



ECOSYSTEM
CHARACTERISATION
OF THE
BAY OF BENGAL

Regional Expert Workshop

Phuket, Thailand, 10-12 February 2014

Organised by:

Bay of Bengal Large Marine Ecosystem Project in collaboration with
CSIRO, Wealth from Oceans Flagship



Norad



Background

Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand are working together through the Bay of Bengal Large Marine Ecosystem (BOBLME) Project to lay the foundations for a coordinated programme of action designed to better the lives of the coastal populations through improved regional management of the Bay of Bengal environment, its resources and trans-boundary issues.

While a considerable amount of information on the marine environment and its resources has been generated by individual countries in the Bay of Bengal, there has, to-date, been very few attempts to aggregate this information to produce a bay wide overview; and by doing so, facilitate a better integrated understanding of how the Bay of Bengal functions on a large scale. This information is also fundamental to any future activities relating to transboundary resources management, such as the implementation of the BOBLME Strategic Action Programme.

Ecosystem Characterisation Workshop

This project 'An ecosystem characterisation of the Bay of Bengal' includes the identification and collation of available data to characterise and describe the ecosystems, sub-systems and the linkages across systems, and the large scale drivers of these systems in the Bay of Bengal. This will lead to a better understanding of how the Bay of Bengal ecological systems function as a whole and within each subsystem.

The characterisation approach was developed by CSIRO through a series of projects on Australia's regional marine planning program in identifying Key Ecological Features and Australia's Marine Protected Areas (see references for examples of methodologies). This workshop will involve the first stage of the process on Ecosystem Characterisation consisting of the following activities:

1. Providing a background to the approach
 - a. The conceptual approach
 - b. Working definitions of ecosystems
 - c. Ecosystem structures, processes and dynamics
2. Implementing the approach
 - a. **Information and mapping**, including in-country data and expertise
 - b. **Basins and sub-Basin** structures of the BoBLME
 - c. **Provinces**: Pelagic and Demersal
 - d. **Bathomes**: Depth-dependent structures
 - e. **Geomorphology**
 - f. **Facies**
 - g. **Biology and fisheries**
3. Capturing local information and knowledge
 - a. Identifying missing data and knowledge gaps
 - b. Working with in-country experts prioritise their information needs
 - c. Transferring knowledge and information to improve BoBLME objectives

At the broadest scale of basins, regional systems are differentiated by large scale oceanographic drivers. Within this regional set of systems, sub-regions will be defined based primarily on differences in the processes operating on the continental shelf, the continental slope and the deep ocean or abyssal plains. Next, subregions will be defined based on differences in other important habitat drivers such as water temperature, current patterns and geomorphology, such that each

features and specific processes associated with those features will be used to identify and characterise major subregions.

It is expected that parts of this ecosystem characterisation will be added to the existing draft Ecosystem Overview publication that had been developed by the Project. In essence it is expected that it will provide a more dynamic and integrated understanding of the eco-physical systems of the Bay and how they are affected by the marine productivity and climate, in particular.

Workshop Objectives

The objective of the workshop is to verify, validate and where necessary provide information to complete the final characterisation. A draft synthesis of the information used in the analysis will be made available before the workshop.

The broad aims of the workshop are:

1. Continue the development of an ecosystem characterisation for the Bay of Bengal that has been drafted using methodologies developed by CSIRO with input from BoBLME scientists.
2. Gather and clarify information that will form part of the final Bay of Bengal system characterisation.
3. Illustrate, discuss and further develop the draft ecosystem characterisation developed by CSIRO.
4. Enhance the capacity of BoBLME scientists to apply the characterisation process and to further develop understanding of ecosystems of BoBLME.

The success of this project relies on 'local expert opinion' elements to it in recognition that much of the information about these systems is unlikely to be published or documented or accessible. Local experts from the BOBLME region, including from government and industry will attend the workshop.

The workshop participants will bring their expertise of the region to the process allowing a more accurate characterisation of the region. The kinds of information we are seeking are:

- Fisheries: main species, where are they caught, seasonality, main fishing areas and species mix, information on breeding grounds and recruitment sites, life cycles and migration patterns. Trans-boundary issues.
- Related to above, productivity information: where (latitude-longitude, depth, timing), processes, influences on ecosystems, broad-scale drivers, trans-boundary issues.
- Key Habitats, preferably as maps. What are the processes sustaining and threatening these habitats? What is the ecological value in terms of species associated with different habitat types and influence on life history stages/processes? Transboundary issues.
- Oceanographic circulation processes as well as local weather and seasonal patterns.
- Their impression of what they think are the main ecosystem types that exist in their national waters and more generally throughout the Bay of Bengal - without reference to national boundaries. This is meant to capture their knowledge and experiences, and help them think about how to integrate the disparate information. This information may be hand drawn on a map and annotated with what they think are taking place in the different ecosystems.

- Provide information and data that is needed for the characterisations;

Expected Outputs of Workshop

The outputs from the workshop are expected to comprise:

1. Collated published data captured as a set of mapped products to be used in the characterisation process at the different scales;
2. Maps of the Basins, Sub-Basins, Provinces, Bathomes and finer-scale information as a set of GIS coverages and images;
3. Information from the Workshop incorporating any suggested changes, edits and relevant supporting information and commentary on the mapped products;
4. Identification of data and information gaps and where possible recommendations to fill them (data, metadata, organisations and contacts);
5. Review of draft ecosystem regionalisation with commentary from the Workshop;
6. Increased capacity of regional scientists: The process for understanding the interactions between biophysical drivers, habitats, species and community composition will be discussed and applied. We will help participants to build an understanding of the structure and function of local ecosystems that can be used for future ecosystem-based management of marine/coastal resources, and for an understanding of trans-boundary issues;
7. Assistance to BOBLME experts to identify local knowledge and data that can be used to further understand issues of local interest, and more generally local ecological knowledge of value to BOBLME. These may comprise information on fisheries, habitats, ecological processes, climatic drivers, oceanographic knowledge/data and anecdotal information on unusual events/sightings and impacts from extreme events or trans-boundary processes;
8. A set of schematics may be produced to capture understanding of various key ecological processes operating broadly within the Bay of Bengal;
9. An understanding of how this information can be used to further, and to prioritise, the future activities of the BOBLME Program.

Draft agenda for the BOBLME ecosystem characterisation workshop

Date	Time	Topic
Day 1	All day	<p>Introductions – Chris O’Brien and David Brewer</p> <p>Workshop Outline – David Brewer</p> <ul style="list-style-type: none"> Process Expected outcomes Expectations of participants <p>Participant introductions – All</p> <p>The ecosystem characterization process – David Brewer</p> <ul style="list-style-type: none"> What is an ecosystem ? Approach used How it links to BOBLME objectives Expectations of participants <p><i>Coffee break</i></p> <p>Description of ecosystem characterization process – David Brewer</p> <ul style="list-style-type: none"> Physical drivers of ecological systems Hierarchical classification Draft BOBLME ecosystem characterization <p><i>Lunch break</i></p> <p>Ecological assets of BOBLME – David Milton</p> <ul style="list-style-type: none"> Fisheries Benthic communities Threatened and protected species Key habitats Knowledge gaps <p><i>Coffee break</i></p> <p>Ecological assets of BOBLME (cont.)</p> <p>Threats to key ecological assets – David Brewer</p> <p>Discussion of Day 1 and planning for Day 2</p>
Day 2	All day	<p>Review of Ecological Classification of BOBLME</p> <p>Introduction of process for Day 2</p> <p>Physical drivers</p> <ul style="list-style-type: none"> Review of Day 1 Small group discussion and review Feedback to workshop Workshop discussion and summary <p><i>Coffee break</i></p> <p>Hierarchical classification of BOBLME</p> <ul style="list-style-type: none"> Review of Day 1 Small group discussion and review Feedback to workshop Workshop discussion and summary

		<p><i>Lunch break</i></p> <p>Ecological assets Review of Day 1 Small group discussion and review Feedback to workshop Workshop discussion and summary</p> <p><i>Coffee break</i></p> <p>Ecological assets (cont.)</p> <p>Summary and planning for Day 3</p> <p><i>Workshop dinner</i></p>
Day 3	All day	<p>Introduction to Day 3</p> <p>Threats to key ecological assets Review of Day 1 Small group discussion and review Feedback to workshop Workshop discussion and summary</p> <p><i>Coffee break</i></p> <p>Summary of updated information</p> <p>Where to from here ? Integration of new information and final report Implications for BOBLME and national SAPs</p> <p><i>Lunch break</i></p> <p>Where to from here ? (Cont.) Media communications Scientific publications Future interactions</p>

Participants

This will be a multi-disciplinary workshop. Workshop participants from the eight BOBLME partner countries will include different areas of expertise as follows:

1. marine ecosystem characterisation experts with oceanographic background;
2. remote sensing experts of marine systems; and
3. ecosystem modellers in fisheries.

Total number of invited participants will be 24 (3 from each country).

Venue

Novotel Phuket Resort by The Beach; Patong Beach, Phuket 83150, Thailand; Tel: +66 (0)76 342-777
Fax: +66 (0)76 342-168, www.novotelphuket.com

References

1. Information on the conceptual approach and application to study the trophic systems of the North West Shelf of Australia:

<http://www.environment.gov.au/coasts/mbp/publications/north-west/pubs/nw-trophic-systems.pdf>

2. Application to Eastern Australia:

<http://www.environment.gov.au/coasts/mbp/publications/east/pubs/ecosystems.pdf>

3. Application to the tropical islands of Christmas Island and Cocos (Keeling) Islands:

<http://www.environment.gov.au/coasts/mbp/publications/north-west/pubs/conservation-christmas-cocos.pdf>

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