

## Foreword

### **Arnulfo M. Mascariñas**

SUC President IV

Bicol University



My heartfelt congratulations to the organizers of this 10th International Kuroshio Science Symposium! We continue to strengthen our partnership and see the many gains of our advocacy towards making the best of our environment.

As early as 2004, Bicol University established a collaboration with Kochi University following a research presentation by our very own Dr. Victor Soliman on a Post-Resource and Social Assessment of Lagonoy Gulf, a part of the Kuroshio Triangle. The research proved to be the start of a number of engagements that led to the First International Kuroshio Symposium (IKS) in 2007 held in Japan.

Ten years later, here we are, hosting another successful gathering of scientists and researchers through this now yearly

symposium spearheaded by Bicol University Tabaco Campus for the Philippines, the National University Corporation Kochi University for Japan, and the National Sun Yat-sen University for Taiwan, Republic of China. This, indeed, is a remarkable and impressive achievement.

This year's theme, "Addressing Coastal Resources Conservation and Food Security thru Science-based Solutions and Innovations" highlights the important role of Kuroshio Science in the fulfillment of the world's sustainable development goals, particularly the fight against poverty and hunger, among others. This symposium once again provides us the opportunity to share new knowledge and best practices in protecting our environment and managing it for our own welfare and development.

We trust that this yearly event will continue for many years to come, and, with it, more solutions and innovations towards making this world a better place to live in. Mabuhay, and God bless us all!

## Opening Remarks & Messages

### **Raul G. Bradecina**

President

Partido State University

JSPS-DOST Ronpaku Fellow,

Kochi University



I would like to extend my warmest felicitations to everyone on the occasion of the 10th Kuroshio Science Conference.

Indeed, for the last ten years, this conference did not only successfully serve as a venue for discussing and communicating the various information generated through research that built and strengthened the science of the Kuroshio, but more so cemented the spirit of scientific cooperation among and between researchers and academicians in the countries linked by this dynamic current system and large marine ecosystem.

These two indicators of success are relevant in the context of promoting happiness among the communities lining the Kuroshio as the expected overall outcome from this collaboration. The research collaboration provided the scientific social, ecological, cultural and economic insights that have influenced how key persons and decision makers think to develop and implement parallel policies and initiatives towards achieving happiness. For a natural and social scientist like me who grew professionally from the many years of Kuroshio science-related engagements, believes that achieving

happiness for the individual and the society as the overall goal of scientific inquiries is synonymous with having established sustainable communities.

Amidst the impacts of climate change on the livelihood of coastal communities, hunger within is not only the root cause of unhappiness but also the key driver of irrational use of resources and ecosystems in many of these communities that threaten their sustainability. While the information that we had generated provided us deeper understanding on the dynamics of the coastal and marine ecosystems, on the incentives governing human behavior in resource utilization and has brought reforms in the institutions managing their sustainable governance and achieving food sufficiency in the process, the persistence of hunger seems to crave for a more ambitious goal of achieving food security. Literature elsewhere state that promoting food security, or making food accessible to all can only be achieved by stimulating economic growth that enable every household to earn enough and be able to acquire whatever food whenever and wherever needed. The achievement of food security through the promotion of economic growth amidst a situation of deprivation requires the development of technologies and social innovations that will enhance and enable those scientific approaches for managing coastal resources and ecosystems that we had established in the many researches and research collaboration activities we've done in the past. The theme of this year's conference

aply provides the relevant impetus to this argument by posing us the challenge to explore, develop and understand technologies and social innovations that will enhance the usefulness of the information and the science-based approaches we had developed in order to make food not only sufficient but also accessible to all.

I am happy to say that I am one of the serious researchers developed and nurtured by this research collaboration activities in the Kuroshio region under the spirit of transcountry cooperation. The influence of Kuroshio Science is manifested now in the directions of Partido State University in its research and extension thrusts that include investigation on the adaptation strategies of coastal communities to climate change, coastal ecotourism development planning, tuna-like species traditional fish processing and social enterprise development, riverine ecosystem biodiversity assessment, economic valuation of coastal resources and marine protected area (MPAs), coastal resource management and the monitoring and social marketing of MPAs. We say we are happy that in our simple way, we partly contribute to the growing body of knowledge that is the Kuroshio Science to promote sustainable communities and ecosystems in its region of influence.

## **Maria Asuncion V. Oronan**

Dean

Bicol University Tabaco Campus



Warmest greetings to the participants of the 10th International Kuroshio Science Symposium! The symposium is now on its third cycle with the Bicol University Tabaco Campus as the host Philippine institution. The organizers have chosen the theme “Addressing Coastal Resources Conservation and Food Security through Science-based Solution and Innovations” for this year, in recognition of the impacts the Kuroshio contributes to the ecological, environmental, economic and social perspectives of the countries involved.

This year’s symposium expects to bring together member countries to discuss important issues and concerns affecting the Kuroshio region and exchange scientific information, specifically on the aspects of Coastal Resources Conservation and Food Security. A lecture series featuring diverse aspects of Marine Protected Areas will be conducted to understand better the synergy of various perspective of the resource. The concurrent sessions will present discourse on (1) Coastal Resources Conservation, (2) Fisheries Resources, (3) Biodiversity and (4) Biological Oceanography.

I wish to extend my congratulations to all presenters, sponsors, working committees, and delegates to this activity! May this endeavour serve as spark that would kindle our enthusiasm and motivation to serve and preserve mankind and his environment.

MABUHAY!!!

## **Keynote Addresses**

### **Milagros C. Morales**

Regional Director

Bureau of Fisheries and Aquatic Resources, Region 02



Warmest greetings to the organizers, participants, resource persons, and guests of the 10th International Symposium on Kuroshio Science.

Since these past decades, we have been facing serious problems on the deterioration of our marine environment. Although problems are caused widely beyond the borders of nations, there is very limited information on the recent deteriorating conditions surrounding our coastal areas. Thus, collaborative research activities among countries are very much essential to have a holistic understanding on the present

status of our coastal environment and marine ecosystem.

This year marks the 10th year of our fruitful research collaboration in our efforts to identify relevant problems and constraints and exchange scientific views to maintain and restore the marine environment and resources in the Kuroshio Region. Reminiscing from our past symposia, the Kuroshio is and will always be of paramount importance to collaborating countries and its people.

This year’s theme, “Addressing Coastal Resources Conservation and Food Security through Science-based Solution and Innovation”, aptly reflects our continuing efforts in harnessing scientific researches to better understand the dynamics of the Kuroshio ecosystem in meeting current and emerging challenges such as climate change, the degradation and depletion of our marine resources, as well as boosting the

productivity for a competitive and sustainable fisheries sector where the future of our fishers along the Kuroshio Region is at stake.

We in the Department of Agriculture-Bureau of Fisheries and Aquatic Resources Region 02, therefore hope that this year's symposium will be a fruitful exchange of knowledge towards sustainable fisheries in the Kuroshio Region. Our continuous sharing of pertinent knowledge and information is a necessary step in establishing solid and extensive measures towards a more vital and sustainable fisheries industry in our region. Rest assured that DA-BFAR will always be in support to all the activities of the Kuroshio Science project.

Lastly, let me extend my sincerest gratitude to the Kochi University, Japan for all the support to the Kuroshio Science project since its conception to the present, the Sun Yat Sen University of Taiwan for supporting all activities of the project, the Bicol University, Philippines for hosting this year's symposium and for their unwavering efforts in organizing this historic event, and to the participants for their full cooperation. Without you, this event would never have been made possible. I wish you all a fruitful time and pleasant stay in Bicol, Philippines.

Mabuhay!

### **Hsu-Sen Chen**

Department of Oceanography  
National Sun Yat-sen University,  
Kaohsiung, Taiwan



I would like to first thank Bicol University Tabaco Campus, and Kochi University for giving Prof. Lee's PhD student and me this opportunity to attend this symposium. This is my first time to attend this symposium, and feel greatly honored to be here.

The Kuroshio, a northward flowing ocean current, flowing by Philippines, Taiwan and Japan, on the west side of the North Pacific Ocean is similar to the Gulf Stream in the North Atlantic. In winter, the Kuroshio and Kuroshio branch current were trapped in south Taiwan Strait, creating a warm water environment for marine creatures, and also regulating the climate in southwestern Taiwan. As part of the counties of Kuroshio related region, we all share similar resources and face increasing challenges under rapidly globalization. This symposium provides a collaborative platform for everyone to share the on-going research progress within our region and to exchange the ideas for future program and development. This symposium also encourages graduate students and young scientists to be involved in the relative topics as has been done in the past. Similar to past symposium, the topics of this symposium focus on coastal resources conservation, fisheries

resources, biodiversity and biological oceanography in the Kuroshio related countries, such as Philippine, Japan and Taiwan.

I am sure that, during this symposium, the links between the researchers of both sides will be further strengthened. The activities of this symposium will give opportunities for mutual technical dialogues and exchange of ideas, leading to the establishment of long-term cooperative capacities. This building cooperative partnerships and network globally will provide benefits for innovation in marine research. From this perspective, we value the friendship of Bicol University Tabaco Campus, and Kochi University very much and are looking very much forward to the close collaborations with each other and affiliated research institutes in the near future.

It is our sincere desire wish this symposium very success, and hope that all participants will enjoy the conference over the next three days.

### **Teruyuki Shinbo**

Head, Kuroshio Science Unit,  
Multidisciplinary Science Cluster,  
Kochi University



This year marks a significant milestone between the Bicol University and Kochi University as we celebrate the 10th year anniversary of our academic cooperation. Our Graduate School of Kuroshio Science, which was established in 2004, has engaged the Academic Cooperation with Bicol University in March 2006. This engagement was enriched by the collaborations with the University of the Philippines, and the Bureau of Fisheries and Aquatic Resources Region02 (BFAR02), in 2005 and 2007, respectively. From the beginning, the Philippines has provided us the attractive and important research fields.

On behalf of Kochi University, I would like to express my sincere appreciation for Bicol University for hosting the 10th International Kuroshio Science Symposium, which was made meaningful by the presence of other Universities and Institutions along the Kuroshio Current represented by National Sun Yat-sen University, BFAR02, and the University of the Philippines. We are very happy that we hold this symposium for the third time here at the Bicol University, in its 10th year anniversary which reminds us of our years of successful collaborations.

I can vividly remember, it was the early spring of 2005 when I first came to the Philippines. With the introduction of Dr. Morooka and together with my colleagues, we visited UP, BU and BFAR02 at that time.

From that time on, I have mainly studied the marine

protected areas in the Philippines from the perspective of social science, collaborating with various Filipino researchers, under the kind support of BU, BFAR02 and other related institutions. In this process I learned many things on the conservation and sustainable use of various coastal/marine resources such as coral reefs, seaweed beds, mangrove areas in the Philippines. Firstly, it is necessary to continuously conduct scientific research about those resources from the viewpoint of natural science like ecology, biology and so on. Secondly, in addition to the natural science viewpoints, it is important that the people of the local communities who use these natural resources on a daily basis manage those resources by themselves, using the knowledge from our research. Thirdly, such challenges are being done by several experts of many marine protected areas in diverse ways. These are unintended social experiments which can be used to identify best practices in the management of MPAs and we have to accumulate wisdom from these. In Japan, many kinds of efforts for conservation and sustainable use of natural resources have been put into practice in various forms, but I believe that we can learn many things from the experiences in the Philippine as well, and we consolidate them with our experiences in the Kuroshio region.

Japanese universities are now urged by the government to deliver their own unique characteristics, and Kochi University chose the key word “ocean” or “marine” as one of its features. In response to that, we are also setting up a project related to “Integrated Coastal and Ocean Management.” In relation to that, I have proposed “Integrated Management of Coastal Resources by Marine Protected Areas” as a theme of Cross-Border Education which is conducted in this symposium. I appreciate the organizers from Bicol University for accepting my proposal pleasantly. And I would like to express my sincere gratitude to those who will give lectures or

presentations on this theme in this symposium.

There are various backgrounds that contributed to the development of the concept of “Integrated Management of Coastal Resources” or “Integrated Coastal Resources Management (ICRM)”. I think the conclusion in 1982 and the effectuation in 1994 of the United Nations Convention on the Law of the Sea are very essential. Under this treaty, the international legal order of the oceans was comprehensively established and the rights and responsibilities of nations with respect to their use of the world’s oceans were defined. Then, the path was opened for the development and utilization of marine natural resources overall. But at the same time, internationally, nations have to bear the responsibility for the conservation of marine environment clearly.

“Integrated Coastal Resources Management” will be emphasized in such a context. Coastal/terrestrial area and marine area should be considered as a single unit, and we have to manage them to keep the balance between development/utilization and environmental conservation by integrated approach. How should we proceed it concretely? It is still necessary to investigate many things theoretically and empirically. It is the motivation of this theme to think about preferable ways of Integrated Coastal Resources Management from the case studies of the marine protected area initiatives in the Philippine.

Last but not least, I guess the word “ocean management” entails a burned smell accompanying the rivalry between the nations in the recent years. However, we believe that deepening the exchanges in education and research as well as nurturing friendships at the grassroots level internationally among researchers and university/institution members will brew the power to suppress the tension before its emergence. I will finish my greetings with prayers for the tranquility of the sea around the Kuroshio region.