E-SLATE

American Academy of Underwater Sciences (AAUS)

EDITORIAL BOARD NOTE – January 2011

Happy New Year and welcome to the January E-Slate. Please continue to submit news, announcements, job postings, new publications and images of underwater work to aaus@disl.org. Current and past issues of the E-Slate are available at www.aaus.org.

NEWS/ANNOUNCEMENTS

Divers Alert Network (DAN) Research Internship

The DAN Research Internship Program provides experiences that motivate young people toward careers in medicine, diving or dive-related fields. Intern applicants are students from colleges and universities. The summer program runs mid-May through August. Training is conducted at DAN headquarters in Durham, NC, where interns receive an orientation to dive-related science and research. Two- to four-month lab or field placements follow. Placements are matched to intern background, interests and community needs. The application deadline is January 15, 2011. Visit: http://www.diversalertnetwork.org/research/projects/intern/index.asp.

AAUS/OWUSS Research Host Site Opportunity

AAUS has collaborated with Our World-Underwater Scholarship Society (OWUSS) to create a scientific diving internship program. This initiative will provide undergraduates with the experience and opportunities appropriate for a future in science, diving for research, or scientific diving-related fields. Applicants must be students from colleges and universities with an interest in science and diving. Interns will be trained to participate in research conducted at host facilities. AAUS/OWUSS will provide funding for travel to/from host facility, basic living expenses and other internship-related expenses. AAUS organizational members interested in the possibility of hosting a AAUS/OWUSS scientific diving intern should contact AAUS head office at aaus@disl.org. Students can apply for the internship at: www.owuscholarship.org. The submission deadline for the 2011 competition is January 31.

ICHM 2011 - Cape Town, South Africa

The International Congress of Hyperbaric Medicine will be held March 16-19 in Cape Town, South Africa. Details are available at: www.acitravel.co.za/ichm2011.

AAUS BOD Call for Nominations

AAUS is seeking individuals willing to run for the position of Director-at-Large for the 2012 Board of Directors. The Director-at-Large position is for a three year term starting January 01, 2012. Specific committee duties will be assigned by the president. To qualify, individuals must be voting members in good standing with the Academy for at least two consecutive years prior to nomination. The list of nominees along with candidate bios will be presented to the BOD on March 31, 2011. Candidates will be asked to submit responses to several questions to be provided to the AAUS membership as part of the election process. Balloting will open May 01 and close June 30. Please submit nominations to one of the Nominating Committee members:

Jeff Godfrey (jeff.godfrey@uconn.edu)
William Dent (wdent@research.usf.edu)
Vallorie Hodges (val.hodges@aquarium.org)

DAN Diving and Hyperbaric Medicine Course

The 69th DAN Diving and Hyperbaric Medicine Course will be held April 09-16 at the Little Cayman Beach Resort. This six-day course is designed primarily for physicians. Emergency medical personnel, paramedics, nurses and professionals with interest in diving medicine will also find the course valuable. The program is jointly sponsored by DAN and Wilderness Medical Society for continuing education credit. A special dive package supplements the course. Contact DAN Education at 919-684-2948, ext. 555 or 800-496-446-2671, ext. 555 or cme@dan.org. Visit: http://www.diversalertnetwork.org/Events/Event.aspx?EventID=829.

2011 AAUS OM Dues

Invoices for 2011 AAUS Organizational Member (OM) dues will be sent out the first week of January. They will be emailed to the primary contact on the OM profile. Please make sure that your contact information is correct. Payment is due by March 31. OMs will be designated as non-compliant if payment is not made by the deadline. Dues can be paid at www.aaus.org by logging on to the OM profile, a check can be mailed or you can call the office with credit card information.

Science of Wound Care, Diving, & Hyperbaric Med

The conference will be held at the Ritz Carlton in Palm Beach, FL, August 04-07, 2011. Visit: www.orf2011.com or contact Sharon Phillips at sphillips@orf2011.com.

AAUS Symposium 2011

The 2011 AAUS Symposium will be held in Portland, ME October 09-15. The Portland Regency will serve as the symposium hotel and the University of Maine Darling Marine Center (DMC) will serve as host for preconference workshops as well as the annual Diving Safety Officers Meeting and AAUS Business Meeting. October is a beautiful time of year in Maine but also a busy tourist season. Consequently, symposium registration will begin in late January. Plan to make travel and lodging arrangements early to avoid missing out on a great meeting. Look for additional information and registration materials on our website in late January or contact Chris Rigaud at crigaud@maine.edu or the AAUS office at aaus@disl.org.

AAUS Membership and Verification Card Drive

To encourage Individual Membership (IM) for divers trained by an Organizational Member (OM), AAUS is offering a one-year free membership in AAUS with the purchase of a verification card ($25). Only divers not currently IMs are eligible for this special pricing. Go to www.aaus.org to apply for individual membership ("membership application" in blue banner on the left). In the payment section, select "Full voting member – with purchase of verification card – $0.00" or "Student member with purchase of verification card - $0.00". Upon completing the membership application you will receive a confirmation page. Follow the links on this page to fill out your verification card form (or select "verification card" from the blue banner after signing into your profile).

All full and student members (AAUS trained and active divers) of AAUS are eligible for a verification card. The card front will have the AAUS logo, the OM logo, a picture of the diver, the date of issue and the name and logo of the certifying OM. The back of the card will list all Volume Two specialty training for which the diver qualifies. Once the DSO has verified that an applicant qualifies, the applicant's name will be added to a national registry of scientific divers that have met the training requirements of AAUS. This card is not intended to be used in lieu of a Letter of Reciprocity and Training Verification when requesting reciprocity from or transferring authorization to another AAUS organizational member. Cards may be ordered by logging into your individual profile and selecting 'verification card' from the blue banner on the left.

EQUIPMENT RECALLS

OTS Guardian Full Face Mask Recall

Ocean Technology Systems (OTS) has issued an urgent safety notice for the Guardian Full Face Mask (GFFM). Under certain conditions and/or usage, the GFFM exhaust assembly may come loose. If this assembly separates from the housing, you will not be able to breathe from the second stage regulator. This is a result of a defective part with bad threads. It is extremely important that you conduct a simple test to ensure your second stage regulator is securely fastened. If you find any problem whatsoever with the second stage, do not dive with the mask. See http://www.oceantechnologysystems.com/GFFM-NOTICE-E.html for instruction on how to test the exhaust system. Contact 877-270-1984 or recall@otscomm.com for details. Note: OTS operating hours Monday-Friday 0730-1600 (PST).

EDGE BCD Recall

In cooperation with the US Consumer Product Safety Commission, EDGE Gear is issuing a voluntary recall on all EDGE FREEDOM buoyancy compensator devices (BCDs), some EDGE STEALTH 2 BCDs (units with red weight release handles for weight pockets are not involved), HOG 32 lb single tank wings identified as 'Made in China' and all EDGE 32, 38 and 58 lb wings. An EDGE Freedom BCD was returned to a dealer with a complaint of a broken spring in the over-pressurization valve (OPV). This is the first report of this issue brought to the attention of EDGE Dive gear and no injuries have been reported. Upon inspection of the unit involved and other used EDGE and HOG products utilizing the same OPV design, it has been determined that the springs in the OPV exhibit an unacceptable amount of corrosion. Immediately cease use of the identified products and return the product to an authorized Edge dealer or Edge for OPV spring replacement. Contact recall@edge-gear.com or 404-579-7631 for more information.

JOB OPPORTUNITIES

Anthropology Dept, U. of Connecticut, Avery Point

Seeks to hire a tenure-track assistant professor in maritime archaeology to begin August 23, 2011. Duties will include teaching, research, and service. The successful candidate's primary academic appointment will be at the Avery Point campus with the possibility of work at UConn's main and/or other regional campuses across the state. UConn Avery Point is located on Long Island Sound and offers a variety of undergraduate programs to a diverse student population, as well as a graduate program in Marine Sciences. Faculty research at UConn Avery Point is primarily oriented toward the ocean and things maritime or marine. UConn maintains a small but active research diving program at Avery Point, and the university is an AAUS OM. For details, visit: http://averypoint.uconn.edu/avery_point/index.php.

The new faculty member will teach undergraduate courses in the Anthropology major, the Maritime Studies major, and the Maritime Archaeology minor, and will also have the opportunity to carry out graduate teaching and training at both the Avery Point and Storrs campuses.

Minimum Qualifications: 1) an active research program in archaeology related to the maritime; 2) completion of all

requirements for the PhD in Anthropology or a related discipline by the start date of employment; 3) a strong record of research and publication; and 4) the ability to teach courses in anthropology, archaeology, and maritime studies. Equivalent foreign degrees are acceptable.
Preferred qualifications: 1) PhD in hand at the time the application is submitted; 2) a strong record in obtaining research funding; and 3) a demonstrated ability to contribute through research, teaching, and/or public engagement to the diversity and excellence of the learning experience.
This is a nine-month, tenure-track position that will report to both the Anthropology Department Head and the Director of the Avery Point campus. Salary will be commensurate with background, qualifications and experience.
Visit Husky Hire at www.jobs.uconn.edu. Applications received by January 15, 2011, will be given preference.

Research Support – HIMB

The Hawaii Institute of Marine Biology, Coconut Island, Kaneohe is looking for a professional to join the research and support staff. The staff member will implement and direct a program to serve HIMB's boating and scientific diving needs, train and/or evaluate boat drivers, design a maintenance protocol for the research boat fleet and interface with the maintenance staff in implementing a maintenance schedule, schedule and manage boat use, ensure that all safety equipment is serviceable and meets Coast Guard requirements, provide boat-driving support as necessary, perform dive checkouts and swim tests, coordinate with UH Dive Safety Program to promote the training of scientific personnel and effective use of compressed air diving at HIMB, facilitate continued training and timely submission of dive logs to UH Dive Safety Program, support and oversee other in-water activities by HIMB visitors and other duties as assigned. Visit http://www.pers.hawaii.edu/wuh/nadvert.aspx?rn=11315&si=740105&pn=1&sn=postdate&so=desc for complete job listing.

Director, Office of Diving and Water Safety

East Carolina University (ECU) is seeking a director for its diving and water safety program. Candidates must have broad and intimate knowledge of scientific diving techniques, water-related research techniques, fleet management and operations, and boating safety. Managerial skills include personnel supervision, budget management, and interfacing with research faculty and staff. The successful candidate will report to the director of the Institute for Coastal Science and Policy (ICSP). Applications must include a letter of interest, resume, and contact information for three references. Nominations and inquires should be made to Dr. Hans Vogelsong (vogelsongh@ecu.edu or 252-328-9373). Screening of applicants will start January 01, 2011. The position will remain open until filled. For additional details visit: https://ecu.peopleadmin.com/applicants/jsp/shared/frameset/Frameset.jsp?time=1291654699059.

NSF Ocean Acidification and Coral Reef Tech

Applications are invited for a two-year (with potential for a two-year renewal) NSF-funded technician position at California State University, Northridge (CSUN), to support research in the area of ocean acidification (OA) and its effects on coral reefs. The successful candidate will work under the supervision of principal investigators RC Carpenter and PJ Edmunds (robert.carpenter@csun.edu and peter.edmunds@csun.edu), as well as a postdoctoral scholar, to elucidate the effects of OA on corals, algae, and coral reefs in Moorea. The research focuses on the ecophysiology of corals and algae, and spans investigative scales from organisms to assemblages of species and natural communities; experiments will involve microcosms and in situ analyses. Candidates are expected to have an MS in a field-based marine biology topic, experience in the biology/ecology of marine organisms, a history of working in tropical environments, and a strong background in the maintenance of marine aquaria, biological laboratory skills, seawater chemistry, and marine field operations (driving of small boats, scuba diving, etc.). AAUS training (or equivalent) is required. The research involves significant periods (up to six months/year) of work overseas in Moorea, French Polynesia, and Hawaii. This position provides unique opportunities to work with a small team studying the biology of coral reefs in the Caribbean and Pacific, and work with colleagues in the Moorea Coral Reef LTER, and Hawaii. The salary includes benefits, with additional funds to support travel and research in Moorea and Hawaii. Applicants should submit a cover letter in which they describe their research training and interests, CV, and arrange to have two letters of reference submitted. All applications must be submitted through the CSUN website (http://www-admn.csun.edu/ohrs/employment/).

Academic Diving Program Coordinator - FSU

The Florida State University Coastal and Marine Laboratory (FSUCML) invites applications for the position of Coordinator of the Academic Diving Program (ADP), a non-tenure track faculty line. FSUCML is committed to building a research program focused on coastal and marine issues of ecological importance. They seek a highly motivated individual with strong leadership skills who can build the underwater research capabilities of the ADP while serving as the University Diving Officer. They are particularly interested in someone who can strengthen the technical support for underwater research conducted by faculty. The successful candidate will be responsible for the conduct, training and operational aspects of all diving-related research; for supervising technical and instructional ADP staff; for coordinating diving-related courses based on national certification standards; and will support faculty teaching other underwater courses. This person will also ensure compliance with dive safety regulations and dive planning guidelines following AAUS standards and applicable state and federal statutes, review standard

operating procedures, develop recommendations for new activities for review and consideration by the Diving Control Board, and prepare reports and budgets. Visit: http://www.marinelab.fsu.edu/news/openings.html. Apply through: https://jobs.fsu.edu. Review of applicants will continue until a successful candidate is identified.

Full Time Research Associate with SCCF

The Marine Laboratory of the Sanibel-Captiva Conservation Foundation in Sanibel, FL has an immediate opening for a full time research associate to conduct fieldwork relating to intertidal oyster habitats and water quality. Candidates must have a background in marine or estuary ecology and experience working with both invertebrates and vertebrates. A MS in environmental, marine or ecological sciences and scientific diving experience is preferred. Visit: http://www.sccf.org/content/120/Employment-Opportunities.aspx

Maritime Archaeology Assistants

Academic and fieldwork assistant position open for current or potential East Carolina University students. Candidates will be responsible for compiling maps and literature, planning lessons, conducting public education programs and preparing fieldwork experiments for ongoing projects in Africa and South Carolina. Interested students must qualify for Federal Work Study positions. Visit: https://ecu.peopleadmin.com/applicants/jsp/shared/frameset/Frameset.jsp?time=1279291470872.

MS/PhD Students: Caribbean Coral Reef Ecology

The Pawlik lab will be recruiting one or two new MS/PhD students for Spring or Fall 2011 to study the ecology of Caribbean coral reefs at University of North Carolina Wilmington (UNCW). The research program, funded by NSF and NOAA, includes research components in the Bahamas, southern Caribbean, and the Florida Keys, and has included missions in NOAA's Aquarius habitat. Visit: http://people.uncw.edu/pawlikj/index.html. Applicants should be highly motivated and independent, with an excellent academic record, references, and past field research experiences using scuba. Visit: http://people.uncw.edu/pawlikj/prosStudent.html.

NEW PUBLICATIONS

Adachi H, Yamano H, Miyajima T, Nakaoka M. A simple and robust procedure for coring unconsolidated sediment in shallow water. J Oceanogr. 2010; 66: 865-72.

This article describes a simple, quick, and inexpensive procedure for coring unconsolidated sediment in shallow water (<30 m from water surface). A 1 m core is retrieved by a PVC pipe that penetrates sediment in response to the percussive force of a hand-operated hammering tool or air hammer. After retrieving the first core segment, a casing is inserted to allow access to deeper sediment layers. Pulverized sediment produced during coring is removed by a water-lubrication system that is powered by an electric pump attached to a generator. Using this system and procedure, five 2-m-long cores with excellent quality were retrieved.

Broad A, Knott N, Turon X, Davis AR. Effects of a shark repulsion device on rocky reef fishes: no shocking outcomes. Mar Ecol Prog Ser. 2010; 408: 295-8.

Shark repulsion devices (SRDs; e.g., Shark Shield™) use an electric field to deter large and potentially dangerous sharks. The use of these devices is becoming increasingly widespread for a range of recreational activities as well as scientific and commercial diving. We sought to determine if SRDs might modify the behaviour of chondrichthyan and osteichthyan fishes and thereby impact on fish assemblages, as well as potentially bias diver census techniques. To assess the potential impacts of this technology, we attached SRDs to baited remote underwater video (BRUV) units and deployed them on shallow rocky reefs in Jervis Bay Marine Park (New South Wales, Australia). We did not detect any impacts of the SRD on the diversity or relative abundance of shallow-reef fishes. In addition, approach of fishes to the bait did not differ whether the SRDs were on or off. At the smallest spatial scale we investigated, contact with the bait was half as frequent when the SRD was switched on compared to when it was off. Surprisingly, even the cartilaginous species were apparently unaffected by the SRD, with the eastern fiddler ray *Trygonorrhina fasciata* making contact with the bait several times when SRDs were activated. We contend that the ecological impacts of SRDs at all but the smallest scales are minimal and they are unlikely to introduce bias in assessments of fish assemblages, at least for non-cartilaginous and small cartilaginous species.

Castagna O, Brisswalter J, Vallee N, Blatteau JE. Endurance exercise immediately before sea diving reduces bubble formation in scuba divers. Eur J Appl Physiol. 2010 Nov 24. [Epub ahead of print].

Previous studies have observed that a single bout of exercise can reduce the formation of circulating bubbles on decompression but, according to different authors, several hours delay were considered necessary between the end of exercise and the beginning of the dive. The objective of this study was to evaluate the effect of a single bout of exercise taken immediately before a dive on bubble formation. Twenty-four trained divers performed open-sea dives to 30 msw depth for 30 min followed by a 3 min stop at 3 msw, under two conditions: 1) a control dive without exercise before (No-Ex); 2) an experimental condition in which subjects performed an exercise before diving (Ex). In the Ex condition, divers began running on a treadmill for 45 min at a speed corresponding to their own ventilatory threshold 1 h before immersion. Body weight, total body fluid volume,

core temperature, and volume of consumed water were measured. Circulating bubbles were graded according to the Spencer scale using a precordial Doppler every 30 min for 90 min after surfacing. A single sub-maximal exercise performed immediately before immersion significantly reduces bubble grades ($p<0.001$). This reduction was correlated not only to sweat dehydration, but also to the volume of water drunk at the end of the exercise. Moderate dehydration seems to be beneficial at the start of the dive whereas restoring the hydration balance should be given priority during decompression. This suggests a biphasic effect of the hydration status on bubble formation.

Heyman WD, Carr LM, Lobel PS. Diver ecotourism and disturbance to reef fish spawning aggregations: it is better to be disturbed than to be dead. Mar Ecol Prog Ser. 2010; 419: 201-10.

Dive tourism, with proper diver training, is often suggested as an environmentally benign and economically viable alternative to commercial fishing of coral reef fishes, affording, for example, unique opportunities to see large schools of spawning fish or encounter whale sharks *Rhincodon typus*. Yet, the ancillary effects of groups of divers disrupting fish spawning aggregations (FSAs) must be assessed. We examined over 9 h of video footage (extracted from over 100 h of underwater video) filmed at FSA sites in Belize. The footage captured divers interacting with schools of snappers and groupers as they aggregated to spawn, as well as showing the arrival of whale sharks. Diver behaviors included both video recording and flash still photography of fish schools and tagging of whale sharks. We filmed 746 unique diver–school interactions that included total observations of approximately 200 000 snappers, 4700 Nassau groupers *Epinephelus striatus* and 200 whale sharks. We recorded 180 spawning events, only 105 of which showed divers disturbing aggregating schools, which affected an estimated 2100 snappers and 90 groupers. We conclude that small groups of experienced divers, following a code of responsible diving centered upon the precautionary principle and sensitivity to fish schooling behaviors, do not negatively affect schooling or spawning behaviors. Though further research is needed to assess the effects of boat traffic and larger groups of less experienced divers, dive ecotourism at fish spawning areas represents an economically attractive and less exploitative alternative to commercial fishing.

Langlois TJ, Harvey ES, Fitzpatrick B, Meeuwig JJ, Shedrawi G, Watson DL. Cost-efficient sampling of fish assemblages: comparison of baited video stations and diver video transects. Aquat Biol. 2010; 9: 155-168.

Baited remote underwater stereo-video (stereo-BRUV) stations and diver operated stereo-video (stereo-DOV) transects are increasingly used to sample both tropical and temperate fish assemblages. Compared to *in situ* visual census methods, the use of stereo-video reduces interobserver variability, improves definition of the sample unit area, increases accuracy of fish length estimates and provides a permanent record of the assemblage that can be validated where required or independently reanalysed. Previous studies have suggested that stereo-BRUV collects representative data on both carnivorous and herbivorous species and can be more cost-efficient than diverbased survey methods. This study compares estimates of common fish assemblage metrics obtained with stereo-BRUV stations and stereo-DOV transects across 3 biogeographic regions, and uses a costoptimization procedure to compare the efficiency of these 2 methods. Stereo-BRUV stations were found to sample greater species richness and obtain greater estimates of relative biomass of generalist carnivores, but no differences occurred in the biomass of herbivores sampled by the 2 techniques. Stereo-BRUV stations generally obtained estimates of assemblage metrics with less variance, resulting in greater power to detect spatial and temporal changes in the fish assemblage metrics. Cost–benefit analyses found that stereo-BRUV was generally more time efficient than stereo-DOV transects in terms of smaller standard error around the mean of the various metrics considered. However, across the 3 biogeographic regions sampled there was considerable variation in the magnitude of these differences. Results suggest that stereo-BRUV stations are, in general, a more cost-effective method for monitoring fish assemblages than stereo-DOV transects.

Sharp KH, Ritchie KB, Schupp PJ, Ritson-Williams R, Paul VJ. Bacterial acquisition in juveniles of several broadcast spawning coral species. PLoS ONE 2010; 5(5): e10898.

Coral animals harbor diverse microorganisms in their tissues, including archaea, bacteria, viruses, and zooxanthellae. The extent to which coral-bacterial associations are specific and the mechanisms for their maintenance across generations in the environment are unknown. The high diversity of bacteria in adult coral colonies has made it challenging to identify species-specific patterns. Localization of bacteria in gametes and larvae of corals presents an opportunity for determining when bacterial-coral associations are initiated and whether they are dynamic throughout early development. This study focuses on the early onset of bacterial associations in the mass spawning corals *Montastraea annularis, M. franksi, M. faveolata, Acropora palmata, A. cervicornis, Diploria strigosa*, and *A. humilis*. The presence of bacteria and timing of bacterial colonization was evaluated in gametes, swimming planulae, and newly settled polyps by fluorescence *in situ* hybridization (FISH) using general eubacterial probes and laser-scanning confocal microscopy. The coral species investigated in this study do

not appear to transmit bacteria via their gametes, and bacteria are not detectable in or on the corals until after settlement and metamorphosis. This study suggests that mass-spawning corals do not acquire, or are not colonized by, detectable numbers of bacteria until after larval settlement and development of the juvenile polyp. This timing lays the groundwork for developing and testing new hypotheses regarding general regulatory mechanisms that control bacterial colonization and infection of corals, and how interactions among bacteria and juvenile polyps influence the structure of bacterial assemblages in corals.

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.

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