All correspondence to be addressed to the Secretary, except financial matters, which are addressed to the Treasurer and membership matters, which are addressed to memberships@amsa.asn.au.
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Hi everyone

Welcome to Issue 2 of the Bulletin for 2011, which is packed full of information from the recent conference in Perth, which was a great success. If you couldn’t make it, then Karen Hillman, the Chair of the 2011 Conference Organising Committee has provided a report which covers all aspects of the event, complete with photos. Congratulations to Graham Edgar, the winner of the 2011 Jubilee Award, as well as all the student prize winners and also to Hugh Kirkman for taking out the Sherwood Award.

After only producing two issues of the Bulletin in 2010 due to our deficit budget, it was decided at the recent Council meeting and AGM that we would be able to return to three issues of the Bulletin in 2011. This means you can expect another issue to arrive on your doorstep just before Christmas.

You may also notice that this current issue of the Bulletin looks a little different. We have changed our layout to be predominantly a single column format. This will hopefully make it easier for reading on screen (for those members receiving an electronic version). For those members still receiving a hard copy of the Bulletin, you may notice that the packaging looks a little ‘green’. This is because we are trialling a biodegradable film so we can do a bit more for the environment. It would be great to hear comments on these changes (or anything else which might improve the quality of your Bulletin).

In this issue we also have some excellent book reviews organised by Jason Everett, our Book Review Editor, as well as a great article on the Sustained Indian Ocean Biogeochemistry and Ecosystem Research (SIBER). We also have a report from one of the AMSA representatives who attended Science Meets Parliament, Hugh Kirkman. This event is organised annually by FASTS, which has now been rebranded as Science and Technology Australia. This name was chosen following extensive consultation and feedback from you and other stakeholders in the science sector and reflects a challenge for the science sector to better communicate the critical work of scientists.

And finally, the AMSA Tasmania branch and their conference organiser, Narelle Hall, are starting to gear up for AMSA 2012. There is a one page article in this issue providing information on key dates and a call for symposia. Stay tuned for more information in upcoming issues.

I hope you enjoy the issue, and as always I am always looking for contributions so please get in touch! And thank you to everyone who contributed to this issue.

Claire Smallwood, Editor
Greetings!

First of all, it was great to meet and catch up with so many AMSA members at the conference in Fremantle. The Western Australian Branch of AMSA pulled out all stops and, with a total of 462 registrants (full, student and day), the “Crossing Boundaries” conference was a bumper one! Congratulations and thanks to Karen Hillman, Kathryn McMahon, Sarah Scott and their team of helpers for all their hard work in putting this conference together. The excellent key-note presentations, wide diversity of talks, 17 specific symposia embedded in the programme, many wonderful posters, subsequent workshops and the various social events made the conference one to remember. Symposia on the Timor & Arafura Seas, the Kimberley, Ningaloo Reef, Indian Ocean and dredging science were new avenues for AMSA and the Census of Marine Life symposium revealed the results of a decade-long, global programme in which Australia has been a key player. A further feature of the conference was the strong support by industry and high attendance by marine consultants – no doubt a reflection of all the marine development happening in WA.

The annual conference was also an opportunity to highlight the annual AMSA awards. Dr Graham Edgar was presented with the 2011 AMSA Jubilee Award for excellence in marine science and gave a thought-provoking talk on generalisation of marine research outcomes. Dr Norm Quinn and Dr Pat Hutchings were granted honorary life membership in recognition of achieving the 40-year membership milestone. Emma Wilkie received the AMSA Allen award for student travel to an international conference. There were about 80 students at the conference eligible for AMSA prizes and the winners were spread amongst seven universities. Thanks to all the judges and well done to all the students who presented their work at the conference.

The AGM was also held during the conference and enabled Council to inform and engage with members on the business of the association (quite difficult in a 30 minute programme slot!). AMSA's five year plan, developed by Council while Anthony Boxshall was president, has seen us follow through on some aspects of governance. The transition to separating the role of treasurer from membership administration and web site maintenance has taken place over the past year and Craig Styan was elected as the new treasurer at the AGM. Narelle Hall has been the AMSA treasurer for more than 13 years and we are extremely grateful to her for this extraordinary service and the professional manner in which she has conducted the financial affairs of AMSA. Narelle has been more than just the treasurer, providing continuity and corporate memory for the Association and over the years, in a paid role, she has taken on full responsibility for managing AMSA membership and maintaining the website. We are delighted that she will remain on as AMSA's business manager and members will still interact with her with respect to membership matters. Further, as Narelle has developed a conference organizing business, we will, hopefully, see her at AMSA conferences in the future (stop press: she will be organizing the AMSA 2012 conference in Hobart!).

Over the past year, Council's financial subcommittee has been deliberating on AMSA investments and membership fee structure and the increase in subscriptions in line with CPI was ratified at the AGM. While on finances, our auditors recommended that the financial transactions of branches be included in our annual audited reports and, this year, we transitioned to this form of reporting – thanks to the branch treasurers who assisted with this. This past year, we started with a deficit budget but, with tight financial management, reduction in printing costs and chasing up fees from recalcitrant members, we managed to return a small profit.

Since the last Bulletin in March, Council has conducted considerable business out of session by email and phone and met again in Fremantle. In April, AMSA made a submission to Safe Work Australia on the model Work Health and Safety Bill in relation to scientific diving and many aspects were covered (e.g., limits to number of days a person can dive, restrictions on overseas researchers and excluding free diving from the bill). AMSA also made a submission to the Australian Research Council with respect to the ERA journal classification scheme. It focused on the multi-disciplinary nature of marine science and the inappropriate allocation of some journals to single field of research codes. In June, Minister Carr issued a response to the national consultation and, in addition to the ranking of journals not being continued, the issue of multi-disciplinarity was acknowledged and will be dealt with in the next round of ERA.

Our vice president, Sabine Dittmann, has been busy as the AMSA representative on the government’s Oceans Policy Scientific Advisory Group (AMSA has an important role, particularly in representing non-agency scientists). Amongst numerous activities, OPSAG is planning an audit of Australia’s marine science capabilities which will identify skills, needs versus capabilities, and gaps in infrastructure.

AMSA councillor, Frances Michaelis, is currently the aquatic cluster representative on the Board of the Federation of Australian Scientific and Technological Societies (FASTS) which represents 68 000 scientists through their various societies. FASTS has recently re-branded as Science and Technology Australia, launched a “Respect the Science” campaign and hosted a successful Science Meets Parliament event in Canberra in late June. AMSA was represented at this gathering of nearly 200 scientists by Frances, Hugh Kirkman and myself. An AMSA member from NSW, Peter McCreddie, was awarded the early career scholarship to attend, so, overall, AMSA had a good
delegation at SMP. The volcanic ash cloud necessitated me spending more time in Canberra than expected and I managed to arrange a meeting with Prof. Ian Chubb, the new Chief Scientist, and was able to brief him on AMSA and an emerging international Indian Ocean marine science programme (SIBER).

Our Bulletin has continued under the able editorship of Claire Smallwood and the majority of members have now signed up to receive the electronic version of the Bulletin. Hard copy will still be available but will require a small addition to your subscription fee to cover ever-increasing handling costs. The AMSA website is a key aspect of the Association but, as it was built more than a decade ago, its limitations are becoming more and more evident. In addition to serving as an important communication tool, it houses all our valuable databases and archives. Council is thus placing considerable emphasis on planning AMSA's digital future and has appointed a sub-committee to oversee this. As ratified at the AGM, during the next year we will commit some of our financial reserves to development a new website.

Thanks to all AMSA Councillors for their hard work during the past year, especially the Executive for their ready support. I would like to acknowledge Isla Fitridge who is stepping down from Council to focus on her post-doctoral fellowship and welcome Kimberley Millers from the University of Melbourne as a new Councillor. Finally, as Narelle transfers to the non-Council role of business manager, I would once again like to re-iterate AMSA's deep gratitude to her for her many years of service as treasurer. No doubt, in her new role she will keep AMSA functioning at the high level to which we have all become accustomed.

Lynnath Beckley, President

AMSA Recognises its members who have supported the Association for 40 years by awarding honorary life membership of the Association. These members are also presented with a certificate at a local branch function in their honour.

Mr Albert Caton - ACT
Dr Keith Crook - ACT
Prof Alberto Albani - NSW
Dr Donald Fielder - NSW
Mr Bruce Hamon - NSW
Dr George Humphrey - NSW
Dr Pat Hutchings - NSW (NEW IN 2011)
Dr Alan Jones - NSW
Dr David Pollard - NSW
Prof Rod Simpson - NSW
Prof Frank Talbot - NSW
Prof Joe Baker - QLD
Dr Ian Brown - QLD
Dr Alan Cribb - QLD
Dr William Dall - QLD
A/Prof. Jack Greenwood - QLD
Prof John Lucas - QLD
Prof Helen Marsh - QLD
Mr Christopher Smalley - QLD
Dr Ian Kirkegaard - SA
Dr Scoresby Shepherd AO - SA
Dr Wolfgang Zeidler - SA
Prof. James Thomson - TAS
Dr Gary Poore - VIC
Dr Jeanette Watson - VIC
Dr Raymond Brown - WA
Mrs Loiset Marsh - WA
Dr Bruce Phillips – WA
Dr Norman Quinn - USA (NEW IN 2011)
Dr Pat Hutchings

I was encouraged to join AMSA shortly after my arrival in Sydney in October 1970, and was co-opted to be an assistant treasurer to Dr Des Griffin. My first Conference was in Brisbane in 1971 where I met Ken O’Gower and Pat Dixon who were working in Wallis Lake NSW and who wanted their polychaetes identified and this became my first paper on Australian polychaetes. This made me realise how poorly known the Australian polychaete fauna was. So over the following decades I took every opportunity to participate in field trips around Australia to collect polychaetes, from the intertidal to SCUBA diving depths. Initially I tried to identify all the polychaete families describing several new species but increasingly I became interested in the Terebellida and undertook major revisions. Over time I became interested in the systematics of the group using both morphological and molecular techniques. Working with Don Colgan of the Australian Museum, we investigated relationships within the polychaetes and especially the Terebellida, and their relationships to other groups and our data supported the close relationship of polychaetes to molluscs.

Basically I am interested in all aspects of polychaetes, such as their ecology, reproductive biology and the role which polychaetes play in benthic ecosystems. This explains why I have worked in a variety of ecosystems, such as mangroves, sea grass beds and unvegetated sediments. I have worked extensively on coral reefs, inspired by their beauty and grandeur. Initially I tried to document the diversity of polychaetes living within the reefal framework, and investigated patterns of recruitment. This gave me the opportunity to work on a variety on reefs throughout the Indo-Pacific with brief excursions to the Caribbean. On one of these trips I met Mireille Peyrot-Clausade from Marseille and this began a close working relationship leading to a great friendship, investigating rates and agents of bioerosion, initially in French Polynesia and also on the Great Barrier Reef. This allowed us to compare relatively pristine reefs with those severely impacted reefs by overfishing, and eutrophication. Coral bleaching events are leading to increasing amounts of dead coral substrate available for bioerosion and with it the potential for loss of reefal framework which leads to declining populations of reef dependent fish and associated invertebrates, loss of tourism and protection of low lying areas from storms.

Throughout my career I have been lucky enough to have supervised a number of students, most of whom have now become my friends and collaborators. For example with Robin Wilson (Museum of Victoria) and Chris Glasby we developed an interactive key to polychaetes. This combined with a publication “Polychaete and Allies” facilitates the identification of Australia polychaetes and provide some information on the ecology of species.

The polychaete community in Australia is small but a cohesive group and we ran the 1st International Polychaete Conference in Sydney in 1983 and we have just won the right to host the 11th International Polychaete Conference in Sydney again in August 2013 (www.ipc2013.com.au).

Throughout my career I have attempted to disseminate to the wider scientific community the role of polychaetes play in benthic communities and the need to protect and manage these. I have tried to achieve this by serving on various government committees both at State, Federal level and internationally, as well as playing an active role in several Australian scientific societies. I have also worked with numerous conservation societies.

I am also very concerned about the long term future of systematics here in Australia. All Australian natural history museums are State funded and are experiencing declines in funding. Often when senior systematists retire they are not replaced, perhaps being replaced with short term contracts. Funding for systematics from grants is also declining with Museums having to provide co-funding not just “in kind” support.

This AMSA conference highlighted the large number of biological surveys being undertaken in the Kimberleys and Northern Australia, but all commented on the lack of systematists to identify this biota. In the future when such surveys are being planned, it is essential that funding is allocated to support systematists thus ensuring that the biota is identified and databased. This allows comparisons to be made between areas and over time, and facilitates the detection of change or impacts from development. Often this will be a relatively small component of the budget compared to ship time or logistical support. This may encourage museums to hire systematists, and develop career paths for the next generation of systematists. Unless this is done soon we will actually be unable to document our biodiversity. How can one manage our environments without knowing the key players, identify changes associated with climate change, or new introductions which may become pests? The answer is we cannot and agencies who are committed to conserving biodiversity need to realise that we actually need to document it first before we can conserve it. Systematics is not a discipline that one learns overnight – it takes a while to get to know and understand a group and this is why it is CRITICAL that we support and encourage students to become systematists, and provide a career path for them.

Finally, I am planning to continue working on polychaetes for many years to come, to mentor and encourage students, and collaborate with benthic ecologists as there is still so much to discover about Australia’s polychaetes, and all the while having fun.

Dr Pat Hutchings, Australian Museum
The AMSA 2011 conference - where to begin? The ‘vibe’ was amazing, and there is so much to talk about that I am bound to omit something that many people think should be mentioned. But here goes.....

The conference opened at the Sunday evening ‘icebreaker’, and it was here that the scene was set. You couldn’t turn around without Esplanade staff offering you beer, wine or food – and that got the networking and discussions into overdrive from the outset. The next day the conference commenced in earnest, and we had a lovely Welcome to Country by Noongar custodian Marie Taylor: part storytelling, part driving away of bad spirits and part blessing. Quite a few people commented on how good it was, but some think it went deeper than that, and the conference actually was blessed - everything seemed to go so well from there! Anyway, we made sure that the eucalypt sprig Marie draped over the microphone stayed there for the duration of the conference. 

Marie’s welcome was followed by Ian Poiner’s inspiring welcome address, and then the first of our keynote speakers, Peter Mumby. I have to say all our keynote speakers and plenary speakers were terrific, and seemed to complement each other. Peter’s talk on the resilience of Caribbean coral reefs was both encouraging and daunting (so much learnt, but still so much to learn for other coral reef systems), and the theme of needing to ‘understand to effectively manage’ was picked up in Ian Cresswell’s talk on the Australia’s marine environment. Then into morning tea (the cakes were sumptuous!), and rolling onto the five concurrent sessions that characterised each day. Monday evening was the Poster Cocktail function, and this went off – there is no other word for it. The place was packed, the interest and discussions were intense, and again Esplanade staff were everywhere, ‘inflicting’ beer, wine or food on us. I have a confession here: my faith in my colleagues had suffered a little at the ‘icebreaker’ on Sunday, because we hadn’t utilised our quota of alcohol and food. Thankfully my faith was restored at the Poster night, as we more than made up for the previous night’s ‘deficit’, with the venue function manager quietly commenting to me that she was ‘impressed with how much the delegates could eat and drink’.

The morning of day 2 was dedicated to AMSA, and we had the privilege of hearing two Jubilee addresses: Graham Edgar’s 2011 address, and Pat Hutchings 2010 address (Pat couldn’t give her talk in 2010 because she was overseas). Again, these two talks complemented each other perfectly: Graham’s was broad-ranging, inter-disciplinary and conservation-based (not to mention his colourful and varied career), and Pat’s was so focussed and passionate, illustrated by her exquisite images of polychaetes. Then into what would have to be the most crisp, efficient AMSA AGM ever (thank you Lynnath!).........perhaps people knew there were warm chocolate brownies with hot chocolate sauce for morning tea? And so into the concurrent sessions (I went to the dredging one, a hot topic in WA). Tuesday night was student night at the Newport Hotel – another packed event that went well, although 2012 conference organisers please take note - 50 pizzas proved to be only just enough (along with the chips, nuts, and tasting platters).

Wednesday started with Paul Snelgrove’s wonderful keynote address on marine biodiversity and the Census of Marine Life – just breath-taking. There was a great ‘cascade of scales’ operating that morning, as we went from Paul’s talk on global-scale marine science, to Steve Blake’s regional-scale (Western Australia) marine science (the Western Australian Marine Science Institution) to Melanie Bishop’s ecosystem-scale research on impacts of different detritus sources to estuarine sediment communities. After morning tea (I won’t mention the cakes this time!), I had the privilege of hearing and judging some great student talks (by-the-by, the standard of student talks was very high), including Kade Mills, the winner of the Ron Kenny award – more on that elsewhere in the Bulletin.

Wednesday evening was the screening of the film ‘Oceans’, preceded by the (inevitable, it seemed) beer, wine and nibbles, while our wonderful conference secretariat (EECW) also organised little boxes of chocolates and lollies for during the film. This was another function where everyone just seemed excited to be there, and film itself – well, what can one say? Words like awesome, mind-blowing, heart-breaking, exhilarating and enchanting all spring to mind, and still don’t do it justice. If you haven’t seen it, do so – some images are destined to stay with you a long time.

Marine taxa on the dancefloor at the conference dinner. Photo Credit: Renae Hovey
And so to Thursday, the last day of the conference. This opened with another great keynote talk, by Anya Waite on the biological oceanography of the Western Rock Lobster larvae. Anya confessed to going out on a limb for her talk, discussing research literally ‘hot off the press’ rather than a distillation of her career. It worked a treat, and was enlivened by a good sprinkling of Anya’s humour. Anya was followed by Richard Brinkman’s terrific talk on simulation of the hydrodynamics of the GBR: all praise to the IT Support – the videos of all Richard’s simulations worked beautifully - and reality was simulated with astonishing accuracy. The final plenary talk was the dynamic duo of Tonney Wagey and Lourenco Fontes, our colleagues from Indonesia and Timor Leste, who provided a wonderful synopsis of the challenges and opportunities for research and management of the Arafura and Timor Seas. After morning tea I indulged myself a little, and flitted between the concurrent sessions (from seagrass wrack, to Ecolab models to marine life of the Kimberley, to name a few), before recruiting my energies for the Conference Dinner. The Conference Dinner was always destined to be a success: the conference vibe had been great and marine scientists sure know how to party. The large ‘marine creature’ balloon decorations on each table also led to some light-hearted raiding, as each group tried to secure their preferred taxon. The awarding of student prizes caused the usual surprised pleasure to the awardees, but for me one of the great memories of the evening was the thankyou song and dance given by Timor Leste delegates in appreciation of their welcome at the conference (it was the Indonesian & Timor Leste delegation’s first major marine conference in Australia). They invited delegates to join them on the dance floor, and I don’t think I’ve ever seen a dance floor get packed so quickly: it was one of those magical moments. The dance floor got packed later in the evening too..... except when the judging of the Sherwood Award came down to a dance-off between the two semi-finalists, and Hugh Kirkman’s exuberance won out over Pat Hutchings’ slick dance moves. It was a fantastic night – the band were terrific, and the only complaint was that the evening ended too soon.

As I mentioned at my opening address, great conferences don’t just happen: they take a dedicated committee and generous sponsors, and we were blessed on both counts. I would like to finish by thanking particular committee members for their hard work: Lynnath Beckley (support on all fronts), Kathryn McMahon (chair of the scientific committee), Sarah Scott (linchpin of the organising committee), Jane Fromont (workshop coordinator), Matt Harvey (student prize judging coordinator), Claire Smallwood, Dave Holliday, Renae Hovey, Ben Davis and Candace Willison.

Warm regards,
Karen Hillman
President, AMSA WA Branch
Chair, AMSA 2011 Conference Organising Committee

Delegates from Timor Leste demonstrating their traditional dancing.
Photo Credit: Claire Smallwood

Dr Ian Poiner delivering the welcoming address.
Photo Credit: Renae Hovey

Conference delegates enjoying the networking opportunities on the poster night. Photo Credit: Claire Smallwood.
Dr Graham Edgar

Graham Edgar is best known for his writings for the wider public. His book ‘Australian Marine Life’ is highly valued and much used by temperate marine biologists. It was awarded the Whitley Award by the Royal Zoological Society of NSW in 1997, and a companion volume on ecology, ‘Australian Marine Habitats’, also received a Whitley Award in 2001. The knowledge contributing to these books is deep and extensive, and many years in the making. Additional to these books, his >100 journal publications are widely recognised and highly cited in the scientific literature.

Graham is one of a few generalist marine scientists, spending time in a variety of fields, as well as interdisciplinary areas. His interests and scientific publications cover seaweed/fish/invertebrate interactions; marine biodiversity; crustacean and fish taxonomy; seagrass habitat ecology; temperate reef ecology; estuarine ecology; marine protected areas; effects of fishing, aquaculture, oil spills, sedimentation, introduced species and global warming on the marine environment; identification and protection of threatened marine species; and marine conservation planning.

He graduated with a BSc degree from University of Sydney, followed by Honours and a PhD at the University of Tasmania studying interactions between macro-algae, invertebrates and fishes. He then embarked on a series of post-doctoral studies. His first, at CSIRO’s Marmion laboratory (Western Australia), examined the trophic role of lobsters in seagrass ecosystems. It was followed by a year at the Amakusa Marine Biological Laboratory in Japan where he developed a novel, and now widely-used method, for estimating secondary production of benthic communities. Subsequently, studies into the plankton, benthos and fishes in isolated Port Davey in SW Tasmania exposed him to southern Australia’s most pristine temperate marine environment. This galvanised a conservation ethic and an increasing interest in the effects of human activity on marine environments.

Whilst based at Melbourne University, he investigated the effect of seagrass loss on fish and benthic invertebrates across southern Australia, with particular focus on Western Port. These studies showed the great value of ecological studies at continental scales in generating findings of broad significance. Over the next two decades he became an expert on human impacts on coastal environments, and a specialist of tanaidacean crustaceans. Pre-eminently a field worker, he developed with co-workers huge multi-year ecological data sets over broad taxonomic, temporal and spatial scales.

The effectiveness of Marine Protected Areas subsequently became a recurrent research focus, with nineteen journal papers so far published on the topic. A notable feature of this work has been collaboration with government researchers that developed into formal linkages with conservation departments in five Australian States, as well as with management and research agencies in Colombia, Ecuador, Panama and Costa Rica. Graham’s strong eastern tropical Pacific connections developed from two years as leader of the Marine Science and Conservation section at the Charles Darwin Research Station in the Galapagos Islands – a turbulent period when zoning plans for the Galapagos Marine Reserve were formalised and fishery quotas negotiated. He and staff survived fisher blockades of the Station and the seizure of threatened tortoises as hostages over sea cucumber quotas! From these experiences, he is now regarded as an authority on tropical eastern Pacific reef ecology as well.

Throughout his career, Graham has established strong links with private industry and the community. The environmental consultancy company that he formed with two others fifteen years ago (Aquenal Pty Ltd) currently employs about a dozen biologists, and has established a niche reputation for high quality environmental impact and assessment work.

Graham is now probably the best known, and most highly respected marine conservation scientist, in temperate Australia. With Dr Cath Samson, he was awarded an inaugural Mia Tegner Award by the US-based Marine Conservation Biology Institute for studies on historical changes to inshore marine ecosystems. His advocacy and work in conservation biology (some behind the scenes) include a proposal to Commonwealth authorities in the early 1990s to declare deep water seamounts as no-fishing MPAs, at a time when the idea was novel globally. This led to a study by CSIRO on trawling impacts, which resulted in a moratorium on trawling on about 70 seamounts which, in turn, has likely saved many seamounts from complete destruction of coral.

Graham’s huge overall impact on government policy can be gauged from the Commonwealth’s environment website where seventy reports citing his work are referenced – probably the highest number for an Australian marine ecologist. In 2007, Graham received the only Commonwealth Environment Research Facilities Significant Project grant to be awarded for a marine topic. The project’s aim was to channel the enthusiasm and skills of recreational divers to allow ongoing monitoring of reefs around Australia at scales impossible for scientific teams to cover. An incorporated NGO was formed (Reef Life Survey Foundation), with >150 volunteer divers now trained and data collected from >1100 sites around the country. This is the only Australia-wide set of systematically-collected information on marine communities that encompasses this island continent. The spectacular success of the program, with its strong community linkages, led to a ‘Community Action and Partnerships’ award in the 2010 Victorian Coastal Awards for Excellence. Graham’s efforts with Reef Life Survey continue to expand, most recently at the global level.

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Graham Edgar is best known for his writings for the wider public. His book ‘Australian Marine Life’ is highly valued and much used by temperate marine biologists. It was awarded the Whitley Award by the Royal Zoological Society of NSW in 1997, and a companion volume on ecology, ‘Australian Marine Habitats’, also received a Whitley Award in 2001. The knowledge contributing to these books is deep and extensive, and many years in the making. Additional to these books, his >100 journal publications are widely recognised and highly cited in the scientific literature.

Graham is one of a few generalist marine scientists, spending time in a variety of fields, as well as interdisciplinary areas. His interests and scientific publications cover seaweed/fish/invertebrate interactions; marine biodiversity; crustacean and fish taxonomy; seagrass habitat ecology; temperate reef ecology; estuarine ecology; marine protected areas; effects of fishing, aquaculture, oil spills, sedimentation, introduced species and global warming on the marine environment; identification and protection of threatened marine species; and marine conservation planning.

The effectiveness of Marine Protected Areas subsequently became a recurrent research focus, with nineteen journal papers so far published on the topic. A notable feature of this work has been collaboration with government researchers that developed into formal linkages with conservation departments in five Australian States, as well as with management and research agencies in Colombia, Ecuador, Panama and Costa Rica. Graham’s strong eastern tropical Pacific connections developed from two years as leader of the Marine Science and Conservation section at the Charles Darwin Research Station in the Galapagos Islands – a turbulent period when zoning plans for the Galapagos Marine Reserve were formalised and fishery quotas negotiated. He and staff survived fisher blockades of the Station and the seizure of threatened tortoises as hostages over sea cucumber quotas! From these experiences, he is now regarded as an authority on tropical eastern Pacific reef ecology as well.

Throughout his career, Graham has established strong links with private industry and the community. The environmental consultancy company that he formed with two others fifteen years ago (Aquenal Pty Ltd) currently employs about a dozen biologists, and has established a niche reputation for high quality environmental impact and assessment work.

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Emma Wilkie

I love that nearly always, the first question people ask me when I tell them my field of research is focussed on oysters is; ‘do you eat them?’ I’m pleased to respond affirmatively, which I couldn’t answer before I started the research because ashamedly I’d never tried the slippery suckers. But, aside from my personal improvements as a gourmet, my research has given me a wonderful insight into the ecological wonder that is the oyster. Despite the downright ugliness these otherwise seemingly uneventful sessile creatures possess, their immense ecological value drives me to chip at them by day and scrupulously inspect them by night, with stitches, scars, forever dirty fingernails and ‘fishy smell’ hands to prove it. My interests of the ecological roles of oysters in Australian marine ecosystems have taken me overseas to compare the vastly similar functions they share with their Asian relatives in Hong Kong. Now, in my final year of my PhD and drawing to a quickly approaching close, my little oysters have given me the awesome fortune of being awarded the Allen AMSA Award, which will allow me to present my latest discoveries at the World Conference on Marine Biodiversity, at the University of Aberdeen in September 2011.

Now, apologies for lack of eloquence, but this conference will rock! Firstly, it will be glamorous, the Academy Awards of marine science conferences if you will. In fact, quite literally it might just be, with marine science documentary film producers on the plenary list. Not to mention spatial geographers, marine ecologists, social scientists, pharmacists and fishermen. From professors to students researching blue whales to bacteria, over 600 speakers from 66 different countries will be there, all sharing one common goal – to learn more about what drives and impacts marine biodiversity. This is an extremely topical issue, with pressure on our oceans escalating, and growing concern not just among scientists, but policy makers and community members alike, I’m really looking forward to the immensity of scientific knowledge this conference will deliver. As I sift through the list of speaker’s and pull up their websites, the diversity and, sometimes intimidating, quality of their research, definitely excites me. Finding the courage to resist the urge to fade into comforting bystander background behind the tea stand at every break, and just admire them for afar will be my biggest challenge. But, never fear, my little oysters have pulled me through similarly terrifying situations in the past, and they won’t fail me now I’m sure of that. Did you know that one oyster filters normally 1 litre of water every hour and in doing so, it cleans the water for all the other creatures, and us humans, to survive. In temperate waters, oyster reefs are the analogue of coral reefs in the tropics. The fate of many fishes, snails, crabs, birds, rays, and plants, depends on oysters. Biodiversity would be doomed without them and so this international conference focused on marine biodiversity is a perfect opportunity for me to put my oysters in perspective. So, forgive the pun, but the World (Conference on Marine Biodiversity) might just be my oyster. If speaking up on the oysters’ behalf is what it takes to get me into just a minute of marine biodiversity spotlight during this week, then I have a duty to uphold. I will also do my absolute best as an Australian student ambassador representing AMSA, Macquarie University and marine science students from our land down under. Many sincere thanks to AMSA and the Allen Award which will help me embark on my future marine science journeys.

**Biotic resistance to the invasive oyster *Crassostrea gigas* is not presently weakened by oyster disease**

Emerging diseases and invasive species represent two of the greatest threats to marine biodiversity, yet their cumulative effects are rarely considered. Where emerging diseases weaken biotic defences that limit the success of invaders, impacts of invaders on native communities may increase. In Australia, the Sydney rock oyster *Saccostrea glomerata* is increasingly threatened by outbreaks of QX-oyster disease caused by a haplospridian parasite, *Marteilia sydneyi*. QX-disease reduces fitness and increases mortality among wild *S. glomerata*, which might allow the non-native and QX-resistant *Crassostrea gigas* to out-compete and displace native oysters on rocky shores, potentially causing large cascading effects on associated invertebrates and fish. We tested this hypothesis in areas immediately adjacent to those where QX disease currently causes up to 90% mortality among cultured oysters. We found that despite impacts on aquaculture, apparent rates of mortality of adjacent wild *S. glomerata* were much lower, and abundances of *C. gigas* were generally low. Nevertheless at one site were *S. glomerata* abundance was low, *C. gigas* abundance was high. Our results indicate that QX disease is not presently reducing biotic resistance of east Australian systems to *C. gigas*. However, the spread of existing or new aquatic diseases might weaken the longer term biotic resistance to invasive marine species.

Emma Wilkie

AMSA Bulletin 185 - Issue 2, 2011
Ron Kenny Oral Award - Kade Mills

Thank you to AMSA, for the chance to present at this year's conference in Fremantle and for the massive buffet lunches. Presenting is something I enjoy, not necessarily the nerves, stress and sweaty armpits that come with it, but, the chance to convince people that what I've been slaving away on for months is interesting and relevant and provide a different insight into fisheries and artificial reefs. Fortunately, I have been given many opportunities to present my work to audiences, from high school students to the public at fishing/boat shows (where I am always upstaged by children's entertainer, Flathead Fred). For these opportunities as well as support in many other ways, I thank Victorian Marine Science Consortium, Victorian Marine Discovery Centre, Victorian AMSA branch and Fisheries Victoria.

Finally thanks to my supervisors at Deakin, Gerry Quinn and Daniel Ierodiaconou and in particular my supervisor from the Fisheries Research Branch of Fisheries Victoria, Paul Hamer, for hours of conversation about my research, surfing, life and cynicism which always leaves me with more questions than answers.

Evaluation of recreational fishing reefs for enhancing fishing opportunities in Port Phillip Bay – comparison of monitoring data and boat ramp surveys

Mills, Kade*1,2 & Paul Hamer1 (kade.mills@dpi.vic.gov.au)

1 Department of Primary Industries, Fisheries Research Branch, PO Box 114, Queenscliff VIC 3225
2 Deakin University, School of Life and Environmental Sciences, Princess Highway Warrnambool VIC 3280

The use of manmade reefs to enhance fishing is not a new idea, but it has recently increased in popularity in Australia as the number of recreational fishers and the need to provide more fishing opportunities steadily rises. In May 2009 Fisheries Victoria deployed three artificial reefs (identical in their arrangement) in Port Phillip Bay as a trial to evaluate the implications of recreational fishing reefs for enhancing fishing opportunities. This project provided an opportunity to sample fish and macro-invertebrate communities before and after the reefs were deployed, and at control sediment and natural reef sites, which is rare. Evaluation methods involved using baited underwater video, underwater visual census, research anglers and boat ramp surveys. The results of the biological surveys showed an increase in many fish species at the new reefs including the key recreational target species, snapper (Chrysophrys auratus). This presentation summarises the key findings of the evaluation program in relation to the biological, management and social implications of the reefs. The presentation will provide interesting comparison between the results of biological monitoring activities and surveys of angler usage and attitudes.

Ron Kenny Poster Award - Candace Willison

Seagrass wrack degradation: The effects of wrack diversity and macroinvertebrates on degradation rates in south Western Australia.

Willison, Candace*, Paul Lavery & Kathryn McMahon (c.willison@ecu.edu.au)

1 Centre for Marine Ecosystems Research, Edith Cowan University, 270 Joondalup Drive, Joondalup, WA 6027

Very little is understood about degradation dynamics in marine habitats and what is known centres heavily around single species degradation of algal wrack. How fast wrack degrades has significant implications for nutrient recycling and energy transfer through trophic levels. Litter diversity is identified as a potential factor affecting degradation rates in terrestrial literature, however whether or not increasing diversity results in additive or non- additive degradation is debatable. To date, only one study has addressed the effects of increasing seagrass wrack diversity on degradation rates, and despite the fact that seagrasses and algae often occur together, no studies have been conducted to assess the effects of mixing these wrack types. Increasing diversity may affect degradation directly by altering the chemical environment, or indirectly by changing the decomposer communities present. Alternatively, it has been suggested that the presence of macroinvertebrates can significantly affect degradation through increased leaf fragmentation and faecal production increasing bacteria numbers, however there is limited evidence to suggest macroinvertebrates graze directly on seagrasses. A sub-tidal litterbag and caging experiment was conducted to investigate how the presence of fauna and wrack diversity affects degradation rates of seagrass. Regardless of the wrack diversity tested, biomass loss was significantly greater where fauna access was restricted (p<0.05). Mixing seagrass and algae appeared to have an inhibiting effect on seagrass degradation. Degradation rates of seagrass were significantly higher when seagrass wrack was dominant (13.76% to 31.41% biomass loss) compared to the algae dominated treatments (10.67% to 22.68% biomass loss). However, for total biomass loss, degradation was significantly higher in the mixed composition treatments (21.71% to 39.06% biomass loss) indicating that where algae are available it will be the first component to degrade. This work has highlighted that fauna are not important for seagrass wrack degradation in these habitats and increasing diversity does not enhance degradation of seagrass. The faster degradation where fauna were reduced could be due to increased bacterial degradation through an effect of reduced grazing on bacteria cells by macroinvertebrates.
I have always known that I wanted to take on this career path, within the zoology and marine science field, and my time at both Murdoch University and the University of Western Australia has helped me achieve that goal. When I finished my undergraduate degree, I was not planning on further study. However, after a year off, I felt the urge to study again, and learn about something new and exciting, which in my case was my honours project on krill. Attending the 2011 AMSA conference allowed me to showcase my work and make connections, and it has further reassured me that I am ready to continue on and do a PhD, as there is so much more to be discovered in our marine environment.

**Horizontal and vertical distribution of euphausiids associated with a meso-scale eddy of the Leeuwin Current**

Sutton, Alicia*, Lynnath Beckley & David Holliday (alia_393@hotmail.com)

School of Environmental Science, Murdoch University, 90 South Street, Murdoch, WA 6150

Krill (Crustacea: Euphausiacea) is an important component of zooplankton and euphausiids have been studied in many ocean currents and upwelling systems around the world. Off the south west of Australia, euphausiid assemblages were investigated within and around a developing warm core anticyclonic eddy. Twenty two species of euphausiids were recorded, of which two were new records for Western Australia, and several others had southward range extensions. *Euphausia recurva* (28%), *Stylocheiron carinatum* (22%) and *Pseudo euphausia latifrons* (13%) were the most dominant species across the eddy field. *Euphausia recurva* and *S. carinatum* were found across most depth ranges, whilst *P. latifrons* was found in shallower waters and distinguished shelf stations from eddy perimeter/ meander, eddy centre and oceanic stations. The euphausiid assemblage around the perimeter of the eddy was not significantly different from the eddy centre assemblage, highlighting the strong mixing effect of the anticyclonic eddy. Strong vertical distribution patterns were largely driven by calyptopis and furcilia larval stages, with higher concentrations of these larval stages in the upper 80 m of the water column. High concentrations of euphausiids were often located within the mixed layer and in proximity to the deep chlorophyll maximum. Of the environmental variables tested, temperature and, in turn, salinity and dissolved oxygen, and larval fish concentrations were most correlated with euphausiid assemblages. Chlorophyll a and water column depth were weakly correlated with euphausiid assemblages. Tracking water masses over time using surface-drifter buoys, enabled repeated sampling of euphausiid assemblages, and species composition and proportions of larval stages were found to vary over time. This is the first study to investigate euphausiids within a developing eddy off the south-west coast of Australia.

**Australian Fisheries Management Authority Oral Award - Amy Newman**

Amy completed her undergraduate studies at the University of Melbourne before undertaking Honours with the Department of Primary Industries in Queenscliff, Victoria. Now in the final year of her PhD, which began at the University of Queensland before transferring to the University of Western Australia, her research revolves around the sensory systems of deep-sea sharks with an emphasis on the visual system. Amy is currently investigating not only the cells within the eyes of sharks but also within the optic tectum, the brain region associated with processing visual information. Amy hopes to complete her PhD studies in 2012 and continue her research career overseas. Amy has enjoyed the broad range of experiences she has gained from studying at different Australian Institutes and always enjoys conference such as AMSA that provide an opportunity to catch up with students and scientists she has met and worked with in the past.

**Visual-Eyes: A look at the distribution and total number of photoreceptor cells in the retina of rare deep-sea sharks**

Newman, Amy*1, Justin Marshall2 & Shaun Collin1 (newmaa02@student.uwa.edu.au)

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2 Sensory Neurobiology Group, Queensland Brain Institute and the School of Biomedical Sciences, University of Queensland, QLD 4067

The deep-sea is the largest unexplored frontier on our planet today, and its inaccessibility has resulted in a lack of knowledge and understanding about the organisms that occupy it. The environmental conditions an animal is exposed to are reflected in its morphological and physiological adaptations: by investigating eye structure, information on how deep-sea animals perceive their environment can be discovered. Eyes from seven deep-sea shark species (depth ranges < 2500 m) were removed and fixed to preserve fine ocular tissue structure. The retina, a multilayered tissue containing the light detecting cells or photoreceptors, located at the back of the eye was removed. The number and topographic distribution of photoreceptors within the retina of three specimens from each species was measured. All seven species showed specializations within the retina, attributable to depth inhabited and foraging/predator avoidance behaviours. One species, *Parmaturus bigus* known only from one specimen previous to this study, was found to have a specialization of increased cell density in the temporal region of the retina, likely to enhance prey detection at low light levels. The highly specialized senses of sharks have allowed them to become apex predators, making them a fascinating subject for comparative morphology and physiology.
Response of small bodied fish to habitat reconnection in the Murray River Estuary

Silvester, Luke*1,2, Sabine Dittmann2 & Kathleen Beyer2 (silv0034@flinders.edu.au)
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2 Inland Waters and Catchment Ecology Program, SARDI Aquatic Sciences, PO Box 120, Henley Beach, SA 5022

Estuaries are a dynamic interface between freshwater, marine and terrestrial ecosystems. Over time, the Murray River estuary has been heavily regulated resulting in environmentally distinct habitats, up- and downstream of a series of barrages. This habitat fragmentation threatened the ecological integrity of the ecosystem, affecting fish assemblage structure and abundance. Following recent floods the barrages were reopened in September 2010 allowing the river to flow into the sea. The aim of this study was to evaluate the effects of reconnection of adjacent habitats on the fish community in the estuary. To assess the temporal and spatial changes in the fish community structure on either side of two barrages (Goolwa and Mundoo), fish were collected once a month using a seine net at eight locations between August 2010 and January 2011. Abundances, distributions and size frequencies of fishes were assessed to determine fish community structure and recruitment. The results show temporal and spatial variability in the fish assemblage structure with a general increase in diversity and abundance of fish species. The results will be discussed in light of their implications for the management of fragmented habitats and estuarine fish communities.
Predictive Habitat Modelling of Indo-Pacific Bottlenose Dolphins (Tursiops aduncus) in South West Australia.

Sprogis, Kate*1, Ken Pollock1, Halina Kobryn1, David Johnston2, Randall Wells3 & Lars Bejder1 (K.Sprogis@murdoch.edu.au)
1 Cetacean Research Unit, Murdoch University, Perth 6150
2 Duke Marine Lab, Duke University, North Carolina 28516
3 Sarasota Dolphin Research Program, Mote Marine Laboratory, Florida 34236

Animals prefer to use an area based on its physical environment (e.g., depth, slope, sea surface temperature, habitat type), food availability, protection from predators, suitability as a breeding or calving ground and lack of anthropogenic pressures. Detecting these critical areas and explaining the factors that influence habitat use and movements are important for conservation and management efforts of a species. Habitat modelling is a powerful tool for predicting distribution patterns and understanding the ecological and physical factors that determine these distributions. Several different modelling techniques are available. Models that are commonly used for marine mammal species include hypothesis testing, maximum entropy, multivariate statistical modeling and multivariate ordination and classification. In this study, the Indo-Pacific bottlenose dolphin (Tursiops aduncus) is used as a model species to investigate which habitat models perform best. Over the past four years research on abundance, distribution, social structure, foraging ecology and conservation genetics has been conducted on the study population in Bunbury, South West Australia. This project will continue to collect data for an additional three years using the same established techniques. The study area will be expanded to now cover an area of 475km², extending offshore to 9.3 km. Greater coverage of the benthic habitat type and complexity will be recorded through an increased number of transect routes and validation points of the current habitat classifications (drop down camera ground truthing). Other relationships with dolphin distributions will also be considered for additional variables, for example, sea surface temperature, prey distribution and vessel density.
CSIRO Editor’s Choice Award - Andrew Olds

Andrew is a PhD candidate at the Australian Rivers Institute, and School of Environment, at Griffith University. He has held research, extension and consulting positions with the Queensland Department of Environment and Resource Management, University of Queensland and Fre Environmental. His current projects focus on the role of connectivity in promoting the performance of marine reserves in Pacific back-reef seascapes (i.e. systems with reefs, mangroves and seagrass). He utilizes a multi-scalar approach to link GIS analysis, field surveys and mesocosm experiments and relate seascape elements to patterns of organism abundance and benthic ecological processes. Andrew anticipates the results of this work will have valuable applications for conservation planning and fisheries management and hopes to highlight the importance of seascape ecology for the design and management of marine reserves. He thoroughly enjoys presenting at the annual AMSA conferences and will continue to recommend the opportunity to other postgraduates.

Connectivity in coral reef seascapes: are there different effects from neighbouring seagrass and mangroves?
Olds, Andrew*, Rod Connolly, Kylie Pitt & Paul Maxwell (a.olds@griffith.edu.au)
Australian Rivers Institute – Coast and Estuaries, School of Environment, Griffith University, Gold Coast QLD 4222

Coral reef fish depend on reefs, but they also move across habitat boundaries for a variety of reasons, including foraging, seeking shelter, spawning and dispersal. Mangrove and seagrass habitats are particularly important as juvenile nurseries and foraging locations, and their position relative to reefs can affect both the demography of reef fish populations and the composition of reefal assemblages. Surprisingly, we still lack information on whether the effects of this connectivity differ among habitats. We used an exploratory seascape approach to examine relationships between fish communities, measures of reef condition and connectivity with mangrove and seagrass habitats in Moreton Bay. Our results suggest a hierarchy in the responses of reef fish to seascape connectivity, with assemblage composition being primarily distinguished by isolation from mangroves, and secondarily by proximity to seagrass. Reefs close (< 250 m) to mangroves were characterised by more mangrove-influenced species than those farther away (> 500 m). Within both levels of connectivity with mangroves, reefs closer to larger seagrass meadows also supported more seagrass-influenced species. Measures of reef condition (i.e. area and cover) were only important in separating communities within each of these groups. We demonstrate that mangrove and seagrass habitats can exert different effects on reef fish assemblages, and suggest that, where other factors remain equal, greatest abundance and diversity might be expected on reefs with high coral cover and connectivity to both mangroves and seagrasses. These findings have important implications for the design of marine reserve networks and the management of mobile exploited populations across reef seascapes.

Ernest Hodgkin Estuary Research Award - Melissa Duggan

I received my Bachelor of Science from James Cook University in 2004, where I studied all things marine-related and loved it all! I then spent the next three and a half years working for CSIRO and the Queensland Museum, where I learned how to identify just about every kind of benthic marine organism imaginable. I was also introduced to ecosystem modelling by Dr Tom Okey and was involved in the creation of a number of trophodynamic models using Ecopath software. During this time I completed an honours project at the University of Queensland (UQ) under the supervision of Dr Kevin Warburton (UQ) and Dr Tom Okey (CSIRO). These experiences instilled in me a desire to continue to explore the distribution and abundance of organisms in the context of environment, as well as the use of models in understanding ecosystem function and environmental processes. This led to me undertaking a PhD project at Griffith University with Assoc. Prof. Michele Burford, Prof. Rod Connolly and Dr Peter Bayliss, where I’ve been able to pursue these interests wholeheartedly in the unique setting of the wet-dry tropics of northern Australia. My project aims to better understand the role of seasonal patterns of freshwater flow on estuarine function in the wet-dry tropics, particularly the impact on benthic biota. My project also seeks to explore the potential impacts of altered flow regime on wet-dry tropical estuaries using a Bayesian Belief Network. I am currently in the final write-up stages of my PhD and am excited by what the future may hold.

I would like to wholeheartedly thank the AMSA organisers for a wonderful and stimulating conference, this was my first AMSA conference and I hope to attend many more. Congratulations also to all the other prize winners and presenters at the conference!

Long and short term effects of extremes in freshwater flow on intertidal biota of a wet-dry tropical estuary
Duggan, Melissa*¹, Michele Burford¹ & Rod Connolly² (melissa.duggan@griffith.edu.au)
¹ Australian Rivers Institute, Griffith University Nathan Campus, QLD 4111
² Australian Rivers Institute – Coast and Estuaries, Griffith University Gold Coast Campus, QLD 4222

The estuaries of the Gulf of Carpentaria (Northern Australia) experience highly variable flows, from zero flow over much of the year, to massive freshwater flooding in the wet season. Potential future water harvesting would dampen this variability. Such changes may affect estuarine ecosystems pre-adapted to variable freshwater flow conditions. We examined the effect of seasonal flooding on benthic productivity in the estuary of the Norman River, a system with a natural flow regime. We compared the long and short term effects of one major and one moderate flood event on benthic microalgae and meiofauna of intertidal mudflats. We focussed on benthic microalgae and meiofauna due to their importance as major food sources for higher trophic levels, their limited ability to leave the estuary during periods of disturbance, and their rapid reaction to disturbance with little or no lag effect. Benthic microalgae biomass and meiofaunal abundance decreased almost to zero during the major flood. Recovery of meiofauna abundance and microphytobenthic biomass began quickly after flood waters began to recede and tidal exchange was restored. During the moderate flood, the same patterns were detected but the magnitude of the decline was much less. In the dry season following the major flood, meiofauna abundance was considerably higher than in the preceding dry season, which followed a moderate flood. This suggests that meiofauna abundance during the dry season may be influenced by flooding in the previous wet season. In summary, we found that floods are important drivers of primary and secondary productivity on intertidal mudflats. This is likely to have flow-on effects to food availability for higher trophic levels.
The Sherwood™ award is given each year by the students of AMSA to the member (over 40) who shows the best dance moves at the conference diner. It is named after Prof. John Sherwood, who I am told has pioneered many dance floor memories in previous years. This year judging was conducted on an ad-hoc basis, with nominations shouted across the dance floor by students amid flailing limbs and creaking hips, no doubt helped by the pre, post and during dinner drinks. Particular mention must go to Hugh Kirkman and Gina Newton, who kick started the night early on, and the Indonesian and Timor-Leste delegates, who helped with a little capacity building. There were many standouts, however slowly the outliers were removed and ten dancers were selected for further analysis.

After some rigorous trials the ten were narrowed down to just two, Pat Hutchings and the ever-young Hugh Kirkman, who I am told was busy for most of the night trying to find a 40+ dancer that could match his dance-floor prowess. A song (picked by Hugh) later and the experiment was over. Congratulations to Hugh on winning the Sherwood™ award for 2011. Your sheer determination, commitment and effort was inspiring to say the least. Thanks must also go to Pat, for being such a good sport, and all of the other final ten. There is always Hobart 2012!! Thank you also to all of my judges, and Candace for her help. For now, at least, I think the Sherwood™ award has gone to a worthy recipient.

Ben Davis, AMSA2011 Committee Member
Chair of the Sherwood Award Judging Panel

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Sustained Indian Ocean Biogeochemistry and Ecosystem Research: a new basin-wide, international program in the Indian Ocean

Raleigh R. Hood¹, Jerry D. Wiggert² and S. Wajih A. Naqvi³

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² Dept. of Marine Science, University of Southern Mississippi
³ National Institute of Oceanography

Introduction

Although there have been significant advances in our ability to describe and model the oceanic environment, our understanding of the physical, biogeochemical and ecological dynamics of the Indian Ocean is still rudimentary in many respects. This is partly due to the fact that the Indian Ocean remains substantially under-sampled in both space and time, especially compared to the Atlantic and Pacific Oceans. The situation is compounded by the Indian Ocean being a dynamically complex and highly variable system under monsoonal influence. The biogeochemical and ecological impacts of this complex physical forcing are not yet fully understood (Hood et al. 2008, Hood et al. 2009).

The SIBER Program reflects the importance placed on these issues by the International Geosphere-Biosphere Program (IGBP), the Scientific Committee on Oceanic Research (SCOR) and the Global Earth Observing System of Systems (GEOSS). SIBER, which has been developed with the guidance and endorsement of the IMBER and IOGOOS Programs, is ambitious and very broad. It is basin-wide, embraces biogeochemical research from the continental margins to the deep sea and tropic levels ranging from phytoplankton to top predators including fish and humans. SIBER is intended to provide scientific guidance and potential research foci to accommodate the broad (and often regional) interests of many countries that are interested in pursuing research in the Indian Ocean.

SIBER has been motivated by the deployment of new coastal and open-ocean observing systems in the Indian Ocean that have created new opportunities for carrying out biogeochemical and ecological research. The IOP is coordinating the deployment of a basin-wide observing system in the Indian Ocean (the Indian Ocean Observing System, IndOOS, which includes the Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction, RAMA) (International_CLIVAR_Project_Office 2006, McPhaden et al. 2009). Although there are significant challenges, deployment of an array of more 30 buoys is planned in the open ocean between 20° S and 20° N spanning the entire basin. These deployments, which are already well underway, are accompanied by Argo floats and a variety of physical oceanographic survey and mooring support cruises. In addition, several nations in the Indian Ocean are deploying coastal observing systems. All these programs provide a unique opportunity for staging international, interdisciplinary research. SIBER will leverage these sampling and monitoring activities and it will provide the basin-wide scientific coordination and communication required to predict Indian Ocean biogeochemical cycles and ecosystem dynamics in the context of climate change and other anthropogenic influences.

The SIBER Program reflects the importance placed on these issues by the International Geosphere-Biosphere Program (IGBP), the Scientific Committee on Oceanic Research (SCOR) and the Global Earth Observing System of Systems (GEOSS). SIBER, which has been developed with the guidance and endorsement of the IMBER and IOGOOS Programs, is ambitious and very broad. It is basin-wide, embraces biogeochemical research from the continental margins to the deep sea and tropic levels ranging from phytoplankton to top predators including fish and humans. SIBER is intended to provide scientific guidance and potential research foci to accommodate the broad (and often regional) interests of many countries that are interested in pursuing research in the Indian Ocean.

Recent developments

The draft SIBER Science Plan and Implementation strategy (SPIS) was submitted to IMBER and IOGOOS in January 2010 (Hood et al. 2011). Following peer review, the plan was been given preliminary approval by the IMBER and IOGOOS steering committees. The revised-final draft of the plan was submitted to IMBER and IOGOOS in early January 2011 and is now available on the SIBER/IMBER website.
With the assistance of the IMBER and SIBER International Program Offices, the SIBER SPIS is now undergoing final editing and formatting for hardcopy printing, and is slated for distribution in Spring, 2011.

The first national SIBER program has been established in India with funding provided by India’s Ministry of Earth Sciences (MoES). Funded proposals include 6 open ocean and 8 coastal/estuarine projects in the northern Indian Ocean.

The timeline for SIBER meetings and symposia that have been convened to date and that are planned for the future are detailed in Figure 1. SIBER convened its first official Scientific Steering Committee (SSC) meeting (SIBER-1) during July 12-15, 2010 in Perth, Australia in a joint meeting with IOGOOS, IOP and the newly formed Indian Ocean Resources Forum (IRF). The report from this meeting is available at http://www.imber.info/SIBER.html. This joint meeting brought together leaders in the Indian Ocean research community from many Indian Ocean rim nations and from all over the world. The goal of this meeting was to coordinate and facilitate international research efforts in the Indian Ocean.

Figure 1: SIBER Program timeline from Hood et al. (2011).

For SIBER, the major accomplishments and action items from this meeting include:
- Election of officers and establishment of a time frame for SSC member rotations.
- Addition of four new SSC members recommended by the IMBER and IOGOOS steering committees.
- Review of scientific work, plans and priorities of countries doing biogeochemical and ecological research in the Indian Ocean.
- Development of a strategy for tying SIBER into global carbon cycle research programs.
- Establishment of working groups dedicated to promoting SIBER in the EU, USA, Australia, Africa, Oman/Kuwait/Pakistan, Indonesia/Thailand and Japan/China.
- Establishment of working groups dedicated to updating the SIBER Science Plan scientific themes and questions to ensure that SIBER will continue to focus on the most important scientific questions in the Indian Ocean in the coming years.
- Development of plans to convene a joint SIBER/IOP workshop on biogeochemical sensor requirements for deployment on moorings and Argo floats.

Perhaps the most significant achievement of this meeting was the identification of resources for establishing a SIBER International Project office (IPO) in INCOIS (Indian National Centre for Ocean Information Services) in Hyderabad, India. The SIBER SSC submitted a proposal INCOIS to establish this office in September, 2010, which provided specifications and resource needs for the IPO. This proposal was accepted and an Executive Director has been identified to lead the new SIBER IPO (Dr Satya Prakash). A schematic diagram illustrating the relationships between the proposed SIBER IPO and the IMBER and IOGOOS IPOs along with oversight and responsibilities is shown if Figure 2.

Activities of the new SIBER IPO have been focused on developing a dedicated website for SIBER, publishing a quarterly newsletter and developing the agenda for the SIBER-2 (in series with IOP-8 and IRF-2) SSC meeting.
Figure 2: A schematic diagram illustrating the relationships between the proposed SIBER IPO and the IMBER and IOGOOS IPOs along with oversight and responsibilities.

Legacy

The coordination and integration of Indian Ocean biogeochemical and ecosystem research through SIBER will advance our knowledge of this under-sampled basin and provide a major contribution to the understanding of how regional and global change may impact biogeochemical cycles and ecosystem function, not only in the Indian Ocean, but in the Earth System, creating a lasting legacy on which future research can build. The scientific findings will inform scientists in the international community and provide a focus for future research on important regional, basin-wide and global issues. These findings will also provide policy makers with the sound scientific basis upon which to make decisions on how to manage Indian Ocean ecosystems. SIBER will leverage and strengthen GOOS and IMBER by promoting coordinated international, multidisciplinary research in developed countries, and also human resources and infrastructure development in many developing Indian Ocean rim countries.

References

PhD in Marine Science (Murdoch University)
The stability of shallow coastal sediments with and without seagrasses

Supervisors: Associate Professor Eric Paling, Dr Mike van Keulen and Dr Jennifer Verduin

Seagrass meadows in south-western Australia exist along a gradient of hydrodynamic disturbance and may be subjected to varying degrees of sediment movement leading to burial and erosion. Such disturbance may play a role in structuring seagrass assemblages and has contributed to the failure of some attempts at seagrass restoration in the region. The seagrasses in south-western Australia occur in a microtidal environment dominated by swell waves, locally generated wind waves and oscillatory currents. This poses challenges not experienced or studied in environments of the northern hemisphere where most other seagrass rehabilitation has taken place, which are dominated by unidirectional tidal currents. This thesis examined the relationship between seagrass assemblages and hydrodynamic disturbance, along with seagrass growth responses to changes in sediment height and the role of shoot density in determining grain size characteristics in natural and transplanted seagrass meadows.

The distribution of seagrass assemblages in Owen Anchorage was examined in relation to hydrodynamic disturbance, approximated by the calculation of a Relative Exposure Index (REI), variants of which considered effective fetch, depth and the long term wind record. Of the variants examined, REI including the full wind record best differentiated between seagrass assemblages and the significant differences between assemblages support the notion that hydrodynamic processes play a role in structuring seagrass distribution in the study area. Short term changes in sediment height were monitored at six sites using electronic sediment height loggers during summer and winter. Highest levels of sediment movement occurred in winter and were associated with westerly winds. Summer observations showed lower levels of sediment movement, with no particular wind characteristics associated with changes in height. Wind direction and uninterrupted fetch were more important than wind speed when determining the level of sediment movement in the study area.

In order to assess the extent to which transplanted Posidonia australis tolerates burial and erosion, transplanted sprigs were subjected to experimental changes in sediment height (-2, 0, 4, 8 & 16 cm) between November 2007 and April 2008 in the relatively sheltered Southern Flats area of Cockburn Sound. Transplants exhibited high survival rates (> 90%) in all treatments except the 16 cm burial treatment, which experienced total mortality. Active rhizome extension was observed in all treatments, along with the production of new shoots, except in the highest burial treatment. There was little evidence of an increase in vertical growth or the production of vertical shoots. This study indicated that P. australis transplants are tolerant to changes in sediment height between -2 and 8 cm, however a critical threshold exists between 8 and 16 cm, above which transplant mortality is high. As such, consideration of the scale of sediment movement will play an important role in site selection for seagrass restoration projects using this species.

The role of seagrass shoot density in influencing changes in sediment height and grain size characteristics was examined in both transplanted and natural Posidonia australis meadows over the course of one year. Transplanted seagrass patches at spacings of 1.0, 0.5, 0.25 and 0.125 m were established, along with natural meadows adjusted to 100, 75, 50, 25 and 0% of their initial shoot density. Short term changes in sediment height were similar between all transplanted and natural seagrass patches, with features such as sand ripples associated with the south-westerly sea breeze observed. Long term monitoring indicated that higher shoot densities experienced greater accretion than lower ones. Within the density manipulated natural meadows, higher shoot densities coincided with a relatively higher proportion of fine sediments. Sediments within the transplanted patches became increasingly fine over the course of the experiment, with higher densities showing the greatest proportion of fine sediment, although sediments within all transplant patches were significantly coarser than natural meadows. As such, grain size characteristics of the transplants represented an intermediate condition between natural meadows and unvegetated sediments. These results show that seagrass shoot density plays a role in structuring the sedimentary environment within seagrass meadows.
OPSAG Update

The Oceans Policy Advisory Group (OPSAG) has been busy over the last few months, especially with regards to providing input for the Marine National Facility and the Strategic Roadmap from DIISR. AMSA was involved on respective working groups. Some of the activities and other information from OPSAG member reports of interest for AMSA are collated below.

- **Feedback for Strategic Roadmap**
  A main emphasis of OPSAG over the last few months was related to the Strategic Roadmap for infrastructure investment of DIISR. Following the release of the first Discussion Paper, OPSAG collated feedback from members and comments made by AMSA were included. The Exposure Draft was released in late June. AMSA contributed to the submission, and I thank all AMSA members who provided feedback to me for this, which was also used for a separate submission from AMSA. The Exposure Draft differed a fair bit from the Discussion Paper. The strategic framework for research infrastructure investment, which included commitment to continuity and inclusion of human capital, was generally welcome. The marine environment capability area appeared too short and not well integrated. A strong focus on continuity of ocean observing was supported, but further linkages to the terrestrial environment as well as climate needed, in particular for research needs in the coastal zone.

- **Revision of “A Marine Nation”**
  A consultant has been appointed and work on the revision and data collection for this science capability update will be occurring over the coming months.

- **Ocean and Coastal Communicators Network (OCCN)/Science communicators**
  The OCCN has commenced activities and will be a case study in the “Inspiring Australia” initiative. The OCCN was involved at the deep-sea exhibition Oceans Week in June and will be active in the National Science Week in August.

- **Coastal bathymetry**
  OPSAG members are participating in the ICSM (Intergovernmental Committee on Survey and Mapping) Bathymetric Data working group. Terms of Reference have been finalised and an agenda specified.

- **Australian Ocean Data Network (AODN) (www.aodn.org.au/webportal/)**
  The AODN now has sections on model outputs and data products (e.g. the CSIRO Atlas of Regional Seas). The data recordings are growing, and eMII is part of the AODN.

- **Marine National Facility (MNF), RV Investigator**
  OPSAG has made suggestions on the governance to the Steering Committee of the MNF. The construction has been commissioned and detailed design and laboratory arrangements are being finalised, with changes being further discussed in consultation with the marine community.

- **Census of Marine Life (CoML)**
  A debrief on the CoML to Federal Ministers will occur in mid August in Parliament House. Workshops and presentations from the CoML were held during the AMSA conference in Fremantle, and several ideas for the future focus discussed. The agenda and procedure to move forward, including seeking funding opportunities, will be further discussed.

- **Australian research vessel status report**
  OPSAG seeks to collate information on Australia’s vessel fleet and OPSAG discussed details on what the survey should include (e.g. equipment, historical information). A list of questions was agreed and information will be assembled to be included in the revision of “A Marine Nation”.

- **Australian marine stations**
  Following on from the above initiative, AMSA suggested a similar survey on Australia’s land-based marine stations, and OPSAG agreed to go ahead with it through the consultant for the revision of “A Marine Nation”.

- **Ministerial Councils**
  Changes to the COAG ministerial councils are currently occurring, with MACC being replaced by Ministerial Standing Councils on Environment and Water (MSCEW). The transition is not yet clear in regards to working group responsibilities for coastal and marine matters. Yet, the NRM Ministerial Council has agreed on a national approach to address climate change impacts in coasts and oceans. Selected information from OPSAG member reports that are of relevance for AMSA are briefly summarised below, if not covered in the points above.

**Australian Antarctic Division (AAD)**
The AAD report included some interesting research findings with regards to the life cycle of krill, with adults feeding at the seabed, which also necessitates re-appreciation of the iron cycle. Another research highlight was insight gained on buried landscapes, as large areas underneath the East Antarctic icesheets were found to lie below sea-level.

The AAD has a new Director, Dr. Tony Fleming, who will commence in August. He was previously National Operations Manager for the Australian Wildlife Conservancy.

The Australian Marine Mammal Centre has been providing scientific advice for Australia’s position at the International Whaling Commission (IWC), which took a strong position on mammal conservation at the recent IWC meeting. A Southern Ocean Research Partnership with a focus on blue whales is being formed.
Australian Institute of Marine Science (AIMS)
Construction of the National Sea Simulator was launched by Minister Carr on 13th of July. Funding for this facility has been provided by the Super Science Marine and Climate initiative. The simulator will allow controlled manipulative experiments on the resilience of tropical marine organisms.

The North Australian Marine Research Alliance, a collaboration between AIMSA, Charles Darwin University, NT Government and ANU, has been carrying out work on seafloor habitats, biodiversity, living marine resources and bio-indicators in Darwin Harbour and the Arafura and Timor Sea. Some of the work is also aligned with IMOS to monitor the Indonesian Through-flow.

Research into natural CO2 seeps in PNG has provided insight into response of coral reefs to greenhouse gas emissions and acidification.

Ian Poiner will continue for another three months as CEO of AIMS for a transition to the new CEO.

Bureau of Meteorology (BoM)
Extensions for operational oceans forecasting are progressing.

Members from several Australian agencies attended the 26th Assembly (and 50th anniversary) of the IOC (Intergovernmental Oceanographic Commission) in early July. GOOS (Global Ocean Observing System) governance is being restructured, replacing the intergovernmental layer with a steering committee. Support for data management, tsunami and ocean observation was strong.

CSIRO
The National Environmental Research Program (NERP) Marine Biodiversity Hub is waiting for approval for its research plan. The research is expected to run until December 2014.

Near real time modelling, such as on shelf hydrodynamics and a biogeochemical model, is now delivered through the AODN. Ocean moorings were deployed to monitor the Indonesian and Solomon Sea Throughflows.

CSIRO has signed an MoU with NOAA on climate science.

Department of Innovation, Industry, Science and Research (DIISR)
A Strategic Framework for Research Infrastructure Investment was developed by NRIC (National Research Infrastructure Council), and already applied for the 2011 Strategic Roadmap for Australian Research Infrastructure. The final roadmap is anticipated for late August or September.

Australia has engaged with Europe on research infrastructure, including marine information systems. Further collaboration on marine observation is under discussion with New Zealand.

Under the Collaborative Research Network (CRN) program, which seeks to build research capacity by partnering between higher education institutions, three projects with marine elements were announced in late May.

Department of Sustainability, Environment, Water, Population and Communities (SEWPaC)
Marine bioregional planning is progressing and a SW plan released for consultation. The framework of this plan may be applied to further marine bioregional planning. ‘Goals and principles’ are used instead of CAR principles for marine park planning.

Geosciences Australia (GA)
GA is active in seabed mapping, including assessments of carbon storage potentials in offshore basins. GA is part of the NERP Marine Biodiversity Hub, which will extend some of the mapping and video observations. Marine surveys are planned around northern and western Australia for seabed habitats and hydrocarbon seeps. GA is also working with the AAD on seabed geomorphology and benthic communities in Antarctica. GA continues to provide support and advise on coastal vulnerability on various levels.

Great Barrier Reef Marine Park Authority (GBRMPA)
The Marine and Tropical Sciences Research Facility is wrapping up. GBRMPA has been engaged in the research plan for the tropical ecosystems hub under NERP (National Environmental Research Program). The GBR has been subjected to a decade of extreme weather events with flooding and cyclones, and there are strong signs for a cumulative impact of these events, which has left the reef in very poor conditions. Seagrass dieback has lead to increased turtle and dugong mortality.

IMOS (Integrated Marine Observing System)
The IMOS data base is growing and the uptake of data was also apparent in numerous talks at the latest AMSA conference in Fremantle. Several positions on the IMOS Advisory Board are turning over in the coming months. IMOS will liaise with the Terrestrial Ecosystem Research Network (TERN) on the coastal zone.

Together with AIMS, IMOS has deployed moorings on the Indonesian Throughflow, and further infrastructure will be deployed on the Northwest shelf, also made possible by co-funding from the WA Government. Meetings in India are under way for the Southern Ocean Observing System (SOOS).

UNESCO IOC (Intergovernmental Oceanographic Commission)
The Perth office continues to provide a strong link into the various Ocean Observing Systems of the IOC with relevance to the oceans around Australia, and facilitates the respective international collaboration.

I strongly invite AMSA members to liaise with me on any matters pertaining to oceans policy, to ensure that AMSA represents the wider marine science community on OPSAG.

Sabine Dittmann, AMSA representative on OPSAG
I was fortunate enough to be chosen by AMSA to represent it at the recent “Science meets Parliament” (SmP) in Canberra. Organised by the Federation of Australian Scientific and Technological Societies (FASTS), now Science & Technology Australia, the theme this year was “Respect Science”. During the first day we were welcomed by the FASTS president and given an overview of SmP. The CEO of FASTS then told us how the system in parliament and groups like FASTS work in the parliamentary system. The Director of Public Affairs and the Media from the Australian Medical Association spoke about science being a voting issue and how it would rate at the next election. For most of the rest of that day we learnt from political reporters how best to convey our scientific messages to the public and parliamentarians. The exaggerated media cover of climate change was particularly spoken about and the bias towards covering climate change deniers was condemned by all. Media lobbyists and people from the Australian Academy of Science and the Australian Institute helped us in our communications with politicians, in preparation for the next day. We heard from the Department of Treasury about how the budget for science operated.

That evening was the Gala Dinner in the Great Hall of Parliament House. A politician at each table was the idea but many were missing. John Brumby, former Premier of Victoria, gave the keynote address on how well his government had developed technology in Victoria. Annabelle Crab (ABC) kept us amused but it was a little disappointing not to have more politicians there.

The next day was more oriented around Parliament. At breakfast we had a briefing on the Excellence in Research for Australia (ERA) initiative that will be developed by the Australian Research Council delivered by its CEO. The ERA will assess research quality within Australia’s universities. Then the Minister for Innovation, Industry, Science and Research spoke about his portfolio.

Later that morning we met the politician assigned to us, there were three scientists assigned to each politician. I am not sure how these matches were made. I met Mr Darren Chester the National Party member for Gippsland. I had prepared a five minute talk on the need for marine protected areas, public education on marine environmental matters and marine environmental monitoring. Although the Gippsland Lakes are of state interest, he was interested in pollution issues there as they are part of his electorate. We also talked about food webs and trophic levels as he wanted to know about the importance of biological diversity. I followed up this meeting with a letter a week later.

Lunch was at the National Press Club where the Chief Scientist for Australia, Professor Ian Chubb gave an amusing and illustrative talk on his role and answered questions from the press mainly about climate change. Later we went to the Public Gallery to watch Question Time, frankly I was disgusted. Members of the House of Representatives were hurling insults at each other and accomplished nothing in the two hours I was there. Children from primary schools were also in the Public Gallery and must have been disappointed at the leaders of our country. At one stage the Speaker mentioned that some of Australia’s leading scientists were in the Public Gallery and were observing the antics of the Members. We clapped and even the ushers were amused. A final cocktail was shared with Senator Christine Milne who spoke very clearly on Greens issues on the environment and then spent some time discussing with individuals on various topics.

My impressions of the Science meets Parliament are that it was worthwhile and constructive. It was a little disappointing that more politicians didn’t take part and that the ones we met were not more associated with our professional science. That is not to say that Mr Chester was not a good listener and that I didn’t enjoy my brief talk with him.

Hugh Kirkman
The Australian Marine Sciences Association and
The New Zealand Marine Sciences Society
invite you to
AMSA-NZMSS 2012
Marine Extremes - and Everything In Between

Wrest Point Hotel
Hobart
Tasmania

1st - 5th July 2012

Notional Dates
Abstracts Submission Opens:
1st January 2012
Close of Abstract Submission:
28th February 2012
Earlybird Registration Close:
1st May 2012

AMSA and NZMSS have a four-yearly joint conference and after the warm welcome to the Aussies at NZMSS-AMSA in 2008 in Christchurch, AMSA is very pleased to be welcoming the NZMSS members to our joint 2012 conference.

AMSA and NZMSS are both very excited to offer members and visitors the opportunity to join us in the beautiful, exciting and interesting city of Hobart. Our program and social program will be second to none, showcasing Tasmanian produce and wine at every function. Excellent accommodation is offered on-site or nearby. We are putting together some interesting pre- & mid-conference trips, and invite you to plan a break and take advantage of the warm friendliness and beauty of Tasmania.

Call for Symposia and Thematic Sessions
AMSA-NZMSS 2012 organisers are now calling for expressions of interest for special symposia and thematic sessions addressing Marine Extremes - and Everything In Between.

Theme summary
Extreme events such as cyclones, floods, tsunamis, dust storms, thermally-induced bleaching, hypoxia, ocean acidification, biological invasions or ecosystem shifts, to name a few, can periodically dominate a marine environment. Extreme events provide a means of expanding our knowledge and testing our understanding of environmental response to a single, pervasive force. Similarly, extreme environments, such as polar seas, deep-sea habitats or biodiversity hotspots, can challenge the paradigms developed in more moderate settings. Recent evidence and climate-scale predictions point to an increase in extreme events across local, regional and global scales. Research that improves our understanding of how to manage, adapt and mitigate extreme events and to understand processes in extreme environments is critical to policymakers and stakeholders, both now and into the future. AMSA/NZMSS 2012 welcomes suggestions for sessions, and invites submissions, of presentations that address extreme ecological, physical, biological and chemical events in marine environments.

If you wish to submit ideas for symposia and thematic sessions, please email Mark.Baird@uts.edu.au.
New South Wales

It is with great pleasure that I announce the 2011 winner of the Sydney Aquarium Conservation Fund – NSW AMSA Student Award: **Michelle Voyer, University of Technology Sydney** *A comparative analysis of media coverage of marine parks in NSW*

The award is valued at $2500 and was established to support conservation-based research of marine ecosystems by an outstanding postgraduate student at a NSW university.

Michelle's research is investigating the role of the media in determining the level of community acceptance of two NSW marine parks, one of which appeared to generate more controversy and hostility than the other. Specifically, her research asks:

- If a significant difference exists in the community responses to each marine park, was this correlated to any differences in the level of media coverage at that time? (e.g. did greater critical media coverage equate to greater numbers of critical submissions)
- How successful were media campaigns by key sectoral interest groups (e.g. did any particular interest group gain greater prominence in the media in either marine park and did this translate into greater numbers of submissions of the type they advocated?)
- How did media coverage change over time?

Michelle was presented with the award at a ‘Celebration of Early Career Researchers’ at Sydney Aquarium on 14 June.

The two runners-up were also presented with certificates:

- **Suzy Evans**, University of New South Wales, ‘The importance of genotypic diversity in endangered seagrass populations: conservation and management of Posidonia australis in NSW’
- **Mirella Verhoeven**, Macquarie University, ‘Linking temporal patterns in seagrass growth characteristics with detrital pulses’

**Andrew McKinley**, UNSW, the 2010 winner, presented the results of his research into the effects of pollutants on larval fishes, one year on.

NSW AMSA thanks Sydney Aquarium for their generous sponsorship of this event, held in the Reef Theatre, with its mesmerising floor to ceiling exhibit! It was particularly great to see so many Early Career Researchers at the event. I look forward to seeing you at other NSW AMSA functions!

**Melanie Bishop**, President, AMSA NSW

Northern Territory

Following a year in recess, AMSA NT has been re-invigorated, following a Special Meeting in February 2011, and the appointment of 7 Branch Committee members. Despite the small size of the Territory's marine science community (i.e. the smallest in Australia), the Territory is facing many sustainable development challenges, particularly from rapidly increasing coastal and offshore development. To meet this challenge, marine science in the Territory is experiencing significant growth with the formation (in November 2009) of a major ‘marine science hub’ in northern Australia, with the signing of a Memorandum of Understanding (MOU) for collaborative marine science among 4 major research organizations: the Australian Institute of Marine Science (AIMS), Charles Darwin University (CDU), Australian National University (ANU) and the Northern Territory Government (NTG). Postdoctoral and higher degree research scholarships are an integral component of the alliance. The creation of the Darwin-based, Northern Australian Marine Research Alliance (NAMRA) recognizes the globally significant, ecological values of northern Australia’s remote coastal and marine ecosystems, and the pressures, impacts and threats they face – and significantly, the critical need to build marine science capacity and capability in the region to address these challenges. NAMRA is further being supported by a $5M expansion of the tropical marine research infrastructure at the Arafura Timor Research Facility (ATRF) in Darwin (under the 2009 Federal Budget announcement). This will provide much-needed office accommodation and aquaria facilities for marine researchers and students at the ATRF. At the local and national level, NT marine science will be further boosted with funding under the NERP Northern Hub Darwin and the Marine Biodiversity Hub – and also, through significant and ongoing marine R&D investment in Darwin Harbour (particularly in light of the proposed $12B INPEX gas project).

The Territory has also been the focus of considerable international marine science activity this year, with the deployment of the IMOS Indonesian Throughflow mooring arrays in the Bonaparte Gulf and also, the Timor and Ombai Strait (Timor Leste) - and also, the Darwin launch in June 2011 of the second, Arafura Timor Seas Ecosystem Action (ATSEA) International Research Cruise (aboard the AIMS RV Solander) – with researchers from Australia, Indonesia and Timor Leste undertaking oceanographic and biological studies of the Sahul Shelf, Big Bank Shoals and southern coast of Timor Leste. This was followed by a major Timor Leste and Indonesian delegation to the AMSA 2011 conference in Fremantle to attend a special symposium on marine science cooperation in the Arafura & Timor Seas (sponsored by CDU and the UNDP-GEF funded, ATSEA Program). This was not only Timor Leste’s first attendance at AMSA, but also, the first major, trilateral, meeting specifically on regional marine science cooperation between Indonesia, Timor Leste and Australia.

**Upcoming Events**

While AMSA NT current membership is low, the branch will be tapping into the growth in marine science in the Territory, through a major recruitment drive (particularly targeting new marine postgraduate students). In addition, the Branch has several major attractive ‘marine activities’ scheduled for 2011. These forthcoming events include a field naturalist day, exploring beach and mangrove environments (with Dr Richard Willan, Museum & Art Gallery); a one-day seminar on ‘Marine Science, People and Dreaming’ (funded by Inspiring Australia and organized in partnership with NAMRA); Bowling by the Beach (barbeque and lawn bowls at the Fannie Bay Bowling Club); and to finish the year, ‘Snorkelling at the Ski Club’ (November), i.e. snorkelling the depths of the Ski Club pool for some marine treats with prizes for the best snorkeler!

**Karen Edyvane**, AMSA NT
Victoria

The Victorian branch has had a busy start to 2011 providing opportunities for young marine scientists and raising awareness of relevant marine research.

In early March 2010 AMSA VIC held the biennial careers information session for Victorian undergraduate students called: “My friend the jellyfish & other stories...” It was hosted at MAFFRI in Queenscliff and allowed many enthusiastic undergraduate students to meet and hear from early career marine scientists from a wide range of fields including marine biology, catchment management, fisheries science, oceanography, and invasive species to name just a few. Sarah Butler did an outstanding job pulling the event together and we warmly thank her for her gallant efforts.

In March we were treated to two public presentations, the first by Agnes Lautenschlanger on “Input of primary production into the estuarine benthic invertebrate foodweb in an intermittently open estuary” followed by Richard Piola “Assessing the efficacy of heat treatment for the control of vessel niche area fouling”. The meeting also saw the unveiling of AMSA Victoria’s logo, the Weedy Seadragon, which was brilliantly designed by Prue Addison.

In May Justin Cutajar traveled down from Nth QLD to deliver on his promise to present on Spartina. His talk was titled “Impacts of the invasive grass, Spartina anglica, on benthic macrofaunal assemblages in a temperate Australian saltmarsh”.

All seminars have been held in the Drummond Room at Melbourne University – it is a pleasure to acknowledge the Zoology Department who have kindly made this venue available to us.

We also announced the student travel award winners for 2011. The awards assist Victorian Postgraduate students to attend the National Conference. This year Jo Browne won first prize ($1000) and Kade Mills & Joel Williams were runners up ($750 each). Jo’s presentation in Fremantle was on “First use of DNA sequencing to link a jellyfish to fish in a digenean life-cycle”. Kade’s talk was titled “Evaluation of recreational fishing reefs for enhancing fishing opportunities in Port Phillip Bay – comparison of monitoring data and boat ramp surveys” and Joel’s was “Spatial distribution of larval black bream (Acanthopagrus butcheri, Sparidae: Munro 1949) in relation to the physico-chemical structure of a drought stricken estuarine lagoon system”. Victoria had a strong contingent, dominated by students, attending the annual conference in Fremantle. Kade Mills was on a role, first winning the AMSA Vic travel award followed by being offered a job after his presentation and then went on to win the best oral presentation award, congratulations Kade!

Kimberley Millers has recently replaced Isla Fitridge on the Federal Council. We thank Isla for several years of fantastic service on the council.

Perhaps our most significant event this year was the awarding of Victoria’s third life member – Garry Poore who is recognized for 40 years commitment to AMSA.

Upcoming Events

Planning for a Sustainable Seafood Night is well underway, the event will include a panel from industry, academia and government.

Scientific writing workshop to be held in September. Public seminars followed by wine and cheese

Recently completed PhD’s

Isla Fitridge recently completed her PhD thesis through the University of Melbourne on the ecology of hydroids in Port Phillip Bay and their impacts as fouling species in longline mussel culture. She is now a postdoctoral fellow at Melbourne University, developing methods to avoid, prevent and treat biofouling in mussel culture. You can read about her biofouling research in the next issue of the Bulletin, due out in November.

Andrew Scardino, President, AMSA VIC

South Australia

Warm greetings to all from AMSA-SA during this remarkably cold winter across southern Australia. Fortunately temperatures were higher on 3 April when AMSA-SA teamed up with Reef Watch for their annual Marathon Dive at Port Noarlunga Reef.

The day allowed for keen divers and snorkelers to take part in fish monitoring surveys. Participants were provided with a short briefing on local fish species using identification cards and slates were provided to record what was seen on the reef. A beautiful, sunny day brought out a range of enthusiasts, including regular Reef Watch members and local families. A free BBQ was provided for all divers and snorkelers.

This activity allowed AMSA-SA to contribute in the organising and running of the event, whilst promoting more AMSA-SA activities.

Now that it is mid-winter, the Committee’s next activity is indoors, with a film night planned for 26 July at the University of Adelaide’s Benham Lecture Theatre. Associate Professor Simon Goldsworthy will present “The Ocean's Supernum”. This one-hour natural history documentary filmed by National Geographic features previously unknown underwater behaviour and a passionate and engaging scientist (Simon!) whose mission it is to unlock the secrets of the most devoted of all marine mothers – the endangered Australian sea lion. Filmed on Dangerous Reef and the surrounding waters of South Australia, The Ocean's Supernum reveals the Australian sea lion's devotion to her young and the continuation of her lineage against historical foes and the forces of environmental change. Simon will open the night with an entertaining back story to the film and be available for questions afterwards. Of course there will be drinks, nibbles and lots of socialising too.

Finally, the Committee is busy planning its Annual General Meeting and Symposium to be held 7 September at the SA Water Learning Centre, Adelaide. The Symposium’s focus is the Great Australian Bight; the world’s longest ice-free east-west extent of coastline and front to the circum-polar waters of the Southern and Antarctic Oceans. Its long period of geological isolation, persistent high-energy environment, warm and cold water intrusions and nutrient upwellings make it a biodiversity “hot spot”. Uses of the region include: Native Title interests, commercial fisheries, petroleum and other mineral exploration activities, tourism interests, and State and Commonwealth Parks. An increase in activities is likely with a concomitant need to base future management decisions on sound information. The daylong Symposium aims to present a comprehensive picture of what is known so far and determine where future research efforts could be directed. Contributions from marine scientists, managers and students presenting their GAB related work are welcome.

Find us on the SA State Branch page of the AMSA website.

AMSA SA Committee
Western Australia

The 2011 AMSA national conference was held in Perth in July, after a tremendous amount of effort by many people. There was a huge variety of topics presented and the talks were of a high standard. The conference has been the main focus of AMSA WA and as such, we’ve been a little less active in some areas. The AMSA WA annual general meeting was held in April, with the conference being the major topic of discussion. The honours prize night, which is usually held in conjunction with the branch AGM, was postponed and integrated with the conference. This year’s prize was slightly different to previous years, with only one winner and no second or third place prizes. Congratulations to Gabrielle Cummins, how was awarded the 2011 AMSA WA honours prize for her talk titled “Humpback whale distribution and habitat use in the Nickol Bay region, Western Australia, a potential resting area”.

While we are all recovering from the conference, there is at least one event on the horizon. AMSA WA will be holding it’s end of year sundowner later in the year (probably November), with details being published in the branch mailing list closer to the event. As always, keep an eye on the branch mailing list for details of upcoming events.

Warren Chisholm, Committee Member, AMSA WA
Seabirds set for better protection

Efforts are being made to better protect seabirds in Australia’s southern fishing waters. By the end of October, all fishing trawlers in the Great Australian Bight and South-East fisheries of South Australia will need seabird management plans.

James Findlay from the Australian Fisheries Management Authority (AFMA) says such arrangements are working well in Australia’s Antarctic fishery. “Seabirds are attracted to trawlers for a free feed. They come in to feed on the fish scraps during the fish processing operations,” he said. “During that time they’re at risk of injury from hitting cables or occasionally entanglement in nets.

“Industry and AFMA are keen to put in place compulsory measures to make sure the risk to seabirds around trawl vessels is as close to zero as possible.”

Simon Boag from the South-East Trawl Fishing Industry Association says most boats already have voluntary plans. He says fishing crews have a long history of caring for seabirds and that is reinforced by superstition.”It’s bad luck (to harm them) and they are a magnificent creature,” he said.

“Even if it’s accidental and birds are bouncing off the cables we use to tow nets it’s still bad luck so it’s certainly not hard to convince fishermen to take steps to avoid interactions with seabirds.”

Source: www.abc.net.au

New approach to sustain ‘forage’ fishing

Reduced catches of small oceanic ‘forage’ fish like sardines and anchovies may be required in some ocean areas in order to protect the larger predators that rely on these species for food. This is a finding of the first major study of the ecosystem effects of fishing forage species: ‘Impacts of fishing low trophic level species on marine ecosystems’, reported today in the journal Science.

Dr Tony Smith of CSIRO’s Wealth from Oceans Flagship led the international team of 12 authors from Australia, the United States, the United Kingdom, South Africa, France and Peru. “Forage species such as anchovy, sardine, herring, mackerel and krill often are the main food source for larger predatory fish, marine mammals and seabirds,” Dr Smith said.

“They account for more than 30 per cent of global fisheries production for use directly as human food and indirectly in livestock feeds, and demand is rising.”

Previous studies have raised concerns about the flow-on effects on seabirds of forage fishing off Peru and South Africa and in the North Sea, and of rising krill catches on whales in the Southern Ocean. “In this study we used three different types of models to examine the broader ecosystem effects when forage fish are harvested at levels that maximise sustainable yields,” Dr Smith said. “We found forage fishing had large impacts in the five areas studied (the northern Humboldt, southern Benguela and California currents, North Sea and south-east Australia). “These impacts were both positive and negative, and varied across forage species, ecological groups and ecosystems.”

The greatest impacts were seen for forage species that dominate their local food supply, such as Peruvian anchovy in the northern Humboldt ecosystem, and for forage species that are highly connected to many other species across the food web. Some ecological groups declined by more than 60 per cent as a result of forage fishing at conventional levels. Marine mammals and seabirds were often affected. “The modelling showed that halving fishing rates for the high-impact species would greatly reduce the impact on ecosystems, while still achieving 80 percent of the maximum sustainable yield,” Dr Smith said. “This reduced level of fishing could improve economic outcomes for forage fisheries while also improving yields for some other commercial species.”

He said these results could be combined with other management measures, (such as closing areas near marine mammal and seabird breeding colonies to fishing), to achieve ecological objectives while ensuring forage fish continue to contribute to global food security.

The Marine Stewardship Council (MSC), which partly funded the study, is revising its guidance on assessing forage fisheries in line with these outcomes. More than 10 per cent of global fishery production is assessed for sustainability within the MSC program.

Source: www.csiro.au

Online tracking of tagged fish

THE CSIRO has developed an innovative website called Ocean Tracks which might just get the computer generation interested in how fish behave in their oceanic environment.

Ocean Tracks is a science-meets-game engine website that displays the paths swum by tagged fish. The website follows three coastal and six open-ocean fish from its database, including Mirella the gold spot trevally, Nero the spangled emperor, Hitomi the bigeye tuna, Papa the whale shark and Galileo the tiger shark.

The CSIRO hopes that developments such as this will help transform the way people think about and interact with their environment. The web application shows lifelike, three-dimensional animations of fish in their underwater environment. The site offers stories about the animals and information on tagging research. Visitors can link Ocean Tracks to their Facebook page, recommend it to their friends and share it through other social sites and online communities.

Source: www.oceantracks.csiro.au
CO₂ seeps in PNG give insights to the future of coral reefs in a world of increasing greenhouse gas emissions

Natural carbon dioxide (CO₂) seeps in Papua New Guinea have given scientists rare insights into what tropical coral reefs could look like if human-induced atmospheric CO₂ concentrations continue to rise unabated. At present rates of increase, the Intergovernmental Panel on Climate Change (IPCC) forecasts atmospheric CO₂ levels of about 750ppm or more by 2100. About a third of this extra atmospheric CO₂ is absorbed by the world’s oceans. As a consequence, pH levels will drop from 8.1 to 7.8, resulting in increased ocean acidification which impacts on coral reef ecosystems.

AIMS scientist Dr Katharina Fabricius has led two research expeditions, with researchers from six countries including Papua New Guinea (PNG), to study three natural CO₂ seeps in Milne Bay Province, PNG. This unique location is the only presently known cool, CO₂ seep site in tropical waters containing coral reef ecosystems. The study has given scientists unprecedented insights into what coral reefs would look like if greenhouse gas emissions and resulting ocean acidification continues to increase at present rates. At the seeps, streams of CO₂ bubbles emanate from the ocean floor due to volcanic activity.

A scientific paper on the first results of this study has just been published in the prestigious, international scientific journal Nature Climate Change. It is the first scientific paper to present data on tropical coral reef ecosystems that are naturally adapted and acclimatised to elevated CO₂.

“In the past, we have relied on short-term laboratory experiments to tell us what happens to marine organisms exposed to ocean acidification,” Dr Fabricius said. “Those experiments indicated deleterious effects on the performance of many species.”

While laboratory experiments are important, Dr Fabricius said the natural CO₂ seeps in Milne Bay provided a more complete picture about the ecological consequences for coral reef communities when exposed to higher levels of CO₂ for many decades. This natural setting allowed scientists to compare coral reef communities along a gradient from normal present day to low pH. “Our research showed us there will be some winners, but many more losers, when tropical coral reefs are exposed to ocean acidification,” she said. “We found that as pH decreases the number and types of corals making up coral reefs are much reduced. Diversity of corals drops by 40 per cent, and the reef becomes dominated by one form of corals, massive Porites.

“The cover of the more delicate tabulate, foliose and branching corals was reduced three-fold near the CO₂ seeps. Similarly, the abundance of soft corals and sponges were also significantly reduced. Most importantly we found that reef development ceased below pH level 7.7.” One of the AIMS co-authors, Dr Janice Lough said: “The study has shown that massive Porites corals are able to tolerate relatively high levels of CO₂. However, their growth rates were 30% lower than expected, both at the seep sites and at the surrounding reefs. We attribute this slow growth to recurring heat stress, with nine of the last 12 years having experienced extremely high seawater temperatures”.

Amongst the few winners at higher levels of CO₂ were seagrasses which showed increased cover with three to four times more shoots and roots than under normal conditions. Dr Fabricius said the study showed that ocean acidification leads to profound changes in coral reef ecosystems.

“The decline of the structurally complex corals means the reef will be much simpler and there will be less habitat for the hundreds of thousands of species we associate with today’s coral reefs.

“They would not be the richly diverse and beautiful habitats we currently see in places such as the Great Barrier Reef.” “There are also fewer juvenile corals in areas with high CO₂ levels, therefore coral reefs in those environments face greater challenges recovering from disturbances such as tropical storms.” Ultimately, what we observed was that the diversity of reefs progressively declines with increasing CO₂. At concentrations similar to those predicted for the end of this century at a ‘business as usual’ emissions scenario, the “coral reef” observed was depauperate and lacked the structural complexity of present healthy tropical coral reefs. These changes are simply due to ocean acidification, i.e., even without the projected +2°C warming of the oceans associated with rising greenhouse gases. The 0.5°C warming we have already observed in the tropics in the last 50 years has already caused mass coral bleaching events and declining coral calcification.”

Dr Fabricius said: “The rate of increase of atmospheric CO₂ continues to accelerate due to human activities. The range of exposures at the Milne Bay seep sites are comparable to end-of-century CO₂ projections. “It would be catastrophic if pH levels dropped below 7.8. This study proves we must urgently transition to a low CO₂ emissions future or we face the risk of profound losses of coral ecosystems.”

Dr Fabricius said it was important for the researchers to continue their study in the unique location in PNG. She said the $30 million new Australian ocean simulator currently under construction at AIMS’ site in Townsville would also contribute significantly to researchers understanding of impacts of CO₂ on organisms in Australia’s valuable and complex tropical oceans territory. The new Australian ocean simulator is a national infrastructure asset that will attract scientists from throughout the world, working on cutting edge climate change research. It is aimed to deliver much improved data and knowledge on the impact of global change, climate adaptation and mitigation issues. The new facility will boost collaborative, world-class scientific and technological research, and will coordinate efforts in tropical marine science.

Source: www.aims.gov.au
Canadian cod make a comeback

At last, a bit of fishy good news: cod have begun returning to Canadian seas where they were fished to near-extinction in the early 1990s. The finding shows that fishing bans are paying dividends, which should boost annual calls to impose similar bans in European waters.

“Cod is about a third of the way to full recovery, and haddock is already back to historical biomass levels,” says Brian Petrie of the Bedford Institute of Oceanography in Dartmouth, Nova Scotia. Petrie and his colleagues monitored populations of cod and 17 other species in Canadian waters from 1970 to 2010. Bans on fishing cod and haddock were introduced in the Grand Banks in 1992 and the Eastern Scotian shelf system in 1993.

The surveys show that fish are back on the Eastern Scotian shelf, an area that has a similar ecosystem and mix of species to the Grand Banks and suffered a similar collapse in the early 1990s. Cod prey on smaller, plankton-eating fish like capelin and Atlantic herring. The population of these species exploded once the cod were gone.

The plankton-eating fish began dwindling again once they had exhausted food supplies, but the cod took longer than expected to return because these fish also eat cod eggs and larvae. The recovering cod are about 0.5 kilograms lighter at 5 years old than before. “There are reports of cod in the early stages of recovery in the Grand Banks area too,” says Petrie, who believes the results are the best justification yet for fishing bans.

For more information see this recent article published in Nature; Kenneth T. Frank, Brian Petrie, Jonathan A. D. Fisher & William C. Leggett (2011) Transient dynamics of an altered large marine ecosystem. doi:10.1038/nature10285
Source: www.newscientist.com

Rate of change key to reef survival

The predicted global-scale collapse of coral reefs within the next few decades due to climate change overestimates the speed of the decline and fails to adequately account for their potential for adaptation, say Australian researchers. However Professor John Pandolfi, of the University of Queensland’s School of Biological Sciences, and colleagues say evolutionary adaptation can only happen if human impacts on reefs are reduced and carbon emissions dramatically reduced.

In a recently published review article, Pandolfi says latest research shows climate change remains the greatest threat to the world's reefs. However, he adds recent research shows there is great variation worldwide in reef organisms’ ability to evolve and adapt to changes in sea surface temperature, ocean acidification, sea level and mineral saturation state.

Pandolfi says shallow water tropical reef organisms existed throughout the past 540 million years of the Phanerozoic through periods when temperatures were more than 7°C higher than today and CO₂ was more than 20 times greater than pre-industrial levels. “[But] the overall evidence from the fossil record indicates that rates of change are crucial for determining ecological outcomes. We can’t find any time in the geological past when the rate of CO₂ rise is equivalent to that of today,” he says.

While previous evolutionary change had occurred over substantial time scales, adaption can occur over decadal time scales if there is sufficient evolutionary potential within a population, says Pandolfi. “When environments change rapidly, extinction risk declines with increasing genetic variation,” he says. “The larger the population size, the more genetic variation and more potential to evolve under environmental changes.”

Pandolfi says significant changes to the climate have been occurring over the past 150 years and organisms would already be adapting. However, Pandolfi says only those reefs that are in as good condition as possible will be able to cope with the changing environment. “Non-climate-related threats already confronting coral reefs are likely to reduce the capacity of coral reefs to cope with climate change. If we can manage reefs more locally ... we are giving them the evolutionary tools they will need and that hopefully they will use.”

He says there are three key factors that will determine if reefs can adapt: reducing of local stressors such as over-fishing, pollution and habitat destruction; expanding current management strategies such as marine protection zones, ecosystem-based management and water quality issues; and slowing climate change by aggressive reduction of CO₂ emissions.

Source: www.abc.net.au
Vale Bill Dall  
(26 February 1926 - 21 April 2011)

Dr William (Bill) Dall, founder of the CSIRO Marine and Atmospheric Research Cleveland Marine Laboratories south of Brisbane and officer-in-charge from 1975 to 1990, died in Brisbane on 21 April 2011 at the age of 85. Bill made an outstanding contribution to CSIRO and to Australian marine science in his 50-year career. He revised the taxonomy of penaeid prawns, expanded the CSIRO Division of Fisheries, and led exemplary research that provided a scientific foundation for management of the Northern Prawn Fishery.

Bill Dall was born on 26 February at St Martin’s Hospital, Brisbane, the second son of Flora and William Gordon Dall. He and his brother Morven used to sleep in the open veranda of their home at Yeronga near the Brisbane River, and played in bushland at nearby Moorooka. At 18 he joined the Second Australian Imperial Force and served in Borneo at 19. After the war he completed Commonwealth Reconstruction Training, then a bachelor of science at the University of Queensland.

In 1952 Bill graduated, married Patricia Anderson, and began a master of science while working as a graduate demonstrator in zoology for £686 a year, a stretch for a growing family. His masters’ project on the taxonomy and biology of Moreton Bay penaeid prawns helped to guide the fledgling open water trawling industry and led to his doctoral research on penaeid prawn metabolism.

In 1955 Bill joined CSIRO Division of Fisheries at Cronulla to study zooplankton of the Tasman Sea and Bass Strait, and its place in tuna and barracouta biology, spending much time aboard the CSIRO research vessel, the schooner Derwent Hunter. Three years later he returned to the University of Queensland where he became a senior lecturer in zoology.

In 1967 Bill was appointed associate professor at Canada’s University of Guelph. While there he did post doctoral research on American lobster at the Fisheries Research Board laboratory at St Andrews, Halifax.

In 1969, at 42, he rejoined CSIRO to research the physiology of the western rock lobster at the Division of Fisheries and Oceanography at Waterman in Western Australia. There he appointed David Smith who was to work with Bill for the next 25 years. “Bill was a leader who had the courage and foresight to employ staff who may not previously have had the opportunity to prove their worth,” David says. “He gave them responsibility, staff, funds, facilities, a broad research direction and the freedom to be creative. He demonstrated the standard that he expected in the way he went about his own work, and the rest of us watched, and learnt from his example. There was nothing I enjoyed more than to discuss our research. He could talk comfortably with senior scientists, government and academia, and would be happy to stand shoulder to shoulder with technical staff fishing off the beach.”

Bill enjoyed the rock lobster research, but yearned for his first love: penaeid prawns. In 1973 he proposed a comprehensive tropical prawn research project in Queensland, where field work had been conducted in the Gulf of Carpentaria since 1963 to establish and support the Northern Prawn Fishery. His proposal was accepted and included the establishment of a new laboratory at Cleveland to house experimental research. Expanded facilities and accommodation at Karumba would enable field research to be conducted through the wet season.

Bill helped to design the new Cleveland laboratory, (completed and in August 1976), and the projects of the Tropical Prawn Research Program. He conducted physiological research, and the broader team investigated the prawn life cycle: larval, juvenile and adult ecology and reproductive biology, as well as stock assessment, behaviour and nutrition.

Bill was program leader and officer-in-charge at Cleveland until his retirement in 1990. He considered the establishment of the Cleveland laboratories and leadership of the penaeid prawn research group to be the greatest achievements of his career. He relished the culture of scientific excellence, the much-cited research papers, publication of the Biology of the Penaeidae which he authored with Burke Hill, Peter Rothlisberg and Derek Staples, and the group’s contribution to the Northern Prawn Fishery, including their solving of the difficult problem of predicting the annual catch of banana prawns. Bill also found satisfaction in his own research achievements; his taxonomic revision of the penaeid group brought him recognition as a leading authority in this field.

“I am particularly proud of my career-long interest in taxonomy of penaeid prawns in Australian waters, and into the Indo-West Pacific; and the work on the respirometry and the measurement of the relative utilisation of protein, lipid and carbohydrate as energy sources by prawns carried out at the Cleveland lab,” he wrote.

Bill retired in August 1990, and was the Australian Marine Science Association Jubilee Award Winner in 1991. The award recognised his contribution to fisheries science and aquaculture through research on crustacean physiology including studies of moulting and growth, osmotic and ionic regulation and nutrition, and his prolonged interest in the taxonomy of Penaeidae, from identification of species to evolution and zoogeography. He continued working on a post retirement fellowship researching carotenoids in penaeids, and as an honorary research fellow helping to identify rare species of prawns from the Great Barrier Reef and Torres Strait. He also worked on penaeid classification with the Queensland Museum and identified penaeids collected in 2003 on a joint research voyage between Australian, New Zealand and French laboratories to describe the faunas of sea-mounts and ridges of the Tasman Sea.

He is survived by his wife Patricia and children Marilyn, Jennifer, Ian, Peter and Richard.
Tony Roach (14 June 1962 - 5 May 2011)

We are very sad to announce the passing of our friend and colleague, Tony Roach, on 5 May 2011. Tony was a Senior Environmental Scientist in the Ecotoxicology & Environmental Contaminants Section of the Office of Environment & Heritage, New South Wales Government (OEH; formerly DECCW). Tony was held in high esteem by his work colleagues in OEH and by many scientists in Australia and overseas with whom he collaborated. A service was held for Tony on 16 May at The Armoury, part of Sydney Harbour National Park, with a sparkling view over the harbour that he worked in and loved. The service was attended by over 300 family and friends, who came from just about every state in Australia. And there were many more that couldn’t come.

Tony Roach completed his undergraduate degree at UTS in 1984 with a Bachelor of Applied Science in Environmental Biology. After some consultancy work, he joined the State Pollution Control Commission (as OEH was known then) for 6 months from August 1985, to do a variety of environmental assessment projects in Botany Bay and Port Kembla. In March 1986 he took up a Technical Officer position with NSW Fisheries at Cronulla. From May 1990 he returned to the SPCC, where he remained (through 5 departmental name changes) to develop his marine biology skills with particular expertise in the impacts of pollutants on marine and estuarine organisms.

During his time in the EPA, as we were then, he undertook a part-time PhD at UTS, supervised by Dr Richard Lim, on population ecology of estuarine snails which he completed in 1996. Tony applied and developed many new research skills to assist OEH to tackle contamination issues. However, a summary of his resumé doesn’t do justice to the real Tony Roach as we, his work colleagues and collaborators, knew him.

Tony did make an extraordinary contribution to science but he was also a joy to be around. It was true that you would never get off the phone frustrated – it would always end with a laugh. And he was always great to work with, enthusiastic and friendly. Tony was also a mentor to his students. I am sure that they were inspired by his infectious enthusiasm. The Lidcombe labs will seem empty without Tony. Robin Stewart, of the USGS echoes how Tony’s scientific colleagues feel: “Tony was a very special person and the world will feel his loss deeply.”

The Office of Environment & Heritage has worked with Sydney Institute of Marine Science to establish a Prize in Tony’s name associated with student projects on the health of Sydney Harbour.

Tony left behind his wife of 19 years, Ann Buchner, and three daughters aged 9 to 14, Perri, Inez and Sylvie. All of Tony’s work colleagues, both at the OEH and across the scientific community, pass on condolences to Ann and all of Tony’s family and close friends.

John Chapman and Bill Maher

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Update on the Work Health and Safety Package from Safe Work Australia - July 2011

Scientific diving legislation is currently in a state of arrested development. As many of you are aware the Australian Government recently identified work health and safety to be a priority area for reform. The Government plans to streamline work health and safety (WHS) with an overarching aim to reduce the incidence of death, injury and disease within Australia. Currently all states and territories are responsible for making and enforcing their own workplace and safety laws and there are some discrepancies between the states and territories. Safe Work Australia is responsible for the development of the new model WHS laws. Scientific Diving will be directly affected by these new laws.

According to the Safe Work Australia timeline, previous public comment submissions on the Model Work Health and Safety Act, model WHS Regulations and Codes of Practice and a nationally consistent compliance and enforcement policy are being developed. The next milestone in the WHS package is the next public comment period for the draft model regulations. It is predicted that this will occur between July and October 2011. It is imperative that all AMSA members review this document once released and ensure that their home institution, laboratory or Diving Officer comment on the package - it has the potential to have a huge effect on Scientific Diving through Australia. The language varies greatly from the currently used Australian Standards (2299.2:2202) and initial regulation package was very difficult to interpret. Please feel free to contact Kate Stuart (AMSA Diving Representative) once the package is released if you have any queries regarding the package.

Currently the timeline predicts that the model Work Health and Safety Act, model WHS Regulations and Codes of Practice will commence as legislation in January 2012.

Kate Stuart, AMSA Diving Representative

AMSA Bulletin 185 - Issue 2, 2011
Scientific Writing = Thinking in Words
This is a great book. At nearly 130 pages, it is chock-a-block full of plain-speaking ideas for how to construct and then write your scientific paper, give your talk, set out your poster, write your thesis or review, and even write for non-scientists.

The book is written by David Lindsay who teaches scientific writing to scientists around the world, and has more than 30 years experience as a researcher and teacher at the University of Western Australia, where he started courses in writing scientific papers. His background and experience shows in this book.

David Lindsay says that good scientific writing has to be precise, clear and brief, and that we should write to inform, not to impress. He has certainly used that style in his book. Scientific Writing = Thinking in Words is very easy to read and gives some great advice on how to make scientific writing readable.

According to David Lindsay, the scientific article needs to be written in plain and simple English so that “as many people as possible read it, understand it and [are] influenced by it”. He outlines how to think through the logic and structure of your scientific paper before you write it, so that the writing process is much clearer and simpler, making it easier to decide what to put in and what to leave out.

David goes through each section of the scientific paper and explains how to decide what it should include. He also discusses whether to use tables, text, figures or graphs and gives some great advice about how to decide. There are some very clear examples of how to improve the presentation of information in tables so that the patterns in the data are clear.

David Lindsay talks about how to fix “verbal stumbling blocks”, such as clusters of nouns which can be misinterpreted but are all too common in scientific papers. For example, ‘annoying infant pathology problems’ is a cluster or nouns. “Are we dealing with pathological symptoms in annoying infants, annoying symptoms in the pathology of infants or symptoms with annoying pathology in infants?” David outlines six other verbal stumbling blocks and illustrates how to fix them. I highly recommend this section. Every scientist should staple these pages to their foreheads so they are constantly reminded of these stumbling blocks and how to avoid them in their writing.

David Lindsay gives a fabulous example of a bog standard scientific poster that is likely to be completely overlooked at a scientific conference, when it has about two seconds to catch the eye of a delegate and entice them to chat to the author to find out more. He gives tips for how to make a successful poster and illustrates with one of the best examples I’ve seen of an eye-catching poster. I wish every scientific poster was structured as he suggests!

As a science communicator, I found the section on writing science for non-scientists fascinating. It untangles why some scientists find it so hard to talk to non-scientists. According to David Lindsay, the “non-scientist seeks information in precisely the reverse order to that in which the scientist is usually prepared to give it.” David spells out how a scientist will explain their work – methods first, then results, and lastly why they are doing the work. In contrast, a non-scientist wants to hear about how the work will affect them or “fit or disrupt their personal vision of life.” Then they want to know how the work fits with what they know about science, and why the scientist is working in the area. It is only after the non-scientist is clear about these things, that they are interested in results, and very rarely in methods.

Scientific Writing = Thinking in Words should be read by every scientist. According to one scientist, “the book not only made me a better writer, it made me a better scientist.”

Louise Goggin, Science Communicator, Office of Environment and Heritage, Department of Premier and Cabinet

BOOK NOTICES

Encyclopaedia of Modern Coral Reefs: Structure, Form and Process
This well illustrated volume presents coral reefs from a geological rather than an ecological angle. It concentrates on modern reefs, providing short sections on topics within geology, geography and ecology with information on emerging issues like water temperature, sea level and ocean acidification. Available in print and electronic form.

Catchment Management and Coral Reef Conservation
A practical guide for coastal resource managers to reduce damage from catchment areas based on best practice case studies by Clive Wilkinson and Jon Brodie was released at the International Marine Conservation Congress in Victoria BC, Canada on 16 May 2011.

The book aims to assist coastal resource managers deal with the problems arriving at the coast from rivers and streams. To date there has been no guide book for managers. The stimulus was that many coral reef managers reported on problems of sediment, nutrient, pesticide and litter pollution damaging their reefs and they did not know where to start. This book will provide some answers.

It is produced as a contribution to the International Coral Reef Initiative by the Global Coral Reef Monitoring Network and James Cook University Catchment to Reef Research Group, with the aim of conserving coral reefs for the future benefits of the world. Copies are free from the GCRMN or through some ICRI Partners around the world.
Dr Rip's Essential Beach Book: Everything you need to know about Surf, Sand and Rips


Dr Rip's Essential Beach Book: Everything You Need to Know about Surf, Sand and Rips is a fantastic synthesis on all things relating to the beach. While it is predominately aimed at safety through education, the book covers everything from the formation of beaches to body surfing tips and what to do if stung by a jellyfish. The book is written in a non-technical, easy to digest style, opening it up to a wide audience.

The author, Dr Rob Brander, is a senior lecturer, coastal geomorphologist and beach lover, at the University of New South Wales. Rob Brander completed his PhD on the morphodynamics of rip currents at the University of Sydney in 1997 and has 25 years of experience in studying beaches and surf science. There is no doubting Rob Brander's (AKA Dr Rip) credentials as Australia's foremost expert on beaches.

The opening chapter of the book provides an excellent introduction into the world of coastal geomorphology. Rob Brander explains the origin of the substrates that make up our beaches and how these substrates find their way to the shore. The chapter also explores the impact of sea level rise on coastline and the future issues that may arise from developments too close to the water's edge.

From there the book moves onto the role waves play in shaping beach environment. Rob Brander explains how waves are formed and how they propagate through the ocean. A brief lesson in the physics of waves is given, without a single equation or Greek symbol in sight. Rob Brander explains to the reader how local beach bathymetry can influence wave dynamics and the effects large surf conditions can have on beach morphology. Rob explains safety in the surf, including how to read the conditions and understanding your limits. There are even inset boxes providing useful tips on how to start body surfing, boogie boarding and stand-up surfing.

Chapter 3 focuses on the large scale waves of the ocean – tides and tsunamis. Here Rob Brander describes the causes of large and destructive tsunamis and details some of the early warning signs. This chapter also discusses the almost equally destructive force of storm surge as a result large storm events such as tropical cyclones. This chapter is a good educational read, particularly for an audience with no prior knowledge of oceanography or physics.

The fourth chapter is the most important from a beach safety point of view and a must read for anyone planning to enter the ocean. This chapter focuses on rips and currents, which are responsible for 100’s of drownings of beach goers worldwide, every year. The aptly nicknamed Dr Rip discusses the different types of rips one might encounter while swimming at the beach and explains how to identify a rip before entering the water. The book provides an excellent two page summary of what to do if you are unfortunate enough to find yourself being carried out to sea by a rip. This chapter is a must read for anyone planning on swimming at a surf beach for the first time.

Chapter 5 discusses beach morphology. Rob Brander explains the causes of the great variation in beach types: why they have different widths, sand colour, surf conditions and why the form of your local beach is continuously changing from day to day. Any reader with an interest in why their favourite beach looks and behaves the way it does will find this chapter very worthwhile.

The final stanza of the book focuses on the hazards of spending time at the beach. While beaches are a fun and enjoyable place to be, there are some very serious hazards that shouldn’t be ignored. However, a bit of common sense will ensure for the most, a day at the beach is an enjoyable experience. The book reminds of, what should be, the standard practice of being sun smart and always swimming between the flags when at a patrolled beach. Rob discusses the hazards of collisions in the surf zone, be it with surf craft or other people and the types of injuries commonly caused in these incidents. Brander again warns of the dangers presented by waves and rips. And finally touches on the biological hazards living in our waters; from the tiny but deadly Irukandji jellyfish to the most feared and misunderstood sea creature of all, the Great White Shark.

Dr Rips Essential Beach Book: Everything You Need to Know about Surf, Sand and Rips is a must read for all beach goers. The easy to understand language of the book makes it an excellent education tool accessible to both primary school children and foreign backpackers alike, and all walks of beach goers in between.

Joshua Humphries, University of New South Wales

BOOK NOTICE

Field Guide for Sharks of the Genus Carcharhinus


All known and relevant data and features to enable an identification of sharks of the genus Carcharhinus (BLAINVILLE 1816) are summarised and visualised. An identification key is given to determine and to differentiate the species. For each species an extended list of characters is given including coloured figures to show the lateral and ventral view, a detailed view of nostril and teeth, and in some cases of juveniles and special characters. Further, data on body size and appearance, colouration, tooth formula and shape, numbers of vertebrae, on other internal and external characters, the geographical distribution, preferred habitat and food spectrum are presented. In addition, biological and reproductive data are included, e. g. number of young per litter, size at birth, size at sexual maturity, as well as behaviour and migrational patterns. This field guide describes 33 species, six species with special notes of the authors.
Practical Computing for Biologists


This is exactly the book I have long been on the lookout for both myself and my students. The computational requirements of science are constantly increasing and basic word processing and spreadsheet manipulation are no longer enough. Scientists are often required to extract data from large text files, compile and merge thousands of files generated by electronic samplers, analyse large genome sequences or access huge data streams from the Internet. Often we lack the data processing skills to complete these tasks quickly and easily. Sound familiar? Then this book is for you.

Don’t be put-off by the title. This book is equally applicable to all scientists. While the examples are biological in nature (and the authors are biologists), in reality the examples are just about data-sets and binary files. They could represent anything you like. The authors use Mac OS X as their operating system, however where the commands or software differ for Windows or Linux, they highlight the differences and explain how to complete the task on your operating system of choice.

The authors, Steven Haddock and Casey Dunn are both biologists with an interest in computing. Steven is a Research Scientist at the Monterey Bay Aquarium Research Institute and adjunct Associate Professor at U.C. Santa Cruz, studying bioluminescence and biodiversity of marine zooplankton. Casey is an Assistant Professor at Brown University and investigates how evolution has produced a diversity of life focusing on morphology. From a young age they both had an interest in building computers, electronic circuits and writing software.

The book is split into 5 broad parts, making it easy to use as a quick reference guide. There are also an extensive range of appendices with extra information on programming languages, software and commands to support the content of the book. The first part covers text files and using regular expressions to manipulate them. Powerful find and replace tools are demonstrated allowing you to merge or rearrange data, join/split lines and much more. Part Two moves onto using the Unix shell (command line) to interact with your computer and its filesystem, and how to automate tasks such as combining (thousands of) files or extracting a specific data type/line. More advanced (but extremely useful) tasks are covered such as piping the output of one program directly into another, retrieving web content using built-in command line tools and creating and executing scripts which can execute all your commands sequentially. More importantly, this approach allows the replication of tasks over and over again, saving you significant amounts of time.

Part Three is focused on programming using the Python language. Python is a popular and very versatile language. It is easy to read and understand (even for a beginner) and has a large collection of freely available scientific libraries. The authors don’t teach you to write a specific program, but explain the building blocks (with examples) required in order to write your own. As Steven and Casey point out, the most important thing is learning to think of your data analysis problems as a series of programmable tasks. They explain the basic tools required to pull these tasks together into your own executable program. Part Four is an extremely valuable section which brings together everything you have learnt and forces you to consider the best way to achieve your goals. Which tools should you choose for which problems? How to go about structuring your workflow for a series of tasks? These might include downloading data from the web, rearranging it into a new text file, piping it through some statistical software and then plotting the output. Part Four also goes through some advanced shell tools and touches on relational databases using MySQL.

Part Five is a section which will be very useful for scientists who publish regularly. It is titled “Graphical Concepts” and within it, the authors discuss the make up of images. What is the difference between vector and pixel art and when/why to use each one. What are the merits of each file format and what sort of compression do they use (none, lossy or lossless)? They then move on to explain how to create and edit both types and some examples of software to use when doing so.

Overall, this is a fantastic book which is well written and easy to understand. It is clearly structured and uses colour coded symbols to highlight important sections, or where Windows or Linux users may need to alter the commands. There is something in this book for everyone, whether you are an advanced or novice computer user. You could argue that it doesn’t cover your preferred software or programming language, but the reality is that the lessons learned in this book can be applied anywhere. What happens if you don’t understand one of the sections? Can’t get the software installed? No worries. Steven and Casey have set-up a website for the book (http://practicalcomputing.org/) which has a list of errata, and most importantly, a forum where you can ask questions and get them answered by either the authors or other users. All the code and examples used in the book are also available. First book I’ve read which comes with after sales support.

The key to this book is that it is a book about the task rather than the tool. It is not a book which lists thousands of command line tools or every function in Python. Practical Computing for Biologists carefully steps the reader through a series of common science tasks showing you how to best achieve your goals as simply and easily as possible. It really is about “Practical Computing”.

Jason Everett, University of New South Wales
ASLO 2011 – Limnology and Oceanography in a Changing World

The American Society of Limnology and Oceanography conference was held from February 13th to 18th 2011 in San Juan, Puerto Rico. I was there to present a poster of the preliminary results of my PhD, and to meet scientists in related fields. One of the highlights of the conference was the talk given by Dr Deborah Bronk, the current ASLO President. She brought up the interesting fact that while 65% of ASLO members are American scientists, the rest are from across the world. This suggests that perhaps the organization’s name should be updated to reflect its international membership. One nomination that has been put forward is the “Association of Scientists in Limnology and Oceanography,” and all ALSO members are encouraged to vote. Another interesting focus of Dr Bronk’s plenary presentation was women in science. What I found surprising was the dramatic decline in the proportion of women in science from the undergraduate phase through to tenured positions. More attention should be brought to this issue in order to facilitate change.

Especially relevant to my PhD topic was a session titled “The relevance of jellyfish blooms in the changing global oceans” which was organized and chaired by Kylie Pitt, Rob Condon and Andrew Sweetman. I was impressed with all of the presentations and I found it very helpful to see what research is currently going on in my field. I presented my poster titled “Synergistic effects of gelatinous zooplankton and elevated water temperatures on oxygen dynamics in the pelagic environment” immediately following this session.

Other highlights of the conference included a talk in which modeling was explained using a metaphor of a hard working French ant, a talk which argued that there is no such thing as a jellyfish, and sharing Latin/Asian fusion tapas with colleagues in Old San Juan. As a new PhD student, I found my experience at ALSO invaluable and extremely applicable to the rest of my studies. I urge other students to attend and present at conferences as early in their degree as possible, as I have no doubt the experience will prove useful.

Ariella Chelsky Budarf, PhD Student, Griffith University

International Zooplankton Production Symposium

The 5th International Zooplankton Production Symposium focusing on “Population Connections, Community Dynamics and Climate Variability” was held in Pucon, Chile on 14-18th March 2011. The conference consisted of 159 talks, 203 posters and a total of 293 attendees from 36 different countries.

With 12 of the presenters from Australia, it was great to see such a big turnout from our often overlooked waters. My first attendance at an international conference, the week provided countless opportunities to meet experts in the field and learn about current work and techniques being used around the world. Of these experts, I’d like to mention Professor Don Deibel from Memorial University in Canada. His presentation as an invited speaker on differences in pelagic tunicate life histories in relation to environmental variability, was one of my favourite and as one of the few tunicate experts in the world I was lucky enough to have the opportunity to sit down and discuss at length my PhD project that is of a similar focus.

As well as nine concurrent sessions on topics ranging from climate change and the role of zooplankton in biogeochemical cycles to zooplankton in polar and extreme ecosystems, five workshops were held. These workshops were designed to allow attendees to explore the current research available and discuss necessary future research that is needed in their specific fields: ocean acidification, automated visual plankton identification, time-series analysis, individual based models and genomic and molecular studies.

Delicious Chilean wine was served nightly at the poster sessions, however, the highlight was the conference dinner. Not only were we served excellent food, but we were also lucky enough to watch traditional dancing of the three cultures which dominate Chile: Mapuche, Polynesian and Spanish. As well as enjoying a week of planktivorous fun, a large number of conference attendees also took time out to enjoy what Pucon had to offer: white water rafting, natural hot springs, horse riding and finally the most exciting, the climb to the top of Villarrica Volcano that towered above the town at 2,847 metres. Overall, the conference was a great experience, but unfortunately the next conference won’t be until 2015!

Natasha Henschke, PhD Student, University of New South Wales and Sydney Institute of Marine Science

Weedy seadragon. Perth, Western Australia. Photo credit: Matt Harvey
New Members – 3 March 2011 – 24 July 2011

Anderson, Mr Douglas James. Murdoch University. Kallaroo WA 6025. catfish1au@yahoo.com.au. Student member. WA branch.


Bathgate, Ms Rachael. University of Melbourne. Brunswick Vic 3056. rbat@unimelb.edu.au. Professional member. VIC branch.

Bondarenko, Ms Olga. UWA. Crawley WA 6009. olga.bondarenko@uwa.edu.au. Student member. WA branch.

Bossereil, Mr Cyprien. University of Western Australia. Crawley WA 6019. bossereil@sese.uwa.edu.au. Student member. WA branch.

Boyd, Mrs Sheree. Auckland Museum. Te Atatu South 0610. sofboyd@xtra.co.nz. Professional member.

Brown, Mr James. Kimberley Marine Research Station. Broome WA 6725. research@oygnetbaypears.com.au.

Corporate member. WA branch.

Buchanan, Miss Valissa. Bunbury WA 6230. alissabuchanan@gmail.com. Student member. WA branch.


Campagna, Mrs Sophie. URS Australia Ltd Pty. Cottesloe WA 6011. scampagna05@gmail.com. Professional member. WA branch.

Cannell, Dr Belinda. Bayswater WA 6053. belindacannell@bigpond.com. Professional member. WA branch.

Chapuis, Miss Lucille. UWA. Crawley WA 6009. lucille.chapuis@gmail.com. Student member. WA branch.


Connelly, Mrs Shirley. Hydrobiology. East Perth WA 6004. shirley.connelly@hydrobiology.biz. Professional member. WA branch.

Coombes, Mr Gavin. University of Western Australia. Crawley WA 6009. coombg01@student.uwa.edu.au. Student member. WA branch.

Coulturier, Miss Lydie. The University of Queensland. Toowong Qld 4066. manta.lydie@gmail.com. Student member. QLD Sth branch.

Crane, Mr Kevin. Bentley Delivery Centre WA 6983. kevin.crane@dec.wa.gov.au. Professional member. WA branch.

Cummins, Ms Gabrielle. University of Western Australia. Subiaco WA 6008. cummig01@student.uwa.edu.au. Student member. WA branch.

Dandan, Ms Sana. UWA. South Fremantle WA 6162. dandan02@student.uwa.edu.au. Student member. WA branch.

de Vos, Miss Asha. The University of Western Australia. Crawley WA 6009. devosa@seesew.uwa.edu.au. Student member. WA branch.

Delaney, Dr Robyn. Palmerston NT 0831. robyn.delaney@nt.gov.au. Professional member. NT branch.

Dorman, Miss Stacey. The University of Western Australia. Como WA 6152. dormas01@student.uwa.edu.au. Professional member. WA branch.

Dunshea, Mr Glenn. Ecological Marine Services. Burnett Heads Qld 4670. ecodes@live.co.uk. Professional member. QLD Sth branch.


Foster, Ms Taryn. Nedlands WA 6009. 20905785@student.uwa.edu.au. Student member. WA branch.

Fraser, Miss Kate. West End Qld 4101. kate.fraser@uqconnect.edu.au. Student member. QLD Sth branch.

Fraser, Dr Ceridwen. Universite Libre de Bruxelles. Burra Creek NSW 2620. ceridwen.fraser@gmail.com. Professional member. NSW branch.

Gallop, Mrs Shari. The University of Western Australia. Crawley WA 6009. gallop@sese.uwa.edu.au. Student member. WA branch.

Gartrell, Mr Patrick. Griffith University. Auchentlochan Qld 4066. p.gartrell@griffith.edu.au. Student member. QLD Sth branch.

Gifford, Mrs Emily. RPS. Hilton WA 6163. emily.gifford@rpsgroup.com.au. Professional member. WA branch.

Gillies, Mr Chris. Earthwatch Institute Australia. South Melbourne Vic 3205. c.gillies@earthwatch.org.au. Professional member. VIC branch.

Green, Ms Barbara. Wambro WA 6169. pmachen@westnet.com.au. Professional member. WA branch.

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Jones, Dr Ashlee. Gardline Marine Sciences Pty Ltd. Cockburn Central WA 6164. ashlee.jones@gardline.com. Professional member. WA branch.

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Kelly, Dr Samuel. University of Western Australia. Crawley WA 6009. samuel.kelly@uwa.edu.au. Professional member. WA branch.

Kilminster, Dr Kieryn. Department of Water. Joondanna WA 6060. kieryn.kilminster@water.wa.gov.au. Professional member. WA branch.

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Kureta, Mr Anton. University of Western Australia. Ingelwood WA 6932. kureta01@student.uwa.edu.au. Student member. WA branch.

Laurendi, Mr Kristofer. Canningvale WA 6155. busted_rod9@hotmail.com. Student member. WA branch.

Lawson, Ms Emily. Nightcliff NT 0810. emilyalawson@yahoo.com.au. Professional member. NT branch.

Legend, Dr Matt. DSTO. Port Kennedy WA 6172. legg@ieee.org. Professional member. WA branch.

Lewis, Ms Anna. Curtin University/CSIRO. Mosman Park WA 6012. annarlewis@hotmail.com. Student member. WA branch.

Linklater, Miss Michelle. Cronulla NSW 2230. michelle.linklater@ozemail.com.au. Professional member. NSW branch.

Lourey, Dr Martin. CSIRO Marine and Atmospheric Research. Wembley WA 6020. martin.lourey@csiro.au. Professional member. WA branch.

Marzinelli, Dr Ezequiel. University of New South Wales. Sydney NSW 2052. e.marzinelli@unsw.edu.au. Professional member. NSW branch.
MINUTE HIGHLIGHTS (full version available on request from the AMSA Secretary)

1. Welcome
   Lynnath Beckley welcomed council to the meeting and specifically new council members – Paul Gribben, Tim Lynch, Jason Everett, Jan-Olaf Meynecke
   Members present: Lynnath Beckley, Sabine Dittman, Karen Miller, Anthony Boxshall, Narelle Hall, Troy Gaston, Isla Fitridge, Craig Styan, Paul Gribben, Tim Lynch, Jason Everett, Jan-Olaf Meynecke

2. Apologies
   Gina Newton, Frances Michaelis, Claire Smallwood

3. Agenda
4. Minutes of Council meeting: July 2010
   Minutes of the last meeting were accepted (proposed LB, seconded SD).
   4.1 Matters arising from the minutes (not elsewhere on Agenda)
   None identified
   4.2 Actions
   Action list updated – most outstanding actions have been completed.

5. Council arrangements
   5.1 Strategic Framework document update (Anth)
   AB provided a briefing of the Strategic Plan to raise awareness for new council members. The plan is now available on Council section of the web site, and has been circulated to all members.
   The Action Plan will need to be considered by new council members as well as the roles of councilors in the back of the document.
   5.2 Councilor vacancy
   Norm Duke was proposed as a new council member. All agreed. The constitution allows that he can be co-opted outside of AGM, but need to check he is still happy to join council.
   Action: Karen to write letter to Norm to invite him to join Council
   5.3 Election of Assistant Secretary
   Isla Fitridge was proposed as the assistant secretary (proposed LB, seconded AB)
   5.4 Book Review Editor – Jason Everett for ratification by council
   All agreed
   5.5 SF17 Representative (Lynnath)
   Kate Stuart is happy to continue in the role (she is now working part-time). Penny McCracken can act as a backup if Kate unavailable. Need to ensure that Kate reports back to AMSA regularly but also need to make members aware that Kate can act as a conduit for AMSA members to provide input into SF17.
   Action: Two-way option needs to be highlighted in next bulletin.
   Action: LB to contact to Penny to confirm
   5.6 Sub-committees for Awards (Allen Award, Silver Jubilee, Technical Award)
   Three sub-committees were formed for award judging
   Allen Award – KM, CSTyan, PG, JOM
   Silver Jubilee – LB, SD, AB
   Technical Award - LB, SD, AB
   5.7 Call for nominations for AMSA awards
   Closing date 28th Feb for all. Action: Need to put out a call for nominations for Silver Jubilee & Technical Award (Lynnath & Karen) & advertise in next bulletin (CSmallwood)

6. AMSA business and finances
   6.1 Report on membership (Narelle)
   40 year member – Pat Hutchings – to be acknowledged at AMSA conference
   State branches to chase up unpaid members (LB to coordinate) and subsequent reminder to be sent from Narelle at end of November and/or prior to next bulletin if still needed. Councilors to chase up recalcitrants as well (ref ongoing action item) – Narelle to circulate list to council. Web site needs to force students to include affiliation institution (to be discussed under Web Site). Need to consider late fee to try to limit this slackness – needs to be discussed at future meeting
   Action: Narelle to put proposal to next meeting for late/joining fee structure & need to increase membership.
6.2 Ratification of new members (Narelle)
Proposed AB, seconded PG

6.3 Ratification of 2010/11 budget (Narelle & Craig)
Based on previous discussions at council meeting in Wollongong, Narelle has revised the budget. Mostly items that have changed relate to Bulletin costs and payments of FASTS and Scientific Diving. Still need to look at how expenses might be reduced – SMP may be less than budgeted if only send 2 delegates. Will most likely have to run at a deficit this financial year. Need to consider raising membership fees at the next AGM. By next meeting need to have formal proposal to increase the subs and council will ratify at meeting and then circulate to membership. Any proposal to increase fees will need supporting documentation to justify to members.

Action: Financial Committee (CS, NH, TL and SB (Chair)) will work on supporting documentation for membership fee rise.

2010/11 Budget was accepted - Proposed AB, seconded: TG

6.4 Treasurer's report (Narelle & Craig)
Narelle explained the report to council. Conference account (designed to keep the conference monies separate from rest of AMSA funds) will be closed – didn’t work out to be worth the effort. Council discussed the need to increase capital of fixed term deposits (in line with CPI as a minimum) before funds dwindle into the future, including looking for sponsors for prizes etc.

Action: Increase in capital of deposits to be considered by financial committee along with membership fees - CS, NH, TL and SB.

6.5 Ratification of expenditure since last report (Narelle)
Payments were passed by council. Proposed: AB, Seconded: CSTyan

6.6 Update on time allocation of business manager (Narelle)
Changed from 2 days to 1 at previous council meeting. Narelle has been documenting exact times that she was working on AMSA business, although this became impractical with time. Narelle indicated that the original timeframe for tasks as put together by AB was reasonable. For now, one day/week appears to be working to keep primary tasks ticking over. LB thanked Narelle for her ongoing work.

7. AMSA State Branches

7.1 Council’s links to State branches (Lynnath)
LB has contacted state branches – WA, SA, SEQld, Vic, Tas, NSW to re-engage. All acknowledged they have received branch report form and working on it. Some have been returned – but these need to be chased up.

Action: LB to chase up branch report forms

7.2 Brief updates on State branch activities (All)
Council noted that it was important for the national council members to engage at the state branch level; but that it was not appropriate that state chairs be automatically on national council – it is possible for them to nominate at national level if they want to be involved at National level.

Troy updated on problems in Tasmanian Branch & need to find non-national councilor to run the local branch. Low uptake on branch membership so far.

Vic branch has been busy with student activities – My Friend the Jellyfish (every 2 yrs); meetings every couple of months including seminars

SA – annual symposium just been run, just had AGM,

NSW – recent meeting, looking to revitalize the committee, some functions well attended, others not. Postgrad forums. Recent public event – screening of End of the Line.

WA – annual student conference at Rottnest. Christmas even coming up in Dec. Mostly focused on conference.

SEQ – has been quiet recently – was a symposium in May but nothing since.

Northern Qld branch doesn’t exist anymore although there are funds still in existence.

NT – branch has also dissolved

Action: need to reclaim funds from branches if no activity – LB will write letter to NT and NQ branches.

7.3 Constitutional issues with respect to State branches (Narelle)
Letter from accountant Brown, Macaulay & Warren re status of state branches and need to be incorporated OR to be considered as constituent bodies of AMSA (under clause 37 of AMSA constitution). If incorporated in different states they will be subject to different rules and need to be audited yearly etc. Could all run under a unified Branch constitution. Council discussed the pros and cons of branches being independent from national and ramifications of logistical aspects of incorporation. There will be liability issues if they are not part of AMSA as they wont be covered under our insurance. Council concluded that it makes sense for branches to work as part of AMSA national and be audited as part of the national process. No need for state branches to hold ABNs

Action: Anth to follow up in Vic. Action: LB to request if Chris Smalley is prepared to draft a branch constitution. LB to circulate letter to branch presidents to move forward with this. Needs to be discussed further (Anth & LB to progress).
8. AMSA Conferences

8.0. Wollongong
Narelle presented a report on behalf of the conference organisers. Wollongong Uni needs to be acknowledged as a major sponsor – donation of venue & AV facilities. Russ McWilliam has been given 5 yr AMSA membership for his contribution to the AV running at the conference. LB thanked Andy Davis and Narelle for running conference & to Narelle for producing cross-year summary

**Note:** Business plan needs to be added into the “conference bible”

8.1 Perth 2011

8.1.1 ACRS (Lynnath)
ACRS has pulled out of the WA conference. Linked to their large commitment to ICRS in 2012 and also to different philosophies of how the AMSA & ACRS conferences run, and financial risk. Both societies are certain there will be an opportunity for joint conference in the future. Council reiterated that the financial commitments of AMSA conference were: 1/3 surplus to state, 2/3 surplus to national, 100% loss to national

8.1.2 Update by Karen Hillman (phone link to Perth at 11h15-11h45 EST)

8.1.3 Sponsorship (Lynnath)

8.1.4 AMSA support of student travel to Perth
Council noted that $5000 needs to be budgeted for within the conference costs for student travel & student travel subsidies need to be properly advertised with an emphasis that it supports students who have no other money for their travel. Closing date for applications needs to be finalised. Need to encourage students to make sure membership up to date (2yrs) so they are eligible for the subsidy.

8.2 Launceston 2012 (Troy)
Need to be careful not to clash with ICRS (9-13 July) – will need to have more of temperate focus.
Troy provided update on approximate costs and venues – Grand Chancellor; will get some sponsorship from government; nothing has been booked yet.

8.3 Future conferences
2013 – Gold Coast – Kylie Pitt & Rod Connelly have volunteered to organise. Council noted that this would be the “Golden Anniversary Year” 2012/2013 (based on first conference in 1963 and beginning of AMSA in 1962). Action: LB to contact SE Qld branch to confirm this is OK

9. AMSA Publications

9.1 Bulletin

9.1.1 Options for reducing Bulletin costs
Report submitted from Claire was discussed.

9.1.2 Bulletin covers
“Missing” bulletin covers possibly linked to change in ownership of printers at UQ and loss of info as to how many were picked up by Paradise Printers. Paradise printers were recently flooded and the 4000 new covers were lost BUT Paradise Printers (sunshine coast) will now replace 8000. They will retain all stock.

9.1.3 Bulletin partnership offer from EBSCO
Re email from EBSCO offering web access of our content through their site. Council decided more information was needed. Do we want a members-only document to be available in the public domain?

**Action:** Claire to get back to them for more information

9.2 Web site survey (Troy)
Survey handed out at Wollongong. Results from the survey were discussed.
Overall the survey has shown that the web site is meeting the needs and expectations of members and there is a sense that there is no need to change its function at the present time. Council will need to look to budgeting for an upgrade in the future. National site is not working well at the State Branch level – state content still needs to be uploaded by Narelle.

10. External Issues

10.1 AMSA Position Statement on MPAs (Tim)
What will AMSA’s next step be? Position paper & statement etc now a few year’s old. Is it time to update this based on new data? AMSA position statements traditionally last for 5 years. Should they be updated more regularly if the need arises and if the field has moved on?

**Action:** Tim will look at the paper and consider what changes might need to be incorporated. Will report back to next meeting.

10.2 Science Meets Parliament (Sabine)
SMP will be continued. We will be able to send 2 people to Canberra (around March). Need to have an organised approach to this and open call for applicants. Council decided that we would send one rep from council (LB as president) and one other member recruited via AMSAlist.

**Action:** Sabine to draft up letter for AMSAlist seeking early career participants.

10.3 Asian Fisheries Society (Lynnath)
AFS has requested AMSA to be non-financial sponsor, to which we have agreed. The conference will be advertised in the Bulletin.
10.4 AMSA Contribution to MNF Steering Committee on RV Investigator (Karen)
Letter sent to MNF Steering Committee with feedback from AMSA membership.

10.5 AMSA 50 year commemorative postal stamp (Isla)
Isla requested feedback on draft letter to Australia Post requesting a commemorative stamp. Council concluded that we needed to make a decision on exactly what product we would request
Action: Isla to chase up what other organizations have had event stamps as a guide. Feedback on draft letter by end next week 19th (All).

10.6 AMSA Marine Parks day in Canberra (Sabine)
Proposal for a 1 day session in Canberra inviting media and politicians on scientific evidence supporting MPAs. Likely to be a major expense. Would we be better having a multiple-issue approach to this rather than just focusing on MPAs and with more future-focused issues Marine 2020 for example?

10.7 AMSA Support of Seaweek2011
Request from Christine Preston – forward to AMSAlist encouraging support from our membership
Action: Karen to send out.

10.8 ODEX Support
An email was received from Mike Turner regarding Ocean Dive & Travel Expo ( ODEX 2011 ).
Action: Forward to Olaf & Peter Davie for them to chase up (KM)

11. Reports
11.1 President’s Report (Lynnath)
Proposed SD, Seconded IF

11.2 Secretary’s Report (Karen)
Report summarised

11.3 Editor’s Report (Claire)
Report supplied. Pdf difficult to read in 2 column format – can easily move to single column format BUT this may require 2 layouts so may not be feasible for now. Action: Claire to clarify if increased cost for two layouts.

11.4 Website report (Troy and Narelle)
Quote to do work on the website to correct programming flaws & fix up membership area. Quote is more than we have budgeted for the year. Need to prioritise what can be done within budget. Narelle’s opinion is that the priority should be to fix up the Branch Structure as a minimum. Action: Narelle to go back to Revium for new quote just to do this component & to have the Tassie branch membership hooked into the system.

Action: Anth to initiate a discussion on aspects of new technology communication that we might want to embrace in the future (with Olaf & Troy).

11.5 OPSAG Report (Sabine)
Last meeting in October. Sabine reiterated that it is an excellent opportunity for AMSA to liaise with this group and direct link to the minister. Key issues discussed were Marine Roadmap, SoE going to be updated, Proposal for a Coastal Observing System, Update from Ian Poiner on CoML.
Action: Claire to include OPSAG Terms of Reference in next bulletin. SD to send OPSAG report to KM

11.6 FASTS Aquatic Cluster Report (Frances)
Report provided
FASTS Strategic Plan summary was discussed

11.7 SF17 Committee Report

12. Correspondence
12.1 Copies of letters of thanks – AMSA conference 2010
12.2 Pre-election correspondence with political parties
12.3 Summary of AMSA contributions for RV Investigator meeting
12.4 Letters for AMSA 2011 conference sponsorship
12.5 Other

13. Other business
JE noted that there was a review of boating underway for NSW (and probably others upcoming) that AMSA may need to be aware of.

14. Next meeting
Most likely end Feb/mid March and possibly in Brisbane

15. Thanks and closure
Meeting concluded 4:30pm
COASTGIS, 5 – 8 September 2011
The 10th CoastGIS 2011 will be in Ostend, Belgium. Many governments, now formally recognise the importance of holistic Marine and Coastal Spatial Planning in order to meet the challenges presented in managing our coastlines more effectively and preserving them for future generations in a time of climate change, associated global sea level change and economic uncertainty. CoastGIS will focus on spatial planning, as well as many other themes - technical and non-technical, thematic and educational, focusing on ICAM methods and applications.
www.coastgis.info

LAND-OCEAN INTERACTIONS IN THE COASTAL ZONE, 12 – 15 September 2011
The Land-Ocean Interactions in the Coastal Zone (LOICZ) Open Science Conference 2011 will be held in Yantai, China. This conference will be arranged around the overarching topic of coastal vulnerability and sustainability to support adaptation to global change. Conference themes include: social-ecological systems and scales; vulnerability and resilience; adaptive capacity and mechanisms; spatial/temporal scales; earth observation and monitoring; assessing, modeling and scenario building; coastal economics, ecosystem goods and services; science-practice-policy interface and knowledge transfer; coastal governance; river-mouth systems; and coastal urbanizations.
http://www.loicz.org/

COAST TO COAST, 17 – 21 September 2011
The Coast to Coast 2012 conference will be held in Brisbane, Queensland. The conference will provide an excellent forum for Australian coastal workers from universities, consulting companies, community organisations and all levels of local, state and federal government and will be a great follow on from the 2010 conference in Adelaide, the NRM Workshop and the intervening State Coastal Conferences.
http://www.coast2coast.org.au

ICES ANNUAL SCIENCE CONFERENCE, 19 – 23 September 2011
The ICES Annual Science Conference 2011 will be held in Gdansk, Poland. The Annual Science Conference is a forum for new marine science where some of today’s most challenging scientific issues are being addressed, issues that urgently require solutions for better management of the seas.

END OF WAMSI 1 CONFERENCE, 19 – 20 September 2011
The End-of-WAMSI 1 Conference aims to showcase the five years of research and $87 million dollars worth of research projects that have been achieved through the Western Australian Marine Science Institution (WAMSI). The WAMSI Conference will bring together some of Australia’s most esteemed marine scientists and their teams who together, will synthesise for audience members, the remarkable outcomes and achievements of their collaboration. The two day conference is being staged at the magnificent facilities of the Western Australian Maritime Museum, Fremantle – where WAMSI was officially launched as an institution in 2007.
www.wamsiconference.org.au

WORLD CONFERENCE ON MARINE BIODIVERSITY, 26 – 30 September 2011
The Universities of Aberdeen and St Andrews are delighted to announce the World Conference on Marine Biodiversity. The conference will be hosted in conjunction with the European Environmental Agency and will take place in Aberdeen, Scotland in September 2011.
www.marine-biodiversity.org

AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION CONFERENCE, 19-21 October 2011
The American Shore & Beach Preservation Association (ASBPA) 2011 National Coastal Conference, will be held in New Orleans, Louisiana, USA. The theme of the conference is Expanding Coastal Horizons. Technical and policy oriented presentations or posters are invited for coastal issues including: Federal, State, and Local Coastal Policy, Regulatory and Legal Issues; Regional Sediment Management; Beach Nourishment; Marsh and Estuary Restoration; Coastal Modeling; Sand Investigations and Resource Management; Relative Sea Level Rise (Planning, Policy, Impacts, and Adaptation); Environmental Characterization and Monitoring; Alternative Offshore Energy; Coastal Mapping and Data Analysis; and Beach Access.
http://www.asbpa.org/

WIOMSA SCIENTIFIC SYMPOSIUM, 24 – 29 October 2011
The Western Indian Ocean Marine Science Association (WIOMSA) and the Kenya Marine and Fisheries Research Institute (KMFRI) have the pleasure to announce the Seventh WIOMSA Scientific Symposium that will be held in Mombasa, Kenya in October 2011, with the theme coping with global change. This theme covers the implications of changes in major drivers on the coastal and marine environment ranging from natural, physical and biological drivers. Major drivers include: demographic pressure, economic development, socio-political changes and climate change.
http://www.wiomsa.net/

INTERNATIONAL CONFERENCE ON ESTUARINE AND COASTAL MODELING, 7 – 9 November 2011
The 12th International Conference on Estuarine and Coastal Modeling, will be held in Augustine, Florida, USA. Possible session topics include: Circulation Modeling; Pollutant Transport and Water Quality Prediction; Modeling Techniques and Sensitivity Studies; Model-Data Comparison Methods; Specific Estuarine and Coastal System Models; Visualization in Model/Data Analysis; Oil Spill Transport and Fate Modeling; Multi-media Modeling; Linking Models of Terrestrial, Atmospheric, Coastal Systems; and Coastal Dynamics of Global Climate Change.
http://www.oce.uri.edu/ecm12/
INTERNATIONAL CONGRESS FOR CONSERVATION BIOLOGY, 5 – 9 Dec 2011
The 25th International Congress for Conservation Biology will be held in Auckland, New Zealand. We encourage proposals from individuals or groups on cutting edge, innovative, or emerging topics in conservation science and practice. Symposium themes should address issues of global relevance that align with the meeting theme and/or the goals of SCB, which are conservation science, conservation management, policy and education.

www.conbio.org

INTERNATIONAL PUBLIC COMMUNICATION OF SCIENCE AND TECHNOLOGY, 18-20 April 2012
The 12th International PCST (Public Communication of Science and Technology) Conference will be held in Florence, Italy. Proposals are welcome for presentations on science communication and science in society research, science journalism, science museums, public engagement with science and technology and communication activities by research institutions. The deadline for proposals is 30 September, 2011. Submitted proposals will be reviewed by members of PCST Scientific Committee, and the final programme will be announced in January 2012.

www.pcst2012.org

INTERNATIONAL ABALONE SYMPOSIUM, 6 – 11 May 2012
The 8th International Abalone Symposium will be held in Hobart, Tasmania – home of the world’s largest wild abalone fishery and continues the tradition of bringing together a diversity of international people with one common interest; abalone. During the 8th International Abalone Symposium the Program will strive to address issues of global importance, commercial relevance and scientific interest in Theme and open sessions, poster sessions, sessions with commercial appeal and workshops.


EFFECTS OF CLIMATE CHANGE ON THE WORLD’S OCEANS, 15 – 19 May 2012
The 2nd International Symposium on the Effects of Climate Change on the World’s Oceans will be held in Yeosu, Korea. This conference will look at the “Effects of Climate Change on the World’s Oceans” will lead us through many issues of the role of climate change on the oceans: sea level rise, changes in thermo-haline ocean circulation, acidification, oligotrophy of temperate seas, changes in species abundance, distribution and phenology, loss of biodiversity, all of which will have serious implications for marine living resources, etc. This symposium aims to bring together experts from different disciplines to exchange observations, results, models and ideas at a global scale and to discuss the opportunities to mitigate and protect the marine environment and its living resources.

www.pices.int/climatechange2012.aspx

ECSA CONFERENCE, 3-7 June 2012
The 50th ECSA Conference will be held in Venice, Italy. Following the success of the renowned ECSA conferences and workshops, the 50th ECSA Conference Disputed Issues in Coastal Science and Management will bring together researchers, environmental managers, policy makers and graduate students to present research results, explore collaborations and to spark new ideas, with the aim of learning about marine, coastal and transitional systems worldwide, catching up on leading-edge techniques and, lastly, appreciating the constraints of the science and the management.

http://www.estuarinecoastalconference.com/

INTERNATIONAL CORAL REEF SYMPOSIUM, 9 – 13 July 2012
The 12th International Coral Reef Symposium will next take place at the Cairns Convention Centre in Cairns, Queensland. This event attracts 2,500 of the world’s leading natural scientists, resource managers, conservationists, economists, educators and graduate students to progress coral reef science, management and conservation.


IUCN WORLD CONSERVATION CONGRESS FORUM, 6 – 15 September 2012
The Congress will take place in Jeju, Korea. The IUCN World Conservation Congress is the world’s largest and most important conservation event. Held every four years, the Congress aims to improve how we manage our natural environment for human, social and economic development. The Congress theme is to be Nature+, a simple and memorable slogan that captures the fundamental importance of nature and its inherent link to every aspect of our lives.

www.iucn.org/congress

INDO-PACIFIC FISH CONFERENCE, 24 – 28 June 2013
The 9th Indo-Pacific Fish Conference will be held in Okinawa, Japan for the 9th Indo-Pacific Fish Conference (IPFC), which will be held from 24 to 28 June 2013 at the Okinawa Convention Centre in Okinawa Prefecture. As in the previous IPFCs, the main themes of the Okinawa Conference include systematics, evolution, zoogeography and phylogeography, biodiversity, ecology, behaviour, and conservation. The Organizing Committee is preparing an interesting program including many symposia on a range of topics such as systematics, evolution, phylogeny, ecology, behaviour, and conservation.

AUSTRALIAN MARINE SCIENCES ASSOCIATION INC.

MEMBERSHIP APPLICATION - TAX INVOICE

ABN 35 279 182 164

(circle one) NEW MEMBERSHIP / RENEWAL (if Renewal, Membership No. ....................)

I hereby apply for membership of the Australian Marine Sciences Association Inc. (PLEASE PRINT ALL Details)

(Surname) .......................................................... (First Name) .................................................. (Title) .......................................................... (Univ. Degree held)

If this application is for a renewal, please complete only those mailing address details which have changed:

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Do you want to receive amsalist emails: Yes / No (select one)

PLEASE SEND AMSA BULLETIN: PDF (email as above) : HARD COPY (Add $10 for postage)

Major research/interest fields: (please circle two) Aquaculture / Biotechnology / Botany / Chemistry / Engineering/ Environment / Fisheries / Geosciences / Oceanography / Policy / Physics / Taxonomy / Zoology

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** STUDENT APPLICANTS - PLEASE NOTE:

Your supervisor is required to complete this section.

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Supervisor’s Signature

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Note: New applicants are required to be proposed by a current AMSA member (AMSA Constitution item 6.)

Proposer

I am a current financial member of AMSA Inc. and, to the best of my knowledge, I verify that the above applicant is eligible for membership under the AMSA constitution.

Proposed by: ..........................................................

Name (please print) ..........................................................

Signature ........................................................................

Membership No. ..................................................................

21/7/2011 Forward completed and signed form to: AMSA Memberships, PO Box 8, Kilkivan Qld 4600
Objects of AMSA

To promote liaison between scattered centres and workers in the many disciplines of marine science in all States, through a regular Bulletin, through meetings and conferences, or any other means, and to promote cooperation between them.

Membership is open to scientists or corporate bodies engaged in marine research, and to students of marine science approved by the Council of the Association. AMSA aims to improve the public’s image of marine scientists and to forward their interest generally.

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