



The Swire Institute of Marine Science

太古海洋科學研究所



Annual Report
2009



Honorary Director's Foreword

SWIMS continues to grow and in 2009 we welcomed Dr Leszek Karczmarski to SWIMS as our resident marine mammal expert. Leszek joins our growing team of senior scientists and has also taken residence at SWIMS. We now have six full-time resident scientists, 3 non-resident scientists and 4 Post Doctoral fellows, and together with their respective students, this means that office and research space has become something of a premium!

Importantly, this year the University recognized the growing status of SWIMS and, after an academic review, has agreed to create a new Professor-level Director position at SWIMS. This appointee will be a Full-time Director and able to concentrate all his/her activities on SWIMS. We hope that in 2010 we will be able to appoint the Director, who will lead SWIMS further in its quest to become the foremost marine biology laboratory in the region.

As ever, we are grateful for the continued support of the Swire Group, who this year were the major donors for our new research boat, Swire *Asterina*. This boat is a significant upgrade from our old vessel and was featured on local TV. We were also able to appoint Mr Nicolas Ory as The Swire Hong Kong PhD Scholar and Nicolas has joined us to work on shrimp behaviour under the supervision of Dr Clement Dumont and Prof David Dudgeon.

It was particularly pleasing to see the development of more international collaborations this year, through exchange visits between SWIMS staff and collaborators in Malaysia, Thailand, South Africa, Japan, China and Brunei. I sincerely hope that this network can grow and develop as the important ecological issues which we should be concerned with, such as climate change, require answers derived from large scale interactive studies. I believe SWIMS will continue to play an important role in answering such questions and contributing towards the development of marine science in the NW Pacific.

*Best wishes for 2010 and the Chinese Year of the Tiger
from the staff and students of SWIMS.*

A handwritten signature in black ink, appearing to read 'Gray A Williams'.

Gray A Williams



Staff and students of SWIMS with the new research boat, "Swire Asterina"

Naming ceremony for 'Swire Asterina' and Open House at SWIMS

Our new boat 'Swire *Asterina*' was officially named by Mrs Jenny Kendall in an 'east meets west' ceremony. The boat is a twin hulled Kevlacat and is the first of its kind in Hong Kong. It has been custom designed for our needs and is a significant upgrade from our aging Boston Whaler which has served us well over the past 10 years.

The name 'Swire *Asterina*' signifies the continued support of the Swire Group, who provided funds for the purchase of the boat together with the Hong Kong University Development Fund and the School of Biological Sciences, and also a beautiful, but largely unknown small starfish - *Asterina*. The name therefore acknowledges our past support but also looks forward in our quest to understand more about our local marine community.

In the ceremony, Jenny Kendall christened the new boat with a champagne toast, followed by a traditional suckling pig cutting ceremony officiated by Prof Paul Tam (PVC Research HKU) and Mr JB Rae-Smith (Executive Director of Trading & Industrial Division, Swire Pacific Ltd). Ms Maisie Shun Wah (General Manager, Group Public Affairs) and Mr Richard Kendall (Managing Director, The China Navigation Co Ltd) also represented the Swire Group. It was also appropriate that Prof Minhan Dai from our partner State Key Laboratory, Marine Environmental Laboratory, Xiamen University was present at the ceremony to share the occasion with us.

Afterwards there was an Open House at SWIMS where friends and collaborators from WWF HK, Ocean Park Conservation Foundation HK, the Agriculture, Fisheries and Conservation Department as well as colleagues from the Faculty of Science toured the facilities and were able to meet and discuss the research at SWIMS with staff and students.



Swire Asterina



The little known starfish Asterina



Mrs Jenny Kendall toasts the new boat



Participants at the naming ceremony and Open House at SWIMS in February 2009



Mr JB Rae-Smith and Prof Paul Tam cutting the suckling pig

International Collaborations



Staff and students from HKU and Xiamen University attending the Postgraduate Symposium



Clement with Kee Alfian and Malaysian colleagues



Prof Nico Smit (University of Johannesburg) with Gray and Dr Mingru Chen (Xiamen University) cutting a suckling pig at the Field Course BBQ



Participants at the 1st Western Pacific Littorinid Workshop

Our regional links and importance continued to grow in 2009, as we further developed collaborations with colleagues in Thailand and China. These links have seen staff and students travelling to the different countries to conduct research and work together with our partners. One of the highlights of the year was a result of these collaborations, with the inaugural Postgraduate Symposium between the State Key Laboratory of Marine Environmental Science (MEL), Xiamen University and SWIMS being held at SWIMS in March 2009. This was founded on the establishment of the University Consortium on Aquatic Science (UCAS) between our laboratories. These activities highlight the close research interests and development between SWIMS and MEL, Xiamen which we plan to further develop in 2010.

We have also developed new links with Malaysia (EKOMAR), and South Africa (University of Johannesburg). In January 2009, we signed a Memorandum of Understanding with the Marine Ecosystem Research Centre (EKOMAR), Universiti Kebangsaan, Malaysia, and already Kee Alfian Abdul Azis has visited SWIMS to join one of our workshops, while Clement Dumont has conducted research in Malaysia. Our collaborations have also included teaching opportunities, and students and staff from the University of Johannesburg joined us on our undergraduate Field Course, which we plan to reciprocate by joining their Marine Biology and Kruger National Park Field Trips in 2010.

The international diversity of SWIMS also continues to broaden as we welcome new students from Chile, USA and China to join the current research students at SWIMS. Recently, Clement Dumont secured a new link with IFO-GEOMAR (Germany) as part of an international collaborative project, Global Approach by Modular Experiments (GAME) to investigate stress tolerance in invasive species. Leszek Karczmariski is also maintaining his links with students in South Africa and developing student exchange with Sun Yat-Sen University, China.

In June we hosted the first Western Pacific Littorinid Workshop, which brought together over 20 research scientists from 8 countries. This workshop was an initiative to plan a collaborative research project investigating how littorinid snails can respond to climate change. After talks and discussion, researchers designed a series of experiments which they later performed in their own countries, covering a latitudinal range of 35° from Qingdao, China to Singapore, investigating the thermal tolerance and also the protein expression of these animals. This form of collaboration is extremely important in bringing together scientists within the NW Pacific region, and it is hoped that a follow up workshop will be held in 2010 to advance this work.

In June, SWIMS researchers also played a major role by hosting and presenting talks in a special session of the 3rd International Symposium of Integrative Zoology: Biological Consequences of Global Change and Darwin 200 held in Beijing. Led by Kenny Leung, and including Prof Brian Helmuth (University of South Carolina), SWIMS staff and students gave a variety of talks about their research, with a particular emphasis on biological consequences of climate change.



SWIMS staff and students with Prof Brian Helmuth and Dr Yunwei Dong at the Chinese Academy of Sciences, Beijing



SWIMS and Ocean Park Conservation Foundation Hong Kong

This year, seven of our undergraduate students from The University of Hong Kong participated in the OPCFHK University Student Sponsorship Programme. Benny Wong and Simon Wong joined the Bangladesh Cetacean Diversity Project to conduct boat surveys to monitor small cetaceans and whales. Ginny Chan and Michelle Law helped in the Chinese sturgeon artificial breeding programme operated by the Chinese Academy of Fisheries Sciences in Jingzhou, Hubei Province, which aims to prevent the loss of this endangered species in China. Gabriella Li was also based in China and was teamed up with students from three other Hong Kong universities to investigate the problems of poaching in Wanglang Nature Reserve, Sichuan, an important natural habitat of the giant panda. Bond Shum and Carol Law took part in a baseline survey of the red panda in Nepal, and were very fortunate to have a close encounter with these charismatic mammals among the mountainous forests of the East Himalayas.



Simon and Benny with survey collaborators in Bangladesh



Bottlenose dolphin, Bangladesh

The students shared their experiences via web blogs during their trips, as well as with enthusiastic presentations recounting their adventures upon their return to classmates and teachers. As always, we would like to thank OPCFHK for providing such valuable opportunities for our students.

Also funded by OPCFHK, the first ever comprehensive study on the exploitation history, mariculture and trade status of the threatened Hong Kong grouper *Epinephelus akaara* was completed by Liu Min. This study highlighted further action to attain sustainable use of this highly-valued marine fish species, particularly for the live reef food fish trade and a management plan to achieve both biological and economic benefits.



A red panda in its natural montane forest habitat

Staff Research

Gray A Williams



Gray collecting animals at Stanley Beach, Hong Kong

This year's research concentrated on widening the geographic scope of our studies. Work on heart rate and protein level responses to thermal stress in limpets continued in collaboration with Yunwei Dong (Qingdao University) and Ng Wai Chuen (SWIMS). To widen the implications of how species respond to thermal stress, the Western Pacific Littorinid Workshop was organized at SWIMS to launch a large-scale latitudinal study of how these species respond to thermal stress. Such collaboration will become an important research direction, and hopefully allow us to answer large-scale questions related to how species may respond at a variety of biological levels (from individual protein production to community level changes) to climate change.



Li Ka Shing Prize winner, Amy Zhang and Kenny

Kenny Leung

Since 2005, my research group has been elucidating the toxicology and ecological impacts of synthetic antifouling compounds to various tropical and sub-tropical marine organisms. To ascertain ecotoxicities in the field, we also consider the influences of environmental variables such as temperature and salinity, and their combined toxicity with copper, which is often used in conjugation with biocides in antifouling paints. The results of these studies have allowed us to suggest better regulatory guidelines for these contaminants with the aim of reducing their ecological impacts. This year, I had the great honour to witness my student Amy Zhang receiving the Li Ka Shing Prize for her outstanding MPhil thesis which examined the ecological risks of Irgarol and its degradants to marine ecosystems.



Rajan and his collaborators (from right) Dr K Shib, Dr T Zhang, Rajan and Prof JHW Lee.

V. ThiyagaRajan

One of our primary objectives is to understand the effects of rising CO₂, temperature and variable precipitation (i.e. climate change and ocean acidification) on early-life stages of marine invertebrates at the molecular, developmental and physiological levels. In collaboration with X-ray diffraction (XRD) specialists, we are also examining CaCO₃ nanomaterial development, structural and mechanical properties in larvae, under present and predicted coastal carbonate chemistry scenarios. Our interdisciplinary collaborative research is focused on the mechanism(s) whereby larvae of marine invertebrates are likely to adapt or succumb to the natural and projected variability in carbonate chemistry.

Cynthia Yau

The long, hot 2009 summer provided a good opportunity to study the response of local corals reared in the SWIMS outdoor aquaria to thermal stress. *Acropora* spp. were the most sensitive and rapidly bleached when water temperatures exceeded 28°C in June, with many dying as temperatures increased later that month to 30°C. Other species, such as *Platygyra carnosus*, *Favites* spp. and *Pavona decussata*, showed greater tolerance and did not bleach, even when temperatures reached as high as 34°C. Such work helps us to better understand how corals may respond and adapt, or not, to climate change, and from this we can make predictions on how local coral communities may change given a warming seas scenario.



Cynthia demonstrating local coral species reared at SWIMS

Yvonne Sadovy

Studies on spawning aggregations continued in Fiji this summer in collaboration with the government fishery department. Grouper species are very important for food and the livelihoods of Fijian fishermen. Ours is the first study of a spawning aggregation in the country. During our 6 week field trip we found that three grouper species shared the small aggregation site, all using the benthic habitats in a different way and spawning at slightly different times of the lunar cycle. The most abundant species was the camouflage grouper which peaked at ~300 fish. We tagged many of the fish to find out where they go when they complete their reproduction, and are now waiting for news from the Fiji fishermen who will be returning the tags from our study fish.



Yvonne leading the Fish Spawning Aggregation Fiji 09 Workshop group

Ji-Dong Gu

Over the last 2 years research directions have shifted to molecular analysis of nitrogen transforming microorganisms, including ammonia-oxidizing archaea (AOA), ammonia-oxidizing bacteria (AOB) and anaerobic ammonium oxidation (Anammox) bacteria, from marine sediments. Our new specific PCR primer sets for anammox have shown much higher specificity than those from other research laboratories. Spatial and temporal dynamics of AOA and AOB in mangrove and deep-ocean sediments of the South China Sea have been analyzed and AOB abundance is generally higher than AOA at these sites. New amplicons of anammox bacteria have been retrieved from the South China Sea and new species of this unique group of microorganisms have been proposed.



JD Gu and his students with Prof Martin Klotz, organizer of the 1st Int'l Conference on Nitrification at University of Louisville, USA



Coral reef survey in a Malaysian marine park

Clement Dumont

My group had a very exciting first year initiating research to examine ecosystem responses to anthropogenic disturbances. We are investigating the role of sea urchins in rocky subtidal areas and the effect of the urchin fishery on benthic communities. In collaboration with Prof Martin Thiel, who visited from Chile, we described the shrimp *Rhynchocinetes brucei* and studied its reproductive behaviour. In collaboration with colleagues in Malaysia, we are also investigating the effect of the removal (by dive shops and government authorities) of the keystone seastar predator *Acanthaster planci* on coral communities at the Pulau Tioman Marine Park, Malaysia.



Leszek with Prof Yuying Wu, Sun Yat-Sen University, China

Leszek Karczmarski

I arrived at SWIMS in August and am currently setting up a research program in cetacean behavioural ecology and conservation. My primary interest is in comparative delphinid ecology and I have several ongoing studies of dolphins in Hawaii, South Africa, and Central America. My top priority over the past months was to develop a strong research project, investigating population structure and socio-behavioural dynamics of Chinese white dolphins (*Sousa chinensis*) across the Pearl River Estuary. This work will begin in early 2010 and involves collaboration with researchers from Sun Yat-Sen University in Zhuhai led by Prof. Yuying Wu. Other collaborative studies will involve research in Taiwan, Malaysia, and the Solomon Islands.



A large colony of the coral Platygyra

Nathalie Goodkin

Research in our lab has started with a focus on studying historical pollutants and climate change within Hong Kong and the South China Sea. We look at coral skeletons to reconstruct 200 year histories of chemicals in the water. Preliminary results from Hong Kong show that corals live much longer than expected, with one colony living more than 220 years, and give us a great opportunity to look back in time to see how the Hong Kong marine environment has changed. We are now preparing for an active field season with more sampling in Hong Kong waters to examine changes at different locations around the island.

Post Doctoral Fellows

Wai Tak-Cheung

Wai Tak-Cheung focused his research on the trophic dynamics and functioning of local marine systems. To study energy flow, Wai used fatty acid and stable isotope analyses to trace the source and fate of autotrophic and detrital energy sources to marine systems. He is currently focusing on food utilization of different feeding groups (from plankton to predatory fishes) in estuarine and rocky habitats, the significance of detrital pathways and the effect of rainfall on carbon source distribution in these food webs. He also conducted an echinoderm survey to assess the biodiversity, population structure and secondary production of sea urchins.



Wai being interviewed by local TV reporters

Liu Min

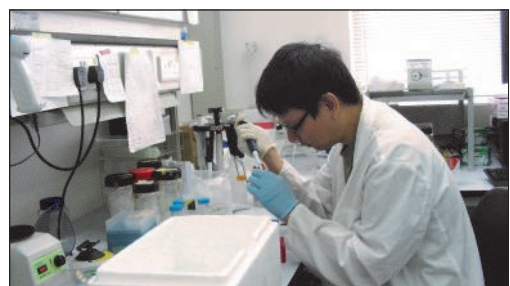
Min's research focuses on the biology and conservation of groupers (Epinephelinae) and wrasses (Labridae), with a newly developed interest in croakers (Sciaenidae). Work supported by Ocean Park Conservation Foundation of Hong Kong on the threatened Hong Kong grouper (*Epinephelus akaara*) has been completed and the final report released in 2010. Studies on the population genetics of *E. akaara* and *E. polyphkadion* throughout their geographic range have been conducted to establish species-specific management measures for these important commercial species. Collaboration with Sun Yat-Sen University (China) on regulation patterns of sex-related genes during sexual differentiation and sex change in protogynous groupers is continuing.



Min and coworkers at the IUCN workshop in Manaus

Ng Wai Chuen

Ng Wai Chuen's research concentrates on population genetics and stress responses of marine animals. One theme is the effect of projected climate change on the physiological response of the limpets *Cellana grata* and *C. toreuma*. Through on-site monitoring and laboratory verification, potential biomarkers are identified for thermal and other environmental stresses based on proteome profiles. He is also taking part in an investigation of the supply side ecology of the barnacle *Tetraclita* spp. in the East and Southeast Asian region. These studies will help resolve the genetic linkage and the possible patterns of larval transport on a local to regional scale.



Ng Wai Chuen working in the SWIMS Molecular Lab



Priscilla scanning gels to investigate protein expression

Priscilla Leung

Priscilla's research interests are in environmental proteomics. She has studied the proteomic response of the mussel *Perna viridis* under cadmium and hydrogen peroxide exposure to identify unique sets of protein expression signatures (PES). Cadmium not only induced oxidative stress but also triggered endoplasmic reticulum stress. Over the past two years, Priscilla has also characterized various metal and non-metal inducible metallothionein isoforms in *P. viridis* and *Thais clavigera*. Through identification of specific PES, it is possible to develop novel, sensitive, biomarkers for monitoring marine pollution.



Vivien presenting her project at the 3rd Int'l Symposium of Integrative Zoology in Beijing

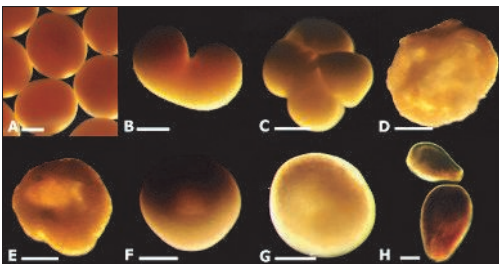
Vivien Wei Wei Bao

Antifouling booster biocides are widely used in combination with copper (Cu) in antifouling paints. The co-occurrence of booster biocides and Cu in the coastal environment is not uncommon, and they may interact with each other leading to additional or synergistic toxic effects to marine life. Vivien is studying the combined toxicity of five common biocides with Cu to various marine organisms including fish, invertebrates and algae. She has shown that zinc pyrithione (ZnPT) and Cu jointly lead to strong synergistic toxic effects, and the predicted no effect concentration of ZnPT to marine species significantly decreases in the presence of Cu at environmentally realistic levels.

Postgraduate Research

Reproductive biology of scleractinian corals in Hong Kong

Christine Yeung recently completed her MPhil on the reproduction and growth of local scleractinian corals. From assessment of gametogenic development, she showed that *Acropora* spp. and *Favites abdita* were synchronous broadcast spawners. Observations of coral colonies at SWIMS confirmed spawning occurs in May and June, when the egg-sperm bundles are released and float to the surface. Christine also found that even a small reduction in salinity significantly reduced fertilization success, which has important implications since the spawning season of these species coincides with the wet season and resultant heavy rainfall in Hong Kong.



Sequence of larval development in Acropora digitifera (scale bar = 250 μm)

Biogenic habitats as important refuges from severe environmental stress

Barnacles strongly influence the distribution of mobile species. Typically they occupy space, denying it for other species and are therefore a negative influence. However, increasing environmental stress can switch the impact of barnacles on mobile grazers into a positive one. Stephen Cartwright has shown that some grazers selectively hide amongst barnacles and benefit physiologically by avoiding heat and desiccation stresses. Removal, or loss of the barnacles, although increasing available rock space, actually results in a decrease in abundance of mobile grazers when environmental stress is severe, highlighting the importance of barnacles as a refuge habitat maintaining assemblage structure on tropical shores.



Stephen demonstrating his work during the SWIMS Open House

Snail behaviour – times of activity

June Leung has been studying the behaviour of the snail *Planaxis sulcatus*, in Hong Kong and Sri Chang Island, Thailand, investigating when they move and where they rest. In general the snails are active when washed by waves, but the overall level of activity is not high; indicating a low degree of synchronization. Formation of aggregations after an activity period is therefore unlikely to be related to immediate cues from other snails such as fresh mucus trails. In addition, while *P. sulcatus* do not aggregate during summer daytime low tides, they do aggregate at night! June is now investigating whether the tendency to aggregate might be related to temperature and/or light.



June with her collaborators Golfie and Milk working in Thailand

Small things matter more than you think

Engineered nano-metal oxides such as nano-zinc oxide (nZnO) are active ingredients in sunscreen, however, their ecological risks are still largely unknown. Stella Wong has been investigating the toxicities of nZnO on various marine organisms. Her results suggest that nZnO is more toxic towards algae than bulk ZnO, but relatively less toxic towards crustaceans and fish. Also, nZnO can cause significant up-regulation of both oxidative stress and heat shock proteins in the marine medaka fish *Oryzias melastigma*. Stella is currently examining the interacting effect of carbon nanotubes on the toxicity of two common contaminants, benzo[a]pyrene and triphenyltin, to *O. melastigma*.



Stella listening to one of the participants' opinion at the PRIMO15 Meeting in Bordeaux, France



Jamius won the Best Presentation Award at the PRIMO15 Meeting in Bordeaux, France

Biomarker responses in the mussel *Perna viridis*

Over the last two years, Jamius Yeung has investigated whether RNA/DNA ratio and total energy reserves (*Et*) are good biomarkers to indicate stress responses in the mussel, *Perna viridis* which is a widely used biomonitor for marine pollution. Her results suggested that RNA/DNA ratio in hepatopancreas and foot muscle was a good biomarker for indicating food availability but to a lesser extent for pollutant-induced stress. Metal exposure could lead to a significant decline in total lipid and thus *Et* in the mussel. In the field, RNA/DNA ratio was strongly associated with food availability and eutrophication, while the combined use of *Et* and condition index was effective to indicate health condition of transplanted mussels.



Dried swimbladders on sale in Hong Kong

Croaker species composition in Hong Kong

Croakers are fishes that are commercially important as food and for their swimbladders, yet little is known about their biology or fishery. Cynthia's study on croakers revealed that current catches in Hong Kong are dominated by small fish and species compared to the past. The reproductive season of the greyfin croaker *Pennahia anea* is from March to June and sizes of sexual maturation for females and males are 13.2 and 8.2 cm SL, respectively. Molecular techniques were used to determine the croaker species composition in the swimbladder trade. Most croaker swimbladders were not from locally caught species and in addition to croaker species from the Atlantic Ocean, swimbladders from other non-croaker species of fish, especially *Lates niloticus*, were also being sold as croaker swimbladders.



*A male *L. arduiniana* (left) following the mucus trail of a conspecific female*

Mucus trails as a sexual communication medium in gastropods

Terence Ng studies whether two snails, *Littoraria arduiniana* and *L. melanostoma*, can locate conspecific mates in the dense mangrove tree canopies by following mucus trails. His research has shown that both species mate and spawn during the summer and that, in the laboratory, males tend to follow mucus trails of conspecific females. Proteomic studies have shown that this selection may be related to a difference in protein composition of the male and female mucus which Terence plans to further evaluate.

Larval proteome response and plasticity to climate change and ocean acidification

CO₂-driven climate change and ocean acidification is threatening the marine ecosystem, particularly calcifying organisms such as barnacles and mussels. Kelvin Wong is studying the effects of three projected future levels of ocean acidification on early life stages in an ecologically and economically important barnacle, *Balanus amphitrite*. His research has shown that the larval proteome can be altered to cope with future acidic seawater regimes in the next 100 to 300 years. Next, Kelvin is going to study the response of two important post-translational modifications (phosphorylation and glycosylation) in the larval proteome, to ocean acidification.



Kelvin Wong demonstrating proteomic techniques to visitors during the Western Pacific Littorinid Workshop 2009 at SWIMS

Characterization of metallothionein isogenes in mussels

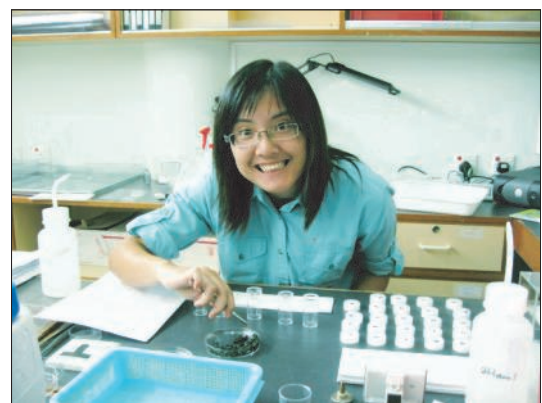
Although our proteomic studies have shown that metallothioneins (MT) exist as multiple isoforms in the mussel *Perna viridis*, there is only limited information on MT isogenes in this biomonitor species. Tae-Jin Park has been undertaking cloning and characterization of these MT isogenes and constructing the phylogenetic tree of MT amino acid sequences in the Mytilidae family. There are two main groups of MT isoforms in *P. viridis* which are highly distinctive from those in other mussels. Currently, Tae-Jin is using real-time quantitative PCR to reveal the mRNA expression patterns of the two dissimilar MT isogenes in different tissues and under various chemical exposure regimes.



TJ in Clearwater Bay preparing to collect mussels

Effect of heat stress on physiological responses of *Echinolittorina* spp.

Living close to the upper limit of the intertidal zone on rocky shores, *Echinolittorina* spp. are able to survive extreme physical conditions, especially during low summer spring tides when they encounter long emersion periods and rock surface temperatures > 50°C. Kathy Li is investigating how littorinids can physiologically tolerate such a harsh environment. She is interested in monitoring the littorinid's metabolism, in particular the function and stability of key enzymes involved in energy production. She will compare structural differences in malate dehydrogenase (MDH) among the three *Echinolittorina* spp. in order to understand their vertical distribution on the shore.



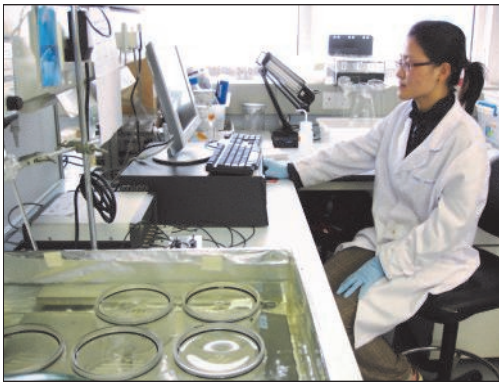
Kathy preparing snails for thermal stress experiments



Vera collecting invertebrates from a fish farm

Biom mineral dynamics in marine invertebrates during larval metamorphosis in CO₂-rich seawater

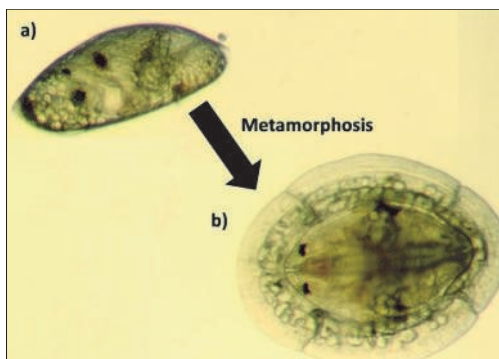
Calcifying marine invertebrates, such as molluscs and corals incorporate CO₂ into their skeleton through biomineralization. This highly regulated process results in the presence of different CaCO₃ polymorphs, such as aragonite and calcite, within shell layers. Shell composition appears to vary among taxonomic groups and through developmental stages, and may be influenced by climate change stressors. Vera Chan is studying how the projected CO₂-rich seawater could affect the shell polymorphs of marine invertebrates during their critical period of development, i.e. larval settlement and metamorphosis, by various crystallographic techniques.



Adela testing the thermal tolerance of marine animals

How does temperature effect chemical toxicity to marine organisms?

Anthropogenically driven climate change has resulted in increased incidents of temperature extremes that may have profound implications on the toxicity of chemical contaminants and hence their ecological risks to marine systems. Adela Li is studying the interacting effect of temperature and chemical toxicity on selected ectothermic marine species. Specifically, she will test a novel, hypothetical, temperature-dependent toxicity model that chemical toxicity generally increases with increasing temperature over the thermal tolerance range (TTR) of a species, and is further exacerbated at extreme temperatures (i.e. lower or higher than TTR). This model will provide more ecologically relevant predictions and assessment of chemical impacts to marine ecosystems.



Balanus amphitrite early life stages, a) the non-feeding cyprid larvae and subsequent b) early juvenile

Larval metamorphic responses to carbonate chemistry variability

As CO₂ emissions continue, atmospheric CO₂ increases, a large portion of which diffuses into the ocean making seawater more acidic. Ackley Lane studies the effects of sea-water acidification on the early stages of marine invertebrates by examining larval physiology, larval growth and larval metamorphosis. Ackley's preliminary work has shown that larvae of *Balanus amphitrite* have lower larval energy reserves as well as decreased metamorphic success as atmospheric CO₂ increases and seawater acidifies. Future work will examine the effects of changes in seawater chemistry over multiple generations, addressing the possibility of adaptation to projected changes in seawater chemistry resulting from CO₂ emissions.

Is organotin pollution declining in Hong Kong waters?

Organotins, in particular tributyltin (TBT) and triphenyltin (TPT), are endocrine-disrupting chemicals which can induce imposex in many gastropods. TBT and TPT are mainly used as antifoulants on ships and fishing nets but since September 2009, a complete ban on the use of organotins on seagoing vessels has been imposed. It is therefore anticipated to see a reduction of organotin pollution in Hong Kong waters. Kevin Ho will closely examine and address whether the environmental levels of various organotin compounds are actually declining and whether populations of the local gastropods, *Thais clavigera* and *T. luteostoma*, are recovering following the ban on organotins.



Kevin sampling water at Victoria Harbour

Small plastics may pose a big problem

Small and microscopic plastic pollution has come under increasing scrutiny since it was shown that these fragments aggregate organic pollutants and endocrine-disrupting compounds. As part of his MSc in Environmental Management, Nico Zurcher quantified small plastic debris on sandy beaches around Hong Kong. His results indicated that, despite high spatial variation, large quantities of these plastic are present on our beaches. Chemical analysis of the plastics, in collaboration with Dr Hideshige Takada in Japan, confirmed elevated levels of toxic persistent organic pollutants, including DDT, PCBs and HCH. These contaminated plastics can be ingested by various marine animals and may contribute to biomagnification of pollutants up the food chain.



One sample at Cheung Chau revealed 5,000 of these plastic nurdles in just 1/2 m² of beach.

Research Visitors and Seminars

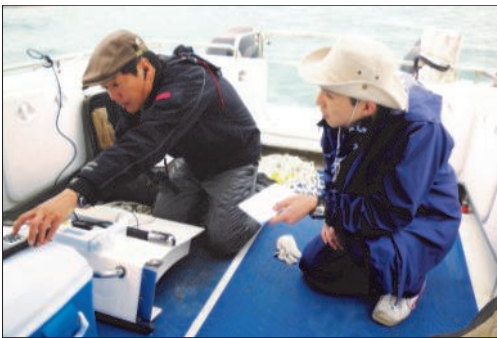
As ever, SWIMS has hosted a great variety of research visitors over the year. Prof Martin Thiel visited from July to September to establish research collaboration with Clement Dumont on shrimp behaviour. Subsequently Martin has been appointed as a Visiting Professor and will continue this collaboration by co-supervising students with Clement. Dr Yunwei Dong returned to SWIMS as a Sino-British Fellowship Trust visitor to further his work with Gray on cardiac and enzyme level responses to thermal stress in intertidal limpets. Yunwei will also continue his collaboration with SWIMS as he has initiated further projects with Gray, Rajan and Ng Wai Chuen.



Prof Martin Thiel demonstrating ocean rafting to Swire Properties Community Ambassadors



Yunwei, Chuen and Given collaborating on environmental proteomic research



Drs. Akamatsu and Morisaka aboard Swire Asterina during preliminary acoustic surveys



The tail fluke of Hong Kong's first record of a humpback whale

Some visitors stayed for shorter time periods, either to attend the workshops held at SWIMS or for short periods of research. Mr Given Matumba (Rhodes University, S. Africa) visited twice to work on proteomics of littorinids with Rajan and his postgraduate students. Dr Rosemary Golding (Australian Museum, Australia) visited to make collections with Ng Wai Chuen and Priscilla Leung, while Prof Ross Coleman spent time at SWIMS discussing collaborative work with Gray and his research group. Mr Simon Bennett of Swire Pacific Offshore also visited SWIMS to investigate possible collaborative links.

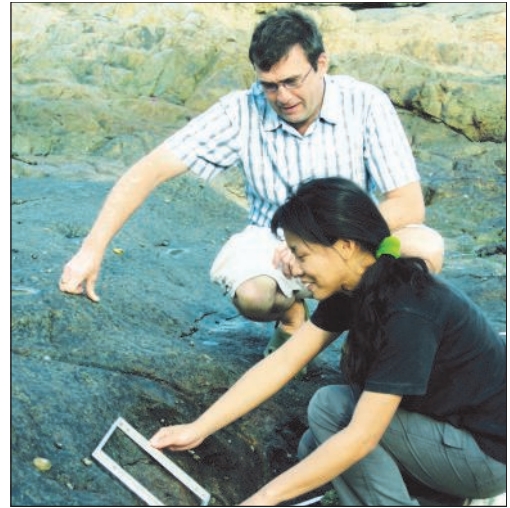
This year was also packed with a number of seminars and workshops which were very well attended. In March we hosted colleagues from Xiamen University as part of our developing collaboration for the first postgraduate symposium on 'Natural and Anthropogenic Impacts on Aquatic Systems'. This is the first of an annual series of symposia, organized by the postgraduates of SWIMS and Xiamen, and saw more than 20 students and staff from Xiamen travel to stay at SWIMS and join with us for a highly interactive 4 day series of talks and events. This was an excellent sharing experience, organized by Terence Ng, Kelvin Wong and Teresa Ma, and we look forward to the next meeting in March 2010.

In November we held a workshop on 'How to write and publish brilliant research papers' led by Prof Jan Pechenik and Dr Howard Browman. This was obviously extremely popular with our postgraduate students (and staff) and was heavily oversubscribed. Finally, we managed to squeeze 46 attendees into the SWIMS seminar room to learn a variety of useful tips and skills on producing and most importantly publishing high quality scientific papers, which Jan and Howard led in a very enjoyable and interactive manner.

In early December, Dr. Tomonari Akamatsu (Nat. Res. Inst. of Fish. Engineering, Japan), and Dr. Tadamichi Morisaka (Wildl. Res. Center, Kyoto University, Japan) visited SWIMS to initiate a collaboration with Leszek, setting up a research project that will use acoustic techniques to investigate dolphin and porpoise populations in Hong Kong waters. Several HKU students and Ocean Park Conservation Foundation personnel joined in the preliminary field work.

On a biodiversity note, SWIMS residents were also occasionally visited by a family of wild boar foraging during the evening, and in March, SWIMS researchers were entertained by Hong Kong's first record of a humpback whale which spent a week swimming and breaching off the Cape d'Aguilar peninsula.

We hosted a great variety of seminars this year, including talks at SWIMS by Prof Ross Coleman (Sydney University, Australia); Prof Martin Thiel (Universidad Catolica del Norte, Chile); Dr Howard Browman and Dr Anna Skiftesvik (Institute of Marine Research, Norway); Prof Jan Pechenik (USA); as well as a variety held at HKU such as Dr Jason Hall-Spencer (University of Plymouth, UK); Prof Hugh Possingham (The University of Queensland, Australia) and Prof Phil Hammond (Aberdeen University, UK). This year also saw the blossoming of the SWIMS informal paper sharing workshops led by Clement Dumont, where students meet on a weekly basis to discuss interesting and topical papers. These group sessions are very popular and contribute greatly to the interactive research atmosphere at SWIMS.



Ross Coleman discussing research methods with June

Community Outreach

Over 700 school children and visitors come to SWIMS for a variety of events this year. SWIMS remains very popular with secondary school groups who come for lectures and field research experience. SWIMS also hosted a variety of undergraduate students, including students from HKU doing their final year projects or internships, and school students from overseas and Hong Kong wanting to gain some work experience. In terms of community groups we also held trips for Hong Kong Federation of Youth Groups, Hong Kong Young Ambassadors, the Hong Kong Underwater Association and Swire Properties Community Ambassador scheme. These visits were all coordinated with the help of the Agriculture, Fisheries and Conservation Department, to ensure they did not disrupt the Cape d'Aguilar Marine Reserve.



Natalie and Joyce helping with fieldwork at SWIMS



Speakers Prof Jan Pechenik and Dr Howard Browman with participants at the "How to Write and Publish Brilliant Research Papers" Workshop

Research Opportunities



The Cape d'Aguilar Peninsula in the early 1960s, before SWIMS was built



One of the adult wild boar which has regularly visited the residential block

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.

Pacific Institutes of Marine Science

SWIMS is also a founding member of the Pacific Institutes of Marine Science (<http://www.pims.usstl.hk/>).

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

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. Accommodation at the Residence is available for students, researchers and visitors working at SWIMS. It is also available to outside visitors. Those interested in booking the accommodation, please contact Ms Sylvia Yiu.

Memorandum of Understanding (MOU)

SWIMS currently has three MOU with overseas institutions for RPG exchange, teaching and research including: The State Key Laboratory of Marine Environmental Science, Xiamen University, China; EKOMAR, Universiti Kebangsaan Malaysia and King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand. It is planned that these collaborations will grow to include other institutions in the coming years.



SWIMS and IUCN

2009 was an exciting year for marine fishes. A major initiative Yvonne Sadovy is involved in, the IUCN Global Marine Species Assessment which aims to complete Red List conservation status assessments for most marine fishes (about 16,000 in all) over the next few years, gathered pace. Intensive workshops were conducted in the Philippines, USA, Indonesia and Taiwan, among others. These widely respected assessments attract local and international attention to threatened species (www.iucnredlist.org). Emerging results clearly show that the larger, longer lived species that are exploited commercially are the most vulnerable and need the most conservation attention. This includes the endangered Hong Kong grouper, *Epinephalus akaara* (hung paan 紅斑 in Cantonese), among many others.



The endangered Hong Kong grouper, Epinephalus akaara

SWIMS and Reef Check

The Reef Check by SWIMS has become the summer gathering party for current and ex-SWIMsers, and 2009 was no exception. Nearly 20 students, ex-students and staff joined the event, and enjoyed a fantastic hot and sunny day. As in the past few years, Siu Long Ke was our favourite Reef Check site. This year all of us had participated in this annual event before, and therefore all were well-prepared and work progressed very smoothly and efficiently – Captain Ah Ming slowly steered us to the right location with his in-built GPS, and Ah Hong efficiently arranged the dive gears, Stan and Allen delivered the briefing and right after that everyone got themselves into various working groups and then jumped into the 'a-bit murky' water. Several corals were found to have various levels of bleaching; big fish were rare, although commercial species such as sweetlips and various groupers were spotted; and everyone noticed the hundreds of sea urchins. After completing the survey we enjoyed a wonderful lunch prepared (but not cooked) by Ah Ming before we went to another site for our final survey.



The SWIMS Reef Check team 2009

- Albins MA, Hixon MA, Sadovy Y (2009) Threatened fishes of the world: *Epinephelus striatus* (Bloch, 1792) (Serranidae). *Environmental Biology of Fishes* **86**(2): 309-310
- Astudillo JC, Bravo M, Dumont CP, Thiel M (2009) Floating buoys in the SE Pacific – a potential dispersal vehicle for associated organisms. *Aquatic Biology* **5**: 219-231
- Bao VWW, Koutsaftis A, Leung KMY (2008) Temperature-dependent toxicities of chlorothalonil and copper pyrrithione to the marine copepod *Tigriopus japonicus* and dinoflagellate *Pyrocystis lunula*. *Australasian Journal of Ecotoxicology* **14**: 45-54
- Choi KW, Lee JHW, Kwok KWH, Leung KMY (2009) Integrated stochastic environmental risk assessment of the Harbour Area Treatment Scheme (HATS) in Hong Kong. *Environmental Science & Technology* **43**: 3705-3711
- Claro R, Sadovy de Mitcheson Y, Lindeman KC, Garcia-Cagide AR (2009) Historical analysis of Cuban commercial fishing effort and the effects of management interventions on important reef fishes from 1960-2005. *Fisheries Research* **99**(1): 7-16
- Dumont CP, Urriago JD, Thiel M, Gaymer CF (2009) The native shrimp *Rhynchocinetes typus* as a potential biological control in scallop aquaculture in Chile. *Aquaculture* **292**: 74-79
- Firth LB, Williams GA (2009) The influence of multiple environmental stressors on the limpet *Cellana toreuma* during the summer monsoon season in Hong Kong. *Journal of Experimental Marine Biology and Ecology* **375**: 70-75
- Gu J-D (2009) Corrosion, Microbial. In: M. Schaechter (ed.), *Encyclopedia of Microbiology* (3rd ed.), Elsevier, U.K. pp. 259-269
- Ho GWC, Leung KMY, Lajus D, Ng JSS, Chan BKK (2009) Fluctuating asymmetry of *Amphibalanus (Balanus) amphitrite* (Cirripedia: Thoracica) in association with shore height and metal pollution. *Hydrobiologia* **621**: 21-32
- Hong Y-G, Gu J-D (2009) Bacterial anaerobic respiration and electron transfer relevant to the biotransformation of pollutants. *International Biodeterioration & Biodegradation* **63**: 973-980
- Hung OS, Lee OO, Thiyagarajan V, He HP, Xu Y, Chung HC, Qiu JW, Qian PY (2009) Characterization of cues from natural multi-species biofilms that induce larval attachment of the polychaete *Hydroides elegans*. *Aquatic Biology* **4**: 253-262
- Kelly A, Reuer M, Goodkin N, Boyle EA (2009) Lead concentrations and isotopes in corals and water near Bermuda, 1780-2000 A.D. *Earth and Planetary Science Letters* **283**: 93-100
- Kwok KWH, Grist EPM, Leung KMY (2009) Acclimation effect and fitness cost of copper resistance in the marine copepod. *Tigriopus japonicus*. *Ecotoxicology and Environmental Safety* **72**: 358-364
- Lam KH, Lei NY, Tsang VWH, Cai Z, Leung KMY, Lam MHW (2009). A mechanistic study on the photodegradation of Irgarol-1051 in natural seawater. *Marine Pollution Bulletin* **58**: 272-279
- Lau DCP, Leung KMY, Dudgeon D (2009) Autochthonous resources are more important to aquatic consumers than allochthonous sources in tropical headwater streams. *Journal of the North American Benthological Society* **28**: 426-439
- Lau DCP, Leung KMY, Dudgeon D (2009) Evidence of rapid shifts in the trophic base of lotic predators using experimental dietary manipulations and assimilation-based analyses. *Oecologia* **159**: 767-776
- Lau DCP, Leung KMY, Dudgeon D (2009) What does stable isotope analysis reveal about food webs and trophic relationships in tropical streams? A synthetic study from Hong Kong. *Freshwater Biology* **54**: 127-141
- Leung KMY, Dudgeon D (2008) Ecological risk assessment and management of exotic organisms associated with aquaculture activities. In: *Understanding and Applying Risk Analysis in Aquaculture*, FAO Fisheries and Aquaculture Technical Paper No. 519, Bondad-Reantaso MG, Arthur JR & Subasinghe RP (eds), FAO, Rome. pp. 67-100
- Little C, Williams GA, Trowbridge CD (2009) The biology of rocky shores. 2nd edition, Oxford University Press, Oxford
- Li M, Yang H, Gu J-D (2009) Phylogenetic diversity and axial distribution of microbes in the intestinal tract of the polychaete *Neanthes glandinecta*. *Microbial Ecology* **58**: 892-902
- Liu M, Sadovy de Mitcheson Y (2009) Gonad development during sexual differentiation in hatchery-produced orange-spotted grouper (*Epinephelus coioides*) and humpback grouper (*Cromileptes altivelis*) (Pisces: Serranidae, Epinephelinae). *Aquaculture* **287**: 191-202
- Liu M, Sadovy de Mitcheson Y (2009) Exploitation history, mariculture and trade status of the threatened Hong Kong grouper (*Epinephelus akaara*) throughout its geographic range. Final report to Ocean Park Conservation Foundation of Hong Kong. 181 pp.
- Luo Z-H, Pang K-L, Gu J-D, Chow RKK, Virijmoed LLP (2009) Degradability of the three dimethyl phthalate isomer esters (DMPEs) by a *Fusarium* species isolated from mangrove sediment. *Marine Pollution Bulletin* **58**: 765-766
- Mok F, Thiyagarajan V, Qian PY (2009) Proteomic analysis of larvae during development, competence and metamorphosis in the polychaete worm *Pseudopolydora vexillosa*. *Proteome Science Research* **37**:118-118
- Ng WC, Chan MN, Slingsby G, Williams GA, Leung FCC (2009) Isolation and characterization of microsatellite markers from the limpet *Cellana grata*. *Molecular Ecology Resources* **9**: 902-904
- Sadovy de Mitcheson Y (2009) Biology and Ecology Considerations for the Fishery Manager. Chapter 2. In: *A Fishery Manager Guidebook*. 2nd edition, KL Cochrane & SM Garcia (eds). FAO/Blackwell Publishing, UK. pp. 21-51
- Sin YW, Yau Cynthia, Chu KH (2009) Morphological and genetic differentiation of two loliginid squids, *Uroteuthis (Photololigo) chinensis* and *Uroteuthis (Photololigo) edulis* (Cephalopoda: Loliginidae), in Asia. *Journal of Experimental Marine Biology and Ecology* **369**(1): 22-30
- Sin YW, Chu KH, Yau Cynthia (2009) Isolation and characterization of highly polymorphic microsatellites in the mitre squid, *Uroteuthis (Photololigo) chinensis*. *Molecular Ecology Resources* **9**: 1460-1466
- Thiyagarajan V, Tim Wong, Qian PY (2009) 2D Gel-based proteome and phosphoproteome analysis during larval metamorphosis in two major marine biofouling invertebrates. *Journal of Proteome Research* **8**: 2708-2719
- To AWL, Sadovy de Mitcheson Y (2009) Shrinking baseline: the growth in juvenile fisheries, with the Hong Kong grouper fishery as a case study. *Fish and Fisheries* **10** (4): 396-407

- Wang Y, Hu M, Sadovy Y, Cheung S-G, Shin PKS (2009) Threatened fishes of the world: *Bahaba taipingensis* Herre, 1932 (Sciaenidae). *Environ Biol Fish* **85**: 335-36
- Wong RLC, Kwok KWH, Leung KMY, Wong CK (2009) Relative sensitivity distribution of freshwater planktonic crustaceans to trace metals. *Human and Ecological Risk Assessment* **15**: 1335-1345
- Xu X-R, Li S-X, Li X-Y, Gu J-D, Chen F, Li X-Z, Li H-B (2009) Degradation of n-butyl phthalate using TiO₂/UV. *Journal of Hazardous Materials* **164**: 527-532
- Yu X-Z, Gu J-D (2009) Uptake, accumulation and metabolic response of ferricyanide in weeping willows. *Journal of Environmental Monitoring* **11**: 145-152
- Zhang R, Lau SCK, Ki JS, Thiyagarajan V, Qian PY (2009) Response of bacterioplankton community structures to hydrological conditions and anthropogenic pollution in contrasting subtropical environments. *FEMS Microbiology Ecology* **69**: 449-460
- Zhang RF, Gu J-D (2009) Complete sequence of plasmid pMP1 from the marine environmental *Vibrio vulnificus* and location of its replication origin. *Marine Biotechnology* **11**: 465-462
- Zhao Z-Y, Gu J-D, Li H-B, Li X-Y, Leung KMY (2009) Disinfection characteristics of the dissolved organic fractions at several stages of a conventional drinking-water treatment plant in Southern China. *Journal of Hazardous Materials* **172**: 1093-1099

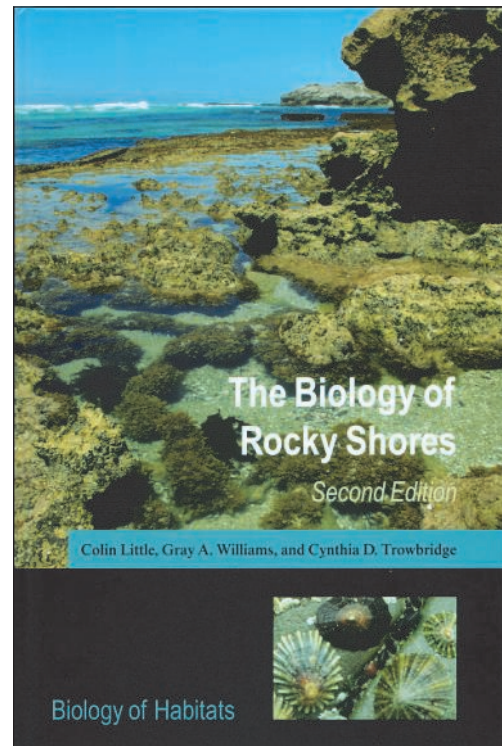
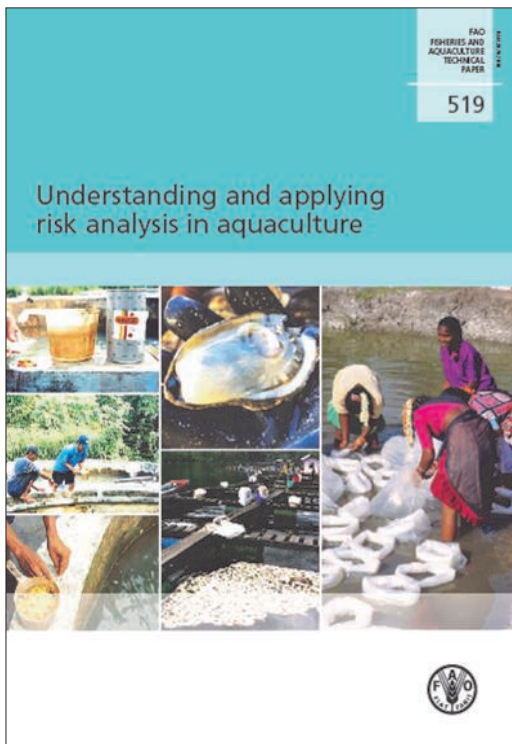
Student Graduations

Ph.D

- To Wai Lun** (2008) - The biology, fishery of groupers (Family: Serranidae) in Hong Kong and adjacent waters, and implications for management.
- Kwok Wing Hin Kevin Patrick** (2009) - On the derivation of water and sediment quality guidelines: some pressing issues and their resolutions.
- Bao Weiwei** (2009) - Toxicities and ecological risks of selected anti-fouling biocides to marine organisms in Hong Kong.

M.Phil

- Choi Kin Sang** (2008) - Reproductive biology and ecology of the loliginid squid, *Uroteuthis (Photololigo) duvauceli* (Orbigny, 1835), in Hong Kong waters.
- Zhang Qian** (2008) - Ecotoxicities and ecological risks of Irgarol 1051 and its related S-triazine compounds in tropical marine ecosystems.
- Shea Kwok Ho** (2008) - Species composition and temporal and spatial patterns in butterflyfishes (Chaetodontidae) associated with coral communities in sub-tropical Hong Kong.
- Sin Ying Tung** (2008) - Age, growth, and reproductive biology of whitespotted bamboo shark (*Chiloscyllium plagiosum*) from Hong Kong and adjacent waters.
- Tang Wing Kai** (2009) - Distribution, seasonality and species identification of larval stomatopoda in Hong Kong waters.



Newly released books co-authored by SWIMS Staff

Other Contributions from SWIMS

Clement Dumont

Research Associate, EKOMAR, National University of Malaysia.

Ji-Dong Gu

Associate Editor: Ecotoxicology, Environmental Geochemistry and Health, International Biodeterioration & Biodegradation, Microbes and the Environment

Member of Editorial Boards: Biodegradation, Journal of Polymers and the Environment, Microbes 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 of AFCD Hong Kong

Member, Scientific Advisory Committee - Ocean Park Conservation Foundation Hong Kong (OPCFHK)

Member, Scientific Advisory Committee - Sirenian International, Inc.

Kenny Leung

Member of Editorial Board: Integrated Environmental Assessment and Management; Marine Pollution Bulletin

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

Member, Marine Mammal Conservation Working Group

Member, Society of Environmental Toxicology and Chemistry (SETAC) Asia/Pacific Board of Directors

Council Member & Librarian, MBAHK

Liu Min

Member, IUCN Specialist Group of Groupers and Wrasses

Mainland China Coordinator, Reef Check Foundation

Journal Reviewer: Aquaculture

Yvonne Sadovy

Chair (and founder): IUCN World Conservation Union Specialist Group of Groupers and Wrasses (www.humpheadwrasse.info)

Director (and founding member): Society for the Conservation of Reef Fish Aggregations (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)

Board of Directors: Ocean Park Hong Kong

V Thiyagarajan

Editor (review), Aquatic Biology, Inter-Research Journal

Editor (review), Aquaculture Environment Interactions, Inter-Research Journal

Organizing committee member: 15th International Symposium on Toxicity Assessment

Member, Human Proteome Society

Member, Hong Kong Proteome Society

Gray A Williams

Secretary, Pacific Institutes of Marine Science

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

Cynthia Yau

Member, Cephalopod International Advisory Council

Conferences and Workshops

Vivien Wei Wei Bao

Oral Presentation; The 3rd International Symposium of Integrative Zoology, 8-10 July 2009, Beijing, China.

Clement Dumont

Oral Presentation; International Temperate Reef Symposium, 12-16 Jan. 2009, University of Adelaide, Australia.

Oral Presentation; 13th International Echinoderm Conference, 5-9 Jan. 2009, University of Tasmania, Australia.

Nathalie Goodkin

Invited Lectures; Climate Reconstructions from Temperate Corals: Complications and Successes, 16 Nov. 2009, Hong Kong University of Science and Technology, Hong Kong.

Low Frequency Variability in the North Atlantic Oscillation Increases with Temperature: A Bermuda Coral Record, Feb. 2009, Tainan, Taiwan.

Ji-Dong Gu

Invited Speaker & Oral Presentation; International Symposium on Biological Responses to Chemical Contaminants: from Molecular to Community Level, 2-4 Sept. 2009, Aveiro, Portugal.

External Evaluator; European Union Research Project COST D33: Nanoscale Electrochemical and Bioprocesses (Corrosion) at Solid aqueous Interfaces of Industrial Materials, 13-15 May 2009, Cluj-Napoca, Romania.

Invited Keynote Speaker; Final Workshop of European Union Research Project COST D33: Nanoscale Electrochemical and Bioprocesses (Corrosion) at Solid aqueous Interfaces of Industrial Materials, 13-15 May 2009, Cluj-Napoca, Romania.

Leszek Karczmarski

Oral Presentation; International Cetacean Conservation Symposium, 3rd Institute of Oceanography State Oceanic Administration, 7-9 Nov. 2009, Xiamen, China.

Invited Speaker; Strategic Workshop of the Indo-Pacific Humpback Dolphin Conservation Task Force, Forestry Bureau and Fishery Agency, Council of Agriculture, the Government of Taiwan, 1 Nov. 2009, Taipei, Taiwan.

Guest Speaker; 19-20 Oct. 2009, Sun Yat-Sen University, Zhuhai, China.

Invited Speaker; Chair of Thematic Session & Regular Oral Presentation; Indian Ocean Conservation Symposium, 18-20 July 2009, Marine Research Centre, The Maldives.

Kenny Leung

Invited Speaker; Regional Training Course on Novel Technology for Marine Environmental Management organised by United Nations' Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), 19-21 Nov. 2009, Manila, Philippines.
Invited Speaker; International Symposium on the Biomonitoring and Biomarker of Endocrine Disrupting Chemicals (EDCs) in Coastal and Marine Environments organised by National Fisheries Research & Development Institute (NFRDI), 17 Sep. 2009, Busan, Korea.
Plenary Speaker & Session Chairman; The 3rd International Symposium of Integrative Zoology: Biological Consequences of Global Change and Darwin 200, 8-10 July 2009, Beijing, China.
Oral & Poster Presentations; The 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO), 17-20 May 2009, Bordeaux, France.

Priscilla Leung

Oral Presentation; The 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.
Poster Presentation; The 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO), 17-20 May 2009, Bordeaux, France.
Oral Presentation; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

Liu Min

Invited Speaker; Marine Eco-Civilization (Wenzhou) Forum, 15-18 Nov. 2009, Wenzhou, China.
IUCN Workshop on Global Red List Assessments of Croakers (Family Sciaenidae), 9-13 Nov. 2009, Manaus, Brazil.
VLIR South-North Specialization Scholarship, 1-30 Sep. 2009, Lab of Aquaculture & Artemia Reference Centre, The Ghent University, Belgium.
Oral Presentation; Annual Meeting of Society of Conservation Biology, 10-16 July 2009, Beijing, China.
Oral Presentation; *Cheilinus undulatus* (Humphead Wrasse/HHW) Compliance/implementation/enforcement workshop, 10 June 2009, Hong Kong.
Workshop on Biological and Economic Parameters for a Sustainable Live Reef Food Fish Trade, 18-22 May 2009, Palawan, Philippines.
IUCN Workshop on Global Red List Assessments of Wrasses (Family Labridae), 23-28 Mar. 2009, Dumaguete, Philippines.

Ng Wai Chuen

Oral Presentation; The 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.
Oral Presentation; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

V Thiyagarajan

Invited Lecture; Department of Chemistry and Biology, City University of Hong Kong, 26 Nov. 2009, Hong Kong.
Organizer & Co-teacher; Mini-teaching Workshop/Seminar for HKU UG students, 20 Nov. 2009, Swire Institute of Marine Science and School of Biological Sciences, The University of Hong Kong, Hong Kong.
Invited Speaker; South China Sea Institute of Oceanology, CAS, 6-8 Oct. 2009, Guangzhou, China.
Invited speaker; Workshop on Systems Biology, Department of Chemistry and Biology, City University of Hong Kong, 12-29 Aug. 2009, Hong Kong.
Invited Speaker; Coastal Ocean Carbon Cycling – An International Workshop and Review on the Implementation of CHOICE-C, 6-8 Mar. 2009, Xiamen, China.

Yvonne Sadovy

Guest Speaker; West Pacific Marine Red List Assessment Workshop, 30 Nov.-4 Dec. 2009, Taiwan.
Invited Speaker; The International Live Reef Food Fish Trade Conference, Nov. 2009, Hong Kong.
Invited Speaker; Roadmap to a Sustainable Live Reef Food Fish Trade, 10-12 Nov. 2009, Hong Kong.
Workshop Organizer & Co-instructor; Spawning Aggregations in the Pacific-identification and Management, 10-15 Oct. 2009, Suva, Fiji.
Keynote Speaker; 8th Indo Pacific Fish Conference and 2009 ASFB Workshop & Conference, 31 May-5 June 2009, Fremantle, W. Australia.
Workshop Organizer & Co-instructor; Biological and Economic Parameters for a Sustainable Live Reef Food Fish Trade, 18-22 May 2009, Palawan, Philippines.

Wai Tak Cheung

Oral & Poster presentations; The 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.
Oral Presentation; 8th Indo Pacific Fish Conference and 2009 ASFB Workshop & Conference, 31 May - 5 June 2009, Fremantle, Australia.
Oral Presentation; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

Gray A Williams

NaGISA-JSPS Western Pacific Marine Biodiversity Conference. 14-16 Dec. 2009, Tokyo, Japan.
Delegate; Intergovernmental Meeting on East and Southeast Biodiversity Information Initiative (ESABII), 12-14 Dec. 2009, Tokyo, Japan.
Delegate; International Meeting for Promoting Asia-Pacific Biodiversity Observation Network (AP-BON), 10-11 Dec. 2009, Tokyo, Japan.
Session Organizer and Speaker; the 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.
Invited Speaker; 2 July 2009, University of Johannesburg, South Africa.
Invited Keynote Speaker and Advisor; InterMed: Intertidal organisms as proxy of climate change, 9-12 Mar. 2009, Palermo, Italy.
Speaker and invited Chairperson; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

Cynthia Yau

Cephalopod International Advisory Council '09 Symposium. 3-11 Sept. 2009, Vigo, Spain.

Postgraduates

Stephen Cartwright

Oral Presentation; The 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.
Oral Presentation; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

Ackley Lane

Oral Presentation; The 3rd International Symposium of Integrative Zoology, 7-10 July 2009, Beijing, China.

June Leung

Oral Presentation; The 8th International Temperate Reef Symposium on Southern Seas, 12-16 Jan. 2009, Adelaide, Australia.

Cynthia Tuuli

Oral Presentation; 8th Indo Pacific Fish Conference and 2009 ASFBI Workshop & Conference, 31 May-5 June 2009, Fremantle, W. Australia.

Stella Wong

Oral & Poster Presentation; The 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO), 17-20 May 2009, Bordeaux, France.

The 5th AoE Annual Symposium, 5-6 Jan. 2009, City University of Hong Kong, Hong Kong.

Jamius Yeung

Oral & Poster Presentations; The 15th International Symposium on Pollutant Responses in Marine Organisms (PRIMO), 17-20 May 2009, Bordeaux, France.

HKU & XMU 1st Postgraduate Symposium on “Natural and Anthropogenic Impacts on Aquatic Ecosystems – *What we know and what we can do*”

Symposium Attendees

From XMU:

Prof. Cai Li-zhe, Dr. Wang Xin-hong & Dr. Cheng Neng-wang

Mr. Sun Guang-da, Ms. Li Ying, Ms. Huang Lin, Mr. Qiu Can-rong, Mr. Du Jian-guo, Mr. Huang Xiao, Mr. Fang Li-kui, Ms. Chen Bei, Ms. Zheng Shu-xian, Mr. Xu Zhi-huan, Mr. Jiang Zong-pei, Mr. Zhou Kuan-bo, Ms. Wei Xing-yuan, Ms. Han Ai-qin, Mr. Fang Chao, Ms. Zhang Xiao-yin, Mr. Wang Gui-hua, Ms. Fang Jing, Ms. Zhao Zi-miao & Ms. Higa Eda Laura Elisa

From SWIMS:

Ms. June Leung, Mr. Kelvin Wong, Mr. Terence Ng, Ms. Vivian Fu, Ms. Jamius Yeung, Mr. William But, Ms. Kiki Khangura, Mr. Lucky Chan, Mr. Park Tae-jin, Ms. Vivian Lam, Mr. Stephen Cartwright, Ms. Cynthia Tuuli, Ms. Stella Wong, Ms. Ann Cai & Ms. Teresa Ma
Dr. Leo Chan, Dr. Clement Dumont, Dr. Nancy Karkaker, Dr. Danny Lau, Dr. Kenneth Leung, Dr. Liu Min, Dr. V ThiyagaRajan, Prof. Gray Williams, Dr. Cynthia Yau, Dr. J-D Gu, Prof. Steven Chen, Prof. David Dudgeon, Prof. Yvonne Sadovy

Guests:

Ms. Doris Chan (CUHK), Mr. Li Meng (HKU)

Western Pacific Littorinid Workshop

Workshop Attendees

Mr. Kee Alfian (EKOMAR, National University of Malaysia)

Dr. Somchai Bussarawit (Phuket Marine Biological Centre, Thailand)

Prof. Cai Lizhe (MEL, XMU, China)

Dr. Dong Yunwei (Ocean University of China, Qingdao, China)

Dr. Monthon Ganmanee (King Mongkut's Inst. of Tech. Ladkrabang, Thailand)

Ms. Kathy Li (Dept of Biology, HKUST)

Dr. David Marshall (Dept. of Biology, Universiti Brunei Darussalam)

Mr. Given Matumba (Rhodes University, S. Africa)

Prof. Christopher McQuaid (Rhodes University, S. Africa)

Dr. Kitithorn Sanpanich (Institute of Marine Science, Burapha University, Thailand)

Ms. Cynthia Wong (National Institute of Education, Singapore)

Ms. Leena Wong (Laboratory of Marine Science & Aquaculture, Universiti Putra Malaysia)

Ms. Ann Cai, Ms. Vera Chan, Ms. June Leung

Dr. Priscilla Leung, Mr. Terence Ng, Dr. Ng Wai Chuen

Dr. V ThiyagaRajan, Prof. Gray Williams

Mr. Kelvin Wong

One-day Workshop on “How to Write and Publish Brilliant Research Papers”

Workshop Attendees

Prof. Gray Williams, Dr. V Thiyagarajan, Dr. Cynthia Yau

Dr. Clement Dumont, Dr. Leszek Karczmarski

Dr. David Thomson (SBS, HKU)

Dr. Wai Tak Cheung, Dr. Ng Wai Chuen, Dr. Vivian Bao

Dr. Priscilla Leung, Mr. Kelvin Wong, Mr. Terence Ng

Mr. Ackley Lane, Mr. Ricky Tang, Mr. Solomon Chak

Mr. Juan Carlos Austudillo, Ms. Vera Chan, Ms. Kathy Li

Mr. Stephen Cartwright, Ms. June Leung, Mr. Tj Park

Ms. Cynthia Tuuli, Ms. Vivian Lam, Ms. Adela Li

Mr. Kevin Ho, Ms. Stella Wong, Mr. John Kwok

Ms. Sophia Niu (SBS, HKU), Ms. Vivian Fu (SBS, HKU)

Mr. Sung Yik Hei (SBS, HKU), Ms. Aggie Li (SBS, HKU)

Ms. Yang Teng Teng (Dept of Earth Sciences, HKU)

Mr. Tony Hung (SBS, HKU), Ms. Teresa Ma (SBS, HKU)

Ms. Peggy Lee (SBS, HKU), Ms. Li Shi Ying (SBS, HKU)

Ms. Zhou Lin Lin (SBS, HKU), Ms. Xue Bine (SBS, HKU)

Mr. Yip Ka Yiu, Soda (SBS, HKU), Mr. Tang Chin Cheung

(SBS, HKU), Ms. Yung Cheuk Man (SBS, HKU), Mr. Zhong Yujuan (SBS, HKU), Ms. Wang Ti, Christy (SBS, HKU), Mr. Constantine Lau (SBS, HKU), Ms. Huangfu

Jieqiong (SBS, HKU), Mr. Pang Chun Chiu (SBS, HKU)

Staff Training

Ms. Cecily Law has attended training on the University's Safety and Health Policy (including the Laboratory/Workshop Safety).

Mr. Cheung Ming Hong has attended the Refresher First-Aid course and examination.

Mr. Chan Pui Cheung and Cheung Ming have attended the Refresher First-Aid course and examination.

Mr. John Kwok has attended the Perch Hatchery Workshop at AFCD.

Mr. Chan Pui Cheung has attended course on electricity.

Mr. Chan Pui Cheung has attended training in seawater pump maintenance at the Estates Office, HKU.

Ms. Cecily Law has attended course at HKU on safety talk for technician.

Mr. Chan Pui Cheung has attended course on hermetically sealed room.

Ms. Sylvia Yiu has attended computer courses at HKU.

Ms. Cecily Law has attended management course at HKU.

Mr. John Kwok has attended the Live Feed Production Workshop & Expedition at AFCD.

Ms. Sylvia Yiu has attended workshops on “Latest Staff Recruitment and Appointment Procedure” at HKU.

Ms. Sylvia Yiu has attended the New Web-based Debit Note System at HKU.

Visitors to SWIMS

Mr. Simon Bennett (Swire Pacific Offshore)
Dr. Ross Coleman (The University of Sydney, Australia)
Dr. Rosemary Golding (Australian Museum, Australia)
Dr. Yunwei Dong (Ocean University of China, Qingdao, China)
Prof. Martin Thiel (Universidad Católica del Norte, Chile)
Mr. Tshifhiwa Given Matumba (Rhodes University, South Africa)
Dr. Jason Hall-Spencer (Marine Institute, University of Plymouth, UK)
Prof. Phil Hammond (Sea Mammal Research Unit, St. Andrews University, UK)
Dr. Hugh Possingham FAA (The University of Queensland, Australia)
Prof. Jan A. Pechenik (Tufts University, USA)
Dr. Howard Browman (Institute of Marine Research, Norway)
Dr. Anne Berik Skiftesvik (Institute of Marine Research, Norway)
Mr. Richard Kendall (Swire Group)
Mrs. Jenny Kendall (Swire Group)
Ms. Maisie Shun Wah (Swire Group)
Mr. J.B. Rae-Smith (Swire Group)
Prof. Paul Tam (Vice-Chancellor's Office, HKU)
Prof. Steven Chen (SBS, HKU)
Prof. C.Y. Ma (SBS, HKU)
Prof. M.L. Chye (SBS, HKU)
Prof. D. Dudgeon (SBS, HKU)
Dr. Billy Hau (SBS, HKU)
Dr. Alice Wong (SBS, HKU)
Dr. Nicole van der Laak (Dept of Chemistry, HKU)
Prof. Minhan Dai (MEL)
Dr. Leo Chan (SBS, HKU)
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Ms. Suzanne Gendron (OPCFHK)
Mr. Timothy Ng (OPCFHK)
Ms. Shadow Sin (OPCFHK)
Dr. Andy Cornish (WWFHK)
Mr. Clarus Chu (WWFHK)
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Ms. Bella Wong (FEO, HKU)
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Mr. Michael Pritchard (KGV)
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Prof. Heather Angel (Natural Visions, UK)
Dr. SG Cheung (City U HK)
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Mr. Syamsul Bahri (Institute of Technology Bandung, Indonesia)
Ms. Olivia Tang (Hong Kong Federation of Youth Groups)
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Mr. Jam Chan (AFCD)
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Ms. PC Tsai (National Taiwan University)
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Mr. HN Chen (National Taiwan University)
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Ms. Karen Lui (ERM-HK)

Institutional abbreviations:

AFCD - Agriculture, Fisheries and Conservation Department;
CUHK - Chinese University of Hong Kong; **City U HK** - City University of Hong Kong; **ERO** - External Relations Office; **ERM-HK** - Environmental Resources Management, Hong Kong; **FEO** - Finance and Enterprises Office; **HKBU** - Hong Kong Baptist University; **HKUST** - Hong Kong University of Science and Technology; **KGV** - King George V School; **MEL** - State Key Laboratory of Marine Environmental Science, Xiamen University, China; **OPCFHK** - Ocean Park Conservation Foundation Hong Kong; **RTHK** - Radio Television Hong Kong; **SBS** - School of Biological Sciences; **WIS** - West Island School; **WWFHK** - World Wide Fund Hong Kong.

Group Visits

- 50 staff and students from King George V School, Dec. 2008
- 41 members from Hong Kong Federation of Youth Groups, Dec. 2008
- 80 staff and student from West Island School (in 2 days), Jan. 2009
- 25 students from Coastal Ecology, HKU, Feb. 2009
- 43 staff and students from Immaculate Heart of Mary College, Feb. 2009
- 36 staff and students from Heung To Middle School, May 2009
- 36 staff and students from Chinese Foundation Secondary School, May 2009
- 43 young ambassadors from The Hong Kong Federation of Youth Groups, July 2009
- 94 staff and student from South Island School (in 2 days), Aug. 2009
- 52 ambassadors from The Swire Properties Community Ambassador, Aug. 2009
- 36 staff and students from King George V School, Sept. 2009
- 35 students from M.Sc. Class, HKU, Sept. 2009
- 63 staff and student from Island School, Sept. 2009
- 30 members from The Hong Kong Underwater Association, Oct. 2009
- 42 staff and students from King George V School, Oct. 2009
- 32 students from Biological Oceanography, HKU, Nov. 2009

- Mr. PBL Lam, Director of Finance Office, HKU
- Ms. Bernadette Tsui and staff, Development and Alumni Affairs Office, HKU
- Ms. Katherine Ma and staff, Communication & Public Affairs Office, HKU
- Directors and staff, WWF HK
- Mr. Alan CK Wong, Director, AFCD
- Mr. Edward Wong, AFCD
- Mr. Patrick Lau, AFCD
- Mr. Alex Kwok and staff, AFCD
- Ms. Anissa SY Wong, Director of Environmental Protection Department
- Mr. Lui and staff, PCCW Cape d'Aguiar station
- Mr. Lam Chiu Ying and staff, the Hong Kong Observatory
- Ms. Suzanne Gendron, Mr. Timothy Ng and staff, Ocean Park Conservation Foundation Hong Kong

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- School of Biological Sciences, HKU
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- Research Services, Registry, HKU
- Ocean Park Conservation Foundation, HK
- King George V School
- West Island School
- Island School
- Clearwater Bay Country Club

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- Prof. Paul Tam, Pro-Vice Chancellor, HKU
- Prof. Sun Kwok and staff, Faculty of Science, HKU
- Prof. Steven Chen, Acting Director, School of Biological Sciences, HKU
- Prof. Rudolf Wu, Director, School of Biological Sciences, HKU
- Mr. KPK Wong, Director, Estates Office, HKU
- Mr. KS Wong, Assistant Director, Estates Office, HKU
- Mr. Tony Wu & Mr. YT Siu and staff, Estates Office, HKU
- Dr. Edmund KM Hau and staff, Safety Office, HKU

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Postgraduates and staff from HKU, Xiamen University and the University of Johannesburg on the Ecology Field Course

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