication that has resulted in knowledge about new sites, help with gear, and perhaps most importantly – a positive representation of our institution to the public.

I have established a small boating program (with a certification course) and instructed a new quarter-long scientific diving course during my five years at FHL. Next month, there will be a new boating safety officer position to assist me while I retain dive supervision responsibilities, and take on part-time work doing environmental consulting for small-scale shoreline construction projects around Puget Sound.

CHRISTOPHER S. MOSES
Florida International University
305-281-2387; geodiver@me.com

Chris Moses completed his MS in Geology from Baylor University in 1999 while studying Jamaican coral reef structure, and then earned his PhD in Marine Geology and Geophysics from the University of Miami, RSMAS in 2005. He began diving in Texas in 1996, and became an AAUS scientific diver at the University of Miami, RSMAS in 2002. He is a certified NAUI scuba instructor as well as a full cave and technical diver. As a scientific diver, Chris has acted in support of many projects including benthic habitat surveys, fish counts, underwater coring, and blue water operations, among others.

Chris has had more than a decade of experience as a professional marine research scientist. He has participated in research projects in roles from student to principal investigator in more than 18 countries around the Caribbean and Atlantic, including the Cape Verde Islands. As a postdoctoral research fellow at the University of South Florida he developed high-resolution, satellite-based decision support tools for coral reef managers. As a marine geologist with Jacobs Technology (contracted to the US Geological Survey) he collaborated with the National Park Service to develop service-wide protocols for benthic habitat mapping. Presently, as visiting research faculty at Florida International University in Miami, Chris is studying the influences of climate variability on coastal ecosystems. Chris has numerous peer-reviewed scientific publications and has more than five years experience planning and leading professional meetings, including international meetings.

Chris has had more than five years of experience teaching earth sciences in formal and informal educational environments, and from high school to graduate students. In 2005, he started volunteering as a dive instructor and science mentor with the youth education organization, SCUBAnauts International (SNI). Chris has volunteered as DSO for SNI since 2008, and continues his active role as a science mentor in the organization. He believes that educating today's youth in marine science and scientific diving is an essential pathway to improved environmental stewardship and increased attraction of students to science, technology, engineering, an mathematics subjects and careers in the future.

In your vision, in what direction should the AAUS be heading in the next decade?

I envision a growth in organizational membership, increase in quality, and expansion in outreach for the AAUS over the next decade. As science and university budgets tighten, diving scientists are prone to increased restrictions and pressure to either prohibit or outsource more and more research diving operations. In addition, the reduced levels of funding for research translate into larger collaborative research projects (i.e., multiple institutions, multiple investigators, etc.). A growth in AAUS organizational membership simultaneous with an increase in the quality of diver training will improve facilitation of multi-institutional research opportunities. This will specifically help facilitate such multi-institutional efforts by increasing confidence in scientific diver skills and safety, as well as having more organizational members with which to collaborate.

Scientific diving outreach to a younger audience is also critical for longer-term success and survival of the AAUS as an organization. Over the past few decades, the attraction of American youth to science, technology, engineering, and mathematics (STEM) subjects and careers has suffered a substantial decline. Using scientific diving as a tool to capture the interest in of high school

age youth in STEM subjects now will increase the body and training of scientific divers in years to come.

Rank in order of importance the six focus areas listed in the AAUS Strategic Plan for 2008 through 2011 (administration, credibility, membership services, scholarship, standards & training, and statistics), provide comment on the items listed under each area, and describe a goal and strategy for meeting your top three ranked focus areas.

The six focus areas listed in the AAUS Strategic Plan for 2008-2011 are naturally intertwined. I would rank the importance of the six focus areas as follows:

Credibility.

I rank *credibility* first because without it, the rest of the AAUS focus areas lose their significance. Who is going to respect AAUS *standards & training* or care about AAUS *statistics* if our organization has no *credibility*? However, the focus area of *credibility* has a dual nature in that by taking care of the remaining five focus areas, AAUS can assure success in the aspect of *credibility*.

Standards & Training.

I believe that *standards & training* are the keys to supporting credibility. With evidence of excellence in this focus area, organizational members will enjoy a stronger reputation in the professional arena, supporting *credibility* and *scholarship*.

Scholarship.

The 'S' in AAUS stands for Sciences, and without *scholarship* (i.e., research, support of higher education, education of students), we would not live up to the overall objectives of the organization as defined in the Code of Federal Regulations.

Administration.

I rank *administration* ahead of membership services, because a strong *administration* is necessary to support *membership services*.

Membership Services.

Membership services are critical to overall advancement of the organization, but need to be coordinated by *administration*, and strengthened by the *credibility* of the organization

Statistics.

I rank *statistics* last of the focus areas, but good *statistics* and record keeping are essential to honest internal (and external) evaluation of whether or not AAUS is achieving its mission and goals that are set by the administration and the membership.

What relationships/networks/professional contacts/non-profit board experiences do you have that will benefit AAUS by having you on the AAUS BOD?

I am a relatively new DSO, but I have been actively involved in scientific diving for about a decade. I have worked as a graduate student or researcher at several universities in Florida (U Miami, U South Florida, Florida International U), and have professional scientific colleagues at many other universities. My position as DSO is with SCUBAnauts International, a 501(c)(3) non-profit organization that maintains strong ties to Federal agencies as well as other private and public organizations. My experience in the arenas of scientific research as well as scientific education and outreach, in addition to scientific diving, should provide a strong foundation for to help the AAUS achieve its long-term objectives.

TIM WHITE

Dive Safety Officer
Pennsylvania State University

Tim White is a Senior Research Scientist in the Earth and Environmental Systems Institute, member of the graduate faculty in Geosciences, and Dive Safety Officer of The Pennsylvania State University's Science Diving Program. Tim was YMCA certified in 1974, and has been an active recreational diver ever since. He holds specialty certifications in deep, nitrox, gas blending, and drysuit diving as well as his NAUI instructor rating. He has attended annual AAUS meetings in Miami and Honolulu and has dived with AAUS science divers from the University of Miami (inc. Rick Riera-Gomez) and University of Alaska-Fairbanks (inc. Brenda Konar). As Penn State's DSO his responsibilities include oversight of 15 science divers as well as teaching 4 semester-long program-related courses: Science Diving, Advanced Science Diving, Coral Reef Systems, and Florida Prehistory; typically, at least 20 new divers-in-training are engaged in the program in any given academic year. Tim also teaches two sections of basic scuba each semester to an additional 25 students, and is certified to teach the DAN Diving Emergency Management module and the International Reef Check protocol.

Tim's underwater research includes vertebrate fossil distributions in the Santa Fe River, and offshore Venice Beach, FL, lake bottom mapping in Green Lake, NY and Lake Champlain, VT, and the isotope geochemistry of coral cores from the Bahamas. He is keenly interested in the genesis of enigmatic geologic deposits called lonestones and has begun to pursue their potential link to so-called kelp 'floatstones.' His lifetime favorite dives have been at Peleliu, Palau and Kenai Peninsula, AK.

Tim is a member of the Geological Society of America in which he served on the Student Scholarship Review Committee for the past three years. He also sits on the steering committee of the Critical Zone Exploration Network (CZEN), and the Board of Directors of the Mount

Nittany Conservancy. His funded research has included grants from the Joint Oceanographic Institution, the American Chemical Society, and the National Science Foundation (past and ongoing).

In your vision, in what direction should the AAUS be heading in the next decade?

First, to provide some context to understand my views: I am a geoscientist, faculty member at Penn State, and my DSO responsibilities are part time. Second, my knowledge of AAUS is limited to personal interactions with 3 organizational members and attendance at 2 annual meetings. My impression of AAUS is very positive. I have learned a lot, feel great support and value Penn State's membership.

The organization may be lacking in some arenas. The most obvious is the lack of standardization of physical fitness exams and skill maintenance. In my courses I stress physical fitness and comfort in the water as the most important aspects of SCUBA training. So, I support any effort to standardize fitness testing and basic skill maintenance, at a minimum, the annual administration of swim tests and demonstration of basic rescue skills.

Second, I left Honolulu with the impression that much of the membership desires greater visibility in the science community. Two thoughts:

1) Many small professional societies align their annual meetings with larger meetings. AAUS should consider alignment with some of the larger professional science organizations, for example (selfishly) the Geological Society of America, perhaps in alternating years.

2) The Miami meeting included a poster session. Poster sessions are a great venue for personal interaction with our community and one means for including more abstracts in the proceedings volume. We should include a poster session(s) at all annual meetings.

Finally, recognizing what I stated above, I support the notion that our annual meetings are most effective if hosted by an organizational member. Besides the personal touch that this allows, it provides the opportunity for smaller programs to observe and learn from other programs. As well, it provides a more ready environment for diving in a range of environments that some of us may not otherwise experience.

Rank in order of importance the six focus areas listed in the AAUS Strategic Plan for 2008 through 2011 (administration, credibility, membership services, scholarship, standards & training, and statistics), provide comment on the items listed under each area, and describe a goal and strategy for meeting your top three ranked focus areas.

For reasons expressed below, I ranked membership services as the BOD's highest priority. I contend that Membership Services is intricately linked to Administration and I consider them as a single focus area – one that should be our priority. To fully serve organizational and individual members we need a full-time staff person! Based on the budget information included in the strategic plan it appears that we will have the finances to support the position. Therefore our task is to determine how to focus staff time, energy and expertise to best serve the membership.

Membership Services

AAUS encompasses hundreds of organizational members and >1000 individuals according to our strategic plan. Without the membership the organization would not exist, therefore the Board of Directors should prioritize membership services. Specific to the points in the strategic plan: the training modules and new database tool are great - I use them all. So on one hand, I am inclined to state that the development of training materials and online and database tools has already been accomplished. On the other, I am aware that some members have expressed unhappiness with the new database logging tool. Therefore we should work to develop tools, training modules etc that are useful to a full range of the Academy membership. I am supportive of the development of specialty training programs and a related support network.

Administration

Although I do not know much about the day-to-day activities of the Academy, the development of a full-time administrative assistant is a worthy goal. The expansion of our financial base also appears to be a worthy endeavor, though I note that our income has exceeded expenses for the past three years and we have a healthy reserve fund equivalent to at least one year of expenses (according to the strategic plan). Penn State does not currently require our science divers to all be individual members – do other programs have this as a requirement? Seems like it would be one simple way to increase income without asking much from those who most benefit from AAUS.

Scholarship

The future of underwater science relies on our ability to recruit and retain young underwater scientists who will guide future development of the science and the Academy. The present crisis within our oceans serves to highlight this point – we need young scientists to expand upon what AAUS and underwater scientists have already accomplished. Thus, the expansion of scholarship opportunities should be a high priority for the organization. Many professional societies are charitable organizations, that is can accept donations that contributors can claim on their taxes. Is AAUS recognized in this way? If not, should we be? Or could we consider a charitable "arm" of the Academy,

organized to support student scholarships? I for one would donate annually to such a fund.

Standards & Training

I am fully supportive of all points in the strategic plan relating to DSO training and certification, accreditation and compliance, revision of core competencies, expansion of professional development opportunities, and standardization for specialties. We should do all of this. Attaining goals is a matter of will and effort. Most of the information exists to make these happen, so it appears to me that it is a matter of organizing the information in a way that is palatable to the majority of organizational members. Implementation of these activities could be accomplished on a fee basis.

Credibility

Refer to my responses in question 1, and comments under Standards and Training.

Statistics

The collection, review and distribution of statistics should be maintained. The development of online tools should be enhanced to respond more broadly to membership.

What relationships/networks/professional contacts/non-profit board experiences do you have that will benefit AAUS by having you on the AAUS BOD?

See Biography for introductory information.

As a researcher, I have many years of experience with National Science Foundation (NSF) grants. In addition, I spent approximately four years of my career in the US Geological Survey. The point being that I have a fair bit of experience dealing with federal agencies and the funding structure. Part of my experiences have included work on the development of a new NSF program – early in this effort I engaged in proposal writing and management and oversight of early projects to help build a network of people, study sites and data that evolved into the new fully funded program. A portion of this effort was international, that is European scientists engaged us to help guide the development of similar programs there. So, the experience I offer is specific to interactions with our federal agencies as well as science funding agencies in the European Community.

FUNDING/SCHOLARSHIPS

AAUS 2010 Student Scholarships

AAUS will award two $2,500 scholarships in 2010 to graduate students conducting research who are using scientific diving as their principal research tool or studying diving science. Contingent on funding and quality of proposals, two additional $1,500 scholarships may be awarded. The application deadline is June 30. Recipients will be announced Oct. 1. For more information, contact the Scholarship Committee Chair at aaus@disl.org or visit: http://www.aaus.org/mc/page.do?sitePageId=64326&orgId=aaus.

UPCOMING EVENTS

USC Chamber Day 2010

Help support the USC Catalina Hyperbaric Chamber in its 36th year of service to Southern California. The 22nd annual Chamber Day and 12th annual Chamber Evening Fund Raiser will be held on May 5. For the past 36 years the Chamber has been dedicated to the treatment of diving accidents on a 24/7/365 basis. The facility gives divers in Southern California a vital safety net in the event of a diving accident. The Chamber's LA County contract covers a little over 50% of the annual budget. Annual Chamber Day contributions from divers, clubs, shops, manufacturers, organizations, publications and dive boat operators provide a significant portion of the remaining budget. Donations cover necessary transportation of chamber volunteers, treatment gas, equipment, maintenance, and repair costs. Visit: www.ChamberDay.org.

The Revolution of Science through Scuba

The Smithsonian Institution, the National Science Foundation, and the Ocean Studies Board of the National Research Council announce a symposium in May 2010 to celebrate the scientific contributions and value of scuba as research methodology. The symposium will present research findings by US scholars and international collaborators with particular focus on the scientific contributions accomplished by placing the trained scientific eye into the underwater environment on self-contained compressed gas. This symposium is the first major effort to highlight and validate the use of scuba as research methodology. The symposium is scheduled for May 24 and 25 at the Smithsonian's Baird Auditorium in the National Museum of Natural History, Washington, DC. The two-day event will feature over 50 oral presentations and a formal reception at the Sant Ocean Hall. The expected audience includes research scientists, postdoctoral fellows, research staff, students, program managers and representatives from federal agencies, congressional staff, news media and the general public. Topics of presentations will include research findings from around the world on coral reefs, blue-water environments, under-ice polar habitats, temperate kelp forests and other sites of interest. Results will be disseminated to scholars and the public through publication of the symposium proceedings volume in the Smithsonian Contributions to the Marine Sciences series by Smithsonian Institution Scholarly Press, websites, and the news media. Please visit www.si.edu/sds for no-fee registration, agenda, abstracts and speaker bios.

UW Spatial Ecology of Salish Sea Benthos Course

The University of Washington Friday Harbor Laboratories is offering a 15 credit course in Spatial Ecology of Salish Sea Benthos September 29 - December 10, 2010. The course will investigate the application of marine ecological and geophysical techniques, seabed sampling and underwater video and still photographic sampling in the characterization of marine benthic habitats. There will be opportunities for advanced scuba divers to take part in sampling and surveys. Enrollment is limited to 10 persons. Contact Dr. Kenneth Sebens (sebens@u.washington.edu) or visit http://depts.washington.edu/fhl.

JOB OPPORTUNITIES

LACSD Senior Laboratory Technician

The Los Angeles District's Ocean Monitoring Research Group performs biological and environmental analysis and assessment as part the agency's marine monitoring and research program under regulatory and research requirements. This is a multi-disciplinary program conducted in response to District's research and State of California NPDES permit requirements. Los Angeles County Sanitation Districts is seeking a Senior Laboratory Technician for the Ocean Monitoring Research Group at the Joint Water Pollution Plant in Carson, CA. The successful candidate conducts or participates in the collection and analysis for a variety of biological, chemical, and physical oceanographic samples as part of the District's Ocean Monitoring Program. Within the laboratory, maintains taxonomic documents and resources as directed; performs quality control checks of infaunal sample sorting; performs fish and invertebrate tissue resection for bioaccumulation studies; provides electronic dataset handling efforts; processes and analyses aquatic sediments for qualitative determinations and quantitative grain size analysis; provides preliminary taxonomic determinations of marine invertebrates and fish. At sea the incumbent, participates in a broad array of oceanographic and biological sampling and analysis: the incumbent operates and navigates a 26 foot motor vessel in open coastal waters, assists in oceanographic sampling by means of a CTD water column profiling and light irradiance measuring packages, including calibration and troubleshooting; rigs and deploys oceanographic sampling gear such as otter trawls, sediment grabs, sample bottles, and uses shipboard winches and capstans or other specialized gear and equipment; utilizes scuba in collecting samples and conducting surveys as a member of the Ocean Monitoring Group's dive team. For more information visit:
http://agency.governmentjobs.com/LACSD/default.cfm?action=viewclassspec&classSpecID=112732&agency=1616&viewOnly=yes

Diving Safety Officer – WHOI

Woods Hole Oceanographic Institute (WHOI) is seeking a Diving Safety Officer. The DSO is responsible for initiating and supervising the diving program and training divers. Major duties include: operational authority for the diving program, implementing policy as established by the Diving Control Board, reviewing the latest diving technology and procedures, and recommending budgets for the Diving Program and compiling an annual report of diving activities for the DCB. Applicants should have a degree in marine science or a related field and must possess a current Instructor's certificate issued by a nationally recognized agency, have at least four years of varied diving experience plus 100 hours underwater using scuba and surface-supplied equipment. Applicants must exhibit a thorough knowledge of diving theory, safety practices, operational procedures and diver training. Some sea duty may be required. Visit:
http://www.whoi.edu/services/HR/jobdescp/administrative/dive_off.htm.

NEW PUBLICATIONS

Bennett MH, Lehm JP, Mitchell SJ, Wasiak J. Recompression and adjunctive therapy for decompression illness: a systematic review of randomized controlled trials. Anesth Analg. 2010 Mar 23 [Epub ahead of print].

Introduction: Decompression illness (DCI) is caused by bubble formation in the blood or tissues after a reduction in ambient pressure. Clinically, DCI may range from a trivial illness to paralysis, loss of consciousness, cardiovascular collapse, and death. Recompression is the universally accepted standard for the treatment of DCI. When recompression is delayed, a number of strategies have been suggested to improve the outcome. We examined the effectiveness and safety of both recompression and adjunctive therapies in the treatment of DCI. Methods: We searched CENTRAL (Cochrane Central Register of Controlled Trials) (The Cochrane Library 2009, Issue 2); MEDLINE (Medical Literature Analysis and Retrieval System Online) (1966 to July 2009); CINAHL (Cumulative Index to Nursing and Allied Health Literature) (1982 to July 2009); EMBASE (Excerpta Medica Database) (1980 to July 2009); the Database of Randomized Controlled Trials (RCTs) in Hyperbaric Medicine (July 2009); and hand-searched journals and texts. We included RCTs that compared the effect of any recompression schedule or adjunctive therapy with a standard recompression schedule and applied no language restrictions. Three authors extracted the data independently. We assessed each trial for internal validity and resolved differences by discussion. Data were entered into RevMan 5.0 software (Copenhagen: The Nordic Cochrane Centre, The

Cochrane Collaboration, 2008). Results: Two RCTs satisfied the inclusion criteria. Pooling of data was not possible. In one study, there was no evidence of improved effectiveness with the addition of a nonsteroidal antiinflammatory drug to routine recompression therapy (at 6 weeks: relative risk 1.04, 95% confidence interval [CI]: 0.90-1.20, p=0.58), but there was a reduction in the number of recompression treatments required when tenoxicam was added (p=0.01, 95% CI: 0-1). In the other study, the odds of multiple recompressions were lower with a helium and oxygen (heliox) table compared with an oxygen treatment table (relative risk 0.56, 95% CI: 0.31-1.00, p=0.05). Discussion: Recompression therapy is the standard for treatment of DCI, but there is no RCT evidence. The addition of a nonsteroidal antiinflammatory drug (tenoxicam) or the use of heliox may reduce the number of recompressions required, but neither improves the odds of recovery. The application of either of these strategies may be justified. The modest number of patients studied demands a cautious interpretation. Benefits may be largely economic, and an economic analysis should be undertaken. There is a case for large randomized trials of high methodological rigor to define any benefit from the use of different breathing gases and pressure profiles during recompression.

Coulange M, Rossi P, Gargne O, Gole Y, Bessereau J, Regnard J, Jammes Y, Barthélémy A, Auffray JP, Boussuges A. Pulmonary edema in healthy scuba divers: new physiopathological pathways. Clin Physiol Funct Imaging. 2010 Feb 4. [Epub ahead of print]

Summary Introduction: The mechanism of immersion pulmonary oedema occurring in healthy divers is a matter of debate. Among consecutive injured divers admitted to our hyperbaric centre, we analysed prospective data about pulmonary oedema. Method: A total of 22 divers suffering from immersion pulmonary oedema without cardiac disease were included. The occurrence of events was compared to the diving conditions as assessed by diving-computer. Each patient underwent a clinical examination, laboratory tests, thoracic CT scan and echocardiography. Results: The median age was 49 years, with a higher proportion of women, in comparison with the data of the French diving federation. The common feature was the occurrence of respiratory symptoms during the ascent after median dive duration of 29 min with strenuous exercise and/or psychological stress. Most of the dives were deep (37 msw/121 fsw) in cool water (1°C/59°F). The average inspired oxygen partial pressure was 0.99 bar. Progression was rapidly favourable, and the medical check-up after clinical recovery was normal. Conclusion: Immersion, body cooling, hyperoxia, increased hydrostatic pressure and strenuous exercise likely combine to induce pulmonary oedema in patients without cardiac disease. This study underlines new physiopathological tracks related to the frequent occurrence of symptoms noticed in the last part of the ascent and a higher incidence in women.

Gallegos CL, Kenworthy WJ, Biber PD, Wolfe BS. Underwater spectral energy distribution and seagrass depth limits along an optical water quality gradient. Smithson Contrib Mar Sci. 2009; 38: 359-68.

We measured *in situ* inherent optical properties and seagrass distributions in widely differing optical water types, including turbid green waters of the Indian River Lagoon (IRL, Florida, USA), a mix of turbid and clear waters in Panama, and very clear waters in Belize. We used Hydrolight to model *in situ* spectral energy distributions, and measured leaf absorbance spectra (*Thalassia testudinum*) to distinguish between photosynthetically available (PAR) and photosynthetically usable (PUR) radiation. Attenuation coefficients for PAR and PUR were nearly indistinguishable in Belize and Panama, and differed only slightly in the IRL. Grass grew to depths of penetration of 33% of PAR in the IRL, 14% in Panama, and ca. 5% in Belize, though we expect the estimate in Belize is an underestimate due to more turbid than typical conditions prevailing at the time of the measurements. Corresponding percentages for PUR were 27%, 12%, and 5% for IRL, Panama, and Belize, respectively. These regional differences in light requirements were striking, and less than half of the difference could be attributed to latitudinal variations in incident light. We conclude that factors, other than spectral energy distribution, that covary with water clarity control site-specific light requirements of seagrasses. Possibilities include epiphytes and sediment quality.

Petri NM, Stipancevic H, Sutlovic D, Gojanovic MD. Death of a scuba diver caused by vomiting and panic: a case report. Am J Forensic Med Pathol. 2010 Feb 25. [Epub ahead of print]

Scuba diving fatalities are rare and sometimes extremely difficult to explain. A thorough forensic investigation, conducted by a qualified team, helps avoid possible later questions and doubts, family concerns and judicial matters, since a significant body of evidence is lost after the body of the victim is buried or the equipment is reused. We report about a death of a scuba diver who was drowned while diving to the depth of 30 m. Before being assisted to the surface, the diver panicked and removed the regulator from his mouth. The technical expertise of the scuba gear and the chemical analysis of the air from the high-pressure cylinder revealed no irregularities. Homicide, suicide, nitrogen narcosis, oxygen toxicity, and regulator malfunction were ruled out as possible causes of death. The most probable cause that triggered the event was vomiting into the regulator, as confirmed nearly four years later by the toxicological analysis of the

traces of matter found in the dry chamber of the breathing regulator. Such an analysis should be considered when investigating suspicious diving related deaths and could be undertaken even after a significant time delay if the equipment is kept properly stored.

Ruiz GM, Torchin ME, Grant K. Using the Panama Canal to test predictions about tropical marine invasions. Smithson Contrib Mar Sci. 2009; 38: 43-72.

As humans alter the landscape of the Earth and economic globalization expands, biological invasions increasingly homogenize the world's biota. In temperate marine systems, invasions are occurring at a rapid pace, driven by the transfer of organisms by ships and live trade (including aquaculture and fisheries activities). In contrast, little is known about patterns and processes of tropical marine invasions, although the same species transfer mechanisms are in operation. This disparity may be due to limited studies of invasions in the tropics relative to temperate regions. Alternatively, the tropics may be less susceptible to invasion than temperate regions, due to environmental unsuitability and biotic interactions. We are now implementing comparative measures across latitudes in North and Central America to test these hypotheses, using standardized field surveys. Here, we provide a brief summary of the current but limited information of marine invasions across latitudes, focusing particular attention on the eastern Pacific north of the Equator. Within this latitudinal framework, the Panama Canal provides an especially important model system for testing predictions about marine invasions in the tropics, due to (a) the high level of shipping traffic since the Canal opened in 1914 and (b) the current expansion of the Canal that is expected to increase ship visits.

The mission of the American Academy of Underwater Sciences is to facilitate the development of safe and productive scientific divers through education, research, advocacy, and the advancement of standards for scientific diving practices, certifications, & operations.

American Academy of Underwater Sciences
101 Bienville Boulevard, Dauphin Island, AL 36528
Tel 251 591 3775 Fax 251-861-7540
aaus@disl.org www.aaus.org

Editor: Roxanne Robertson - aaus@disl.org
Editorial Board: Neal Pollock, Michael Dardeau, Heather Fletcher

AAUS BOARD OF DIRECTORS