

Souvenir Programme

First International Conference on Managing Ecosystem Health of Tropical Seas: Environmental Management of Coastal Ecosystems



19 - 21 October 2010
Putrajaya Marriott Hotel,
IOI Resort, Putrajaya
MALAYSIA

Organised by:



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**Cover photograph courtesy of Mr. Kee Alfian Abdul Adziz,
Universiti Kebangsaan Malaysia.*

Programme Snapshot

DAY	MORNING	AFTERNOON
18/10/10		Registration
19/10/10	Opening Ceremony (0915 - 1000)	Technical Session 1A (1400 - 1600)
	Plenary 1 (1020 - 1050)	
	Plenary 2 (1050 - 1120)	Technical Session 1B (1600 - 1720)
	Keynote 1 (1120 - 1150)	Conference Dinner (1815 - 2230)
20/10/10	Keynote 2 (1150 - 1220)	
	Keynote 3 (0900 - 0930)	Keynote 5 (1400 - 1430)
	Keynote 4 (0930 - 1000)	Keynote 6 (1430 - 1500)
21/10/10	Technical Session 2A (1020 - 1220)	Technical Session 2C (1500 - 1740)
	Technical Session 2B (1020 - 1220)	Technical Session 2D (1500 - 1720)
	Poster Viewing (1220 - 1300)	
22/10/10	Keynote 7 (0900 - 0930)	Technical Session 3C (1400 - 1540)
	Keynote 8 (0930 - 1000)	
	Technical Session 3A (1020 - 1240)	
	Technical Session 3B(i) (1020 - 1240)	Technical Session 3B(ii) (1400 - 1520)
		Conference Synthesis, Summary and Panel Discussion (1600 - 1730)
		Closing Ceremony (1730 - 1800)
22/10/10	Technical Tour to Malacca (0800 - 1800)	

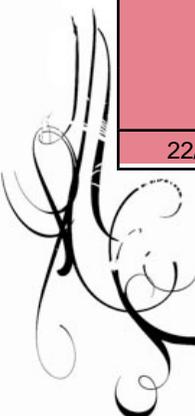
Legend:



Putrajaya Ballroom 1



Selangor Room



Message



It is broadly acknowledged that our seas are under numerous pressures leading to degradation of their ecological health and consequent biodiversity loss. This loss of economic resources and ecological services such as fisheries and marine tourism deleteriously affect millions of lives, especially those directly dependent on marine ecosystems for their livelihood.

Many human activities pose serious threats to coastal and offshore ecosystems. Intensive exploitation of living marine resources, sedimentation, industrial and municipal pollution, eutrophication and introductions of alien invasive species and offshore mining are among major challenges that face our marine resources. Though once considered something nebulous, the impacts of marine hazards, climate variability and climate change have become more marked in recent years.

The collective effects of these pressures include declines in the populations of marine fauna and flora, as well as the habitats that sustain their feeding and breeding. The degradation of coral reefs, mangroves and sea-grasses reduce the ability of marine ecosystems to provide important goods and services, which eventually undermines the food security of all nations, in addition to decimating employment & incomes in many coastal communities.

In meeting these challenges, the Ministry of Science, Technology and Innovation Malaysia (MOSTI), through the National Oceanographic Directorate (NOD), has taken positive steps to develop an Ocean Policy Outline towards having a vision as well as strategies to effectively protect and sustain marine ecosystem health in the country and region.

MOSTI, together with other related ministries, have developed numerous research plans and activities in consonant with the 1992 Rio Declaration of the United Nations Conference on Environment and Development (UNCED) and the 1992 Convention on Biological Diversity, both of which are closely related to the assessment of the state of marine environment and the promotion of sustainable development.

MOSTI's collaboration with international organisations such as UNESCO's Intergovernmental Oceanographic Commission-WESTPAC underscores our commitment to work with the global scientific community in addressing the issues facing marine ecosystems. For instance, the Coral Triangle Initiative (CTI), a collaborative regional program in Sulu-Sulawesi waters with five other countries within the Coral Triangle region, is testimony of our commitment to ensuring the health and sustainability of tropical marine ecosystems.

Thus, this International Conference on "Managing Ecosystem Health of Tropical Seas: Environmental Management in Coastal Ecosystems" ECOSEAS 2010, is a very significant and timely event. It is a platform for us to collectively address and share the understanding of our marine environment and the maintenance of marine ecosystem structure, function and integrity, and sustainable use of ecosystem goods and services in our countries.

I envision the ideas that will flourish from this gathering of intellectuals will have a strong impact on our efforts to ensure a sustainable management of our tropical seas. I look forward to hearing the outcomes and achievements of this conference, and wish all of you success.

Thank you.

YB. Datuk Seri Dr. Maximus Johnity Ongkili
Minister
Ministry of Science, Technology and Innovation



Message



Welcome and Selamat Datang.

On behalf of the Universiti Putra Malaysia (UPM), I would like to take the opportunity to welcome all the participants to Putrajaya, the administrative city of the Malaysian government. This hotel lies adjacent to UPM and hence I welcome you to our green campus as well.

Today marks another milestone for the local marine scientists from various institutions and organisations as Malaysia is again chosen as the venue for the First International Conference on Managing Ecosystem Health of Tropical Seas: Environmental Management of Coastal Ecosystems (ECOSEAS 2010). Indeed, it is an honour for the country, and UPM in particular. I would like to express our appreciation and gratitude for giving us the opportunity to organise this international event of such global significance.

UPM is one of the leading research universities in the country and we are committed to ensure excellence in our R & D activities. In this respect, it is pertinent to note that many of our academics have received grants from national and international organisations in recognition of the high quality and impact of their research. In the field of ecosystem health, UPM scientists are actively collaborating with a number of institutions on a wide range of topics pertaining to marine ecosystems. UPM is fortunate to have an excellent marine science station facility in Port Dickson along the Straits of Malacca which is only one hour drive from the main campus. The recently upgraded laboratory and hatchery facility will provide immense opportunities for our scientists and collaborating partners to further enhance our knowledge on the tropical seas. Some of the ongoing projects include culture of microalgae, marine fish breeding, broodstock management, livefeed production and biodiversity.

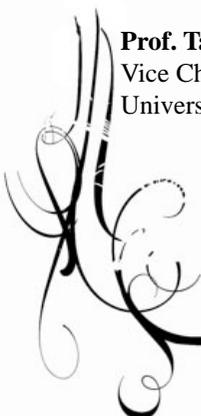
I am delighted to note that the meeting has managed to attract several imminent guest speakers from reputable global institutions to address the issue of the environmental management of the tropical seas. I do hope that at the end of this meeting, we would be successful in highlighting some of the major ecosystem health issues confronting tropical seas and be able to collectively signal relevant authorities as to where we are now and what needs to be done to ensure sustainable management of the marine ecosystem.

I hope this 3-day event will also provide a platform for scientists from all over the world to enhance their networking, exchange scientific findings and foster their friendships. At the same time, please also take the opportunity to explore the hospitality, culture and tropical beauty of our country.

I wish you a successful and fruitful conference.

Thank you.

Prof. Tan Sri Datuk Dr. Nik Mustapha R. Abdullah
Vice Chancellor
Universiti Putra Malaysia



Message



The concept of ecosystem health is based on ecological principles that represent integrated management of the natural environment so as to ensure sustainability of the goods and services it provides all of mankind. The First International Conference on Managing Ecosystem Health of Tropical Seas (ECOSEAS 2010) is a concerted effort in promoting this concept by addressing threats and challenges facing the health of tropical seas and seeking solutions for their sustainability.

I would like to express my appreciation and gratitude to all local and international agencies, departments and individuals who have contributed significantly to make this conference a success. This multi-disciplinary conference features world renowned and distinguished speakers, who will be addressing more than 200 conference delegates from across the globe.

Apart from recent findings and advances in scientific knowledge, current issues in the management and sustainable utilisation of tropical marine resources are also expected to be deliberated. The 3-day conference will feature sessions on Riverine Linkages and Coastal Interactions, Fisheries and Aquaculture, Marine Biodiversity and Resource Management, Environmental Stressors in Marine Ecosystems, Emerging Technologies and Management Policies and Socio-Economic Issues. These topics correspond to major areas of importance where sustaining marine ecosystem health is concerned. The presentations and the information they carry are expected to be of crucial importance, not just to scientists working in the field but also politicians, law-makers, managers and administrators.

The importance of this gathering is underscored by the fact that anthropogenic activities are driving ocean systems toward conditions not seen for millions of years, potentially leading to fundamental and irreversible ecological transformations. Destruction of marine habitats, diminishing catch, genetic variability reduction, and shifts in ecosystem dynamics and processes have far-reaching effects, deleterious not only to the millions within coastal communities, but also to the national economies of many countries across the globe. Decrease in marine production can translate into disruption of supply chains, increase of market price, loss of assets and livelihood opportunities, and declines in purchasing power.

We hope that the conference will engender an invaluable engagement amongst the scientists, policymakers as well as the general public to address the pressing issues that currently bedevil ecosystem health. It is pertinent to note that tropical waters sustain the greatest biodiversity in the global biosphere, yet remain among the least understood. To actively enhance and maintain the health of tropical marine ecosystems, it is clearly necessary to intensify research into ensuring a better understanding of the ecosystems we are expected to manage.

I look forward to interesting and fruitful discussions in the conference, hopefully leading to a mapping of management measures and adaptation strategies that can strengthen ecosystem health and resilience in tropical seas. Thank you again to all whose contributions will certainly pave the way for sustainable global food and living security.

Prof. Dr. Fatimah Md. Yusoff
 ECOSEAS 2010 Co-Chair
 Director Institute of Bioscience
 Universiti Putra Malaysia



Message

Welcome from the AEHMS



On behalf of the Aquatic Ecosystem Health and Management Society (AEHMS), I would like to extend a warm welcome to the attendees of this conference. The AEHMS has maintained a global programme of environmental networking, convening conferences and publishing including a primary journal and book series, for the past 20 years. The Society is not new to the region, having published a special issue of the Aquatic Ecosystem Health & Management (AEHM) Journal in 2006 dealing with the health and sustainability of Malaysian ecosystems. The AEHMS also co-organised an international conference in 2008 focusing on the "Health of the Marine Ecosystems of South East Asia" which led to the publication of several articles in the journal in 2009.

The huge tropical seas of the South East Asia and the Asia Pacific regions, and the ecosystems within them, are corner stones of the regional economy, and by extension, the global economy as well. These tropical marine ecosystems serve as a lifeline for transportation, food, recreation, biodiversity and many other ecological services. The sudden and dramatic industrial development of the region, especially in coastal regions, has threatened the health, integrity and sustainability of these marine ecosystems. Consequently, a group of concerned environmentalists from Malaysia, with the support of the AEHMS, felt that there was a dire need of a conference devoted to understanding the health and integrity of these tropical ecosystems in order to promote their conservation. The group soon realised that tackling the issue at the level of the entire region was a gigantic task and it was decided to convene three conferences to complete the mission. This conference, first of the ECOSEAS series, has been designed to focus on the ecosystem health and integrity of tropical waters in the region. Themes to be explored include a wide variety of topics such as food webs, biodiversity, fisheries, aquaculture, abatement technologies and riverine linkages. The second conference will exclusively focus on the ecosystem health and management of the South China Sea and is set to be held in Guangzhou, China next year. The third conference is expected to deal with the rest of the marine ecosystems including Australasia. The Society is once again looking forward in publishing selected papers from this conference in AEHM Journal concerning the state of the art information about various ecosystems of the region.

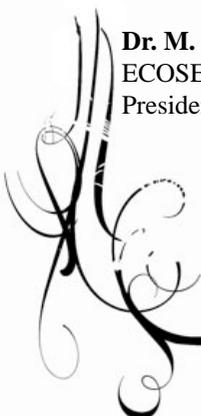
The AEHMS cordially welcomes all the scientists, managers and students to an interesting and exciting gathering of researchers and expertise in diverse areas of ecosystem conservation. We hope that this conference will generate momentum and interest for initiating ecosystem-based integrated research needed for conserving the health and integrity of the marine ecosystems of South East Asia and the Asia Pacific.

I congratulate the Organising and Scientific Committees for convening an excellent gathering of scientists and managers.

Dr. M. Munawar

ECOSEAS 2010 Co-Chair

President, Aquatic Ecosystem Health and Management Society (AEHMS), Canada



Message



The National Oceanography Directorate of the Ministry of Science, Technology and Innovation (MOSTI), is proud and honoured to be associated with the organisation of this First International Conference on Managing Ecosystem Health of Tropical Seas: Environmental Management in Coastal Ecosystems, ECOSEAS 2010.

Malaysia as a maritime nation and member of the Executive Council of Intergovernmental Oceanographic Commission (IOC) of UNESCO, celebrates the 50th Anniversary of IOC as part of our effort and contribution towards the wise management and stewardship of the ocean. In support of the global encouragement for the Regular Process on the Assessment of Assessments (AoA) of the State of Marine Environment (SOMER) of our waters and marine resources, we are duty bound to provide the scientific data and analysis on ecosystem health to our policy makers so that they can make informed decisions on the issue.

As we all live on land, we take the seas for granted. We forget that more than 70% of our planet is made up of coastal and marine ecosystems and that our coastal economies, and their attendant communities, are sustained by them. Environmental damage is on going in the form of land-based and sea-borne pollution, marine hazards and climate change, over exploitation of its living and non-living resources, loss of biodiversity and other destructive human practices. There are also systemic issues that remain unresolved since the adoption of UNCLOS including flag state jurisdiction, compliance with and enforcement of international law and the declining share of ocean resources for developing countries.

The marine environment, which embraces the ocean, seas and adjacent coastal waters, forms a complete integrated systems that is an essential component of the global biosphere. Pollution, ecological imbalance and habitat change are major threats to health, productivity and biodiversity of the marine environment. The socio-economic components and services of integrated coastal management and marine spatial planning should be considered by experts as a means to provide suitable indicators and tools for decision support where sustainable management of the marine eco-region is concerned.

I wish to thank the organisers and the contributors to this conference and hope everyone will enjoy their deliberations and networking sessions.

Prof. Dr. Nor Aiemi Haji Mokhtar

ECOSEAS 2010 Co-Chair

Undersecretary/Director, National Oceanography Directorate (NOD)

Ministry of Science, Technology and Innovation (MOSTI)



Conference Programme

PRE-CONFERENCE: 18th October 2010 (Monday)

1500 - 1730	Registration
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FIRST DAY: 19th October 2010 (Tuesday)

0730 - 0845	Registration at Putrajaya Ballroom 1
0845 - 0915	Arrival of Guests & VIPs
0915 - 1000	Opening Ceremony by the Honourable Minister of Science, Technology and Innovation YB. Datuk Seri Dr. Maximus Johnity Ongkili
1000 - 1020	Refreshment Press Conference

Plenary Lectures

Venue: Putrajaya Ballroom 1

Chairperson: Prof. Dr. Nor Aieni Haji Mokhtar (NOD/MOSTI, Malaysia)

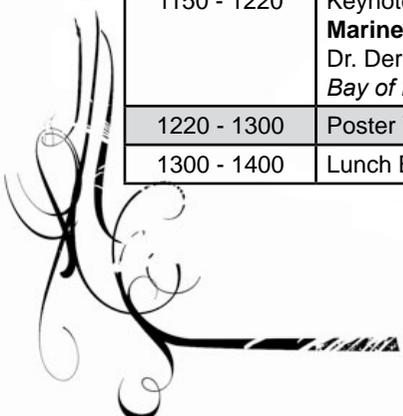
1020 - 1050	Plenary 1: Marine spatial planning - Practical approach towards ecosystem-based management Mr. Wenxi Zhu <i>Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO) Regional Secretariat for Western Pacific (WESTPAC), Bangkok, Thailand</i>
1050 - 1120	Plenary 2: Structural and functional indicators of ecosystem health: Sharing the inland seas - Great Lakes experience for global conservation Dr. Mohiuddin Munawar <i>Fisheries & Oceans Canada</i>

Keynote Addresses

Venue: Putrajaya Ballroom 1

Chairperson: Prof. Capt. Dr. Mohd Ibrahim Hj. Mohamed (Universiti Putra Malaysia)

1120 - 1150	Keynote 1: Sustaining aquatic ecosystem services through integrated management of river basins and the coastal seas Dr. Thia-Eng Chua <i>East Asian Seas Partnership Council of PEMSEA, Philippines</i>
1150 - 1220	Keynote 2: Marine biodiversity and resource management – What is the link? Dr. Derek J. Staples <i>Bay of Bengal Large Marine Ecosystem (BOBLME) Project, Thailand</i>
1220 - 1300	Poster Viewing with Authors
1300 - 1400	Lunch Break



Conference Programme

Technical Session 1A - Coastal and Riverine Interactions

Venue: Putrajaya Ballroom 1

Chairperson: Dr. Thia-Eng Chua (PEMSEA, Philippines)

1400 - 1420	Water management achievement in tidal lowlands <i>Muhammad Yazid (Indonesia)</i>
1420 - 1440	Wave attenuation ability of <i>Rhizophora</i> species at Kemaman, Terengganu <i>Isfarita Ismail (Malaysia)</i>
1440 - 1500	Ecological capability evaluation for sustainable land use planning <i>Sara Kaffashi (Iran)</i>
1500 - 1520	Modelling sustainable development indicators for coastal cities - Case study of Mahshahr City in Iran <i>Fereshteh Jaderi (Iran)</i>
1520 - 1540	Conservation and management programmes for nesting habitats of sea turtles in Persian Gulf, Iran <i>Rouhollah Zare (Iran)</i>
1540 - 1600	Refreshment

Technical Session 1B - Marine Biodiversity and Resource Management

Venue: Putrajaya Ballroom 1

Chairperson: Dr. Derek J. Staples (BOBLME, Thailand)

1600 – 1620	The study of genetic diversity of <i>Eretmochelys imbricata</i> in the Persian Gulf using microsatellite analysis <i>Mohammad Ali Salari-Aliabadi (Iran)</i>
1620 – 1640	Demographic composition of green turtle <i>Chelonia mydas</i> at foraging ground off Semporna Waters, Sabah <i>Juanita Joseph (Malaysia)</i>
1640 – 1700	Population biology and resilient features of mudskippers in mangrove ecosystem <i>Marina Hashim (Malaysia)</i>
1700 – 1720	Diversity of seaweeds in the vicinity of Johor: With emphasis on the east coast of Peninsular Malaysia Expedition II 2006 <i>Ming-Herng Gan (Malaysia)</i>
1815 - 2230	Conference Dinner Venue: Saloma Bistro and Theatre Restaurant, Kuala Lumpur



Conference Programme

SECOND DAY: 20th October 2010 (Wednesday)**Keynote Addresses**

Venue: Putrajaya Ballroom 1

Chairperson: Dr. Abdul Kadir Ishak (NOD/MOSTI, Malaysia)

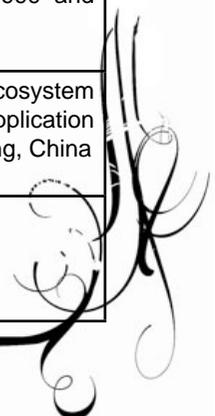
0900 - 0930	Keynote 3: Coral Triangle Initiative - Coral reefs, fisheries and food security (CTI-CFF) Prof. Dr. Nor Aieni Haji Mokhtar <i>National Oceanography Directorate (NOD), MOSTI, Malaysia</i>
0930 - 1000	Keynote 4: Coastal fisheries management in developing countries – Issues and policy concerns Prof. Dr. Dilip Kumar <i>Central Institute of Fisheries Education (ICAR), India</i>
1000 - 1020	Refreshment

	Technical Session 2A – Governance & Socio-Economics Venue: Putrajaya Ballroom 1 Chairperson: Prof. Dr. Dilip Kumar (ICAR, India)	Technical Session 2B – The Straits of Malacca Special Session: Safety Navigation for Resource Protection Venue: Selangor Room Chairperson: Mr. Gopinath Nagaraj (Fanli Marine and Consultancy Sdn. Bhd)
1020 – 1040	Responsible small scale capture fisheries <i>Abdul Rahim Ibrahim (Malaysia)</i>	Ecosystem-based management of the marine resources in the Straits of Malacca <i>Mohd Ibrahim Hj. Mohamed (Malaysia)</i>
1040 – 1100	Co-management arrangements for Kota Marudu, Sabah <i>Illisriyani Ismail (Malaysia)</i>	Cooperation in safety of navigation and environmental protection in the Straits of Malacca and Singapore <i>Mohd Nizam Basiron (MIMA, Malaysia)</i>
1100 – 1120	Sustainable fisheries of the East Coast of Peninsular Malaysia: Is traditional fishing the "best hope" for it? <i>Azizi Amin (Malaysia)</i>	Study on the ship carrying capacity of the Straits of Malacca <i>Mansoureh Syahriari (MIMA, Malaysia)</i>
1120 – 1140	Socio-economic profile of sea cucumber <i>Apostichopus japonicus</i> gatherers in the coastal areas of Bantayan Island, Cebu Province <i>Corazon P. Macachor (Philippines)</i>	Maritime law enforcement for oil waste disposal in the Straits of Malacca <i>Sutarji Kasmin (Malaysia)</i>
1140 – 1200	Governance of mangrove rehabilitation in Carles, Central Philippines <i>Didi B. Baticados (Philippines)</i>	Plenary Discussion
1200 – 1220	Community-based tourism of mangrove ecosystem in Kota Marudu, Sabah <i>Awang Noor Abd. Ghani (Malaysia)</i>	
1220 – 1300	Poster Viewing with Authors	
1300 – 1400	Lunch Break	

Conference Programme

<p>Keynote Addresses Venue: Putrajaya Ballroom 1 Chairperson: Prof. Dr. Noor Azhar Mohamed Shazili (Universiti Malaysia Terengganu)</p>	
1400 – 1430	Keynote 5: Bioaccumulation of organotins by fish and rock shell Prof. Dr. Jiro Koyama <i>Kagoshima University, Japan</i>
1430 – 1500	Keynote 6: Distributed network of environmental monitoring in the South China Sea and its implication for the regional collaborations Prof. Dr. Dong-Xiao Wang <i>South China Sea Institute of Oceanology (SCSIO), Chinese Academy of Sciences (CAS), China</i>

	Technical Session 2C – Environmental Stressors Venue: Putrajaya Ballroom 1 Chairperson: Prof. Dr. Jiro Koyama <i>(Kagoshima University Japan)</i>	Technical Session 2D – South China Sea Special Session Venue: Selangor Room Chairperson: Prof. Dr. Dong-Xiao Wang <i>(SCSIO, China)</i>
1500 – 1520	Cooling of sea surface waters near Cheju Island responding to strong wind and positive geopotential tendency by a typhoon <i>Hyo Choi (Korea)</i>	A numerical study of coupled estuary-shelf circulation around the Pearl River Estuary <i>Ting-Ting Zu (China)</i>
1520 – 1540	Persistent organochlorine pesticides (OCPs) residues in marine food chain <i>M. Maruf Hossain (Bangladesh)</i>	Transportation and distribution of pollutant in Pearl River Estuary <i>Lin Luo (China)</i>
1540 – 1600	Assessment of anthropogenic influences of heavy metals from Klang River into the Straits of Malacca <i>Abolfazl Najj (Malaysia)</i>	Seasonal water masses variation of the upper layer South China Sea <i>Abd Muhaimin Amiruddin (Malaysia)</i>
1600 – 1620	Refreshment	
1620 – 1640	Marine debris composition and abundance: A case study of selected beaches in Malaysia <i>Khairunnisa Ahmad Kamil (Malaysia)</i>	Environmental exposure and ecological risk of heavy metals from fishing harbours in the Pearl River Delta (PRD), South China <i>Wei-Hai Xu (China)</i>
1640 – 1700	A preliminary study of zooplankton composition associated with thermal effluents from a power plant at Manjung, Perak, Malaysia <i>Jiang-Wei Chan (Malaysia)</i>	Comparison and analysis of environmental constituents in the Pearl River Estuary during summer of 1999 and 2009 <i>Wei Yang (China)</i>
1700 – 1720	Utilization of locally isolated phototrophic bacterium for the treatment of palm oil mill effluent <i>Sujjat Al Azad (Malaysia)</i>	A theoretical frame for ecosystem health assessment and its application to the Tolo Harbour, Hong Kong, China <i>Fu-Liu Xu (China)</i>
1720 – 1740	Effect of cold stress on three genera of hard corals in Persian Gulf with 70KDa protein as stress indicator <i>Fatemeh Nozhat (Iran)</i>	



Conference Programme

THIRD DAY: 21st October 2010 (Thursday)	
Keynote Addresses	
Venue: Putrajaya Ballroom 1 Chairperson: Prof. Dr. Fatimah Md. Yusoff (Universiti Putra Malaysia)	
0900 – 0930	Keynote 7: Marine pollution abatement through microbial bioremediation Prof. Dr. David J. W. Moriarty <i>University of Queensland, Australia</i>
0930 - 1000	Keynote 8: Responsible coastal fisheries and aquaculture for sustainable ecosystem health Dr. Meryl J. Williams <i>Commission of the Australian Centre for International Agricultural Research (ACIAR), Australia</i>
1000 -1020	Refreshment

	Technical Session 3A – Environmental Abatement Technologies Venue: Putrajaya Ballroom 1 Chairperson: Prof. Dr. D.J.W. Moriarty <i>(University of Queensland, Australia)</i>	Technical Session 3B(i) – Fisheries Venue: Selangor Room Chairperson: Dr. Meryl J. Williams <i>(ACIAR, Australia)</i>
1020 – 1040	Reef restoration through coral transplantation in Malaysia <i>Mohamed Pauzi Abdullah (Malaysia)</i>	Mapping fishing ground of yellowfin tuna (<i>Thunnus albacares</i>) with application of satellite multi-sensor and upwelling in Wakatobi National Park, Southeast Sulawesi Province, Indonesia <i>Muslim Tadjuddah (Indonesia)</i>
1040 – 1100	Characterization of Cebu City port water and waterways: Clean-up strategies and technologies <i>Cecilio S. Baga (Philippines)</i>	Population, stock status and management of Sergestid shrimp <i>Acetes indicus</i> (Decapoda: Sergestidae) in the coastal waters of Malacca, Peninsular Malaysia <i>S. M. Nurul Amin (Malaysia)</i>
1100 – 1120	Macrobenthos as saline intrusion indicator upstream of Sungai Sarawak <i>Tak-Seng Leong (Malaysia)</i>	Finfish fisheries and resources of Sarawak, Sabah and Labuan <i>Albert Chuan Gambang (Malaysia)</i>
1120 – 1140	Simulation and prediction of seawater intrusion in a small island's aquifer <i>Sarva Mangala Praveena (Malaysia)</i>	Recreational fisheries effort and values of Port Dickson, Negeri Sembilan, Malaysia <i>Puvanesuri Sandera Sagaren (Malaysia)</i>
1140 – 1200	Application of AHP model for land-use suitability analysis in Malaysian coastal areas <i>Seyed Milad Bagheri Ghadikolaei (Malaysia)</i>	Impact of migratory birds on the production of fishery composition in Pongdam wetland in Himachal Pradesh, India <i>Ram Krishan Negi (India)</i>
1200 – 1220	Three dimensional water quality modelling for Sungai Segget watershed <i>Noor Baharim Hashim (Malaysia)</i>	Development of drawing ink from squid (<i>Thysanoteuthis rhombus</i>) <i>Cecilio S. Baga (Philippines)</i>

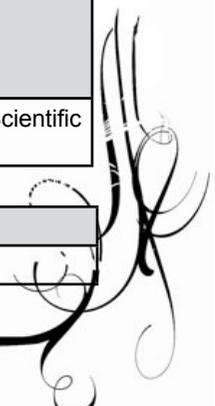
Conference Programme

1220 – 1240	Usage of digital shoreline analysis system for coastal ecosystem management <i>Abbas Moradi (Malaysia)</i>	Trophic position of sharks and ecological consequences of their increased fishery in the southwest coast of India <i>B. Madhusoodana Kurup (India)</i>
1240 – 1400	Lunch Break	

	Technical Session 3C – Aquaculture <i>Venue: Putrajaya Ballroom 1</i> <i>Chairperson : Assoc. Prof. Dr. Mariana Nor Shamsudin (Universiti Putra Malaysia)</i>	Technical Session 3B(ii) – Fisheries <i>Venue: Selangor Room</i> <i>Chairperson : Assoc. Prof. Dr. Aziz Arshad (Universiti Putra Malaysia)</i>
1400 – 1420	Indicators for sustainability analysis of world shrimp aquaculture production <i>Md Arif Chowdhury (Malaysia)</i>	Overview of the leiongnathid species of Malaysia <i>Ying-Giat Seah (Malaysia)</i>
1420 – 1440	Integrated aquaculture system: Shrimp co-cultured with seaweed <i>Mun-Kuin Choy (Malaysia)</i>	Research on season, places and gears for collection of grass eels migrating into estuaries in Quang Binh and Phu Yen, Vietnam and technical nursery in artificial conditions <i>Nguyen Quang Linh (Vietnam)</i>
1440 – 1500	Gametogenesis of green mussel <i>Perna viridis</i> in the coastal waters of Malacca, Malaysia <i>Said Al-Barwani (Oman)</i>	Coral associated fishes in St. Martin's Island of the Bay of Bengal, Bangladesh <i>M. Maruf Hossain (Bangladesh)</i>
1500 – 1520	Absence of postzygotic isolating mechanisms: Evidence from experimental hybridization between two reef margin species of tropical sea urchins (genus <i>Echinometra</i>) <i>Md. Aminur Rahman (Malaysia)</i>	Use of hidraulic modelling in fisheries ecology - A case study of the sergestid fishery in Miri, Sarawak <i>Mr. Gopinath Nagaraj (Malaysia)</i>
1520 – 1540	Biofloc (BF) – The futuristic technology (BFT) for replacing animal protein in aquafeeds and improving the ecological sustainability of aquaculture systems <i>B. Madhusoodana Kurup (India)</i>	
1540 – 1600	Refreshment	
1600 – 1730	Conference Synthesis, Summary and Panel Discussion <i>Venue: Putrajaya Ballroom 1</i> <i>Chairperson: Prof. Dato' Dr. Mohamed Shariff Mohamed Din (Universiti Putra Malaysia)</i>	
1730 – 1800	Closing Remarks by Dr. M. Munawar on behalf of the Organising and Scientific Committees	

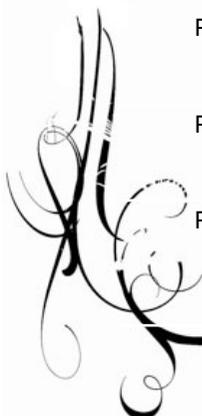
FOURTH DAY: 22nd October 2010 (Friday)

0800 - 1800	Technical Tour to Malacca
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Coastal and Riverine Interactions	
PP01	Sedimentology of the Redang Island coral reefs environment <i>Nor Antonina Abdullah, Noor Azhar Mohamed Shazili, Norhayati Mohd. Tahir and Siti Zauyah Darus</i>
PP02	Coastal water quality in near shore development area at Sepang coastline <i>Leow Wai Mun and Rozainah Mohamad Zakaria</i>
PP03	A case of fish kill in cages related to dredging activity <i>Toh-Thye Chuah</i>
Marine Biodiversity and Resource Management	
PP04	Evaluation on the genetic relationship of Malaysian grouper using molecular marker <i>Abdul Muhaimin Ahmad, Mariana Nor Shamsudin and Noraznita Sharifuddin</i>
PP05	Biodiversity and adaptability in artificial environment of two sea cucumber species <i>Abdoulie Ceesay and Mariana Nor Shamsudin</i>
PP06	Biodiversity and cultivation of sea star, <i>Astropecten indicus</i> at Kuala Perlis, Perlis <i>Ahmad Fakhurrazi Mokhtar and Mariana Nor Shamsudin</i>
PP07	Zooplankton community structure in riverine coastal ecosystem, Kota Marudu, Sabah during dry season <i>Marinni Khir and Fatimah Md. Yusoff</i>
PP08	Zooplankton abundance and distribution along Perak River estuary during northeast monsoon season <i>Nur Zulikha Zakariya and Fatimah Md. Yusoff</i>
PP09	Spatial and temporal distribution of phytoplankton along salinity gradient during northeast monsoon season in Perak River estuary, Malaysia <i>NurSuhayati Abu Seman and Fatimah Md. Yusoff</i>
PP10	The root profile of <i>Avicennia alba</i> in Carey Island, Selangor <i>Noraziera Mohd Fadhi, O. Normaniza and Rozainah Mohd Zakaria</i>
Environmental Stressors	
PP11	Effect of elevated water temperature at a coastal power plant on phytoplankton assemblages <i>A.H. Muhammad Adlan, W.O. Wan Maznah and Khairun Yahya</i>
PP12	Heavy metals concentrations in the medaka fish (<i>Oryzias javanicus</i>) as a new research organism collected from Linggi estuary in the west coast of Peninsular Malaysia <i>Dariosh Khodadoust and Ahmad Ismail</i>
PP13	Assessment of heavy metals in brown alga <i>Padina</i> sp. along the east coast of Peninsular Malaysia <i>Siti Mashitah Mohammad and Nor Azhar Mohamed Shazili</i>
PP14	Distributions of trace metals in rocky shore rock oyster <i>Saccostrea cucullata</i> along the east coast of Peninsular Malaysia <i>Mohd Fuad Miskon and Noor Azhar Mohamed Shazili</i>
PP15	Impacts of the 2010 severe coral reef bleaching event on a coral reef restoration site in Trat Province, the Gulf of Thailand <i>Makamas Sutthacheep, Chaipichit Saenghaisuk, Sittiporn Pengsakun and Thamasak Yeemin</i>



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- PP17 Dissolved organic matter release by an axenic culture of *Emiliana huxleyi*
Suhaimi Suratman, Keith Weston, Tim Jickells, Rosie Chance and Tom Bell
- PP18 Anthropogenic activities deteriorates the water quality of St. Martin's Coral Island, Bangladesh
M. Maruf Hossain and D. Sultana
- PP19 Comparison of mitotic index in Nay Band and Asaloye coral reefs (Northern part of Persian Gulf, Iran)
M. Boloki, S.M.B. Nabavi and M. Haghghat
- PP20 Reclamation effects on meiofauna community: Case study - Fahaheel area, Kuwait
Eiman Khaliefa, Saied Al-Qadi, Aisha Al-Kandari, Jamila Al-Saffar and Mishari Al-Kandari
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- PP22 Analysis and control of pollution sources of aquaculture in Taihu Lake Basin in China
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Fisheries and Aquaculture

- PP23 Improvement of grouper cultivation by domestication system
Ainatul Hakimah Zakaria
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- PP27 Size, frequency, distribution and length-weight relationship of long-spined sea urchin, *Diadema setosum* in Malaysia
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*Plenary Lecture***Mr. Wenxi Zhu**

Mr. Wenxi Zhu has been serving as the Programme Specialist of the Intergovernmental Oceanographic Commission of UNESCO since March 2009. Stationed in Bangkok since August 2006, he has been leading the UNESCO/IOC Regional Secretariat for the Western Pacific (WESTPAC) in the efforts to promote the regional cooperation and coordinate programmes in marine scientific research, observations and services, and capacity building in order to assist member states in the study and management of coastal and marine resources. Mr. Zhu graduated from the Dalian University of Technology in Marine Engineering in 1995, and obtained his Master's degree in Marine Science from the Ocean University of China.

Prior to joining IOC, Mr. Zhu worked in the State Oceanic Administration of China, as a programme officer and obtained extensive experience in the development and implementation of various national and international marine-related programmes and organisations, including UNDP/GEF Yellow Sea Large Marine Ecosystem, UNDP/GEF Biodiversity Management in the Coastal Areas of China's South Sea, North-East Asian Regional Ocean Observing System (NEAR-GOOS) and South East Asian Regional Ocean Observing System (SEAGOOS). During his service with IOC, he established several region-specific projects for WESTPAC across the IOC's High Level Objectives, namely, climate change and variability, natural hazards, and health of marine ecosystem with the member states. He also developed the IOC regional capacity building initiative "UNESCO/IOC Regional Network of Training and Research Network on Oceanography in the Western Pacific". In this regional network, the first IOC Regional Training and Research Centre, with a focus on ocean dynamics and climate, has been established with regular training opportunities to be provided for young scientists in the region.



Marine Spatial Planning - Practical approach towards ecosystem-based management

Wenxi Zhu

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Abstract

The oceans cover 71% of the earth's surface, and provide 97% of the world's water. They provide 2/3 of the value of all the natural services provided by the planet, and yet less than 1% is protected. The world's marine ecosystems are being impacted globally by human activities as a result of ever-increasing demands for desired goods and services always exceeding the capacity of a marine area.

To maintain the value of marine ecosystems while at the same time allowing sustainable use of economic potential, Marine Spatial Planning (MSP) is a practical approach that can make key components of ecosystem-based management of marine areas a reality. MSP has been the focus of considerable interest throughout the world, particularly in heavily used marine areas. Numerous attempts have been made to define both the scope and nature of MSP, but relatively few have discussed how to put it into practice. The presentation provides a comprehensive overview of MSP, from the perspectives of the Intergovernmental Oceanographic Commission of UNESCO, with focus on describing a logical sequence of steps that are all required to achieve desired goals and objectives for marine areas based on the analysis of actual MSP initiatives from around the world.



*Plenary Lecture***Dr. Mohiuddin Munawar**

Dr. Mohiuddin Munawar received a Ph.D. in Phycology. He joined the Southern Illinois University, Carbondale, for post-doctoral research with Dr. J. Verduin, a well-known Great Lakes scientist, as part of a U.S. National Science Programme. In 1969, Dr. Munawar initiated research in the North American Great Lakes as a Post-doctoral Fellow of the National Research Council of Canada, in collaboration with Dr. R.A. Vollenweider – an eminent limnologist. In 1972, he joined Fisheries & Oceans Canada as a Research Scientist. Since then, he has been actively involved in Great Lakes research and has published more than 250 papers and given over 350 presentations dealing with phycology, physiological ecology, food-web dynamics, ecotoxicology and ecosystem health. He has delivered several keynotes, plenary and invited presentations. Dr. Munawar has convened and chaired numerous international symposia, conferences and ecoforums, and edited more than 30 special issues of primary journals and 20 peer-reviewed books.

Dr. Munawar is the founder-president of the Aquatic Ecosystem Health and Management Society (AEHMS) established in 1989. He was invited to launch the Society's primary journal as the chief editor of Aquatic Ecosystem Health & Management, published by Taylor & Francis, Philadelphia. The journal is now ranked by ISI and is covered by Thompson Scientific.

Due to the need for holistic environmental books dealing with the "total ecosystem", the Ecovision World Monograph Series was initiated by Dr. Munawar. The series has already published more than 20 peer-reviewed books of global interest. Under the banner of the AEHMS Society, he has been successful in organising several international conferences and symposia on diverse topics and issues around the world.

Dr. Munawar has received several awards and distinctions such as the Chandler-Misner Award for best scientific manuscript of the year, Canadian Public Service Commission Award, the prestigious Anderson-Everett Award for life time contribution to Great Lakes Science, an honorary doctorate (Doctor Honoris Causa) from the Faculty of Science, Göteborg University, Sweden, and recently has been conferred the Fellowship of the Academy of Science, Engineering & Technology, from India. In 2008, Dr. Munawar was also awarded the Assistant Deputy Minister's Distinction Award by the Department of Fisheries & Oceans in recognition of his excellence, leadership and scientific contributions.



**Structural and functional indicators of ecosystem health:
Sharing the inland seas - Great Lakes experience
for global conservation**

M. Munawar*, I.F. Munawar, M. Fitzpatrick and H. Niblock

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Abstract

Throughout the globe, aquatic ecosystems have been adversely affected by multiple anthropogenic stressors including pollution, eutrophication, over-exploitation of fisheries, the establishment of exotic biota and climate change. As a result of rapid globalization and population growth, the impacts of such stressors have been compounded. The proliferating, cumulative challenges to aquatic ecosystems require integrated, adaptive, science-based approaches to management. A holistic approach to ecosystem management must balance both the maintenance of and benefits from healthy ecosystems. Aquatic resource management is changing from a species-based to a space-based approach. Identifying ecologically significant areas that require attention is a priority. The Great Lakes provide an ideal example of ecosystem based management due to their enormous size (245 000 km² containing almost 20% of the global supply of fresh water) which could be applied globally. Since the 1800s, nearly 200 exotic species have become established in the Great Lakes causing a wide range of impacts affecting all trophic levels. The effects of climate change are already evident, affecting productivity and habitats by decimating existing biodiversity and allowing new invasive species to flourish. A comprehensive understanding of the vulnerability and sensitivity of different habitats to stressors is a critical dimension of risk assessment which provides advice in the face of uncertainty. Given the complexity of ecosystem processes, a risk-based approach to aquatic ecosystem health and management may provide the most effective framework. Models are being developed in the Great Lakes (inland seas) to synthesize knowledge, helping to identify risks and evaluate hypotheses for an ecosystem approach to management. The lessons learned from the long term management of the majestic Great Lakes - inland seas has resulted in the development of ecosystem based management tools which are applicable globally to large marine and freshwater ecosystems.



*Keynote Address***Dr. Thia-Eng Chua**

Dr. Thia-Eng Chua was a former Regional Programme Director of the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) and currently Chair of PEMSEA's Governing Council. He concurrently serves as a member of Research Council and Visiting Fellow of the Ocean Policy Research Foundation of Japan (since 2008), Chair Professor at the Coastal and Ocean Management Institute of Xiamen University, China (since 2008).

Dr. Chua was a former academic staff member of University of Singapore, University of Science Malaysia and University of the Philippines. He had served in various capacities with UN and international organisations including FAO, IMO, GEF/UNDP and ICLARM (now World Fish Centre).

He was the founding President of the Malaysian Society of Marine Sciences (1972-1973), Asian Fisheries Society (1986-95) and Chair of the First World Fisheries Congress in Athens. He won the First Gold Medal Award (1995) and Honorary Life Membership Award (1998) by the Asian Fisheries Society, also the Honorary Life Membership Award (1994) of the Malaysian Fisheries Society.

Dr. Chua was a member of the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) and also served as a Scientific Advisor of the International Foundation for Science (IFS). He served as the Associate Editor of the Journal of Coast and Ocean Management and as Executive Editor of the Tropical Coasts.

He published over 230 papers, technical reports, keynote speeches, articles and books. His most recent book include "The Dynamics of Integrated Coastal Management – Practical Application in the Sustainable Development in East Asia" (2006) and "Securing the Oceans" (2008, co-editor).

In recognition of his work, the State Council of the People's Republic of China conferred him the prestigious "Friendship Award" in October 1997. The Royal Government of Cambodia conferred him the Sahak Metrey Medal in March 2002 by his majesty King Sihanouk. In 2006, he was recognised as one of the outstanding alumni of the National University of Singapore for the work he has done.

Dr. Chua completed his undergraduate studies at Nanyang University (1963), postgraduate studies (Diploma in Fisheries, Masteral and Doctorate Degree) at the University of Singapore (1964-71).



Sustaining aquatic ecosystem services through integrated management of river basins and the coastal seas

Thia-Eng Chua

Chair, Partnership Council

Partnership in Environmental Management for the Seas of East Asia (PEMSEA)

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Abstract

The inland and marine aquatic ecosystems have long served mankind. They not only ensure our survival but also enriched our lives and living standards through the provision of air, water, natural resources, medicines, transport, energy and recreation, which in turn create employments and livelihoods for millions. Human activities on the other hand have increasingly damaged the functional integrity of these aquatic ecosystems. Our economic activities have generated enormous negative impacts on these fragile ecosystems.

Considerable efforts have been made during the last three decades in promoting coastal and river-basin management largely through the initiating efforts of international donors and UN agencies. In the East Asian Seas Region, Integrated River-Basin and Coastal Area Management (IRBM-ICM) has evolved into a new management paradigm that addresses the management problems associated with the ecological *continuum* from river-basins to the coastal seas.

Two major regional initiatives have taken place during this period. One is the establishment of the inter-governmental Mekong Committee in 1957 to promote regional cooperation in water resource management in the Mekong River Basin. The other major regional initiative is the Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) consisting of 12 country and 19 non-country partners. PEMSEA's primary focuses are the development and implementation of the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). PEMSEA plays a critical role in promoting and facilitating the development of national coastal and marine policy of the participating nations, strengthening the concept and practices of ICM through the development of Integrated Coastal Management System (ICM), organising a network of local governments implementing ICM; improving financing mechanism for environmental improvement through the public and private sector partnership mechanism; enhancing individual and institutional capacity through on the job training, areas of excellence, institutional and individual networks. PEMSEA builds partnerships with governments, private sectors, scientific and academic communities, NGOs and other stakeholders to collectively address the coastal management challenges.



*Keynote Address***Dr. Derek J. Staples**

Dr. Derek Staples is a fisheries consultant, based in Australia. He has a PhD in fisheries ecology from the University of Canterbury, New Zealand and a post-doctoral diploma in aquaculture from the Tokyo University of Fisheries, Japan.

Prior to retirement, he was the Senior Fishery Officer in the Regional Office of the Food and Agriculture Organisation of the United Nations (FAO) and the past Secretary of the Asia Pacific Fisheries Commission (APFIC). He was a senior science advisor in Australia, working with the Minister for Fisheries and senior policy decision makers in the Department of Agriculture, Fisheries and Forestry, for several years before joining FAO. He has extensive experience as a research scientist with the Commonwealth Scientific and Industrial Research Organisation (CSIRO).

His interests include all aspects of the sustainable development of fisheries and aquaculture, particularly small-scale operations in developing countries. While in FAO, Dr. Staples was responsible for providing technical advice on coastal and offshore fisheries and was actively involved in a number of FAO projects in Asia, including fishery livelihoods in Bangladesh, fisheries information in several South East Asian countries and the multi-sectoral management in Bay of Bengal Large Marine Ecosystem. He is currently the Vice President (incoming President) of the Asian Fisheries Society (AFS).



Marine biodiversity and resource management – What is the link?

Derek J. Staples* and Rudolf Hermes

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Abstract

Marine biodiversity refers to the variation of life at all levels and is much more than just a count of species. Marine biodiversity decline is occurring across the globe and is characterised not only by extinctions (sometimes local), but also by invasions and hybridisations, reductions in the abundance of some species, degradation of habitats and changes in ecosystem processes (e.g. cycling of water, nutrients and energy).

The major threats in marine diversity can be categorised as (i) unsustainable resource use; (ii) land-based impacts; (iii) coastal and marine pollution; (iv) introduced pests; and (v) climate change. All these pose major risks in tropical seas where the high biodiversity in the past has allowed the tropical ecosystems to provide more services with less variability than more temperate systems in the past.

There is a strong link between better resource management and better biodiversity outcomes. With the introduction and acceptance of the concept of sustainable development, a way was opened up to ensure that human development did not impact irreversibly on the physical environment, thereby preserving biodiversity for future generation so that they could also enjoy the services that healthy ecosystems can provide. Along with the concept came a range of “approaches”, many of which developed in parallel by different sectors and disciplines. Because they were all developed to implement sustainable development, there is considerable agreement on principles and management tools.

Given that the concept, approaches and tools to better manage resources are available, why have there been so many failures and biodiversity continues to decline? Several reasons for these failures are grouped under four pillars that are considered essential for successful resource management. These are: (i) an enabling policy legislative environment; (ii) empowerment of stakeholders; (ii) effective linkages and institutions; and (iv) adequate resources – people and finances to implement the management system. The use of large marine ecosystem management is also put forward as an approach that can address some of the issues that the reasons highlight.



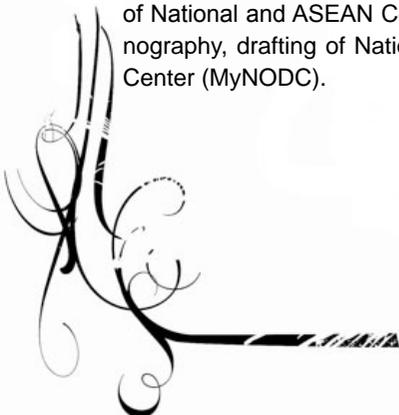
*Keynote Address***Prof. Dr. Nor Aieni Hj Mokhtar**

Prof. Dr. Nor Aieni binti Hj Mokhtar was born on 10th March 1957 in Terengganu. She was appointed as the Under-Secretary / Director of the National Oceanography Directorate (NOD), Ministry of Science, Technology and Innovation (MOSTI) on 11th March 2008 upon secondment from University Teknologi Malaysia. Her experience as a member of the Task Force Team for the establishment of NOD since as early as 1998, indicates her understanding, passion and capability to drive, direct and spearhead the national needs in research and development (R&D) programs and activities in oceanography and marine sciences.

Prof. Dr Nor Aieni binti Hj Mokhtar obtained her first degree in Physics from the State University of New York, Binghamton, New York, USA (1980) and Masters in Physics from the University College of Swansea, United Kingdom (1983). Subsequently, she obtained her PhD in Physics-Laser Technology from Universiti Teknologi Malaysia (1992).

Prof. Dr Nor Aieni binti Hj Mokhtar began her career in the public sector in 1980 as an academia at the University Teknologi Malaysia (UTM). She has been involved in teaching and research at the Civil Engineering Faculty and also active in the promotion of research, Intellectual Property, commercialisation, technopreneurship and consultancy at the university's Research Management Centre and also at Bureau of Innovation and Consultancy of the university as Deputy Dean. Her areas of expertise include computer and physical modelling studies, hydraulic and coastal engineering, instrumentation, oceanography and marine science, islands and marine environment studies: policy, experimental design and field studies such as integrated coastal zone management, coastal processes, structures design and feasibility studies. Other special management skills include Intellectual Property, Commercialisation and Innovation. Her last assignment prior to MOSTI was as CEO of ISI Ventures Sdn Bhd and Deputy Executive Director of Institut Sultan Iskandar, UTM.

As the Under-Secretary cum Director of NOD, Prof. Dr Nor Aieini binti Hj Mokhtar focuses on planning, designing, coordinating and bringing together resources and expertise (both domestic and international) in order to ensure application of knowledge in oceanography and marine sciences towards wealth generation and community well-being. Being the national focal point for Intergovernmental Oceanographic Commission (IOC) of UNESCO, she has also been appointed as 2nd Vice Chairman of IOC for Western Pacific (IOC/WESTPAC). She has participated as key members to the Regional Coordinating Mechanism Working Group of Coral Triangle Initiative (CTI). In support of CTI activities in Malaysia, she leads various programs including establishment of CTI National Coordinating Committee (NCC), national marine scientific expedition in 2009, compilation of National and ASEAN Coastal Environment Profile, establishment of National Institute of Oceanography, drafting of National Ocean Policy and development of Malaysia National Ocean Data Center (MyNODC).



Coral Triangle Initiative - Coral reefs, fisheries and food security (CTI-CFF)

Nor Aieni Haji Mokhtar

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Abstract

"We, the leaders who are entrusted with the management of the world's most pristine coral reefs pledge to conserve the sustainability and productivity of biodiversity for generations to come". This was the declaration made by the leaders of the six Coral Triangle Initiative (CTI) countries namely Indonesia, Malaysia, Philippines, Papua New Guinea, Timor Leste and Solomon Islands as they penned down their signatures to promise for the regional collaborative action in protecting the 6 million km² of Coral Triangle region that is home to more than 75% of the world's known species of corals, exceeding 600 species, 35% of all known coral reef fish species-3,000 species of fish, largest tuna fishery spawning and juveniles growth area, large presence of six of the world's seven species of sea turtles, migrating sharks and manta rays, whales, dolphins and coelacanths. This momentous occasion took place in Manado, North Sulawesi, Indonesia on 15th May 2009 in conjunction with the World Ocean Conference 2009.

Malaysia's Prime Minister, the Honorable Datuk Sri Mohd Najib Tun Haji Abdul Razak in his speech mentioned "Malaysia is very committed to ensuring that our marine ecosystem remains healthy so that this rich biodiversity can be enjoyed in perpetuity and sustainably utilized for wealth creation in line with our objective to be a fully developed nation by 2020".

The bio-geographical conditions within CT may enable the region to maintain its exceptional productivity in the face of the threats of unsustainable fisheries practices, future impacts of climate change, making it the world's most important refuge for marine life. CTI which has received a lot of global attention with international donors and partners pledging their contribution had created vast opportunities for regional cooperation and capacity building in marine resource management. This paper highlights the initiatives of the National Focal Point in MOSTI through the National Oceanography Directorate in planning the CTI outlined framework; goals, targets and programs, focusing on seascapes, sustainable fisheries management, marine protected areas, climate change adaptation and threatened species, aligning the national priorities with that of the regional aspiration.



*Keynote Address***Prof. Dr. Dilip Kumar**

Dr. Dilip Kumar has just completed his five year term as Director/Vice Chancellor of Central Institute of Fisheries Education (CIFE) a Deemed University under the Indian Council of Agricultural Research (ICAR) and core centre for higher fisheries education of India. Dr. Kumar has a distinguished career in teaching, research, extension and development in fisheries in India and abroad. Dr. Dilip Kumar started his career as Lecturer in the University of Bihar, Muzaffarpur and L.N. Mithila University, Darbhanga. Later, he joined Central Inland Fisheries Research Institute (CIFRI), Barrackpore and subsequently Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar where he continued research for over 17 years specifically in the aspect of small-scale aquaculture, fish health management and aquaculture extension. In 1990, he joined FAO of the United Nations as Fishery Extension Expert, and eventually executed several fishers' and small fish farmers' centres successful development projects in Bangladesh, Vietnam and Sri Lanka as Project Leader/Chief Technical Advisor. During his 15 years of international services he worked with FAO, UNDP, NACA and other International Agencies like IFAD and UNOPS. Small-scale fisheries and aquaculture based development of sustainable livelihoods remained priority focus throughout his career. Besides, he has also been spearheading development of fisheries sector perspective plans and matching policy guidelines in several states of India and few neighbouring countries. While working with CIFE he has tried to mainstream concerns of small-scale fisheries and aquaculture and the primary producers who depend for their livelihoods on this sub-sector in the higher fisheries education programme. In addition to publications of research papers and reports of ground level interventions he has also authored many highly acclaimed books. One of the TCP project he executed as CTA in Bangladesh was given FAO Eduward Souma Award. He is also recipient of many awards including ZSI Gold Medal, E.P. Odum Gold Medal and Sir Dorabjee Tata Gold medal.



Coastal fisheries management in developing countries – Issues and policy concerns

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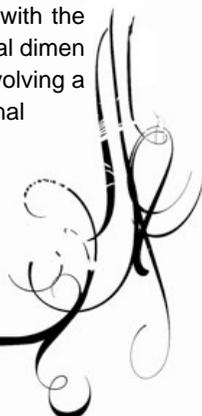
Corresponding author's email: dk.dilipkumar@gmail.com

Abstract

Fisheries sector is passing through a difficult transition encompassing biological, environmental, economic and social changes, which are placing mounting pressure on the natural resources. Small-scale fisheries which is vital for food and nutritional security, economy and livelihoods of millions of coastal fishing communities, especially in developing countries of Asia and Africa is most affected. Recent phenomena of globalisation of markets and global warming have further impacted the life and livelihoods of small-scale or artisanal fishers who depend on this natural resource for their survival. On the other side, this is also realised that small-scale fisheries have yet to fully realise its potential to significantly contribute to sustainable human development and attaining the millennium development goals (MDGs).

However, to accomplish this there is immediate need to bring sustainability to this sub-sector. Current fisheries management approaches based on centralised government intervention have failed to meet any reasonable set of objectives including preventing stock depletion, resolving user-group conflicts, increasing income and quality of life of fishing communities and preventing social disruption. Consequently, in their desperate bid to survive, the fishing communities are left with no other option than to exert further pressure on the fragile coastal fisheries resources by intensifying fishing and employing certain highly destructive gear and fishing practices. Though several acts and regulations are in place, their compliance level is decimal. The management is still largely government-driven although experiences in several countries, specifically Japan show that effective partnership between government and fishers strengthen management and produce results.

Recognising the rights of fishing communities over the resources, making them legitimate and effective partner in developing supporting policies and legislation, providing access to institutional finance and assigning them responsibilities in management of fisheries are essential elements to ensure responsible fisheries activities and bringing sustainability to the sub-sector. However, empowerment of fishing communities is vital and pre-requisite to enable them function as an effective partner along with the government in the co-management regime. It is a process and grows over time, and has several dimensions, which mutually reinforce each other. A holistic approach is required to empowerment involving a two pronged approach, interventions at the community level as well as outside at the institutional and policy level. Parallel to empowerment of fishing communities also requires a symmetric disempowerment of government agencies, which formerly had full control over the resources. This would involve strong re-orientation in their mindsets and attitude. Besides, they also need to develop their capacity and skill to facilitate social mobilisation, conflict resolution and ability to work with the fishing communities and their organisation in the co-management regime.



*Keynote Address***Prof. Dr. Dong-Xiao Wang**

Prof. Dr. Dong-Xiao Wang is the Vice-Director of the South China Sea Institute of Oceanology, Chinese Academy of Sciences, Peoples Republic of China. He obtained his PhD in Physical Oceanography from the Ocean University of Qingdao, ShanDong, China in 1996 and subsequently was a Postdoctoral Research Fellow and Research Associate in the Laboratory of Numerical Modelling for Atmospheric Sciences and Geophysical Fluid Dynamics (LASG), Institute of Atmospheric Physics, in Beijing till 1998.

Prof. Wang was also a Visiting Scholar to numerous institutions of global repute such as the University of Wisconsin-Madison's Department of Atmospheric and Oceanic Sciences, the International Arctic Research Centre (IARC) at the University of Alaska, the International Pacific Research Centre (IPRC), University of Hawaii, the University of Miami and the Hong Kong University of Science and Technology. He was the Director of the state key laboratory, Tropical Marine Environmental Dynamics (LED) in the South China Sea Institute of Oceanology (SCSIO) in 2002 before taking up his current position in 2009.

His current research focuses on the seasonal and inter-annual characteristics of the circulation, front, and eddy dynamics in the South China Sea (SCS), large-scale air-sea interaction in the SCS, numerical modelling with assimilation of satellite remote sensing data in the SCS and the mechanisms of the interannual and interdecadal variation of the Indian and Pacific Oceans.



Distributed network of environmental monitoring in the South China Sea and its implication for the regional collaborations

Dong-Xiao Wang

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Abstract

The historical and present observation systems in the South China Sea (SCS) operated by the South China Sea Institute of Oceanology (SCSIO) are reviewed. Studies of the characteristics of the seasonal circulation and eddies in the SCS, the plume over the Northern SCS, the western boundary currents off the Vietnam coast and their related biological features through utilising various types of observation data from cruise, moorings, Argos drifter, and satellite images reveal their distinct seasonal and inter-annual variability, and complex structures. In addition, the results also showed that the combination of the different data sets does help us to get a three-dimensional and time-dependent view of the physical and biological processes in the ocean. However, the available data still could not satisfy our demand of higher spatial and temporal resolution and further understanding of the fundamental hydrological and ecosystem dynamics. Thus, collaborations among regional countries to establish an extensive and long-term environment monitoring network in the SCS should be the primary goal and deserve our efforts.



Keynote Address

Prof. Dr. David J.W. Moriarty



Prof. David Moriarty has an honours degree in agricultural science and a Ph.D. in biochemistry from the University of Adelaide. He worked in Uganda from 1969 – 1973 on microbial biochemistry and fish ecology with The Royal Society of London African Freshwater Biological Team, which was studying the productivity of Lake George. He discovered that tilapia could readily digest and assimilate cyanobacteria (blue-green algae). Most aquatic ecologists had thought cyanobacteria were indigestible and thus had no role in food chains.

In 1973, he returned to Australia as Queen's Fellow in Marine Science at the University of Queensland, and then joined CSIRO to investigate the role of bacteria in marine ecosystems. During that time, he developed new methods for quantifying bacterial biomass and growth rates in water and sediments. He has studied the ecology of microorganisms, particular bacteria and microalgae, in seagrass beds, coral reefs, coastal and deep sea ecosystems. He has consulted for the United Nations Food and Agriculture Organisation in China, India and Malaysia on microbial aspects of fish and shrimp aquaculture. He was a Senior Principal Research Scientist when he left CSIRO in 1993 to work as an independent consultant in applications of microbial ecology to aquaculture.

Prof. Moriarty has been a Guest Professor at the University of Gothenberg, Sweden, where he studied probiotics for fish pathogen control using molecular methods with DNA probes to *Vibrio anguillarum*.

He was awarded a D.Sc. by the University of Adelaide and was made a Fellow of the Australian Society for Microbiology in 1991. He has been consulting recently to INVE Aquaculture Health on development of effective probiotics for shrimp and fish, and pond management in aquaculture. Currently, he is an Honorary Professor in the School of Biological Sciences at the University of Queensland.



Marine pollution abatement through microbial bioremediation

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Abstract

The impact of wastes on the coastal environment from urban sources and the agriculture, manufacturing and aquaculture industries can be mitigated by the use of appropriate microbes either individually or in consortia with plants. Aquaculture — coastal land-based and estuarine or bay cage culture — and urban sewage and industrial organic wastes are particularly amenable to microbial technologies. Microbial ecology is the scientific field that is the basis for biotechnological applications that are critical to minimising the impact of these wastes on the coastal environment.

Our knowledge of microbial ecological processes from studies in lakes and the sea has been applied to aquaculture ponds and to improving the performance of treatments of waste water from urban, agriculture and industrial sources. Several criteria must be applied to ensure success. Appropriate bioremediation species, i.e. microbes that are natural to or integrate easily into the natural ecological communities and provide the desired beneficial actions, have to be selected and produced at a cost that is acceptable to the end users. The microbes have to be added at a high enough population density to compete with the natural flora in the treatment sites. Bacteria that carry genes for antibiotic resistance and disease virulence must not be used in sites where they could affect not only human, but also fish and shrimp health; safety checks must be made during selection and production processes. Microbial remediation and related technologies are now being used widely in the field of aquaculture.

The maintenance of good water quality and the control of disease are closely linked to managing the communities of microbes, which include the microalgae. An obvious cost-benefit is seen by the aquaculture producer at harvest, whereas the costs of bioremediation in treatment of urban and industrial wastes are additional; they do not result in an increase in net profit. Therefore, pollution abatement from the latter sources requires government regulation and enforcement.



*Keynote Address***Dr. Meryl J. Williams**

Dr. Meryl J. Williams is engaged in non-executive leadership positions, including Chair of the Commission of the Australian Centre for International Agricultural Research, Vice-Chair of the Scientific and Technical Advisory Panel of the Global Environment Facility, member of the Governing Board of ICRISAT, member of the Scientific Steering Committee of the Census of Marine Life and Vice-Chair of the Scientific Committee of the International Sustainable Seafood Foundation.

From 1994 to 2004, Dr Williams was the Director General of the WorldFish Centre, one of the CGIAR Centres. She concentrated the focus of the WorldFish on eradicating poverty, improving people's nutrition, and reducing pressure on the environment.

Dr. Williams was also previously the Director of the Australian Institute of Marine Science, Executive Director of the Bureau of Rural Sciences (Australian government) and the fisheries statistician at the Secretariat for the Pacific Community.

She was elected as Fellow of the Academy of Science, Technology and Engineering in 1993, and awarded an Australian Centenary Medal in 2003. In 2004, the Asian Fisheries Society elected her as an honorary Life Member.

She has published widely on fisheries and aquaculture. In her fields of expertise, she has refereed many postgraduate theses, journal papers and has edited several volumes of conference proceedings and for special editions of journals. Recently, she spearheaded selecting and editing papers for the special Development journal edition (published for the Society for International Development) on Gender and Fisheries.



Responsible coastal fisheries and aquaculture for sustainable ecosystem health

Meryl J. Williams

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Abstract

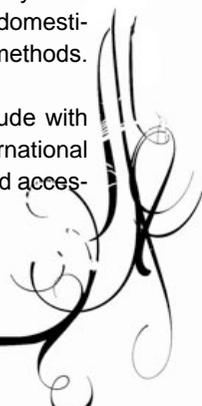
In tropical seas, modern coastal fisheries and aquaculture are often seen as presenting great threats to ecosystem health. As a major human use of sea space and marine life, fisheries and aquaculture create and face extraordinary challenges, especially the pressures to exploit and develop the resources beyond sustainable limits, driven by growing seafood markets, environment stresses, inadequate management and knowledge for management.

Often treated as one, the fisheries and aquaculture sectors actually occupy different political and social domains. Yet they also merge, overlap and even compete in other domains, such as coastal space and the market. This paper will explore these different and overlapping domains for tropical fisheries and aquaculture. It will describe the global transition now in train but in different stages in each region, and from fisheries to aquaculture dominated production. Like all food production, fisheries and aquaculture operate as exploiters of ecosystems and beholden to them for their productivity.

This paper will focus on the current state of fisheries and aquaculture in Southeast Asia, with reflections on developments in other tropical regions, specifically South Asia, Africa and the Caribbean and Meso-America. In global terms, Southeast Asia is the most productive tropical region in the world, supports the largest population of people dependent on fish and the largest trade in fish. It is also a hub for tropical marine aquaculture development. The region therefore serves as an excellent case study in the interaction between ecosystem health and renewable resource use and management in tropical seas.

In Southeast Asia, coastal fisheries have a long history of intensive exploitation that has intensified further in the last 100 years due to the introduction of mechanised and mobile fishing operations such as gill nets, demersal trawls and purse seines. The pace of fisheries development has been swift. National and regional fisheries management has been much slower to develop and is still hindered by sea boundary uncertainties and tensions, and lack of reliable resource and environment information. Aquaculture has a more recent history of modernisation and intensification, dating largely from the 1970s and still being underdeveloped in some key aspects, such as the low level of domesticated species used, and over-developed in others, such as intensification of production methods.

With specific reference to Southeast Asian fisheries and aquaculture, this paper will conclude with observations on the way forward. Positive steps to better environment outcomes are better international cooperation, improved controls over fisheries and aquaculture development and enhanced and accessible public information on the sectors.



*Keynote Address***Prof. Dr. Jiro Koyama**

Prof. Koyama obtained his PhD from Kyushu University. He used to work with the National Institute of Fisheries Agency and currently, belongs to the Faculty of Fisheries, Kagoshima University, Japan. His specialization is Ecotoxicology and Environmental Chemistry. His recent research work focuses on endocrine disruption in aquatic organisms using Java medaka, spilled oil and dispersant effects on marine organisms as well as other chemicals such as pesticides, organotin compounds and nitroPAHs.

Bioaccumulation of organotins by fish and rock shell

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Abstract

Although organotins have been banned since 2003 as anti-fouling paints for boats, many coastal areas are still contaminated with these chemicals because they are highly persistent in the environment. Organotins are also known to induce imposex in female gastropods. Hence, imposex induction and organotin residues in the rock shell *Thais clavigera* and in their prey were investigated at Iso (reference site) and Akobaru (polluted site) in Kagoshima Bay, Japan from 2003 to 2006. Almost all female rock shells at Akobaru had induced imposex but none at Iso. Higher concentrations of tributyltin (TBT) and triphenyltin (TPT) in sediments (123 µg/g dry weight for TBT and 6.4 µg/g for TPT), rock shell (97 ~182 µg/g for TBT and ND for TPT) and their prey (2.7~289 µg/g for TBT and 1.8~4.1 µg/g for TPT) were detected at Akobaru compared with Iso. However, organotins in the water were less than 2.6 ng/L and less than 0.1 ng/L for TBT and TPT at Akobaru, respectively. Five out of 7 female rock shells transplanted from Iso to Akobaru had induced imposex after 13 weeks. These results suggest that prey organisms are one of the main sources of organotins for rock shells.

Due to their immunotoxicity, immune function in relation to their body burdens were also examined for marine fishes, red sea bream, *Pagrus major*, and sea bass, *Lateolabrax japonicas*. Increased TBT inhibited respiratory burst of neutrophil but not phagocytosis in both fishes. TBT concentrations of some wild sea bass and cultured red sea bream were higher than the observed TBT concentrations of the exposure group with lowest concentration. The study suggests that non-specific immune function of wild sea bass and cultured red sea bream can be inhibited by TBT contamination.

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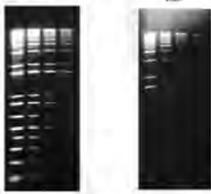


Figure 1. Comparison of GelRed™ and ethidium bromide (EtBr) in post-cast gel staining using 1% agarose gel in TBE buffer. Ten-fold serial dilutions of 1 kb Plus DNA Ladder from Invitrogen were loaded onto each gel in 4 lanes in the amounts of 200 ng, 100 ng, 50 ng and 25 ng, respectively, from left to right. Gels were imaged using a 300-mW transilluminator and photographed with an E8B filter and Polaroid 687 film and white print film.

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Figure 2. Comparison of GelGreen™ and SYBR® Safe in post-cast gel staining using 1% agarose gel in TBE buffer. Ten-fold serial dilutions of 1 kb Plus DNA Ladder from Invitrogen were loaded onto each gel in 4 lanes in the amounts of 200 ng, 100 ng, 50 ng and 25 ng, respectively, from left to right. Gels were imaged using a 300-mW transilluminator and photographed with a SYBR® Safe and Polaroid 687 film and white print film.

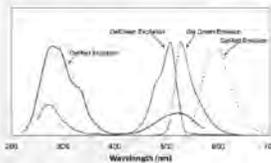


Figure 3. Normalized excitation and emission spectra of GelGreen™ (green) and GelRed™ (red) in the presence of calcium chloride.

GelRed™ & GelGreen™



GelRed and GelGreen are a new generation of fluorescent nucleic acid gel stains designed to replace the highly toxic ethidium bromide (EtBr). Developed by scientists at Biotium, GelRed and GelGreen are superior to EtBr and other EtBr alternatives by having a combination of low toxicity, high sensitivity and exceptional stability.

EtBr has been the predominant dye used for nucleic acid gel staining for decades because of its low price and generally sufficient sensitivity. However, EtBr is a highly mutagenic material. The safety hazards and costs associated with decontamination and waste disposal can ultimately make the dye expensive to use. For this reason, alternative gel stains, such as SYBR® dyes, have become increasingly available in recent years. Although these alternative dyes have reduced mutagenicity, they often have to sacrifice other aspects of the dyes. For example, SYBR® Safe has very limited sensitivity while SYBR® Green and SYBR® Gold are much less stable than EtBr. SYBR® dyes also enter cells rapidly to stain mitochondria and nuclear DNA, making it more likely for the dyes to be toxic at high enough concentrations. Indeed, SYBR® Green I is known to strongly potentiate mutation caused by UV light or another mutagen (Ohta et al. *Mutat. Res.* 492: 91-2001).

To make GelRed and GelGreen safe, scientists at Biotium used a novel yet very simple concept: reducing toxicity by preventing the dye from entering living cells. We believe that a DNA-binding dye can't make mutagenic or substantially so by denying its chance to be in contact with genomic DNA in living cells. Thus, we engineered the chemical structures of GelRed and GelGreen such that the dyes are incapable of crossing cell membranes. The Ames test confirmed that GelRed and GelGreen are non-mutagenic at concentrations well above their working concentrations used for gel staining. Furthermore, environmental safety tests showed that GelRed and GelGreen are non-hazardous and nontoxic to aquatic life. As a result, GelRed and GelGreen can be disposed of down the drain or in regular trash. For more information, please download the GelRed/GelGreen Safety Report on Biotium website.

GelRed and GelGreen are highly sensitive either as precast gel stains or post-cast stains. Designed primarily for use with a 312000 nm UV transilluminator, GelRed is much more sensitive than EtBr, and at least as sensitive as or brighter than SYBR® Gold in post-cast staining. Unlike SYBR® Gold, GelRed can also be used as a highly sensitive precast gel stain. GelGreen is developed to meet the needs of researchers who use a 488 nm laser-based gel scanner or a Dark Reader that uses a visible blue light for excitation. GelGreen is especially similar to SYBR® Safe, but is more sensitive than the latter.

Another major advantage of GelRed and GelGreen is their remarkable stability. You can handle the two dyes the same way you do with EtBr. This means that the dyes are perfectly stable in water at room temperature for long-term storage, and they can be recovered for making precast gels. Both dyes are also very photostable, permitting their use under normal room light without exercising special precautions.

A complete list of GelRed and GelGreen products is shown in Table 1.

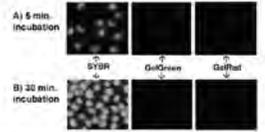


Figure 4. HELa cells were incubated at 37 °C with 1X of SYBR® Safe, GelGreen™ and GelRed™, respectively. Images were taken following incubation for 5 min (panel A) and 30 min (panel B), respectively. SYBR® Green I and SYBR® Safe stained nuclei rapidly as evident from the bright green nuclear staining (images from SYBR® Safe not shown). However, GelGreen™ and GelGreen™ were unable to stain cell membranes as shown by the lack of any fluorescence staining.

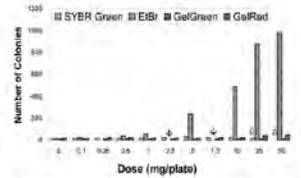


Figure 5. Comparative of mutagenicity among GelGreen™, GelRed™, SYBR® Green and EtBr in *H. pylori* Salmonella mutator strain 14026 in the presence of 20 µg/ml. *P indicates EtBr was not tested at this concentration. **P indicates SYBR® Green I was not tested at this concentration. For more information, you can download GelRed™ and GelGreen™ Safety Report on Biotium website.

Table 1. Gel Stain Product List:

Cat#	Product Name	Unit Size
41001	GelRed™, 10,000X in H ₂ O	0.8 mL
41003-1	GelRed™, 10,000X in H ₂ O	10 mL
41001	GelRed™, 25 in H ₂ O	4 L
41002	GelRed™, 10,000X in DMSO	0.5 mL
41005	GelGreen™, 10,000X in H ₂ O	0.5 mL
41005-1	GelGreen™, 10,000X in H ₂ O	10 mL
41004	GelGreen™, 10,000X in DMSO	0.5 mL

* GelGreen™ and GelRed™ are covered by pending US and International patents.

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Thank You

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