



The Swire Institute of Marine Science

太古海洋科學研究所



**Annual Report**  
2005

## Honorary Director's Foreword



*Gray Williams lecturing in the Tribuna di Galileo, Florence*

Following our first year, where we contended with the teething problems inherent with a renovation, we have been able to move forward with our research in 2005-2006. With a new influx of postgraduates, we are continuing our work on coastal systems, and the management and conservation of marine resources.

One of our aims this year was to further encourage collaborations and exchanges, both in a local and international context. To promote this we have organized a variety of seminars and workshops as well as hosted a number of exchange students who have contributed to the international research community at SWIMS.

A highlight of the collaborations which help promote students' research experiences was the student Internship Programme sponsored by Ocean Park Conservation Foundation. As you can see from the report, it is a truly enlightening experience, both academically and culturally and we are delighted that OPCF will continue this partnership for the next few years.

In last years Annual Report, I outlined our goal of establishing SWIMS as an internationally recognized center for ecophysiology. This year we have made steps towards achieving this goal in terms of research collaborations, but most notably in organizing a special Symposium on the Ecophysiology of Marine Organisms (SEMO). This symposium involved overseas and local collaborators and was attended by over 60 delegates. It proved a highly interactive and dynamic forum and I am sure will sow the seeds for future collaboration.

Finally - congratulations to ex-SWIMS colleagues Dr. Andy Cornish, who has recently become the Director of Conservation at World Wide Fund for Nature HK; and Dr. Benny Chan who has been appointed at the Research Center for Biodiversity, Academia Sinica in Taiwan - we look forward to collaborating with both Andy and Benny in the future!

*Best wishes for 2006 and the Chinese Year of the Dog  
from the staff and students of SWIMS.*

A handwritten signature in black ink that reads "Gray A Williams". The signature is fluid and cursive.

Gray A Williams



## SWIMS and Ocean Park Conservation Foundation Internship Programme

SWIMS and the Ocean Park Conservation Foundation (OPCF) joined forces in December 2004 to launch the first SWIMS-OPCF Internship Programme, which allowed HKU students the rare opportunity to take part in ongoing, OPCF-funded conservation projects on marine mammals in Southeast Asia.

Three postgraduate and three undergraduate students were selected to participate in two projects in Cambodia for a 10-day period in February 2005: Kevin Kwok and Karen Chan conducted a boat survey of the Irrawaddy dolphin along the Mekong River; while Anna Situ, Wallace Choi, Katy Ho and Heidi Lau helped to promote a Marine Mammals Stranding Network programme in 10 villages along the coast of Cambodia, educating the local residents on marine mammal conservation and on what to do in the event of a stranding incident.

The Internship Programme gave our students first-hand knowledge of regional conservation projects, which they enjoyed despite enduring hardships such as spending long hours monitoring dolphins from an open boat, and having to excavate decomposing dolphin carcasses to confirm species identification. The Internship Programme also allowed the students to experience the wealth of culture and life in rural Cambodia where they were met with tremendous hospitality.

Upon their return to Hong Kong, the students helped to raise local awareness of these projects by sharing their many experiences with fellow HKU students and with the media through a series of interviews and a public seminar. The resounding success of this first Internship Programme has already ensured that a second round of projects will be offered in 2005-06.



*Karen and Kevin surveying Irrawaddy dolphins on the Mekong River*



*Anna, Heidi, Wallace and Katy with villagers in Cambodia*



*Working with local fishermen*



*The SWIMS-OPCF interns with Professor Paul Tam, Professor Nora Tam, and Andy Lau at the 10th Ocean Park Conservation Open Day*

# Symposium on Ecophysiology of Marine Organisms



*Invited speakers & SEMO organizing committee members*

In line with the newly established University Strategic Research Theme 'Environmental Systems', SWIMS has recently focused its research direction on the ecophysiology of marine organisms in relation to environmental change. Anthropogenically induced global climate change is likely to pose a major threat to marine ecosystems, affecting both biodiversity and productivity. These changes will, in turn, have a cascade effect on marine resources and thus a large impact on human populations, particularly those reliant on the sea.

To initiate such an important research development, SWIMS organised a special Symposium on the Ecophysiology of Marine Organisms (SEMO) on 7 September 2005. This symposium attracted over 60 local marine scientists and postgraduate students for a day-long series of talks and discussions and was opened by the Dean of Science, Dr. FC Leung. The main purpose of SEMO was to provide a forum for local and overseas experts to meet and discuss their research findings and the latest advances in marine ecophysiology. The symposium primarily focused on the ecophysiology of organisms exposed to natural and anthropogenic stressors. Talks were delivered by six local and three overseas speakers (Dr. D Morritt, University of London, UK; Dr. M De Pirro, University of Florence, Italy and Dr. D Marshall from Brunei Darussalam University) with topics covering a cohesive range of important aspects such as metabolic depression, cardiology, metal regulation, osmoregulation and feeding ecophysiology, as well as responses of marine organisms to salinity, hypoxia and thermal stress.

The meeting was very successful; participants not only refreshed their knowledge of the field, but also initiated research collaborations. The symposium ended with a dinner at a Peking Restaurant in Wan Chai. Following this event, SWIMS plans to organise another international workshop on marine ecophysiology in early 2007.

*A group photo of all SEMO participants with the Dean of Science, Dr. FC Leung*



## Visit by Sir John Swire

In March we were delighted by a visit from Sir John Swire and his Personal Assistant, Ms. Pamela Ratchford. Sir John was the driving influence at the Swire Group behind the establishment of SWIMS and officiated at the opening ceremonies of the Swire Marine Laboratory in 1990 and of the Swire Institute of Marine Science in 1994. It was a great pleasure to show Sir John around the renovated facilities and to update him on SWIMS developments and future directions.



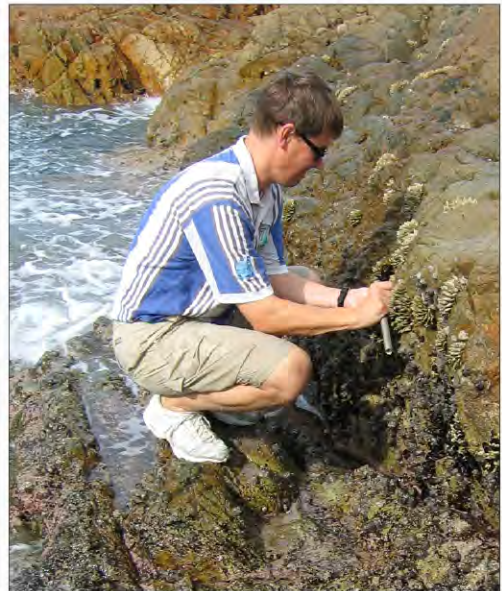
*Sir John Swire, Ms. Ratchford and the Director in SWIMS aquarium*

## Staff Research

### Gray A Williams

My research has continued on the impact of environmental factors on herbivore behaviour, and how this effects community structure. This has progressed in two areas - ecophysiology and computer modeling. Ecophysiology of marine invertebrates is becoming a major focus for SWIMS and this year saw SWIMS staff and overseas colleagues working on the impacts of monsoon rains on limpet physiology.

In terms of computer modeling, together with Dr. Giacomo Santini (Florence University, Italy) and Avis Ngan, we have been using models to predict limpet movement patterns. This builds on collaboration with Giacomo and Prof. Guido Chelazzi. We are applying for funding to take this further in collaboration with Dr. Rick Stafford (a SWIMS graduate), using artificial intelligence protocols to try and predict how individuals interact to form aggregations or move to feed. We believe that simple decisions made by individuals can result in complex patterns at the population level.



*Collecting limpets at Cape d'Aguilar*

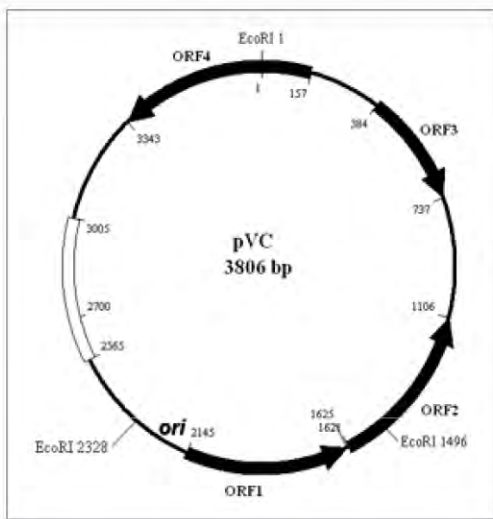
### Cynthia Yau

If there is any conclusion to be drawn from preliminary work on updating the species checklist of cephalopods from Hong Kong waters, it is that more studies are clearly required to resolve the confusion concerning the identifications of certain squid and octopus species from the region. To date, my group and I have identified 7 species of cuttlefishes, 2 species of sepiolids, 6-8 species of neritic (inshore) squids, and 4-7 species of octopuses.

Squids belonging to the commercially important Loliginidae family now form the focus of my Research Grants Committee funded project, in collaboration with Prof. KH Chu from the Chinese University of Hong Kong, to investigate their phylogenetic relationship and ecology. Additional samples collected from a wide geographic range are currently being sought with assistance from overseas cephalopod researchers. The information obtained will be used to rationalize fishery management of these neritic squids.



*A hatching squid*



*Physical map of plasmid pVC isolated from Vibrio cholerae MP-1.*

## Ji-Dong Gu

*Vibrio*, with its high diversity, is becoming the bacterium of choice for environmental and microbial research and is currently being used in my laboratory. Due to its pathogenicity to humans and aquatic life through horizontal gene transfer and gene cassette uptake, *Vibrio* species are situated at an important position in the evolutionary process.

One fundamental mechanism of this process is gene uptake from the environment and then integration into the bacterial genome. Plasmids are mobile genetic elements occurring widely in the environment and also found in bacteria which allow them better resistance to higher concentrations of toxic chemicals. My lab has shown that a high frequency of plasmid formation is associated with *Vibrio* species in Hong Kong and subsequent analysis has been carried out to delineate the information encoded in the plasmids.



*Kenny weighing limpets exposed to rainwater*

## Kenny Leung

Is it safe to eat shellfish from polluted marine environments? If yes, how many can be consumed and what are the acceptable or safe levels for pollutants in marine ecosystems? These questions can be addressed through probabilistic ecological risk assessments, which is one of my areas of expertise. Together with other local experts, I am collaborating in the Centre of Marine Environmental Research and Innovative Technology (MERIT), a recognized Area of Excellence under the University Grant Committee scheme. Since the establishment of MERIT, I have successfully developed, with Prof. John Gray (Oslo University, Norway), an improved method to derive ecologically relevant sediment quality guidelines.



*Yvonne meeting with fishermen in a village following research interviews in Fiji*

## Yvonne Sadovy

Over the last year I have been involved in projects that have as their goals a better scientific understanding of vulnerable, exploited, marine resources and education. My reef fish work in the western Pacific documents the history and current status of spawning aggregations by field work and by interviewing fishermen in their villages. Some of the fish caught by these villagers end up in Hong Kong restaurants and their aggregations are easy to overfish. This project is conducted by the Society for the Conservation of Reef Fish Aggregations ([www.scrfa.org](http://www.scrfa.org)), of which I am Director.

In addition, my work for IUCN (World Conservation Union) focuses on groupers (Serranidae) and wrasses (Labridae), in Hong Kong and internationally, with the aim of better managing and conserving populations of these vulnerable food species.

# Post Doctoral Fellows

## Liu Min

Groupers are commercially important and high value marine fishes. Liu Min is studying sexual patterns in this group which are more variable than previously thought. Liu Min has previously demonstrated that social factors influence sexual differentiation in *Cephalopholis boenak*; and is furthering this work on a RGC project with the orange-spotted grouper *Epinephelus coioides* in collaboration with Dr. Harry Grier (Florida Marine Research Institute, USA), Yvonne Sadovy, Prof. Irani Quagio-Grassiotto (UNESP, Brazil) and Dr. Fabiana Lo Nostro (University of Buenos Aires, Argentina).



*Liu Min in her SWIMS office*

## Wai Tak Cheung

Wai Tak Cheung has been collaborating with Kenny Leung, focusing on the environmental impact of open-sea-cage fish farms on subtidal communities using carbon and nitrogen stable isotope ratios and fatty acid analyses. Wai was able to show that fish farm wastes are a potential organic source for plankton and filter/suspension feeders. Algal derived matter was, however, the main source for grazers and deposit-feeders. Fish farm impact on marine communities ranged from 200 - 800 m depending on tidal current. Wai's study highlights the importance of considering both biochemical and tidal data when predicting impacts from a point source of pollution.



*Sea cucumber - a good bioindicator of pollution*

## Benny Chan

Benny Chan has interests in supply-side ecology, population ecology and crustacean (especially barnacle) biology. Recently, Benny took up a position in the Research Centre for Biodiversity, Academia Sinica, Taiwan. Benny's research focuses on the ecology and biodiversity of W. Pacific shallow water and deep sea barnacles in collaboration with colleagues in China, Taiwan, Japan, UK and Denmark. In 2005 Benny, together with Gray Williams and Prof. KH Chu, The Chinese University of Hong Kong was awarded an RGC grant to research into supply-side ecology and population genetics of *Tetraclita* spp. from Japan to southern China.



*Tetraclita japonica cyprid*

## Andy Cornish

Andy Cornish continued his research into the only resident shark left in Hong Kong waters, the White-spotted bamboo shark (*Chiloscyllium plagiosum*). Stomach content analysis revealed that juveniles eat shrimps and worms, while adults prefer fishes and squid. Collaboration with Dr. S Mantel using stable isotope analysis revealed which food items are most assimilated into the tissues of the animal. Separate collaborations with Kenny Leung and Yvonne Sadovy examined the heavy metal loadings of various tissues and the reproductive life of this species. The diet of this species indicates it is actually not a top-level predator.



*White-spotted bamboo shark*

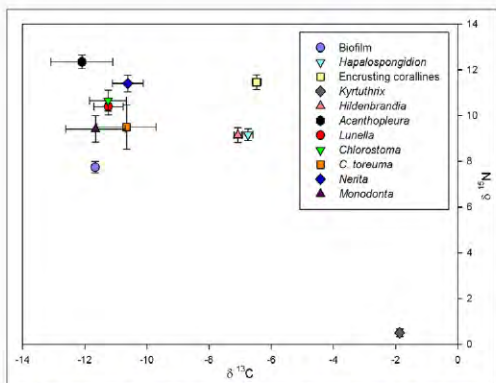
# Postgraduate Research



*Avis & Giacomo working on their model*

## Environmental stress and behavioural plasticity

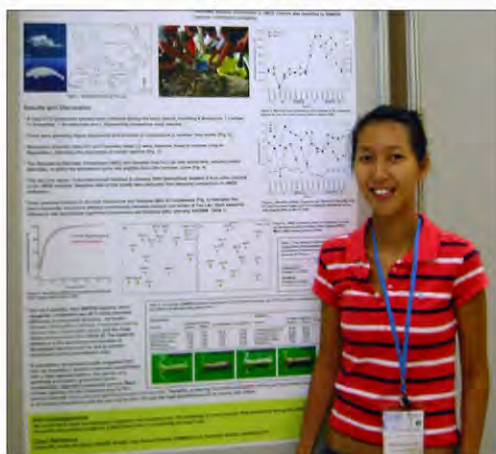
Avis Ngan's project aims to predict the spatial distribution of grazing by the limpet *Cellana grata*. By studying the rules governing the organisation of limpet foraging in time and space, and using computer simulations to predict foraging under different environmental parameters, Avis aims to deliver a predictive tool and a mechanistic understanding of the relationship between *C. grata* and the biofilm on which it feeds. Avis is currently writing up his findings and the computer models which Avis is using have been developed in conjunction with researchers from Florence University, Italy.



*A bi-plot of stable isotope results showing distinctive trophic niches*

## Identifying patterns of resource partitioning

Jasmine Ng's previous work showed that the chiton, *Acanthopleura japonica*, varied their foraging strategies in different seasons and at different resting heights, demonstrating an opportunistic nature. Her current research deals with resource partitioning of herbivores. Using conventional dietary analysis with new biochemical approaches, such as stable isotope signatures and fatty acid profiles, Jasmine is investigating dietary patterns and overlap and will use her results to interpret interactions and resource partitioning of intertidal molluscs.



*Karen presenting a poster at a conference*

## Mantis shrimp research in southern China

Karen Lui has recently completed her M.Phil and is currently working as a research assistant investigating the biodiversity of soft shores in Hoi Ha Wan Marine Park. During the last two years, she studied the ecology of commercially important stomatopods (mantis shrimp). Karen also examined the genetic structure of six different populations of the most abundant species, *Oratosquilla oratoria*, using mt DNA sequencing, and successfully identified two distinct populations. Her work provides invaluable information of stomatopod stocks in southern China, which will be particularly important for sustainable management of these species.



*Anna getting ready for diving*

## Fish larval assemblages in Cape d'Aguilar

Anna Situ's research focuses on the very early life history phase of fishes when mortality can approach 100%. Understanding this pelagic stage is vital to resource management. Anna is studying the larval assemblage in and around the Cape d'Aguilar Marine Reserve, with a focus on fishes. Such basic information can contribute to later assessment of the function of the marine reserve and management options. As there is no local fish larvae expert, Anna recently visited Prof. Chiu Tai-sheng's laboratory in National Taiwan University to learn identification techniques.



## Defining "safe" concentrations for industrial chemicals

For our convenience, mankind has created an arsenal of more than 100,000 chemicals, many of which enter the marine environment and can be harmful. Whether these cause adverse effects depend on their concentrations, physicochemical conditions and organism sensitivity. Kevin Kwok's research focuses on finding the concentrations of an array of industrial chemicals that are unlikely to result in adverse effects and which can be used as legal water quality guidelines (WQGs). Research outcomes from Kevin's work will provide better models for derivation of ecologically relevant WQGs for the SE-Asian region that can safeguard marine organisms.



*A local ecotoxicity test copepod species, Tigriopus japonicus*

## Ecological risks of anti-fouling biocides

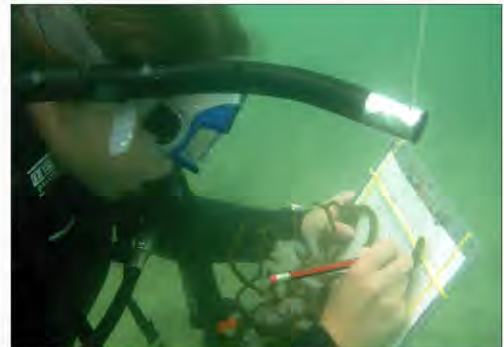
Biocides are often applied to ship hulls to prevent fouling. These biocides can leach into the water column and are toxic. Organotin compounds such as tributyltin, have been widely used and partially banned due to their severe toxicity. To replace organotins, a new generation of antifouling biocides has been developed, but their toxicities are largely unknown. Vivien Bao is investigating the toxicity and ecological risk of these biocides on a diverse range of tropical marine organisms. Ecologically relevant and regional-specific water quality criteria for these new biocides will be established based on the results of her study.



*Vivien working on her toxicity tests*

## Reproductive biology & ecology of loliginid squid in Hong Kong

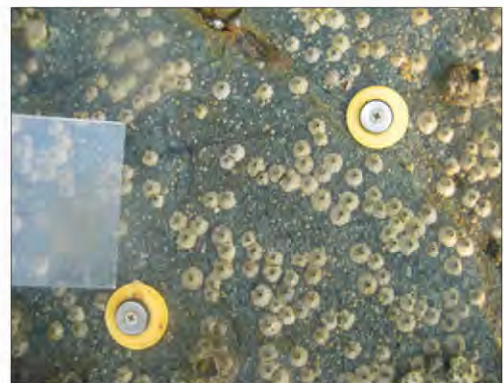
Recreational jigging for the squid, *Uroteuthis*, in Sai Kung is a potentially sustainable fishery. It is believed that these squids migrate into Port Shelter to mate and spawn during the summer. Wallace Choi is investigating the reproductive biology of *Uroteuthis* to determine population dynamics, sexual development, spawning seasonality and fecundity. Wallace's work will provide new information on the reproductive ecology of *Uroteuthis*, which can be used to devise management strategies to ensure that the squid fishery is sustainable.



*Underwater survey counting squid eggs*

## Supply-side ecology of an acorn barnacle

To study the supply-side ecology of the barnacle *Tetraclita*, Damgy Chan has measured the larval supply, settlement and recruitment success on four shores. Her findings show that larval supply and recruitment success are key stages in the barnacles' life history but that their importance varies spatially. Damgy is currently using genetic approaches to investigate if selection pressure on *T. japonica* is genotype-dependent, with Prof. KH Chu (Chinese University of Hong Kong). Damgy is planning to incorporate her findings with known oceanic processes along the South China coast to elucidate the source of *T. japonica* larvae arriving on Hong Kong shores.



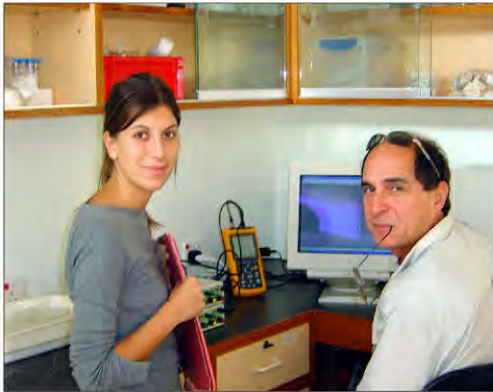
*Newly settled barnacles*



*Olivia counting sea urchins underwater*

## How effective is the marine reserve at protecting sea urchins?

Throughout 2005, Olivia Stark, an exchange student from Oldenburg, Germany, studied the heavily harvested sea urchins *Anthocidaris crassispina* and *Diadema setosum*. As Cape d'Aguilar is the only Marine Reserve in Hong Kong, Olivia's research aims to determine the spatial and temporal distribution patterns of these two urchins and compare data with surveys conducted in 1983 and 1996. Olivia showed that several sites no longer support urchins although numbers in the Marine Reserve appear stable. Olivia's study, therefore, provides useful information for AFCD to develop a regulation strategy for management.



*Giada & Guido working in SWIMS*

## Effect of copper on cardiac activity of the chiton *Acanthopleura*

In October, Prof. Guido Chelazzi (University of Florence, Italy) returned to conduct research with one of his PhD students, Ms. Giada Bini. Guido has been a long-term collaborator at SWIMS and so it was great pleasure to welcome him back.

Guido and Giada studied the effect of copper on the cardiac physiology of the chiton, *Acanthopleura*. Using pharmacological tools, ( $\text{Na}^+$  channel blockers, and antagonists of the cholinergic system), they investigated if modifications of cardiac activity, and consequent variation in haemolymph circulation induced by acute copper exposure, are due to an impairment of the intrinsic, myogenic activity of the heart or to an external, neuronal control of heart rate.



*Melina measuring water temperature on the shores of Cape d'Aguilar*

## Supralittoral rock pools as refuges for snails

Melina J. Garcia conducted a 3 month project as part of a Minor for her Biochemistry degree from Concordia University, Montreal. Her study investigated the behavioural patterns of a high shore snail, *Echinolittorina trochoides*, in response to variation in supralittoral rock pool conditions. During low tide, these small gastropods are left exposed on the shore where they can remain emersed for several days. At these times, rocks pools are important refuges for the snails. In studying the effects of water temperature, salinity, oxygen levels, pool size and depth, Melina revealed the importance of pools as refuges for these snails.



*Exchange students Olivia, Melina and Giada enjoy Hong Kong*



*Tilly and Andy deploying fish traps*



*Soldier crabs*

## Part-time researchers at SWIMS

A number of postgraduates use SWIMS as a temporary base for their research, especially when their field sites are in the New Territories or their work requires access to facilities at HKU.

Allen To works on the biology of local groupers, *Epinephelus awoara* and *E. quoyanus*, specifically their reproductive biology. His results provide important biological information for subsequent fishery management of the declining stocks of local groupers.

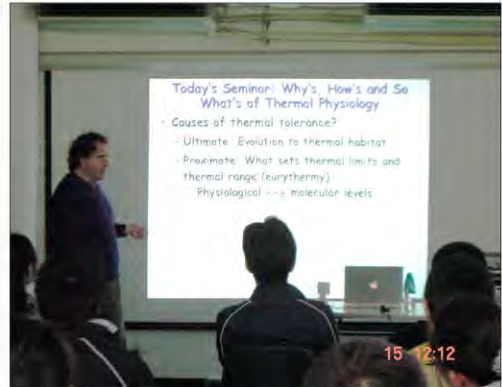
Janet Lee studies sandy shore soldier crabs, documenting the size difference and sexual variation in their behaviour with tidal level. Currently, she is working on the impact of this animal on the meiobenthic community structure of the shore.



*A small but curious grouper*

## Research Visitors and Seminars

This year kicked off with a seminar from Dr. J Stillman (University of Hawaii, Manoa) on thermal tolerance of Porcelain crabs. Jonathon's work using microarrays to investigate genetic selection, attracted a lot of interest, and discussions lasted well into the Christmas Party which followed his talk. Throughout the year visiting scientists gave informal seminars at SWIMS including Prof. Mike Kingsford (James Cook University, Australia) and Dr. Laurie Chan (McGill University, Canada). We also initiated informal, in-house seminars to discuss students' research methods and plans.



*Jonathon giving his seminar at SWIMS*

Dr. Maria Milicich (Milicich & Co Ltd, Hong Kong) and Dr. Lynnath Beckley (Murdoch University, Australia) visited at separate times to work with Anna Situ helping with fish larvae identification and Dr. Ng Wai Chuen also helped Anna with seine netting. Dr. John Wong (HK Marine Conservation Society), Prof. Wang Peilie (Liaoning Ocean and Fisheries Science Research Institute, China) and his daughter visited to examine the whale skeleton outside SWIMS.



*Ryan Hechinger studying local Batillaria*

Dr. Ryan Hechinger (University of California, Santa Barbara) worked in the Museum on parasites of mangrove snails. Dr. Giacomo Santini (Florence University, Italy) stayed for a week to work with Gray Williams and Avis Ngan, refining models of limpet behaviour and also gave two seminars. Following on from the Symposium on the Ecophysiology of Marine Organisms, Dr. David Marshall (Brunei Darussalam University) stayed on to discuss research topics, as did Dr. Roger Uglow (Hull University, UK). Drs. Dave Morrith (University of London, UK) and Maurizio De Pirro (Florence University, Italy) worked with SWIMS staff on the impact of summer monsoons on limpet physiology. During their stay they also trained staff and students in various physiological techniques.



*Maurizio De Pirro measuring heart rates of limpets exposed to rain*

Locally, Dr. Roger Kendrick (Kadoorie Farm and Botanical Gardens); Dr. Richard Cheung (City University); Prof. Ron Hill (DEB); Prof. John Malpas and students (PVC, Department of Earth Science) have all used SWIMS facilities for their research.



*Limpets being monitored in the rain machine*

A number of overseas students came to SWIMS as part of their degree programmes. Ms. Olivia Stark (Oldenburg, Germany) stayed at SWIMS for 2005 to research her Masters thesis. Ms. Ottila Thoreson and Mr. Tom Gallagher (University of Wales, Bangor, UK) worked over the summer on their MSc theses, focusing on trapping reef fish and starfish predation, respectively. In the winter, Ms. Melina Garcia (Concordia University, Canada) worked on her BSc project. Ms. Giada Bini also worked at SWIMS for a month, together with Prof. Guido Chelazzi (Florence University, Italy), on heart rates in copper-stressed chitons. So many visitors from overseas institutions has greatly helped diversify SWIMS focus, especially the social atmosphere and the number of different languages used at the Residence!

## Community Outreach



*School students learning survey techniques at Cape d'Aguilar*

SWIMS has maintained a high presence in terms of outreach to local schools, giving seminars and leading fieldtrips. This year has seen visits from Island School; South Island School; King George V; Immaculate Heart of Mary College and Tai Po Secondary School. As last year, students from West Island (Ms. Sameen Mazhar) and South Island School (Ms. Jeanine Ezech and Alissa Wong) spent their work experience programmes at SWIMS. SWIMS also hosted visits from the 7th Hong Kong Scout Group and Hong Kong Young Ambassadors (HK Federation of Youth Groups).



*Liam Bailey, an Island School 6<sup>th</sup> former, working at SWIMS during the summer*

In terms of University interactions, a number of different faculties have visited, including groups from the Faculty of Medicine; Faculty of Science (Summer Science Institute) and HKU SPACE. Coastal Ecology undergraduate students conducted their projects and took part in a research seminar and students of the MSc in Environmental Management also visited SWIMS to attend a seminar and conduct fieldwork.

SWIMS featured prominently in the local press during 2005. In December, the Pearl Report (TVB) highlighted research at SWIMS. Features on research and local species have also appeared in the "Green Corner" of Ming Pao newspaper.

We were also very lucky with the number of students who either joined us as Research Assistants or volunteered to gain work experience, helping with research projects. Many thanks to all those helpers!



*Some of the many cheerful summer helpers at SWIMS*

## SWIMS and the MBAHK

SWIMS and The Marine Biological Association of Hong Kong (MBAHK) co-organized a series of events. In December 2004, Ms. Jo Ruxton presented the BBC's "Deep Blue" film. In November 2005, SWIMS jointly hosted, together with the Atmospheric, Marine and Coastal Environment Programme, HKUST, a workshop on "Hong Kong's waters: how transport processes influence distribution patterns". Over 80 researchers and members of MBAHK attended to hear presentations by Prof. Joseph Lee (HKU), Prof. Jinping Gan (HKUST) and Prof. I-I Lin (National Taiwan University). Both Gray Williams (Vice Chairman) and Kenny Leung (Librarian) sit on the MBAHK council, whilst Sylvia Yiu maintains the Library which is housed at SWIMS.



*Prof. Paul Harrison acknowledging the speakers & supporters of the Hong Kong's waters Workshop*

## International Marine Conservation: fins, food and fish

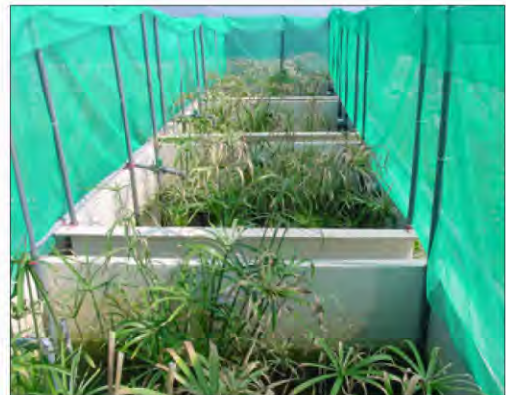
With increasing evidence of overfishing and growing concern for the conservation of several fish groups, we are active in local and international conservation initiatives. In addition to the SCRFA work (see Yvonne Sadovy's research), we have been vocal in supporting a reduction in the consumption of shark fins. We also provide expert advice for various WWF-HK projects, and are assisting Indonesia, a major exporter of the Napoleon wrasse, *Cheilinus undulatus* (蘇眉), to develop fishery management plans for this CITES - Appendix II - listed species. Ultimately, such projects will promote sustainable resource use and consumption.



*The endangered Napoleon wrasse, Cheilinus undulatus*

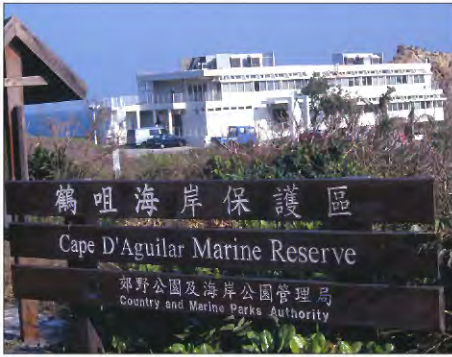
## Cleaner Effluent by Greener Treatment

In collaboration with Dr. Josie Close and Mr. Jasper Ip (Centre of Renewable Energy, Architecture Department, HKU) and Dr. Albert Koenig (Civil Engineering Department, HKU), Kenny Leung has been working on a project funded by the Environment and Conservation Fund to improve SWIMS sewage effluent quality and help recycle wastewater. An artificial wetland with *Cyperus* plants has been constructed which can reduce nutrients and suspended solids in wastewater prior to UV disinfection powered by renewable solar energy.



*SWIMS artificial wetland*

Preliminary results suggest that this advanced system not only effectively removes nutrients, suspended solids and faecal bacteria but also generates a more environmentally friendly effluent, rather than the chlorinated effluent which is toxic to marine microalgae. This system therefore demonstrates an environmentally friendly, chemical-free, treatment scheme using renewable energy that can be applied in remote rural locations.



2005 has seen a great deal of interaction between SWIMS and AFCD. In light of the continued threats from illegal fishing, Mr. Alex Kwok and staff mounted a number of overnight vigils from the SWIMS Residence and were able to apprehend illegal fishers. AFCD staff also maintained round-the-clock watches during the spawning season of the heavily exploited sea urchin, *Anthocidaris*. Mr. Edward Wong and Mr. Patrick Lau have continued to work closely with SWIMS staff to rationalize the existing permit system. Researchers at SWIMS are very grateful for the positive and active assistance of AFCD on all these matters.

## SWIMS, Big Fish Count and ReefCheck



*The HKU SWIMS Big Fish Count Team*

SWIMS continue to support local activities to raise public awareness on marine conservation. The Big Fish Count, organized by WWF HK, aims to arouse public interest in reef fish diversity. This year, the "HKU SWIMS Team", broke their 2004 record and recorded 92 species of fish from 3 sites around Sai Kung.

ReefCheck is a global monitoring programme to monitor coral reefs using volunteer divers trained in ReefCheck survey techniques. SWIMS supported the event with Dr. Ng Wai Chuen as the guest speaker in the fish identification training session, and formed a survey team led by Allen, To Wai Lun and Dr. Wai Tak Cheung, to monitor the coral community and associated fish and invertebrates in Long Ke Wan.



*The SWIMS ReefCheck team*

# Research Opportunities

## Research visitors

The Swire Institute of Marine Science offers three main 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 Woodward, to bring young people to SWIMS to undertake research in marine biology with a resident staff member. Ms. Giada Bini (Florence University, Italy) was the successful recipient of the scholarship in 2005.

## 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 and 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 and Gray Williams sits on the committee of their Fellowship Exchange Scheme.

## 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

Accommodation at the Residence is available for students, researchers and visitors working at SWIMS. It is also available to outside visitors who wish to enjoy the scenic serenity Cape d’Aguilar has to offer. It is an ideal retreat from the city on weekdays and makes a perfect getaway for quiet weekends.

SWIMS residential blocks are situated on the top of Cape d’Aguilar cliffs, offering magnificent sea views of the southern islands of Po Toi and Waglan, and west, behind the residence, where there are steep dramatic cliffs and views of Shek O.

Those interested in booking the accommodation, please contact Ms. Sylvia Yiu.



*Residential block overlooking the Marine Reserve*

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- Leung KMY, Dewhurst RW, Halldórsson H, Svavarsson J (2005) Metallothioneins and trace metals in the dogwhelk *Nucella lapillus* (L.) collected from Icelandic coasts. *Marine Pollution Bulletin* 51: 729-737
- Li J, Gu J-D, Yao J-H (2005) Degradation of dimethyl terephthalate by *Pasteurella multocida* Sa and *Sphingomonas paucimobilis* Sy isolated from mangrove sediment. *International Biodeterioration & Biodegradation* 56: 158-165
- Li J, Gu J-D, Pan L (2005) Transformation of dimethyl phthalate, dimethyl isophthalate and dimethyl terephthalate by *Rhodococcus ruber* Sa and modeling the processes using the modified Gompertz model. *International Biodeterioration & Biodegradation* 55: 223-232
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- Liu M, Sadovy Y (2004) The influence of social factors on adult sex change and juvenile sexual differentiation in a diandric, protogynous epinepheline, *Cephalopholis boenak* (Pisces, Serranidae). *Journal of Zoology* 264: 239-248
- Liu M, Sadovy Y (2005) Habitat association and social structure of the chocolate hind, *Cephalopholis boenak* (Pisces: Serranidae: Epinephelinae), at Ping Chau Island, northeastern Hong Kong waters. *Environmental Biology of Fishes* 74(1): 9-18
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- Sadovy Y, Randall JE, Rasotto MB (2005) Skin structure in six dragonet species (Gobiesociformes; Callionymidae): interspecific differences in glandular cell types and mucus secretion. *Journal of Fish Biology* 66: 1411-1418
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- Wang Y, Gu JD (2005) Influence of temperature, salinity and pH on the growth of environmental isolates of *Aeromonas* and *Vibrio* species isolated from Mai Po and the Inner Deep Bay Nature Reserve RAMSAR site of Hong Kong. *Journal of Basic Microbiology* 45: 83-93
- Williams GA, De Pirro M, Leung KMY, Morrill D (2005) Physiological responses to heat stress on a tropical shore: the benefits of mushrooming behaviour in the limpet *Cellana grata*. *Marine Ecology Progress Series* 292: 213-224
- Xu XR, Li HB, Gu JD (2005) Biodegradation of an endocrine-disrupting chemical di-*n*-butyl phthalate ester by *Pseudomonas fluorescens* B-1. *International Biodeterioration & Biodegradation* 55: 9-15
- Xu XR, Li HB, Gu JD (2005) Kinetics of the reduction of chromium(VI) by vitamin C. *Environmental Toxicology and Chemistry* 24: 1310-1314
- Xu XR, Li HB, Gu J-D (2005) Degradation of *n*-butyl benzyl phthalate by *Pseudomonas fluorescens* B-1 isolated from mangrove sediment. *Journal of Microbiology and Biotechnology* 15: 946-951
- Yan Y, Chan BKK (2004) Larval morphology of a recently recognized barnacle, *Chthamalus neglectus* (Cirripedia:Thoracica:Chthamalidae), from Hong Kong. *Journal of Crustacean Biology* 24: 519-528
- Yan Y, Miao SY (2004) The effect of temperature on the reproductive cycle of the tropical barnacle *Chthamalus malayensis* Pilsbry (Cirripedia). *Crustaceana* 77: 205-212
- Yin B, Gu J-D, Wan N (2005) Degradation of indole by enrichment culture and *Pseudomonas aeruginosa* Gs isolated from mangrove sediment. *International Biodeterioration & Biodegradation* 56: 243-248



*SWIMS researchers and students feature on the covers of the HKU annual reviews for the University and its research.*

# Other Contributions from SWIMS

## Academic Contributions

### Ji-Dong Gu

Member of Editorial Boards: Biodegradation, International Biodeterioration & Biodegradation, Ecologic Science, Journal of Tropical Oceanography, Water and Wastewater, Chinese Journal of Applied Ecology  
Member of the International Advisory Committee, State Key Laboratory of Marine Environmental Science at Xiamen University (2005-)

### Kenny Leung

Member of Editorial Board: Integrated Environmental Assessment and Management

### Yvonne Sadovy

Director, Society for the Conservation of Reef Fish Aggregations (SCRFA)  
Chair, IUCN Specialist Group for Groupers and Wrasses  
Co-Chair SSC Marine Conservation Sub-Committee  
International Advisory Council of the University of British Columbia Fisheries Centre  
Member, Scientific Advisory Committee of the Palau International Coral Reef Centre  
Chair, Conservation Projects Committee, WWF-HK  
Member of Editorial Boards: Conservation Biology, Fish & Fisheries, Reviews in Fish Biology & Fisheries.

### Gray A Williams

Member of Pacific Institutes of Marine Science Fellowship Committee

## Conferences and Workshops

### Benny Chan

Institute of Marine Biology, The National Sun-Yatsen University, 12 Dec. 2005, Kaoshiung, Taiwan.  
Oral presentation; The Annual meeting of the Fishery Society of Taiwan, 10-11 Dec. 2005, Taiwan.  
Institute of Marine Biology, The National Taiwan Ocean University, 7 Dec. 2005, Keelung, Taiwan.  
Invited presentation; The 6<sup>th</sup> APEC roundtable meeting on the development of the business/private sector in the sustainability of the marine environment, 6-8 Oct. 2005, Taipei, Taiwan.  
Invited presentation; 2005 Asia-Pacific Conference on Marine Pollution Prevention and Control, 4-6 Oct. 2005, Kaohsiung, Taiwan.  
Invited presentation; Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

### Ji-Dong Gu

Invited presentation; Seminar on Microbiology in Food and Water, Analytical Technique and Applications, 1-2 Dec. 2005, Macau, China.  
The Biology of *Vibrios*: Biodiversity, Genomics, Disease/Epidemiology, Ecology and Applications, 7-8 Nov. 2005, Ghent, Belgium.  
International Symposium on Greenhouse Gas and Carbon Balances in Mangrove Coastal Ecosystems, 3-5 Oct. 2005, Tsukuba, Ibaraki, Japan.

International Symposium on Wetland Pollutant Dynamics and Control, 4-9 Sept. 2005, Ghent, Belgium.

10<sup>th</sup> International Symposium on the Interactions between Sediments and Water, 28 Aug.-2 Sept. 2005, Bled, Slovenia.

Invited presentation; The 8<sup>th</sup> National Symposium on Environmental Microbiology, 14-17 Aug. 2005, Harbin, China.

3<sup>rd</sup> International Workshop on Space Microbiology, 22-25 May 2005, Mol, Belgium.

Invited presentation; Swiss Federal Laboratories for Materials Testing and Research (EMPA), 20 May 2005, St. Gallen, Switzerland.

Invited presentation; Swiss Federal Institute for Water Resources and Water Pollution Control (EAWAG), 18-19 May 2005, Dübendorf, Switzerland.

BioMicroWorld 2005 - International Conference on Environmental, Industrial and Applied Microbiology, 14-18 Mar. 2005, Badajoz, Spain.

Asia Pacific Symposium on Environmental Geochemistry, 18-21 Jan. 2005, Perth, Australia.

### Kenny Leung

Special Workshop on Hong Kong's waters: how transport processes influence distribution patterns, 5 Nov. 2005, The Swire Institute of Marine Science, Hong Kong.

Co-organizer; 1<sup>st</sup> Marine Biological Association of Hong Kong Postgraduate Symposium, 22 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

Invited presentation; 5<sup>th</sup> International Conference on Metallothionein, 8-12 Oct. 2005, The Beijing Friendship Hotel, Beijing, China.

Co-organizer; Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

6<sup>th</sup> International Crustacean Congress, 16-22 July 2005, University of Glasgow, United Kingdom.

IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong.

### Liu Min

Symposium of Endangered Wild Animal & Plant Species Trade of Guangdong Province-HKSAR, 10 Dec. 2005, Shenzhen, China.

Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

Workshop of Immunocyto-Chemical Technique, 20-22 Feb. 2005, UNESP, Botucatu, Brazil.

### Yvonne Sadovy

Speaker; Gulf and Caribbean Fisheries Institute Annual meeting, 7-11 Nov. 2005, San Andres, Colombia.

Speaker; Workshop on spawning aggregations in Lakeba, Fiji, 10-18 Oct. 2005, with Fisheries Research Department, Fiji, Japan.

Steering Committee meetings of the Species Survival Commission, 4-7 June 2005, Gland, Switzerland. 6-9 Dec. 2005, Puerto Madryn, Argentina.

Invited keynote address; 7<sup>th</sup> Indo-Pacific Fish Conference, 16-20 May 2005, Taipei, Taiwan.

Invited speaker; Workshop on threat criteria for the Canadian government, 2-4 Mar. 2005, Committee on the Status of Endangered Wildlife in Canada, Halifax.

Invited keynote address; Bevan Lecture Series, 24 Feb. 2005, University of Washington, USA.

### **Wai Tak Cheung**

Special Workshop on Hong Kong's waters: how transport processes influence distribution patterns, 5 Nov. 2005, The Swire Institute of Marine Science, Hong Kong.

Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

Oral presentation; Biology in Asia International Conference, 7-12 Dec. 2004, National Institute of Education, Nanyang Technological University, Singapore.

### **Gray A Williams**

Invited speaker; Marine Annual Research on Invertebrate Symposium: State of the Art in Ecology, Ethology, Conservation and Evolution of Marine Invertebrates, 28-30 Nov. 2005, Florence University, Italy.

Co-organizer; Special Workshop on Hong Kong's waters: how transport processes influence distribution patterns, 5 Nov. 2005, The Swire Institute of Marine Science, Hong Kong.

Invited Speaker; BioLife Series. 25 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

Co-organizer; Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

Invited speaker; ACME programme, 18 Feb. 2005, The Hong Kong University of Science and Technology.

### **Cynthia Yau**

Special Workshop on Hong Kong's waters: how transport processes influence distribution patterns, 5 Nov. 2005, The Swire Institute of Marine Science, Hong Kong.

Co-organizer; Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

Oral Presentation; IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong.

## **Postgraduates**

### **Vivien Bao**

Marine Environmental Research and Innovative Technology Opening Ceremony and Annual Symposium, 28 Jan. 2005, Centre for Marine Environmental Research and Innovation Technology, City University of Hong Kong.

### **Wallace Choi**

IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong, Hong Kong.

### **Kevin Kwok**

Poster presentation; 6<sup>th</sup> International Crustacean Congress, 17-22 July 2005, The University of Glasgow, UK.

Oral Presentation; 1<sup>st</sup> Marine Biological Association of Hong Kong Postgraduate Symposium, 22 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

Short Course in Environmental Health Risk Assessment, 18-22 July 2005, The University of Queensland, Australia.

### **Karen Lui**

Oral & Poster Presentation; IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong, Hong Kong.

Oral & Poster Presentation; 6<sup>th</sup> International Crustacean Congress, 16-22 July 2005, University of Glasgow, UK.

Oral Presentation; 1<sup>st</sup> Marine Biological Association of Hong Kong Postgraduate Symposium, 22 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

### **Jasmine Ng**

Poster Presentation; IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong, Hong Kong.

Oral Presentation; 1<sup>st</sup> Marine Biological Association of Hong Kong Postgraduate Symposium, 22 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

### **Anna Situ**

IUCN World Commission on Protected Areas: the 5<sup>th</sup> Conference on Protected Areas of East Asia, 21-25 June 2005, The Chinese University of Hong Kong, Hong Kong.

### **Avis Ngan, Damgy Chan, Jasmine Ng, Karen Lui, Vivien Bao, Kevin Kwok, Anna Situ, Wallace Choi, Janet Lee, Allen To**

Symposium on Ecophysiology of Marine Organisms, 7 Sept. 2005, The Swire Institute of Marine Science, Hong Kong.

Hong Kong's waters: how transport processes influence distribution patterns, 5 Nov. 2005, The Swire Institute of Marine Science, Hong Kong.

### **Damgy Chan, Anna Situ, Vivien Bao, Wallace Choi, Janet Lee, Allen To**

1<sup>st</sup> Marine Biological Association of Hong Kong Postgraduate Symposium, 22 Oct. 2005, The Chinese University of Hong Kong, Hong Kong.

## Student Graduations

### Ph.D

**Xu Xiangrong** (2005) - Reductive detoxification of hexavalent chromium and degradation of methyl tertiary butyl ether and phthalate esters.

### M.Phil

**Chow Chi Yui** (2005) - Foraging behaviour of *Thais clavigera*: the interplay of environmental variation and predator behaviour on sheltered rocky shores.

**Qiu Wanfei** (2005) - Reproductive biology, space use and trophic status of *Entomacrodus stellifer lightii* (Pisces: Blenniidae) in Hong Kong.

**Tsui C.Y. Justine** (2005) - Evaluation of telomere length as an age-marker in marine teleosts

**Wang Yuping** (2005) - Degradation of dimethyl phthalate, dimethyl isophthalate and dimethyl terephthalate by bacteria from deep-ocean sediment.

## Staff Training

Mr. Simon Wong has attended the First Aid Refresher Course and passed the examination.

## Visitors to SWIMS

### Delegates for SEMO

Dr. Ang Put (CUHK)  
Dr. Doris Wai Ting Au (City U HK)  
Ms. Chan Ho Yan (City U HK)  
Mr. Chan Ka Ming (HKU)  
Mr. Cheang Chi-chiu (CUHK)  
Mr. Eric XH Chen (City U HK)  
Ms. Chen Yan (City U HK)  
Ms. Cheung Hin Ying (City U HK)  
Ms. Cheung Ma Shan (HKUST)  
Dr. SG Cheung (City U HK)  
Ms. Jill Chiu (HKUST)  
Mr. Justin Kit Yan Chu (City U HK)  
Dr. Maurizio De Pirro (University of Florence, Italy)  
Mr. Gao Qinfeng (City U HK)  
Mr. Ho Yam Tat (HKUST)  
Mr. Hung Oi Shing (HKUST)  
Ms. Kwok Sin Tung (City U HK)  
Dr. Liang Yan (HKBU)  
Mr. Lam Wai Yip (City U HK)  
Mr. Leung Ka King (City U HK)  
Dr. KF Leung (EPD)  
Ms. Li Hiu Yan (City U HK)  
Ms. Sunny XY Lu (City U HK)  
Dr. David Marshall (University of Brunei Darussalam)  
Ms. Flora SY Mok (HKUST).  
Ms. Helen OL Mok (City U HK),  
Dr. David Morrirt (University of London, UK)  
Dr. Tania Ng (HKUST)  
Dr. JW Qiu (HKBU)  
Ms. Shang Hui Hua (City U HK)  
Mr. Shen Hua (City U HK)  
Dr. Paul Shin (City U HK)  
Ms. Tsui Siu Ying (City U HK)  
Dr. WX Wang (HKUST)  
Ms. Dorothy Wong (HKBU)  
Prof. Norman Woo (CUHK)  
Prof. Rudolf Wu (City U HK)  
Mr. Xu Jing Liang (City U HK)  
Ms. Yip Ka Man (City U HK)  
Dr. Zhang Yixin (DEB, HKU)

## Delegates for Hong Kong's Workshop

Prof. Joseph Lee (Department of Civil Engineering, HKU)  
Prof. Gan Jinping (HKUST)  
Prof. Lin I-I (National Taiwan University, Taiwan)  
Ms. Dorothy Wong (HKBU)  
Ms. Giada Bini (University of Florence, Italy)  
Ms. Olivia Stark (University of Oldenburg, Germany)  
Ms. Melina Garcia (Concordia University, Montreal, Canada)  
Dr. Khaki Chan (AFCD)  
Ms. Greta MY Tam (EPD)  
Mr. Yu WP (EPD)  
Mr. Edwin Lui (EPD)  
Mr. Liu Xiaoshou (City U HK)  
Mr. Yuan Xiangcheng (HKUST)  
Mr. Jor Fan (ERM-HK)  
Dr. Tony KT Chiu (EPD)  
Ms. Lee Mei Wah (CUHK)  
Mr. Lau Chi San (CUHK)  
Ms. Ng Ka Yan (CUHK)  
Dr. Job SL Lam (EPD)  
Dr. David Choi (Department of Civil Engineering, HKU)  
Dr. Ken Wong (Department of Civil Engineering, HKU)  
Dr. Yu Daeyoung (Department of Civil Engineering, HKU)  
Prof. Paul Harrison (HKUST)  
Ms. Kitty Chong (HKUST)  
Mr. Xu Jie (HKUST)  
Mr. He Lei (HKUST)  
Mr. Alvin Ho (HKUST)  
Dr. David Sanderson  
Mr. Jon Abel  
Dr. Liu Hongbin (HKUST)  
Mr. Clarus Chu (WWFHK)  
Dr. Andy Cornish (WWFHK)  
Dr. Yang Limin (CUHK)  
Dr. Leung KF (EPD)  
Mr. Edward YW Chan (EPD)  
Dr. Lee HS (EPD)  
Ms. Winnie OK Leung (EPD)  
Mr. Jason YM Tam (EPD)  
Dr. Deborah MW Cha (EPD)  
Ms. Tam Yin Ki (HKUST)  
Mr. Terence Fong (ERM-HK)  
Mr. Vicent Lai (ERM-HK)  
Mr. Ben Tse (CUHK)  
Dr. Kevin Q-F Gao (City U HK)  
Ms. Candy FY Yang (City U HK)  
Ms. Rita HY Chan (City U HK)  
Mr. Li Hiu Yan (City U HK)  
Ms. Carmen KM Yip (City U HK)  
Mr. Nelson WY Lam (City U HK)  
Mr. James KH Fang (City U HK)  
Mr. Zhang Rui (HKUST)  
Mr. Hung Oi Shing (HKUST)  
Ms. Flora SY Mok (HKUST)  
Ms. Jill MY Chiu (HKUST)  
Dr. Patsy PS Wong  
Ms. Anson Cheung (HKUST)  
Ms. Ju Ting Ting (HKUST)

## Official Visitors

Sir John Swire (John Swire & Sons Ltd.)  
Mrs. Pamela Ratchford (John Swire & Sons Ltd.)  
Mr. Robert Cutler (John Swire & Sons (H.K.) Ltd.)  
Mr. Christopher Lavender (Kadoorie Charitable Foundation)  
Ms. Maria Harkins (Kadoorie Charitable Foundation)  
Ms. Rita Bonomally (Kadoorie Charitable Foundation)  
Ms. Jo Ruxton (BBC)  
Prof. RD Hill (DEB, HKU)  
Dr. Josie Close (Department of Architecture, HKU)  
Mr. Jasper Ip (Department of Architecture, HKU)  
Dr. SI Sachoemar (Agency of the Assessment and Application of Technology (BPPT))  
Mr. Subiyanto (Agency of the Assessment and Application of Technology (BPPT))  
Dr. David B Robins (Plymouth Marine Laboratory, UK)  
Dr. XD Li (Hong Kong Polytechnic University)  
Mr. Richard F Lee (Skidaway Institute of Oceanography, USA)  
Ms. Wincy Ng (Mingpao)  
Prof. Chan Tin Yam (National Taiwan Ocean University)  
Dr. Richard Cheung (City U HK)  
Ms. Cheung Ma Shan (HKUST)  
Dr. Roger C Kendrick (KFBBG)  
Dr. Sam Hui (Department of Mechanical Engineering, HKU)  
Ms. Kat McKeon (University of Bangor, UK)  
Mr. George Ma (Department of Earth Science, HKU)  
Prof. J Malpas (PV Chancellor, HKU)  
Ms. Maria Milicich (Milicich & Co. Ltd.)  
Mr. Tom Winstanley (Milicich & Co. Ltd.)  
Mr. Edward Wong (AFCD)  
Mr. Patrick Lau (AFCD)  
Mr. Alex Kwok (AFCD)  
Dr. John MK Wong (HK Marine Conservation Society)  
Prof. Wang Peilie (Liaoning Ocean and Fisheries Science Research Institute)  
Prof. Michael J Kingsford (James Cook University, Australia)  
Ms. Kari Arbouin (James Cook University, Australia)  
Dr. Ng Wai Chuen (Milicich & Co. Ltd.)  
Dr. L Beckley (Murdoch University, Western Australia)  
Ms. Julia Shaw together with 6 visitors (Saigon Forest Protection Department and VET Faculty University of Agricultural & Forestry, Ho Chi Minh City, Vietnam)  
Dr. Zhang Yixin (DEB, HKU)  
Mr. Wilson Choi (City U HK)  
Mr. Ben Wong (City U HK)  
Mr. Pete Spurrier (Blacksmith Books)  
Ms. Lorette Roberts (Blacksmith Books)  
Mr. Ben WK Chu (Department of Chemistry, HKU)  
Mr. Latif Khan Mazhar (Emson Trade Links)  
Mr. Ryan F Hechinger (University of California, Santa Barbara, USA)  
Dr. Mike Mackett (Safety Office, HKU)  
Mr. Michael Bogaert (Jan de Nul N.V., HK Branch)  
Ms. Jacqueline Yuen (Thomson Learning)  
Prof. Tom Garrison (Orange Coast College, USA)

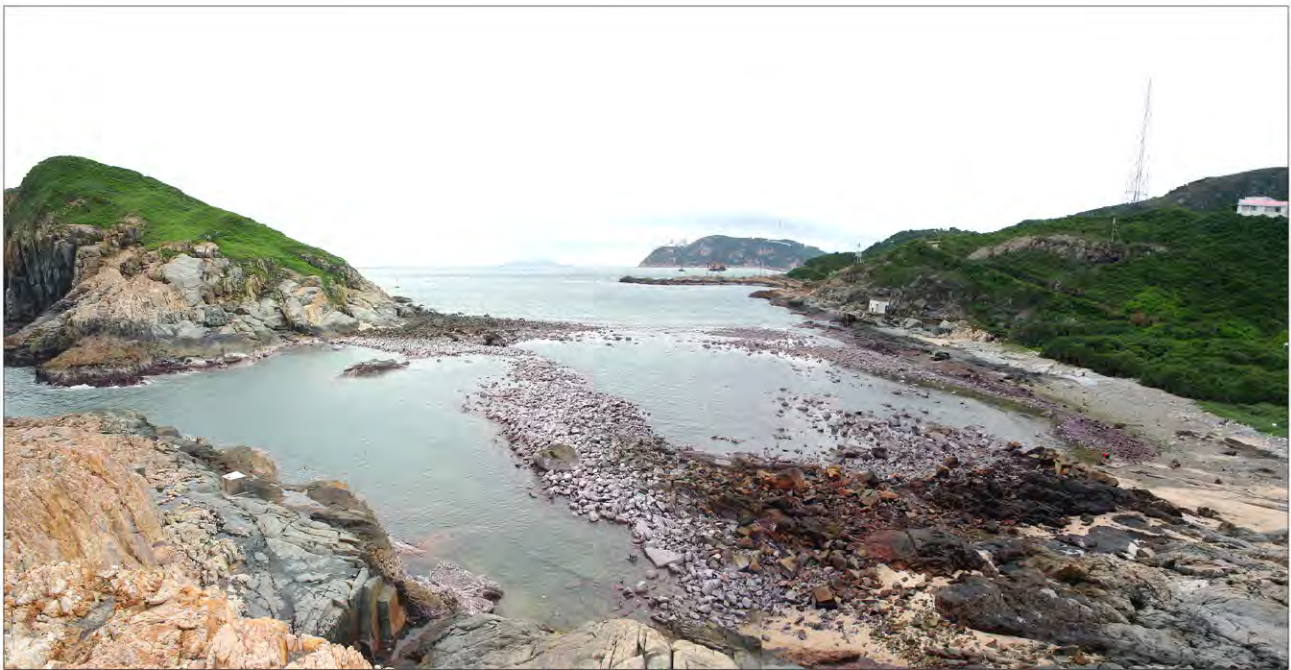
Mr. George Wong (Old Dominion University, Norrock, VA)  
Mr. Hongbin Liu (HKUST)  
Prof. Brian McArdle (Department of Statistics, The University of Auckland, NZ)  
Mr. Peter Clarke (Mentor of HKU)  
Dr. Graham J Pierce (University of Aberdeen, UK)  
Dr. Roger Uglow (University of Hull, UK)  
Prof. Jonathan Aitchison (Department of Earth Sciences, HKU)  
Mr. Richard Jones (Sinopix)  
Mr. Hans van Ullerd (Artis 200, Holland)  
Ms. Charlotte Scott (BBC, UK)  
Mr. Michael B Broom (HKPF)  
Mr. Jonathan Anderson (Portsmouth University, UK)  
Mr. Sin Yung Wa (CUHK)

### Institutional abbreviations:

**AFCD** - Agriculture, Fisheries and Conservation Department; **City U HK** - City University of Hong Kong; **CUHK** - The Chinese University of Hong Kong; **DEB, HKU** - Department of Ecology & Biodiversity, The University of Hong Kong; **EPD** - Environmental Protection Department; **ERM-HK** - Environmental Resources Management - Hong Kong; **HKBU** - Hong Kong Baptist University; **HKUST** - Hong Kong University of Science and Technology; **KFBBG** - Kadoorie Farm & Botanic Garden; **HKPF** - Hong Kong Police Force

### Group Visits

Staff and 40 students from Immaculate Heart of Mary College, Dec. 2004  
14 students from the 1<sup>st</sup> year, Environmental Life Science, HKU, Jan. 2005  
38 students from the 2<sup>nd</sup> year, Coastal Ecology class, HKU, Feb. 2005  
6 students from the 1<sup>st</sup> year, Environmental Life Science, HKU, Mar. 2005  
40 cubs from the 7<sup>th</sup> Hong Kong Scout Group, Apr. 2005  
Staff and 40 students from Island School, June 2005  
Staff and 40 students from South Island School, Jun. 2005  
30 medical students from Faculty of Medicine, HKU, Jun. 2005  
Staff and 19 students from Tai Po Secondary School, Jul. 2005  
Staff and 39 ambassadors from Hong Kong Young Ambassador Scheme 2005, July 2005  
21 students from Faculty of Science, HKU, Jul. 2005  
Staff and 50 students from HKU SPACE, Jul. 2005  
31 students from the M.Sc in Environmental Management, HKU, Oct. 2005  
Staff and 35 students from King George V School, Nov. 2005



*An exceptionally low summer tide at Cape d'Aguilar*

## Acknowledgements

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Mr. KPK Wong, Director, Estates Office, HKU

Mr. KS Wong, Assistant Director, Estates Office, HKU

Dr. D Mabbott, Dr. M Mackett and staff, Safety Office, HKU

Mr. PBL Lam, Director of Finance Office, HKU

Ms. Bernadette Tsui and staff, Development and Alumni Affairs Office, HKU

Ms. Karen Tang and staff, External Relations Office, HKU

Prof. D Dudgeon and staff, Department of Ecology & Biodiversity, HKU

Directors and staff, WWF HK

Mr. TCY Chan, Director of Agriculture, Fisheries and Conservation Department

Dr. FY Wong, AFCD

Mr. Edward Wong, AFCD

Mr. Patrick Lau, AFCD

Mr. Alex Kwok and staff, AFCD

Mr. KKK Kwok, Director of Environmental Protection Department

Mrs. SM Stimpson and staff, Registry, HKU

Dr. Paul Shin, Chairman and Council of The Marine Biological Association of Hong Kong

Mr. Michael Bogaert, Jan de Nul N.V. (HK Branch)

Mr. Lui and staff, PCCW Cape d'Aguilar station

Mr. Lam Chiu Ying and staff, the Hong Kong Observatory

Ms. Suzanne Gendron, Mr. Timothy Ng and staff, Ocean Park Conservation Foundation

Clearwater Bay Country Club

Volunteer divers

Staff and students of King George V. School

Staff and students of Island School

Staff and students of South Island School

Staff and students of Immaculate Heart of Mary College

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Albert Au, Rachel Smith Ali, Benny Chan, Damgy Chan, Andy Cornish, Melina J. Garcia, Ji-Dong Gu, Valerie Ho, Jasper Ip, Cecily Law, KF Leung, Leung Wai Ki, Karen Lui, Jasmine Ng, Avis Ngan, Lorette E. Roberts, Olivia Stark, Wai Tak Cheung, Gray Williams, Cynthia Yau, Ariel Yeung, Guido Chelazzi, Tom Gallagher, Maui De Pirro

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