E-SLATE

American Academy of Underwater Sciences (AAUS)

EDITORIAL BOARD NOTE – February 2010

Welcome to the February E-Slate. The AAUS Symposium is approaching quickly. If you plan on attending be sure to schedule the AAUS general/business membership meeting into your plans and read about the great Oahu diving opportunity for AAUS attendees. AAUS welcomes Heather Fletcher into her new position as AAUS office administrator and thanks Alma Wagner for her contributions to AAUS during her time as office manager.

The E-Slate is a newsletter from and for the scientific dive community. We welcome news, announcements, job positions, new citations, and images with captions of underwater work. Please submit items to aaus@disl.org. Current and past issues of the E-Slate are available at www.aaus.org.

NEWS/ANNOUNCEMENTS

Greetings from the New AAUS Office Administrator

Greetings! My name is Heather Fletcher and I am the new office administrator for AAUS. I am a graduate of UNCW (B.S. '97) and University of South Alabama (M.S. '02) and I have been a part of the Dauphin Island Sea Lab community for over 12 years. During my time at DISL, I was an active part of the scientific diving community and served on the Dive Control Board. I am excited about my new appointment to AAUS and I am looking forward to serving AAUS members and the scientific diving community in a whole new way. I hope to meet and get to know each of you at the 2010 Symposium!

AAUS General Membership/Business Meeting

The AAUS General Membership/Business Meeting and National Diving Safety Officer Meeting will be conducted on Thursday, March 25 2010 from 0800-1700 at the Ala Moana Hotel in Honolulu, HI. All AAUS members and Diving Safety Officers are encouraged to attend.

Please forward proposed agenda items to Michael Lang, AAUS President-Elect, via Laurie Penland (penlandl@si.edu). A draft agenda will be posted on the AAUS website (www.aaus.org) on March 1, 2010.

Oahu Diving for AAUS Symposium Attendees

Dive Oahu, a shop close to the symposium hotel, is offering two-dive morning charters during the week of March 20-27. The first dive is usually on one of two artificial reef shipwrecks on the Oahu Southshore, the second on a natural reef. Dive reservations must be booked on-line, which includes a 20% discount off the phone-booking price. The charter fee includes hotel pick-up and return, two air or EAN tanks, and core gear rental as needed (BC, regulator and dive computer). Divers should supply mask, fins and wetsuit at a minimum. An additional $20 store credit for merchandise purchases will be given to AAUS-affiliated divers, which will cover many small shop items (e.g., t-shirts, hats or mugs) but cannot be used to pay for the charter fee. To qualify for the credit, put "AAUS" after the diver's last name in the 'last name' field (e.g., "Pence AAUS") when making reservations on-line. Then show your AAUS registration badge when checking in at the shop prior to diving. Dive Oahu's boat can carry 16, but they usually run more often with 12 or fewer. If AAUS divers target March 23 and March 24 (0810 departure) it will ensure that we are diving with many of our friends and colleagues. For more information about Dive Oahu, their charters, dive sites, or to make reservations, visit www.diveoahu.com

Web-Based Dive Logs

With a full year behind us and organizational members successfully submitting 2009 statistics to AAUS, look for a minor change in the format of the dive log entry screen. The order of the entries will be rearranged to make data entry by the divers more efficient. Nothing else will change and no new information will be required - only the order in which the fields are presented will be different. The underlying database and functions will remain unchanged. The new appearance will be implemented in February.

Hawaii Symposium Flights and Hotel

Continental Airlines offers discounts off published fares of 2% to 10% or Zone fares. Call your travel professional or Continental MeetingWorks at 800-468-7022 for reservations. Refer to ZGJS and ALFFHT. Or, save an additional 3% off by booking your own reservations at www.continental.com. Choose your flight times and access your meeting discounts by inserting ZGJSALFFHT in the Offer Code box. Location: HONOLULU, Valid travel dates: March 19-30, 2010. Most of the symposium workshops and meetings will be held at the Ala Moana Hotel, located across the street from a beautiful beach and within the Honolulu shopping area. For more information visit: www.alamoanahotelhonolulu.com.

Abstract Review Notification - AAUS Symposium
Confirmations of status will be sent to all first authors on February 02. If you submitted an abstract as first author and do not receive notification, please contact Neal Pollock, Meetings and Publications Chair, at neal.pollock@duke.edu.

Dive Medicine for Scuba Divers - Free Download
Diving Medicine for Scuba Divers, 2010 edition, by Carl Edmonds, Bob Thomas, Bart McKenzie and John Pennefather, is a great resource for scientific divers and covers topics such as breath hold diving, diving environments, and breathing gas contamination. The authors are generously allowing free download of individual chapters or the entire book. Visit: http://www.divingmedicine.info/divingmedicine/Welcome.html.

FROM THE PRESIDENT

As we move forward into a brave new year, I wish to take this opportunity to detail the transition on the 2010 AAUS Board of Directors and Office Management staff. Please join me in thanking outgoing Board of Directors members, Nate Schwarck as Secretary and Brenda Konar as Scholarships Chair, for their hard work and significant contribution to the Board's work on behalf of the Academy.

Thanks as well to all who remain committed to the work of the Board and will be staying on in 2010: Mike Dardeau as Treasurer, Neal Pollock (Meetings and Publications), Dave Pence, and Kevin Flanagan (Standards) as our 'Directors-at-Large,' and Liz Kintzing (Standards), Phil Lobel (Statistic), and Chris Riguad (Membership) as Appointed Directors. I would also like to welcome our incoming Board members: Michael Lang as our President-Elect, George Peterson as Secretary, and Jenn Caselle as our fourth Appointed Director focused on the AAUS Scholarship programs.

A very special thanks is reserved for our outgoing President, Jeff Godfrey. My time on the Board, thus far, has been an exceptional learning experience guided and encouraged by a number of past and current board members, none more so than Jeff. Thank you for the leadership and hard work you have put in these last years both to the Academy, and for the support you have given me as I've worked to learn all things AAUS. I look forward to your continued input and support during my tenure.

Many may already know that our office manager, Alma Wagner, has recently accepted a full-time position with the Barataria-Terrebonne National Estuary Program as their Education Coordinator. This is a wonderful opportunity for Alma to get back into coastal conservation and restoration. She has graciously agreed to stay on with us as we carry out the Diving for Science symposium from March 25-27th, 2010 hosted by the University of Hawaii. While we will miss her smiling voice and enthusiasm in all our AAUS dealings, we will all have the opportunity to send her off properly at our meeting in March. The Board has hired a new Office Manager. As of February 1st, Ms. Heather Fletcher will be managing our day-to-day business from the Dauphin Island Sea Lab in Dauphin Island, Alabama. Welcome, Heather. We look forward to working with you for years to come.

All the best in what we all hope will be a safe and productive 2010.

Christian McDonald
AAUS President

EQUIPMENT RECALLS

Cressi Safety Recall
Cressi USA has announced a safety recall of its Ellipse Black MC5 scuba regulator. This recall affects regulators distributed and sold from March 2009 through August 2009. The words 'Cressi Black' appear on the second stage cover and the words 'Cressi MC5' are visible on the first stage. The problem is that partial obstruction of the high pressure port can produce an inaccurate reading on the pressure gauge, resulting in an overestimate of remaining gas supply. Free repair will be provided by Cressi or any Cressi-authorized dive shop. For more information contact Cressi-sub USA (800-338-9143) or visit: www.cressi.com.

Dive Rite Wings
The U.S. Consumer Product Safety Commission has issued a recall of 16,000 Dive Rite Wings because the overpressure valve springs could rust and fail, allowing the BCD to leak and pose a drowning hazard. The affected models include Travel, Venture, Rec, Trek, Classic, Nomad and Super Wings, and were sold in red, blue or black. Faulty springs were used on wings that have an opaque white or blue-tinted bladder and welded in flanges. Wings with a black bladder are not affected. Only the Dive Rite wings that have a serial number ranging from 42,000 through 72,000 and were sold from June 2006 to October 2008 are included in this recall. If you have one of them, return it to an authorized distributor or call Dive Rite at 800-495-1046.

Ocean Management Systems, Inc. – BCS Seal Ring
Ocean Management Systems, Inc. (OMS) has voluntarily recalled Sealing Rings BCA-500. Molding variations in this part as used in the OMS Buoyancy Control System (BCS) could cause cracking or breakage, resulting in rapid loss of buoyancy, creating a potential drowning hazard. While this variation is not present in every seal ring, field determination is difficult. Therefore all seal rings will be updated with new assemblies reinforced at critical areas. A total of 19,790 BCS

seal rings were installed in 5,730 BCS units in use from May, 2006. Nineteen failures have been reported, none involving injury or death. Visit http://www.omsdive.com/bca500-recall.html for a list of affected serial numbers. If affected, stop using your BCS and contact your local OMS dealer or distributer for no-charge repair.

UPCOMING EVENTS

Ocean Sciences Meeting 2010

The 2010 Ocean Sciences Meeting will be held February 22-26 at the Oregon Convention Center in Portland Oregon. Visit: http://www.agu.org/meetings/os10/index.php.

Diving for Science - 2010 AAUS Symposium

The 29th AAUS scientific symposium will be held at the Ala Moana Hotel, March 25-27, in Waikiki, HI. Mention AAUS when making reservations to get a reduced room rate of $109 (available March 22-29). If hotel rates decrease before the symposium, the AAUS rate will also decrease. If the hotel rate increases, the AAUS fee is locked in at $109. All symposium meetings including the DSO meeting and business meeting will be held at the hotel. The banquet will be at the Waikiki Aquarium (http://www.waquarium.org). Call 808-955-4811 or visit http://www.alamoanahotelhonolulu.com/ for reservations.

2010 Diving for Science Symposium Workshops

Monday, March 22

University of Hawaii Diver Training Methods - $50

Oceanic Regulator Repair Workshop - $150

Tuesday, March 23

PSI Visual Cylinder Inspector Training - $250 (Refresher - $175.00)

Digital Photography for Scientific Divers - $100 (includes 2-tank dive)

Wednesday, March 24

PSI Oxygen Cleaning and Cylinder Valve Repair Technician - $175

Identification and Study of Coral Disease - $100 (includes two-tank dive*)

Towboarding techniques for Science - $100 (includes tows over shallow reef*)

* diving activity requires current AAUS Scientific Diver LOR and UH Visiting Diver Forms

For more information visit: http://www.aaus.org/mc/page.do?sitePageId=94127&orgId=aaus.

DAN Diving Fatalities Workshop

Diving fatalities are detrimental on both individual and community levels. Divers Alert Network will host a 2.5 day workshop, April 8-10, in Durham, NC focusing on strategies to reduce compressed gas diving fatalities. Presentations and panel discussions will be led by or include an array of experts and industry stake-holders in this globally-focused workshop. The goal is to develop consensus for effective strategies. Those who would benefit from participating include persons having responsibilities for training divers, supervising diving operations, conducting medical examinations of divers and diver candidates, and/or investigation of diving accidents. Registration is $395 per person ($435 for physicians who can earn 20 hours of continuing medical education credit). For more information, contact Jeanette Moore (jmoore@dan.org; 919-684-2948) or visit: https://www.diversalertnetwork.org/Events/Event.aspx?EventID=758.

JOB OPPORTUNITIES

Diving Technician Position

The Academic Diving Program of the Florida State University Coastal and Marine Laboratory invites applications for the position of Diving Technician. The successful candidate will provide operational support for all diving-related academic and training courses, and will be responsible for the maintenance and repair of diving equipment. Visit: http://www.marinelab.fsu.edu/news/openings.aspx#diving or contact Alison Ma, Marine Technical Operations Coordinator and Diving Safety Officer (ama@fsu.edu; 850-697-2078).

NEW PUBLICATIONS

Curran JN, McGuigan KG, O'Broin E. A case of deep burns, while diving The Lusitania. Plast Reconstr Aesthet Surg. 2010 Jan 5. [Epub ahead of print]

We present the first documented case of severe burns, sustained by a diver as a result of auto-ignition of air-activated heat packs at high partial pressure of oxygen and high ambient pressure. Our patient was diving the shipwreck of The Lusitania off the south coast of Ireland. This is a significant wreck, lying 90 m down on the seabed. Torpedoed by a German U-boat in 1915, its loss prompted American involvement in WW1. Several unlikely events combined in this case to bring about serious and life threatening injuries. Herein we discuss the case and explore some of the physical and chemical processes that lead to these injuries.

Hirst AJ. Surrogate measures for assessing cryptic faunal biodiversity on macroalgal-dominated subtidal reefs. Biol Conserv. 2008; 141(1): 211-20.

A major impediment to the identification of priority areas for marine biodiversity conservation is a fundamental lack of information about the distribution of many marine species. Comprehensive species inventories for many areas currently do not exist, and performing detailed taxonomic surveys is often prohibitively expensive and time-

consuming. Accordingly, there is a need to develop simple and reliable rapid-assessment techniques for mapping marine biodiversity. One potential approach is to use 'surrogates' that function as proxies for the distribution of other, less easily sampled, 'cryptic' biota. Two potential surrogates for predicting arthropod faunal biodiversity on rock subtidal reefs were investigated in this study: (1) macroalgae, and (2) faunal subsets derived by aggregating the arthropod fauna at higher taxonomic levels. Faunal and macroalgal assemblage composition was only weakly correlated across sites reflecting broad faunal responses to changes in algal structural complexity and/or common environmental gradients. This suggests that algal species composition may not be very informative in mapping patterns of faunal species distribution on reefs. Instead, the best surrogates were related (i.e. nested), subsets of the faunal assemblages such as family-level taxon richness which was found to be a good predictor of arthropod species richness at independent test sites.

Jaap WC, Dupont JM, Kellogg L, Chaplin G, Hertler H. Coral reef habitat around New Providence Island, Bahamas. Proceedings of the 11th International Coral Reef Symposium 2008; 753-756.

In July 2006, the Academy of Natural Sciences of Philadelphia organized an expedition to New Providence Island, Bahamas. Coral species richness and cover, and reef surface rugosity were examined at Delaport Point (DP), Green Cay (GC), and Long Cay (LC). Greatest number of coral species (27) was observed at DP2 and the fewest (14) at DP3. Rugosity was greatest at GC1 due to the spatial complexity of an *Acropora palmata* reef. Coral cover tracked well with rugosity index (RI); GC1 with an average RI of 1.7 had coral cover (20.56%) superior to the other stations. Algae were the most abundant benthic cover component: mean= 50.99 ± 25.45% (SD); stony coral cover ranged from 0.65 to 20.56%, and the mean was 6.72 ± 6.94%. Bray Curtis similarity was greatest among GC stations and transects. ANOSIM two-way test documented that replicate transects at sampling stations were not different (Global R=0.066); however, site locations were different (Global R=-0.259). SIMPER analysis showed that macro algae genera *Dictyota, Lobophora*, and *Stypopodium* were responsible for differences in the station assemblages. Taxonomic Distinctness and Variation in Taxonomic Distinctness evaluations reported that Distinctness is stable but high Taxonomic Variation may indicate community instability.

The 11th International Coral Reef Symposium Proceedings are available online at: http://www.nova.edu/ncri/11icrs/proceedings/index.html.

Montcalm-Smith EA, McCarron R, Porter WR, Lillo RS, Thomas JT, Auker CR. Acclimation to decompression sickness in rats. J Appl Physiol. 2009 Dec 24. [Epub ahead of print]

Protection against decompression sickness (DCS) by acclimation to hyperbaric decompression has been hypothesized, but never proven. We exposed rats to acclimation dives followed by a stressful "test" dive to determine if acclimation occurred. Experiments were divided into two phases. Phase 1 rats were exposed to daily acclimation dives of hyperbaric air for 30 min followed by rapid decompression on one of the following regimens: 'L70' - 70 fsw for 9 days, 'S70' - 70 fsw for 4 days, 'L40' - 40 fsw for 9 days, 'S40' - 40 fsw for 4 days, or 'Control' - unpressurized sham exposure for 9 days. On the day following the last exposure, all were subjected to a 'test' dive (175 fsw, 60 min, rapid decompression). Both L70 and S70 rats had significantly lower incidences of DCS than Controls (36% and 41% vs. 62%, respectively). DCS incidences for the other regimens were lower than Control rats, but without statistical significance. Phase 2 used the most protective regimen from Phase 1 (L70); rats were exposed to L70 or a similar regimen with a less stressful staged decompression. Another group was exposed to a single acclimation dive (70 fsw/30 min) on the day before the test dive. We observed a non-significant trend for the rapidly decompressed L70 dives to be more protective than staged decompression dives (44% vs. 51% DCS incidence). The single acclimation dive regimen did not provide protection. Conclusion: Protection against DCS can be attained with acclimating exposures that do not themselves cause DCS. The deeper acclimation dive regimens (70 fsw) provided the most protection.

Sayer MDJ, Barrington J. Trends in scientific diving: an analysis of scientific diving operation records, 1970-2004. Underwater Technol. 2005; 26(2): 51-5.

A detailed trend analysis was made of 8611 scientific diving operation records undertaken at the Dunstaffnage Marine Laboratory between 1970 and 2004. The analysis represented 15,711 separate person-dives and a total of 285,512 minutes of diving time. Specific trends were highly influenced by predominant project areas during specific periods of the analysis. However, most diving was relatively shallow with only 0-12% of annual dive duration at depths of 30 m or greater, and the majority (32-87%) being in the 10-29 m depth range. Diving was undertaken throughout the year and average dive depth and duration were not influenced by month. One incident of decompression illness (DCI) occurred within the dives analysed yielding a DCI incidence rate of 0.12 per 1000 dives or 0.06 per 1000 person-dives. This level of incident is within the range for previous studies on scuba diving (0.07-0.14) but below reported incident rates for wreck and/or multi-day recreational diving (0.25-0.49). However, it is suggested that true inter-sector comparisons of estimated risk to the individual diver can only be made when expressing DCI rates in relation to person-dives. Average numbers of divers per dive in 'at work' operations will usually be below two;

some recreational dives may have many more than two divers per dive.

Wienke BR. Computer validation and statistical correlations of a modern decompression diving algorithm. Comput Biol Med. 2010 Jan 15. [Epub ahead of print]

A diving algorithm is a safe combination of model and data to efficiently stage diver ascents following arbitrary underwater exposures. To that end, we detail a modern one, the LANL reduced gradient bubble model (RGBM), dynamical principles, and correlations with the LANL Data Bank data. Table, profile, and meter fit and risk parameters are obtained in statistical likelihood analysis from decompression exposure data. The RGBM algorithm enjoys extensive and utilitarian application in mixed gas diving, both in recreational and technical sectors, and forms the bases for released tables, software, and decompression meters used by scientific, commercial, and research divers. The LANL Data Bank is described, and the methods used to deduce risk are detailed. Risk functions for dissolved gas and bubbles are summarized. Parameters that can be used to estimate profile risk are tallied. To fit data, a modified Levenberg-Marquardt routine is employed. The LANL Data Bank presently contains 2879 profiles with 20 cases of DCS across nitrox, trimix, and heliox deep and decompression diving. This work establishes needed correlation between global mixed gas diving, specific bubble model, and deep stop data. Our objective is operational diving, not clinical science. The fit of bubble model to deep stop data is chi squared significant to 93%, using the logarithmic likelihood ratio of null set (actual set) to fit set. The RGBM algorithm is thus validated within the LANL Data Bank. Extensive and safe utilization of the model reported in field user statistics for tables, meters, and software also suggests real world validation, that is, one without noted nor reported DCS spikes in the field.

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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AAUS BOARD OF DIRECTORS