E-SLATE

American Academy of Underwater Sciences (AAUS)

EDITORIAL BOARD NOTE – October 2010

Welcome to the October issue of the E-Slate. There are several new job listings, funding opportunities and equipment recalls. 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

AAUS Scholarship Award Announcement - 2010

AAUS offers two competitive scholarship programs. The Kathy Johnston (KJ) award for doctoral-level students and the Kevin Gurr (KG) award for master-level students. First place awards are $2500; second place awards are $1500. The scholarship panel received a total of 24 proposals for 2010 (18 KJ [10 female, 8 male] and 6 KG [5 female, 1 male]). Best wishes to all who participated. Special thanks to the 10 anonymous reviewers.

Kathy Johnston Recipients

1st place award goes to **Aaron Galloway** (Friday Harbor Laboratories and School of Aquatic and Fishery Sciences, University of Washington)
Title: Subsidy of macroalgal derived essential fatty acids to subtidal food webs: molecular characterization of source material and aging effects.

2nd place award goes to **Kimberly Tenggardjaja** (Long Marine Lab, University of California Santa Cruz)
Title: A Genetic Comparison of Endemic and Non-Endemic Damselfishes in the Hawaiian Archipelago.

Kevin Gurr Recipients

1st place award goes to **Scott Toews** (Division of Science and Environmental Policy, California State University Monterey Bay)
Title: Linking habitat heterogeneity to genetic partitioning in the rocky subtidal using black surfperch (*Embiotoca jacksoni*).

2nd place award goes to **Tania Eskin** (Three Seas Professional Masters in Marine Science Program at Northeastern University)
Title: Assessing the effects of chronic and acute exposure to ship noise on plasma cortisol levels in the lumpfish, *Cyclopterus lumpus*

Call for Papers – Maritime Archaeology

The 22nd Annual Symposium on Maritime Archaeology and History of Hawaii and the Pacific will be held Feb 18-21, 2011 in Hilo, HI. The symposium theme is "Reading Coastal Footprints: Ecology and Maritime Archaeology in the Pacific." Papers pertaining to the following topics are preferred: applications of ecological models to archaeology, recent maritime archaeology fieldwork and general topics in maritime archaeology and maritime history. Submit abstracts (max 300 words), with title, and presenter name(s) affiliation(s). Deadline: Nov 01, 2010. Additionally, two scholarships are available for students to attend the conference. Visit: http://www.mahhi.org.

FUNDING OPPORTUNITIES

Regional Ecosystem Prediction Program: Understanding Coral Ecosystem Connectivity in the Gulf of Mexico - Pulley Ridge to Florida Keys

NOAA's Center for Sponsored Coastal Ocean Research (NOAA/CSCOR), in partnership with the NOAA Office of National Marine Sanctuaries, Office of Ocean Exploration and Research (NOAA/OER), National Marine Fisheries Service Southeast Regional Office, and Gulf of Mexico Regional Collaboration Team, is soliciting proposals for a project under the Regional Ecosystem Prediction Program of up to five years in duration to conduct research to improve the understanding of population connectivity of key species between the southernmost portion of Pulley Ridge on the West Florida continental shelf and downstream to the coral ecosystems of the Florida Keys. Coral ecosystems upstream of Pulley Ridge can be considered if directly relevant to population connectivity or to provide context to the overall study. This information will be used to improve the ability of Gulf of Mexico resource managers to proactively develop strategies to manage and protect poorly understood mesophotic coral ecosystems, including coastal and marine spatial planning and the siting of marine protected areas and marine protected area networks for shallow and mesophotic coral ecosystems. One project is expected to be supported for up to five years, with an annual budget up to $1,000,000. At no additional cost, up to 15 days per year for two years of time using the MolaMola/AUV will be provided by the NOAA/OER National Institute for Undersea Science and Technology. Additionally, NOAA/CSCOR has partnered once again with NOAA/OER to provide their expertise in administering appropriate technologies for field-based research to support

your proposal such as advanced technical diving, autonomous underwater vehicles and remotely operated vehicles. Operational costs for conducting the research must be included in the proposal. Full proposals are due Oct 21, 2010 at 1500 EST. For more information visit: http://www.blueplanetdivers.org/archives/2010/07/fy_2011_funding.php.

Women Divers Hall of Fame Scholarship

WDHOF is offering four scholarships and nine training grants in 2010. Awards are available to women and men of all ages who wish to pursue higher education and training, further their career goals and find opportunities in aquatic and diving-related industries. November 15 deadline. Visit: http://www.wdhof.org/scholarships/scholarships.shtml.

EQUIPMENT RECALLS

Recall Mares Nemo Air Quick Connector

Mares has discovered a quality issue involving the O-ring assembly of the Nemo Air Quick Connector. Under certain circumstances, the O-ring can fail and cause a slow leak of breathing gas through the Quick Connector, which could require a diver to surface quickly and face possible risk of injury or running out of air. The O-rings in some units may have been replaced in an earlier service campaign, but this recall requires replacing the entire metal quick connector female fitting at the end of the high pressure air hose that holds the O-ring (new Mares part no. 44200829). Replacement connector assemblies have a groove machined around the middle of the fitting, but recalled units do not. All consumers should stop using any Nemo Air Dive Computer and all retailers should remove these units from distribution until they have been inspected by an authorized Mares Dealer/Service Center.

Affected product codes are:
414158 Dive Computer Nemo Air
414159 Dive Computer Nemo Air w/Compass
44200771 HP hose w/ Nemo Air Quick Connector
44200770 Quick Connector Assy. Female Nemo Air

Please contact an Authorized Mares Dealer/Service Center to schedule the removal and substitution of your Nemo Air computer Quick Connector Assembly Female with the new Nemo Air computer Quick Connector Assembly Female. If you want Mares to perform the above service procedures, please contact the customer service department (1-800-874-3236) for a return authorization number. For more information visit: www.mares.com.

SITECH Inflation Hose Recall

SITECH low-pressure hoses contain a flow-restricting insert that may malfunction, potentially causing an obstruction of air flow. Anyone with a hose subject to this recall (or other equipment that has been connected to such a hose) should stop use until the insert has been exchanged by knowledgeable service personnel. Recalled inflator hoses should be sent back to the Mares Dealer or Mares US Service Center so the insert can be removed at no charge.

The SITECH recall affects the following Mares products:
412012 Drysuit Polarfit TLM
412014 Drysuit Dryfit 3.5 LX UNI
412015 Drysuit Dryfit 3.5 NP UNI
412016 Drysuit Icefit 4.0 Latex Men
412017 Drysuit Icefit 4.0 Latex Women
412018 Drysuit Icefit 4.0 Neoprene Men
412019 Drysuit Icefit 4.0 Neoprene Women
412010 Drysuit Dryfit 3.5
412011 Drysuit Icefit 4.0
480094 Drysuit 3.5 LX Man W/Radial Boots
480095 Drysuit 3.5 LX Lady W/Radial Boots
480096 Icefit 4.0 LX Man
480097 Icefit 4.0 LX Lady
480098 Polarfit TLM LX Man
42150060 Hose W/Wing Puller

Visit: http://www.sitech.se/pages/default_uk.asp?SectionID=3562.

Recall of Halcyon Buoyancy Compensators

Halcyon Manufacturing Inc. in cooperation with the US Consumer Product Safety Commission has initiated a voluntary recall of select Eclipse, Evolve, Explorer, Pioneer and CCR35 buoyancy compensators (BCDs) manufactured between January 2006 and September 2008. In addition, select Halcyon inflatable devices (Lift Bags, SMBs, DAMs, Surf Shuttles and Diver Lift rafts) may also be affected. These BCDs or Inflatable Devices could develop excessive corrosion or rusting problems with the stainless steel Over Pressure Valve (OPV) spring, causing the spring to fail and the BCD or Inflatable Device to leak through the OPV. It is unlikely that most of these units will experience any problems since the potential defect is limited to a very small portion of the total number of OPV springs used during this time period. However, given the potentially serious implications all OPV springs should be checked to minimize risk or inconvenience to Halcyon customers. For more information visit: www.halcyon.net/opv-recall.

Recall of OMS Buoyancy Compensators

Ocean Management Systems (OMS) has issued a voluntary recall of 20,000 buoyancy compensators (BCs) due to faulty seal rings. Seal rings have been found to crack under pressure, compromising bladder integrity and placing divers at increased risk of drowning. BCs impacted by the recall were made in America, sold between May 2006 and August 2008. A list of model numbers and pictures of the BCs affected by the recall and information on the free repair process may be found at the OMS website. Visit: http://www.cdnn.info/recall/oms_100428/0ms_100428.html.

UPCOMING EVENTS

AAUS Board of Directors Meeting
The AAUS BOD will meet October 9-10 in La Jolla, CA. Further information is available from: aaus@disl.org.

Coral Reef Foundation Restoration Program
The Coral Reef Foundation (CRF) and Rainbow Reef Dive Center in Key Largo, FL are hosting a community-based reef restoration program on October 09. The program will begin with lectures outlining the history of CRF, ongoing reef restoration campaigns and future initiatives. CRF staff and volunteers will perform two dives in the afternoon: one at the CRF coral nursery, one at a restoration site. The program is open to the public, but space is limited and registration required. Visit: http://www.coralrestoration.org or contact Rainbow Reef Dive Center for reservations: www.rainbowreef.us or 305-451-7171.

DAN Diving and Hyperbaric Medicine Course
The 68th DAN Diving and Hyperbaric Medicine Course will be held October 23-30 at the Presidente Intercontinental Hotel on the island of Cozumel. This six-day course is designed primarily for physicians, but emergency medical personnel, paramedics, nurses, instructors, divemasters and other non-medical, diving-related personnel with interest in diving medicine will also find the course valuable. The course is certified by the Undersea and Hyperbaric Medical Society for continuing education credit. A special dive package supplements the course. Contact DAN Education at 919-684-2948, ext. 555 (toll free: 800-496-446-2671, ext. 555) or cme@dan.org. Visit: http://www.diversalertnetwork.org/Events/Event.aspx?EventID=799.

Canadian UW Conference and Exhibition 2010
The 2010 Canadian Underwater Conference and Exhibition will take place October 24-26 at the Toronto Airport Marriott Hotel, Toronto, Ontario. This year's theme is 'Man and Machine: Onshore and Offshore.' This event is aimed at commercial divers, dive contractors, and ROV operators, contractors and suppliers. Technical presentations will address construction, police, fire and rescue diving, and ROV and AUV operations. The event will include lectures, panel discussions, evening receptions, and a final Awards Banquet. Registration is required. Visit: http://www.underwaterconference.ca/English/index.html.

DEMA 2010
The Diving Equipment and Marketing Association will hold its annual show in Las Vegas, NV November 17-20. For more information, visit: www.demashow.com.

Dive Rescue International
DRI offers several training programs in aquatic emergency preparedness for public safety professionals. Courses include: Animal Rescue in Floods, Dive Rescue I, Evidence Recovery Operations, Interspiro Technician, Light Salvage and Recovery, Marine Sonic Sonar, Public Safety Diver Survival, Underwater Crime Scene Tech I, Visual Cylinder Inspection, and Water Operations Officer Development. Courses are taught at various US locations. Visit: http://www.diverescueintl.com/training_calendar.aspx.

JOB OPPORTUNITIES

California Academy of Sciences Dive Safety Officer
The California Academy of Sciences located in San Francisco, CA is looking for a dive safety officer to oversee their Steinhart Aquarium scuba diving program. Responsibilities include supervising part-time staff and volunteer divers, reviewing status of Academy scientific divers, recruiting and training volunteers, participating in Diving Control Board meetings, managing the departmental budget, and monitoring the dive office website. Applicants must possess active Scientific Diver and scuba instructor certifications, and be active AAUS members. Applications due October 15. Visit: http://calacademy.snaphire.com/jobseeker/safelink=JSJDMM&O_p=hOnB7&.

Senior Aquarist, Monterey Bay Aquarium
The Senior Aquarist is responsible for all aspects of aquarium plant and animal husbandry for the area to which they are assigned. This includes the design, set-up, care and maintenance of live exhibits, disease recognition and treatment, life support system construction and operation, field collecting and species identification. In addition to the Senior Aquarist's scheduled duties, he or she is highly encouraged to work independently to contribute to various research and development projects and other investigations aimed at furthering the quality of Monterey Bay Aquarium's live exhibitions. The Senior Aquarist, when directed, will also be responsible to carry out the daily tasks of the Associate Curators during their absence. The Senior Aquarist also trains and supervises Aquarist II, Aquarists, Aquarist Trainees, Assistant Aquarists and volunteers as needed or directed. Scuba certification is required. Visit: https://montereybayaquarium.snaphire.com/jobseeker/safelink=JSJDMM&O_p=QCxk7&.

Sea Otter Aquarist II, Monterey Bay Aquarium
The Sea Otter Aquarist II is responsible for performing all aspects of sea otter husbandry duties without direct supervision. Husbandry activities include: daily care of sea otters, preparing and dispensing food, employing operant conditioning techniques for husbandry purposes, comprehensive record keeping, providing veterinary care (under the supervision of a licensed veterinarian) and moving animals to holding areas. Other duties include cleaning and maintenance of otter exhibit areas, which includes 1-2 scuba dives per week and assisting with plant and invertebrate collections. In addition, the employee will

be required to interact with visitors. The Sea Otter Aquarist II holds responsibilities and skills of the Sea Otter Aquarist and also has the knowledge and ability to act as a resource and sometimes supervise Sea Otter Aquarists, Assistant Sea Otter Aquarists and volunteers. Visit: https://montereybayaquarium.snaphire.com/jobseeker/safelink=JSSAJOBS&.

Dive Officer, Monterey Bay Aquarium

The Monterey Bay Aquarium (MBA) is seeking a Dive Officer/Volunteer Diver supervisor. The Dive Officer oversees the aquarium's volunteer dive program and diving safety programs. The Dive Officer is responsible for developing and enforcing policies and procedures to ensure the safety of volunteer and staff divers. He/She supervises the volunteer diver program including selection, development, training and scheduling. The Dive Officer assists in overall dive program management and supervises daily dive operations. The ideal candidate will hold the following nationally recognized certifications: open water scuba instructor, Reef Check California instructor, scuba equipment repair technician for equipment approved for use at MBA, DAN oxygen administration instructor, CPR/First aid/AED instructor, and divers with disabilities instructor. Preferred experience includes undergraduate college degree, scientific diving instruction, small boat handling skills, and a minimum of two years experience working as a Dive Safety Officer at a public aquarium or similar environment, supervising and coordinating skills, excellent oral and written communication skills, including a working knowledge of computer processing, database programming and operations. Candidates must have a valid driver's license, an insurable driving record and be able to pass a scientific diving physical examination. Apply online: https://montereybayaquarium.snaphire.com.

Maintenance Diver, Part-Time Georgia Aquarium

The Georgia Aquarium is seeking a part-time maintenance diver to work in their Atlanta, GA facility. Major duties are split into two categories: commercial and scientific diving work. Commercial duties include daily aquarium husbandry, inspection and preventative maintenance of aquarium exhibits and equipment ordering and inventory. Scientific duties include participation in and assistance with advanced dive personnel training, monitoring of aquarium species and sample collection, and implementation of dive safety measures. The diver may also serve as a liaison between the Georgia Aquarium and guests, media and the general public. Candidates must hold an Advanced Open Water (or higher) diving certification and have a minimum of two years experience in aquarium or scientific diving. Additional requirements relate to first aid certifications, equipment service/technician certifications and proficiency in Microsoft Office Products. For more information visit: http://partners.georgiaaquarium.org/all/Lists/Join%20Our%20Team/DispForm.aspx?ID=71.

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. More information about the UNCW graduate program and about expectations of graduate students in the Pawlik lab can be found at: http://people.uncw.edu/pawlikj/prosStudent.html.

NEW PUBLICATIONS

Honner S, Kudela RM, Handler E. Bilateral Mastoiditis from Red Tide Exposure. J Emerg Med. 2010 Aug 26. [Epub ahead of print].

Background: Bilateral mastoiditis in adults has previously been reported only in association with diabetes mellitus or immunocompromised patients. Objective: To describe a case of bilateral mastoiditis in a healthy adult and to investigate the etiology. Case Report: A 53-year-old woman presented to the Emergency Department with bilateral otitis externa and mastoiditis after scuba diving during a harmful algal bloom, commonly known as a 'red tide.' The levels of coliform bacteria recorded at the time and location of her dive exceeded health regulatory limits and correlate with her atypical culture results. Conclusion: Elevated bacterial counts that result from harmful algal blooms may account for this rare infection.

Ljubkovic M, Marinovic J, Obad A, Breskovic T, Gaustad SE, Dujic Z. High incidence of venous and arterial gas emboli at rest after trimix diving without protocol violations. J Appl Physiol. 2010 Sep 2. [Epub ahead of print].

Scuba diving is associated with generation of gas emboli due to gas release from the supersaturated tissues during decompression. Gas emboli arise mostly on the venous side of circulation and they are usually eliminated as they

pass through the lung vessels. Arterialization of venous gas emboli (VGE) is seldom reported and it is potentially related to neurological damage and development of decompression sickness. The goal of the current study was to evaluate the generation of VGE in a group of divers using a mixture of compressed oxygen, helium and nitrogen (trimix) and to probe for their potential appearance in arterial circulation. Seven experienced male divers performed three dives in consecutive days according to trimix diving and decompression protocols generated by V-planner, a software program based on the Varying Permeability Model. The occurrence of VGE was monitored ultrasonographically for up to 90 minutes after surfacing and the images were graded on a scale from 0 to 5. The performed diving activities resulted in a substantial amount of VGE detected in the right cardiac chambers and their frequent passage to the arterial side: in 9 out of 21 total dives (42%) and in 5 out of 7 divers (71%). Concomitant measurement of mean pulmonary artery pressure revealed a nearly twofold augmentation, from 13.6±2.8, 19.2±9.2 and 14.7±3.3 mm Hg assessed before the first, second and the third dive, respectively, to 26.1±5.4, 27.5±7.3 and 27.4±5.9 mm Hg detected after surfacing. No acute decompression-related disorders were identified. The observed high gas bubble loads and repeated microemboli in systemic circulation raise questions about the possibility of long-term adverse effects and warrant further investigation.

Pollock NW, Natoli MJ. Chemical oxygen generation: evaluation of the Green Dot Systems, Inc portable, non-pressurized emOx device. Wilderness Environ Med. 2010; 21(3): 244-9.

Objective: To evaluate the performance of the emOx emergency powdered oxygen portable non-pressurized delivery system. This device produces oxygen through chemical reaction and is marketed for emergency first aid use until professional medical assistance is available. Methods: Seven unmanned trials were conducted under standard laboratory conditions. Measures included oxygen flow, reaction canister external wall temperature, delivered gas temperature and delivered gas relative humidity. Results: The mean oxygen flow was 1.75±1.58 $L \cdot min^{-1}$ (mean±SD) with a total yield of 40.4±2.6 L. Oxygen flow increased slowly and with substantial variability between reactant groups, exceeding 2.0 $L \cdot min^{-1}$ after 15.7±6.4 minutes of operation. Oxygen flow briefly peaked at 5.93±0.56 $L \cdot min^{-1}$ at 17.8±7.9 minutes before rapidly falling to zero. The mean oxygen fraction was 0.81±0.28, exceeding 0.96 in 10.7±2.9 minutes. The reaction canister external wall temperature reached 54.7±7.4°C. Delivered gas temperature varied little from ambient. Delivered gas relative humidity surpassed 75% in 8±3 minutes and 90% in 15±5 minutes of operation. Conclusions: A readily available, high concentration oxygen supply could have utility to manage many conditions in advance of the arrival of professional emergency medical services (EMS). Unfortunately, the highly variable activation time and low average oxygen flow rate make the rapid deployment value of the emOx equivocal. The limited total oxygen yield makes it inappropriate for conditions demanding significant oxygen resources. Advancement in oxygen concentrator systems likely holds far more promise than powdered chemical oxygen generation for first aid and emergency medical applications.

Smith K, Scarr M, Scarpaci C. Grey Nurse Shark (*Carcharias taurus*) Diving Tourism: Tourist Compliance and Shark Behaviour at Fish Rock, Australia. Environ Manage. 2010 Sep 25. [Epub ahead of print].

Humans can dive with critically endangered grey nurse sharks (*Carcharias taurus*) along the east coast of Australia. This study investigated both compliance of tourist divers to a code of conduct and legislation and the behaviour of grey nurse sharks in the presence of divers. A total of 25 data collection dives were conducted from December 2008 to January 2009. Grey nurse shark and diver behaviour were documented using 2-min scan samples and continuous observation. The proportion of time spent observing human-shark interactions was 9.4% of total field time and mean human-shark interaction time was 15.0 min. Results were used to gauge the effectiveness of current management practices for the grey nurse shark dive industry at Fish Rock in New South Wales, Australia. Grey nurse shark dive tourists were compliant to stipulations in the code of conduct and legislation (compliance ranged from 88 to 100%). The research detailed factors that may promote compliance in wildlife tourism operations such as the clarity of the stipulations, locality of the target species and diver perceptions of sharks. Results indicated that grey nurse sharks spent the majority of their time milling (85%) followed by active swimming (15%). Milling behaviour significantly decreased in the presence of more than six divers. Distance between sharks and divers, interaction time and number of sharks were not significantly correlated with grey nurse shark school behaviour. Jaw gaping, rapid withdrawal and stiff or jerky movement were the specific behaviours of grey nurse sharks that occurred most frequently and were associated with distance between divers and sharks and the presence of six or more divers. Revision of the number of divers allowed per interaction with a school of grey nurse sharks and further research on the potential impacts that shark-diving tourism may pose to grey nurse sharks is recommended.

Washburn BK, Levin AE, Hennessy K, Miller MR. Identification of bacteria in scuba divers' rinse tanks. Undersea Hyperb Med. 2010;37(4):233-40.

Scuba divers typically rinse equipment in communal tanks. Studies show these tanks are contaminated with bacteria, but the types of bacteria have not been studied. We sought to identify bacteria in rinse tanks at a dive facility at San Pedro, Belize, to determine the origin of the bacteria and determine whether the bacteria represented potential threats to human health. The identity of bacteria was investigated using reverse line blot (RLB) assays based on 28 different rDNA probes designed to detect known pathogens of sepsis, as well as by sequencing 23S rDNA from isolates and performing VITEK identification of several isolates. Based on the identities of bacteria in divers' rinse tanks, many likely originate from the ocean, and others likely originate from the divers themselves. None of the bacteria identified would be considered overt human pathogens. However, some of the bacteria found in the tanks are known to be associated with unsanitary conditions and can cause opportunistic infections, which may pose health problems to some individuals. Rinsing scuba equipment in communal tanks has the potential to transmit disease among some divers. Equipment, especially regulators and masks, should be rinsed/cleaned individually and not be placed in communal tanks.

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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