

## Preface

This volume is the outcome of an international workshop “Future Collaboration on Island Studies between Pattimura University and Kagoshima University” held from 17 to 19 October, 2016 in Kagoshima, Japan. The Memorandum of Understanding for Academic Cooperation between Pattimura University and Kagoshima University was concluded in March, 2014, and a workshop “Research and Education Linkage between Pattimura University and Kagoshima University” was held on 23 June, 2014 in Ambon, Maluku, Indonesia as an initial step of long-term cooperative research among scientists of two universities. After the workshop, several collaborative research projects were launched, such as ethnobotanical research on crops (e.g., citrus, chili pepper etc.) and entomological research on mosquitoes and black flies in Maluku. The objectives of this workshop were to share and discuss issues in small islands especially in Maluku Province and Kagoshima Prefecture by scientists from different disciplines and to promote more research collaborations between two universities. Eight researchers from Pattimura University visited Kagoshima with the financial support of Pattimura University (DIPA-2016) funding, and they discussed challenges and prospects on “general issues”, “conservation of natural resources”, “fishery”, “agriculture” and “agricultural and fishery engineering” in the islands of Maluku and Kagoshima with many researchers from Kagoshima University. We hope two universities will establish a closer relationship and initiate new collaborative research in the near future.

YAMAMOTO Sota  
Research Center for the Pacific Islands,  
Kagoshima University

LEATEMIA J. Audrey  
Faculty of Agriculture, Pattimura University

March 2017



## Welcome Address

I am honored to have distinguished guests from Pattimura University for this very important partnership university with Kagoshima University. I hope you will have enjoyable stay in Kagoshima. The Memorandum of Understanding was concluded in 2014, and six scholars from our university participated in a workshop “Research and Education Linkage between Pattimura University and Kagoshima University” held in your university. Last year, we invited one scholar from Pattimura University as a visiting associate professor. We would like to promote our exchange programs more actively.

First of all, I would like to give you a brief overview of our university. Kagoshima University has a long history and rich tradition in education. The university’s origins can be traced back to the Hangaku Zoshikan School, which was established in 1773 and was run under the feudal domain of the Shimazu family.

After the merger of several higher education institutions including the Seventh Higher School established during the Meiji period (1868-1912), Kagoshima University inherited this educational tradition and was newly established in 1949 as a national university. The university has developed into one of the leading comprehensive universities of Japan.

It is comprised of nine faculties, ten graduate schools and fourteen education and research institutes with approximately 9,000 undergraduates and 2,000 post-graduate students including 300 international students. In 2014, Dr. Akasaki, who graduated from our Seventh Higher School currently Kagoshima University, was given a Nobel Prize. Recently, we have to address the population decline in Japan and to promote local creation in Japan. Based on the characteristics and development potential of Kagoshima, our university, as a key local engine we are expending effort in the area creation and turning out strong students with the “spirit of enterprise.”

There are many historical spots in this city. I hope you will enjoy not only this campus, but also our historical spots, along with the delicious local food, *shouchuu* (liquor made from sweet potato) and hot springs available in Kagoshima.

Thank you very much for visiting at Kagoshima University.

MAEDA Yoshizane  
President of Kagoshima University

## Opening Speech for the Workshop

On behalf of the staff of Kagoshima University I would like to express to all the distinguished guests from Pattimura University: Welcome to our university and thanks for attending this international workshop “Future Collaboration on Island Studies between Pattimura University and Kagoshima University.”

Kagoshima University consists of 9 faculties and 10 postgraduate schools with about 11,000 students and 2,500 staff. We have also 24 education and research institutes such as Research Center for the Pacific Islands. Kagoshima Prefecture has several active volcanoes (e.g., Mt. Sakurajima, Kirishima etc.), and also a lot of small islands, such as Amami-Oshima and Yakushima islands.

We are now promoting two kinds of strategic studies. One is five regional studies contributing to community development: Islands, Environments, Food and Health, Renewable Energies and Water. The other is several studies with excellent results at a top international level, such as Infection Control, Biological Diversity, Experimental Animal Models, the Milky Way Galaxy and Intractable Cancer.

The subject of this workshop is related mainly to the former region studies, and I hope that discussion about future collaborations on Island Studies between the two universities will contribute much to the community development in both countries.

I wish a great success of this workshop and an enjoyable stay of all the distinguished guests in Kagoshima.

SUMIYOSHI Fumio  
Executive Vice President (Research),  
Kagoshima University

## Photo Album



**Group Photo**



**Welcome and Opening Speech:  
SUMIYOSHI Fumio  
(Executive Vice President (Research),  
Kagoshima University)**



**Speech from Pattimura University:  
OSOK Rafael M.  
(Head of Research Institute, Pattimura  
University)**



**Presenter 1: TAKAMIYA Hiroto**  
**(Research Center for the Pacific Islands,**  
**Kagoshima University)**



**Presenter 2: OSOK Rafael M.**  
**(Study Center for Disaster Research**  
**and Climate Change Adaptation**  
**(PSPB-API), Pattimura University)**



**Presenter 3: APITULEY Yolanda M. T. N.**  
**(Faculty of Fisheries and Marine**  
**Science, Pattimura University)**



**Presenter 4: TORII Takashi**  
**(Faculty of Fisheries, Kagoshima**  
**University)**



**Presenter 5: LIMMON Gino V.**  
**(Maritime and Marine Science Center**  
**of Excellence, Pattimura University)**



**Presenter 6: FUJII Takuma**  
**(Research Center for the Pacific Islands,**  
**Kagoshima University)**



**Presenter 7: ABRAHAMSZ James**  
(Research Center for Small Islands,  
Coastal Area and Outer Islands,  
Pattimura University)



**Presenter 8: SUZUKI Mariko**  
(Research Center for the Pacific Islands,  
Kagoshima University)



**Presenter 9: RAHARJO Simon H. T.**  
(Faculty of Agriculture, Pattimura  
University)



**Presenter 10: SAKAI Norio**  
(Faculty of Agriculture, Kagoshima  
University)



**Presenter 11: LEATEMIA J. Audrey**  
(Faculty of Agriculture, Pattimura  
University)



**Presenter 12: SAKAMAKI Yoshitaka**  
(Faculty of Agriculture, Kagoshima  
University)



**Presenter 13: MALLE Dominggus  
(Faculty of Agriculture, Pattimura  
University)**



**Presenter 14: HETHARIA Wolter R.  
(Faculty of Engineering, Pattimura  
University)**



**Presenter 15: ICHIKAWA Hidetaka  
(Faculty of Law, Economics and  
Humanities, Kagoshima University)**



**Discussion on Future Collaboration:  
KAWAI Kei (Director of Research  
Center for the Pacific Islands,  
Kagoshima University)**



**A gift from Pattimura University  
to Research Center for the Pacific Islands, Kagoshima University**





**Courtesy call on President MAEDA Yoshizane (Kagoshima University)**



**Courtesy call on IWAI Hisashi  
(Dean of Faculty of Agriculture,  
Kagoshima University)**



**Courtesy call on MOMII Kazuro  
(Dean of the United Graduate School of  
Agricultural Sciences, Kagoshima  
University)**



**Welcome Reception**



**Visit to Education and Research Center for Fermentation Studies**



**Studying Amami culture at the Village of Amami Island in Kagoshima City**



**Enjoy Amami cuisine**



**Excursion to the Experimental Farm, Faculty of Agriculture, Kagoshima University (blueberry, mandarin, Japanese persimmon etc.)**



## Contents

Preface	i
Welcome Address, Opening Speech and Photo Album	iii
1) The Islands of Amami and Okinawa Where Hunter-Gatherers Once Throve	1
TAKAMIYA Hiroto (Research Center for the Pacific Islands, Kagoshima University)	
2) Development of Fresh Fish Marketing in Maluku	9
APITULEY Yolanda M. T. N. and BAWOLE Dionisius (Faculty of Fisheries and Marine Science, Pattimura University)	
3) Efforts for Improving the Distribution of Fishery Products in Toshima, Kagoshima Prefecture	17
TORII Takashi (Faculty of Fisheries, Kagoshima University)	
4) The Diversity of Grouper (Epinephelinae) in Ambon Island, Maluku, Indonesia	23
LIMMON Gino V. <sup>1,2</sup> , RIJOLY Frederik <sup>1,2</sup> , KHOUW Abraham S. <sup>1,2</sup> , MANUPUTTY Gratia D. <sup>1,2</sup> and PATTIKAWA Jesaya A. <sup>1,2</sup> ( <sup>1</sup> Maritime and Marine Science Center of Excellence, Pattimura University, <sup>2</sup> Faculty of Fisheries and Marine Science, Pattimura University)	
5) Species Diversity of Hexacorallia around the Satsunan Islands, Japan	31
FUJII Takuma (Research Center for the Pacific Islands, Kagoshima University)	
6) Identification and Inventory of Coastal and Small Islands Conservation Area in the Lease Islands, Maluku Province	37
ABRAHAMSZ James <sup>1</sup> , AYAL Frederik W. <sup>1</sup> , LOPULALAN Yoisy <sup>1</sup> and MAKAILIPESY Marvin M. <sup>2</sup> ( <sup>1</sup> Fisheries and Marine Science Faculty, Pattimura University, <sup>2</sup> Polytechnic of Fisheries, Tual)	
7) Assessment of the Impact of Wildlife Tourism on Animals: A Case Study of Amami-Oshima Island	45
SUZUKI Mariko <sup>1</sup> , INOUE Eiji <sup>2</sup> , ITO Keiko <sup>3</sup> and FUJITA Shio <sup>4</sup> ( <sup>1</sup> Research Center for the Pacific Islands, Kagoshima University, <sup>2</sup> Faculty of Science, Toho University, <sup>3</sup> Yuinoshima Animal Clinic, Amami, <sup>4</sup> Joint Faculty of Veterinary Medicine, Kagoshima University)	

- 8) Cassava and Sweet Potato in Western Seram, Maluku Province: Diversity, Cultivation and Utilization . . . . . 51  
RAHARJO Simon H. T.<sup>1</sup>, HETHARIE Helen<sup>1</sup>, AUGUSTYN Gelora H.<sup>1</sup> and PESIRERON Maritje<sup>2</sup> (<sup>1</sup>Faculty of Agriculture, Pattimura University, <sup>2</sup>Maluku Agricultural Technology Assessment Board)
- 9) Production and Distribution of Potatoes in the Kagoshima Island Areas . . . . . 63  
SAKAI Norio (Faculty of Agriculture, Kagoshima University)
- 10) Productivity of Nutmeg (*Myristica* spp.) in Agroforestry System (*Dusung*) in Ambon Island . . . . . 69  
LEATEMIA J. Audrey, REHATTA Herman, ULUPUTTY M. Riadh and MAHULETE Asri S. (Faculty of Agriculture, Pattimura University)
- 11) A Newly Invasive Long-Horned Beetle from Mainland Kyushu Attacks Citrus Trees in the Amami Islands . . . . . 77  
SAKAMAKI Yosataka, TSUDA Katsuo and MIYAKE Masataka (Faculty of Agriculture, Kagoshima University)
- 12) Design and Application of Unsinkable Tuna Longboat for Local Fishermen . . . . . 83  
HETHARIA Wolter R. and METEKOHY Obed (Faculty of Engineering, Pattimura University)
- 13) Renewable Energy Makes Life Style Change: An Example of Yakushima Island's Zero Emissions . . . . . 91  
ICHIKAWA Hidetaka (Faculty of Law, Economics and Humanities, Kagoshima University)