



The Swire Institute of Marine Science

太古海洋科學研究所



**Annual Report**

2011



## Honorary Director's Foreword

After celebrating our 20th Anniversary in 2010, it has been a time to look forward to the next years at SWIMS. 2011 has seen SWIMS more active than ever, with a variety of international workshops and conferences as well as numerous research visitors and staff joining SWIMS. We welcome Dr Moriaki Yasuhara, who is a paleobiologist and will contribute towards our understanding of the past environments which have moulded the communities we see today. Our Post Doctoral staff has also increased, with Dr Michael Eitel joining us on a German funded Fellowship to continue his work on Placozoans, and Dr Joy Mukharjee who is working on environmental proteomics. Drs Cynthia Yau and Clement Dumont have moved on to new challenges, although both maintain research links with SWIMS. This was also a very successful year for winning grants, with four RGC-GRF awards, worth >4 million HKD to SWIMS staff.

This year SWIMS was also the fullest SWIMS has ever been, and although this posed some challenges with transportation, it was great working with overseas colleagues, interns and student helpers over the summer months. Increasing numbers of workers and new research directions have, however, stretched the facilities and space available to support this work. SWIMS is badly in need of more research space and, importantly, dedicated laboratories for specific projects. In December, the Swire Group initiated a feasibility study to investigate the potential to further develop SWIMS, with plans for a possible two-phase expansion. This is a wonderful opportunity and is a timely link with the concurrent development of SWIMS sister laboratory in Xiamen University, again funded by the Swire Group.

So it is with a great deal of excitement that we look forward to the next phase of development of SWIMS, not only within Hong Kong but also regionally, strengthening links with China and also within SE Asia. Once again we are indebted to the vision and support of the Swire Group and look forward to working with them in our efforts to document, understand, protect and preserve our rich marine biodiversity.

*Best wishes for 2012 and the Chinese Year of the Dragon  
from the staff and students of SWIMS.*



Gray A Williams

## International Collaborations

The number of overseas researchers visiting SWIMS this year was another record, attesting to SWIMS regional importance as an international research center. Many visitors were long time collaborators, such as John Taylor (NHM, London) who has long had close links with Hong Kong and SWIMS. He was joined by Emily Glover (NHM, UK) and Liz Harper (Cambridge University, UK), another long-term, SWIMS collaborator, to continue their global project on bivalve phylogeny.

David Morrirt (Royal Holloway, UK) returned for part of his sabbatical with Kate Hind as a Research Assistant to continue studies on osmoregulation in intertidal organisms. Partners from regional laboratories also returned, as part of Memoranda of Understanding with SWIMS, including Yunwei Dong and Zhang Zhen (Xiamen University, China) to develop methods to measure on-shore temperatures in biomimetics; Monthon Ganmanee and his student Surawit Khunchamanan (KMITL, Thailand) worked on sea urchins with Clement Dumont's group and Dumsile Nyembe and Charon Farquharson (University of Johannesburg, S. Africa) learned about analytical techniques with Priscilla Leung.

International collaborations continued to develop further afield with visits from Simon Winkler (as part of the global GAME project led by the University of Kiel, Germany) as well as revisits from long-term collaborators Rick Stafford (University of Gloucestershire, UK) and Maui de Pirro (Monte Argentario, Italy).

We welcomed a series of informal visits and discussions from Steve Hawkins (Southampton University, UK), Tom Garrison (Orange County, USA), Wong How Man (China Exploration and Research Society, HK), Maggie Cusack (University of Glasgow, UK) and Mark Costello (Auckland University, New Zealand) who gave seminars or discussed research projects with students, as well as many other day visitors.



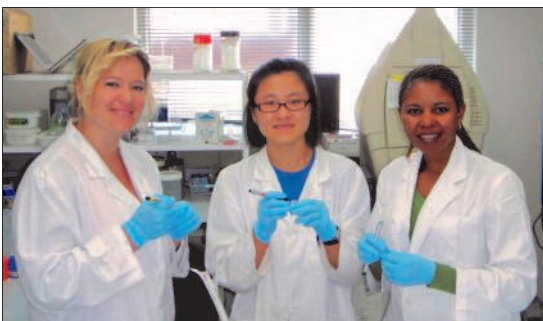
*John Taylor, Emily Glover and Liz Harper collecting bivalves in Hong Kong*



*Dave Morrirt and Kate Hind working with Steve*



*Yunwei Dong and Zhang Zhen discuss sensor designs with Steve*



*Charon and Dumsile learning lab techniques with Adela*



*Monthon Ganmanee with his student Surawit*



*Simon Winkler teamed up with Juan Carlos as part of the GAME project*



*Steve Hawkins chatting with Karen, Yuanyuan and Terence*



*Gray with Tom Garrison, author of the book Oceanography*



*Seiji Hayashi searching for Nassarius*

## International collaborations (cont'd)

SWIMS also organized a number of special seminars including from Cuiluan Yao (Jimei University, China) on temperature stress on hemocytes of invasive and native mussels, Philip P Molloy (Simon Fraser University, Canada) on conservation and fisheries management of sex-changing fish, Seiji Hayashi (Nagoya University, Japan) on variations in *Nassarius*: morphological and genetic aspects, Helga Guderley (Laval University, Canada) on the escape response of *Placopecten*, Louis A Gosselin (Thompson Rivers University, Canada) on initial benthic mortality in marine invertebrates, and Dora Ingrid Rivera and Hilda Viquez (Universidad Nacional of Costa Rica) on Costa Rica's biodiversity and sustainability. Ken Pollock (Murdoch University, Australia and North Carolina State University, USA) and Lyndon Brooks (Southern Cross University, Australia), visited and gave seminars on mark-recapture population modeling in marine mammals.

Leszek Karczmarski established a new research collaboration with Mark Keith (University of Witwatersrand, South Africa) focusing on spatial ecology of Chinese White Dolphins in the Pearl River Delta.

## Fieldcourse exchange with the University of Johannesburg

Thanks to the collaborative exchange between SWIMS and the University of Johannesburg (UJ), South Africa; Ackley Lane, Kathy Li and Karen Villarta had the opportunity to join the UJ marine fieldcourse in the Tsitsikamma National Park, one of the largest coastal marine reserves in the world, from 29 March to 15 April 2011. This is an exchange programme where staff and students from UJ join the Ecology of Hong Kong fieldcourse in October and HKU participants join the UJ marine fieldcourse in March. Our postgraduates also participate in the UJ MSc course on the 'Functions and structures of estuaries and the near-shore marine environment'.

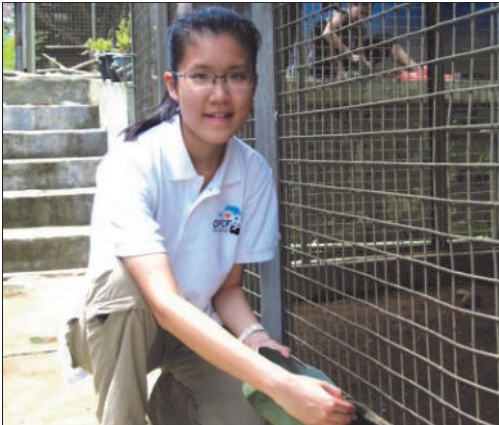


*Ackley, Gray, Kathy and Karen in S. Africa*





*Preparations for a whale shark survey in the Bohol Sea*



*Carmen in the Slow Lori rehabilitation centre*



*Sze Wing searching for dolphins off the coast of Bangladesh*



*Participants of the 3rd SE Asian Training Workshop in Marine Mammal Research Techniques*



## SWIMS and Ocean Park Conservation Foundation Hong Kong

For the seventh consecutive year HKU students participated in the OPCFHK University Student Sponsorship Programme.

Helen Fong and Ray So helped with Dr. Alessandro Ponzo's conservation project assessing the population status of Whale Sharks in the Bohol Sea, Philippines for 18 days. They also analysed plankton samples to study the whale shark's diet and assisted in community conservation events aimed at young people.

Carmen Or and Ken Chan joined a Javanese project to conserve Slow Loris, an endangered small primate that is threatened by the unregulated pet market and illegal animal trafficking in Indonesia. They monitored free-ranging and recently reintroduced lorises, recording their natural patterns and the success of re-introduction. They also assisted in pet market surveys, captive enrichment programs and veterinary operations, and joined local school outreach education programs.

Sze Wing Yiu and Elaine Yuen assisted in the Bangladesh Cetacean Diversity Project. They surveyed cetaceans off the Sundarbans and the Swatch-of-No-Ground, a submarine canyon in the Bay of Bengal. They collected sighting records of several dolphin species and participated in fishery surveys, as there is a severe threat of dolphin bycatch in this region.

All the students recorded their experiences via online blogs and gave well-received presentations to OPCFHK stakeholders and fellow students. Carmen and Sze Wing are currently pursuing their postgraduate degrees at SWIMS. It is our pleasure to acknowledge OPCFHK for providing such unique and valuable opportunities for our students.

OPCF also supported the 3rd South-East Asian Training Workshop in Marine Mammal Research Techniques, led by Leszek, which provided comprehensive training in quantitative population analyses with mark-recapture models.

## Staff Research

### Gray A Williams

One of the black boxes in intertidal ecology is estimating the water content and osmotic balance of animals during emersion, yet this appears to be one of the most important factors determining survival. Trying to measure this, and forecast how species survive Hong Kong's summer, has been an overall focus of research in 2011. This has involved research into water loss rates in littorinids with Rick Stafford and Mark Davies, and investigating the various water storage reserves of intertidal organisms with David Morritt. I plan to apply this work in my new RGC project which will investigate thermal tolerance in littorinid snails from Japan to Singapore.



*Gray in St Petersburg, Russia with collaborator Christopher McQuaid*

### Kenny Leung

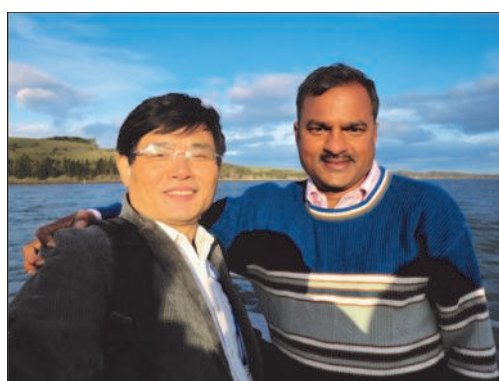
In recent decades, the paradigm of water quality management has shifted from zero discharge to allowing certain amounts of pollutants to be discharged into the environment. By doing so, we need to know exactly how much pollutants we can discharge without adverse effects to the ecosystem. With various external funding sources my research team tackles this question through establishing empirical toxicity data for an array of chemical pollutants. Our results provide a scientific basis for deriving ecologically relevant water and sediment quality guidelines for long-term protection of marine ecosystems.



*Kenny snorkelling on the Great Barrier Reef*

### V. ThiyagaRajan

As a consequence of anthropogenic CO<sub>2</sub>-driven ocean acidification (OA), coastal waters are becoming unsuitable for calcifying organisms. Our research team, in collaboration with crystallographers, has discovered that metamorphosing larvae of oysters and tubeworms are in deep trouble! Under anticipated low pH levels, the tubeworm larvae attached and metamorphosed but were unable to produce a calcified tube. The ultimate goal of our interdisciplinary team is to understand the mechanisms through which larvae of these commercially important species might adapt, or succumb, to projected OA conditions.



*Rajan with collaborator Prof Yu (South China Sea Institute, China)*



*Leszek during winter photo-ID surveys in Hong Kong*

## Leszek Karczmarski

Work in Hong Kong entered its second season. Here we focus on the Chinese White Dolphin, gathering data that will enable us to construct mark-recapture models quantifying population structure; socio-behavioural dynamics; and model population trends. Our international collaborations have also generated fascinating new findings: describing echolocation signals of Heaviside's dolphin, a little known species endemic to SW Africa; and documenting that oceanic currents have a profound impact on population structure and connectivity of Humpback Dolphins in the western Indian Ocean.



*Yvonne counting groupers at a large spawning aggregation in Polynesia*

## Yvonne Sadovy

My highlight this year was the publication of a new book -- *Groupers of the World: A Field and Market Guide* -- after many years of research and conservation work and a major output of the IUCN (International Union for Conservation of Nature) Groupers and Wrasses Specialist Group that I co-Chair and founded in 1998. The co-edited publication covers all 163 species of grouper, reef fishes extremely important globally in fisheries and a favourite in Hong Kong restaurants. The biology of many grouper species makes them vulnerable to overfishing and they need management and monitoring to ensure their populations persist. As many groupers are difficult to identify and little understood, the guide should greatly assist in furthering work with this group of fishes.



*JD on the Silk Road with the director of the Conservation Centre, Dunhuang Academy*

## Ji-Dong Gu

Another set of new PCR primers targeting the nitrite reductase encoding *nirS* gene of the anaerobic ammonium oxidation (anammox) bacteria has been tested successfully in the Pearl River Delta and South China Sea by my team. This allows amplification of this group of difficult-to-culture bacteria, responsible for removal of inorganic nitrogen in the N cycle, to obtain more reliable information about their diversity and abundance in the environment. Furthermore, we continued our collaborative research on preservation of the world cultural heritage sites in Cambodia and Dunhuang Academy on the Silk Road.



## Clement Dumont

The lab team continued to expand this year with new students to work on invasive species and sea cucumber fisheries. Among our current projects, we found that sea urchins selectively graze on particular coral species (e.g. *Platygyra*) that are severely affected by bioerosion in Hong Kong. Despite protection from predators while alive, as soon as damage occurs, massive corals are likely to be attacked by sea urchins, which may result in the collapse of coral colonies. Urgent research is therefore required to better study this problem and our lab will continue investigating this topic in 2012.



*Clement collaborating on sea urchin research in Thailand with Dr Ganmanee and his students*

## Nathalie Goodkin

This year my group took part in two major field excursions. Firstly to sample the coral reefs off Nha Trang, Vietnam with the Institute of Oceanography where we were able to extract more than 400 years of fossil record and secondly we conducted reef surveys in the northern Philippines with the University of the Philippines to identify fossil skeletons. My post-graduate student, Teng Teng, began her fellowship to study at the Australian Institute of Marine Science in Townsville, Australia and we welcome Dr Annette Bolton who joined the group as a new post-doctoral fellow. Finally, I received a HKU Overseas Fellowship to measure new geochemical proxies in Hong Kong corals at the Woods Hole Oceanographic Institution in the US.



*Nathalie examines a Porites coral in Santa Ana, Philippines*

## Moriaki Yasuhara

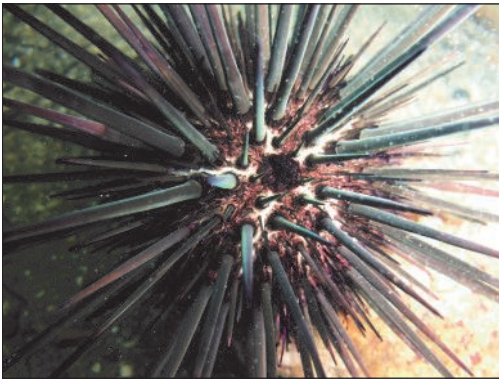
I have joined SWIMS and HKU in January 2011, and will continue to work on climatic and anthropogenic impacts on deep-sea and shallow-marine ecosystems and biodiversity using paleoecological methods in collaboration with various colleagues in the US, Japan and Germany. The long term goal of my research is to integrate my deep-sea and shallow marine work for a better, comprehensive understanding of large-scale marine biodiversity patterns and their temporal dynamics. I am also going to start research into Hong Kong's shallow-marine ecosystem history, especially focused on human-induced ecological degradation, with my postgraduate student, Yuanyuan Hong, and other collaborators.



*Moriaki giving an invited lecture at the University of Ryukyus, Japan*

## Post Doctoral Fellows

### Wai Tak-Cheung



*The sea urchin, Stomopneustes variolaris, which has only recently been recorded in Hong Kong*

Wai Tak-Cheung has focused his research on the trophic dynamics and function of HK marine systems. Due to the monsoonal climate, there is a seasonal food supply to consumers. Wai used fatty acid and stable isotope analyses to study terrestrial-marine energy flow and trace the source, fate and relative importance of autotrophic and detrital carbon to various feeding groups (from plankton to predatory fishes) in estuarine and rocky habitats. Wai has also conducted a large spatial scale survey to determine the effects of carbon use and ecological thresholds on relationships between grazers and sessile communities in Hong Kong rocky reefs, including Marine Protected Areas.

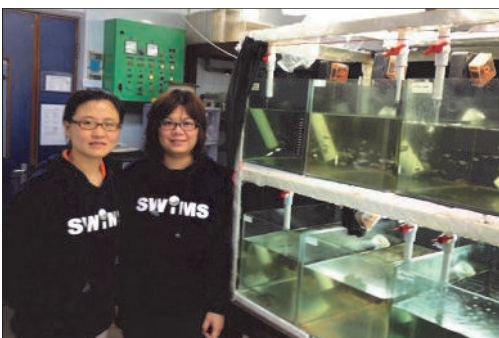
### Ng Wai Chuen



*Chuen's model organisms - an aggregation of Cellana limpets*

Ng Wai Chuen focuses his research on the population genetics and stress response of marine animals. One of his study themes is on the effect of climate change on the physiological responses of intertidal organisms using the regionally common limpets *Cellana grata* and *C. toreuma* as model species. Through on-site monitoring and laboratory verification, potential biomarkers have been identified for heat and other environmental stresses based on differentially expressed proteome profiles. He is also taking part in an investigation of the population genetics of the sea urchin *Anthocidaris crassispina* in the East and South-east Asian region.

### Priscilla Leung



*Priscilla and Adela in front of their experimental setup*

Priscilla's research interest focuses on stress-associated responses of marine species upon exposure to chemical pollutants. Currently, she is looking at the combined effect of temperature and selected pollutants on marine fish and diatoms using genomic and proteomic analyses. The results will be useful to address the toxic mechanisms of the pollutants under global warming scenarios. Priscilla is also working closely with Kenny Leung on developing the *de novo* transcriptome of the common biomonitor species, the green mussel, *Perna viridis* using the next-generation sequencing technology.

## Vivien Wei Wei Bao

To account for unique site-specific characteristics in the natural water environment, the US EPA's Water Effect Ratio procedure can be applied to derive site-specific water quality objectives (WQOs). But, to date, most documented WER studies have been applied to freshwater systems. Vivien's study with Kenny, for the first time, has determined WER of copper (Cu) for Victoria Harbour and the southern and western marine waters of Hong Kong, using the diatom *Skeletonema costatum*, copepod *Tigriopus japonicus* and fish larvae *Oryzias melastigma*.



*Vivien conducting field work at a marine fish farm*

## Stephen Cartwright

Stephen Cartwright's interests lie in thermal biology and ecology - how temperature impacts organisms or modifies species interactions, driving changes at the individual, population or community level. He is developing a thermal ecology research laboratory at SWIMS, to address key themes such as the effects of chronic levels of heat stress. Current literature is dominated by short term experiments to predict organism responses, but Steve is concerned such tests are inadequate to predict the impacts of a rising, average global temperature, and plans to measure the chronic effects of this on the health of organisms.



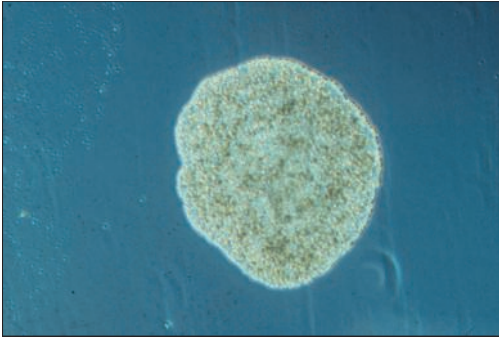
*Stephen dissecting limpets with Dave Morrill*

## Joy Mukherjee

Almost all aquatic species have a complex life-cycle with larval metamorphosis that converts free swimming larvae to permanently attached benthic adults within only a few minutes. A big knowledge gap exists about how this larval metamorphosis will respond to hypoxia in an acidifying ocean. Using his proteomics and bioinformatics experience, Joy is studying the proteomic response of the metamorphosing larvae of tubeworms to the twin threats of climate change: hypoxia and ocean acidification. This study will not only advance our understanding of climate change impacts on marine organisms but also our ability to predict the consequences of such changes.



*Joy with the LC-MS/MS Mass spectrometer instrument dedicated for the proteomics laboratory*



*Trichoplax adhaerens, the only described species in the phylum Placozoa*

## Michael Eitel

Michael was awarded a German Academic Exchange Service postdoctoral fellowship to work at SWIMS. His research interests focus on the diversity, ecology and development of the marine Placozoa, the simplest of all animal phyla. The Placozoa is currently monotypic with *Trichoplax adhaerens* as the only described species. Previous studies, however, have revealed a surprising genetic divergence suggesting the presence of multiple taxa and ranks within Placozoa. Using a combination of molecular, ecological and morphological characters, Michael aims to erect new taxa and establish a robust classification in this *tabula rasa* phylum.

## Postgraduate Research

### Spatial distribution patterns of *Planaxis sulcatus*



*June recording movement patterns in Planaxis sulcatus on the shore*

June Leung is in the final year of her studies on the spatial distribution patterns of the rocky shore snail, *Planaxis sulcatus*. Previously, June found that patterns of aggregation and microhabitat use varied spatially and temporally. To investigate the factors causing these patterns, June used a computer modelling approach to simulate pattern formation. The models were able to generate spatial patterns that approximate naturally-occurring patterns using information on *Planaxis* population biology and ecology; but a full understanding of pattern formation still requires more in-depth knowledge of the behaviour of these snails.

### Nanomaterials in the environment



*Stella together with her labmates in Korea*

Between March and May, Stella Wong worked in Prof Jae-Seong Lee's laboratory at Hanyang University, Korea. Using advanced molecular techniques, she discovered that a number of metallic nanomaterials such as nano-zinc oxide (nZnO) and nano-magnesium oxide can produce reactive oxygen species (ROS) and thus induce oxidative stress in marine organisms, and that nZnO may be a potential endocrine disruptor. Stella also compared the toxicity of nZnO in single form and commercial form (i.e., in sunscreens) and observed that other sunblock components could react synergistically or antagonistically with nZnO toxicity.

## Sex in the mangrove: reproductive behaviour of *Littoraria*

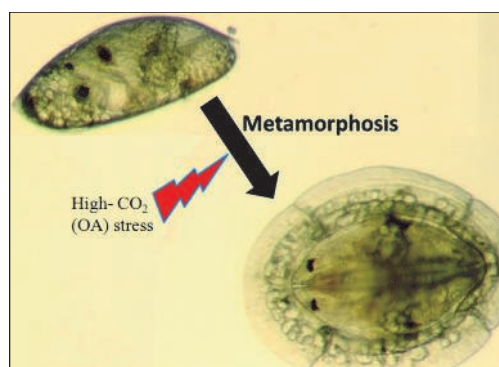
Diverse reproductive behaviours can occur in different species to increase individual fitness. Terence Ng studies reproductive behaviour of two mangrove snails, *Littoraria ardouiniana* and *L. melanostoma*. Terence has found that, in order to find a mate, male *L. ardouiniana* prefer to follow mucus trails laid by large as opposed to small females, but this preference is not shown in *L. melanostoma*. This specific difference can be explained by the fact that large *L. ardouiniana* females have a higher fecundity than small individuals, but this is not the case in *L. melanostoma*. Terence is also investigating other forms of behaviour to understand how these snails maximize their reproductive success.



Terence with collaborators Kerstin Johannesson and Sara Hintz-Saltin (Sweden) at St Petersburg, Russia

## Is the barnacle larval proteome robust to CO<sub>2</sub> emissions projected for 2100?

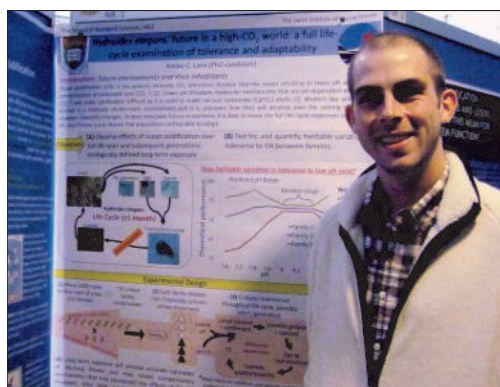
Ocean acidification (OA) is an emerging stressor to marine ecosystems, especially the more sensitive larval stages of invertebrates. Kelvin Wong has investigated the impact of OA on the larvae of an economically and ecologically important barnacle species at the proteome level. The larval proteome appears to be highly plastic and thus can resist rising CO<sub>2</sub> levels until 2100. Kelvin's interdisciplinary effort showed, for the first time, the ability to derive larval proteome information from a sentinel species for a mechanistic understanding of OA effects. Now he has graduated with an "excellent" MPhil thesis – thanks SWIMS!



Larval metamorphosis in barnacles is sensitive to CO<sub>2</sub> emission

## Will future low ocean acidification (OA) create OA populations?

Ackley Lane has begun his work on identifying heritable variation that exists within populations to OA stress. If individuals within a population have different OA tolerances, and those tolerances are heritable, then this novel stressor may select for animals that can survive at projected OA levels. So, while current populations may respond poorly to low pH, future populations may do fine. This last year, Ackley attended a workshop in Norway where advice was received from many experts in the field resulting in a refined experimental design and new OA regulation system.



Ackley presented his experimental design at a workshop in Tromsø, Norway



*Vera working on oyster larvae at Zhanjiang Experimental Station, South China Sea Institute of Oceanology*

## Evaluating calcification products of marine invertebrates in a high-CO<sub>2</sub> world

Calcifying marine invertebrates construct their skeleton with calcium carbonate through highly regulated biomineralization processes. The difference in calcification systems may explain variability responses demonstrated by different calcifiers to seawater with a high CO<sub>2</sub> level. Vera Chan's PhD thesis research examines how the projected CO<sub>2</sub> rich seawater would affect the end products of biomineralization by marine invertebrates. Her project applies engineering techniques such as X-ray diffraction (XRD), Fourier transform infrared spectrometry (FT-IR) and nanoindentation to ascertain the physicochemical mechanisms through which CO<sub>2</sub> is threatening marine invertebrates.



*Dinesh testing the development of Calcein stained oyster embryos at different CO<sub>2</sub> conditions*

## Oysters in South China are in deep trouble in a high-CO<sub>2</sub> world

Oysters are one of the commercially exploited shellfish around the world. Among various life stages, the survival of the early-larval stages of oysters, under fluctuating high-CO<sub>2</sub> estuary conditions and ocean acidification (OA), is critical for aquaculture sustainability. Ramadoss Dineshram, using the native commercial oysters of Hong Kong, *Crassostrea hongkongensis*, has shown that larvae exposed to OA stress have a delayed growth rate compared to controls. This is the first step towards the search for novel protein expression signatures for OA, and Dinesh's future study will use gel free proteomics to investigate the mechanisms responsible for slow growth and calcification associated with OA stress.



*Adela at the Primo 16 Conference together Prof King M Chan and Roy R Ye*

## Interacting effects of temperature and pollution on fish

Anthropogenically driven global climate change is happening and results in an increase of thermal extremes. Toxicities of chemical pollutants are likely influenced by temperature. Adela Li investigates the combined effects of temperature and DDT on larvae of the marine medaka fish *Oryzias melastigma*. Her results show that toxicity of DDT was lowest at optimum water temperature (i.e., 25°C) but increased at both higher and lower temperatures. Adela is currently examining enzyme activities and heat shock protein expression in the fish larvae, to verify if the observed temperature-dependent toxicity profile is associated with a reduction of aerobic scope.

## Local marine organisms are still threatened by organotin pollution

Organotins (OTs), in particular tributyltin and triphenyltin (TPT) originating from antifouling systems, can induce imposex (i.e., superimposition of male sex organs on females) in marine neogastropods. Recovery from OT pollution has been anticipated after their global ban in Sept 2008. Kevin Ho examines imposex status and has measured tissue concentrations of various OTs in the neogastropod, *Thais clavigera*, from 28 sites in Hong Kong. Alarmingly, all animals exhibited high incidences of imposex and high TPT tissue concentrations, indicating a continuous threat of OT contamination.



*Kevin doing a transect survey on a rocky shore*

## Distribution of non-native marine invertebrates in Hong Kong

Juan Carlos is conducting research on non-native marine invertebrates in Hong Kong supported by ECF. The aim for his first year of research was to assess the distribution and abundance of the reported non-native ascidian *Ciona*, the limpet *Crepidula*, the bryozoan *Bugula*, and the mussels *Mytilopsis* and *Mytilus* in fouling communities in both wet and dry seasons. The abundance of these invertebrates during the last wet season was low with few individuals of *M. sallei* and *M. galloprovincialis* on Victoria Harbour piers, however, he is expecting a higher abundance of non-native species in the next dry season.



*Juan Carlos sampling under a pier at Hong Kong*

## Stress tolerance as a mechanism for marine bioinvasion

Marine bioinvasions are an emerging problem in times of global change and stress tolerance is thought to be one of the common traits of successful invaders. To test this theory, Charles Ma has been investigating the role of stress tolerance on invasion success of marine mussels. In 2011, Charles compared tolerance to temperature and salinity stress between two invasive and one non-invasive mussel by testing their mortality and heart function limits. His results agree with the general theory, with invasive mussels being more stress tolerant than non-invasive mussels, and his findings help explain the invasion success of these species.



*Mussels heart rates being measured under heat stress*



*Kathy enjoying the rich biodiversity on the shore at Tsitsikamma Nature Reserve, South Africa*

### **Thermal tolerance of *Echinolittorina* species – implications for vertical distribution and seasonal migration patterns?**

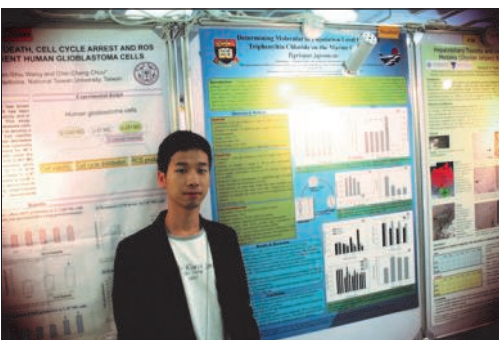
The high-zoned littorinids *Echinolittorina malaccana*, *E. radiata* and *E. vidua* exhibit a distinctive vertical distribution, as well as seasonal migration patterns. Kathy Li has investigated the effect of increasing temperature on the littorinids' lethal limit, heart rate and enzyme activities. Her findings show that these animals are incredibly tolerant of thermal stress and can survive temperatures up to 53°C. Their tolerance is positively correlated with their vertical distribution, and their seasonal migration pattern, moving down the shore, may help them survive the summer in Hong Kong.



*Interaction between a damselfish and a hinge-beak shrimp, Tioman Island, Malaysia*

### **Direct and indirect effects of predation, mediated by habitat structure, on the dynamics of predator-prey interactions**

Nicolas Ory holds the Swire Hong Kong PhD Studentship and his project examines how the influence of predatory fishes on the distribution and abundance of small prey is mediated by habitat structure in temperate and tropical waters. His recent work in Chile revealed a weak effect of fish predators on the abundance of rock shrimp. Shrimp distribution was, however, influenced by the structure of the reef. Fishes tended to eat the largest shrimp, even though these were less abundant than smaller individuals. In the future, Nicolas will investigate whether this difference is due to a preference by the fish, which will help him gain a better understanding of the dynamics of predator-prey interactions.



*Andy with his poster at the ISTA 15 conference*

### **How toxic is triphenyltin to marine life?**

Triphenyltin (TPT) is widely used as a biocide in antifouling paints and agriculture production. High concentrations of TPT have been found in the tissues of local marine gastropods by Kevin Ho. Andy Yi's PhD study investigates the toxic effects of TPT to selected marine species. His results show that TPT is very toxic to the copepod *Tigriopus* with a significant decline in population growth at 1.0 µg/L. TPT can induce reactive oxidative species in the copepods and in turn inhibit their expression of some essential detoxification and growth-related genes at 0.1 µg/L or above.



## Environmental stress on the rocky shore

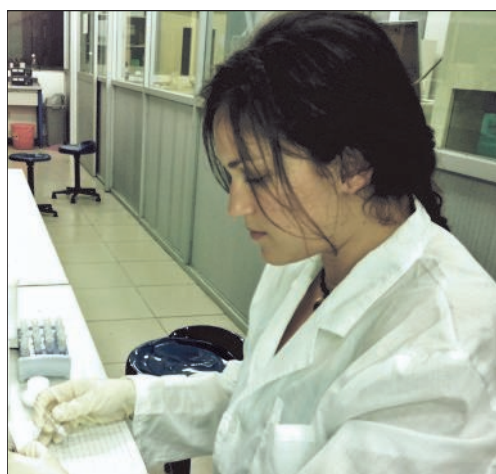
Rocky shores experience strong environmental changes due to the rise and fall of the tides. As a result, many species undergo stressful conditions, using different strategies to cope with this extreme environment. Karen Villarta is investigating the role of environmental stress on the physiology, energy budget and population dynamics of the limpet *Cellana toreuma* to understand the life history strategy of this species. Preliminary investigations show a sharp decline in this species during summer associated with high temperatures during daytime low tides. Future, physiological experiments and energy budget calculations will be used to relate how this stress impacts the limpets' population dynamics.



*Karen, Marielle and Terence after field work in the Cape d'Aguilar Marine Reserve*

## Bioaccumulation of heavy metals in Heaviside's dolphins

Julie Serot is working her way through over 250 samples of Heaviside's Dolphin (*Cephalorhynchus heavisidii*) tissues from southwest Africa, which she is analyzing for heavy metal concentrations in a collaboration with colleagues at Sun Yat Sen University, China. Tissue samples were collected from free-ranging dolphins off the coast of South Africa and Namibia covering a distance of >1000 km and habitat ranging from coastal kelp forest and rocky shores in the south to coastal desert in the north. Julie's work will provide the first bioaccumulation research of this severely understudied species which is currently listed under IUCN criteria as 'data deficient'.



*Julie conducting labwork in Zhubai*

## Risk assessment framework for safeguarding the Marine Reserve

Over the past year, Elvis Xu has successfully conducted a series of field surveys and a comprehensive literature review. Elvis is now able to identify and prioritize most of the potential threats to marine organisms inhabiting the Cape d' Aguilar Marine Reserve. Experiments have also been conducted to examine the environmental levels of pollutants, including faecal pollutants, inorganic nutrients, and endocrine disrupting chemicals (EDCs). His preliminary results indicate high ecological risks associated with EDCs and orthophosphate phosphorus in the Reserve. Elvis is also developing a multilayer Drive – Pressure – State – Impact – Response (DPSIR) framework for integrated protection and management of the Reserve.



*Elvis collecting samples from Shek O Sewage Treatment Plant*



*Macarena on her field surveys in La Herradura Bay, Chile*

### **Risso's dolphins of La Herradura Bay, Chile**

Macarena Bravo continues her research project in Chile, investigating socio-dynamics of a little known dolphin species, the Risso's dolphin (*Grampus griseus*). The small size and protected conditions of La Herradura Bay, her research site, provides excellent conditions for systematic sea-based surveys. The Bay seems to function as shelter for many dolphin groups; especially for groups containing small calves. Macarena's data indicate that although the overall pattern of group structure is very dynamic, some individuals display considerable levels of site fidelity, a surprising finding for a wide-ranging species.



*Lenin during his field work in Golfo Dulce*

### **Ecology of coexistence: sympatric dolphin species in a tropical fjord, Costa Rica**

This has been the second season of Lenin Oviedo's research in Golfo Dulce, a fjord-like habitat on the Pacific coast of Costa Rica. Lenin's project investigates the population ecology and dynamic interactions between two sympatric dolphin species, the bottlenose (*Tursiops truncatus*) and pantropical spotted dolphin (*Stenella attenuata*). Lenin's mark-recapture records doubled since the previous season and indicate a spatio-temporal pattern of niche partitioning. Further sub-structuring of bottlenose dolphins into apparently discreet communities suggests that there is still much to learn about the processes that shape species coexistence.



*Hong (left) and Juan Diego (right) complete their mission*

### **Sustainable management of sea urchin fisheries "the magic box"**

In Hong Kong, commercial harvesting of the sea urchin *Anthocidaris crassispina* began in the mid-1970s with an annual production reaching a peak of 60-80 tonnes in 1978-1980. Since 1984 landings have declined to less than 10 tonnes a year. Despite the strong evidence of over-exploitation, no quantitative assessment of the effects of fishing on survival, growth and mortality has been conducted and there is no management plan for this species. Juan Diego Urriago is comparing the demography of four populations, two in no-take areas and two in open fishing areas, to examine the effects of establishing Marine Parks and Marine Reserves on this exploited sea urchin.

## Impacts of salinity and pH on growth of corals

Under the Endeavour Research Fellowship, Teng Teng is currently investigating the effects of varying salinity and pH on the growth of corals. This project is now ongoing at the Australian Institute of Marine Science (AIMS), Townsville. The prestigious tropical marine research centre is situated adjacent to the Great Barrier Reef (GBR) and surrounded by national parks as well as being in a marine reserve. Presently, coral nubbins prepared from the GBR are left to heal in outdoor aquaria, pending the completion of the indoor experimental setup before Teng Teng starts her experiments. These corals will be monitored for growth and physiological changes using facilities at AIMS.



*Marine Operational Area of AIMS overlooking the Coral Sea*

## The future of macroalgae

In 2011, Simon Winkler from The University of Kiel and Juan Carlos from SWIMS participated in the German project GAME IX. The question of this GAME was "Are tropical macroalgae more sensitive to short-term changes in energy/light supply than comparable species from temperate waters?". Scientists expect more shading events and less stable light conditions in the future due to ocean eutrophication, river runoff and pollution. To see how algae will cope under these global changes, the same experiment was conducted in Brazil, Chile, Finland, Hong Kong, Indonesia and USA. Results indicate that temperate algae cope better with long-term irradiation changes while high and low latitude algae react similarly to short-term fluctuations.



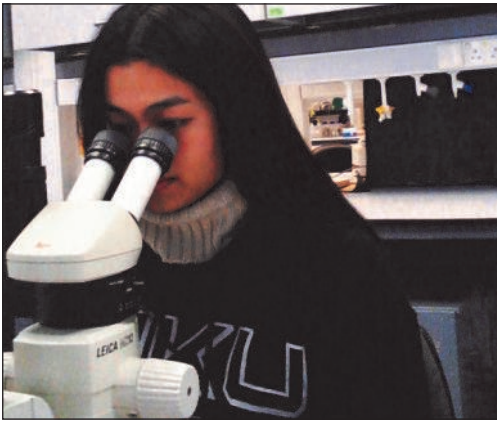
*Simon and Juan Carlos with their set up in SWIMS*

## Nutritional plasticity of scleractinian corals

Scleractinian corals are important reef habitats and are vulnerable to environmental changes. However, the trophic plasticity of scleractinian corals from Hong Kong is not known. Michelle Luk wants to know if scleractinian corals rely more on heterotrophy to obtain energy in Hong Kong where waters are relatively eutrophic and turbid, and exhibit marked seasonality. She is also interested in how marine animals use energy throughout their life cycles by studying dynamic energy budget models (DEBM) in filter feeding organisms.



*Fragments of Goniopora columna extend tentacles for active capture feeding*



*Yuanyuan observing ostracod and mollusc samples under the microscope*

### **Shallow marine ecological degradation of Hong Kong based on paleoecological analysis of Ostracoda and Mollusca**

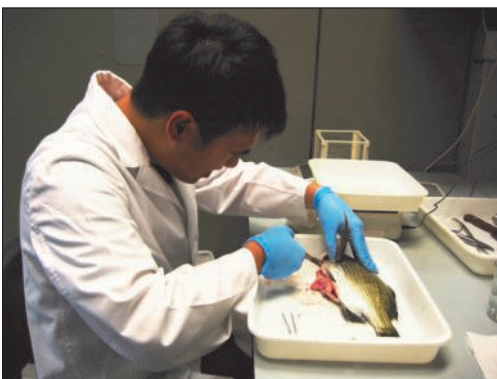
Ostracoda and Mollusca have heavily calcified shells which preserve well in sediments. The discrepancy between live and dead assemblages of Ostracoda or Mollusc in samples can represent faunal changes over the past decades, that can reflect human impacts on marine benthic ecosystems. Yuanyuan Hong investigates living and dead fossil ostracods and molluscs in grab and core samples, in order to reconstruct the ecological degradation history in Hong Kong; to quantitatively assess causes of human-induced degradation, and to develop ecosystem health indices using paleoecological data.



*The sea cucumber Stichopus chloronotus from the Pacific island, New Caledonia*

### **Social and ecological aspects of the sea cucumber fishery in Vanuatu**

Sea cucumbers are a highly valuable seafood commodity in many parts of the world. In the Pacific archipelago of Vanuatu, declines in sea cucumber populations have led to a five year moratorium on the fishery. Marielle Dumestre plans to investigate the sea cucumber fishery to determine key features for sustainable management options. She will assess Holothurian stocks and examine biological parameters for replenishment of populations. Socio-economic perspectives will be gathered using a qualitative research approach. Additionally, as Hong Kong is a central hub in the trade of Holothurians, Marielle will investigate the import and local trade market and consumer behaviour and attitudes.



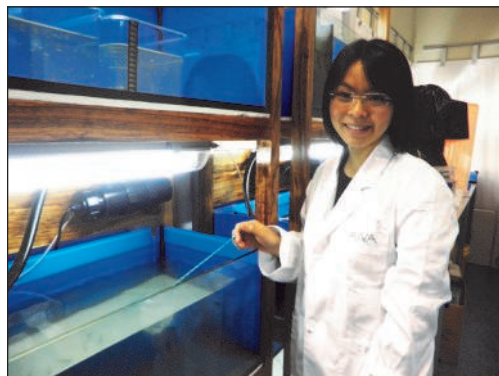
*Calton dissecting fish to obtain gonads for further assessment*

### **Reproductive biology of seabreams and their fisheries status in Hong Kong**

Seabreams (family Sparidae) are an important group of food fishes in Hong Kong yet little is known of their fishery status and biology. One important aspect is their reproductive biology, which often includes hermaphroditism (i.e., adult sex change). Sex change can make certain species particularly susceptible to unmanaged fishing and require specific management action. Calton Law is conducting a study on the reproductive biology of seabreams that are important in the Hong Kong fishery. His research focuses on their sexual pattern and seeks to understand their fishery through market surveys, fishermen interviews and examination of historical fishery data.

## Ecotoxicology of nanomaterials

Annually, tonnes of manufactured nanomaterials (NMs) are introduced into the market. As these NMs have unique physiochemical properties and unknown toxicities toward marine organisms, they pose new challenges to their management. As a graduate from HKU's MSc in Environmental Management programme, Mana Yung recognised that legislation and water quality criteria (WQC) are essential tools for pollution control. Mana's PhD research will concentrate on the ecotoxicology and risk assessment of commercially available NMs (e.g., nano-sunscreens). Her findings will provide scientific information for developing WQC for NMs and improving their management.



*Mana checking her fish in the Marine Aquarium*

## Population status of the coral trout, *Plectropomus leopardus*, in the Philippines and Indonesia

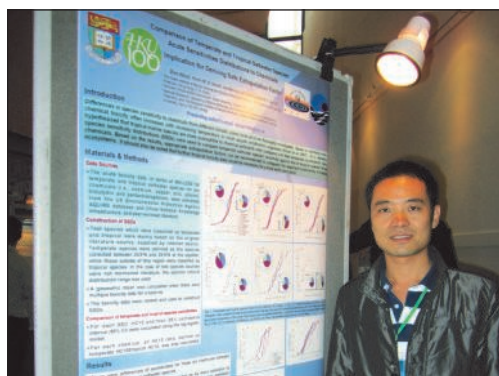
The coral trout, *Plectropomus leopardus*, is listed as 'Near Threatened' in the IUCN red list and is one of the most valued species in the Live Reef Food Fish Trade in South-east Asia. Hong Kong is the largest importer of the fish, and it also re-exports a substantial amount into mainland China. Xueying has constructed the first-ever trade profile of coral trout in mainland China this year. After documenting the heavy demand for the fish, she is now investigating fishing levels in the Philippines and Indonesia, two major suppliers to Hong Kong. Assessing fish stocks can help local fishery managers to decide on the most effective management options for sustainable long-term use of the species.



*Coral trout at Huangsha Seafood Wholesale Market, Guangzhou, China*

## Comparison of the acute sensitivity to chemicals of tropical and temperate aquatic animal species: meta analysis and mechanistic studies

The regulation of substances discharged to marine environments relies upon data derived from ecotoxicity tests. Most of these data, however, are generated from western countries and based on temperate species. In contrast, there are fewer toxicity data available for tropical regions. There is a concern whether tropical countries can reliably and safely apply the predicted 'no effect' concentrations of temperate countries to assess ecological risks in their marine environments. Zhen Wang's PhD study will address this issue through meta analysis of secondary toxicity data, standard toxicity tests and laboratory comparative studies using genetically, closely related species.



*Zhen and his poster at the EQSPA conference*



*Simon during theodolite survey work at Tai O peninsula*

### **Quantifying anthropogenic impacts on cetaceans**

The Indo-Pacific humpback dolphins (*Sousa chinensis*) inhabiting the Pearl River Estuary are under tremendous pressure from many human activities. Simon Wong is currently developing a research framework to categorise and quantify these impacts. He is using boat-based surveys and shore-based observation platforms to quantify patterns of distribution, behaviour and movement in the presence and absence of anthropogenic stressors. This is an early stage of Simon's research that aims at establishing a broader comparative approach to the issue of anthropogenic impacts.



*Amina photographing spinner dolphins in the Red Sea*

### **Comparative ecology of spinner dolphins in the Egyptian Red Sea**

The Red Sea is among the most pristine and unexplored seas compared to other enclosed marine habitats. Current anthropogenic impacts are on a rise, however, and so is concern about long-term viability of coastal species and habitats. Amina Cesario investigates the ecology and population structure of the most abundant dolphin in the area, the spinner dolphin (*Stenella longirostris*). Using photographic identification and mark-recapture techniques, she examines population parameters and distribution and will construct models of socio-dynamics that shape larger-scale population processes.



*Wei-Lung during her final data analyses at SWIMS*

### **Social structure and reproductive parameters of Indo-Pacific humpback dolphins off Taiwan**

Wei-Lung Chang visited SWIMS several times this year, as an exchange student working on her project jointly co-supervised by Leszek and Prof Lien-Siang Chou of National Taiwan University. Her research quantified the population structure of humpback dolphins inhabiting the west coast of Taiwan; classified under IUCN criteria as 'Critically Endangered'. She documented that the population is subdivided into two largely discreet communities with limited transition rates. She also constructed models of socio-behavioural dynamics and estimated several vital reproductive parameters.

## Research workshops and conferences

### South-East Asian Training Workshops in Marine Mammal Research Techniques

SWIMS also maintained its role in organizing a series of workshops and conferences in 2011. The series of workshops on marine mammal ecology led by Leszek continued to gain support and help increase the regional capacity for research into these animals and their threatened habitats.

In all, three international workshops were organised at SWIMS. The workshops gathered over 30 participants from across 10 nations in South-East Asia; and aimed to standardize marine mammal field research techniques and to build a collaborative research network in this severely understudied region. The workshops conducted in 2011 were the 2nd SE Asian Workshop: Introduction to Geographic Information Systems (14-17 Jul 2011); the 3rd SE Asian Workshop: Quantitative Population Analyses with Mark-Recapture Models (10-16 Dec 2011) and the 4th SE Asian Workshop: GIS Techniques - Principles and Concepts (28-31 Dec 2011).

In summer (10-20 Jun 2011) Leszek also organised a regional Field Training Course on "Tracking of Animal Movement with the use of Surveyor's Theodolite" which gathered participants from Hong Kong and Mainland China.

In November, at a dedicated international workshop (27 Nov 2011) during the 19th Biennial Conference of the International Society for Marine Mammalogy (27 Nov - 2 Dec 2011, Tampa, Florida, USA) Leszek, jointly with Glenn Gailey of Texas A&M University, launched a new software for image processing and data management in photographic-identification mark-recapture studies. This new software, named *DISCOVERY: Photo-Identification Data-Management System for Individually Recognizable Animals*, has a multi-taxa (marine and terrestrial) application and has attracted great interest amongst marine mammalogists.



*Ken Pollock, Leszek & Lyndon Brooks*



*Participants at the 3rd SE Asian Workshop on Quantitative Population Analyses with Mark-Recapture Models*



*Mark Keith who led the GIS Techniques - Principles and Concepts Workshop with Leszek*



*Participants of the 4th SE Asian Training Workshop in Marine Mammal Research Techniques*



*Kenny giving a keynote lecture at the EQSPA 2011 Conference*

## The EQSPA 2011 Conference

The first International Conference on Deriving Environmental Quality Standards for the Protection of Aquatic Ecosystems (EQSPA 2011) was accomplished during 3-7 December 2011 at HKU. This conference was chaired by Kenny Leung and jointly organised by SWIMS and the School of Biological Sciences, HKU. With the generous financial support from the Environment and Conservation Fund of the HKSAR Government, we were able to bring internationally renowned experts to Hong Kong to share their experience and expertise on the advancement of the scientific derivation of environmental quality standards (EQS) for the protection of aquatic ecosystems and human health.

The conference provided an essential platform for international, regional and local experts from government, academia and the environmental sector to exchange their experience and establish research collaboration. Two training workshops were also provided for environmental practitioners and postgraduate students to acquire knowledge and skills in the derivation of water or sediment quality benchmarks. Over 90 and 150 delegates from over 15 countries participated in the workshops and conference, respectively. The conference was opened by the Director of the Environmental Protection Department Ms Anissa Wong, our Provost, Prof Roland Chin and Dean of Science, Prof Sun Kwok.



*Prof. Chin, Deputy Vice Chancellor and Provost, HKU giving the opening speech*

The conference consisted of 36 platform presentations, 40 poster presentations and three group discussion sessions. The results of the discussion sessions will be published as synthesis papers in the international journal, *Integrated Environmental Management and Assessment* while selected papers will be published as an edited volume entitled "Environmental Quality Benchmarks for Protecting Aquatic Ecosystems" in the winter of 2012. The EQSPA 2011 was a great success as reflected by the productive discussions and many positive feedbacks from the participants. We are looking forward to the next meeting to be held in Beijing in 2013/2014.



*Participants at the EQSPA 2011 Conference*



## Community Outreach

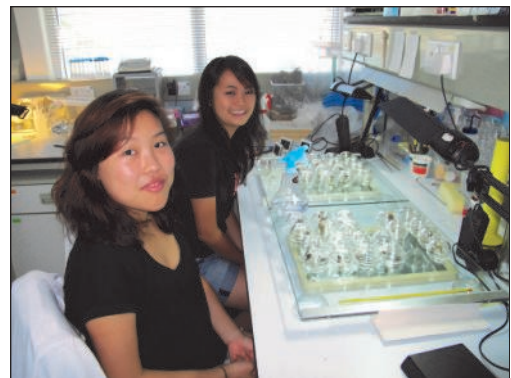
This was a bumper year in terms of community outreach for SWIMS with over 750 visitors in 2011! This included over 350 school children visiting SWIMS as part of their curricula; visits from HKU departments (Architecture, Law); the Swire Staff Association; as well as from HK Government (AFCD, Marine Parks Ambassadors). As always it is a pleasure to open SWIMS up for the general public to see the work we do and for people to learn more about Hong Kong's marine environment and we especially thank AFCD for their support in this respect, and especially Dr Cheng who has recently taken over from Mr Edward Wong as Marine Parks Officer (West).

SWIMS also maintained its role in helping train and provide internship opportunities for young scientists, providing research facilities for BSc students from HKU; as well as taking 20 undergraduate students wanting to gain work experience from universities in Hong Kong, Canada, UK, USA and Australia over the year, adding to our multinational community at SWIMS.

On a more personal note, in December 2011 Dinesh went back to his hometown - not to visit relatives but rather to help the street children in Pondicherry, India, to have a better life. Dinesh was involved in a service project entitled "Idea India Art Empowerment Project" which involved children in a special sheltered school designing and making attractive and fashionable handmade decorations to sell. Towards the end of this event, Pondicherry was unfortunately hit by a disastrous cyclone, causing a vast damage to the shelter school which Dinesh and his team members helped to fix. Dinesh has used this experience to tackle a new project supported by CEDARS in HKU, to motivate students in Tamil Nadu to continue their education in a friendly learning environment. It is one of Dinesh's dreams to organize similar service oriented projects with the goal of eliminating poverty from this part of the world.



*A farewell party to thank summer helpers for their excellent help*



*Sally and Sharon working in SWIMS lab*



*Dinesh after sharing his service dreams at the HKU100 Gala dinner*



*Idea team playing with children after building multifunctional outdoor area*

## Conservation

### SWIMS and IUCN

Work continues on the Napoleon fish (or humphead wrasse), *Cheilinus undulatus*, in preparation for the next CITES (Convention on International Trade in Endangered Species) meeting in 2012, to determine whether the species is recovering in areas where fishing has substantially reduced populations and to seek ways of reducing its illegal trade. The species was listed on CITES Appendix II in 2004 because of severe overfishing for the live reef fish trade. This trade supplies the fish we see swimming in restaurant tanks in Hong Kong and southern Mainland China. With high demand for the species, and no management, populations have been dwindling. Our investigations have revealed illegal trade, particularly out of Indonesia and into Mainland China. In 2011 we resurveyed a site in eastern Indonesia where fishing of the species had stopped 4 years earlier and found about twice as many fish as before with exciting signs of recovery. However, there were few adults and we need to wait a few more years to see their recovery because this species lives for 30 or more years. One exciting aspect of the study in Indonesia this year was that we were accompanied by a film crew from Hong Kong (Monster Productions) which is making a 5-part series for RTHK and will feature the Napoleon fish as one of its stories.



*Yvonne's view of her audience while being filmed in a village in eastern Indonesia for an RTHK series*



*Yvonne studying Napoleon fish, Cheilinus undulatus, in its natural habitat*



*SWIMmers, past and present, on the Reef Check 2011 team*

### SWIMS and Reef Check

Reef Check 2011 was another successful experience, as students and alumni of SWIMS continue to monitor local coral communities and associated fauna in support of this public event. As for the past 6 years, SWIMS was responsible for the dive survey at Siu Long Ke, and team members were tasked to assess the status of indicator fish and invertebrate species, as well as coral cover. This data contributes to a long term and continuing data set, which in conjunction with other teams throughout Hong Kong, is used by green groups to reflect on the health of coral communities. In 2011, coral cover was about 40%, which is similar to previous years, indicating that the community was relatively undisturbed, as was supported by observations of little damage through natural or anthropogenic causes. The abundance of indicator fish and invertebrate fauna still remains relatively low, with evidence of some fish traps, suggesting more could be done to protect these important ecological habitats. However, sightings of starfish, nudibranchs, and even lobsters, as well as other offerings of charismatic critters – demonstrates that our coral communities have a lot to offer, if one is patient (a little luck wouldn't hurt either!).

# 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 Hon. 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 are encouraged to apply to work as volunteer student research assistants during the semester break/summer holidays. High school students who would like to gain some experience in marine biological/ecological research are also encouraged. Interested students should contact Ms Sylvia Yiu.

# Accommodation

SWIMS residential blocks are situated on top of the Cape d'Aguilar cliffs. Facilities at the Residence include a common room, kitchen, as well as a BBQ area and table tennis table! Accommodation at the Residence is available for students, researchers and visitors working at SWIMS in either en-suite rooms, student rooms or the communal bunk room. Those interested in booking the accommodation should contact Ms Sylvia Yiu.



*A sighting of a python in the morning at SWIMS, the wall is 1.5m tall - so we wonder how big this snake was?*



*Terence and Elvis match up at SWIMS Residence*

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Urriago JD, Himmelman JH, Gaymer CF (2011) Responses of the black sea urchin *Tetrapygus niger* to its sea-star predators, *Heliaster helianthus* and *Meyenaster gelatinosus* under field conditions. *Journal of Experimental Marine Biology and Ecology* **399**: 17-24

Urriago JD, Santodomingo N, Reyes J (2011) Deep-sea coral formations: biologic criteria for the establishment of marine protected areas on a continental margin (100-300 m) in the Colombian Caribbean. *Bulletin of Marine and Coastal Research* **40**: 89-113

Wai TC, Leung KMY, Sin SYT, Cornish A, Dudgeon D, Williams GA (2011) Spatial, seasonal, and ontogenetic variations in the significance of detrital pathways and terrestrial carbon for the benthic shark, *Chiloscyllium plagiosum* (Hemiscyllidae), in a tropical estuary. *Limnology and Oceanography* **56**: 1035-1053

Wai TC, Leung KMY, Wu RSS, Shin PKS, Cheung SG, Li XY, Lee JHW (2011) Stable isotopes as a useful tool for revealing the environmental fate and trophic effect of open-sea-cage fish farm wastes on marine benthic organisms with different feeding guilds. *Marine Pollution Bulletin* **63**: 77-85

Wang BS, Goodkin NF, Angeline N, Switzer AD, You CF, Hughen KA (2011) Temporal distributions of anthropogenic Al, Zn, and Pb in Hong Kong *Porites* coral during the last two centuries. *Marine Pollution Bulletin* **63**: 508-515

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Williams GA, De Pirro M, Cartwright SR, Khangura HK, Ng WC, Leung PTY, Morrill D (2011) Come rain or shine: the combined effects of physical stresses on physiological and protein-level responses of an intertidal limpet in the monsoonal tropics. *Functional Ecology* **25**: 101-110

Wong KKW, Lane A, Leung PTY, Thiyagarajan V (2011) Response of larval barnacle proteome to CO<sub>2</sub>-driven seawater acidification. *Comparative Biochemistry and Physiology D - Genomics and Proteomics* **6**: 310-321

## Student Graduations

### Ph.D

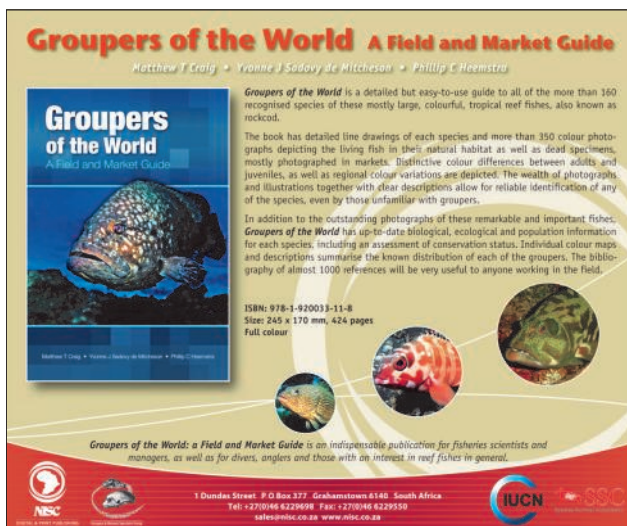
- Cao Huiluo** (2011) - Molecular ecology of ammonia oxidizing archaea and bacteria.
- Li Meng** (2011) - Diversity of anammox bacteria in coastal and ocean sediments and interactions among ammonia oxidizers and nitrite reducers.
- Wang Jing** (2011) - Cultural independent analysis of anammox, AOA and AOB in paddy soils of the Sanjiang Plain in Northeast China.

### M.Phil

- Wong King Wai Kelvin** (2011) - Proteome response of barnacle larvae to CO<sub>2</sub>-driven seawater acidification.

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Juan Carlos Astudillo, Vivien Bao, Macarena Bravo, Stephen Cartwright, Amina Cesario, Vera Chan, Eric Clua; Ramadoss Dineshram, Marielle Dumestre, Clement Dumont, Nathalie Goodkin, Ji-Dong Gu, Kevin Ho, Yuanyuan Hong, Leszek Karczmarski, John Kwok, Ackley Lane, Calton Law, Cecily Law, June Leung, Kenneth Leung, Priscilla Leung, Adela Li, Kathy Li, Michelle Luk, Charles Ma, George Mitcheson, Joy Mukherjee, Terence Ng, Ng Wai Chuen, Nicolas Ory, Lenin Oviedo, Yvonne Sadovy de Mitcheson, B. Schierwater, Julie Serot, V. Thiyagarajan, Juan Diego Urriago, Karen Villarta, Wai Tak Cheung, Zhen Wang, Gray Williams, Simon Winkler, Kelvin Wong, Simon Wong, Stella Wong, Elvis Xu, Yang Teng Teng, Moriaki Yasuhara, Cynthia Yau, Andy Yi, Xueying Yin, Mana Yung



Advertisement for Yvonne's new book "Groupers of the World"

## Other Contributions from SWIMS

### Clement Dumont

Research Associate, EKOMAR, National University of Malaysia

### Ji-Dong Gu

Assistant Editor-in-Chief, *Frontiers in Microbial Ecotoxicology and Bioremediation*

Associate Editor, *Ecotoxicology, Environmental Geochemistry and Health, International Biodeterioration & Biodegradation, International Journal of Environmental Science and Technology*  
Editorial Board Membership of *Journals, Biodegradation, Journal of Polymers and the Environment, The Open Proteomics Journal*  
Ambassador, International Society of Microbial Ecology

### Leszek Karczmarski

Member, IUCN World Conservation Union Specialist Group: Small Cetaceans

Member, IUCN Species Survival Commission

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.

### Kenny Leung

President, the Asia-Pacific Geographical 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*

Member, Environment and Conservation Fund (ECF) Research Projects Vetting Subcommittee, HKSAR Government

Member, Marine Mammal Conservation Working Group, HKSAR Government

Member, Endangered Species Advisory Committee, HKSAR Government

Member, Red Tide/Harmful Algal Bloom Expert Advisory Group, HKSAR Government

Co-opt Member, Marine Parks Committee, HKSAR Government

Member, The Outstanding Young Persons' Association

Council Member & Librarian, MBAHK

### Yvonne Sadovy

Co-Chair, IUCN World Conservation Union Specialist Group of Groupers and Wrasses ([www.humpheadwrasse.info](http://www.humpheadwrasse.info))

Director (and founding member), Society for the Conservation of Reef Fish Aggregations ([www.scrfa.org](http://www.scrfa.org))

Member, Steering Committee of the IUCN Species Survival Commission

Co-Chair, Marine Conservation Sub-Committee of the IUCN Species Survival Commission

Member, Scientific Advisory Committee - Palau International Coral Reef Centre (PICRC)

Editorial Boards, Reviews in *Fish Biology and Fisheries; Fish and Fisheries*

Chair, Executive Committee Member, World Wide Fund for Nature Hong Kong (WWF HK)

Member, Board of Directors, Ocean Park Hong Kong

Member, Expert Panel for the Harbour Area Government Panel, Treatment Scheme Stage 2B Review

Member, International Advisory Committee for the Fisheries Centre, UBC, Canada

Chair, Conservation Advisory Committee, WWF Hong Kong

Chair, Education Advisory Committee, Ocean Park Hong Kong

### V Thiyagarajan

Editor (review), *Aquatic Biology*

Editor (review), *Aquaculture Environment Interactions*

Council Member, Hong Kong Proteome Society

### Gray A Williams

Postgraduate Advisor, King Mongkut's Institute of Technology Ladkrabang, Thailand

Guest Professor, Xiamen University, China

## Conferences and Workshops

### Vivien Wei Wei Bao

Oral Presentation; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

### Nathalie Goodkin

Poster Presentation; Ocean Carbon and Biochemistry Workshop, 18-21 July 2011, Woods Hole, MA, USA.

### Ji-Dong Gu

Invited Speaker; The 14th Symposium on Environmental Microbiology, 25-28 Nov. 2011, Xiamen, China.

Invited Speaker; International Conference on Soil Omics-Nanjing, 19-23 Nov. 2011, Nanjing, China.

International Organizing Committee Member; The 4th International Conference on Enzymes in the Environment: Activity, Ecology & Applications, 17-21 July, 2011, Bad Nauheim, Germany.

Co-organizer; The 1st International Conference on Geomicrobial Ecotoxicology, 30 May-2 June 2011, Wuhan, China.

Invited Speaker; Biofilm-Material Interactions, 5-9 Apr. 2011, San Francisco, California, USA.

### Leszek Karczmarski

Oral Presentation; 25th International Congress on Conservation Biology, 5-10 Dec. 2011, Auckland, New Zealand.

Oral Presentation; 19th Biennial Conference on The Biology of Marine Mammals, 28 Nov.-3 Dec. 2011, Tampa, Florida, USA.

Chair, Organiser & Speaker; DISCOVERY: Photo-ID Data-Management System - Workshop at the 19th Biennial Conference on the Biology of Marine Mammals, 27-28 Nov. 2011, Tampa, USA.

Invited Speaker; Strategic Workshop of the Taiwan Strait Humpback Dolphin Conservation Task Force; Acoustic Monitoring of the Marine Protected Area of *Sousa chinensis* in Taiwan. The Forestry Bureau, Council of Agriculture and National Taiwan University, 7-9 Oct. 2011, Taipei, Taiwan.

Chair & Organiser; International Field Training Course: Tracking of Animal Movement with the Use of Surveyor's Theodolite, 10-20 June 2011, Hong Kong.

Invited Advisor; Monitoring and Conservation of Chinese White Dolphins in the Pearl River Estuary. Strategic Meeting of the Pearl River Estuary Chinese White Dolphin National Nature Reserve and Sun Yat-Sen University, 19-20 May 2011, Zhuhai, Guangdong, China.

### Kenny Leung

Invited Speaker; The 2011 Science Promotion Workshop for High School Teachers, 9 July 2011, University of Macau, Macau.

Oral & Poster Presentations; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

Oral Presentation; The EnviroTox 2011 Conference: Sharing Knowledge for a Healthier Environment, 17-20 Apr. 2011, Darwin, Australia.

Invited Speaker; The 5th International Functional Foods Symposium: Promoting Good Health and Developing a Sustainable Environment, 10-11 Mar. 2011, Hong Kong Polytechnic University, Hong Kong.

### Priscilla Leung

Oral Presentation; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

## Joy Mukherjee

Oral Presentation; The Environmental OMICS Sciences & Technologies: A System Biology Approach for Research on Environmental Stress and Health, 8-12 Nov. 2011, Guangzhou, China.

## V Thiyagarajan

Keynote Speaker; The Environmental OMICS Sciences & Technologies: A System Biology Approach for Research on Environmental Stress and Health, 8-12 Nov. 2011, Guangzhou, China.

Keynote Speaker; The 4th International Oyster Symposium (IOS4), 15-18 Sept. 2011, Tasmania, Australia.

Keynote Speaker; 7th EGU Alexander von Humboldt International Conference on Ocean Acidification: Consequences for Marine Ecosystems and Society, 20-24 June 2011, Penang, Malaysia.

## Yvonne Sadovy

Keynote Speaker; Gulf and Caribbean Fisheries Institute, 31 Oct.-4 Nov. 2011, Puerto Morelos, Mexico.

Keynote Speaker; Student Conference on Conservation Science, 14-16 Sept. 2011, Bangalore India.

Invited Speaker; Asian Club Management Conference. 11-14 May 2011, Hong Kong.

Invited Speaker; Royal Geographical Society, 16 Feb. 2011, Hong Kong.

## Gray A Williams

Invited Speaker; International Symposium on the NW Pacific Coastal Marine Ecology and Environmental Conservation for Yeosu EXPO-2012, 14-16 Dec. 2011, Jeju National University, S. Korea.

Invited Speaker; European Science Foundation Workshop: The effects of climate change on vulnerable life traits of aquatic ectotherms: towards an integrated approach, 18-21 Sept. 2011, Alfred Wegner Institute, Bremerhaven, Germany.

Chairperson & Speaker; Xth International Symposium on Littorinid Biology and Evolution (ISOLBE), 24-29 July 2011, St Petersburg State University, Russia.

Steering Committee, Chairperson & Speaker; 9th International Temperate Reef Symposium, 27 June-1 July 2011, Plymouth University, UK.

Invited Speaker; Discovering Marine Biodiversity in the Asia Pacific, 22nd Pacific Science Congress, 14-18 June 2011, Kuala Lumpur, Malaysia.

Invited Speaker; Sensor Development for the Study of Global Climate Change in Intertidal Ecosystems, 3-10 June 2011, University of South Carolina, USA.

## Moriaki Yasuhara

Invited Lecture; Micropaleontology course, Department of Physics and Earth Sciences, 9 Dec. 2011, University of Ryukyus, Japan.

Invited Lecture; Seminar for the International Research Hub Project for Climate Change and Coral Reef/Island Dynamics, 7 Dec. 2011, University of Ryukyus, Japan.

Oral Presentation; Annual Meeting of Paleontological Society of Japan, 1-3 July 2011, Kanazawa University, Japan.

## Postgraduates

### Vera Chan

Oral Presentation; 7th EGU Alexander von Humboldt International Conference on Ocean Acidification: Consequences for Marine Ecosystems and Society, 20-24 June 2011, Penang, Malaysia.

### Wei-Lung Chang

Poster Presentation; 19th Biennial Conference on The Biology of Marine Mammals, 28 Nov-3 Dec. 2011, Tampa, Florida, USA.

### Ramadoss Dineshram

Workshop on Acidification in Aquatic Environments, 26-29 Sept. 2011, Tromsø, Norway.

## Kevin Ho

Seminar and Training Course on Benthic Data Analysis, 10-11 Oct. 2011, City University of Hong Kong, Hong Kong.

Poster Presentation; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

Public Lecture Series 3D Environmental Impact Assessment (EIA). Workshops on Water Quality Forecast and Management System, 31 May 2011, Hong Kong Central Library, Hong Kong.

## Ackley Lane

Workshop on Acidification in Aquatic Environments, 26-29 Sept. 2011, Tromsø, Norway.

## Adela Li

Oral Presentation; 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

Oral & Poster Presentation; Primo 16 - Pollutant Responses in Marine Organisms, 15-18 May 2011, Long Beach, California, USA.

## Kathy Li

Oral Presentation; Xth International Symposium on Littorinid Biology and Evolution (ISOLBE), 24-29 July 2011, St Petersburg State University, Russia.

## Charles Ma

GAME Project VIII: Does stress tolerance in invasive marine species differ between populations from the native and the introduced range? Organized by IFM-GEOMAR, Kiel University, Apr, Nov-Jan, 2010-2011.

## Terence Ng

Oral Presentation; Xth International Symposium on Littorinid Biology and Evolution (ISOLBE), 24-29 July 2011, St Petersburg State University, Russia.

## Lenin Oviedo

Oral Presentation; 25th International Congress on Conservation Biology, 5-10 Dec. 2011, Auckland, New Zealand.

Oral & Poster Presentation; 19th Biennial Conference on The Biology of Marine Mammals, 28 Nov-3 Dec. 2011, Tampa, Florida, USA.

Oral Presentation; 2nd International Conference on Marine Mammals and Protected Areas, 7-11 Nov. 2011, Fort de France, Martinique.

## Julie Serot

International Field Training Course: Tracking of Animal Movement with the use of Surveyor's Theodolite, 10-20 June 2011, Hong Kong.

## Zhen Wang

AoE: The Centre for Marine Environmental Research and Innovative Technology Postgraduate Research Training Workshop 2011-2012, 15 Nov. 2011, The University of Hong Kong, Hong Kong.

Seminar and Training Course on Benthic Data Analysis, 10-11 Oct. 2011, City University of Hong Kong, Hong Kong.

## Simon Wong

19th Biennial Conference on the Biology of Marine Mammals, 29 Nov-2 Dec. 2011, Tampa, USA.

Oral Presentation; DISCOVERY: Photo-ID Data-Management System - Workshop at the 19th Biennial Conference on the Biology of Marine Mammals, 27-28 Nov. 2011, Tampa, USA.

K-11 Eco-leaders Training Programme 2011, jointly by SBS, HKU; JSI, Faculty of Science, HKU; K11 Art Mall, 2-16 Aug. 2011, Madagascar.

International Field Training Course: Tracking of Animal Movement with the Use of Surveyor's Theodolite, 10-20 June 2011, Hong Kong.

## Stella Wong

Oral & Poster Presentation; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

## Elvis Xu

Workshop on the Derivation and Application of Water Quality Guidelines (WQGs), 3 Dec. 2011, The University of Hong Kong, Hong Kong.

Poster Presentation; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

## Teng Teng Yang

Poster Presentation; The 22nd Pacific Science Congress, 14-18 June 2011, Kuala Lumpur, Malaysia.

## Andy Yi

Workshop on the Derivation and Application of Sediment Quality Guidelines (SQGs), 3 Dec. 2011, The University of Hong Kong, Hong Kong.

Oral & Poster Presentations; The 15th International Symposium on Toxicity Assessment, 3-8 July 2011, City University of Hong Kong, Hong Kong.

## Mana Yung

AoE: The Centre for Marine Environmental Research and Innovative Technology Postgraduate Research Training Workshop 2011-2012, 15 Nov. 2011, The University of Hong Kong, Hong Kong.  
Seminar and Training Course on Benthic Data Analysis, 10-11 Oct. 2011, City University of Hong Kong, Hong Kong.

## International Conference on Deriving Environmental Quality Standards for the Protection of Aquatic Ecosystems (EQSPA 2011), 3-7 Dec. 2011, The University of Hong Kong, Hong Kong

### Invited Keynote Speakers

Dr. Youn-Joo An (Konkuk University, Korea)  
Dr. Graeme E Batley (CSIRO Land and Water, Australia)  
Dr. Peter Chapman (Golder Associates Ltd, Canada)  
Dr. Paul KS Lam (City University of Hong Kong)  
Dr. Kenneth MY Leung (SWIMS, HKU)  
Prof. Zheng-Tao Liu (Chinese Research Academy of Environmental Science, China)  
Dr. James P Meador (NOAA, USA)  
Dr. Graham Merrington (WCA Environment, UK)  
Dr. Glenn W. Suter (US Environmental Protection Agency, USA)  
Dr. Ju-Ying Wang (State Oceanic Administration, China)  
Dr. Michael Warne (Queensland Department of Environment and Resource Management, Australia)  
Dr. Richard J Wenning (ENVIRON Holdings Inc, USA)  
Prof. Rudolf SS Wu (SBS, HKU)  
Dr. Kunihiko Yamazaki (Ministry of the Environment, Japan)  
Prof. Xiao-Wei Zhang (Nanjing University, China)

### Poster Presentations

Dr. Vivien Bao, Mr. Kevin Ho, Ms. Adela Li, Ms. Stella Wong, Mr. Elvis Xu, Mr. Andy Yi & Ms. Mana Yung

### Attendees

Mr. Terence Ng & Mr. Zhen Wang

## The 3rd UCAS Postgraduate Symposium on Aquatic Sciences: Current Research and Perspectives, 11-14 Apr. 2011, Kadoorie Institute, Hong Kong

### From XMU, Ocean University of China & Institute of Hydrobiology, Chinese Academy of Science:

Dr. Chunxiang Ai, Dr. Qinhuang Fang & Dr. Dekui He  
Mr. Jiezhong Wu, Ms. Hongjie Wang, Mr. Hua Lin, Mr. Chuanjun Du, Ms. Shanshan Lin, Mr. Yuyuan Xie, Mr. Lei Gu, Mr. Rongyuan Chen, Ms. Hui Zeng, Ms. Jiayi Xu, Mr. Qingyu Huang, Mr. Zhihuan Xu, Mr. Yifan Zhang, Ms. Xuan Zhang, Ms. Jingshan Cai, Ms. Xiaoyin Zhang, Mr. Chenlong Huang, Ms. Lu Yang, Ms. Chunxiu Huang, Ms. Shirong Wang, Mr. Chengzhi Ding, Mr. Weixing Tang & Mr. Yintao Jia

### From SWIMS:

Prof. Gray Williams, Prof. Yvonne Sadovy, Dr. Kenneth Leung, Dr. Leszek Karczmarski, Dr. V ThiyagaRajan, Dr. Moriaki Yasuhara, Dr. Clement Dumont & Dr. Nancy Karraker

Mr. Terence Ng, Mr. Kevin Ho, Ms. Vera Chan, Mr. Elvis Xu, Mr. Nicolas Ory, Mr. Juan Diego Urriago, Ms. Michelle Luk, Mr. Dineshram Ramadoss, Ms. Adela Li, Mr. Simon Wong & Ms. Julie Serot

### From SBS, HKU:

Prof. David Dudgton & Dr. David Thomson  
Mr. Samuel Wang, Mr. Edward Lau, Mr. Chan Hon Ki, Mr. Chau Kwok Chuen, Ms. Hiromi Uno & Mr. Alex Yeung

## 2nd South-East Asian Training Workshop in Marine Mammal Research Techniques: Introduction to Geographic Information Systems, 14-16 July 2011, Tai O, Hong Kong

### From Sun Yat-sen University:

Mr. Ruiqiang Zheng, Mr. Haifei Zhang, Mr. Weizhi Lin

### From National Taiwan University:

Dr. Shiang-lin Huang, Ms. Hsin-yi Yu

### From Peking University:

Mr. Kaijin Lu

### From SWIMS:

Dr. Leszek Karczmarski, Dr. Wai Chuen Ng, Dr. Tak Cheung Wai, Mr. Stephen Chan, Ms. Carmen Or, Ms. Julie Serot, Mr. Simon Wong, Ms. Szewing Yiu

### From HKU:

Mr. Ken Chan, Mr. Scott Chui, Mr. Edward Lau, Mr. Jackasy Ng, Ms. Elaine Yuen

## 3rd South-East Asian Training Workshops in Marine Mammal Research Techniques: Quantitative Population Analyses with Mark-Recapture Models, 10-16 Dec. 2011, Kadoorie Institute, Hong Kong

### From Murdoch University, Australia

Ms. Jo Marie Acebes

### From Sun Yat-sen University:

Mr. Ruiqiang Zheng, Mr. Weizhi Lin

### From National Taiwan University:

Dr. Shiang-lin Huang, Ms. Hsin-yi Yu, Ms. Wei-lung Chang

### From Peking University:

Mr. Kaijin Lu

### From Nanjing Normal University:

Dr. Bing-yao Chen, Dr. Peng Li

### From Kyoto University, Japan:

Dr. Tadamichi Morisaka

### From Universiti Malaysia Sabah, Malaysia:

Ms. Hairul Masrini Muhamad

### From SWIMS:

Dr. Leszek Karczmarski, Mr. Stephen Chan, Ms. Carmen Or, Ms. Amina Cesario, Mr. Simon Wong, Ms. Szewing Yiu, Mr. Lenin Oviedo, Mr. John Kwok

### From HKU:

Mr. Scott Chui



## 4th South-East Asian Training Workshops in Marine Mammal Research Techniques: GIS Techniques: Principles and Concepts, 28-31 Dec. 2011, Tai O, Hong Kong

### From WWF-Cambodia

Mr. Keavuth Hui

### From Sun Yat-sen University:

Mr. Ruiqiang Zheng, Mr. Haifei Zhang, Mr. Weizhi Lin

### From National Taiwan University:

Dr. Shiang-lin Huang, Ms. Wei-lung Chang, Mr. Tzu-Hao Lin, Ms. Jyh-Huey Yeh, Mr. Yu-Pu Kuo, Ms. Hsin-yi Yu

### From Silliman University, Philippines:

Ms. Edna Sabater, Mr. Angelico Tiongson

### From Nanjing Normal University:

Dr. Bing-yao Chen, Dr. Peng Li

### From Nagasaki University, Japan:

Ms. Miki Nishita

### From Universiti Malaysia Sabah, Malaysia:

Mr. Hairul Masrini Muhamad

### From Lake Kenyir Terengganu, Malaysia:

Mr. Paul Henry

### From Chinese University of Hong Kong:

Ms. Wei Li

### From SWIMS:

Dr. Leszek Karczmarski, Dr. Tak Cheung Wai, Mr. Stephen Chan, Ms. Carmen Or, Mr. Simon Wong, Ms. Szewing Yiu, Mr. Lenin Oviedo, Mr. John Kwok, Ms. Xueying Yin, Mr. Calton Law

### From HKU:

Dr. Nathalie Mauroo, Mr. Scott Chui

## Staff Training

Ms. Sylvia Yiu has attended 6 HCMS half-day courses in March 2011.

Ms. Sylvia Yiu has attended 2 HCMS half-day courses in August 2011.

## Visitors to SWIMS

Dr. Rick Stafford (University of Gloucestershire, UK)  
Prof. Cuiluan Yao (Jimei University, Xiamen, China)  
Dr. Seiji Hayashi (Nagoya University, Japan)  
Prof. Yunwei Dong (Xiamen University, China)  
Mr. Zhen Zhang (Xiamen University, China)  
Dr. David Morrith (Royal Holloway, University of London, UK)  
Dr. Maurizio de Pirro (AMA, Firenze, Italy)  
Dr. Glenn Gailey (Texas A&M University, USA)  
Prof. John Taylor (The Natural History Museum, UK)  
Dr. Emily Glover (The Natural History Museum, UK)  
Dr. Liz Harper (University of Cambridge, UK)  
Ms. Kate Hind (LUSH, Royal Holloway, University of London, UK)  
Dr. Mark Keith (University of the Witwatersrand, S. Africa)  
Dr. Barend Erasmus (University of the Witwatersrand, S. Africa)  
Prof. Monthon Ganmanee (KMUTT, Thailand)  
Prof. Stephen J. Hawkins (University of Southampton, UK)  
Mr. Philippe Lacamp and family (Swire Group)  
Dr. Tom Garrison (Orange Coast College, California, USA)  
Mr. WC Lai (Communication and Public Affairs Office, HKU)  
Mr. Andy Cheung (Communication and Public Affairs Office, HKU)  
Dr. Jian-Wen Qiu (Hong Kong Baptist University)  
Ms. Lobo De Soyres (Definox, Beijing, China)  
Mr. Jacques De Soyres (Beijing, China)  
Ms. Andrea Naylor (University of Johannesburg, S. Africa)  
Mr. Francis Asprey (New York University, USA)  
Ms. Doris Leung (Elsa High School, HK)  
Mr. Kwok-For Cheung (Hong Kong Polytechnic University)  
Ms. Sze-Ching Wong (Hong Kong Polytechnic University)  
Ms. Hisayo Yasuhara (Smithsonian Institute, USA)

Mr. How-Man Wong (China Exploration & Research Society)  
Ms. Berry Sin (China Exploration & Research Society)  
Mr. Derrick Hung (China Exploration & Research Society)  
Mr. Owen Chan (Yung Yau College, HK)  
Mr. David Ng (Swire Properties, HK)  
Ms. Carmen Chu (Swire Properties, HK)  
Prof. Yim (Department of Earth Sciences, HKU)  
Ms. Jenny Cheung (Bio-Rad, HK)  
Ms. Laura Lau (Swire Group)  
Ms. Chaoyi Li (HKU)  
Ms. S. Cowland (South Island School, HK)  
Ms. Wei-Lung Chang (National University Taiwan)  
Ms. Ula Yu (National University Taiwan)  
Dr. Ben Kefford (University of Technology Sydney, Australia)  
Ms. Katharine Li (Swire Hong Kong Staff Association, HK)  
Dr. John Himmelman (Laval University, Canada)  
Dr. Helga Guderley (Laval University, Canada)  
Dr. Kelley Whitaker (Letter Boxes Organization, HK)  
Ms. Cristy Acabado (University of the Philippines)  
Mr. Simon Winkler (University of Kiel/IFM-Geaner, Germany)  
Dr. Lawrence Frank (University of California, San Diego, USA)  
Ms. Laam Li (HKU)  
Ms. Jennifer Kwan (HKU)  
Mr. Virni Li (Open University of Hong Kong)  
Prof. Maggie Cusack and family (University of Glasgow, UK)  
Dr. Min Liu (Xiamen University, China)  
Dr. Huapu Chen (Sun Yat-sen University, China)  
Ms. Helen Foley (University of Southern California, USA)  
Mr. Patrick Sun (University of Southern California, USA)  
Prof. Lung-Sang Chan (Department of Earth Sciences, HKU)  
Ms. Clare Ostle (Swansea & UEA University)  
Dr. Louis Gosselin (Thompson Rivers University, Canada)  
Prof. Xiaobo Wen (Shantou University, China)  
Prof. Zhong Hu (Shantou University, China)  
Prof. Huaiping Zheng (Shantou University, China)  
Dr. Shengkang Li (Shantou University, China)  
Dr. Lanping Ding (Shantou University, China)  
Dr. Wenhua Liu (Shantou University, China)  
Dr. Sekar Raju (Xi'an Jiaotong-Liverpool University)  
Dr. WW Cheng (AFCD)  
Ms. Tine Chan (School of Biological Sciences, HKU)  
Dr. Stanley Lau (Hong Kong University of Science and Technology)  
Dr. Jill Chiu (School of Biological Sciences, HKU)  
Ms. Cherie Au (School of Biological Sciences, HKU)  
Ms. Beverly Po (School of Biological Sciences, HKU)  
Mr. Edward Leung (School of Biological Sciences, HKU)  
Dr. Michael Eitel (TIHO Hannover, Germany)  
Mr. Garic Tse (Estates Offices, HKU)  
Prof. Robin Moyer (HK)  
Ms. Jane Shang (HK)  
Ms. Nissa Marion (Ecovision, Asia, HK)  
Mr. Shaun Martin (Ecovision, Asia, HK)  
Dr. Mark Costello (The University of Auckland, New Zealand)  
Dr. SG Cheung (City University of Hong Kong)  
Ms. HY Zhang (City University of Hong Kong)  
Ms. Dawn Strachan (West Island School)  
Mr. Surawit Khunchamnan (KMUTT, Thailand)  
Mr. Peter Chung (University of Glasgow, UK)  
Mr. James Hui (HK)  
Mr. Ray So (HK)  
Mr. Nelson Law (Plate-Forme Limited, HK)  
Prof. Dora I Rivera (Universidad Nacional of Costa Rica)  
Prof. Hilda Viquez (Universidad Nacional of Costa Rica)  
Dr. Vincent Pettigrove (University of Melbourne, Australia)  
Dr. Graeme Allinson (University of Melbourne, Australia)  
Dr. Martin Ferieira (University of Johannesburg, S. Africa)

## Visitors to SWIMS (Cont'd)

Ms. Monica Moir (University of Johannesburg, S. Africa)  
Mr. Steven Osmond (University of Johannesburg, S. Africa)  
Mr. Quinton Dosfantos (University of Johannesburg, S. Africa)  
Ms. Dumsile Nyembe (University of Johannesburg, S. Africa)  
Ms. Charon Farquharson (University of Johannesburg, S. Africa)  
Dr. Olivier Ottevaere (Department of Architecture, HKU)  
Dr. Ling Ming Tsang (Chinese University of Hong Kong)  
Mr. Wills Wong (University of Queensland, Australia)  
Dr. Matthew Pryor (Faculty of Architecture, HKU)  
Mr. Guoqin Duan (HK-Zhuhai-Macao Bridge Authority, China)  
Mr. Hanjiang Cao (HK-Zhuhai-Macao Bridge Authority, China)  
Mr. Rui Chai (HK-Zhuhai-Macao Bridge Authority, China)  
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Dr. Wei Chen (HK-Zhuhai-Macao Bridge Authority, China)  
Mr. Zhaoyong Zheng (HK-Zhuhai-Macao Bridge Authority, China)  
Prof. Yuping Wu (Sun Yat-sen University, China)  
Mr. Wenzhi Lin (Sun Yat-sen University, China)  
Dr. Kexiong Wang (Institute of Hydrobiology, Chinese Academy of Sciences, China)  
Mr. Yousheng Xiao (Pearl River Estuary Chinese White Dolphin National Nature Reserve, China)  
Mr. Xuewen Zheng (Design & Research Institute, China)  
Mr. Jiangcang Liu (Design & Research Institute, China)  
Mr. Ping Zhong (Design & Research Institute, China)  
Prof. Ken Pollock (Murdoch University, Western Australia)  
Dr. Lyndon Brooks (Southern Cross University, Australia)  
Dr. Alex Huang (National Taiwan University)  
Dr. Hon-Chung Chau (Pasteur Institute, France)  
Ms. Sharon Sloman (Australian International School, Hong Kong)  
Mr. Jason de Nys (Australian International School, Hong Kong)  
Ms. Hairul Masniah (University of Sabah, Malaysia)  
Mr. Graclano Deck Kattod (Hong Kong Polytechnic University)

### Group Visits

20 UGS from Coastal Ecology Class, HKU, Jan. 2011  
30 members from Faculty of Architecture, HKU, Mar. 2011  
90 staff and students from South Island School (in 2 days), Apr. 2011  
90 members from Swire Hong Kong Staff Association, Apr. 2011  
43 UGS from M.Sc. Class, HKU, Sept. 2011  
90 members from Swire Hong Kong Staff Association, Sept. 2011  
64 staff and students from West Island School (in 2 days), Sept. 2011  
30 members from Faculty of Law, HKU, Oct. 2011  
84 staff and students from Island School (in 2 days), Oct. 2011  
23 staff and students from Sacred Heart Canossian College, Oct. 2011  
11 members from Department of Architecture, HKU, Nov. 2011  
65 UGS from Environmental Life Science (in 2 days), HKU, Nov. 2011  
84 staff and students from King George V (in 2 days), Nov. 2011  
30 Participants from the "International Conference on Deriving Environmental Quality Standards for the Protection of Aquatic Ecosystems (EQSPA – 2011), Dec. 2011  
45 members from Marine Parks Ambassador Scheme, AFCD, Dec. 2011

## Acknowledgements

Sir John and Sir Adrian Swire, John Swire & Sons Ltd  
Mr. JB Rae-Smith, The Swire Group of Companies, Hong Kong  
Ms. Maisie Shun Wah, The Swire Group of Companies, Hong Kong  
Mr. Philippe Lecamp, The Swire Group of Companies, Hong Kong  
Ms. Laura Lau, The Swire Group of Companies, Hong Kong  
Prof. Tsui Lap-Chee, Vice-Chancellor, HKU  
Prof. Roland T. Chin, Deputy Vice-Chancellor, HKU  
Prof. Paul Tam, Pro-Vice-Chancellor, HKU  
Prof. Sun Kwok and staff, Faculty of Science, HKU  
Prof. Rudolf Wu and staff, School of Biological Sciences, HKU  
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Mr. Edward Yau, Director, EPD  
Mr. Lui and staff, PCCW Cape d'Aguilar station  
Mr. Shun Chi-Ming and staff, the Hong Kong Observatory  
Ms. Suzanne Gendron, Mr. Timothy Ng and staff, Ocean Park Conservation Foundation Hong Kong  
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Hurgada Environmental Protection and Conservation Association, Egypt  
University Research Committee, HKU  
West Island School  
Island School  
Plate-forme Hong Kong  
King George V School  
Bio-Rad Pacific Limited

Many thanks to all the following for their cheerful and excellent help:  
Ms. Asia Palmer, Ms. Erica Mak, Ms. Annie Mejaes, Ms. Janice W.K. Cheung, Ms. Wendy W.Y. Tsui, Ms. Sally C.Y. Lau, Mr. James Ziemann, Ms. Tory Tolles, Ms. Sharon Shin, Ms. Sandra Lo, Mr. Mark Ng, Mr. Wills Wong, Mr. Aaron Wong, Ms. Clare Ostle, Mr. Ricky Chiu

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