Preface

Ladies and Gentlemen,

The SCESAP International Symposium hosted together by the Department of Aquatic Resources Management, Faculty of Fisheries and Marine Sciences, IPB University, Bogor, Indonesia – the first and the largest fisheries and marine sciences faculty in Indonesia, and The Society for Coastal Ecosystems Studies-Asia Pacific. The symposium, as part of the annual scientific meeting of The Society for Coastal Ecosystem Studies – Asia Pacific (SCESAP), is intended to catalyze research and information exchange among scientists, students or managers who concerned about marine and coastal environment in the Asia Pacific. It will provide opportunities for sharing experiences and information concerning research and development in diverse areas of coastal/marine science and technology.

The symposium on the theme “Coastal Ecosystem and Biodiversity of Asia-Pacific: Achieving SDG-14” was held for five days on 12-16 August 2019 in Andi Hakim Nasoetion (AHN) Auditorium, IPB University. The symposium was attended by more than 180 participants in 95 abstracts from 10 countries, namely Indonesia, Japan, Myanmar, Philippines, Taiwan, Thailand, Singapore, India, Russia, and Germany. The symposium also has presented two keynote presentations, three special presentations, 55 oral presentations, and 40 poster presentations.

This proceeding presents a selection from papers submitted to the conference, and all papers were subjected to peer-review by conference committee members and international reviewers. The papers selected depended on their quality and their relevance to the symposium. There are 37 selected and reviewed papers that will be published in the IOP Conference Series: Earth and Environmental Science.

We would like to many thanks and appreciation to International Collaboration Office (ICO)-IPB University, Faculty of Fisheries and Marine Sciences–IPB University, Center for Coastal and Marine Resources Studies (CCMRS)-IPB University, Environmental Research Center-IPB University, SEAMEO-BIOTROP, Rare Indonesia, and WCS (Wildlife Conservation Society) Indonesia, Yayasan Konservasi Alam Nusantara-The Nature Conservancy (TNC), who financially supported this event, also Chulalongkorn University, Tascmar, Marine Biodiversity Research Group-Ramkhamkhaeng University, and USAID SEA Project who supported this event. The Organizing Committee would like to thank...
all the authors who contributed to this symposium and also the reviewers who provided their valuable comments and suggestions.

Finally, we would like to extend our warm and sincere thanks to all members of the local organizer for a great contribution to this symposium.

Warm regards,

Prof. Yusli Wardiatno
Chairman of The SCESAP International Symposium
Welcome Speech by Rector of IPB University

The honorable:
Dean of Faculty of Fisheries and Marine Science, Dr. Luky Adrianto
Head of SEAMEO Biotrop, Dr. Irdika Mansur
President of SCESAP, Prof. Mutsunori Tokeshi
Chairman of Organizing Committee, Prof. Dr. Yusli Wardiatno
Distinguished guests, speakers, and participants

Assalamu’alaikum Warahmatullahi
Wabarakatuh,

Good morning,

It is my great pleasure to welcome all participants to Bogor, Indonesia.

We are honored to be able to host the “SCESAP International Symposium 2019”. SCESAP or The Society for Coastal Ecosystems Studies - the Asia Pacific is the first international academic community association based in Asia with a legal structure, built on the spirit of 'equal partnership' participation with members, especially those from countries or regions around the mega biodiversity area in tropical/subtropical Asia Pacific. SCESAP was established to advance research and education in the science and management of coastal ecosystems and the surrounding environment in the Asia-Pacific region and the world.

This conference is a routine activity that is held every two years, and for this 3rd period, Indonesia has the honor to be the host. The implementation of this activity in collaboration with FPIK IPB, ICO IPB, PKSPL IPB, PPLH IPB, SEAMEO BIOTROP, Rare Indonesia, WCS Indonesia, and the Nusantara Natural Conservation Foundation (TNC). In addition, this activity is supported by Chulalongkorn University, Thailand; Tascmar; and the Marine Biodiversity Research Group (MBRG, Ramkhamhaeng University), and the USAID SEA Project which supports scholarships for participating students. We therefore continuously support this conference which has been able to gather national and global leading experts in fisheries and marine science to share and update the latest technological and commercialization development in the related fields.

Distinguished Guests, Ladies, and Gentlemen,

Currently, we are facing the era of industrial revolution 4.0. This stage has started at the beginning of the 21st century, characterized by the development of artificial intelligence (AI), robotic development, information technology & management system, biotechnology, big data and the Internet of Things (IoT). These
developments resulted in disruptions of industries in many countries, while promising transformations in production and governance systems. This industrial 4.0 phase is not only characterized by IoT technology that connects all the devices around us with internet technology. Moreover, it emphasizes added value aspects with the most devastating impact, not only creating civilization but also optimizing what already exists by connecting ones each other through more safety and intelligent decision-making processes.

The 4.0 technology is indicated by – at least – five interconnected characteristics, i.e. (i) Digital Data Acquisition, where data collection technology can be done through smart data acquisitions to improve data quality and precision; (ii) Big Data Sciences, where extremely large datasets are gathered and analyzed computationally; (iii) Data Connectivity, where different aspects of 4.0 technology can be connected through internet, starting from connectivity in data collections process using various instrumentations and interfaces, connectivity in big data collection, processing and analytics, etc.; (iv) Machine learning, where computational processes from big data – for example using AI – are performed to reveal patterns, trends, and associations, providing capability to create automatic and intelligent decision making processes; and (v) Value Creation, where newly added values are created from complex integrations of 4.0 technology for more effective and efficient system that could possibly disrupt and change the way of work and interact within our society.

Distinguished Guests, Ladies, and Gentlemen,

The expansion of protected areas for marine biodiversity and existing policies and treaties that encourage responsible use of ocean resources are still insufficient to combat the adverse effects of overfishing, growing ocean acidification due to climate change and worsening coastal eutrophication. As billions of people depend on oceans for their livelihood and food source and the transboundary nature of oceans, increased efforts and interventions are needed to conserve and sustainably use ocean resources at all levels.

Many problems in the ocean we are facing to achieve SDGs number 14, life below water. Ocean acidification is caused by the uptake of atmospheric CO$_2$ by the ocean, which changes the chemical composition of the seawater. Illegal, unreported and unregulated fishing remains one of the greatest threats to sustainable fisheries, the livelihoods of those who depend upon them and marine ecosystems. Small-scale fisheries are present in almost all countries, accounting for more than half of total production on average, in terms of both quantity and value. To achieve sustainable development of fisheries, fish stocks must be maintained at a biologically sustainable level. The use of technology 4.0 must be applied to answer various challenges in the ocean.

With a large number of participants in this symposium, comprising of 180 participants from 10 countries, I believe that this symposium will be able to overcome all of the challenges, promote the existence of a forum for researchers/experts, students, and practitioners in coastal ecosystem management. Furthermore, all participants are expected to contribute knowledge and solutions needed to marine and fisheries stakeholders and support the government in realizing the SDGs agenda.
I wish all participants to have a fruitful symposium and enjoy your stay in Bogor.

Wassalamu’alaikum Warahmatullahi Wabarakatuh.

Bogor, August 12th, 2019
Rector of IPB University

Dr. Arif Satria, SP, M.Si
Conference Photographs

Pre-Symposium
**Symposium Dinner**
Field Observation
Sponsor or funding acknowledgements

We are pleased to acknowledge the financial funding from Faculty of Fisheries and Marine Sciences, IPB University; International Collaboration Office, IPB University; Center for Coastal and Marine Resources Studies, IPB University; Center for Environmental Science, IPB University; SEAMEO-BIOTROP (Southeast Asian Regional Centre for Tropical Biology); Rare Indonesia; WCS (Wildlife Conservation Society) Indonesia; Yayasan Konservasi Alam Nusantara, The Nature Conservancy; Chulalongkorn University; Tacsmar; Marine Biodiversity Research Group, Ramkhamhaeng University; and USAID Sustainable Ecosystems Advanced (USAID SEA) Project.
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