E-SLATE

American Academy of Underwater Sciences (AAUS)

EDITORIAL BOARD NOTE – February 2011

Welcome to the February E-Slate. This month's issue features a special note from the AAUS President and a request for comment on a plan to change the structure of the symposium publication. In addition to your comments, we ask that you please submit new publications to share with the membership. It is a great opportunity to highlight the research from your home institution. Please continue to submit news, announcements, job postings, and images of underwater work to aaus@disl.org. Current and past issues of the E-Slate are available at www.aaus.org.

FROM THE PRESIDENT

As we build into this New Year, I wish to take this opportunity to recognize the hard work and significant contribution of our entire 2010 AAUS Board of Directors. I specifically, wish to thank our outgoing members: Dave Pence, Liz Kintzing and Phil Lobel. I recognize that your participation may often appear to go unappreciated but it is not and again, thank you.

Thanks as well to those who will be staying on in 2011; President Elect Michael Lang, Secretary George Peterson, Treasurer Mike Dardeau, Directors-at-Large Neal Pollock and Kevin Flanagan, and Appointed Directors Dr. Jenn Caselle and Chris Riguad. Thanks, as always, to our Office Manager, Heather Fletcher, for her fresh perspective and enthusiasm as we work to enhance the continuity needed to manage the Academy looking forward.

I would also like to welcome our incoming Board members. Pema Kitaeff (Director-at-Large) joins us from University of Washington's Friday Harbor Lab where she is DSO. Pema will work with Chris Riguad on the Membership Committee, specifically on membership services. Dr. Amy Moran, Assistant Professor at Clemson University, who has extensive scientific diving experience at McMurdo Station, Antarctica and research sites worldwide looking at temperature-oxygen interactions, larval energetic strategies, and larval dispersal and population connectivity of marine organisms. Amy takes on the AAUS Statistics Committee as an Appointed Director. Finally, Dr. Marc Slattery, DSO and Professor of Pharmacognosy at University of Mississippi, a specialist in marine natural products as well as polar and advanced scientific diving operations, will work with Kevin Flanagan on a suite of Standards Committee projects.

Though much of the role of the Board involves the day to day conduct of committee business, we are all working on a suite of issues and ongoing projects. In 2011, we wish to move forward a host of projects, most notably our effort to replace the current AAUS web platform with a system that would enhance office functionality, improve communication with and between members, streamline membership application review and approvals, symposium registrations, and more affordable E-commerce solutions.

It is important to recognize that the Board includes a diverse range of scientific diving stakeholders who volunteer their time on behalf of the Academy. This can be a significant effort and we welcome the participation of our larger community to accelerate the advancement of the mission of the Academy. If you wish to help us on issues associated with any existing committee or elsewhere, please contact committee chairs or me directly. We welcome the support.

The Board of Directors will hold a meeting on March 05-06, generously hosted at the Georgia Aquarium in Atlanta, GA.

Thanks for your commitment to the Academy. We look forward to a dynamic and productive 2011.

Christian McDonald
President, AAUS
DSO, Scripps Institution of Oceanography

NEWS/ANNOUNCEMENTS

AAUS 2009 Proceedings Available

Digital copies of the 2009 AAUS Diving for Science Symposium proceedings are available for free download from the AAUS website (http://www.aaus.org). Print copies will be sent to meeting participants this month. Additional print copies can be purchased at www.lulu.com/aaus.

AAUS Welcomes New DSO at the Smithsonian

Anya C. Watson joined the Smithsonian Institution as Assistant Scientific Diving Officer/Marine Science Network Program Manager in the Office of the Under Secretary for Science on January 18, 2011. Anya will assist in the management of two pan-institutional programs: the Smithsonian Scientific Diving Program (SDP) and the Marine Science Network (MSN). Prior to arriving at the Smithsonian, Anya was employed by the University of Connecticut and has taught academic classes and scientific diving courses at UCONN and MIT.

Call for Scientific Diving Photos

John Heine is working on the second edition of the book *Scientific Diving Techniques: A Practical Guide for the Research Diver*. He is soliciting photos and descriptions of novel underwater scientific techniques for the new edition. Photos that are used will be credited to the photographer and the photographer will receive a complimentary copy of the book. Please send a couple of your best photographs, and references to underwater techniques and methodology to jheine@ucsd.edu. Examples of photographs needed are historical, aquatic habitats and ecosystems, equipment, technical diving, marking and mapping, physical and chemical oceanography, archeology, collecting, tagging, transects, coring, photography, and videography.

Scuba Experience for Educators: Gulf of Mexico

National Marine Sanctuaries announces that applications are now being accepted for the annual Down Under, Out Yonder (DUOY) education workshop and field experience, July 09-13, 2011. Any scuba-certified teacher or informal educator, grades K-12, may apply for this one-of-a-kind program. The DUOY workshop, sponsored by the Gulf of Mexico Foundation, with funding from ConocoPhillips, has been offered by the sanctuary for the past 15 years. It includes two days of activities and classroom instruction in Galveston, followed by three days of diving in the Flower Garden Banks NMS. Application materials and info online: http://flowergarden.noaa.gov/education/workshops.html. Application deadline February 25, 2011.

Change in Proceedings Structure – AAUS 2011

AAUS has a long history of publishing full proceedings of scientific meetings. In the early years of the Academy, proceedings were published in advance and distributed at meetings. The shift to post-meeting production was convenient for many authors but slowed down the release of materials. More problematically, concerns over the potential for proceedings articles to interfere with the ability to publish data in peer-reviewed journals have discouraged some from presenting in the AAUS forum. The BOD recently discussed a solution to both issues – collecting extended abstracts (800-1200 words) for accepted presentations and publishing them in advance of the meeting. Barring compelling argument, this plan will be implemented with the 2011 symposium. We invite your input over the next three weeks. Please contact Neal Pollock (neal.pollock@duke.edu) with questions or comments. Final details will appear in the March E-Slate.

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)

2010 AAUS Statistics has New URL

2010 statistics are due by June 30, 2011. For those of you who have been ready since Jan. 01, we thank you for holding off while the data entry form was redesigned. The new site for entering your summary data is http://stats.diveaaus.org/although the old URL should bring you to the site as well. If you are not ready to submit, please begin compiling these numbers now! Remember, you must submit summary stats even if you are using the web based dive logging program. If you have any questions about AAUS data collection criteria, please review the AAUS Statistics Collection Criteria and Definitions available at the site or contact Mike Dardeau (mdardeau@disl.org) directly.

FUNDING OPPORTUNITIES

Dr. Nancy Foster Scholarship

The National Oceanic and Atmospheric Administration's (NOAA) Dr. Nancy Foster Scholarship Program recognizes outstanding scholarship and encourages independent graduate level research - particularly by female and minority students - in oceanography, marine biology and maritime archaeology. Congress authorized the Program, described in the National Marine Sanctuaries Amendments Act of 2000 (Pub. L. 106-513), soon after Dr. Foster's death in June 2000, as a means of honoring her life's work and contribution to the nation. The application period for 2011 is January - March. Visit: http://fosterscholars.noaa.gov/.

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 spring OPV replacement. Contact recall@edge-gear.com or 404-579-7631 for more information.

UPCOMING EVENTS

Educational and Research Diver Symposium NC

The second annual Educational and Research Diver Symposium will be held March 04 at the NC Aquarium at Pine Knolls Shores, NC. The lunch keynote speaker will be Dr. Nick Bird, chief executive officer and chief medical officer at Divers Alert Network. There is no fee for the symposium but you will have to pay for your lunch. The symposium is part of an effort by local DSOs and DMs to improve communication and cooperation between public research/education diving units working in Carteret County. Contact Roger Mays (roger.mays@noaa.gov) for details.

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.

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.

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 10-15. 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 and the annual Diving Safety Officers Meeting and AAUS Business Meeting. Workshops to be offered are:

- PSI – VCI certification course
- PSI – Eddy Current Testing
- DAN Instructor Certification
- Diver-based suction sampling: a monitoring tool for newly settled lobsters
- Quantitative observation of the adult American lobster (*Homarus americanus*)
- New DSO Orientation
- DUI Demo Day

There will be boat and shore diving opportunities as well as our annual Bubble Breaker sponsored by Ocean Enterprises. October is a beautiful time of year in Maine but also a busy tourist season. Make travel and lodging arrangements early to avoid missing out on a great meeting. Additional information will be available at: www.aaus.org. You can register directly at http://guest.cvent.com/d/ydqgkt/4W. Contact Chris Rigaud at crigaud@maine.edu or the AAUS office at aaus@disl.org for more information.

JOB OPPORTUNITIES

Channel Islands National Park Internship

Channel Islands National Park's Kelp Forest Monitoring Program has two Student Conservation Association (SCA) internships available from May – Oct/Nov 2011. The intern will assist with all aspects of the Park's long-term kelp forest monitoring program (KFMP). The KFMP has conducted annual monitoring around the five Park Islands since 1982 and has recently added sites to evaluate new marine reserves. The intern will collect data on population dynamics of up to 70 species of fish, invertebrates and algae. Most data are collected underwater using SCUBA and surface-supplied air. The intern may also assist with other monitoring programs that may include terrestrial vegetation, seabird, restoration, and other park monitoring programs. Desirable candidates would have a minimum of 50 logged cold water dives, an AAUS-recognized scientific diving certification, some vessel experience, excellent

references, the ability and willingness to make three to five dives per day in water temperatures ranging from 50-73°F. Dive depths are typically less than 65 ft, frequently in dense kelp forests and exposed offshore locations. Remuneration includes a stipend of up to $640/month in addition to $650/month for housing, accident and medical insurance, and up to $2,000 to purchase scuba equipment. In addition, up to $2,675 Americorps Education award may also be available. Background on SCA is available at www.thesca.org. To apply, send a resume with cover letter to David Kushner (david_kushner@nps.gov; 805-658-5773). Detailed diving history and biological experience should be described and references listed. Application packages should be submitted immediately since candidate selection is to be made by the end of February.

Georgia Aquarium Assistant DSO

The Assistant Dive Safety Officer (DSO)/Volunteer Coordinator will work with a diverse team of divers in the implementation of dive safety procedures and guidelines to ensure the safety of all employees at the facility and offshore. The Assistant DSO will possess a broad knowledge base in all aspects of diving and diving technology. S/he should also possess a broad technical and scientific expertise in research and research related diving. In short, the Assistant DSO's level of knowledge and diving skills should span the reach of the Georgia Aquarium's dive program, with particular attention to the volunteer diving program. Contact Jeff Reid, DSO/Manager, Georgia Aquarium at 404-581-4310 or jreid@georgiaaquarium.org for a full job description and application.

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 1, 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/).

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

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

Dzwonkowski B, Park K. Influence of wind stress and discharge on the mean and seasonal currents on the Alabama shelf of the northeastern Gulf of Mexico. J Geophys Res. doi:10.1029/2010JC006449.

Analysis of a relatively long (3.33 years) time series of velocity in 20 m of water on the Alabama shelf of the northeastern Gulf of Mexico in conjunction with long-term records of wind stress and discharge reveal a better understanding of the seasonal currents. Analysis of the mean and seasonal signals of the depth averaged velocity shows virtually no mean flow, but a relatively small yet significant seasonal signal. The 3 $cm \cdot s^{-1}$ seasonal signal is primarily rectilinear in the along-shelf direction with peak eastward (westward) flow during the late spring (late fall), consistent with the patterns reported in previous basin scale studies of the region. The two prominent regional forcing functions, wind stress and freshwater discharge, show clear seasonal signals. The seasonal vertical profiles also show two distinctively different patterns, most clearly observed in the fall with a westward maximum flow at the surface that decreases with depth and spring with a subsurface eastward flow and a reduced westward or even eastward surface flow. Separation of the current velocity into a wind-driven component and a non-wind-driven component demonstrates their counteracting influence on the mean current and maximizes seasonal effects where the minimum (maximum) seasonal wind-driven signal roughly corresponds to the maximum (minimum) non-wind-driven signal in late spring/early summer (late fall/early winter). On the basis of several sources of indirect evidence, it is hypothesized that a freshwater discharge generated barotropic pressure gradient is the primary forcing of the seasonal signal in the non-wind-driven current.

Goplen FK, Aasen T, Grønning M, Molvær OI, Nordahl SH. Hearing loss in divers: a 6-year prospective study. Eur Arch Otorhinolaryngol. 2011 Jan 19. [Epub ahead of print]

Occupational diving is associated with hearing loss, but the cause is disputed. Our aim was to follow a cohort of divers through the first 6 years of their career in order to look for evidence of permanent threshold shift associated with diving activity, occupational noise exposure or acute injuries. Hearing was measured by pure tone audiometry in 67 participants at a basic course for working divers. Hearing thresholds were adjusted for age (ISO 7029). The subjects were examined and interviewed by an otologist. Additional medical and exposure data were recorded in questionnaires and personal logbooks. The procedure was repeated after 3 and 6 years. None of the subjects suffered inner ear barotrauma or inner ear decompression sickness during follow-up. Middle ear barotrauma was common. The prevalence of subjective hearing difficulties increased during follow-up, and there was a significant threshold shift at 4 kHz (mean 2.6 dB, 95% confidence interval 0.9-4.3 dB). Both subjective and objective hearing loss was associated with occupational noise exposure, but not with diving frequency or with a history of middle ear barotrauma. In the absence of manifest inner ear barotrauma or inner ear decompression sickness, noise seems to be the most important cause of long-term hearing loss in occupational divers. This study did not find evidence of long-term hearing loss caused by uneventful diving per se.

Hobbs M, Kneller W. Anxiety and psychomotor performance in divers on the surface and underwater at 40 m. Aviat Space Environ Med. 2011; 82:20-5.

Performance impairments attributed to the effects of nitrogen narcosis have been reported to be significantly larger in studies conducted underwater compared to in hyperbaric chambers. One suggestion is that the larger impairment results from higher levels of anxiety in the underwater environment. The current study aimed to investigate the impact of anxiety and narcosis, in isolation and in combination, on a measure of psychomotor performance. The effects of self-reported anxiety (anxious vs. not anxious) and depth (surface vs. underwater) on performance on the digit letter substitution test (DLST) were measured in 125 divers. Change from baseline scores indicated that divers performed significantly worse on the DLST underwater (mean = 3.35; SD = 4.2) compared to the surface (mean = 0.45-0.73; SD = 4.0-4.2). This decrement was increased when divers reported they were also anxious (mean = 7.11; SD = 6.1). There was no difference on DLST performance at the surface between divers reporting they were anxious and those reporting they were not anxious. The greater decrement in performance at depth in divers reporting anxiety compared to those not reporting anxiety and the lack of this effect on the surface

suggested that anxiety may magnify performance deficits presumed to be caused by narcosis.

Linden B, Rinkevich B. Creating stocks of young colonies from brooding coral larvae, amenable to active reef restoration. J Exp Mar Biol Ecol. doi:10.1016/j.jembe.2010.12.002.

Coral reefs are declining worldwide, even though traditional reef practices continuously underlie reef protection. This calls for exploration and integration of novel restoration techniques and tools, such as the 'gardening' concept. The gardening approach, which has been successfully applied in various reef sites worldwide, is based on farming coral stocks in mid-water nurseries. To date, the farming of asexually produced coral material has chiefly been studied. Here, we test the performance of a novel spat-stocking tool for planulae of *Stylophora pistillata*, a brooding coral species. Two prototypes of a new settlement apparatus and one original apparatus made of Petri dishes lined with preconditioned transparency (Mailer's paper) disks had been stocked with >3730 panulae. After 96 h, only 95.3% of >2080 settlers were found on the Mailer paper provided. One-month-old survivors (80.8% of initial settlements) that were kept *ex situ* in a flow through seawater table were detached from the papers, "transglued" onto plastic pins, and transferred to mid-water coral nursery, where the trays were covered with fitted plastic nets (1 cm^2 mesh) to prevent predation and detachment. Four months later, more than 89% survivorship was documented, with colonies starting to form 3D structures. We estimate that 676 person-hours would be required to create 10,000 5-month-old genotypes of equal size to small branch fragments. This novel methodology allows farming of large quantities of colonies originating from sexually produced planulae and may enhance local populations' genetic variability within a short period. This method is inexpensive and easy to perform in remote places for incorporation in coral reef management practices.

Poulain C, Lorrain A, Flye-Sainte-Marie J, Amice E. Morize E, Paulet Y-M. An environmentally induced tidal periodicity of microgrowth increment formation in subtidal populations of the clam *Ruditapes philippinarum*. J Exp Mar Biol Ecol. 2011; 397(1): 58-64.

The periodicity of increment formation in the shell of the Manila clam *Ruditapes philippinarum* was investigated in the subtidal zone of the Auray River estuary (South Brittany, France). Calcein markings were performed at different periods between May and October 2007 using *in situ* benthic chambers tented by scuba divers. This study shows that shell microgrowth increments were well-defined and deposited with a tidal periodicity in the subtidal zone, providing the calendar base for high-resolution ecological studies and environmental reconstruction from these *R. philippinarum* shells. Endogenous rhythmicity in shell microgrowth increment formation and oxygen consumption was previously documented in this species from intertidal flats. Our study suggests that, in the subtidal zone, Manila clams' rhythmic activity may be controlled by such an endogenous process, synchronized by tidal cues. As in other bivalves, *R. philippinarum* is an osmoconformer euryhaline bivalve. The tidal rhythmicity of shell microgrowth increments in subtidal specimens of this species could be explained by a behavioral adaptation of valve closure at low tide to protect the clam from low salinities and/or to synchronize with food availability. Finally, large inter-individual variability in tidally associated growth rates and asynchronous growth breaks were observed, and could be due to genetic variability between individuals, asynchronous partial spawning events or predation.

Richards BL, Williams I D, Nadon MO, Zgliczynski BJ. A towed-diver survey method for mesoscale fishery-independent assessment of large-bodied reef fishes. B Mar Sci. 2011; 87(1) 55-74.

Coral reef fishes are ecologically and economically important, particularly the largest species and individuals, which often include top predators, as they show disproportionate fecundity and generally make up the basis of nearshore fisheries. Large-bodied coral reef fishes can be difficult to sample using conventional survey methods, because they are often relatively rare, have comparatively large home ranges, and can exhibit behaviors that influence their 'sightability.' We describe a towed-diver survey that can be used to assess populations of these fishes in which a pair of scuba divers maneuver 'towboard' dive planes and record the abundance and size of large-bodied (>50 cm TL) reef fishes while being towed at slow speed behind a small boat for 50 min. The resulting biological data are georeferenced, allowing for location-based comparison with habitat and environmental data. Comparisons with conventional belt transect surveys within the same reef and habitats reveal similar archipelagic patterns, but show some key differences. Encounter rates and statistical power are generally higher using the towed-diver method, and taxa that show behavioral responses to scuba divers exhibit different abundance and distribution patterns with each method. The scale of the towed-diver survey allows for more complete and representative coverage of the shallow-water reef environment, resulting in improved large-scale estimates of the density and spatial distribution of large-bodied reef fishes. As a result, the towed-diver method provides managers and scientists with an additional tool for assessing the distribution and status of large-bodied reef fish stocks.

Rohner CA, Richardson AJ, Marshall AD, Weeks SJ, Pierce SJ. How large is the world's largest fish? Measuring whale sharks *Rhincodon typus* with laser photogrammetry. J Fish Biol. 2011; 78: 378-85. doi: 10.1111/j.1095-8649.2010.02861.x.

Laser photogrammetry was found to be a promising new cost-effective technique for measuring free-swimming whale sharks *Rhincodon typus*. Photogrammetric measurements were more precise than visual size estimates by experienced researchers, with results from the two methods differing by 9.8 ± 1.1% (mean ±SE). A new metric of total length and the length between the fifth gill and first dorsal fin (r^2=0.93) is proposed to facilitate easy, accurate length measurements of whale sharks in the field.

Smale DA, Wernberg T, Peck LS, Barnes DKA. Turning on the Heat: Ecological Response to Simulated Warming in the Sea. PLoS ONE 6(1): e16050. doi:10.1371/journal.pone.0016050.

Significant warming has been observed in every ocean, yet our ability to predict the consequences of oceanic warming on marine biodiversity remains poor. Experiments have been severely limited because, until now, it has not been possible to manipulate seawater temperature in a consistent manner across a range of marine habitats. We constructed a 'hot-plate' system to directly examine ecological responses to elevated seawater temperature in a subtidal marine system. The substratum available for colonisation and overlying seawater boundary layer were warmed for 36 days, which resulted in greater biomass of marine organisms and a doubling of space coverage by a dominant colonial ascidian. The 'hot-plate' system will facilitate complex manipulations of temperature and multiple stressors in the field to provide valuable information on the response of individuals, populations and communities to environmental change in any aquatic habitat.

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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