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IOC Sub-Commission for the
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(WESTPAC)

IOC/WESTPAC E-Bulletin

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IOC/WESTPAC Workshop on Marine Invasive Species and Management in the Western Pacific Region

Bangkok, Thailand, 4-5 June 2009

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In the IOC/WESTPAC Programme, the Coastal Marine Biodiversity and Conservation in the Western Pacific is one of the projects that are recently approved. One of the activities that were recently conducted together with IOC/WESTPAC Harmful Algal Blooms in the Western Pacific (WESTPAC-HAB) was “the IOC/WESTPAC Workshop on Marine Invasive Species and Management in the Western Pacific Region”. The workshop was held during June 4-5, 2009 at the Faculty of Science, Chulalongkorn University, Bangkok, Thailand. The workshop was sponsored by IOC/WESTPAC and Japan Fund in Trust, with co-sponsorship of the Chulalongkorn University (Thailand), the Department of Marine and Coastal Resources (Thailand), Asian Natural Environmental Science Center, the University of Tokyo (Japan), and the contribution of China to IOC/WESTPAC. A total of 63 participants from 11 countries attended the workshop.

In recent years, great attention is paid to the marine invasive species amongst other issues on biodiversity and its conservations. The introduction of non-indigenous species into the coastal waters in many countries poses serious environmental and economic threats. There are many examples of disastrous invasions by such species that resulted in the loss of native species, changes in community structure and function, and damages to the fisheries and aquaculture.



Participants of the IOC/WESTPAC Workshop on Marine Invasive Species and Management in the Western Pacific Region



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To better understand the current status and impacts of marine invasive species, and to develop effective prevention and monitoring measures/plan, the workshop was aimed:

- To review the regional status on the marine invasive species and increase the knowledge and awareness of the threats of marine invasive species on marine biodiversity in the Western Pacific region.
- To provide scientific basis for marine invasive species management plan and to establish the research priority and direction in the Western Pacific region through establishment of quality assurance standard and protocol for scientific data on invasive organisms.
- To share experiences and knowledge related to marine invasive species and countermeasures to the invasion through establishment of research collaboration among scientists in the Western Pacific region as well as from other regions.

During the first day of the workshop, representatives from each country presented the current status of marine invasive species in their country. In addition, representatives from The International Council for the Exploration of the Sea (ICES) and The North Pacific Marine Science Organization (PICES) shared their experiences and knowledge related to marine invasive species issues and countermeasures to the invasion, and the possible collaboration between WESTPAC, ICES, and PICES. Research and knowledge related to ballast water, HAB and marine introduced species were also presented.

On the second day, a group discussion was held to refine WESTPAC- marine biodiversity project by defining work plan and research priorities. In addition, publishing current status report and other actions related to marine invasive species in the WESTPAC region were discussed. It is agreed that a report on current status of marine invasive species in the WESTPAC region will be published. In addition, it was decided that with the collaboration of the UNEP/COBSEA, a training and review workshop on the Management of Marine and Coastal Invasive Species in the COBSEA region will be organized during August 31 – September 4, 2009 in Bangkok, Thailand.

The introduced white shrimp *Litopenaeus vannamei*

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Native and white shrimps that were caught from the wild

In the past two decades, black tiger shrimp *Penaeus monodon* has been among one of popular cultured shrimps generating income for Thailand and other Asian countries (Briggs et al, 2005). However, due to outbreaks of White Spot Syndrome Virus (WSSV) and Yellow Head Virus (YHV), self-pollution, and general environmental degradation, shrimp farms were crashed (Briggs et al, 2005). Consequently, the white shrimp, *Litopenaeus vannamei*, a native to Central and South America, was introduced to Thailand for aquaculture purpose in 1999. At present, *L. vannamei*, is a major cultured shrimp species, and its production is more than 300,000 metric tons per year (Ekmaharaj, 2005). It has been known that *L. vannamei* can tolerate to a wide salinity ranges and it can grow fast in brackish water (Holthuis, 1980).

Introduction of non-native species into ecosystems may have both negative and positive impact(s) to the environment. Introduced species can be used as a pest control. However, introduced species both intentionally and unintentionally can also result in the loss of native species, changes in community structure and function, and alterations of the physical structure of the systems (Lambert et al, 1992; Ceccherelli et al, 2000; Grosholz et al, 2000). Although, escapes of this introduced white shrimp from farms to natural environments have not been confirmed on negative ecological consequences, the outbreaks of Taura syndrome virus (TSV) in cultured *L. vannamei* have been reported in China since 1999 (Tu et al, 1999) and in Thailand since late 2002 (Nielson et al, 2005). Thus, for conservation point of view, ecological impacts of introduced species need to be assessed for prevention of escaping into the nature and for management purpose.

Individuals of *L. vannamei* escaping from shrimp farms were first found in a wild in the eastern part of Thailand in 2005. The presence of this alien species in an estuarine ecosystem and



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potentially large volumes of escapes has raised concerns over short- and long-term negative impacts to local shrimp communities. To gain better understanding of potential ecological interactions of this alien species and native shrimp species, we conducted series of experiments to determine feeding interactions between *L. vannamei* and local shrimp species. In addition, we examined diet overlap between wild-caught *L. vannamei* and five local shrimp species. The results showed that *L. vannamei* was more aggressive than native shrimp species. *L. vannamei* approached and captured foods faster than all of the native shrimp species: *Metapenaeus brevicornis*, *M. ensis*, *Penaeus merguensis*, and *P. monodon*. The percentage of *L. vannamei* individuals outcompeting native shrimps for food ranged between 80-100%. In addition, there was a diet overlap between native shrimps and *L. vannamei* that escaped into the wild and later were captured.

Even though, *L. vannamei* is an economically important species to Thailand, the establishment of *L. vannamei* populations in the wild may have potential impact on the native shrimp populations. Monitoring on establishment of white shrimp populations in the wild and their potential breeding can serve as a baseline data for further management.

For more information, please contact suchana.c@chula.ac.th

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Detecting Vietnamese oil spill using ALOS AVNIR images

By Tong Phuc Hoang Son

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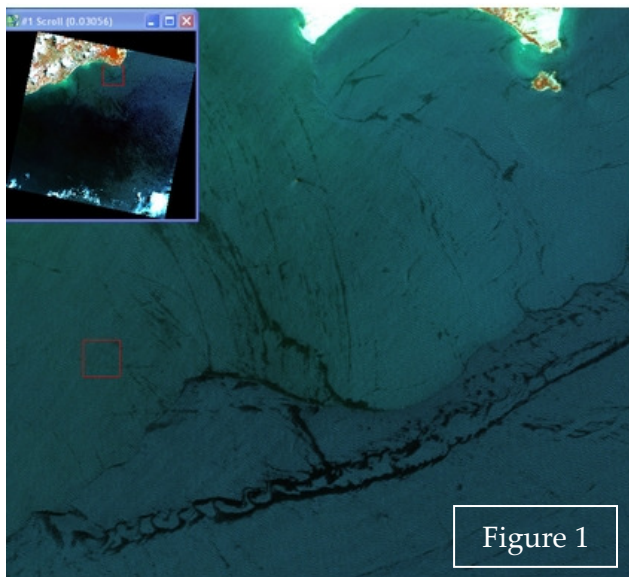


Figure 1

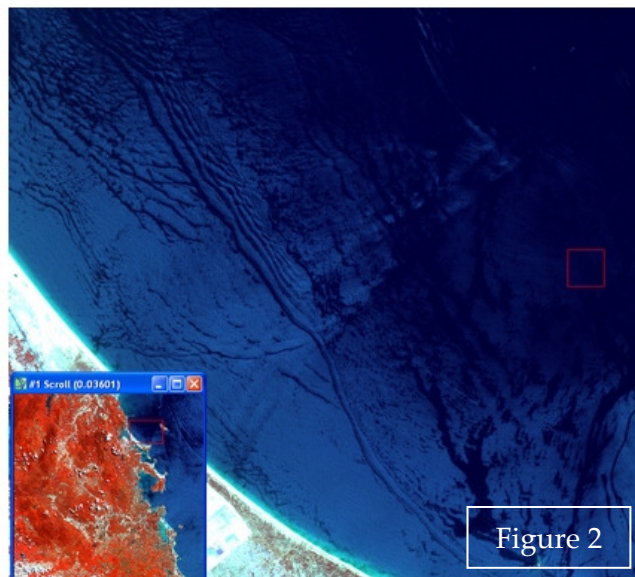


Figure 2

Image Courtesy: JAXA EORC

Oil spill has been a serious threat to the coastal ecosystem and economy in Vietnam. In March 2008, the “Duc Tri” vessel, a tanker carrying 1,700 tons of oil on its way to Da Nang, sank off the coast of Binh Thuan province, causing a possible threat of oil spread along the southern coast of Vietnam.

Immediately, research team from Nha Trang Oceanographic Research Institute used the JAXA ALOS satellite images to study the distribution of the oil spill. They found that even after a few months, the oil slick from the sunken ship can still be detected in the satellite images. Serious economic loss on the tourism, aquaculture (shrimp ponds), marine culture (lobster cages) in the oil spill affected areas have been recorded. The total economy loss of this single event was estimated to be 7 million Vietnamese Dong. On top of that, the marine

ecosystem is also affected, especially the coral reefs, sea grass bed, and seaweed meadows.

Figure 1 shows the detection of floating oil (from accident of Duc Tri ship) in the Binh Thuan waters using ALOS AVNIR2 false color image on May 22, 2008 (10 m resolution). Few weeks later, the oil spill landed along the beaches and bays of Quang Ngai, Binh Dinh and Phu Yen provinces (Figure 2).

Oil spill, usually, is difficult to be detected using natural color image. However, when the oil slick coincides with the area of sun glint (reflection of sun light from ocean surface), the less reflective oil-covered area can be easily identified in the satellite image. This study has shown the possibility of using passive satellite sensor in oil slick monitoring where it will be useful to develop the oil spill contingency plan.

Building Capacity

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Research Opportunity

JAXA Third ALOS Research Announcement

The third Research Announcement (RA) of the Japan Aerospace Exploration Agency (JAXA) is soliciting research proposals for scientific and practical research using the Advanced Land Observing Satellite (ALOS, "Daichi"). This research will support the ALOS Research Plan to be carried out by members of the ALOS research team exploiting PRISM, AVNIR-2 and PALSAR sensor data. JAXA welcome all researchers in Asia and Russia, to submit research proposals for peaceful and non-commercial purposes.

Due date: November 30, 2009

For details, please visit

http://www.eorc.jaxa.jp/ALOS/en/ra/ra3_guide.htm

Capacity Building

UNU-INWEH & UNESCO International Course - Biodiversity in Mangrove Ecosystems

The course focuses primarily on mangrove ecosystems while maintaining an integrated approach towards management of coastal ecosystems. Particular emphasis will be given to teaching the methodology for assessing, monitoring and conserving biodiversity in mangrove ecosystems. A limited number of fellowships are available to qualified candidates from developing countries only.

Date: 2-16 November 2009.

Venue: Centre of Advanced Studies in Marine Biology, Annamalai University, India

Application Due: September 25, 2009.

For details, please visit

<http://www.inweh.unu.edu/Coastal/Mangroves/Mangroves.htm>

Job Opportunity

- (i) Postdoctoral, Associate or Senior Research Scientist in Ocean Optics, Lamont Doherty Earth Observatory, Columbia University, USA. Applicants should submit a personal statement describing research experience and interests, a curriculum vitae, and the names and addresses of three references, to: <https://academicjobs.columbia.edu/applicants/Central?quickFind=52069>.
- (ii) Postdoctoral position at IFREMER, Laboratoire de Physique des Océans, Brest, France. Contact: Bach.Lien.Hua@ifremer.fr
- (iii) Postdoctoral research associate position in North Atlantic Bloom Experiment, The Applied Physics Laboratory, University of Washington. Contact: Linda M. Marsh, marsh@apl.washington.edu
- (iv) Post-Doctoral Research Scientist, Associate Research Scientist (Project) or Senior Staff Associate (Project Engineer) Open Rank; working in the field of Ocean Optics, Lamont Doherty Earth Observatory, Columbia University. Applicants should submit a personal statement describing research experience and interests, a curriculum vitae, and the names and addresses of three references, to: <https://academicjobs.columbia.edu/applicants/Central?quickFind=52069>

More Job Opportunity can be found at <http://www.unescobkk.org/en/special-programmes/westpac/phd-and-post-doc-opportunities/>

IOC/WESTPAC Announcement

The third Expert Workshop of WESTPAC on Monsoon Onset Monitoring and its Social and Ecosystem Impacts

WESTPAC will hold one side meeting during the East Asian Seas Congress 2009 on the Monsoon Onset Monitoring and its Social & Ecosystem Impacts (MOMSEI). The MOMSEI side meeting will discuss the potential link between the coral bleaching with the monsoon climate variability, identify the possible collaborations with other partners in the region, and further finalize the science plan of the pilot project.

Date: 25-26 November 2009
Venue: Manila, Philippine
Contact: Wenxi Zhu
Email: w.zhu@unesco.org

<http://www.unescobkk.org/special-programmes/westpac/partnerships-at-work-the-monsoon-onset-monitoring-and-its-social-ecosystem-impacts/>

Second International Workshop on the Fluvial Sediment Supply to the South China Sea

Fluvial Sediment Supply to the South China Sea: Anthropogenic and Natural Aspects (FluSed) Project was started in 2008. The project organizes a series of international workshops to provide a regional platform for those interested scientists to share their scientific knowledge and to stimulate new ideas on the study of the topic. The first Workshop was successfully held in Tongji University at Shanghai during 27-28 November 2008.

Date: 26-28 November 2009
Venue: Shanghai, China
Contact: Dr. Zhifei Liu

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Email: lzhifei@tongji.edu.cn

<http://www.westpacflused.com>

The 2nd Workshop of WESTPAC on the Response of Marine Hazards to the Climate Change

Date: 4-6 December 2009
Venue: Qingdao, China
Contact: Wenxi Zhu
Email: w.zhu@unesco.org

The 13rd Session of WESTPAC Coordinating Committee for the North East Asian Regional Ocean Observing System (NEAR-GOOS-13)

Date: 10-12 December 2009
Venue: Vladivostok, Russia
Contact: Wenxi Zhu
Email: w.zhu@unesco.org

Partner Organizations Announcement

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

EAS Congress 2009

The EAS Congress 2009 will be a venue for reviewing and sharing on-the-ground experiences in integrated management of coastal and marine resources. Carrying the theme, "Partnerships at Work: Local Implementation and Good Practices," it will highlight initiatives and good practices covering key aspects of

coastal and marine resource management and how interregional, interagency and multisectoral partnerships are contributing toward the attainment of regional and international environmental targets.

The International Conference will feature six major Conference Themes as follows that cover essential aspects of sustainable coastal and ocean development:

- Coastal and Ocean Governance
- Natural and Man-made Hazard Prevention and Management
- Habitat Protection, Restoration and Management
- Water Use and Supply Management
- Food Security and Livelihood Management
- Pollution Reduction and Waste Management

The Provisional Programme of the Congress is available at the following URL:

http://pemsea.org/eascongress/section-support-files/easc2009_provisional_programme.pdf

Date: 23-27 November 2009
 Venue: Manila, Philippines
 Contact: EAS Congress Secretariat
 Email: congress@pemsea.org
 Phone: +63 (2) 9292992

Youth Forum at the EAS Congress 2009

The 2nd EAS Youth Forum (YF2) aims to: provide a venue for youth of the EAS region to learn more about pressing issues in the marine and coastal environment; strengthen the role of young participants in addressing these issues; and provide some practical skills that can be applied at the community level. The YF2 will carry the theme: **Youth of the East Asian Seas Region and Climate Change**. The YF2 can serve as a venue for promoting awareness on the potential impacts of climate change and how the youth can be engaged in addressing this pressing concern.

<http://www.pemsea.org/eascongress/youthforum>

Yellow Sea Large Marine Ecosystem Project (YSLME)

The Second Yellow Sea Regional Science Conference

The UNDP/GEF Project, "Reducing Environmental Stress in the Yellow Sea Large Marine Ecosystem" has completed the Strategic Action Programme (SAP) and implemented demonstration projects, generating new knowledge and information. These will be showcased at the "Second Yellow Sea Regional Science Conference" along with scientific results from other projects implemented in the Yellow Sea.

Date: 24-26 February 2010

Venue: Xiamen, China

Abstract submission deadline: 15 December 2009

<http://www.yslme.org/doc/2rsc.htm>

The Action Plan for the Protection, Management and Development of the Marine and Coastal Environment of the Northwest Pacific Region (NOWPAP)

NOWPAP integrated HAB website to be launched

NOWPAP CEARAC has developed a website dedicated to harmful algae blooms (HAB) which will soon be available after the review by the 7th CEARAC Focal Points Meeting scheduled on 14-15 September 2009 in Toyama, Japan. From this dedicated website, regional integrated reports on HAB, reports on country case studies, public awareness brochures, database on experts and some details on each case study will be available along with other information, such as meetings, events and links to other relevant organizations, programmes and institutions.