EMBRIO 2014
Enhancing Marine Biodiversity Research in Indonesia

1st International Workshop
Understanding, Protecting/Rehabilitating & Sustainable Use of Indonesian Marine Biodiversity
Bogor, March 6+7, 2014

Supported by:

- Bogor Agricultural University (IPB)
- Federal Ministry of Education and Research
- DAAD (Deutscher Akademischer Austausch Dienst, German Academic Exchange Service)
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PKSPL Training Center

Bogor Agricultural University (IPB)

Kampus IPB Baranangsiang, Bogor-Indonesia

Supported by
Constituting Workshop of ‘EMBRIO – Enhancing Marine Biodiversity Research in Indonesia’

March 6+7, 2014; PKSPL Training Center, Kampus IPB Baranangsiang, Bogor

1. Organizing Board

Dr. Hawis Madduppa (Lecturer / Secretary FPIK-IPB (ITK))
Dr. Mala Nurilmala (Lecturer FPIK-IPB (THP))
Dr. Nurul K. Humaida (IPB Directorate for Research & Innovation)
Prof. Dr. Iskandar Z. Siregar (IPB Director for Research & Innovation)
Dr. Carsten Thoms (DAAD Longterm Lecturer, FPIK-IPB)
Dr. Neviaty Zamani (Lecturer FPIK-IPB (ITK))

2. Background – The importance of enhancing Marine Biodiversity Research in Indonesia

Biodiversity can be defined in several ways, but it generally refers to the number of species (including their genetic variations and structures) living in a particular ecosystem. Marine biodiversity, therefore, refers to the species richness and abundance in the world’s oceans and seas. Our planet is covered with approximately 70% water and the amount of life in the oceans is enormous. For a long time the marine environment was considered better buffered against human influence than the land. Resulting from this, scientific efforts to investigate and protect marine biodiversity lag for several years behind terrestrial research. In recent years, however, it has become clear that there are severe, often large-scale changes occurring in the biodiversity of marine habitats. Many of the most striking changes can be linked to human activities (causing pollution, habitat loss and overexploitation of resources), climate change effects, and invasion of non-endemic species (with the latter two oftentimes also having links to human activities). One could argue that biodiversity has innate importance, as life has value on its own. In addition to this consideration, marine ecosystems have several functions critically important to life on Earth in general and to human well-being in particular. These functions include:

- Protection of water resources
- Nutrient storage and cycling
- Pollution breakdown and absorption
- Gas and climate regulation (with impacts on climate change)
- Food provision
- Bioactive compounds from marine sources with pharmaceutical and biotechnological potential
- Raw materials (as resource for biotechnological innovation as well as for ornamental purposes)
- Recreation / Tourist attractions
- Cultural values
Experiments in coastal ecosystems have shown that maintaining biological diversity is essential for maintaining these functions. In consequence, in order to secure the marine habitat as a basis for human well-being, innovation and survival, it is imperative to protect marine biodiversity. Among the major challenges for future marine biodiversity research, therefore, is to monitor and counteract biodiversity loss as well as to develop strategies to make use of the as yet still existing plenitude of marine resources in a responsible and sustainable way.

Indonesian marine habitats are world-renowned as hotspots of biodiversity, thus constituting an immense treasure for the Indonesian people. At the same time, Indonesian marine habitats are among the most threatened by human activities that result in pollution and habitat loss throughout the archipelago. Despite this, research on marine biodiversity is rarely conducted in Indonesia due to lack of the necessary resources. Moreover, marine biodiversity research in Indonesia most of the times is scattered with very few concerted efforts. IPB aims to counteract this by promoting national and international collaborations across scientific disciplines, making use of synergies that arise from cooperative endeavours of scientists with complementing expertise. The goal of IPB is to promote initiatives towards joining such forces in order to understand, protect/rehabilitate and sustainably use Indonesian marine biodiversity.

3. EMBRIO Goals

In 2013, Bogor Agricultural University (IPB) officially recognized Marine Sciences as one of three focus areas in the university’s strategic plan for future research development. While in the years before marine research has been considered part of agricultural science at IPB, the importance of marine biodiversity for the Indonesian people and for the IPB scientific vision has now been underlined by officially including this field of research in the IPB statutes (66/2013) as signed by presidential decree. In response to this, IPB Vice Rector for Research & Innovation, Prof. Dr. Ir. Anas Miftah Fauzi, launched a Task Force to develop a roadmap for the future strategy of IPB Marine Biodiversity Research with the aim to:

1. identify ground-breaking multidisciplinary research concepts centred on “Marine Biodiversity” that foster synergies by involving various disciplines and research groups.
2. determine opportunities for international collaboration as well as collaborations with Indonesian non-university research institutions.
3. exchange of experiences in overcoming challenges typically involved in international collaborations.
4. determining ways to foster publication in international peer-reviewed journals and to promote young researchers in their career to become internationally competitive and collaborative scientists in the field of Marine Biodiversity

A first full-day brainstorming workshop was held on December 12, 2013, with fourteen invited speakers on the topics Marine Environments & Resources as well as Socioeconomics/Human Dimension and with round-table discussions in the afternoon. One of the most important outcomes of this workshop was the definition of a concerted strategy for IPB Marine Biodiversity Research – an ‘Integrated Approach to Understand, Protect/Rehabilitate & Sustainable Use of Indonesian Marine Biodiversity’.

Along these three conceptual goals, IPB Marine Biodiversity Research will be streamlined in the future and strategic partnerships will be established with national and international collaborators. Following the
initial workshop in 2013, the Task Force has since met regularly to refine this strategy. The Task Force suggested establishing an Indonesia-wide program coordinated by IPB with the title:

**EMBRIO**

Enhancing Marine Biodiversity Research in Indonesia

The targets of EMBRIO are:

- Increasing *(International) Visibility* of Indonesian Marine Biodiversity Research
- Promoting **Dialogue/ Coordinated Communication** in Marine Biodiversity Research on a national and international level
- Promoting **Coordinated Research Approaches** targeted on achieving all three Goals of EMBRIO “Understand, Protect/Rehabilitate & Sustainable Use of Indonesian Marine Biodiversity” in collaboration with national and international partners

The Task Force identified the following initial measures required to achieve these targets:

**Measures to increase *(International) Visibility***

- Defining a concerted EMBRIO research agenda with clearly defined focus areas (‘Clusters of Research’)
- Installing an EMBRIO Management Office as central contact point for potential external partners and to coordinate public awareness activities
- Setting up an EMBRIO Homepage providing information on the EMBRIO Research Goals as well as a ‘Who’s Who database’ on EMBRIO Researchers and their scientific expertise
- Establishing an EMBRIO International Symposium Series

**Measures to promote Dialogue/ Coordinated Communication**

- Installing the EMBRIO Management Office as central communication hub and as central unit to coordinate data management within the EMBRIO consortium
- Establishing the EMBRIO International Symposium Series, an EMBRIO Mailing List, and regular EMBRIO Status Meetings to foster exchange, mutual research status updates and a concerted research strategies between the EMBRIO researchers

**Measures for a Coordinated Research Agenda**

- Establishing the EMBRIO Task Force as a central steering committee to define concerted research strategies
- Installing the EMBRIO Management Office to communicate these research strategies
- Providing seed funding to foster innovative collaboration projects, to support research facilities that can jointly be used for interdisciplinary research (e.g. field stations, laboratories), and to motivate research in areas currently underrepresented within in the three EMBRIO Goals
- Establishing a model pilot project that covers all three EMBRIO Goals (Understanding, Protecting/Rehabilitating, Sustainable Use of Marine Biodiversity)
- Fostering the formation of multidisciplinary teams for joint proposal writing to apply for national and international grants.
Enhancing **Marine Biodiversity** Research in Indonesia (EMBRIO)’

*Definition of Research Clusters (DRAFT)*

- **Understand**
  - Tropical Ecosystems & Climate Change
  - Invasive Species
  - Dynamics of Water Masses in Coastal Areas
  - Marine Microbiology

- **Protect / Rehabilitate**
  - Marine Conservation
  - Marine Pollution & Bioremediation
  - Habitat Rehabilitation & Restoration

- **Socioeconomic Implications**
  - Marine Socioeconomic Dynamics
  - Gender Studies

- **Sustainable Use**
  - Marine Natural Products
  - Bioenergy
  - Integrated Coastal Management
  - Food Production & Safety

**Fig. 1: EMBRIO Clusters of Research Expertise**
In order to define a concerted EMBRIO Research Agenda, the Task Force has suggested identifying and establishing interdisciplinary ‘Clusters of Research’ with the target to bring together researchers who have complementing research interests. These clusters are meant to promote sharing expertise and facilities as well as joining forces in writing grant proposals (see Fig. 1 for the current status of Research Clusters). The aim of the EMBRIO Research Agenda is to achieve sustainable use of marine biodiversity resources by understanding the processes underlying biodiversity in marine ecosystems, by protecting & rehabilitating marine biodiversity, and by considering socioeconomic implications of marine biodiversity loss/conservation.

4. Aims of the ‘EMBRIO Constituting Workshop’ (March 6+7, 2014)

One of the central aims of the ‘EMBRIO Constituting Workshop’ on March 6+7, 2013, will be to achieve a general consent on a concerted EMBRIO roadmap among the key players in Marine Biodiversity Research and related fields at IPB as well as partnering institutions. The workshop discussions will be based on the suggestions formulated by the EMBRIO Task Force that enjoy the full support by the IPB Rectorate. Representatives from Indonesian Ministries and governmental agencies are cordially invited to pinpoint competence needs and research demands in the field of Marine Biodiversity in order to pave the way for a maximum impact of future EMBRIO Research on Indonesian prosperity, policy-making and marine ecosystem management.

Next to discussing general strategies for the implementation of the EMBRIO program, the workshop will aim to identify complementing expertise and potential synergies between the participating researchers who are situated at different departments, faculties, and institutions. The workshop participants are invited to present their current research as well as concepts for future research projects in a Poster Session entitled “Integrated EMBRIO Research”. The aim of this poster session will be to facilitate discussions about an integrated, concerted approach. Therefore, the presenters are asked to highlight how their ideas integrate into the EMBRIO concept and can contribute to achieve the three EMBRIO Goals to “Understand, Protect/Rehabilitate & Sustainably Use Indonesian Marine Biodiversity”.

Great importance is also attached to enhancing collaboration with Non-Governmental Organizations (NGOs) concerned with Indonesian Marine Biodiversity issues. NGO Representatives are invited to present their perspective on how to best join efforts with the aim to instigate fruitful discussions during the EMBRIO workshop. Working group discussions conducted on the 2nd workshop day (March 7) will aim on the formation of grant proposal writing teams, the exchange of expertise, and the joint use of facilities and equipment.

Anticipated workshop outcomes are:

1. A general consent to a clearly defined roadmap targeted on Enhancing Marine Biodiversity Research in Indonesia
2. Groundbreaking, future-oriented research concepts as a basis for the EMBRIO roadmap
3. Synergies arising from a concerted utilization of complementing research expertise and facilities across the traditional borders of disciplines and IPB’s structural units.
4. Strategic collaborations between the EMBRIO consortium and non-university partners in Indonesia
5. Identification of potential partnerships with research institutions and scientists abroad
6. Determining ways to foster publication in international peer-reviewed journals and to promote young researchers to become internationally competitive and collaborative scientists in the field of Marine Biodiversity.

7. Initiating the establishment of structures to efficiently bridge between science and management for a successful implementation of the EMBRIO Goals.

The participants are cordially asked to keep these goals in mind when contributing their multifaceted expertise to the discussions at the ‘EMBRIO Constituting Workshop’, this way facilitating a concerted effort to Enhance future Marine Biodiversity Research in Indonesia.

5. Workshop Schedule (March 6+7, 2014)

**March 6, 2014 – Morning Session**

**PKSPL Training Center, Kampus IPB Baranangsiang, Bogor, Indonesia**

1. **Workshop Opening**

   **8:00**  Registration & Coffee
   **8:30**  Opening Remarks, Dr. Neviaty Zamani
   **8:45**  Welcome by Prof. Dr. Anas Miftah Fauzi (IPB Vice Rector for Research & Cooperation)
   **9:00**  Dr. Irene Jansen (Director of the German Academic Exchange Service (DAAD) Regional Office Jakarta)
            “The sustainability of DAAD activities for international networking of researchers in Indonesia”
   **9:15**  Prof. Dr. Indra Jaya (Dean of the IPB Faculty for Fisheries & Marine Science Faculty)
            “The importance & potentials of enhancing Marine Biodiversity Research in Indonesia”

2a. **EMBRIO – Research, Impact & Outreach**

   **9:30**  Introduction to the EMBRIO Goals & Roadmap, Dr. Carsten Thoms (on behalf of the EMBRIO Task Force)
   **9:45**  Poster Session 1 “Integrated EMBRIO Research” & Coffee Break

Plenary discussion “The significance of EMBRIO to bridge science and policy-making”
   **Facilitator: Dr. Luky Adrianto (alternative: Prof. Dr. Indra Jaya)**

   **10:30**  Ministry of Marine Affairs & Fisheries (KKP) “Expectations by KKP – how can the EMBRIO program contribute to policy-making in the context of Understanding, Protecting/Rehabilitating & Sustainably Using Indonesian Marine Biodiversity?”
   **10:45**  Ministry of Environment (KLH) “Indonesia’s implementation of the international agenda on policies & regulations for the Protection/Rehabilitation & Sustainable Use of Marine Biodiversity?”
   **11:00**  Ministry of Research and Technology (RISTEK) “Regulations & Policies for international collaborations in the context of EMBRIO”
   **11:15**  Indonesian Institute of Sciences (LIPI) “The future of Marine Biodiversity Research in Indonesia from the LIPI perspective”
   **11:30**  State Ministry of National Planning (BAPPENAS) “National Planning for the future of Marine Biodiversity Research in Indonesia”
   **11:45**  Plenary Discussion

**12:45**  Lunch Break
2b. EMBRIO – Research, Impact & Outreach

Plenary discussion “Potential for collaborations between NGOs and EMBRIO”
Facilitator: Prof. Dr. Dietrich G. Bengen (alternative: Dr. Neviaty P Zamani)

Presentations by NGO representatives on their views on potentials for collaboration with the EMBRIO consortium

13:45 Coral Triangle Initiative (CTI)
13:55 Conservation International (CI)
14:05 World Wildlife Fund (WWF)
14:15 Burung Indonesia
14:25 Plenary Discussion

15:10 “Wrap-Up of the day and remarks on the IPB support to EMBRIO”, Prof. Dr. Iskandar Siregar (IPB Director for Research & Innovation)

15:25 “Outlook on the Workgroup Discussions on March 7”, Dr. Neviaty Zamani

15:30 Poster Session 2 “Integrated EMBRIO Research”& Coffee
- Open End -

March 6, 2014 – Afternoon Session
PKSPL Training Center, Kampus IPB Baranangsiang, Bogor, Indonesia

March 7, 2014 – Workgroup Discussions
PKSPL Training Center, Kampus IPB Baranangsiang, Bogor, Indonesia

8:30 Instructions for the Workgroup Discussions (Dr. Carsten Thoms & Dr. Neviaty Zamani)

8:50 Workgroup Discussions

Group 1: Tropical Ecosystem; Climate Change & Invasive Species; Marine Microbiology [incl. socioeconomic, gender & policy-making implications]
Facilitators: Dr. Yusli Wardianto / Dr. Suryadi Wibowo

Group 2: Biotechnological Potential of Marine Biodiversity (Marine Natural Products, Bioenergy & Biomaterials) [incl. socioeconomic, gender & policy-making implications]
Facilitators: Dr. Mujizat Kawaroe / Dr. Irmanida

Group 3: Utilization & Safety of Marine Biodiversity as Source of Food [incl. socioeconomic, gender & policy-making implications]
Facilitators: Prof. Dr. Nurjanah / Dr. Ekowati Chasanah (KKP)

Group 4: Marine Conservation, Pollution & Remediation; Habitat Rehabilitation& Restoration; Integrated Coastal Management [incl. socioeconomic, gender & policy-making implications]
Facilitators: Dr. Tri Prartono / Dr. Zainal Arifin (LIPI)

Group 5: Other Marine Biodiversity Research Fields [incl. socioeconomic, gender & policy-making implications]
Facilitators: Dr. I Wayan Nurjaya / Dr. Cecep Kusmana

11:30 Lunch Break

13:30 Workgroup Presentations& Plenary Discussion
Facilitator: Dr. Ario Damar

15:00 Summary of the Workgroup Results & Closing, Prof. Dr. Indra Jaya

15:15 End of the EMBRIO Workshop
Guidelines for the Workgroup discussions (preliminary)

1. Identify potential teams for joint proposal writing / research projects within the agenda of the EMBRIO program.
2. Develop the research scope of the anticipated research project and identify researchers to be involved in the proposal writing team.
3. Identify and discuss interfaces of the anticipated research project to other EMBRIO research fields with the aim to promote an integrative EMBRIO approach addressing all three EMBRIO Goals (“Understand, Protect/Rehabilitate & Sustainably Use Indonesian Marine Biodiversity”).
4. Discuss socioeconomic & policy-making implications of the anticipated project and identify potential research topics and partners in these fields.
5. Map and discuss existing & potential strategic partnerships for the anticipated project with national and international collaborators.
6. Discuss the infrastructure required for the success of the anticipated research project (e.g. field stations; management & communication) as well as for its integration in a concerted, multidisciplinary EMBRIO research scope with national and international partners.
7. Discuss how young researchers & students training can be integrated and promoted through the anticipated project and through concerted EMBRIO activities.
8. Discuss how international publication activities and impacts on policy-making can be enhanced by the anticipated project and through concerted EMBRIO activities.
9. Compile a list of research funding organizations and grant schemes (national/international) the proposal for the anticipated project can be submitted to.