



The Swire Institute of Marine Science

太古海洋科學研究所



Annual Report

2013



Gray working on the shore in Brazil

Director's Foreword

Whilst every year seems like a special year at SWIMS, 2013 really was an important milestone. This year, the Vice Chancellor of Hong Kong University signed a letter of intent with the Swire Group to give the go-ahead for the planned SWIMS extension. This is excellent timing given the development of our sister laboratory at Xiamen University, which is also partially funded by the Swire Group, and we are extremely grateful for the Swire Groups continued support. With this support and further funding from the UGC, we plan to expand our molecular laboratories, office space and aquaria to support our growing research team and provide them with state-of-the-art facilities. Perhaps the most exciting development is the planned establishment of a Marine Biodiversity Centre, an interactive reference collection of Hong Kong's marine biodiversity. This initiative fits in with the Biodiversity Strategic Action Plan that the HKSAR Government is currently undertaking as part of the Convention on Biological Diversity.

This year, SWIMS staff members had a 100% success rate with their RGC applications including a prestigious Collaborative Research Fund project worth HK\$7.8M, led by Kenny Leung, to investigate the recovery of the Hong Kong benthos following the Government's trawling ban in January 2013. This grant dovetails with a recent Environment and Conservation Fund grant to review marine biodiversity and ecological surveys in Hong Kong which Gray and Kenny headed with Terence Ng and Martin Cheng.

This year SWIMS also welcomes David Baker as its newest resident scientist. David joins us from the Smithsonian Institution to work on anthropogenic impacts on coral communities, and is already establishing an active research group at SWIMS.

So, 2014 promises to be another busy and productive year at SWIMS, including the initiation of the formal process of its expansion. The future of SWIMS looks ever brighter!

Best wishes from the staff and students of SWIMS.

Gray A Williams

International Collaborations

Prof. Yuping Wu of Sun Yat-sen University and his postgraduates visited in January to discuss collaborative research across the Pearl River Delta (PRD) with Leszek. In February Dr. Shiang-Lin Huang (National Taiwan Ocean University) visited to develop a project on spatial ecology and distribution of dolphins off Taiwan's west coast. Prof Jon Havenhand (Gothenburg University, Sweden) undertook collaborative research with Rajan in April. Dr Rick Stafford (Bournemouth University, UK) and Prof Mark Davies (Sunderland University, UK) continued long-term studies on littorinid behaviour with Terence and Gray. Dr. Glenn Gailey (Texas A&M University, USA) revisited SWIMS in June/July to work on updates to the software DISCOVERY with Leszek. In August, Prof Mary Sewell (Auckland University, NZ) stayed at SWIMS to collaborate with Rajan on the impacts of ocean acidification, and in September Dr Chris Freeman (Smithsonian Institution, USA) stayed for 2 months to work with David. Prof Christopher McQuaid (Rhodes University, S. Africa) continued his Visiting Research Professor role at SWIMS.

SWIMS informal lunchtime sessions continued with students and visitors presenting talks ranging from statistical design and analysis by Prof Jon Havenhand to oyster physiology by Prof Choi Wang-Sik (Cheju University, Korea), the PRIMER multivariate package, the use of GIS systems in ecological studies, Leszek's new DISCOVERY software, and student research projects. Visitors also presented at HKU campus, including seminars by Dr Andrew Parker (Natural History Museum, UK) on ancient vision and the cause of the Cambrian explosion, Dr Magdalena Blazewicz-Paskowycz (University of Lodz, Poland) on Southern Ocean Tanaidacea, and Dr Chris Freeman on interactions between sponges and their symbiotic communities.

In May, a one-day workshop addressed the question 'Behavioural and physiological ecology of intertidal organisms: are we going in the right direction?'. This featured talks by Drs Rick Stafford, Steve Cartwright (SWIMS), Terence Ng (SWIMS), Laurent Seuront (Flinders University, AU) and Profs Christopher McQuaid and Mark Davies, and culminated in an open discussion session.

This year Dinesh Ramadoss, Calton Law, Circle Hong and Ginger Ko joined Gray on the annual exchange with the University of Johannesburg (UJ). As in previous years, the SWIMS group joined the UJ MSc Fieldcourse coordinated by Dr Richard Greenfield at the magnificent Tsitsikamma marine reserve where they studied the local seashores.



Members of the informal behavioural workshop, from left Rick Stafford, Laurent Seuront, Mark Davis and Terence Ng



Prof. Mary Sewell & Shawna Foo running 2D gels with Dinesh



Tommy Hui & Prof David Paterson inspecting crab inclusion experiments



SWIMS students with UJs MSc class at Tsitsikamma



Group photo of HKU participants



Students participating in group debate



A day out to a real ecosystem, Danshui River Mangrove Wetland

The 5th UCAS Postgraduate Symposium: From Stream to Ocean: The Biodiversity and Sustainability of Aquatic Ecosystems

Initiated as a collaborative network by postgraduate students from The University of Hong Kong (HKU) and Xiamen University (XMU) in 2008, the University Consortium on Aquatic Sciences (UCAS) has continued to foster academic and cultural exchanges among young researchers within the Greater China Region. This year not only marks the 5th anniversary of UCAS, but also witnesses the joining of the 3rd core institution, National Taiwan Ocean University (NTOU), affirming the growth and success of UCAS.

The 5th annual symposium of UCAS was held at NTOU, Keelung, Taiwan from 11-14 March, 2013, the first time for the symposium to be held outside Hong Kong and Xiamen. A record-breaking 56 postgraduate students from six institutions from Hong Kong, China and Taiwan came together to share their research studies and experience. The symposium covered a comprehensive array of topics on freshwater and marine ecosystems, from ecology and biodiversity to ecotoxicology, fisheries and aquaculture, biogeochemistry and environmental risk assessment and management. For the first time, a poster session was offered, in addition to oral presentations. Prof. Yvonne Sadovy from HKU, together with professors from XMU and NTOU, delivered keynote speeches. These presentations, as well as an animated debate session on aquatic ecosystem conservation, sparked a flow of exchange of knowledge and ideas not only among students, but also among staff members from across the border.

After the symposium, a special meeting was called at which the professors reaffirmed the significance of UCAS and Prof. Ching-Fong Chang, the President of NTOU, committed his full support for students to participate in this event in years to come.

In 2014, the symposium series will be back to Hong Kong. Stay tuned to the website for news and updates: <http://mel.xmu.edu.cn/ucas/index/>.

Bio-mimetic Sensors for Autonomous Temperature Logging in the Coastal Environment

Coastal areas of South-East Asia are predicted to be warming at one of the fastest rates in the world, and yet we have limited data to test whether these predictions are true, or what they mean to organisms living on our coasts. To address this a 4 day workshop was held at SWIMS to establish a regional network of data loggers to record real-time, biologically relevant, records of temperatures. The workshop was led by Fernando Lima (University of South Carolina, USA and Universidade do Porto, Portugal) who has been pioneering the use of bio-mimetic sensors (data loggers that mimic real animals) to monitor on-shore temperatures along the coasts of Europe and the USA. During the course Fernando led an international group of participants from Malaysia, Thailand, South Africa, Brunei, USA, Singapore Australia, Brazil, China, Italy and Taiwan, as well as local HK institutions, to learn how to make and deploy bio-mimetic devices as well as the quality-control and data management required to successfully run a large-scale monitoring programme.

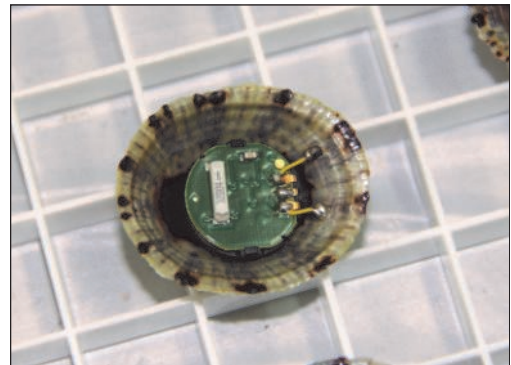
All participants tried their hand at making different sensors, but mostly 'Robolimpets' which Fernando has shown to be excellent mimics of biologically relevant thermal environments. To illustrate how valuable such data are, Brian Helmuth (North Eastern University, USA), Gianluca Sarà (Palermo University, Italy), Bayden Russell (Adelaide University, Australia), and Nova Mieszkowska (Marine Biological Association of the UK) gave presentations linking temperature changes to large-scale gradients, individual performance, productivity and geographic range patterns. Brian Helmuth also gave a public seminar at HKU entitled 'Tipping points, thresholds, and the forgotten role of physiology in marine climate change research'. The final workshop sessions were devoted to planning a programme whereby participants would gather to make identical bio-mimics (Robolimpets) which will be deployed on shores in South-East Asia to give a regional scale assessment of temperature variation along our coastlines.



Participants of the Bio-mimetic Sensor Workshop



Fernando Lima leading a hands-on session to show participants how to make the sensors



The 'guts' of a Robolimpet, showing the temperature data logger



Scott helps set up a camera trap



Kevin & Scott with the Principle Investigator, Bhupendra Prasad Yadav in Nepal



Tommy, Dick & the project team led by Dr. Binguao Chen during boat surveys in Guangxi



Caren collecting underwater photo-IDs of whale sharks in the Bohol Sea



SWIMS and Ocean Park Conservation Foundation Hong Kong

For the 9th consecutive year, HKU undergraduate students participated in the University Student Sponsorship Programme (USSP) sponsored by the Ocean Park Conservation Foundation Hong Kong (OPCFHK).

In January/February, Kevin Wu and Scott Chui explored the biodiversity around Chitwan National Park in Nepal and learned about the current conservation status of various wildlife species in Nepal. They also participated in a field study of the Bengal tiger, assisting in daily collection of data on tiger occurrence and movements using camera traps, mapping the environment, and identifying the pattern of distribution of tigers and their prey.

In June, Dick Tam and Tommy Hui travelled to Guangxi, China, to join researchers from Nanjing Normal University investigating the population ecology of Chinese white dolphins. They joined boat-based research surveys, during which they assisted in gathering data on population parameters and participated in a questionnaire survey conducted in the local fishing community.

Also in June, Caren Shin and Starry Lam visited a study site for whale sharks in the Bohol Sea, the Philippines. They helped to collect underwater photographic data (photo-ID) of the sharks and assisted in recording the types and levels of anthropogenic disturbance caused by tourist activities, especially the impacts of tour boats on shark feeding behaviour.

All participating students documented and shared their experiences via online blogs, where they uploaded photo albums and video footage, and gave presentations at HKU and at OPCFHK as well as interviews with newspapers and local radio. It is our pleasure to acknowledge OPCFHK for providing such unique and valuable opportunities for our students.

Staff Research

Gray A Williams

Research continued into assessing the responses of intertidal organisms to climate change and ranged from investigating thermal tolerance in littorinid snails over a latitudinal gradient from Japan to Singapore, to comparing responses of two species of limpets along a pH gradient created by natural CO₂ vents in Vulcano Island, Sicily. To further develop these large-scale investigations Gray and his team launched an interdisciplinary consortium to study the impacts of climate change on marine organisms with scientists from 18 countries, which will also help build capacity within the SE Asia region.



Gray with collaborators at Vulcano Island, Italy

Kenny Leung

With the implementation of the international Convention on Biological Diversity (CBD), our Government is responsible for studying, monitoring and protecting local biodiversity. Kenny's group at SWIMS continues to play a central role in building an up-to-date marine species inventory for Hong Kong and South China. This year, they have established the joint-university consortium for "Biodiversity, Ecology and Conservation of Marine Ecosystems (BECOME)" and coordinated a mega-project to investigate the "Ecology and biodiversity of benthic marine ecosystems before and after the trawling ban in Hong Kong coastal waters". The synergy created through BECOME will assist the government in delivering on its CBD commitments, and help to better conserve Hong Kong's precious natural resources.



Kenny giving a talk on ecological impacts of endocrine disrupting chemicals to local school students

V. ThiyagaRajan

A 100% grant application success over 5 years is helping Rajan's group to investigate the mechanisms of how ocean acidification (OA) affects oysters and tubeworms using an "interdisciplinary/multi-institutional" collaboration with a team of PhD students from engineering and science. In 2013, the team successfully completed a mega-project to understand the effects of multiple climate-related stressors on early life history stages at physiological, molecular and biomineralization levels. Using proteomics, they are investigating a molecular mechanism of how OA affects oyster larval production, which will revolutionize oyster aquaculture in a changing climate.



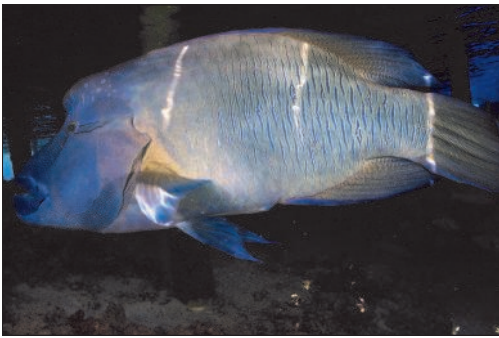
Rajan discussed the ecology of ocean acidification with experts in the field at the University of British Columbia in October



Leszek giving a public lecture during Conservation Day at Ocean Park

Leszek Karczmarski

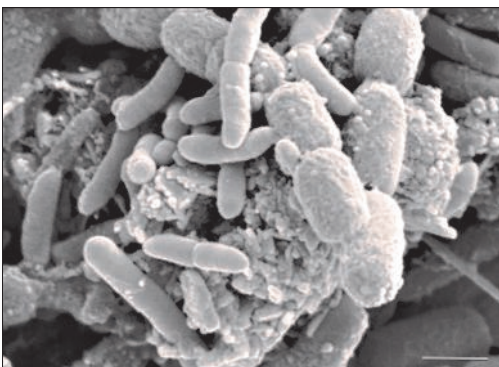
Research by Leszek's group on Chinese White Dolphins was expanded by a new RGC grant to study population connectivity along the coasts of China and Taiwan. Together with colleagues in the USA, Europe and Australia Leszek recently revised the taxonomic status of humpback dolphins. A genetic study of spinner dolphins, in collaboration with colleagues in the USA, UK and the South Pacific, revealed that rapid evolution of the Y chromosome is important in reproductive isolation and evolutionary diversification. Together with Juichi Yamagiwa (Kyoto University), Leszek has just published a book on the research and conservation of primates and cetaceans.



Friendly Napoleon wrasse in French Polynesia

Yvonne Sadovy

A long-term project on conservation and sustainable trade of the CITES (Convention on Trade in Endangered Species) Appendix II-listed Napoleon fish (Humphead wrasse), *Cheilinus undulatus*, continued in 2013 with activities ranging from field work on population abundance in Indonesia, to trade in China and behavioural studies in French Polynesia. The good news is that when fishing declines, populations begin to recover, as was documented in eastern Indonesia. The bad news is that illegal trade of live Napoleons continues into China for the restaurant trade, prompting overfishing and ongoing declines.



SEM showing a microbial community on debris on mangrove sediments from wetlands (scale bar, 1 mm)

Ji-Dong Gu

Nitrite-driven microbiological biochemical processes are globally essential for nitrogen cycling in freshwater and marine ecosystems. Previously JD's group demonstrated the diversity and distribution of anaerobic ammonium oxidation (anammox) bacteria over an anthropogenic gradient profile from the polluted Pearl River Delta to the pristine South China Sea (SCS). New phylotypes of anammox bacteria and their seasonal dynamics were reported. Recently, the nitrite-dependent anaerobic methane oxidation coupling carbon and nitrogen cycles were assessed for their presence and abundance in coastal wetlands of the SCS.

Moriaki Yasuhara

Moriaki is interested in climatic and environmental impacts on marine ecosystems and biodiversity. He works on fossil ostracods as a model system with various collaborators in US, UK, Italy, Germany, Netherlands, Japan, etc. Moriaki's group include one postdoctoral fellow and four postgraduate students whose research spans: human-induced shallow-marine ecological degradation in Hong Kong, paleoecological study of submarine cave cores, spatiotemporal patterns and controlling factors of deep-sea benthic communities and species diversity, and tropical western Pacific marine paleo-biodiversity.



Moriaki receiving his Early Career Award at the RGC ceremony

David Baker

The Baker laboratory opened in January 2013 to document and understand the impacts of anthropogenic nitrogen on coral reefs of the Asia-Pacific. This year Molly Moynihan (Université Pierre et Marie Curie, France), investigated the genetics and physiology of Hong Kong hard corals while the team conducted fieldwork with the Korea Institute Ocean Science & Technology in Chuuk, and the University of Guam (USA). David's RGC study, 'Anthropogenic nitrogen pollution in Hong Kong coral communities: identifying the sources and their impact on ecosystem biodiversity', started in October 2013. Dr. Chris Freeman (Smithsonian Institution) visited David at SWIMS to establish the first inventory of sponge diversity in Hong Kong.



*Monitoring coral disease at Chuuk Atoll.
From left to right: Taibun Kim, Laurie Raymundo, David Baker.*

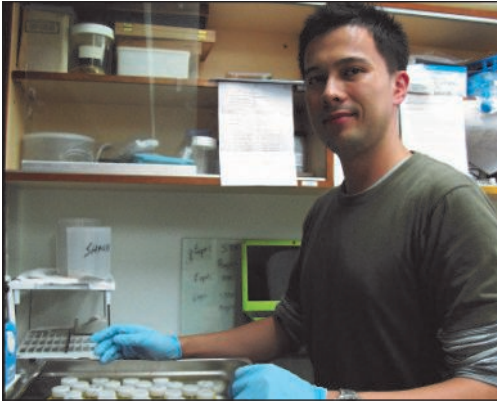
Post Doctoral Fellows

Priscilla Leung

Priscilla's research focuses on responses of organisms to environmental stresses at the molecular level. She has studied the combined effect of temperature and chemical pollutants on marine fish and diatoms using genomic and proteomic analyses. Priscilla developed *de novo* transcriptomic databases for the mussel *Perna viridis* and whelk *Reishia clavigera* providing unique platforms for ecotoxicological and environmental genomic studies. Priscilla is also investigating juvenile fish diversity in three local Marine Parks to provide baseline information for managing fish resources, and establishing a CO-I sequence library for DNA barcoding of the collected species.



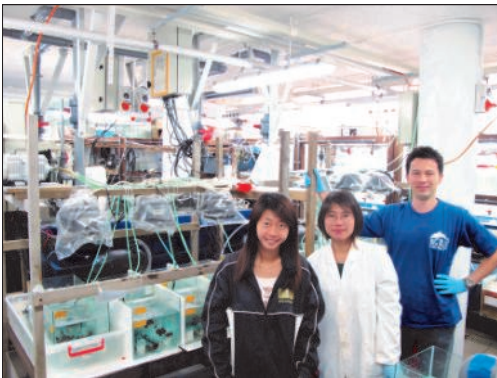
Priscilla hauling in a seine net with fishermen in an over-night purse seine survey



Steve running tests on snails

Stephen Cartwright

Stephen continued to investigate responses to thermal stress of littorinid species collected from across their latitudinal range. Working with local and regional collaborators the work nears its end with recent trips abroad completing field sampling. Over the summer experiments from other localities investigated the effect of variable temperature and its duration on the acclimation ability of molluscs. Varying temperatures appeared more important than exposing animals to constant average temperatures for the same duration, and longer durations (> 2 weeks) were important for responses to manifest themselves. The work illustrates the importance of good protocols to assess the potential of species to cope with climate change.



Vivien (middle) working with Steve and Michelle on mussel acclimation

Vivien Bao

Vivien's research focus was on the effects of exposure to variable temperatures and duration time on *Septifer virgatus*, a species which reaches its southern limit in Hong Kong. Preliminary analysis suggests that when acclimated to constant average temperatures for a short period of time (2 weeks) the mussel showed little or no ability to acclimatise to higher temperatures. However, when exposed to variable temperatures that cycled lower and higher than the average for 4 weeks, the mussels were more resilient to higher temperatures. Vivien also continued her work on the enzyme responses of littorinid snails to thermal stress, as part of a regional project spanning from Singapore to Japan.



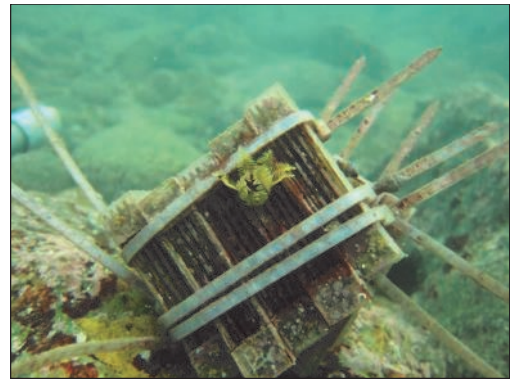
Terence (left, with his supervisor Gray) received the Outstanding Research Postgraduate Student Award

Terence Ng

Despite a long history of studies which date back to the 1840s, the number of marine species in Hong Kong waters remains a mystery. In the past year Terence conducted an ECF project, where he reviewed the available data on Hong Kong's marine biodiversity, and constructed the first full species database. Terence's work shows that Hong Kong is exceptionally biodiverse, with >5,000 species recorded in Hong Kong waters and that even though Hong Kong only accounts for ~0.03% of the marine area of China, it supports ~25% of the marine species recorded for all China.

Michael Eitel

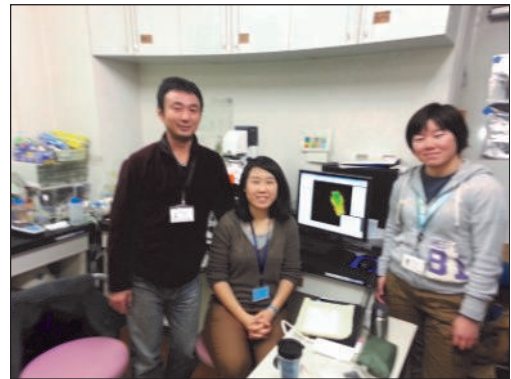
Michael Eitel finished his studies on the biodiversity and ecology of the marine animal phylum the Placozoa as a German Academic Exchange Service postdoctoral fellow. Using a molecular approach, Michael genotyped more than 1,500 placozoans and identified ten different species-lineages, characterized as 16S mitochondrial ribosomal RNA haplotypes. This unexpectedly high diversity represents almost half of the known global placozoan diversity. Michael was able to identify three entirely new lineages, possibly Hong Kong endemic placozoans, and established more than 30 clonal placozoan laboratory strains.



Traps set at the Cape d'Aguilar Marine Reserve to collect placozoans

Vera Chan

It has been a fruitful year for Vera, as she completed her PhD and is now working as a Post Doctoral Fellow. Vera was also awarded the excellent Teaching Assistant Award by the Faculty of Science. Vera's PhD applied interdisciplinary collaborative knowledge of modern mineralogy tools to investigate early mineral deposition in metamorphosing larval tubeworms. Vera's research provided important information for understanding the response of biomineralization to multiple climate change-related stressors. She has now started a project to observe marine invertebrate calcification using live cell imaging techniques.



Vera (middle) visiting Dr. Takashi Toyofuku's laboratory in Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

Nicolas Duprey

Nicolas joined SWIMS as a Post Doctoral Fellow with David in September 2013. His main interest is in the spatial and the temporal patterns of reactive nitrogen pollution in the reef ecosystems of the Asia-Pacific region, with particular emphasis on Hong Kong. Nicolas accompanied David on sampling trips to Chuuk (FSM) and Guam (USA) and on an extensive exploration and sampling campaign of HK coral communities in October-November 2013. Besides laboratory work, such as preparing centennial coral core chronologies and stable nitrogen isotopes analyses, Nicolas is also preparing a meta-analysis of water quality and coral biodiversity data to determine the factors which drive coral biodiversity in Hong Kong.

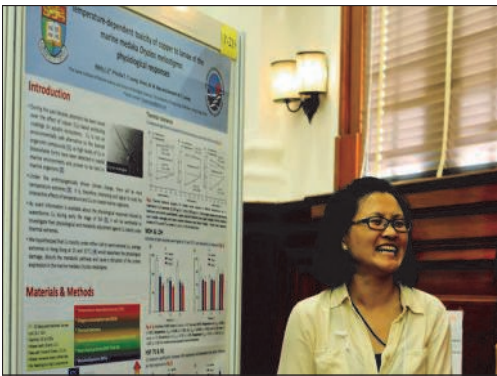


Assessing coral biodiversity on the WWII wreck Fujikawa Maru - Chuuk FSM.

Postgraduate Research

Temperature-dependent chemical toxicity

In November 2013, Adela Li submitted her PhD thesis which established two different models to describe temperature-dependent chemical toxicity for marine fish and small crustaceans. Temperatures at both cold and warm extremes increased toxicities of chemical pollutants to fish, leading to growth inhibition and metabolism interruption which could be temporarily buffered by increased enzymatic activities and heat shock protein expression. Interacting effects of temperature and chemical pollutants, especially at high temperatures, significantly reduced survival, increased developmental time, changed sex ratios and affected transcriptions of several stress-related genes.



Adela with her poster presentation at the 7th International Conference on Marine Pollution and Toxicology

Ocean acidification, a long-term multi-generational stressor

Ocean acidification will worsen in the future and will affect many generations of most species, hopefully allowing for adaptation. Ackley has shown that tolerance to decreased pH is partially genetically determined, and variable, so selection for tolerant phenotypes might result in more tolerant populations. Recently, Ackley has shown that when animals (e.g. tube-worms) are raised in low pH conditions, their offsprings' tolerance to low pH is different from that when raised at ambient pH. Hence, transgenerational phenotypic plasticity is capable of immediately affecting performance, and should play an important role in species tolerance and survival in the future.



Ackley takes a quick excursion to the shore

Climate change causes higher metabolic regulations in baby oysters

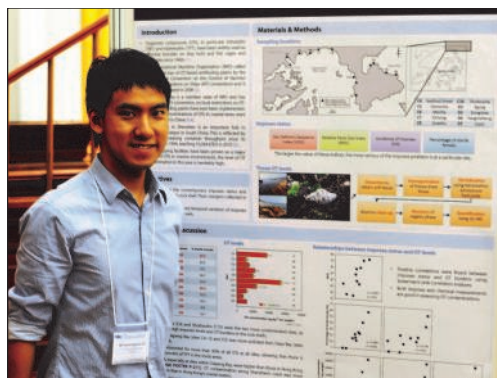
Dinesh has been studying how warming, freshening and ocean acidification may adversely affect marine invertebrate larval forms, especially economically important juvenile oysters. To understand the impact of these climate change-related stressors on oysters, Dinesh uses a shot gun proteomics strategy to elucidate how a large number of proteins, and protein interaction networks, alter various metabolic pathways to interacting multiple climate change stressors.



Dinesh working with oyster proteins in the Environmental Proteomics lab

Assessing ecological and human health risks of organotin compounds

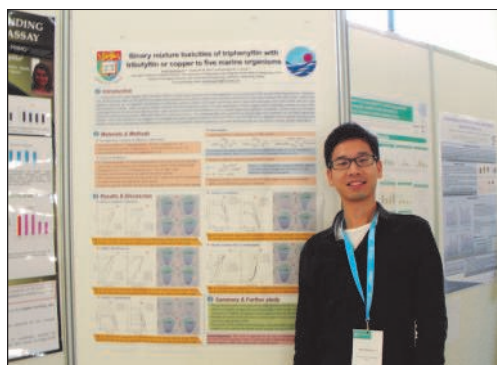
Kevin Ho conducted field-based investigations to examine the adverse impacts of organotin (OT) contamination on coastal environments of Hong Kong and Shenzhen. The intertidal whelk *Reishia clavigera* collected from many sites exhibited high tissue OT concentrations. Transplanted *R. clavigera* from clean to polluted sites for six months showed an increase in both imposex status and tissue OT concentration. Kevin's 25-month population study showed limited recruitment of this species in polluted sites. Contamination of organotins, especially triphenyltins, persist in this region posing high risks to marine biodiversity and human health.



Kevin presenting a poster at the 7th ICMPE in Hong Kong

Triphenyltin is highly toxic to marine fish

Triphenyltin (TPT) compounds are widely used as effectual biocides in antifouling paints and agriculture production. Elevated concentrations of TPT have recently been detected in the tissues of local marine gastropods and fishes. Andy Yi's PhD study aims to investigate the toxic effects of TPT on selected marine species. His latest work shows that TPT is highly toxic to the marine medaka fish. TPT can affect their embryonic heart development, reduce larval growth and swimming activity, lead to a male-biased population and eventually inhibit reproduction.



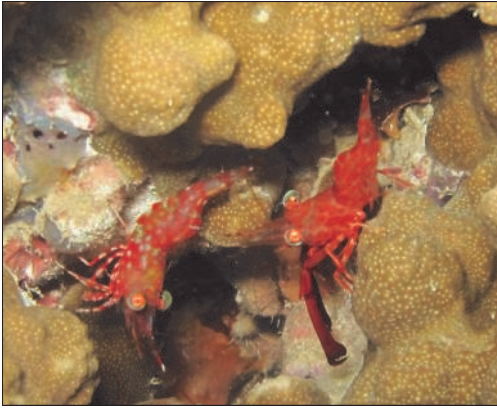
Andy with his poster at the 17th Symposium on Pollutant Responses in Marine Organisms

Distribution of non-native marine invertebrates in Hong Kong

Juan Carlos focuses on non-native marine invertebrates in Hong Kong finding six uncommon non-native marine invertebrates in our waters. To understand what controls their spread, he tested their resistance to abiotic (temperature and salinity) and biotic (predation) factors, and compared the results with those of native species. He shows that non-native species have a wider tolerance to abiotic factors, indirectly suggesting that biotic interactions could be controlling the abundance of non-native species.



Juan Carlos and Marielle before going for field work



Cinetorhynchus hendersoni female (left) and male (right) on *Porites rus* coral in Malaysia.

The influence of habitat complexity and symbiotic associations on predator-prey interactions between fishes and reef-dwelling rhynchocinetid shrimps

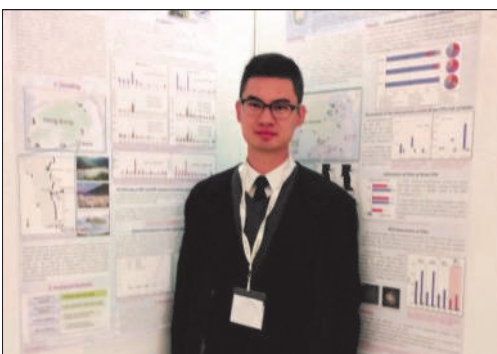
Nicolas Ory holds the Hong Kong Swire Scholarship and examines the effects of predation and habitat structure on distribution and abundance of mesoconsumer prey in coral and rocky reefs of temperate and tropical waters. He conducted experiments on a shallow fringing coral reef in Malaysia to examine whether predation risks affect feeding activity, habitat use and survival of *Cinetorhynchus* shrimps. Shrimps emerged from refuges at night and preferred complex substrata which protect them from predatory fishes, and Nicolas study highlights the need to investigate trophic roles, especially where predatory fishes have been overexploited.



Karen and Kathy after field work in Shek O

Survival strategies of *Cellana toreuma* to environmental stress

Karen Villarta is investigating the survival strategies of the limpet, *Cellana toreuma*, to environmental stress. This species shows a highly dynamic annual pattern, with a sharp decline in abundance in summer. Physiological experiments showed that, overall, thermal tolerance is low in *C. toreuma*, but differs among size classes. Karen is currently investigating the different environmental factors affecting thermal tolerance and investment in growth and reproduction in *C. toreuma* to understand how this limpet is able to survive in a highly stressful, dynamic, environment.



Elvis at the Conference on Urban Environmental Pollution in Peking University, China

Ecological risk assessment for safeguarding Hong Kong's only Marine Reserve

This year Elvis Xu, who holds the James Henry Scott Scholarship, conducted field and laboratory work on the ecological risk of endocrine disrupting chemicals (EDCs) faced by organisms in the Cape d'Aguilar Marine Reserve. Elvis discovered high levels of EDCs in samples collected from the reserve, and that the Shek O sewage treatment plant was possibly the major source of EDC pollution in the reserve. Diluted effluents had significant adverse effects on the health of marine medaka. Elvis is now applying *in vivo* and *in vitro* bioassays to quantify estrogenic activities.

Temperature-dependent pesticide toxicity to amphibians

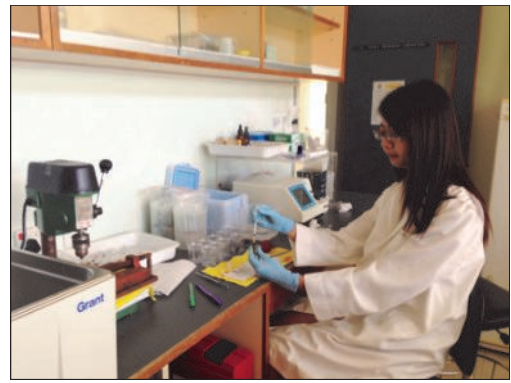
Edward Lau has been investigating the combined effect of temperature and pesticides on physiological responses of the larvae of several local amphibian species. Using the molecular biology facilities at SWIMS, Edward discovered relationships between temperature and different physiological responses in his target species. His results indicate that species respond differently to the same pesticide under varying temperatures. In the coming year, he will investigate whether the presence of predators affect these relationships.



Edward presenting his work on conservation science at the University of Queensland, Australia

Ecophysiology and dynamic energy budgets (DEB) of *Septifer virgatus*

The black mussel, *Septifer virgatus*, is an ecologically important species on exposed rocky shores in Hong Kong. Yet, *Septifer* experiences mass mortalities with > 70 % drop in mussel cover during the summer. To investigate why this occurs, Michelle Luk measured the mussels' physiological thermal upper limits in air and seawater, heart rates, oxygen consumption rates and osmotic concentrations. She also investigated its energy allocation strategies by applying DEB modeling to predict the success and distribution of *Septifer* under increasing temperatures associated with climate change.



*Michelle extracting haemolymph from *Septifer virgatus* after thermal exposure*

Sea urchin conservation strategies

People eat sea urchins mainly as sashimi or sushi. Hong Kong has only one commercially important species, *Anthocardaris crassispina*, which Juan Diego has been studying for 3 years. Now, at the end of his PhD, JD will use a matrix population model to measure the relative contribution of different demographic parameters to population growth, using the outcomes to explore various conservation strategies and to provide essential information for the development of a management plan for this sea urchin. Preliminary analyses show that Cape d'Aguilar Marine Reserve is an important spawning ground for this urchin in eastern Hong Kong waters.



JD using SCUBA to collect sea urchins



Simon using a theodolite to track dolphins

Impacts of coastal tourism on Indo-Pacific humpback dolphins in Hong Kong

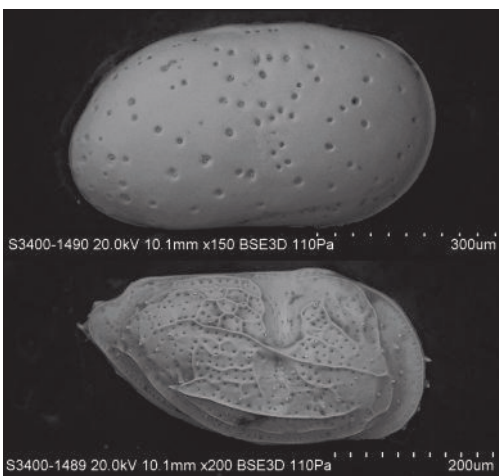
Simon Wong used a case study of two coastal dolphins (the Benguela dolphin and the Indo-Pacific humpback dolphin) to demonstrate how an understanding of behavioural ecology contributes to development and implementation of effective conservation management plans. His current fieldwork applies scan sampling and theodolite tracking of local humpback dolphins from shore-based vantage points on Lantau Island, to quantify their pattern of area use and to identify core habitat(s). He will analyse movements and behavioural responses of dolphins to anthropogenic stressors such as coastal development and dolphin-watch tourism.



Marielle after fieldwork with her supervisor, Yvonne

Investigation of growth of the sea cucumber *Holothuria leucospilota* in Hong Kong

Hong Kong is a major global trader of sea cucumbers. *Holothuria leucospilota* is a common local species but of low economic value. Given that some species of sea cucumber are overfished and some are of conservation concern, it is important to understand aspects of their population dynamics for possible management. Marielle Dumestre explores different methods, including weight-frequency cohort analysis, cage enclosure and mark-recapture experiments to characterize growth of *H. leucospilota*. She is also attempting to understand the characteristics of fluorochrome tagging on holothurians and its application to determine growth.



Ostracod species Sinocytheridea impressa (upper) and Neomonoceratina delicate (lower)

Shallow marine ecological degradation in Hong Kong: A paleoecological approach using ostracods

Little is known about the long-term history of human-induced marine ecological degradation in Hong Kong. Circle Hong uses microfossil ostracods as a model system to compare present-day and recent-past assemblages in grab samples with Holocene background assemblages in sediment cores. Preliminary results show that the species diversity of the Holocene background assemblage was much higher than species diversities in grab samples. The faunal composition of the Holocene sample was also distinct. These results may indicate serious ecological degradation over time.

Socio-behavioural dynamics of spinner dolphins in the Egyptian Red Sea

Spinner dolphins (*Stenella longirostris*) frequently visit sheltered waters of offshore reefs, such as Samadai Reef (Egypt). These animals are the focus of Amina Cesario's PhD research which seeks to quantify their socio-behavioural complexity using underwater photo-ID techniques. Results indicate a generally high geographic fidelity of the animals and long-term preferential associations, suggesting a multi-level society. During a recent conference, Amina presented evidence of male alliance formation as a behavioural trade-off between species-specific ecological needs and cooperation with (or against) other conspecifics over access to females.



Amina collecting photo-identification data at Samadai Reef, Egypt

Biology and fisheries of seabreams in Hong Kong

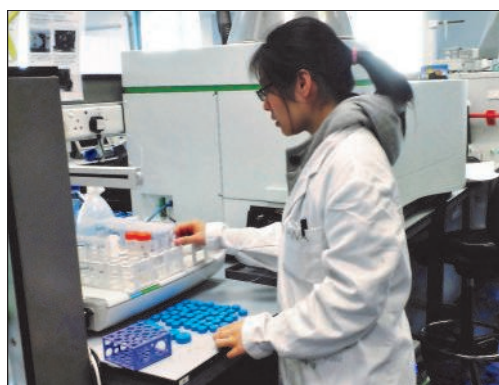
Calton Law continues his research on the biology of three sea breams (Sparidae: *Acanthopagrus schlegelii*, *Evynnis cardinalis* and *Pagrus major*) and their local fisheries. *A. schlegelii* is a protandric hermaphrodite while *E. cardinalis* and *P. major* likely exhibit gonochorism. Spawning seasons occur during the Hong Kong winter-spring period. Preliminary results from fishermen interviews suggest that these species are recruitment or/and growth overfished as significant decreases in catches of adults and fish fry were reported. He is now investigating the age and growth of *A. schlegelii*, and the trophic dynamics of these species related to reproduction, season and location.



The 'technical' problems involved with Calton setting up a tank for age and growth studies!

Effects of salinity on the toxicity of nanoparticles to a marine diatom

Nano zinc oxide particles (ZnO-NPs) are effective blockers of UV light and are used extensively in sunscreens. Thousands of tonnes of sunscreen are washed into the marine environment annually. Mana Yung investigates the influence of salinity on the physicochemical properties of ZnO-NPs and studies their toxicity to a marine diatom, *Thalassiosira pseudonana*. Her results show that salinity increases with increasing aggregate size of the nanoparticles and decreasing ion dissolution from ZnO-NPs. At high salinities, the concentration of bioavailable Zn ions and the toxicity of ZnO-NPs to the diatom are greatly reduced.



Mana analysing ion dissolution of ZnO nanoparticles



Wang collecting soil specimens

Different chemical responses of tropical and temperate marine species

Wang Zhen's PhD study addresses how temperature can modulate chemical toxicity in various freshwater and marine species, and develops appropriate models to predict chemical toxicity under different thermal scenarios. This year, he successfully compared temperate and tropical saltwater species' acute sensitivity to 11 chemicals through a comprehensive meta-analysis. He demonstrated that temperate and tropical saltwater species display significantly different sensitivity towards all test chemicals except cadmium. Based on his results, he recommends an extrapolation factor of two for deriving tropical water quality guidelines from temperate toxicity data.



Sze-Wing searching for lions with the use of VHF receiver

Spatio-behavioural dynamics of predator-prey interactions

Reintroduction of top predators into previously altered communities can induce behavioural changes in prey species, including movement, range and space use, which can exert a cascading effect. In a South African nature reserve, Sze-Wing Yiu has been tracking animals and conducting behavioural observations on reintroduced lions and their prey (zebras and wildebeests). Lions were collared with satellite tracking devices and wildebeests ear-tagged with GPS loggers. Through intensive focal sampling of behaviour and the application of behavioural models, she investigates habitat use of lions and responses of their prey species.



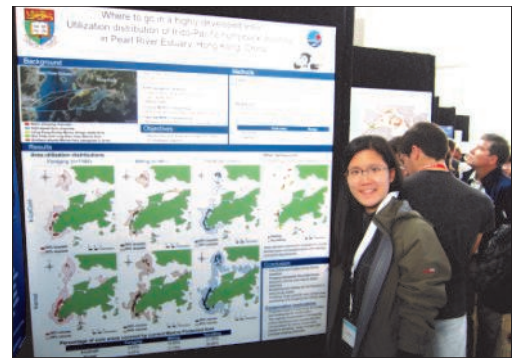
A Indonesian colleague interviewing local fishermen

Seeking sustainable coral trout fisheries

Xueying Yin has just finished her MSc thesis on stock assessment of coral trout, *Plectropomus leopardus*, a major reef fish exported from Southeast Asia. In the past year, she assessed the sustainability of coral trout fisheries in Indonesia and proposed a series of measures to ensure their sustainable use. Her work highlighted the need for community-based management and drew a roadmap for the synergy of efforts needed from governments, NGOs and consumers. Besides thesis work, she coauthored a book chapter with Yvonne that analyzed the nature and implications of present-day international trade on reef fishes.

Social and spatial ecology of Chinese white dolphins in the Pearl River Estuary

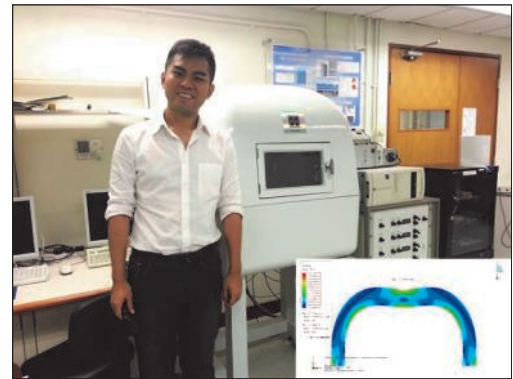
Carmen Or has continued her study in the Pearl River Estuary (PRE). In collaboration with postgraduate students from Sun Yat-Sen University, she intensified her research effort in the western reaches of the PRE. Her analyses of area utilization indicate that dolphin activities concentrate along natural coastlines. Foraging represents by far the predominant behaviour and the core area is highly restricted. Carmen's spatiotemporal analyses reveal the inadequacy of current conservation policy in Hong Kong where the majority of core areas that harbour biologically critical dolphin behaviours are unprotected.



Carmen at the 20th Biennial Conference on the Biology of Marine Mammals in Dunedin, New Zealand

Climate change causes severe damage to tubeworms: an engineers prospective

Acidifying oceans due to rising anthropogenic CO₂ will cause many calcifying organisms to form impaired shells/tubes with poor mechanical properties. Through interdisciplinary collaboration with biological, medical and engineering schools, Roy Li applied SEM, micro-CT scanning, micro-force testing and nanoindentation to generate a map of mechanical property distribution of the impaired tube of the tubeworm *Hydroides elegans*. This information was input into the engineering computational ABACUS model for finite element analysis to simulate predatory attack which revealed that tubeworms may face extra challenges in the future due to weakened shells.



Roy is busy modeling (right hand bottom corner) the mechanical properties of tubeworm shells

Multiple climate change stressors put Pacific oyster larvae under risk

Climate change stressors (warming, freshening and ocean acidification) are detrimental to larval calcification, health, shell architecture and mechanics, and hence recruitment of several important shellfishes. Ginger Ko has successfully tested this hypothesis on Pacific oysters using a long-term climate change perturbation experiment. Larvae appear to have a short-term adaptive or acclimatory mechanism to tolerate applied multiple stressors although they failed to grow after recruitment. She is exploring how calcification and energy metabolism regulatory pathways are altered at the proteome level in oyster larvae to cope with stress.



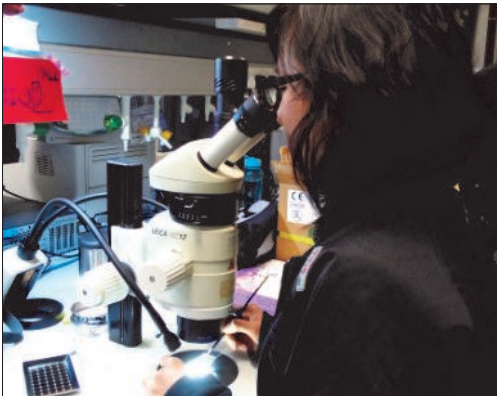
Ginger "Strip Spawning" oysters to collect their eggs



Yanny and helpers sorting trawl catches on board a fishing vessel

Effects of the trawl-ban on demersal fisheries resources in Hong Kong

Trawling has been banned across Hong Kong waters since 31 December 2012. Yanny Mak's PhD study aims to investigate whether the trawl-ban will allow recovery of demersal fisheries resources. With regular surveys using a designated scientific vessel, her preliminary results indicate that there were significant differences in community structure of demersal fishes in terms of abundance and biomass between 2012 and 2013, with fish abundance and biomass in eastern waters of Hong Kong being significantly higher than that of western and southern waters.



Ruby sorting ostracods under a microscope

Influences of Holocene environmental changes on submarine cave ostracod community and species diversity

Submarine caves are a unique environment due to their isolated nature, stable sedimentation, paucity of light and low primary production. To understand ecosystem responses to rapid climate change in this unique environment, Ruby investigates fossil ostracod faunal and diversity changes over the last 7000 years using two sediment cores from the Daidokutsu submarine cave, Okinawa, Japan. The Holocene Daidokutsu ostracod fauna includes typical submarine cave taxa (*Kasella* and *Cardobairdia*), known as 'living fossils', but is mostly composed of tropical shallow marine species.



*Jack conducting gene expression analysis of *Perna viridis* by quantitative Real-time PCR (q-PCR) analysis*

Establishing genomic platforms for environmental 'omics' on two molluscan biomonitor species

The mussel *Perna viridis* and the whelk *Reishia clavigera* are commonly used as biomonitor species for pollution monitoring programmes in Southeast Asia. However, limited molecular information has hindered the study of toxic mechanisms of environmental pollutants. With the advance of next generation sequencing, Jack Ip is developing comprehensive *de novo* mRNA transcriptomic databases for these two species. In the coming year, he will use the databases to investigate the toxic mechanism of triphenyltin in *P. viridis* and the onset mechanisms of imposex development in *R. clavigera*.

Influence of the trawl-ban on molluscan diversity

As part of the project investigating whether the trawl-ban will allow recovery of the marine benthic ecosystem in Hong Kong, Archer Wong's research focuses on investigating molluscan diversity before and after the trawl-ban. With regular field surveys across Hong Kong waters, he has been collecting samples of various gastropod, bivalve and cephalopod species assisted by training on species identification from Prof. Brian Morton. In the future, Archer will embark on data processing and analysis to investigate possible spatiotemporal patterns in abundance and biomass of molluscan species.



Archer checking information on the way to fieldwork

Central-place foraging of the sand-bubbler crab, *Scopimera intermedia*

Sand-bubbler crabs, *Scopimera intermedia*, are foragers which burrow in sandy shores and feed radially from their burrows on sediments. Tommy Hui is trying to unravel patch exploitation strategies employed by these crabs to optimize their energy gain. To achieve this, Tommy is describing and quantifying the patch exploitation patterns, and testing for seasonal differences in feeding patterns and sediment food distribution. By investigating how the crabs respond to varying food qualities, it will be possible to assess whether they are foraging optimally, and integrate additional components (e.g. satiation state) into the framework of an optimal deposit-feeder foraging model.



Scopimera intermedia, a deposit-feeding crab on sandy shores

Can oysters produce novel matrix proteins to protect their shells in an acidified ocean?

Climate change variables such as ocean acidification (OA), flooding by fresh water and global warming are threatening shellfishes. Specifically, production of organic matrix proteins (OMP) that assemble CaCO_3 crystals into oyster shells may be affected by climate-related stressors, particularly OA. In this first year of his PhD, Abhishek Upadhyay will use quantitative proteomics and bioinformatics tools to study OMP production in oysters under projected near-future climate change scenarios. Since the complete genome of the Pacific oyster has just been published, this proteomics project has great potential to reveal new molecular pathways.



Abhishek using the LC-MS/MS Machine



Stephen collecting photo-ID data in the Pearl River Estuary

Constructing population models of a coastal delphinid

Using population modelling techniques, Stephen Chan's research constructs multistate population models to investigate the ecology of Indo-Pacific humpback dolphins in the Pearl River Estuary (PRE). In collaboration with Sun Yat-Sen University, China, Stephen quantifies the demographic parameters, geographic structure, behavioural dynamics and population trends of this species, providing insights into the mechanisms that shape the population-level demographic and behavioural processes in the PRE under increasing anthropogenic pressure. He also conducts visual assessment of skin disorders and human-induced injuries on free-ranging animals to reflect the health of the population.



Lily sorting her trawl samples

Effects of the trawl-ban on demersal crustacean resources in Hong Kong

The Hong Kong government has imposed a territory-wide ban on bottom trawling since 31 December 2012. Lily Tao's PhD study seeks to examine the benthic marine crustacean biodiversity and their mean trophic level following the trawl-ban. Based on preliminary results, community structure of benthic crustaceans was found to differ before and after the trawl-ban. With more long-term data, Lily will address the effect of the ban on crustacean biodiversity, and examine trophic relationships using stable isotope analysis.



Yuan working on oyster culturing

What is the cause of stronger oyster shells?

Three oyster species *Crassostrea gigas*, *C. angulata* and *C. hongkongensis* are commonly cultured along the coast of China; these related oysters have different shell strengths. Using analytical techniques from mechanical engineering, Yuan Meng analyzes the mechanical information and crystal characteristics of oyster shells. This interdisciplinary approach includes finite element methods, scanning electron, electron backscattered diffraction and atomic force microscopy as well as microforce testing and nanoindentation. Yuan aims to study the structural and crystallographic features that lead to different mechanical properties among these species.

Biodiversity, distribution, and taxonomy of shallow marine ostracods in Taiwan

Ostracods are useful paleo-indicators of marine biodiversity changes, especially in the ancient past. Given that Taiwan is a part of the Indo-Australian Archipelago (IAA) biodiversity hotspot, and its marine fauna includes both (sub) tropical and temperate components, Richard's project will revise the unsolved taxonomy of Taiwan shallow marine ostracods. He is using Plio-Pleistocene fossil samples and literature surveys to better estimate ostracod biodiversity of Taiwan as compared to that diversities in lower (southeastern Asia) and higher latitudes (e.g. Japan) to better understand the IAA biodiversity hotspot in the geologic past.



Richard examining ostracods under the stereomicroscope

Effects of climate change on marine biota using deep-sea benthic ostracod communities from Icelandic waters as model organisms

Though remote, the deep sea is not immune to climatic changes. As global warming becomes increasingly severe the need to understand its impact on deep-sea biodiversity increases. Even basic information (e.g. modern distribution of faunal diversity and their controlling factors) is, however, limited. Aiming to elucidate the predominant controlling factors of deep-sea biodiversity and faunal distribution, Anna Joest studies deep-sea Ostracoda as a model system. Using multiple core samples from the sub-polar North Atlantic Ocean, a region highly sensitive to climate alterations, Anna is investigating species diversity and spatiotemporal patterns.



Anna preparing her ostracod samples

Community Outreach

SWIMS has continued to play an important role in knowledge exchange, hosting over 850 visitors in the past year. As in past years, school groups have been the major visitors, coming to SWIMS to learn about sampling procedures and marine ecology. This year SWIMS hosted visits from Australian International, South Island, West Island, King George V and Island Schools as well as Discovery College. Other visitors included Swire and Ocean Park HK Staff Associations, South China Diving Club as well as HKU departments such as Architecture and the Faculty of Law alumni.



Visit from the Department of Social Work & Social Administration



Terence giving a talk about marine biodiversity to high school students at the Tai Tam Tuk Eco Educational Centre



TV Appreciation Index Award gathering with Yvonne, Director Jerry Tai, Stan Shea and Allen To



Yvonne with 4 of the 7 Board members of SCRFA

We were also able to play host to a number of summer internship students from Canada, France, Malaysia, UK and the USA as well as local HKU students who helped SWIMS researchers with their projects, or conducted their own projects for their BSc or MSc programmes.

SWIMS has been working closely with Tai Tam Tuk Foundation – Eco Educational Centre to inspire HK's young people to take action in environmental conservation. Terence, for example, has been assisting Vickie Yau from the Centre to prepare and give talks, as well as host field activities for local high school students.

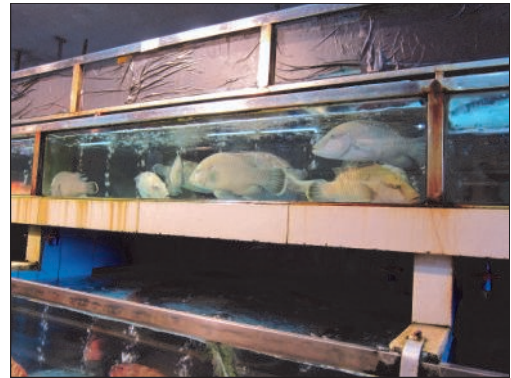
This year was also successful in terms of outreach, with SWIMS research being featured in numerous TV documentaries, including e-TV (targeting HK school students) and a TVB programme on climate change. In 2010 Hong Kong film director Jerry Tai saw Yvonne in 'End of the Line', a film about global fisheries. He felt that more of the Asian side of the story would be interesting to tell and approached Yvonne for ideas, which ultimately led to the release, in 2013, of a five-part RTHK series 'Fishy Business' (Ocean Business in Cantonese). The series tells stories about fisheries in the region; shark fin, live fishes, dolphin and the history of Hong Kong's fishery. Yvonne and two of her ex-SWIMS postgraduate students, Stan Shea and Allen To, featured in several episodes (<http://programme.rthk.hk/rthk/tv/programme.php?name=tv/oceanbusiness&p=5985>).

Yvonne is also co-founder of SCRFA (Science and Conservation of Fish Aggregations), established in 2000 to safeguard fish spawning aggregations. Many of these form briefly and predictably each year as the only opportunity for breeding. Uncontrolled fishing, however, has reduced or eliminated many aggregations with serious consequences for the fisheries involved. SCRFA uses science, education and policy to work with scientists, governments, NGOs and fishing communities to study and preserve fish aggregations. A recent film project by the group (<http://www.scrfa.org/>) and went on to win first place in its category in the Reef-Renaissance Film Festival (www.reefrenaissance.com). A collaboration with SeaWeb produced a public awareness campaign in Fiji (<http://www.fijisun.com.fj/2012/08/25/seaweb-leads-campaign/>).

Conservation

SWIMS and IUCN

The IUCN (International Union for Conservation of Nature) Groupers & Wrasses Specialist Group (GWSG) is working to conserve several threatened species of groupers (Epinephelidae) and wrasses (Labridae). A major current focus is the Napoleon fish (So Mei in Cantonese), or Humphead wrasse, *Cheilinus undulatus*, which is listed on CITES (Convention on International Trade in Endangered Species) Appendix II. This appendix seeks to ensure that international trade in threatened species is operated sustainably. The GWSG supported a survey in China which showed that many of the species have entered the country illegally through Hong Kong and are on sale in local fish markets in southern China and have also been spotted in luxury hotels, including the Shangri-La, Guangzhou. This hotel has now taken the Napoleon fish off its menu! Being a luxury seafood item, the response of such hotels is key to reducing illegal trade in the species.



Juvenile Napoleon fish illegally on sale in southern China

SWIMS and Reef Check

Hong Kong Reef Check 2013 was initiated by the Agriculture, Fishery and Conservation Department, HKSAR Government, on 27th July 2013 as part of an on-going collaborative project, initiated in 2000 to monitor reef biodiversity in Hong Kong. As in previous years, AFCD assigned the SWIMS team to monitor the reef at Siu Long Ke. Around twenty people conducted a SCUBA diving survey along the reef to monitor the coral community and its associated animals. We recorded 41% coral coverage, the same as for 2012.



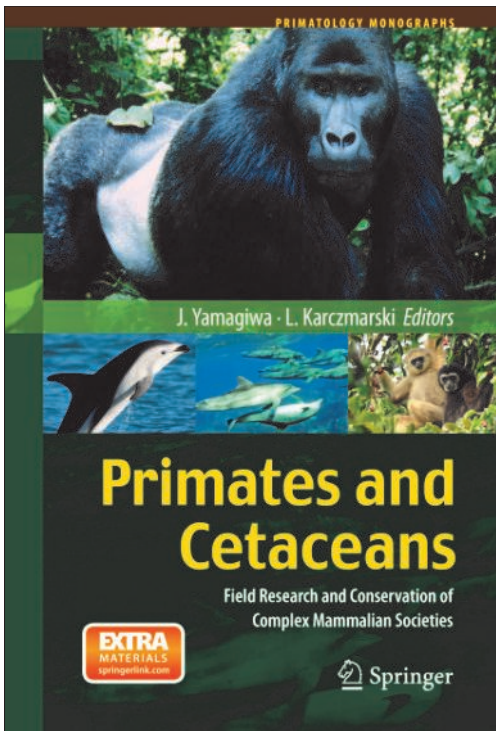
Hong Kong vessel illegally exporting Napoleon fish from western Indonesia

Sightings of indicator species, such as groupers and snappers, were confirmed and we also noticed some damage. We encountered a relatively high abundance of other, non-indicator species, such as the long-spined urchin (*Diadema*). This is a fruitful and fun event that, as in previous years, was a positive experience. We gained exposure to marine biodiversity in Hong Kong and experience with underwater survey techniques. The team is looking forward to participating again next year.

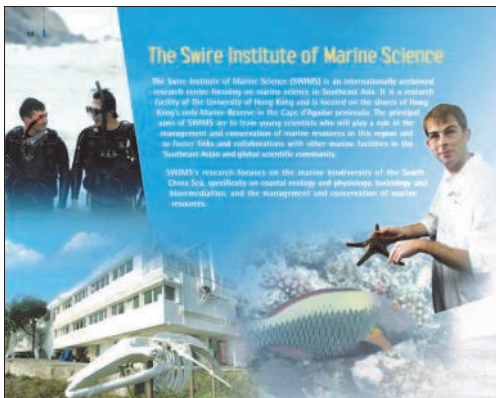


Reef Check team 2013





New publication co-edited by L. Karczmarski



Research Opportunities

Research Visitors

The Swire Institute of Marine Science offers three major sources of funding to support researchers wanting to visit SWIMS to undertake research. For enquiries, please contact the Director, Gray A Williams.

The Laurence Caplin Scholarship in Marine Biology

Established in memory of Laurence Caplin by his widow, Mrs E Caplin and daughter, Mrs J Woodford, to bring young people to SWIMS to undertake research in marine biology with a resident staff member.

The Intertidal Trust Fund

Established in 1982 with profits from the book "The Seashore Ecology of Hong Kong", grants from the Intertidal Trust Fund can be made to overseas students and scientists who wish to undertake research on intertidal ecology at SWIMS.

Cape d'Aguilar Trust Fund

Established in 1995 with profits from the book "An Introduction to the Cape d'Aguilar Marine Reserve, Hong Kong", grants from the Cape d'Aguilar Trust Fund can be made to local or overseas students and scientists who wish to undertake marine biological research on the Cape d'Aguilar Marine Reserve at SWIMS.

Higher Degrees (M.Phil / Ph.D)

Students who are interested in undertaking a research postgraduate degree (M.Phil or Ph.D) in marine biology and ecology should directly contact SWIMS academic staff for more information regarding individual projects.

Student Research Assistantships/Internships

Undergraduate students holding a permanent Hong Kong identity card can apply to work as volunteer student research assistants during the semester breaks/summer holidays. Undergraduate students from both local and overseas institutions enrolled in a degree programme which requires the completion of an internship may also contact Ms Sylvia Yiu to discuss how we can facilitate that requirement.

Accommodation

SWIMS residential blocks are situated on top of the Cape d'Aguilar cliffs. Accommodation at the Residence is available for students, researchers and visitors working at SWIMS. Those interested in booking the accommodation should please contact Ms Sylvia Yiu.

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- Ng TPT (2013) Sexual selection in marine snails using littorinids as model species. *The Malacologist* 61: 20-22
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- Shin PKS, Leung JYS, Qiu JW, Ang PO, Chiu JMY, Thiagarajan V, Cheung SG (2013) Hypoxia induces abnormal larval development and affects biofilm-larval interaction in the serpulid polychaete *Hydroides elegans*. *Marine Pollution Bulletin* 76(1-2): 291-297
- Tsang LM, Chan BKK, Williams GA, Chu KH (2013) Who is moving where? Molecular evidence reveals patterns of range shift in the acorn barnacle *Hexechamaesipho pilsbryi* in Asia. *Marine Ecology Progress Series* 488: 187-200
- Vincent ACJ, Sadovy de Mitcheson YJ, Fowler SL, Lieberman S (2013) The role of CITES in the conservation of marine fishes subject to international trade. *Fish and Fisheries* DOI:10.1111/faf.12035 pp1-30.
- Wang J, Gu J-D (2013) Dominance of *Candidatus scalindua* species in anammox community revealed in soils with different duration of rice paddy cultivation in Northeast China. *Applied Microbiology and Biotechnology* 97(4): 1785-1798
- Wang Y, Feng Y-Y, Ma X-J, Gu J-D (2013) Seasonal changes of ammonia/ammonium oxidizing prokaryotes (AOPs) in the oxic and anoxic sediments of mangrove wetland. *Applied Microbiology and Biotechnology* 97(17): 7919-7934
- Wang YF, Gu J-D (2013) Higher diversity of ammonia/ammonium-oxidizing prokaryotes in constructed freshwater wetland than natural coastal marine wetland. *Applied Microbiology and Biotechnology* 97(15): 7015-7033

- Wong SWY, Leung KMY, Djuric AB (2013) A comprehensive review on the aquatic toxicity of engineered nanomaterials. *Reviews in Nanoscience and Nanotechnology* 2(2): 79-105
- Yan ZG, Wang H, Wang YZ, Zhang YH, Yu RZ, Zhou JL, Leung KMY, Liu ZT (2013) Developing a national water quality criteria system in China. *Water Policy* 15(6): 936-942
- Yasuhara M, Hunt G, Okahashi H, Brandão SN (2013) The 'Oxycythereis' problem: taxonomy and palaeobiogeography of deep-sea ostracod genera *Pennyella* and *Rugocythereis*. *Palaeontology* 56(5): 1045-1080
- Yeung JWY, Leung KMY (2013) Effects of animal size and nutritional status on the RNA/DNA ratio in different tissues of the green-lipped mussel *Perna viridis* (Linnaeus, 1758). *Journal of the Marine Biological Association of the United Kingdom* 93(1): 217-225.

Student Graduations

Ph.D

- Chan, Vera Bin San (2013) - Climate change impacts on the Serpulid tubeworm *Hydroides elegans* - a biomineralization perspective
- Wang, Yongfeng (2013) - Molecular analysis of ammonia oxidizing prokaryotes in mangrove wetlands and factors affecting their dynamics.

M.Phil

- Ding, Shunping (2013) - A survey of fungi associated with trees in subtropical Hong Kong.

Staff Training

- Ms. Cecily Law attended the Refresher First Aid course and exam on 6 & 20 May 2013.
- Ms. Patrick Chan attended Electricity Training on 31 May 2013 (PM).
- Ms. Cecily Law attended the AED & CPR course on 23 August 2013.
- Mr. Simon Wong attended Electricity Training on 12 September 2013 (PM).
- Mr. Cheung Ming Hong attended the AED & CPR course on 30 August 2013.
- Mr. Cheung Ming attended the AED & CPR course on 17 October 2013.

Other Contributions from SWIMS

Ji-Dong Gu

Advisory Board, American Journal of Current Microbiology
 Assistant Editor, Frontiers in Microbiotechnology, Microbial Ecotoxicology and Bioremediation
 Associate Editor/Editor, Ecotoxicology, Environmental Geochemistry and Health, International Biodeterioration & Biodegradation, International Journal of Environmental Science and Technology, Journal of Environmental Engineering & Ecological Science
 Editorial Board, Biodegradation; Global Journal of Environmental Science and Technology; Journal of Polymers and the Environment

Leszek Karczmarski

Member, IUCN Species Specialist Group: Small Cetaceans
 Member, Society for Marine Mammalogy
 Member, Marine Mammal Conservation Working Group, HKSAR Government
 Member, Scientific Advisory Committee - Ocean Park Conservation Foundation Hong Kong (OPCFHK)
 Member, Scientific Advisory Committee - Sirenian International, Inc.
 Postgraduate Advisor, National Taiwan University, Taiwan
 Postgraduate Advisor, Sun Yat-sen University, China
 Postgraduate Advisor, University of Pretoria, South Africa
 Associate Research Fellow, Mammal Research Institute, University of Pretoria, South Africa
 Research Associate, Division of Forestry and Wildlife, State of Hawaii, USA
 Invited Co-Editor, Primatology Monographs

Kenny Leung

Immediate Past President and Director, the Asia-Pacific Geographic Unit of the Society of Environmental Toxicology and Chemistry (SETAC)
 Subject Editor and Founding Editorial Board Member, Integrated Environmental Assessment and Management
 Member of Editorial Board, Marine Pollution Bulletin, Integrative Zoology, Canadian Journal of Zoology, Toxicology and Environmental Health Sciences, Ocean Science Journal
 Member, Advisory Council on Food and Environmental Hygiene, HKSAR Government
 Member, Endangered Species Advisory Committee, HKSAR Government
 Member, Environment and Conservation Fund (ECF) Research Projects Vetting Subcommittee, HKSAR Government
 Chairman, Marine Mammal Conservation Working Group, HKSAR Government
 Member, Red Tide/Harmful Algal Bloom Expert Advisory Group, HKSAR Government
 Member, Genetic Modified Organisms (Control of Release) Expert Group, HKSAR Government
 Member, Marine Biodiversity Working Group, HKSAR Government
 Co-opt Member, Marine Parks Committee, HKSAR Government
 Member, The Outstanding Young Persons' Association

V Thiyagarajan

Editor (review), Aquatic Biology, Inter-Research Journal
Editor (review), Aquaculture Environment Interactions
Council Member, Hong Kong Proteome Society
Academic Editor, PLoS One Journal
Editorial Board Member, PeerJ ISSN: 2167-8359

Yvonne Sadovy

Co-Chair (and founder), IUCN World Conservation Union Specialist Group of Groupers and Wrasses
Director (and co-founding member), Science & Conservation of Reef Fish Aggregations
Member, Steering Committee of the IUCN Species Survival Commission
Co-Chair, Marine Conservation Sub-Committee of the IUCN Species Survival Commission
Board Member, Gulf and Caribbean Fisheries Institute
Member, Board of Directors, Ocean Park Hong Kong
Chair, Education Advisory Committee, Ocean Park Hong Kong
Member, Executive Committee, World Wide Fund for Nature Hong Kong
Chair, Conservation Advisory Committee, World Wide Fund for Nature Hong Kong
Invited Panel Member, The Harbour Area Treatment Scheme Stage 2B Review
Invited EIA Technical Briefing Group, Marine Ecology & Fisheries for Three-Runway System at Hong Kong International Airport
Chairman, Marine Fish Focal Group, BSAP HKSAR Government
Co-chair, Red-list & Standards Focal Group, BSAP HKSAR Government
Editorial Committee, Fish and Fisheries
Board member, Luc Hoffmann Institute

Gray A Williams

Postgraduate Advisor, King Mongkut's Institute of Technology Ladkrabang, Thailand
Postgraduate Advisor, Palermo University, Sicily, Italy
Guest Professor, Xiamen University, China
Editorial Board Member, Journal of Thermal Biology
Subject Editor, Zoological Studies
Member, Biodiversity Strategy and Action Plan (BSAP) Marine Biodiversity Working Group, HKSAR Government
Scientific Committee, World Conference on Marine Biodiversity

Moriaki Yasuhara

Associate Editor, Paleontological Research
Member of Scientific Committee, 17th International Symposium on Ostracoda
Temminck Fellow, Naturalis Biodiversity Center, Netherlands

Conferences and Workshops

Leszek Karczmarski

Co-authored presentations (Oral and Poster); The 20th Biennial Conference on the Biology of Marine Mammals, The Society for Marine Mammalogy; 9-13 Dec 2013, Dunedin, New Zealand.
Guangdong - Hong Kong - Macau Chinese White Dolphin Conservation Workshop, 19-21 Aug 2013, Zhuhai, China.
Oral Presentation; The International Conference on Challenges in Aquatic Sciences. 15-21 Mar 2013, National Taiwan Ocean University, Keelung, Taiwan.

Kenny Leung

Invited Expert; Poster Presentation; Workshop on Risk Assessment for the Sediment Compartment, organised by European Chemicals Agency, 7-8 May 2013, Helsinki, Finland
Keynote Speaker and Member of Scientific Committee; International Conference on Environmental Safety and Ecological Criteria/Standards, 30 Jun-2 Jul 2013, Nanjing, China
Organizing Committee Member; Oral and Poster Presentations; 7th International Conference on Marine Pollution and Ecotoxicology, 24-27 Sep 2013, Hong Kong

Priscilla Leung

Poster Presentation: The 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong

V Thiyagarajan

Keynote Lecture; Joint International Seminar on Past and present changes in marine ecosystems and biodiversity in the Asia-Pacific region, 18 Mar. 2013, Japan.
Keynote Lecture; Symposium on Deep Bay Wetland Conservation, 12 Apr 2013, Hong Kong.
Organizing Committee Member; 7th International Conferences on Marine Pollution and Ecotoxicology (7th ICMPE), 17-21 Jun 2013, The University of Hong Kong, Hong Kong.
Keynote Lecture; the AOGS 10th Annual Meeting (AoGS 2013), 24-28 Jun 2013, Brisbane, Australia.
Organizing Committee Member; The 15th International Symposium on Toxicity Assessment (ISTA 15), 3-8 Jul 2013, City University of Hong Kong, Hong Kong.
Keynote Lecture; Young Scientists Symposium: Exchanging knowledge on novel approaches to studying marine organisms and ecosystems, 12 Jul 2013, Japan.
Discussion Leader; The Gordon Research Conference on Marine Molecular Ecology, 28 Jul-2 Aug 2013, Hong Kong.
Keynote Lecture; International Workshop on Ocean Acidification - Consequences for Marine Ecosystems (IWOA'13), 20-21 Sep 2013, Kolkata, India.
Keynote Lecture; Workshop on the ecology of ocean acidification Workshop on the ecology of ocean acidification, 12-18 Oct 2013, Vancouver, Canada.

Yvonne Sadovy

Workshop designer and conductor; Spawning aggregation monitoring at North East Point Glover's Reef Marine Reserve. 30 Jan - 3 Feb 2013, Wildlife Conservation Society, Belize.
United Nations Food and Agriculture Organization and Caribbean Fishery Management Council (NOAA) Workshop on Fish Spawning Aggregations in the Caribbean. 28-29 Oct 2013, Miami, USA.
Gulf and Caribbean Fisheries Institute. Co-organizer of session on spawning aggregations. Oral presentation: 'Sad Farewell to C. Lavett-Smith's Nassau Spawning Aggregation'. 3-8 Nov 2013, Texas, USA.
International Union for Conservation of Nature (IUCN) workshop and consultation on Key Biodiversity Areas. Rome, Italy, 2-3 Dec 2013.

Gray A Williams

Organizer; Workshop on 'Biomimetic sensors for autonomous temperature logging in the coastal environment' (given by F Lima) 14-18 Jan 2013, SWIMS, Hong Kong.
Guest Lecture; University of the Philippines, 13 Feb 2013, Visayas, Philippines.
Visiting Lecturer; Zoology Fieldcourse to Tsitsikamma Marine Reserve, 26 Mar - 3 Apr 2013, University of Johannesburg, South Africa.

Moriaki Yasuhara

Invited Lecture; Okinawa-Hong Kong Joint Workshop on Past and Present Changes in Marine Ecosystems and Biodiversity in the Asia Pacific Region, 18 Mar 2013, University of Ryukyus, Okinawa, Japan

Chairperson and Speaker; 17th International Symposium on Ostracoda, 23-26 Jul 2013, University of Roma Tre, Rome, Italy

Invited Lecture; An invited seminar in Naturalis Biodiversity Center, 17 Sep 2013, Naturalis, Leiden, Netherlands

Invited Lecture; Invited lectures in Ehime University, 26-27 Sep 2013, Ehime University, Ehime, Japan

Postgraduates

Amina Cesario

Workshop at the 20th Biennial Conference on the Biology of Marine Mammals, 7-8 Dec. 2013, Dunedin, New Zealand

Poster Presentation; The Society for Marine Mammalogy (SMM) 20th Biennial Conference on the Biology of Marine Mammals, 9-13 Dec 2013, Dunedin, New Zealand

Stephen Chan

Guangdong - Hong Kong - Macau Chinese White Dolphin Conservation Workshop, 19-21 Aug 2013, Zhuhai, China

Workshop at the 20th Biennial Conference on the Biology of Marine Mammals, 7 Dec 2013, Dunedin, New Zealand

Meeting of the South-East Asian Marine Mammal Symposium (SEAMAMS) group, 9 Dec 2013, Dunedin, New Zealand

Poster Presentation; The Society for Marine Mammalogy (SMM) 20th Biennial Conference on the Biology of Marine Mammals, 9-13 Dec 2013, Dunedin, New Zealand

Ramadoss Dineshram

Oral Presentation; Exchange Fieldtrip in Tsitsikamma Nature Reserve in South Africa, 30 Mar.-7 Apr 2013, University of Johannesburg, South Africa.

Marine Molecular Ecology, Gordon Research Conference, 11-16 Aug 2013, Hong Kong

12th Human Proteome Organisation World Congress (HUPO 2013), 11-14 Sep 2013, Yokohama, Japan

6th European Proteomics Association Congress, 14-17 Oct 2013, Saint-Malo, France

Nicolas Duprey

Oral Presentation; 2nd Annual South Pacific Asian Marine Science Symposium, 29 Jun 2013, Guam, USA

Kevin Ho

Oral Presentation; The 8th AoE Annual Symposium, Area of Excellence - Centre for Marine Environmental Research and Innovative Technology (MERIT), 10-11 Jan 2013, The University of Hong Kong, Hong Kong

Young Scientists Award for the Best Poster Presentation; The SETAC Europe 23rd Annual Meeting, 12-16 May 2013, Glasgow, UK

2nd Runner-up; Three Minute Thesis Competition, 11 Jun 2013, The University of Hong Kong, Hong Kong

Oral and Poster Presentations; The 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong. (Marine Pollution Bulletin Young Scientist Award for an Outstanding Oral Presentation)

Circle Hong

Oral Presentation; Exchange Fieldtrip in Tsitsikamma Nature Reserve in South Africa, 30 Mar.-7 Apr 2013, University of Johannesburg, South Africa.

Best Oral Presentation; 17th International Symposium on Ostracoda "Back to the Future", 23-26 Jul 2013, Rome, Italy.

Jack Ip

Poster Presentation; 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong.

Ginger Ko

Oral Presentation; Exchange Fieldtrip in Tsitsikamma Nature Reserve in South Africa, 30 Mar.-7 Apr 2013, University of Johannesburg, South Africa.

Oral Presentation; 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, University of Hong Kong, Hong Kong.

Oral Presentation; Asian Pacific Aquaculture 2013 - 5th International Oyster Symposium, 11-13 Dec 2013, Ho Chi Minh City, Vietnam .

Edward Lau

Student Conference on Conservation Science, 21-31 Jan 2013, Brisbane, Australia.

Adela Li

National Institute for Minamata Disease (NIMD) Forum, Minamata Oral/poster presentation in The 7th International Conference on Marine Pollution and Toxicology, Hong Kong Oral and Poster Presentations; The 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong. (Marine Pollution Bulletin Young Scientist Award for an Outstanding Poster Presentation)

Oral Presentation; EURAXESS Science Slam China, 26 Sep 2013, Beijing, China. (Presentation Award of the Final Six)

Calton Law

Oral Presentation; Exchange Fieldtrip in Tsitsikamma Nature Reserve in South Africa, 30 Mar.-7 Apr 2013, University of Johannesburg, South Africa.

Oral Presentation; Aquatic Science at the Interface: Joint Conference for the New Zealand Freshwater Sciences Society, New Zealand Marine Sciences Society and the Australian Society For Fish Biology; 19-23 Aug 2013, Hamilton, New Zealand.

Michelle Luk

The 3rd International Dynamic Energy Budget Symposium at Texel, the Netherlands during 24 - 26 Apr 2013.

Yanny Mak

7th International Conference on Marine Pollution and Ecotoxicology 17-21 Jun 2013, The University of Hong Kong, Hong Kong.

Carmen Or

Guangdong-Hong Kong-Macau Chinese White Dolphin Conservation Workshop, 19-21 Aug 2013, Zhuhai, China.

Workshop at the 20th Biennial Conference on the Biology of Marine Mammals, 7-8 Dec 2013, Dunedin, New Zealand.

Meeting of the South-East Asian Marine Mammal Symposium (SEAMAMS) group, 9 Dec 2013, Dunedin, New Zealand.

Poster Presentation; 20th Biennial Conference on the Biology of Marine Mammals, 9-13 Dec 2013, Dunedin, New Zealand

JD Urriago

University Consortium on Aquatic Sciences (UCAS), 11-14 Mar 2013, National Taiwan Ocean University, Keelung, Taiwan.
Gordon Research Conference. Marine Molecular Ecology, 11-16 Aug 2013, The Hong Kong University of Science and Technology, Hong Kong

Karen Villarta

12th National Symposium in Marine Science, 24-26 Oct 2013, University of the Philippines, Tacloban City, Philippines.

Zhen Wang

Areas of Excellence (AoE) Symposium, 10-11 Jan 2013, Hong Kong.
Oral Presentation; 7th International Conference on Marine Pollution and Ecotoxicology, 16-21 Jun 2013, The University of Hong Kong.
Oral Presentation; 1st International Conference on Environmental Safety and Ecological Criteria/Standards, 30 June 30-1 Jul 2013, Nanjing, China.

Simon Wong

Guangdong - Hong Kong - Macau Chinese White Dolphin Conservation Workshop, 19-21 Aug 2013, Zhuhai, China.
Workshop at the 20th Biennial Conference on the Biology of Marine Mammals, 7-8 Dec 2013, Dunedin, New Zealand.
Meeting of the South-East Asian Marine Mammal Symposium (SEAMAMS) group, 9 Dec 2013, Dunedin, New Zealand.
Poster Presentation; The Society for Marine Mammalogy (SMM) 20th Biennial Conference on the Biology of Marine Mammals, 9-13 Dec 2013, Dunedin, New Zealand.

Elvis Xu

Participant; Conference on the Forty Years of Environmental Protection in China, 3-5 Jan 2013. The Chinese University of Hong Kong, Hong Kong.
Oral and Poster Presentations; The 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong.
Poster Presentation; Conference on Urban Environmental Pollution (UEP 2013), 17-20 Nov 2013, Peking University, Beijing, China.

Andy Yi

Best Poster Presentation; The 17th Symposium on Pollutant Responses in Marine Organisms, 5-8 May 2013, Faro, Portugal.
Best Oral Presentation; The 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, The University of Hong Kong, Hong Kong.

Sze Wing Yiu

20th Biennial Conference on the Biology of Marine Mammals, 9-13 Dec 2013, Dunedin, New Zealand.

Mana Yung

Oral presentation; 7th International Conference on Marine Pollution and Ecotoxicology, 17-21 Jun 2013, Hong Kong.

Workshop on Biomimetic Sensors for Autonomous Temperature Logging in the Coastal Environment, 14-18 Jan. 2013, The Swire Institute of Marine Science, Hong Kong

Invited Keynote Speaker

Dr. Fernando Lima & Prof. Brian Helmuth

Overseas Participants

Prof. Christopher McQuaid, Dr. Maui De Pirro, Dr. Yunwei Dong, Dr. Monthon Ganmanee, Mr. Kee Alfian, Dr. David Marshall, Dr. Bayden Russell, Dr. Neil Hutchinson, Dr. Benny Chan, Dr. Ronald Christofolletti, Dr. Nova Miezowska, Dr. Marco Milazzo, Dr. Gianluca Sara, Mr. Jia Wong & Ms. Shu Zhang

From Chinese University of Hong Kong

Ms. Karen Wong, Ms. Karen Kam & Ms. Stella Chan

From SWIMS

Prof. Gray Williams, Dr. Stephen Cartwright, Dr. Terence Ng, Ms. Michelle Luk, Ms. Karen Villarta, Mr. JD Urriago, Ms. Ginger Ko, Ms. Camilla Campanati & Mr. Martin Cheng

From HKU

Dr. David Baker, Dr. Tim Bonebrake & Mr. Nick Sullens

The 5th UCAS Postgraduate Symposium on From Stream to Ocean: The Biodiversity and Sustainability of Aquatic Ecosystems, 11-14 Mar. 2013, National Taiwan Ocean University, Keelung, Taiwan

From XMU; National Taiwan Ocean University; Academia Sinica; National Taiwan University:

Prof. Minhan Dai, Dr. Min Liu, Dr. Jinliang Huang, Prof. Ching-Fong Chang, Prof. I-Shiung Chen, Prof. Deng-Fwu Hwang, Prof. Tin-Yam Chan & Prof. Kwang-Tsao Shao

Ms. Rui Wang, Mr. Lixing Huang, Ms. Lulu Yang, Ms. Yifan Chen, Mr. Jianlong Li, Mr. Kai Chen, Ms. Jing He, Ms. Jiayi Xu, Ms. Yanyan Zhao, Mr. Xinguo Shi, Ms. Shu Zhang, Mr. Jinru He, Ms. Yuan Jin, Ms. Ya'nan Yang, Ms. Lu Ye, Ms. Lu Yang, Ms. Congcong Chen, Ms. Huaxia Sheng, Mr. Xinxin Wu, Mr. Cheng-Ming Su, Mr. Chen-Yun Lee, Mr. Cheng-Tsung Tseng, Mr. Quang-Thien Huynh, Mr. Wei-Hsiang Chang, Ms. Chun-Lan Lin, Mr. Chi-Chiu Lee, Mr. Yen-Chiun Haung, Mr. Bo-Wei Ye, Mr. Shang-Chih Lin, Mr. Yu-Chun Chen, Mr. Shih-Pin Huang, Ms. Ping Li, Mr. An-Ke Hsu, Ms. Ching-Hsien Ho, Mr. Zong-Han Wen, Mr. Tsung-Hsien Tsai, Ms. Min-Chia Chiang, Mr. Yu-Hai Kung, Ms. Meng Han, Ms. Sheng-Tai Hsiao & Mr. Yu-Min Shi

From SWIMS:

Prof. Gray Williams & Prof. Yvonne Sadovy

Mr. Kevin Ho, Ms. Michelle Luk, Mr. Calton Law, Mr. Edward Lau, Mr. Juan Diego Urriago, Mr. Andy Yi, Ms. Karen Villarta, Ms. Circle Hong, Ms. Marielle Dumestre, & Ms. Yanny Mak

From SBS, HKU:

Mr. Samuel Wang, Ms. Beverly Po, Ms. Zhe Wang, Ms. Elaine Yuen & Mr. Simon Wang

Visitors to SWIMS

- Dr. Fernando Lima (University of South Carolina, USA)
Prof. Brian Helmuth (University of South Carolina, USA)
Dr. Gianluca Sara (University of Palermo, Italy)
Prof. Christopher McQuaid (Rhodes University, S. Africa)
Dr. Maurizio de Pirro (Academy of Environmental and Sea, Monte Argentario, Italy)
Dr. Yunwei Dong (Xiamen University, China)
Dr. Monthon Ganmanee (KMITL, Thailand)
Mr. Kee Alfian (EKOMAR, National University of Malaysia)
Dr. David Marshall (Universiti Brunei Darussalam)
Dr. Bayden Russell (University of Adelaide, Australia)
Dr. Neil Hutchinson (James Cook University, Singapore)
Dr. Benny Chan (Academia Sinica, Taiwan)
Dr. Ronaldo Christofoletti (Universidade Federal de São Paulo, Brazil)
Dr. Nova Miezowska (Marine Biological Association, UK)
Dr. Marco Milazzo (University of Palermo, Italy)
Mr. Jia Wong (Xiamen University, China)
Ms. Shu Zhang (Xiamen University, China)
Ms. Laura Lau (JSSHK)
Mr. Benny Au (Swire Properties Ltd)
Prof. Mark Davies (University of Sunderland, UK)
Dr. Rick Stafford (Bournemouth University, UK)
Dr. Steven Cannon (Executive Vice-Chancellor, HKU)
Ms. Seraphina Ho (Vice-Chancellor's Office, HKU)
Ms. Karen Wong (Chinese University of Hong Kong)
Ms. Karen Kam (Chinese University of Hong Kong)
Ms. Stella Chan (Chinese University of Hong Kong)
Mr. Stewart Wolf (HKU Bulletin)
Mr. Ning Wang (HKU)
Ms. Teresa Ma (City University of Hong Kong)
Dr. Mindy Richlen (Woods Hole Oceanography Institute, USA)
Dr. Mirelle Chinain (Institut Louis Malardé, Papeete-Tahiti, France)
Mr. Edward Leung (Open University of Hong Kong)
Ms. Lisa Xu (Swire/TAECO)
Mr. James Hui (HK)
Dr. Nicolas Duprey (Universiti Paris 6 UPMC, France)
Dr. Li Cheng (HKUST)
Dr. Kwang-Sik Choi (Jeju National University, South Korea)
Dr. Hym-Sti Kang (Jeju National University, South Korea)
Mr. Hee-Do Jeung (Jeju National University, South Korea)
Mr. Hyun-ki Hong (Jeju National University, South Korea)
Prof. Yuping Wu (Sun Yat-Sen University, China)
Mr. Wenzhi Lin (Sun Yat-Sen University, China)
Ms. Yaqian Mo (Sun Yat-Sen University, China)
Dr. Sandra Tsang (Department of Social Work and Social Administration, HKU)
Mr. Stephen Cheung (Department of Social Work and Social Administration, HKU)
Dr. Joshua Bolchover (Department of Architecture, HKU)
Ms. Vicki Shene (Gallant Ho Experiential Learning Fund, HKU)
Ms. Mary Ho (Gallant Ho Experiential Learning Fund, HKU)
Dr. Albert Ko (Gallant Ho Experiential Learning Fund, HKU)
Dr. Tak Cheung Wai (City University of Hong Kong)
Ms. Ann Kildahl (Estates Office, HKU)
Mr. Gary Lee (Estates Office, HKU)
Prof. Jon Havenhand (University of Gothenburg, Sweden)
Ms. Ang Yu (Xiamen University, China)
Dr. Magdalena Blazewicz-Paszkowycz (University of Lodz, Poland)
Dr. Andrew Parker (Natural History Museum, London, UK)
Dr. Laurent Seuront (Flinders University, Australia)
Dr. Chris Todd (St. Andrews, UK)
Mr. Alan Chan (AFCD)
Dr. WW Cheng (AFCD)
Mr. Kwok King Chan (AFCD)
Ms. Josefina Bergsten (Pictures by the Way Side)
Mr. David Lowry (Royal Holloway, London, UK)
Ms. Joyee Chan (South China Morning Post)
Dr. Peter Brewer (Monterey Bay Aquarium Research Institute, USA)
Dr. Cynthia Yau (HKU)
Dr. Robert Diaz (Virginia Institute of Marine Science)
Dr. Sandra Shumway (University of Connecticut, USA)
Dr. Lunaire Bundances (Elsevier)
Dr. Sam Dupont (University of Gothenburg, Sweden)
Mr. David Lai (Ocean Park Corporation)
Mr. Grant Abel (Ocean Park Corporation)
Mr. Una Lau (Ocean Park Corporation)
Ms. Michelle Lau (Ocean Park Corporation)
Ms. Yvonne Lim (Ocean Park Corporation)
Mr. Jimmy Au Yeung (Ocean Park Corporation)
Mr. Zhi-wen Zheng (Shenzhen Marine Environment and Resources Monitoring Center)
Ms. Yue Liu (Shenzhen Marine Environment and Resources Monitoring Center)
Mr. Yu Hong (Shenzhen Marine Environment and Resources Monitoring Center)
Mr. Xiang-yu Guo (Shenzhen Marine Environment and Resources Monitoring Center)
Ms. YANG Wei-si (Shenzhen Marine Environment and Resources Monitoring Center)
Ms. Claire Liu (City University of Hong Kong)
Mr. Chung Yin Wu (City University of Hong Kong)
Ms. Catherine Kim, (Cornell University, USA)
Mr. Yin Kong Leong (Hong Kong Observatory)
Dr. Richard Bellerby (Siquard & Elsa Bellerby of Niva, Norway)
Ms. Kriser Bellerby (Siquard & Elsa Bellerby of Niva, Norway)
Mr. Winston Lung (University of Virginia, USA)
Dr. Mary Sewell (The University of Auckland, New Zealand)
Ms. Shauna Foo (Sydney University, Australia)
Ms. Vickie Yau (Tai Tam Tuk Eco Educational Centre)
Mr. Christopher d'Orey (Tai Tam Marine & Water Education Foundation Ltd)
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Group Visits

- 28 staff & family members from Department of Social Work & Social Administration, HKU, Feb. 2013
- 13 staff & students from Department of Architecture, HKU, Feb. 2013
- 24 staff & students from Australian International School, Mar. 2013
- 90 members & family members from Swire Hong Kong Staff Association, Apr. 2013
- 88 staff & students from South Island School (in 2 days), Apr. 2013
- 32 staff & students from Discovery College, May 2013
- 36 members from Hong Kong Society of Mass Spectrometry, May 2013
- 20 UGS from BIOL 2318, HKU, July 2013
- 62 staff & students from West Island School (in 2 days), Sept. 2013
- 60 staff & students from Island School (in 2 days), Sept. 2013
- 80 UGS from ENVS 1002/1301, HKU, Sept. 2013
- 26 members & family members from Faculty of Law, HKU, Oct. 2013
- 40 UGS from ENVS 2001, HKU, Nov. 2013
- 42 staff & students from King George V School, Nov. 2013
- 60 members & family members from Ocean Park Hong Kong Staff Association, Nov. 2013
- 19 members from South China Diving Club, Nov. 2013
- 90 members & family members from Swire Hong Kong Staff Association, Dec. 2013
- 42 staff & students from King George V School, Dec. 2013

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