REPORTING FORM 2024

CREPSUM (Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems)

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1. Ongoing activities, in line with the IMBeR Grand and Innovation Challenges

(Among other uses, information will be used to update the IMBeR Annual Report to SCOR)

1.a. Grand Challenge I

Understanding and quantifying the state and variability of marine ecosystems - with focus on Research Objectives 1 to 3:

***Research Objective 1**. Evaluate and predict the cumulative effect of multiple stressors*
***Research Objective 2**. Integration of climate change and climate variability*
***Research Objective 3**. Impacts on society – preparation for a changed future*

Ontogenetic shifts in Symbiodiniaceae assemblages within cultured Acropora humilis across hatchery. https://doi.org/10.3389/fmars.2024.1138021

Comparative ecophysiology of four harmful Chattonella spp. (Raphidophyceae) from tropical Asian waters. https://doi.org/10.3389/fmars.2023.1127871

A new small thecate dinoflagellate Azadinium anteroporum sp. nov. (Amphidomataceae, Dinophyceae) isolated from Asian Pacific. https://doi.org/10.1080/00318884.2023.2204681

Distributional range extensions of Onigocia grandisquama (Platycephalidae) and Soleichthys siammakuti (Soleidae) in the South China Sea https://doi.org/10.26028/cybium/2024-010

First record and distribution extension of two emperor fishes, Lethrinus semicinctus and Lethrinus olivaceus to the east coast of Peninsular Malaysia http://doi.org/10.17576/jsm-2023-5204-01

Modeling of the Elements Ca2+, Mg2+ and Si in the Sediments and the Body Walls of Sea Cucumbers in the Tropical Seagrass Meadows https://doi.org/10.3390/d15020146

1.c. Grand Challenge III

Improving and achieving sustainable ocean governance - with focus on Research Objectives 7 to 9:

***Research Objective 7**. Develop knowledge on best practices for multilevel governance approaches to ocean climate adaptation and mitigation*
***Research Objective 8**. Develop understanding on key ingredients for transformation towards more sustainable, equitable and inclusive governance approaches to fisheries and aquaculture*
***Research Objective 9**. Support implementation of post-2020 biodiversity targets for marine spatial planning and marine protected areas*

A Global Survey Project on "the Ocean We Want" for International Collaboration of Ocean Science based on the Value-Belief-Norm framework with the assumption of that personal value system influence environmental behavior via environmental beliefs and personal norms. The questionnaire survey is carried out in Australian France, Japan, USA and planning over the world (target 80-100 countries).

Scientists at Universiti Sains Malaysia (USM) and colleagues were tasked by the Penang State Government to undertake studies and prepare the groundwork for the gazettement of the Middle Bank area as a marine sanctuary to be named the Middle Bank Marine Sanctuary (MBMS). Revealing key ecosystems and biological species found in the Middle Bank, and found out the crucial ecological functions provided by them. Also analysed usage of the marine ecosystem services from the Middle Bank. The sustenance and promotion of ecosystem services are dependent on conservation of the areas. Such ecosystem services include the maintenance of food security, the protection of coastal erosion, readiness for climate change and the maintenance of ecosystem processes. The Middle Bank is an important feeding ground and nursery area for marine animals. This service is provided not only for resident species but also for the migratory fish and avian species that visit the area. Conservation and improvement of the areas must be done soon, especially given the importance of the Middle Bank to the health and services of the marine environment and the benefit it brings to the state. MBMS also supplements general efforts taken to improve the future of Penang through the Green Agenda 2030. The findings from the projects are shared with local stake holders and decision makers to co-design the management and conservation policy of the Middle Bank.

Indonesian policy and researches toward 70% reduction of marine plastic pollution by 2025 *https://doi.org/10.1016/j.marpol.2023.105692*

Tides of Change: The Middle Bank Marine Sanctuary and the Quest for a Resilient Penang

https://penanginstitute.org/wp-content/uploads/2023/08/Monograph_MBMS.pdf

2. Selected highlights

2.b. Publications since last report

Please add all publications since last report to the table below (see notes for details on "Class" and "Activity" fields).

***Publication** with DOI*	***Class 1, 2, 3***	***Activity****
Pratiwi et al. (2023) Euryhaline fish larvae ingest more microplastic particles in seawater than in freshwater. Sci Rep 13, 3560. doi:10.1038/s41598-023-30339-y	*1*	
Ohji et al. (2023). Bioaccumulation of antifouling biocides in mangroves and seagrasses in coastal ecosystems. Journal of the Marine Biological Association of the United Kingdom, 103, E24. doi:10.1017/S0025315423000024	*1*	
Jandang et al (2024) Ontogenetic shifts in Symbiodiniaceae assemblages within cultured Acropora humilis across	*1*	

hatchery. Front. Mar. Sci. 11:1138021 https://doi.org/10.3389/fmars.2024.1138021		
Lum et al. (2023) Comparative ecophysiology of four harmful Chattonella spp. (Raphidophyceae) from tropical Asian waters. Frontiers in Marine Science 10: 1127871 https://doi.org/10.3389/fmars.2023.1127871	*1*	
Kuwata et al. (2023) A new small thecate dinoflagellate Azadinium anteroporum sp. nov. (Amphidomataceae, Dinophyceae) isolated from Asian Pacific. Phycologia 62, 303-314https://doi.org/10.1080/00318884.2023.2204681	*1*	
Matsunuma et al. (2024) Distributional range extensions of Onigocia grandisquama (Platycephalidae) and Soleichthys siammakuti (Soleidae) in the South China Sea. Cybium, https://doi.org/10.26028/cybium/2024-010	*1*	
Piah et al. (2023) First record and distribution extension of two emperor fishes, Lethrinus semicinctus and Lethrinus olivaceus to the east coast of Peninsular Malaysia. Sains Malaysiana, 52: 1037-1046.http://doi.org/10.17576/jsm-2023-5204-01	*1*	
Floren et al. (2023) Modeling of the Elements Ca2+, Mg2+ and Si in the Sediments and the Body Walls of Sea Cucumbers in the Tropical Seagrass Meadows. Diversity, 15, 146. https://doi.org/10.3390/d15020146	*1*	
Arifin et al. (2023) Indonesian policy and researches toward 70% reduction of marine plastic pollution by 2025" Marine Policy 155, 105692 https://doi.org/10.1016/j.marpol.2023.105692	*1*	

2.c. Events, Meetings, and Workshops

List all international and national events, meetings and workshops. Describe the level of participation: e.g. chairing session/workshop, organising meeting. Include Endorsed Projects committee meetings and workshops.

Format: Title of event. Date. Location. Description of participation. Any other pertinent details.

CREPSUM Seminar on Biodiversity of Marine Benthic Invertebrates, Jan 2024, Tsukuba, Japan. Benthos group of CREPSM hold the seminar at National Museum of Nature and Science, Tsukuba, Japan..

4. Input to management, policy and SOCIETY* over the last year

Add anything that is not covered under "1.c. Grand Challenge III"

**As previous reporting forms requested 'input to management and policy' only, please add any 'input to society' not captured in previous reports*

It was examined policies related to plastic litter and their impact on reducing plastic litter in Indonesian seas and analyzed the progress in marine plastic research to contribute to the policy. It was synthesized gaps to improve policy and possible scientific contributions to reduce marine plastic

pollution. The national policy to reduce 70% of marine plastic litter entering the Indonesian seas by 2025 requires an extended period. The active role of local governments, improvement of solid waste management information system, and establishment of a marine plastic research agenda are among the most crucial for achieving national targets.

Scientists at Universiti Sains Malaysia (USM) and colleagues were tasked by the Penang State Government to undertake studies and prepare the groundwork for the gazettement of the Middle Bank area as a marine sanctuary to be named the Middle Bank Marine Sanctuary (MBMS). Revealing key ecosystems and biological species found in the Middle Bank, and found out the crucial ecological functions provided by them. Also analysed usage of the marine ecosystem services from the Middle Bank. The sustenance and promotion of ecosystem services are dependent on conservation of the areas. Such ecosystem services include the maintenance of food security, the protection of coastal erosion, readiness for climate change and the maintenance of ecosystem processes. The Middle Bank is an important feeding ground and nursery area for marine animals. This service is provided not only for resident species but also for the migratory fish and avian species that visit the area. Conservation and improvement of the areas must be done soon, especially given the importance of the Middle Bank to the health and services of the marine environment and the benefit it brings to the state. MBMS also supplements general efforts taken to improve the future of Penang through the Green Agenda 2030. The findings from the projects are shared with local stake holders and decision makers to co-design the management and conservation policy of the Middle Bank.

6. Planned activities

CREPUSM ended in March 2024. Several collaboration studies and education activities are on-going based on developed scientists and human network in CREPSUM.

9. Images / Figures

See the web site: https://www.crepsum.com/