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**International Conference  
on Marine Biodiversity and Conservation  
of The Bird's Head Seascape (BHS)**



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**CONFERENCE PROGRAM BOOK**

# **1st International Conference on Marine Biodiversity and Conservation of the Bird's Head Seascape**

**“Strengthening Connectivity of Marine Conservation in the Pacific“**

2-4 November 2016

Manokwari, Indonesia

## **Programme**

### **University of Papua**

# Committee

Lampiran 1. SURAT KEPUTUSAN REKTOR UNIVERSITAS PAPUA

Nomor : SP- 25/UN42/KP/2016  
 Tanggal : 24 Maret 2016  
 Tentang : Susunan Panitia Penyelenggara Simposium Internasional 2016

**SUSUNAN PANITIA PENYELENGGARA SIMPOSIUM INTERNASIONAL**  
 "Keanekaragaman Hayati dan Konservasi Perairan  
 Bentang Laut Kepala Burung Papua (*Bird's Head Seascape - BHSY*)  
 Memperingati Kulminasi Program Ecosystem-Based Management of Bird's Head Seascape dan  
 Setahun Penetapan Provinsi Papua Barat sebagai Provinsi Konservasi  
 Tanggal 2-5 November 2016 di Manokwari, Papua Barat-Indonesia

PELINDUNG : REKTOR UNIVERSITAS PAPUA

PENANGGUNG JAWAB : WAKIL REKTOR IV  
 KEPALA LPPM UNIVERSITAS PAPUA

KOMITE PENGARAH : LAKSAMANA MADYA (PURN. TNI) FREDDY NUMBERI  
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 Dr. Ir. AGUS I. SUMULE, M.Sc  
 Dr. Ir. VICTOR NIKUULUW, M.Sc  
 Prof. Dr. CHARLIE D. HEATUBUN, S.Hut, M.Si

PELAKSANA KEGIATAN : 1. PUSAT PENELITIAN SUMBERDAYA PERAIRAN PASIFIK (PZSP2) UNIPA  
 2. CONSERVATION INTERNATIONAL (CI) - INDONESIA

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## Welcome MBC-BHS 2016

### From the Governor of Papua Barat Province,

Good morning everybody. On behalf of the Government of Papua Barat Province, I am pleased to welcome you to the Marine Biodiversity and Conservation of Bird's Head Seascape (MBC-BHS) 2016. Much has been said that Bird's Head Seascape as a center of coral triangle. Located at the heart of the Coral Triangle, the BHS is home to 600 species of hard corals, which represents 75% of the total number of coral species in the world, and over 1,700 species of reef fish. This makes the BHS the most diverse place on earth. Beside coral reefs, the BHS also has vast mangrove and sea grass ecosystems. These two coastal ecosystems support dugong, fish larvae, saltwater crocodile populations as well as providing protection and securing food for coastal communities.

Bird's Head Seascape in Papua Barat Province has experienced spectacular increases in economic, infrastructures and population growth along with human welfare. These developments have been sustained in part by resource extraction and agricultural expansion, which have created complex environmental challenges now facing the seascape. The conference theme of "Strengthening Connectivity of

Marine Conservation in the Pacific" draws attention to the multi-faceted and cross-disciplinary nature of the challenges as well as the 'bringing science to policy' solutions. A principal goal for this first ever International Conference is to offer a stimulating intellectual environment for students, researchers, leaders and conservation practitioners to engage in scientific discourse, share knowledge, discuss innovative research and conservation applications, and develop new partnerships and collaborations.

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Conservation of the Bird's Head Seascape*

I encourage everyone in attendance to take advantage of this opportunity to engage with stakeholders who are often seen as 'on the other side' of the issues. Partnerships with local communities and governments at district, regency, and provincial levels will be essential if long-term sustainable solutions are to be determined; if MBC-BHS International Conference 2016 facilitates the building of new solution-oriented collaborations, then the conference will be a success.

This conference would not have materialized had it not been for the commitment of the Local Organizing and Scientific Program Committees from University of Papua (UNIPA), Conservation International, and The Nature Conservancy (TNC) with partners, who volunteered their time to make this event the best possible. As the Governor of Papua Barat Province, I am deeply grateful to those who have contributed their hard work, persistence and enthusiasm for MBC-BHS 2016. I wish all of participants an enriching, educational and professionally inspirational conference. Thank you and May God grants His blessing to the Land of Papua.

Manokwari, 2<sup>nd</sup> November 2016

Abraham O. Ataruri,  
Governor of Papua Barat Province

## Welcome MBC-BHS 2016

### From Rector of the University of Papua,

Good morning everyone. On behalf of the University of Papua (UNIPA), I am delighted to welcome you to the Marine Biodiversity and Conservation of Bird's Head Seascape (MBC-BHS) 2016. This is the first-ever joint scientific meeting which is organized by UNIPA and is supported by Papua Barat Provincial Government and BHS Consortium: Conservation International – Indonesia (CII), The Nature Conservancy (TNC) – Indonesia Program and WWF Indonesia.

Much has been said about how UNIPA, the only state-owned university located in Manokwari, the capitol of Papua Barat Province, which has three branch campuses in Sorong, Sorong Selatan and Raja Ampat. UNIPA's mission is to conduct a higher education service that support development effort in agricultural and natural resource conservation in Tanah Papua through its three main responsibilities: teaching, researching, and conducting community services. As such, UNIPA has been instrumental to play important roles, together with partners undertaking scientific research throughout the Bird's Head region to produce sound scientific research products that are essential to facilitate all regency and Papua Barat Province in making decisions and policies regarding developments in economic, social, human welfare components. In addition, apart from safeguarding Bird's Head's core diversity area within the Coral Triangle, UNIPA and partners facilitate the balancing of need for conservation and development and focus on improving ecological connectivity among conservation areas of Bird's Head Seascape and Landscape.

We are aware that effective conservation cannot be accomplished without science and research. This is why we get together all of you in this scientific meeting to engage in scientific discourse, share knowledge and experiences and develop tight partnerships and collaborations. At the end of it all, I hope we will renew our commitment to continue working in safeguard the fascinating biodiversity that exists around Bird's Head.

Manokwari, 02 November 2016

Dr. Ir. Jacob Manusawai, MH  
Rector - University of Papua



## Welcome MBC-BHS 2016

### From the Organizing Committee,

Good morning and welcome to the 1<sup>st</sup> Marine Biodiversity and Conservation of Bird's Head Seascape (MBC-BHS) International Conference 2016. It's very special to be here in Manokwari, the capital of Papua Barat Province. The city of Manokwari is known as Gospel City, the city where gospel was firstly landed in Tanah Papua.

On behalf of the organizing committee, I would like to extend a very warm welcome to all our honored guests, speakers, and participants who are willing to travel thousand miles and share their knowledge and experiences and to explore the better way to take action in preserving biodiversity at Bird's Head Seascape and this is what we want to achieve in this conference. The conference is attended by more than 200 attendees and will organize two days conference with five keynote speakers, 40 oral presentations and nine poster presentations. We have many great people who have been working for marine at Bird's Head and in Indonesia. It is time for us to set a vision together of what we dream on our beautiful archipelago region and nation. Please take this opportunity to make new connection with participants from the wider Bird's Head and use this conference as a chance to build networks and sharing works and programs.

This conference would not have been possible without local organizing program committees, partners and sponsors. I am deeply grateful to those who have contributed their hard work, persistence and enthusiasm for the conference. For our partners and sponsors, our thanks go to:

1. Papua Barat Provincial government and kabupaten/kota governments in Papua Barat Province.
2. Our consortium partners: CI Indonesia, The Nature Conservancy and WWF Indonesia Program
3. Our sponsors: Bank Rakyat Indonesia, Bank Mandiri, and Bank Negara Indonesia.
4. Hotel Aston Niu Manokwari.

We hope that you will have the most conference days of interesting presentations. I sincerely wish this conference will be a great success not only as a chance to share the knowledge and experiences but also to strengthening our long and fruitful friendship and network. Let's work together to integrate the way we interact with the marine world.

Manokwari, 02 November 2016

Ricardo F. Tapilatu, Ph.D  
Organizing Committee

# Programme Overview

## 1st International Conference on Marine Biodiversity and Conservation of the Bird's Head Seascape "Strengthening Connectivity of Marine Conservation in the Pacific"

### 1) Presentation

Day One 02 November 2016

08.00-08.30	Registration					
08.30-09.00	OPENING CEREMONY					
09.00-11.00	Mark Erdmann		Tropical Marine Biodiversity's Last Best Hope: The Bird's Head Seascape		Moderator: Ricardo Tapilatu	
11.00-12.00	LUNCH BREAK					
12.00-12.30	Victor NIKJuluw		Blue Carbon as a strategy approach to manage BHS Mangrove		Moderator: Paulus Bili	
12.30-13.00						
13.00-14.00	Room A			Room B		
Time	Program	Presenter	Moderator	Time	Program	Moderator
Session 1 Fisheries Resource and Management			Session 2 Building Capacity for Sustainable Management			
14.00-14.15	Output Control in Groupers Fisheries Management (Pteropus species): Cases from Cenderawasih Bay National Park, Papua Barat, Indonesia	Arnoldus S. Anonta	Ron Baswile	14.00-14.15	Developing Rural Communities for Conservation: Learning from Abun District, Tambrauw Regency, Papua Barat	Deasy Lonchi
14.15-14.30	Does selective fishing conserve community biodiversity? Predictions from demersal trawl fishing	Husubessy B.G.		14.15-14.30	Turtle Camp: Learning to Conserve Leatherback with Children	Kartika Zohar
14.30-14.45	Improving efficiency in transporting catch to increase income of local fishers in Raja Ampat, Indonesia	Wilson P. Anan		14.30-14.45	Agriculture Program to Help Strengthen Leatherback Conservation in Abun District, Papua Barat Province, Indonesia	Sirius Haroman
14.45-15.00	Fishery Management by Ecosystem-Based of Reef Fish ( <i>Lutjanus</i> sp.) (Fisheries Management Ecosystem Approach) in Teluk Wondama	Simon Laatenia		14.45-15.00	Utilization of Mangrove Plant Species in Saonek Island and the District of Raja Ampat	Machius Beller
15.00-16.00	COFFEE BREAK & POSTER SESSION					
Session 3 Megafauna in the Bird's Head Seascape			Session 4 Diversity of coastal resources and bioactive or nutritional compounds			
16.00-16.15	Preliminary Results on Emergence Behavior, Crawl Speed, and Swimming Speed of Hatching Leatherback ( <i>Dermochelys coriacea</i> ) Sea Turtles at Index Nesting Beaches in North Coast of Bird's Head Seascape - Papua, Indonesia	Ricardo F. Tapilatu	Mark Erdmann	16.00-16.15	Diversity of bioactive substances from marine organisms	Jenib Ahmad
16.15-16.30	Reversing the decline of shark population in Raja Ampat, Eastern	Purwanto		16.15-16.30	In Vivo Antimalarial activities of n-Hexkan Extract of Sponge ( <i>Xestospongia</i> sp.)	Mariah H. Azreed
16.30-16.45	Improving Survival and Hatching Success of Leatherback Nests at Jemurub Med Beach, Papua Barat, Indonesia	William S. wanggin		16.30-16.45	Mangrove community structure across hydrogeomorphic settings in Raihaka, West Papua	Nio Frans Mela
16.45-17.00	Options for mitigating efforts in limiting predators of Leatherback Turtles ( <i>Dermochelys coriacea</i> ) Around Nesting Sites in Jemurub-Med, Tambrauw, West	Denny Iyali		16.45-17.00	Nutritional content comparison of larvae found at three different locations in Anbon Island waters, Indonesia	Yocimaa Tapilatu
17.00-18.00	Capacity Building : Building Global Network in Research and Conservation Mark Erdmann					

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**Preliminary Results on Emergence Behavior, Crawl Speed, and Swimming Speed of Hatchling Leatherback (*Dermochelys coriacea*) Sea Turtles at Index Nesting Beaches in North Coast of Bird's Head Seascape – Papua Indonesia**

Ricardo F. Tapilatu<sup>1,2)</sup>, Amy Bonka<sup>3)</sup>, William G. Iwanggin<sup>1)</sup>, Hengki Wona<sup>1)</sup>, Yairus Swabra<sup>1)</sup>, Sadrak Woisiri<sup>1)</sup>, Riki M. Mayor<sup>1)</sup>, Gideon Waroy<sup>1)</sup>, Erick Sembor<sup>1)</sup>, Roy Rumbiak<sup>1)</sup>, and Thane Wibbels<sup>3)</sup>

<sup>1)</sup> Bird's Head Leatherback Conservation Program - Research Center for Pacific Marine Resources – University of Papua (UNIPA), Manokwari 98314 – Papua Barat INDONESIA

<sup>2)</sup> Marine Science Dept – Faculty of Fisheries and Marine Science, University of Papua (UNIPA), Manokwari 98314 – Papua Barat INDONESIA

<sup>3)</sup> Biology Dept – University of Alabama at Birmingham (UAB), AL – 35294 USA

**Abstract**

Emergence from the nest represents a pivotal event in the life history of sea turtles. Time of emergence can directly affect the survival of hatchlings through factors such as the type and abundance of predators, type and availability of orientation cues, and heat-induced mortality. During the 2016-2017 nesting season, we monitored emergence from a sub-set of both *in situ* and relocated nests of the Leatherback sea turtle (*Dermochelys coriacea*) at Wermon and Jamursba Medi, Papua, the primary nesting beaches for this species in the Western Pacific. We utilized time-lapse cameras to monitor nest emergence throughout the first hatching season (July-August) and emergence times ranged between 1800 h to 0100 h, with an average emergence time of 2214 h  $\pm$  0146 h. We also used a drone equipped with a camera to record crawl speed and swimming speed of hatchlings that emerged from the same sub-set of nests. Crawl speed was documented for an average of 10m from release point to water. Swimming speed was documented for 100m from shoreline. Preliminary results indicate that hatchling Leatherback sea turtles had a mean crawl speed of 0.04  $\pm$  0.009 m/s and a mean swimming speed of 0.55  $\pm$  0.13 m/s. The crawl speed, swimming speed, and emergence times of hatchlings may be a species and/or population specific behavior related to the ecology of specific nesting beaches. Further, from a conservation viewpoint our results suggest it may be advantageous for programs which move nests to protected egg hatcheries to release hatchlings at natural emergence times in order to mimic the natural behaviors which may have evolved to maximize survival.

*Key words:* Leatherback sea turtle; Hatchling; Behavior; Conservation; Ecology; Life history; Papua; Wermon; Jamursba Medi; Temperature.

## Population genetics and social network analysis: implications for the conservation of manta rays in Raja Ampat

Stephanie Venables<sup>1,2</sup>, Ricardo F. Tapilatu<sup>3</sup>, Robert Perryman<sup>1</sup>, Ferawati Runtuboi<sup>3</sup>,  
Hawis Madduppa<sup>4</sup>

<sup>1</sup>Marine Megafauna Foundation, Tofo Beach, Inhambane MOZAMBIQUE <sup>2</sup>School of Animal Biology - The University of Western Australia (UWA), Crawley AUSTRALIA. <sup>3</sup>Research Center for Pacific Marine Resource - University of Papua (UNIPA), Manokwari 98314 - Papua Barat INDONESIA <sup>4</sup>Faculty of Fisheries and Marine Science - Bogor Agricultural University (IPB), Bogor 16680 - INDONESIA

### Abstract

The Raja Ampat archipelago is one of the few places in the world where populations of both reef (*Manta alfredi*) and giant (*M. birostris*) manta rays can be found. It is a globally important habitat for manta rays and provides an excellent opportunity to gain further insight into the biology and ecology of these threatened species. Accurate information on population size and structure is necessary in order to understand the conservation requirements of a species, develop effective management strategies, assess and monitor population health over time. A collaborative research project between the Marine Megafauna Foundation (MMF), the University of Papua (UNIPA) and Bogor Agricultural University (IPB) has been launched in 2016 with the aim of conducting long-term, focused research into Raja Ampat's manta ray populations.

With the help of citizen science data, long-term photo identification (photo-ID) catalogues are being developed for both species of Manta. The Raja Ampat *M. alfredi* Catalogue already consists of over 500 unique individuals and 120 *M. birostris* individuals have been identified to date. Continued photo-ID data collection will expand these catalogues, forming the backbone of further population studies.

Photographic documentation and behavioral observations will be used to record and analyze social structure in the *M. alfredi* population. Sociality in manta rays is yet to be studied and may be a crucial factor linking individual behavior, group information and aggregations within populations. Population genetic techniques will also be employed to estimate population size and investigate the structure and spatial connectivity of the *M. alfredi* population. The genetic component is the first assessment of fine-scale spatial connectivity within a *M. alfredi* population. This research represents the continuation of a long-term database and contributes to global knowledge of Manta species as well as aid in the development and refinement of efficient management and conservation strategies for manta rays in the Bird's Head seascape.

**Keywords:** manta ray ecology, photo identification, population genetics, social network analysis

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