



The Swire Institute of Marine Science

太古海洋科學研究所



Annual Report 2007



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Gray Williams introducing speakers at this year's ICEMO Conference

Honorary Director's Foreword

This has been another successful year for SWIMS and we welcome a number of new students and Post Doctoral researchers to the SWIMS family. Dr. Wai Tak Cheung recently took up a 3 year position and Dr. Cheung Ma Shan joined us from HKUST. This year also saw the retirement of Mr. James Hui, who was one of the original SWIMS staff. We wish James and his family all the best for a happy and healthy retirement.

During 2007 we organized a highly successful international conference (ICEMO, see opposite page), which brought together a variety of invited experts to share their opinions in the field of ecophysiology. This event encouraged active discourse between students and professors, and it was great to see such relaxed and lively discussions between participants from all over the world. Special thanks to SWIMS staff who ensured the meeting ran smoothly and cheerfully!

Perhaps the most important event was the recent promotion of SWIMS within the Faculty of Science as an independent non-teaching unit. This move recognizes the importance of SWIMS within the university system and allows us to bid for funds and resources as a standalone entity. In line with this move, we were able to win funding for a new Associate Professorship, in collaboration with Ocean Park Conservation Foundation HK, and hope to have a new member of staff by the next academic year. This year was also a bumper year in terms of grant funding secured and so, with our new status and expanding researcher base, 2008 promises to be another productive year at SWIMS.

Finally - special congratulations to Kenny and Suria who got married in 2007 - we wish them all the best for the future.

*Best wishes for 2008 and the Chinese Year of the Rat
from the staff and students of SWIMS.*

Gray A Williams



SWIMS staff and students celebrating with Kenny at his wedding banquet

Contact Details

Honorary Director Resident Scientists

Dr. Gray A Williams
Dr. Kenneth Leung
Dr. Cynthia Yau
Prof. Yvonne Sadovy
Dr. Ji-Dong Gu
Dr. Wai Tak Cheung
Dr. Liu Min
Dr. Ng Wai Chuen
Dr. James True
Ms. Bao Wei Wei, Vivien
Mr. But Lok Wai, William
Mr. Stephen Cartwright
Ms. Chan Hoi Lam, Damgy
Mr. Chan Kin Yip, Lucky
Mr. Kwok Wing Hin, Kevin P
Ms. Lam Yan Yan, Vivian
Ms. Leung Ngo Hei, June
Mr. Shea Kwok Ho, Stanley
Ms. Sin Ying Tung, Shadow
Mr. Tang Wing Kai, Ricky
Mr. To Wai Lun, Allen
Ms. Wong Wing Yu, Stella
Ms. Yeung Wai Shan, Christine
Ms. Yeung Wai Yin, Jamius
Ms. Zhang Qian, Amy
Ms. Yiu Sik Fong, Sylvia
Mr. Au Chi Cheung, Albert
Ms. Law Chi Ling, Cecily
Ms. Chan Kit Ping
Mr. Chan Pui Cheung, Patrick
Mr. Cheung Ming
Mr. Cheung Ming Hong
Mr. Wong Kam Kin, Simon

Part-time Scientists

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Secretary Technical staff



Acknowledgements

Sir John and Sir Adrian Swire, John Swire & Sons Ltd
Mr. Robert Cutler, The Swire Group of Companies, Hong Kong
Prof. Tsui Lap-Chee, Vice-Chancellor, HKU
Prof. Paul Tam, Pro-Vice Chancellor, HKU
Prof. Sun Kwok and staff, Faculty of Science, HKU
Mr. Kenneth PK Wong, Director of Land Development, HKU
Mr. KPK Wong, Director, Estates Office, HKU
Mr. KS Wong, Assistant Director, Estates Office, HKU
Mr. R Lam, 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. Katherine Ma and staff, External Relations Office, HKU
Prof. Y Sadovy and staff, Department of Ecology & Biodiversity, HKU
Prof. KS Cheng, Acting Director, School of Biological Sciences, HKU
Directors and staff, WWF HK
Ms. SH Cheung, Director of Agriculture, Fisheries and Conservation Department
Mr. Edward Wong, AFCD
Mr. Patrick Lau, AFCD
Mr. Alex Kwok and staff, AFCD
Ms. Anissa Wong, Director of Environmental Protection Department
Dr. Paul Shin, Chairman and Council of The Marine Biological Association of Hong Kong
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 Hong Kong
King George V College for donations
Island School for donation
Clearwater Bay Country Club

Many thanks to all the following for their cheerful and excellent help: Ms. Michelle Tsui, Mr. Boyd Hao, Ms. Sylvia Yuen, Ms. Joyce Leung, Ms. Cheuk-Yan Chow, Ms. Rui-Jun Chuah, Ms. Anne Beatrice Li, Mr. Yin Shan Ho, Ms. Bonnie Ling, Ms. Louise Li, Mr. Brian Lai, Ms. Kasumi Yoshimura, Mr. Maurice Cheung, Ms. Tania Ng, Ms. Jena Saffery, Ms. Kathy Li, Ms. Curtis Freund, Ms. Sarah Mak, Mr. Kingsley Wong, Ms. Gracie Liu, Ms. Elbe Lam, Ms. Vera Chan, Mr. Wong Wai Shing, Ms. Lam Tsz Kwan, Mr. Hu Yu, Mr. Chan King Man, Ms. Hung Mei Mei, Ms. Ivy Mak, Mr. Kenny Ng, Ms. Molly Fu & Ms. Diana Cowland

Photograph/picture credits:

Albert Au, Vivien Bao, William But, Stephen Cartwright, Damgy Chan, Lucky Chan, Sophia Chan, Patrick L. Colin, Apple Chui, Ji-Dong Gu, Kevin Kwok, Vivian Lam, Cecily Law, Vincent Law, June Leung, Kenneth Leung, Liu Min, Ng Wai Chuen, Ricky Tang, Yvonne Sadovy, Stanley Shea, Shadow Sin, Allen To, James True, Wai Tak Cheung, Gray Williams, Stella Wong, Cynthia Yau, Christine Yeung, Jamius Yeung, Amy Zhang



Stephen Cartwright describing the behaviour of sea urchins to the Swire Management Trainees

International Conference on the Ecophysiology of Marine Organisms (ICEMO)

Between 9-11 January 2007, SWIMS hosted the International Conference on the Ecophysiology of Marine Organisms (ICEMO) “*Coping with change: physiological responses of marine organisms*”. ICEMO was conceived as a forum where invited experts shared their experiences and views. To facilitate this, 10 overseas experts were invited to give presentations dealing with the scientific theories, techniques and emerging trends in the field of the ecophysiology of marine organisms and their responses to anthropogenic and environmental changes. The speakers were selected based on their fields of expertise and for their ability to transfer that knowledge through their passion for science. They did an excellent job, preparing stimulating and challenging talks ranging from small-scale protein and genetic level responses to larger scale ecosystem responses, and the implications of climate change.

The conference attracted over 85 delegates, including researchers from Brunei, Thailand, China, Taiwan, South Korea, the Philippines and Japan, as well as local scientists from tertiary institutions and colleagues from the Environmental Protection Department and the Agriculture, Fisheries and Conservation Department. There was also a well-attended poster session with over 30 presentations from local and overseas researchers, including a good representation from SWIMS postgraduate students.

Special thanks are extended to the speakers who were magnanimous in sharing their work with students and colleagues. We are also grateful to the Organizing Committee, Prof. Dudgeon and the Department of Ecology & Biodiversity, the SWIMS and departmental staff who looked after the day to day running of the conference and our sponsors. We hope that we can carry the spirit of this meeting - sharing the excitement of discovery - to future meetings.



The Vice Chancellor, Prof. Tsui with speakers and delegates at ICEMO



Chinese white dolphin in Leizhou Bay



Ricky and Kathy with local co-workers



Virian and Apple with Yangtze finless porpoise Research Team



Captive bred Yangtze finless porpoise



Yee Lai and Luduo setting off to survey small cetaceans



香港海洋公園保育基金
Ocean Park
Conservation Foundation
Hong Kong

SWIMS and Ocean Park Conservation Foundation Hong Kong

Our collaborations with the Ocean Park Conservation Foundation Hong Kong (OPCFHK) continued to strengthen and grow over 2007. The OPCFHk Student Sponsorship Programme was further expanded, and this year our students were joined by students from the Hong Kong University of Science and Technology (HKUST). Not only did students get the opportunity to join on-going conservation projects around SE Asia, but also to share their experiences with colleagues from other universities. In this year's projects, SWIMS postgraduate Ricky Tang travelled with Kathy Li (HKUST) to measure populations of Indo-Pacific humpback dolphins in Leizhou Bay, China. Another SWIMS postgraduate, Steve Cartwright, worked in central Philippines with June Wong (HKUST) assessing dugong populations. Our undergraduates Vivian Fu and Hei Sung went with Apple Chui and Ronald Wu of HKUST to work on finless porpoise in Poyang Lake and monitor pandas in the Wang Leng Panda Reserve, Sichuan Province, respectively. June Leung and Yee Lai went further afield with HKUST students Ting Chiang and Luduo Zhang to work in Sri Lanka on marine turtles and on small cetaceans in Karachi, Pakistan. All students gave informative and entertaining accounts of their travels on the OPCFHk blog and in their interviews with local press. We are extremely grateful to OPCFHk for these wonderful opportunities which their funding gives our students, and are very proud of the commitment and professional attitude our students exhibited when they were on these projects.

OPCFHK also kindly sponsored four of our postgraduates, Milla Fok, Allen To, Shadow Sin and Christine Yeung to attend a course on Dolphin and Whale Biology in Tropical Asia held in Taiwan. This course consisted of a series of lectures and practicals by leading marine mammal experts which helped our students gain first-hand experience in dealing with these animals.

The most significant collaboration we have with OPCFHk is one that will develop over the next 6 years. We were extremely lucky to successfully bid for an OPCFHk funded Associate Professorship in aquatic mammal research. SWIMS, co-sponsored by the Science Faculty of HKU, won that bid and we are now in the process of advertising this position, which we hope to fill by September 2008. Once again, we are grateful to OPCFHk for their vision and funding and also to Professor Sun Kwok, Dean of the Science Faculty, for his support of this initiative.



Students and teachers of the B.Sc. Coastal Ecology course

Visitors to SWIMS

Prof. Daniel Chourrout (Sars Centre, Norway)
Mrs. Emily Waller (London, UK)
Mr. Paul Waller (London, UK)
Mr. Robert Gibson (Swire Group)
Mr. Ian Winderam (Swire Group)
Ms. Mia Horn af Rantzen (Swedish Ambassador)
Dr. Kevin Gao (City U HK)
Dr. Tim Steves (University of Plymouth)
Mr. George Li (Rotary Club HK South)
Dr. KF Leung (EPD)
Dr. Alan Chan (AFCD)
Dr. Khaki Chan (AFCD)
Dr. Tony Li (AFCD)
Mr. Phil Heeinstraa (SAIAB)
Mr. Leung Chi Kai (RTHK)
Mr. Lo Man Ki (RTHK)
Mr. Raymond Man (RTHK)
Mr. Sam Lam (Department of Architecture, HKU)
Ms. Jacqui Saffery
Prof. Dr. Goran Kniewald (Ruder Boskovic Institute, Croatia)
Mr. Brian Ho (Aquaculture Technologies Asia Limited)
Ms. Tzo Tze Ang (Institute of Zoology, London, UK)
Mr. Sum Wan Wah (New Page)
Mr. Chan Kwok Hung (New Page)
Mr. Raymond Man (New Page)
Mr. Edwin Grandcourt (Environment Agency, Abu Dhabi)
Mr. Ahmed T. Aamer Al Shamsi (Environment Agency, Abu Dhabi)
Dr. Wolfgang Sterrer (Bermuda National History Museum)
Dr. Yan Yan (South China Sea Institute of Oceanology, Chinese Academy of Sciences, China)
Prof. Zhou Kai-ya (Nanjing Normal University, China)
Ms. Ivy Lau (Jessica Magazine)
Dr. Liz Harper (Cambridge University, UK)
Dr. Lilian Vrijmoed (City U HK)
Mr. Ching Wai Keung (City U HK)
Mr. KS Tso (Hong Kong Indoor Air Quality Society)
Mr. Eric WK Ching (Hong Kong Indoor Air Quality Society)
Mr. John Cowland (Geosystems Ltd.)
Mr. Hung Oi Shing (HKUST)
Ms. Flora Mok (HKUST)
Ms. Jacqui Weir (RSPB, UK)
Dr. Chad Hewitt (Australian Maritime College)
Dr. Marnie Campbell (Australian Maritime College)
Mr. Wang Yuexing (Department of Civil Engineering, HKU)
Dr. Bill Ballantine (Leigh Marine Laboratory, New Zealand)
Mr. Markus Shaw (WWF HK)
Dr. Andy Cornish (WWF HK)
Mr. Clarus Chu (WWF HK)
Ms. Loretta Luk (WWF HK)
Ms. Margaret Chan (WWF HK)
Mr. Victor Mallet (Financial Times)
Mr. Law King Man (Wen Wei Po Daily News)
Mr. Poon Tat Man (Wen Wei Po Daily News)
Ms. Scarlett Chiang (Sing Tao Newspaper Group Limited)
Dr. Michael Eitel (Veterinary University (TIHO) Hannover, Germany)
Dr. Maurizio De Pirro (University of Florence, Italy)
Mr. Paolo Bracci (San Stefano, Italy)
Dr. G Sara (University of Palermo, Italy)
Dr. A Zenone (University of Palermo, Italy)
Ms. Cindy Cheung (Swire Group)
Ms. Lucy Fennell (APV)
Mr. Laurence Gilbert (APV)
Mr. Niall Phelan (APV)
Mr. Vicky Baker (APV)
Mr. Danny Lai Kwok Kwong (APV)
Dr. Cindy Lam (University of Oldenburg, Germany)
Mr. Cyrus Pang (YSI Hong Kong Ltd.)
Dr. Jinho Jung (Korea University)
Dr. Seung Bo Shim (Korea University)
Mr. Simon Forder (King George V School)
Mr. Nelson Lam (City U HK)
Mr. Ng Pun Tung (City U HK)
Prof. Yair Achituv (Bar-Ilan University, Israel)
Mr. Tsang Lay My (CUHK)
Dr. Benny Chan (Academia Sinica, Taiwan)

Mr. Sitthixay Witthavong (Australian Department Foreign Affairs and Trade)
Prof. Eric Wolanski (PIMS, Australia)
Dr. Jenny Stabel (CSIRO, Australia)
Dr. Jacqui Levy (University of Wollongong, NSW, Australia)
Dr. Dianne Jolley (University of Wollongong, NSW, Australia)
Ms. Vanessa Li (Academic Liaison Section, The Registry, HKU)

Institutional abbreviations:
AFCD - Agriculture, Fisheries and Conservation Department; **APV** - Asia Pacific Vision; **CITY U HK** - City University of Hong Kong; **CSIRO** - Commonwealth Scientific and Industrial Research Organisation; **CUHK** - The Chinese University of Hong Kong; **EPD** - Environmental Protection Department; **HKUST** - Hong Kong University of Science and Technology; **PIMS** - Pacific Institutes of Marine Science; **RSPB** - The Royal Society for the Protection of Birds; **RTHK** - Radio Television Hong Kong; **WWF HK** - World Wide Fund for Nature Hong Kong; **SAIAB** - South African Institute for Aquatic Biodiversity.

Group Visits

37 students from Coastal Ecology class, HKU, Feb. 2007
36 students from Coastal Ecology class, HKU, May 2007
1 staff and 8 students from King George V School, May 2007
20 staff and students from South Island School, Jun. 2007
56 staff and relatives of Swire Group, Jun. 2007
3 staff and 46 students from Island School, Jun. 2007
21 students from Faculty of Science, HKU, Jul. 2007
11 staff from Ocean Park Hong Kong, Sept. 2007
35 students from the M.Sc in Environmental Management, HKU, Sept. 2007
3 staff and 49 students from King George V School, Oct. 2007
15 sixth formers students led by Academic Liaison Section, Registry, HKU, Nov. 2007

Amy Zhang

Poster Presentation; 5th International Conference on Marine Pollution and Ecotoxicology, 3-6 June, 2007, City University of Hong Kong.
International Conference on Environmental and Public Health Management: Aquaculture & Environment, 7-9 Dec. 2006, Baptist University, Hong Kong.

ICEMO

Invited Keynote Speakers

Prof. Brian P Bradley (University of Maryland, U.S.A.)
Prof. Guido Chelazzi (University of Florence, Italy)
Prof. John Davenport (University College Cork, Ireland)
Prof. Stephen J Hawkins (The Marine Biological Association of the United Kingdom, UK)
Dr. Michael E Hellberg (Louisiana State University, U.S.A.)
Dr. Brian Helmuth (University of South Carolina, U.S.A.)
Prof. Christopher D McQuaid (Rhodes University, South Africa)
Prof. Dr. Hans-Otto Pörtner (Wegener Institute for Marine and Polar Research, Germany)
Prof. John Spicer (University of Plymouth, UK)
Dr. Jonathon H Stillman (San Francisco State University, U.S.A.)

Poster Presentations

Dr. Kenny Leung
Dr. Liu Min
Dr. Ng Wai Chuen
Dr. James True
Dr. Wai Tak Cheung
Ms. Damgy Chan
Mr. Kevin Kwok
Mr. Stephen Cartwright
Ms. June Leung

Attendees

Ms. Vivien Bao
Mr. Stanley Shea
Ms. Shadow Sin
Mr. Ricky Tang
Mr. Allen To
Ms. Christine Yeung
Ms. Amy Zhang

The 3rd MBAHK Postgraduate Symposium Oral Presentations

Ms. Vivien Bao
Mr. William But
Mr. Lucky Chan
Mr. Kevin Kwok
Ms. Stella Wong
Ms. Jamius Yeung
Ms. Amy Zhang

Attendees

Dr. Cynthia Yau
Dr. James True

Mr. Stephen Cartwright
Ms. Vivian Lam
Ms. June Leung
Mr. Stanley Shea
Ms. Shadow Sin
Mr. Ricky Tang
Ms. Christine Yeung

Living in a warmer world: Climate Change and Hong Kong Oral Presentation

Dr. James True

Attendees

Dr. Cynthia Yau
Dr. Kenny Leung
Dr. Gray Williams
Ms. Vivien Bao
Mr. Stephen Cartwright
Mr. Kevin Kwok
Ms. Shadow Sin
Mr. Stanley Shea
Mr. Ricky Tang
Mr. Allen To
Ms. Amy Zhang

Student Graduations

Ph.D

Lee Ka Wai (2007) - The impact of foraging by soldier crabs, *Mictyris brevidactylus*, on sandy shore communities.
Ng So Shan (2007) - Resource partitioning and coexistence of molluscan grazers on Hong Kong rocky shores.
Avis Ngan (2007) - Environmental stress and its implications for behavioural plasticity of foraging in *Cellana grata*.

M.Phil

Ellen Chiu (2007) - Proteomic and physiological studies of paralytic shellfish toxin producing dinoflagellates *Alexandrium tamarense* and *Gymnodinium catenatum*.
Choi Kin Sang (2007) - Reproductive biology and ecology of the loliginid squid, *Uroteuthis (Photololigo) duvauclii* (Orbigny, 1835), in Hong Kong waters.
Situ Ying Yi (2007) - Ichthyoplankton assemblage at Cape d'Aguilar: seasonal variability and family composition.

Staff Training

Mr. Patrick Chan and Mr. Simon Wong attended the CCC Training Facilities held by EMSD.
Mr. Simon Wong, Ms. Chan Kit Ping have attended the Briefing Talk for Fire Wardens on 12 November 2007 (PM).
Ms. Sylvia Yiu has attended the New Web-based Receipt System on 16 November 2007 (AM).
Ms. Cecily Law has attended the First Aid Certificate Course (Refreshment) by St. John Ambulance on 29 May 2007.

Staff Research

Gray A Williams

This year work reverted to the effects of heat stress, especially on two common limpet species, *Cellana toreuma* and *C. grata*. Although in the same genus, they show different susceptibility to heat stress. Together with Dr. Louise Firth (University College Dublin), we tracked mortality of *C. toreuma* in rock pools and in collaboration with Dr. Yunwei Dong (Qingdao University), we measured heat shock protein production in both species. Differences between the two species may be linked to their biogeography. Both species are thought to range as far north as Japan - where I have seen *C. grata* in snow - a far cry from the tropical summer heat of Hong Kong! This raises a fundamental question: are these limpets in Japan and Hong Kong the same species? To answer this we are currently investigating the genetic relatedness of these 'species'.



Gray and Edison fixing experimental cages to the shore

Kenny Leung

Currently, tropical and subtropical countries often adopt water quality criteria (WQCs) derived from temperate species. To address the uncertainty of such extrapolations, we compared species sensitivity distributions to determine whether temperate WQCs adequately protect tropical assemblages. Temperate species appear to be more sensitive to heavy metals than their tropical counterparts, which are more sensitive to ammonia, phenol and certain pesticides. We recommend applying a safety factor of 10 when surrogate temperate WQCs are used for tropical regions. In collaboration with the late Prof. John Gray (Oslo University), we also used field data to derive more ecologically relevant, site-specific, sediment quality criteria for protecting benthic communities.



Kenny (2nd row, 4th left) with other experts at the FAO/NACA meeting (Photo courtesy: FAO)

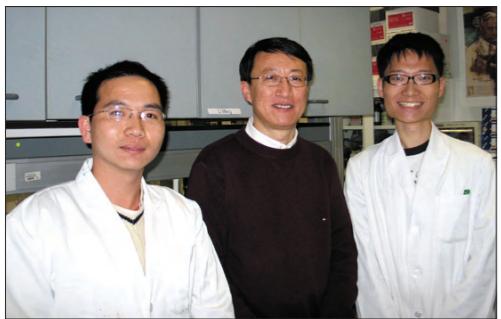
In June 2007, I was invited by the Food and Agriculture Organisation (FAO) of the UN to serve as an expert on ecological risk assessment and delivered a keynote lecture at the FAO/NACA Expert Workshop (Rayong, Thailand). It is always very encouraging when we can apply our research to solve problems in the real world.

Cynthia Yau

Results from research by my group in 2007 helped establish the importance of the early life stages of marine species in their conservation and management. Wallace Choi completed his thesis on the reproductive ecology of squid, data from which will help manage the developing recreational squid fishery in Sai Kung. This complemented the work of Milla Fok, who also finished her MPhil studies this year, working on juvenile fish assemblages in nursery grounds in Tolo Harbour. Again, results from this research will inform management decisions on the prospective fisheries protection of Tolo Harbour. My group is following up this work by studying stomatopod (mantis shrimp) planktonic larval stages and also coral reproduction in Hong Kong waters.



Fish post-larva of Synanceiidae



JD and his research students

Ji-Dong Gu

My laboratory has focused on three areas this year. Firstly, we continued our work on the identification of the gene and expression of the protein involved in Cr reduction by *Bacillus megaterium* TKW3. One gene encoding a putative quinone oxidoreductase has been cloned. Further work is in progress on protein structure and catalytic function. Secondly, five different replicon groups have been distinguished for *Vibrio* plasmids and filamentous phages. Identification of conjugative transfer regions on plasmids in two groups indicates the evolutionary origin of these plasmids. Lastly, assimilation and uptake of metals (Cr, Se) and ferrocyanide and ferricyanide have been investigated using model systems to obtain information on their metabolism and transport/accumulation in plants.



Spawning aggregation of snappers (Photo courtesy: P.L. Colin)

Yvonne Sadovy

Work continues on the biology and management of reef fishes that aggregate to spawn (i.e. reproduce). In addition to running the Society for the Conservation of Reef Fish Aggregations, I have conducted workshops and training on the management and conservation of aggregating species during 2007 in the Philippines, Indonesia and Fiji. I am involved in conservation work in the Caribbean on the Nassau grouper, *Epinephelus striatus*, which is threatened by aggregation-fishing. Currently I am co-editing a book on reef fish aggregations to publish the results from 4 years of research. Many new species have been revealed to spawn by this project (see photo for one example), including a range of commercially important fishes.

Yvonne Sadovy

Keynote Speaker; Gulf and Caribbean Fisheries Institute annual meeting - 1st International Goliath Grouper Symposium, 5-9 Nov. 2007, Dominican Republic. Co-organizer; Special session on the management and conservation of the Nassau grouper, *Epinephelus striatus*, in collaboration with the United States National Marine Fisheries Service Caribbean Fishery Management Council held at the GCFI, 5-9 Nov. 2007, Dominican Republic. Invited Speaker; 1st Asian Summit on Corporate Social Responsibility, 1-2 Nov. 2007, Hong Kong. Invited Expert Participant; FAO Aquaculture Workshop, 8-12 Oct. 2007, Hanoi, Vietnam. Convenor & Organizer; Coastal fisheries workshop and Director; The Society for the Conservation of Reef Fish Aggregations, 19-20 Sept. 2007, Fiji. Co-Chairman & Organizer; The IUCN Species Survival Commission Marine Conservation Sub-Committee bi-annual meeting, 25-27 July 2007, Switzerland. Invited Expert Participant; "Management and Science of Fish Spawning Aggregations in the Great Barrier Reef Marine Park", 12-13 July 2007, Townsville, Australia.

Invited Speaker; Meeting of 'Groupe d'etude du Merou', 10-13 May 2007, Nice, France.

Convenor & Organizer; The IUCN Red List assessment workshop and Chairman; The IUCN Groupers & Wrasses Specialist Group, 7-11 Feb. 2007, Hong Kong.

James True

Poster Presentation; Global Warming Impacts on Thai Biodiversity: Threats, Research and Management, 15-18 Oct. 2007, Udon Thani, Thailand.

Wai Tak Cheung

Guest speaker; Public lecture "Soft shore ecology and biodiversity in Hoi Ha Wan Marine Park", organized by Agriculture, Fisheries and Conservation Department, Hong Kong SAR Government, 18 Aug. 2007, Hong Kong.

Gray A Williams

Invited Seminar; Centre for Biodiversity, Academica Sinica, Oct. 2007, Taiwan.

Chairman and Invited Speaker; International Conference on Ecophysiology of Marine Organisms (ICEMO) 2007, 9-11 Jan. 2007, The University of Hong Kong, Hong Kong, China.

Invited seminar series; MARIS, Marine Annual Research on Invertebrate Syposium "State of the Art in Ecology, Ethology, Conservation and Evolution of Marine Invertebrates", Nov. 2006, Florence, Italy.

Cynthia Yau

Co-organizer; International Conference on Ecophysiology of Marine Organisms (ICEMO) 2007, 9-11 Jan. 2007, The University of Hong Kong, Hong Kong, China.

Postgraduates

Vivien Bao

Poster Presentation; The 5th International Conference on Marine Pollution and Ecotoxicology, 3-6 June 2007, City University of Hong Kong, Hong Kong.

Kevin Kwok

Oral & Poster Presentations; The 5th International Conference on Marine Pollution and Ecotoxicology, 3-6 June 2007, City University of Hong Kong, Hong Kong. (Awarded the Australasian Society for Ecotoxicology Prize for Outstanding Presentation).

Allen To

Organizer; The 3rd Marine Biological Association of Hong Kong Postgraduate Symposium, 20 Oct. 2007, The University of Hong Kong, Hong Kong. IUCN Species Survival Commission (Grouper and Wrasse Specialist Group) Workshop, 7-11 Feb. 2007, The University of Hong Kong, Hong Kong.

Post Doctoral Fellows



Liu Min (far left) visiting Guangzhou for research collaboration

Liu Min

From a recently completed 3-year RGC project, Liu Min confirmed that the orange-spotted grouper *Epinephelus coioides* is a diandric, protogynous hermaphrodite. This species is the most commonly sold maricultured grouper in Hong Kong. Detailed histological examination revealed that all juveniles develop a bisexual gonad with immature ovarian and testicular tissues and an ovarian lumen, prior to first sexual maturation, as either female or male. Females mature at 2 years old in captivity, while primary males are at least half a year behind. Min showed that juvenile sexual differentiation as either female or male was influenced by social factors which will prove important for mariculture practices.



SWIMS football team!!

Other Contributions from SWIMS

Ji-Dong Gu

Editor/Associate Editor: International Biodeterioration & Biodegradation, Ecotoxicology
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

Kenny Leung

Member of Editorial Board: Integrated Environmental Assessment and Management
Member, Environment and Conservation Fund (ECF) Research Projects Vetting Subcommittee
Member, Marine Mammal Conservation Working Group
Member, Selection Committee for 2008 SETAC / Procter & Gamble Fellowship for Doctoral Research in Environmental Science
Council member & Librarian, MBAHK

Liu Min

Member, IUCN Specialist Group for Groupers and Wrasses
Mainland China Coordinator, Reef Check Foundation

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: Conservation Biology; Reviews in Fish Biology and Fisheries; Fish and Fisheries, Journal of Fish Biology
Chair, Conservation Projects Committee: World Wide Fund for Nature Hong Kong (WWF HK)

James True

Member, Andaman Protected Areas World Heritage Nomination Project Working Group, Thailand

Gray A Williams

Secretary/Treasurer, Pacific Institutes of Marine Science
Vice Chairman, MBAHK
Postgraduate Advisor, King Mongkut's Institute of Technology hadkrabang, Thailand

Cynthia Yau

Member, Cephalopod International Advisory Council

Conferences and Workshops

Ji-Dong Gu

Chairperson, Symposium on Environmental, Marine, Water Microbiology. The 2nd International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld2007), 28 Nov.-1 Dec. 2007. Seville, Spain.
Oral Presentation; The 2nd International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld2007), 28 Nov.-1 Dec. 2007, Seville, Spain.

Oral Presentation; 2nd International Symposium on Wetland Pollutant Dynamics and Control, 16-22 Sept. 2007, Tartu, Estonia.

Moderator, Symposium IX: Bioremediation and nucleic acids and enzyme expression. The 3rd International Conference on Enzymes in the Environment: Activity, Ecology and Applications, 15-19 July 2007. Viterbo, Italy.

Oral Presentation; The 3rd International Conference on Enzymes in the Environment: Activity, Ecology and Applications, 15-19 July 2007, Viterbo, Italy.

Oral Presentation; Contamination Cleanup 07, 24-27 June 2007, Adelaide, Australia.

Oral Presentation; The 2nd International Symposium on Trace Elements and Health, 18-20 June 2007, Helsinki, Finland.

Oral Presentation; Ecological Complexity and Sustainability, 22-26 May 2007, Beijing, China.

Oral Presentation; 107th General Meeting of American Society for Microbiology, 21-25 May 2007, Toronto, Canada.

Oral Presentation; Conservation Science 2007, 10-11 May 2007, Milan, Italy.

Vice Chair, Microbial Influenced Corrosion Session (TEG 187X), Corrosion/2007, 11-15 Mar. 2007, Nashville, Tennessee, USA.

Kenny Leung

Invited keynote address, 12th Beijing Conference and Exhibition on Instrumental Analysis (Environmental Analysis), 18-21 Oct. 2007, Beijing, China.

Invited speaker, FAO/NACA Expert Workshop on Understanding and Applying Risk Analysis in Aquaculture Production, 7-11 June 2007, Rayong, Thailand.

Invited speaker, 15th International Conference on Environmental Bioindicators, 7-9 June 2007, City University of Hong Kong, Hong Kong, China.

Co-organizer, Oral & Poster Presentations; 5th International Conference on Marine Pollution and Ecotoxicology, 3-6 June 2007, City University of Hong Kong, Hong Kong, China.

Co-organizer, International Conference on Ecophysiology of Marine Organisms (ICEMO) 2007, 9-11 Jan. 2007, The University of Hong Kong, Hong Kong, China.

Invited speaker, Workshop on Ecophysiology of Marine Organisms, 12 Jan. 2007, The Swire Institute of Marine Science, Hong Kong, China.

Liu Min

Oral Presentation; Fish Ecology Group Seminar Series, 19 Sept. 2007, James Cook University, Townsville, Australia.

Poster Presentation; Annual Meeting of Australian Society for Fish Biology, 11-15 Sept. 2007, Canberra, Australia.

Oral Presentation; Workshop on Guangdong Reef Check, 24 Aug. 2007, Guangzhou, China.

Oral Presentation; Workshop on Fish Pathology, 14-18 May 2007, Ocean Park, Hong Kong.

Workshop on Global Red List Assessments of Groupers (Family Serranidae; Subfamily Epinephelinae), 7-11 Feb. 2007, The University of Hong Kong, Hong Kong.

Ng Wai Chuen

Poster Presentation; 5th International Conference on Marine Pollution and Ecotoxicology, 3-6 June 2007, City University of Hong Kong, Hong Kong.

Wai Tak Cheung

Wai Tak Cheung investigates the trophic dynamics and functioning of local marine systems. Stable isotope and fatty acid analyses have been used to trace the source and fate of energy in intertidal and subtidal communities. In Hong Kong, as a result of monsoonal climate change, massive degeneration of erect macroalgae is associated with enhanced supply of phytoplankton and stream-borne terrestrial detritus during the onset of the summer monsoon. Marine consumers showed increased dependence on heterotrophic food chains based on decomposing algal and terrestrial detritus, suggesting this energy source may be typical of coastal ecosystems in the monsoonal tropics. Long-term monitoring of the relationship between variation in annual rainfall and utilization of these detrital sources will help to predict the effects of global climate change on marine ecosystem functioning.



The sea urchin, *Salmacis sphaeroides*, feeding on terrestrial detritus

Ng Wai Chuen

Ng Wai Chuen researches the population genetics and stress responses of marine animals. Currently, he is managing an investigation of the supply-side ecology and population genetics of the barnacle *Tetraclita* spp. in the Southeast Asian region; as well as investigating the small-scale genetic structure, cohort and temporal variation of the limpet *Cellana grata* along Hong Kong shores. These studies will help resolve the genetic linkage and patterns of larval transport on local and regional scales. Chuen also tackles questions on the possible effects of projected climate change on the physiological responses of intertidal communities using the regionally common limpets *Cellana grata* and *C. toreuma* as model species.



Chuen sorting and counting barnacle larvae

James True

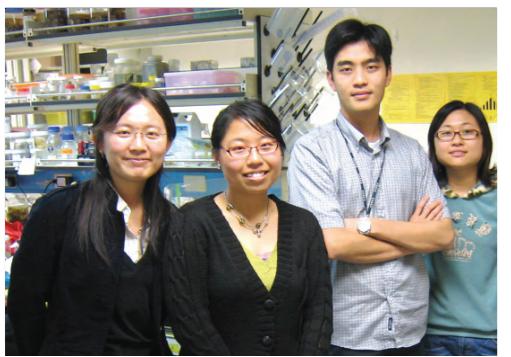
James True continued research into boundary conditions controlling the success of corals in marginal environments. By relating the relative tolerance of species to hypersalinity, the occurrence of monsoon floods can be mapped to existing coral distributions. This research is part of a larger project involving corals in Hong Kong and the Gulf of Thailand. Levels of stress can also be reflected by the increased incidence of disease and, this year, a new coral disease was detected and described by James and his co-workers. The SWIMS coral farm also expanded and now holds 8 species of HK corals. This year, cultivated colonies of 3 species spawned, and their larvae settled on artificial substrates to form a second generation of farmed corals. This creates new opportunities for the rehabilitation of degraded coral habitats in Hong Kong waters.



Ivy, Patrick and James building a prototype artificial coral reef

SWIMS Publications (Dec. 2006-Dec. 2007)

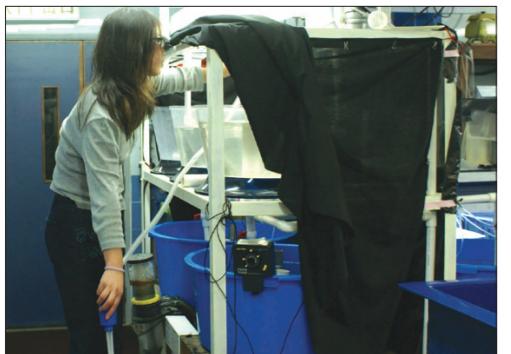
Postgraduate Research



Damgy in Taiwan with Dr. Benny Chan and researchers

Supply-side ecology and onshore selection

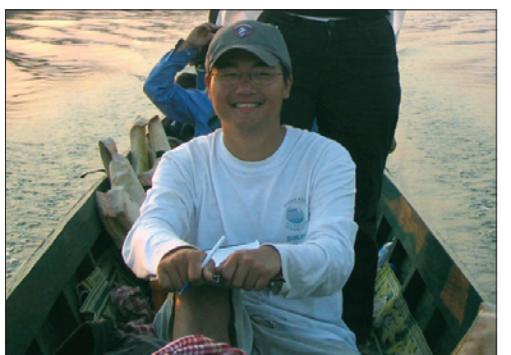
Damgy Chan completed her PhD project which showed that the population structure and dynamics of the barnacle, *Tetraclita japonica*, is influenced by the combined effect of larval supply, settlement and recruitment. By studying at a range of spatial and temporal scales, she discovered that the overall pattern was governed by small-scale variability and that the relative importance of these supply-side processes is site- and time-specific. Damgy also determined, in collaboration with Prof. KH Chu at Chinese University, that the post-settlement mortality of *Tetraclita* was a genotype-dependent process.



Vivien inspecting her fish population in SWIMS aquarium

Combined toxicities of antifouling biocides

Zinc pyrithione (ZnPT) has a strong synergistic, toxic, effect with copper (Cu) on the diatom *Thalassiosira pseudonana*, polychaete larvae *Hydroides elegans* and the amphipod *Elasmopus rapax*. Vivien Bao successfully modelled the combined toxicity of ZnPT and Cu. Such synergistic effects may be partly due to the formation of copper pyrithione. Vivien proposes that it is, therefore, inadequate to assess the ecological risk of ZnPT to marine organisms solely based on toxicity data generated from the biocide alone. To better protect marine resources, she advocates developing appropriate water quality criteria for ZnPT with a consideration of its synergistic effects with Cu at environmentally realistic concentrations.



Kevin enjoying his survey work

Better sediment quality guidelines for Hong Kong

Making use of databases from benthic community surveys and sediment quality monitoring of the HKSAR Government, Kevin Kwok has successfully constructed field-based species sensitivity distributions (f-SSDs) based on the negative relationship between the abundance of sensitive species and contaminant concentrations in sediment. A threshold effects level of the target contaminant, can be estimated and adopted as sediment quality guidelines (SQGs). Using this approach, Kevin has derived more ecologically relevant SQGs for nine trace metals, polycyclic aromatic hydrocarbons and polychlorinated biphenyls. In general, the newly derived SQGs are slightly conservative, implying that they can provide better protection to benthic marine communities in Hong Kong.

- Campagna C, Sadovy Y (co-Chairs of the IUCN SSC Marine Conservation Sub-Committee) (2007) Sustainable use in the marine realm. Species - Newsletter of the Species Survival Commission IUCN **48**:21
- Chan KK, Leung PTY (2007) Antennular morphology of the cypris larvae of the mangrove barnacle *Fistulobalanus albicostatus* (Cirripedia: Thoracica: Balanomorpha). *Journal of the Marine Biological Association of the United Kingdom* **87**: 913-915
- Chan KK, Tsang LM, Chu KH (2007) Cryptic diversity of the *Tetraclita squamosa* complex (Crustacea: Cirripedia) in Asia: Description of a new species from Singapore. *Zoological Studies* **46**: 46-56
- Chan KK, Tsang LM, Ma KY, Hsu CH, Chu KH (2007) Taxonomic revision of the acorn barnacles *Tetraclita japonica* and *Tetraclita formosana* (Crustacea: Cirripedia) in East Asia based on molecular and morphological analyses. *Bulletin of Marine Science* **81**: 101-113
- Cheung KH, Gu J-D (2007) Mechanisms of hexavalent chromium detoxification by bacteria and bioremediation applications. *International Biodeterioration & Biodegradation* **59**: 8-15
- Cheung JKH, Lam RKW, Shi MY, Gu J-D (2007) Environmental fate of the endocrine disruptors, dimethyl phthalate esters (DMPE), under anoxic sulfate-reducing conditions. *Science of the Total Environment* **381**: 126-133
- Cornish AS, Ng WC, Ho VCM, Wong HL, Lam JCW, Lam PKS, Leung KMY (2007) Trace metals and organochlorines in the bamboo shark *Chiloscyllium plagiosum* from the southern waters of Hong Kong, China. *Science of the Total Environment* **376**: 335-345
- Crane M, Kwok KWH, Wells C, Whitehouse P, Lui GCS (2007) Use of field data to support European Water Framework Directive Quality Standards for dissolved metals. *Environmental Science & Technology* **41**: 5014-5021
- Gu J-D (2007) Microbial colonization of polymeric materials for space applications and mechanisms of biodeterioration: a review. *International Biodeterioration & Biodegradation* **59**: 170-179
- Hutchinson N, Davies MS, Ng JSS, Williams GA (2007) Trail following behaviour in relation to pedal mucus production in the intertidal gastropod *Monodonta labio* (Linnaeus). *Journal of Experimental Marine Biology and Ecology* **349**: 313-322
- Jiang J, Zhang R, Li R, Gu J-D, Li S (2007) Simultaneous biodegradation of methyl parathion and carbofuran by a genetically engineered microorganism constructed by mini-Tn5 transposon. *Biodegradation* **18**: 403-412
- Kwok KWH, Leung KMY, Lui GCS, Chu VKH, Lam PKS, Morritt D, Maltby L, Brock TCM, Van Den Brink PJ, Warne MStJ, Crane M (2007) Comparison of tropical and temperate freshwater animal species' acute sensitivity to chemicals: implications for deriving safe extrapolation factor. *Integrated Environmental Assessment and Management* **3**: 49-67
- Li J, Gu J-D (2007) Complete degradation of dimethyl isophthalate requires the biochemical cooperation between *Klebsiella oxytoca* Sc and *Methylobacterium mesophilicum* Sr isolated from wetland sediment. *Science of the Total Environment* **380**: 181-187
- Lau MC, Chan KM, Leung KMY, Luan TG, Yang MS, Qiu JW (2007) Acute and chronic toxicities of tributyltin to various life stages of the marine polychaete *Hydroides elegans*. *Chemosphere* **69**: 135-144
- Leung KMY, Grist EPM, Morley NJ, Morritt D, Crane M (2007) Chronic toxicity of tributyltin to development and reproduction of the European freshwater snail *Lymnaea stagnalis* (L.). *Chemosphere* **66**: 1358-1366
- Lui GCS, Li WK, Leung KMY, Lee JHW, Jayawardena AW (2007) Modelling algal blooms using vector autoregressive model with exogenous variables and long memory filter. *Ecological Modelling* **200**: 130-138
- Lui KKY, Ng JSS, Leung KMY (2007) Spatio-temporal variations in diversity and abundance of commercially important Decapoda and Stomatopoda in subtropical Hong Kong waters. *Estuarine, Coastal and Shelf Science* **72**: 635-647
- Morritt D, Leung KMY, De Pirro M, Yau C, Wai TC, Williams GA (2007) Responses of the limpet, *Cellana grata* (Gould 1859), to hypotonic stress during simulated tropical, monsoon rains. *Journal of Experimental Marine Biology and Ecology* **352**: 78-88
- Ng JSS, Lui KKY, Lai CH, Leung KMY (2007) *Harpiosquilla harpax* (Crustacea, Stomatopoda) as a biomonitor for trace metal contamination in benthic sediments in Hong Kong waters. *Marine Pollution Bulletin* **54**: 1523-1529
- Ng JSS, Wai TC, Williams GA (2007) The effects of acidification on the stable isotope signatures of marine algae and molluscs. *Marine Chemistry* **103**: 97-102
- Pan L, Gu J-D (2007) Characterization of aerobic bacteria involved in degrading polyethylene glycol (PEG)-3400 obtained using plating and enrichment culture techniques. *Journal of Polymers and the Environment* **15**: 57-65
- Raisuddin S, Kwok KWH, Leung KMY, Schlenk D, Lee JS (2007) The copepod *Tigriopus*: a promising marine model organism for ecotoxicology and environmental genomics. *Aquatic Toxicology* **83**: 161-173
- Sadovy Y (Ed.) (2007) Workshop for global red list assessments of groupers family Serranidae; subfamily Epinephelinae. *IUCN Grouper & Wrasse Specialist Group*. Final Report April 2007, 24 pp.
- Stafford R, Davies MS, Williams GA (2007) Computer simulations of high shore littorinids predict small-scale spatial and temporal distribution patterns on rocky shores. *Marine Ecology Progress Series* **342**: 151-161
- Tsang LM, Chan KK, Ma KY, Hsu CH, Chu KH (2007) Lack of mtDNA and morphological differentiation between two acorn barnacles *Tetraclita japonica* and *T. formosana* differing in parietes colours and geographical distribution. *Marine Biology* **151**: 147-155
- Wei, YH, Dai JY, Liu M, Wang JS, Xu MQ, Zha JM, Wang ZJ (2007) Estrogen-like properties of perfluoroctanoic acid as revealed by expressing hepatic estrogen-responsive genes in rare minnows (*Gobiocypris rarus*). *Environmental Toxicology and Chemistry* **26**: 2440-2447
- Williams, G.A. and C. Little (2007) Foraging behaviour. Invited contribution to "The Encyclopedia of tidepools and rocky shores" Eds M. Denny & S. Gaines, California University Press. pp. 239-242.
- Williams, G.A. and Cartwright, S.R. (2007) Marine Ecology: Process, systems and impacts (Book Review). *Journal of Experimental Marine Biology & Ecology* **352**: 268.
- Wu RSS, Lau TC, Ko PH, Fung WKM, Leung KMY (2007) An 'artificial mussel' for monitoring heavy metals in aquatic environments. *Environmental Pollution* **145**: 104-110
- Xu XR, Li HB, Gu J-D, Li X-Y (2007) Kinetics of N-butyl benzyl phthalate degradation by a pure bacterial culture from mangrove sediment. *Journal of Hazardous Materials* **140**: 194-199
- Xu XR, Li HB, Gu J-D (2007) Photocatalytic reduction of hexavalent chromium and degradation of di-N-butyl phthalate in aqueous TiO₂ suspensions under ultraviolet light irradiation. *Environmental Technology* **28**: 1055-1061
- Yu X, Gu J-D (2007) Accumulation and distribution of trivalent chromium and effects on metabolism of the hybrid willow *Salix matsudana* Koidz × *alba* L. *Archives of Environmental Contamination and Toxicology* **52**: 503-511
- Yu X, Gu J-D (2007) Difference in the Michaelis-Menten kinetics for different species of maize during cyanide removal. *Ecotoxicology and Environmental Safety* **67**: 254-259
- Yu X, Gu J-D (2007) Metabolic responses of weeping willows to selenate and selenite. *Environmental Science and Pollution Research* **14**: 510-517
- Yu X, Yan Y, Gu J-D (2007) Attachment of the biofouling bryozoan *Bugula neritina* larvae affected by inorganic and organic chemical cues. *International Biodeterioration & Biodegradation* **60**: 1934-198
- Yu X, Gu J-D, Huang S-Z (2007) Hexavalent chromium induced stress and metabolic responses in hybrid willows. *Ecotoxicology* **16**: 299-309
- Yu X, Gu J-D, Liu S (2007) Biotransformation and metabolic response of cyanide in weeping willows. *Journal of Hazardous Materials* **147**: 838-844
- Zhang R, Wang Y, Leung PC, Gu J-D (2007) pVC, a small cryptic plasmid from the environmental isolate of *Vibrio cholerae* MP-1. *The Journal of Microbiology* **45**: 193-198
- Zhao Z-Y, Gu J-D, Li H-B (2007) Characterization of dissolved organic matter and disinfection characteristics of source water from Pearl River of P.R. China. *Water Science & Technology: Water Supply* **7**: 205-212



IUCN Grouper workshop (7-11 Feb. 2007) in Hong Kong, chaired by Yvonne Sadovy, left

SWIMS and IUCN

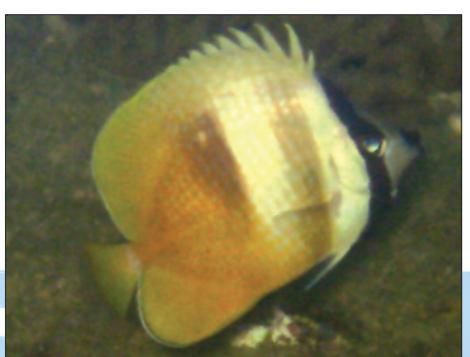
It has been another busy year for the IUCN Groupers & Wrasses Specialist Group, chaired by Yvonne Sadovy. In February we held a workshop to complete IUCN Red-Listings on all 161 species of groupers, and gathered together many world experts in grouper taxonomy, biology and fisheries. Following almost one year of preparation, 20 species were identified as threatened with extinction if they are not managed. These species tended to be the largest groupers and many of them have a habit that makes them easy to catch when reproducing because they congregate in large numbers to spawn.



Prof. Bill Ballantine on the shores of the Cape d'Aguilar Marine Reserve



SWIMS 2007 Reef Check team



Species of the day - the locally rare sunburst butterflyfish

SWIMS and WWF

SWIMS and WWF HK continue to share many of the same goals and visions, one of which is the need to conserve and protect our coastal marine resources, and move towards expanding the network of marine protected areas in Hong Kong. To highlight this SWIMS hosted a special visit organized by WWF HK by Prof. Bill Ballantine who was the champion of marine reserves in New Zealand and established the famous Leigh Marine Reserve. Together with WWF HK Chairman Marcus Shaw, and Director of Conservation, SWIMS alumni, Dr. Andy Cornish, Prof. Ballantine met with press at Cape d'Aguilar to promote the urgent need to expand Hong Kong's marine protected areas.

SWIMS and the MBAHK

SWIMS hosted the 3rd MBAHK Marine Biology Postgraduate Symposium on 20 October 2007 which was held at the HKU campus and chaired by our postgraduate student, Allen To. Congratulations to Amy Zhang who won the best oral presentation in this event for the second time.

SWIMS and Reef Check

Reef check aims at monitoring the status of coral reef communities around the world by collecting fundamental ecological information with the help of volunteer divers and scientists.

This year the SWIMS Reef Check team was composed of 19 enthusiasts and, as in previous years, they dived at Siu Long Ke.

Despite low visibility and difficult conditions the SWIMS team was able to accomplish ecological monitoring in one of the most diverse coral communities in Hong Kong. The team revealed generally good health status of coral, but a deficiency of indicator fishes and invertebrates, especially those of commercial value, demonstrating the impact of fishing pressure. The highlight of the day was when Shadow Sin spotted a sunburst butterflyfish, *Chaetodon kleinii*, which is a locally very rare species.

Facilitation by barnacles can influence species' summer distribution patterns

Stephen Cartwright is investigating the role of the barnacle *Tetraclita japonica*, as a habitat-forming organism, in reducing environmental stress for other species. His work shows that during the hot season, small gastropods take refuge amongst the shells of barnacles, whereas in the cool season, they are found on bare rock surfaces. This suggests that barnacles are important in reducing stress in an environmentally harsh environment, influencing the distribution of other species. Laboratory work has demonstrated that littorinids select to associate with barnacles, and Stephen's preliminary results suggest that living with barnacles can reduce the frequency of littorinids aggregating.



Littorinids associating with barnacle shells in aquarium experiments



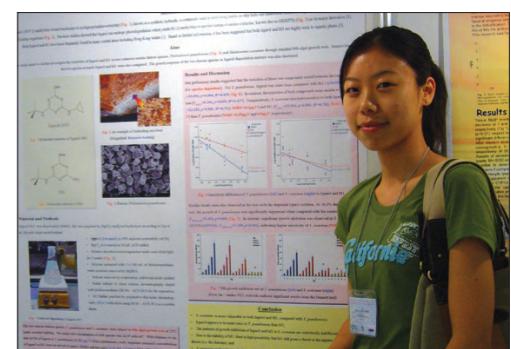
Allen monitoring the home range of the honeycomb grouper, *Epinephelus merra*

Home range of *Epinephelus merra* in Hong Kong and implications for its management

Allen To works on the biology and fisheries of groupers in Hong Kong. His work in 2007 was to map the home range of the honeycomb grouper, *Epinephelus merra*, which is a reef-associated species. A total of 32 individuals were tagged at Shelter Island. Allen used a 'Tag-release-resight' strategy for over 90 man-hours of snorkeling and SCUBA. Twelve of the tagged fish were resighted in sufficient numbers to calculate their home range ($\sim 47\text{m}^2$) which is similar to that of the chocolate hind, *Cephalopholis boenak*. Allen's results suggest that effective protection of relatively small coral communities may be sufficient for *E. merra*, one of the few groupers still found frequently in local waters.

Antifoulant Irgarol 1051 - a blessing or a curse in disguise?

In the past year, Amy Zhang estimated the ecotoxicities of a popular antifoulant - Irgarol 1051 and its major derivative, M1. She found that Irgarol is generally more toxic than M1 to marine autotrophs and microalgae are more sensitive than macroalgae and cyanobacteria to Irgarol and M1. Amy's study also identified the need to separate freshwater and saltwater toxicity data when establishing water quality regulations for Irgarol, due to differences in their sensitivity. Although data are limited, M1 might be less toxic than Irgarol, but this finding requires further confirmation with additional data on other species.



Amy presenting her poster at the International Conference on Marine Pollution and Ecotoxicology



Shadow (left) attending the OPCFHK Conservation Workshop in Taiwan

The biology of the whitespotted bamboo shark in Hong Kong

The whitespotted bamboo shark, *Chiloscyllium plagiosum*, is the most common shark in Hong Kong waters. This small, benthic shark is often caught by fishermen, but is of low commercial value and not widely consumed. Although it is one of the few remaining shark species in Hong Kong waters, its basic biology is still unknown. Shadow Sin is studying its age and growth, as well as its reproductive biology from samples collected in local wet markets. Data suggest that female sharks mature at 65 cm, while males mature at 63 cm, with both maturing at ~4 years of age. Shadow is currently determining the reproductive cycle and growth rate of these sharks.



Ricky rinsing the bongo net after a plankton tow

Larval ecology of stomatopods in Hong Kong waters

Ricky Tang's project aims to assess the larval ecology of stomatopods (mantis shrimps) in terms of their seasonal and geographic abundance in Hong Kong waters via zooplankton surveys. Ricky found that densities of stomatopod larvae were higher in May and October, which is approximately the peak season of stomatopod spawning. In addition, larval densities were significantly higher in western waters than in the north-eastern waters of Tolo Harbour and Channel. Ricky uses DNA sequencing to identify larvae and, to date, has identified at least 4 different larval morphotypes.



Stanley (third from the right) with other HKU diving team members

Regional and temporal distribution of chaetodontids in Hong Kong's coral communities

Over the last year, Stanley Shea's project has focused on chaetodontids (butterflyfishes), including their species composition, relative abundance and temporal patterns of distribution on Hong Kong's reefs. Hong Kong has a rich butterflyfish fauna. Nine sites were surveyed using SCUBA in summer and winter. Stan found a relatively higher abundance of chaetodontids in coral communities at Tung Ping Chau Marine Park and Shelter Island and they were more abundant in summer than winter. Currently, Stanley is studying whether several environmental variables, including live coral coverage, structural complexity and temperature, may influence the assemblage of chaetodontids in Hong Kong's coral communities.

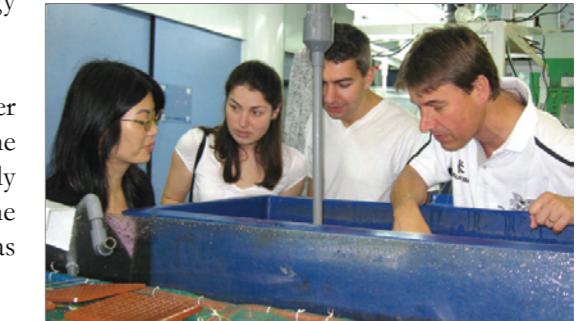
Research Opportunities

Research Visitors

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

The Laurence Caplin Scholarship in Marine Biology

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



Emily and Paul visiting SWIMS aquarium

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.



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.

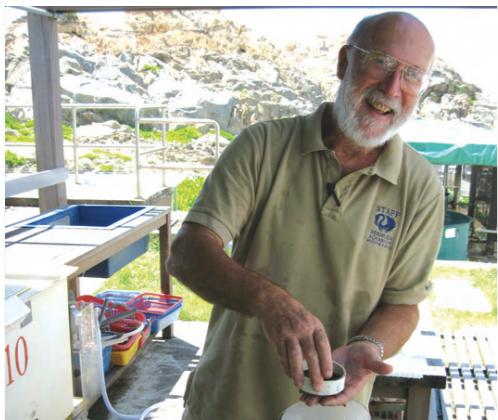
Accommodation

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.



Renovation of the New Residence

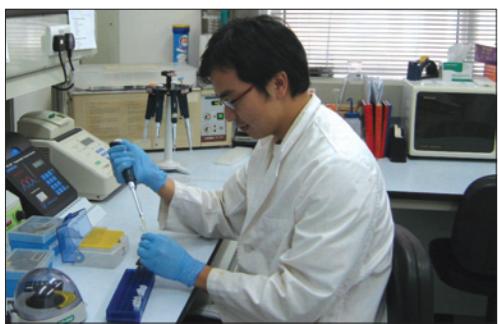
From July to September 2007 the "new" Residence block was renovated to bring the facilities up to the standard of the "original" block, which was refurbished in 2003. Improvements include new roofing, split-level air-conditioners, aluminium windows, tiled floors and a new kitchen facility.



Wolfgang Sterrer sieving mangrove muds



*Prof. Gianluca Sara, Artori Zenone and Dr. Maurizio de
Pirro, visited from Italy*



Solomon Chak working on barnacle genetics

Sichang Island (Thailand). During this time, Mr. Edison Macusi spent 5 months at SWIMS to conduct his MSc project based at the University of Bremen (Germany). Edison investigated spatial distribution patterns of intertidal grazers in relation to environmental conditions.

A number of colleagues visited for shorter periods. Dr. Monthon Ganmanee and Mr. Sakaman Plathong (Prince Songkla University, Thailand) visited to collaborate with James True on coral ecology and physiology. We were also pleased to welcome back long-term collaborator Dr. Liz Harper (Cambridge University, UK) who worked on epifaunal gastropods. Another regular researcher who returned for a short trip this year was Dr. Maurizio de Pirro, who was joined by Paolo Bracci and Prof. Gianluca Sara and Artori Zenone (Palermo University, Italy). During their visit, they collected samples of *Brachidontes* and initiated collaborations on trophic pathways and environmental stressors.

Community Outreach

As in previous years there has been a great number of visitors, over 400 in 2007, who have come to SWIMS to attend seminars, act as summer helpers, gain work experience or work on research projects, and this does not include casual visitors. This year we have tried to regulate numbers as the demand for such visits runs the risk of disrupting research at SWIMS. One group, however, which it was a pleasure to host was the Swire Management Trainees who toured SWIMS' facilities and the shores of the Marine Reserve and held an informal reception on the SWIMS balcony.

We have still been able to accommodate a variety of groups. Once again school groups have been a major focus for us. Numerous school groups came to SWIMS for one-day visits, including lecture classes and practical fieldtrips. Many of these school students returned for work experience, spending 1-2 weeks helping researchers at SWIMS.

As usual many of our undergraduates either conducted their final year projects at SWIMS, or acted as helpers over the summer. Some of them have gone on to join us as full time postgraduate researchers. Mr. Solomon Chak joined us as a research helper and has worked as a Research Assistant with Dr. Ng Wai Chuen for the last 6 months.

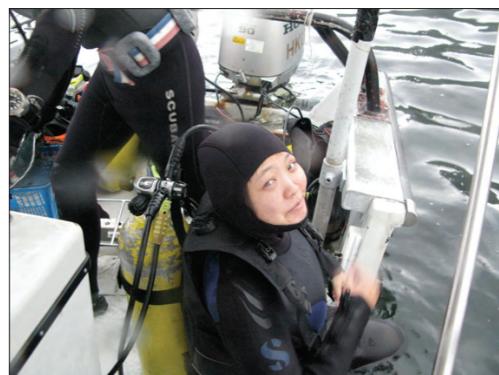
Again, SWIMS has featured in the local press, and staff were interviewed and gave expert opinion on numerous marine issues. This has seen Dr. Cynthia Yau featured in *Jessica Magazine* and Prof. Yvonne Sadovy in the *Hong Kong Tatler*. This year staff and students also acted as scientific advisors to a 5 part TV programme “Sea World Odyssey” on the wonders of Hong Kong’s marine life which was aired by RTHK.



Yvonne featured in the Hong Kong Tatler, August 2007

Reproduction and growth of scleractinian corals in Hong Kong

There have been few studies on the biology of scleractinian (stony) corals in Hong Kong waters. The chief objective of Christine Yeung's research is to investigate the reproductive biology of these corals, in particular, to determine whether local species spawn each year, or if they "skip" spawning in some years due to limited energy reserves. Christine collects coral samples from the field to assess their gametogenic status from histological analysis. She is also staining individual coral colonies *in situ* with Alizarin Red S to determine if they show seasonal variation in growth rates due to the marked seasonality in Hong Kong's marine environment.



Christine preparing for a dive to mark corals



William gearing up for diving

The effects of salinity on the physiology of hermatypic corals in Hong Kong

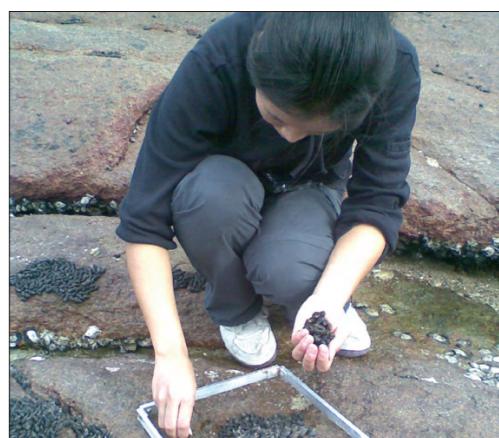
The Hong Kong environment is characterized by a south-west to north-east salinity gradient due to the influence of the Pearl River Estuary. The main objectives of William But's research are to determine the salinity tolerance of different hermatypic coral species and compare the effects of low salinity on their physiology. William hopes to relate the spatial distribution of different species of hermatypic corals with the salinity variation pattern in local waters. Consequently, William's study might help to predict the possible effects of increasing rainfall and Pearl River freshwater discharge, under the influence of global climate change, on Hong Kong corals.

Aggregation in marine invertebrates

Aggregation is the non-random distribution of animals, where individuals form clumps, and this behaviour is seen in a wide range of marine taxa. In intertidal communities, it is especially common high on the shore in the tropics. It is hypothesized that aggregating benefits animals by reducing vulnerability to predators, mechanical dislodgement and extreme environmental conditions. As yet, however, there is no unequivocal evidence as to the selective benefits of this behaviour. In June Leung's study, she investigates aggregation behaviour in several Hong Kong invertebrates to identify general patterns across taxa or environmental gradients. From this project, June will try to understand how and why animals clump together.



Sea World Odyssey (courtesy: RTHK)



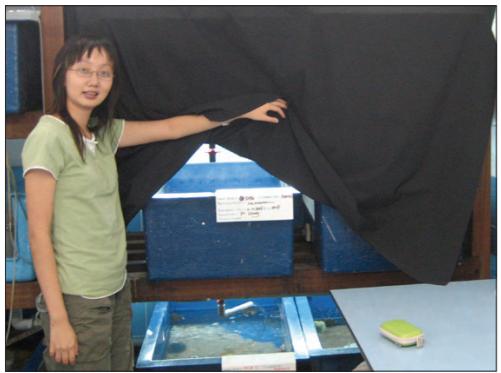
June counting aggregations of the snail Planaxis sulcatus



The green lipped mussel, *Perna viridis*

Body burdens in green lipped mussels

The green-lipped mussel, *Perna viridis*, has been proposed as a biomonitor for environmental contaminants along the Indo-Pacific coast. Many contaminants are accumulated within the mussel body and may cause adverse effects at different biological levels (e.g. molecular, cellular and physiological responses). Although different health biomarkers have been investigated in *Perna*, the relationship between biomarkers and contaminant tissue concentrations are poorly understood. In Jamius Yeung's study, a variety of biomarkers in mussels at different biological levels will be assessed with a view to providing important information for ecological risk assessment.



Stella showing her experimental setup

Small things matter more than you think

Nanomaterials, such as the engineered metal oxide, fullerenes and carbon nanotubes are increasingly being developed and manufactured for industrial and commercial applications, and there is increasing concern over their potential ecological impacts. Stella Wong is investigating the ecotoxicities of selected nanoparticles and their functionalized derivatives on various marine organisms such as sea anemones, sea squirts and jelly fish. To simulate an environmentally realistic scenario, Stella will also examine the ecotoxicities of these nanomaterials in the presence of humic acid, which is a common organic component of coastal waters.



Sawfish rostra in a Chinese temple

Sharks of the South China Sea

The relative paucity of information on sharks means it is difficult to understand their biology and fisheries history in the South China Sea. To develop conservation and management plans for these rapidly declining species, Vivian Lam's study addresses several aspects of shark fisheries. Vivian studies the reproductive biology of the spadenose shark *Scoliodon laticaudus*, one of the few remaining common sharks in the region, through histological analyses of gonads and population demographic data. Her study will provide important biological information for understanding the status of this species. Vivian also has an interest in endangered species and she is monitoring sawfish, a group of threatened species, rostra in museum displays and temples in Southern China.

Metallothioneins in marine gastropods

Metallothioneins (MTs) are low-molecular-weight cysteine-rich metal-binding proteins that play important roles in regulation of essential metals, detoxification of toxic metals, and as antioxidants. It is hypothesized that different MT isoforms exist which have different physiological functions in marine molluscs. Using advanced genomic and proteomic techniques, Lucky Chan's study aims to characterize different MT isoforms and investigate their physiological functions and kinetics in the whelk *Thais clavigera*. Ultimately, Lucky hopes to identify stress-specific MT isoforms to use as biomarkers for monitoring coastal pollution.



Lucky measuring samples of the whelk, *Thais*

Research Visitors and Seminars

SWIMS was host to a number of important visitors this year, including Ms. Mai Horn Rantzen (Swedish Ambassador for the marine environment) and Mr. Robert Gibson (Director of Sustainable Development, Swire Group), as well as academics from over 16 different countries across the globe.

Dr. Louise Firth (University College Dublin, Ireland) spent 2 months researching the thermal and osmotic tolerance of *Cellana toreuma* and gave a seminar about her work in Ireland on *Patella* species. Whilst she was here Louise also worked with another visiting researcher, Dr Yunwei Dong (Qingdao University, China). Yunwei collaborated with Gray Williams and Stephen Cartwright investigating heat shock protein expression in intertidal limpets, and gave a seminar on his work in China on the thermal ecophysiology of sea cucumbers.



Breakfast time at the SWIMS residence



Michael Eitel processing his Placozoa samples



William with visitors Sujitra & Edison



Yunwei & Stephen preparing limpet tissue