Symposium Synthesis

13th International Kuroshio Science Symposium: A Synthesis

By

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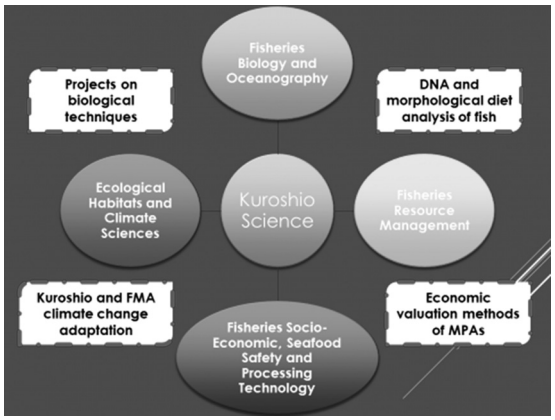
Introduction

This year' s 13th International Kuroshio Science Symposium with the theme "Climate Change Adaptation and Mitigation Towards Sustainable Fisheries Resources Along Kuroshio Region" is hosted by the Philippines. The Bureau of Fisheries and Aquatic Resources Regional Office No. 02 in cooperation with the Cagayan State University welcomed you earlier here in Tuguegarao City and we have been together for two days since November 19, 2019. There are four thematic areas for the parallel sessions. Under the theme "Fisheries Biology and Oceanography", seventeen (17) papers were presented. For the theme "Fisheries Resources Management", there were also seventeen (17) presenters. Nine researchers discussed their papers under the "Fisheries Socio-economic, Seafood Safety and Processing Technology" theme. The fourth theme on "Ecological Habitats and Climate Sciences" had eleven presented research results. The posters submitted for the Poster contest counted eleven (11) comprising several basic research as well as impact assessments.

The participants to the symposium already have concrete knowledge about Kuroshio. It is a fact that its effects and influences are global. The Kuroshio is part of the worldwide series of currents that determine our weather patterns and ocean productivity. Its interconnectivity is vast and immense. Let us learn from the wise words of Chief Seattle enunciated decades ago even before we focused our attention to Kuroshio. He said, "Humankind has not woven the web of life. We are but a thread within it. Whatever we do to the web, we do to ourselves…". This kind reminder teaches us to do the right things, be it in terms of our personal life, our work life, our community participation, our research studies and in everything that we do. Whatever we come up with and whatever we do, it will eventually come back to us with an impact. So be wise. Let us do things properly to ensure that we perpetuate our species and that we let the future generations live their dreams too.

Dr. Morooka already helped us recall the salient points that we need to know and remember about Kuroshio. The researches that you presented contain in whole or in part the principles behind the Kuroshio current. The young generation of researchers that we have with us today will dwell so much in the future about Kuroshio and the various phenomena that come with it. The development of more expertise out of Kuroshio science, I am sure, is underway.

The Four Parallel Presentation Themes



Let me now dwell on the synthesis of our presentations, posters, plenaries and parallel sessions for the past two days. The study of the Kuroshio current summoned us to come up with Kuroshio science. As a systematic way of coming up with knowledge, we can use Kuroshio science to meet head on the various problems, researchable areas, unexplained phenomena and other things that confront us in our quest to better understand Kuroshio. Today, we have used the four lenses in our parallel sessions to inquire about the researches that we have developed. These four lenses are, 1) Fisheries Biology and Oceanography; 2) Fisheries Resources Management; 3) Fisheries Socio-economic, Seafood Safety and Processing Technology; and 4) Ecological Habitats and Climate Sciences. To guide us further in unveiling the science behind these four themes, we listened intently to the plenary presentations delivered.

Dr. Sakaguchi showed us the modern way of using DNA and morphological diet analysis of fish. The study is vital in coming up with new ways of undertaking fisheries biology while trailblazing the way for better future resource management strategies.

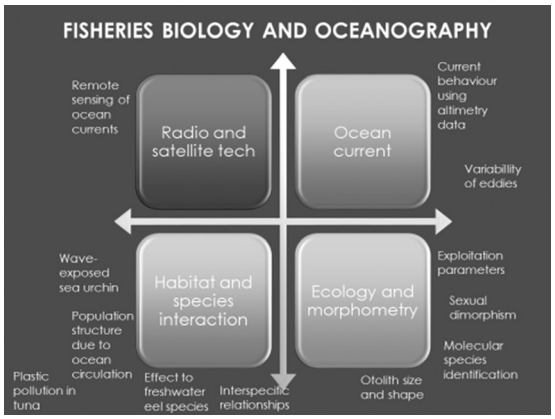
Dr. Bradecina shared to us the techniques in economic

valuation of Marine Protected Areas (MPAs). This is an important aspect of fisheries resources management but is also a handy tool when one does socio-economic analysis.

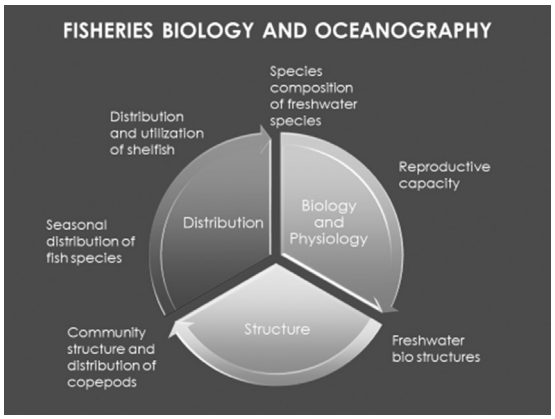
Dr. Santos, during his talk, introduced to us the whys of understanding Kuroshio. He hinted on the general direction that we may pursue for researches related to Kuroshio. It was also high time that he introduced the concrete concept of Fisheries Management Areas (FMA) because the Philippines has recently crafted the legal basis for implementing the concept. I do not know if it is only incidental that Kuroshio current passes through FMA 1 which is composed of the Regions V, IV, III and II. The concerted effort from among these concerned Philippine regions will surely contribute more to the knowledge and strategies on how climate change problems in these areas will be addressed.

Dr. Kubota updated us about the projects on biological techniques. The availability of modern equipment in the Universities that his team is assisting will bring closer the technology to conduct researches on ecological habitats as well as fisheries biology and oceanography. All in all, the parallel themes and the plenary presentations gave us a good grasp of the interactions and interplay of our researches which continually compound the knowledge that now forms part of Kuroshio science.

Fisheries Biology and Oceanography: Theme 1

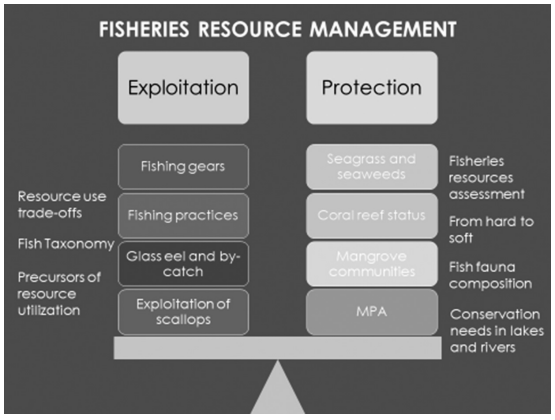


By looking at the theme on Fisheries Biology and Oceanography, it is possible to come up with a framework to discover the spread of researches already completed. For example, we can make use of a perceptual map in dichotomizing the research trends along the subthemes of Radio and Satellite Technology; Ocean Current; Ecology and Morphometry; and Habitat and Species Interaction. There were researches on current behavior using altimetry data as well as studies on variability of eddies that will help us dissect its implications on ocean current studies. Works on exploitation parameters, sexual dimorphism, molecular species identification and even otolith size and shape all focus on ecology and morphometry. Remote sensing of ocean currents fall at the border between the Radio and Satellite Technology sub-theme and the Ocean Current sub-theme. The rest of the studies touch on Habitat and Species Interaction such as wave-exposed sea urchins, population structure as a function of ocean circulation, interspecific relationships, effects to freshwater eel species, and even the plastic pollution that haunts the elusive tuna.



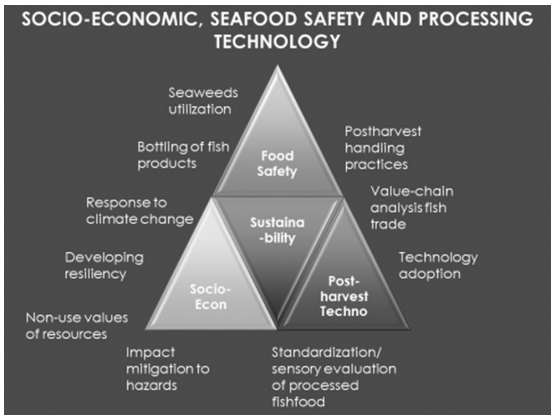
Under the same theme, one may choose to analyze the research patterns using a cyclic approach. This is one strategy that may be adopted to understand the research outputs according to Distribution; Biology and Physiology; and Structure. Such interaction leads us to hypothesize that this cyclic pattern might eventually aid in improving the depth of related studies to come up with other major themes as research focus. When I analyzed the papers presented, I saw, for example, that studies on species composition could be analyzed as part of the Distribution aspect while it can also be assessed as part of Biology and Physiology arena. It becomes interesting as several other researches can be considered borderline studies because they fall between the worlds of two sub-themes. I would say that these studies may be considered as interdisciplinary.

Fisheries Resources Management: Theme 2



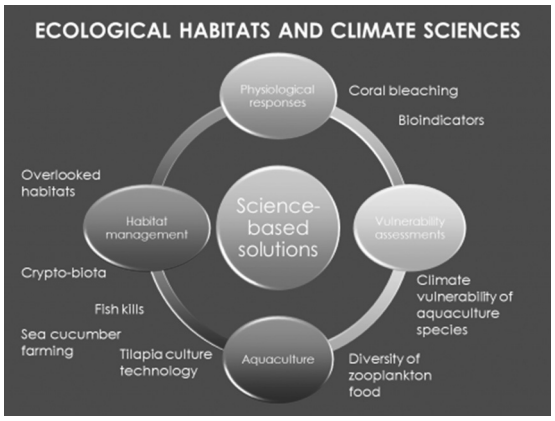
The theme on Fisheries Resources Management presents a great problem not only for research but for practical aspects of governance and politics. I tried to put the research studies discussed under this theme into the colorful boxes that you see and stacked it over side by side over a lever in a fulcrum. The opposing ends are categorized as Exploitation and Protection. The lever in a fulcrum represents simple machine. This is basic science. But I consciously came up with a balanced see-saw because I will not undermine your weighing prowess. I included the other research studies as options for you to choose where to stack them. Where the balance will eventually tip is now in your hands. Weigh wisely.

Socio-Economic, Seafood Safety and Processing Technology: Theme 3



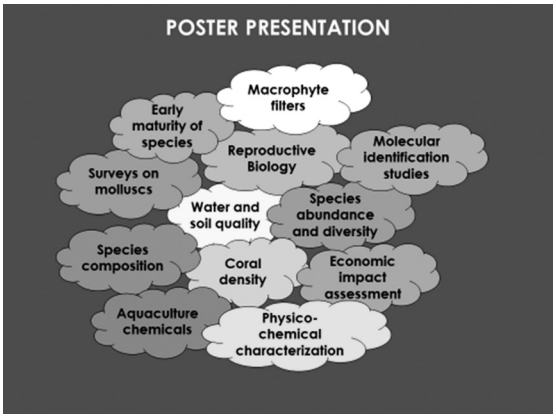
I had a hard time trying to determine a framework for the Socio-Economic, Seafood Safety and Processing Technology theme. I have come up with a big triangle with small triangles to have a mental map of the researches undertaken. The three basic sub-themes are Food Safety, Postharvest Technology and Socio-Economic realms. Researches on postharvest handling practices, value chain analysis and technology adoption are spread between Food Safety and Postharvest Technology realms. The research on standardization and sensory evaluation of processed fishfood fall under Postharvest Technology but has great implication in terms of Socio-economic sub-theme. Seaweed utilization researches and bottling strategies all focus on food safety while studies on non-use values of resources and impact mitigation can be categorized under the socio-economic sub-theme. At the center of all these dimensions is sustainability. It is the core that holds them together and stabilizes the system. Without sustainability, each sub-triangle will eventually fall. For example, if postharvest technology is not sustained, food safety may be compromised. Unsafe food will bring socio-economic losses. Without sustainability, the paradigm becomes a typical love triangle which is doomed to fail eventually.

Ecological Habitats and Climate Science: Theme 4



The fourth theme of the parallel sessions is Ecological Habitats and Climate Science. Here, it is easy to see that the researches point to science-based solutions as the Holy Grail that would address a plethora of problems related to physiological responses, vulnerability, aquaculture and habitat degradation. The study on coral bleaching can be well understood when analyzed as a physiological response while at the same time emphasizes the vulnerability of the same species. This added avenue for analysis almost always triggers researchers to conduct vulnerability assessment studies. Climate vulnerability of aquaculture species are proper subjects of vulnerability assessment but its implication is more on the impact to aquaculture. Fishkills, sea cucumber farming and tilapia culture are evident in aquaculture but could also be analyzed by looking into habitat management.

Poster Display



The poster presentations as well give us a glimpse of various research themes that could be used to analyze the trend and patterns of research propensity. I did not use a framework to analyze the poster topics because I do not want to pre-empt the winners in the poster contest. Nonetheless, when we look closely, we can deduce that these researches on poster presentation are basic researches on various fisheries resources

and species except for economic impact assessment and aquaculture chemicals. Several studies are aimed at gaining more knowledge on commercially-important species. Other studies concentrate on the population dynamics while the rest are on reproductive biology and maturation parameters. Water and soil quality, habitat and useful macrophytes are also popular topics.

Important Lesson: Real meaning of KUROSHIO

The more important aspect of our research collaboration and the ultimate prize of our endeavor for the past two days is our gain. Allow me to collate for you our takeaways for this 13th International Kuroshio Symposium.

Let me start with Knowledge. Our interactions, the presentations, discussions, conclusions, recommendations have all added fresh insights to our existing know-how. For others, the learnings have further concretized the theoretical concepts lurking in our minds long ago.

Unity in diversity. We come from various places, different regions with highly diversified cultures, beliefs and traditions. But we have come here to unite despite our different backgrounds. Our expertise, experience, race or creed may be different but we are united in pursuing Kuroshio science.

Research direction. I believe that given the variety of researches undertaken and studies presented, the interactions that came with it enabled us to sort things well and point ourselves to the right direction for our future researches.

Ongoing collaboration. Our two-day activity centers on our ongoing and future research collaborations. By this time, we should have exchanged calling cards, added our colleagues as Facebook friends, contained their information in our phone contacts or even sent emails to them. Who knows, we might need the expertise of one or two of the acquaintances we made during this symposium in the near future.

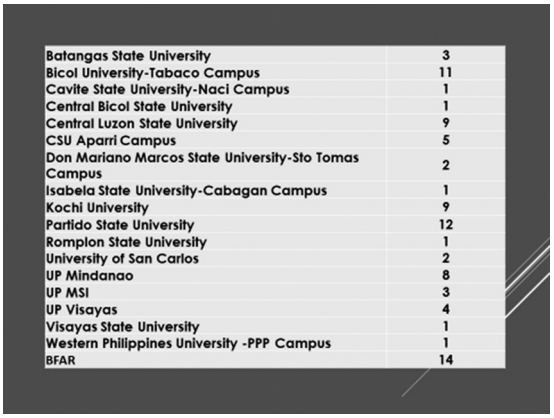
Sharing of experiences. The research presenters have undoubtedly shared their experiences. They too learned from our very own experiences when we commented, reacted, critiqued or recommended something for the improvement of their studies in the plenary as well as the parallel sessions. We look forward to more sharing in the next symposium.

Holistic approach as a goal. We are not so much interested in the variety of studies undertaken or how one region or country comes up with seemingly isolated research focus. We came here with the goal of having a holistic approach for future research collaboration. Holistic approach allows us to have greater reach in terms of research variety and considerable depths in terms of research focus that we can mix and match in order to come up with science-based solutions to the million dollar questions that we need to answer about the Kurushio current. If we can do this we will all be prepared to take on the challenges that it brings alongside the concerns on climate change and its impacts to resources and humanity. Even if we work independently, our outputs should create synergy so that we can arrive at optimal solutions to solve the problems besetting us today.

International cooperation. Kuroshio is not only the concern of Japan and the Philippines. I learned from the subject matter experts during the presentations that there are other countries involved like Taiwan, Vietnam and Malaysia. In the future symposium I hope that we will be able to collaborate and share experiences with the researchers and experts from our neighboring countries in the ASEAN region, Korea and China. Such kind of international interaction will bring in immense knowledge and skills that we can add to Kuroshio science.

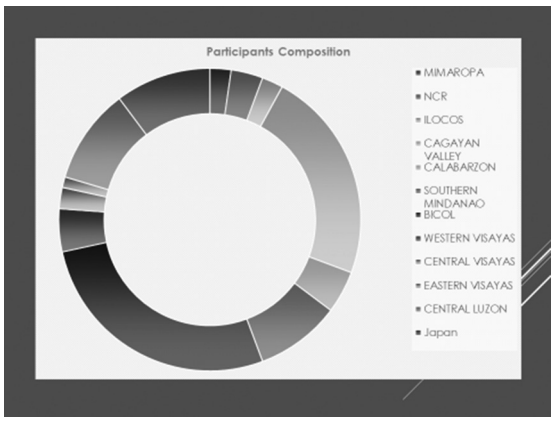
Optimism. Our two-day activity for sure brought us renewed optimism in our quest to do more researches towards understanding Kuroshio and its implications to the resources, people, climate, habitats and countries influenced by it. We are confronted with a lot of problems but optimism propels us to move on and continue the fight towards hurdling the challenge, be it on climate change, resource depletion, economic decline, and even political influences. The one thing that keeps us moving forward is hope. Hope makes us believe that someday we will see the light at the end of the channel.

Participant Composition



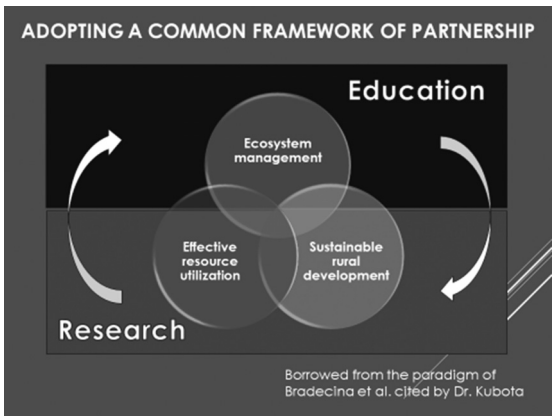
Batangas State University	3
Bicol University-Tabaco Campus	11
Cavite State University-Naci Campus	1
Central Bicol State University	1
Central Luzon State University	9
CSU Aparri Campus	5
Don Mariano Marcos State University-Sto Tomas Campus	2
Isabela State University-Cabagan Campus	1
Kochi University	9
Partido State University	12
Rompion State University	1
University of San Carlos	2
UP Mindanao	8
UP MSI	3
UP Visayas	4
Visayas State University	1
Western Philippines University -PPP Campus	1
BFAR	14

In the table above is the list of the participating institutions and the number of participants represented. The data is taken form the registration forms filled up on the first day of the symposium. There are eighty eight (88) registered participants to the symposium.



This colorful ring represents the delegates from regions all over the Philippines plus Japan. A wider array of colors will be expected in the next symposium because it is probable that the participation of researchers from all the sixteen Regions and the National Capital Region of the Philippines will increase.

Common Framework of Partnership



Above is a concept I borrowed from the presentation of Dr. Kubota citing the paradigm of Dr. Bradecina. This framework points out the very reason why we continue to hold Kuroshio symposium annually. It speaks about our collaboration that may one day define our common future. I tweaked along the plain relationship of the variables and gave Effective Resource Utilization an equal weight as that of the other two. Instead of treating Effective Resource Utilization as subsumed under the interaction of Ecosystem Management and Sustainable Rural Development, I considered it as an interdependent function to form part of the three spheres as the triumvirate requisite or focus against the backdraft of dynamic Education and Research interphase. As a framework, it teaches one to understand that the researches being made support knowledge generation for education. This, in turn, creates information and strategies to address problems on ecosystems, rural development and resource utilization which will eventually guide implementers in achieving proper Ecosystem Management, Effective Resource Utilization and Sustainable Rural Development.

More Questions Than Answers

Now we come back to one important lesson from the presentation of Dr. Santos. He earlier posited, “What would happen if Kuroshio current stops running?”. Is there a definite answer to this? Are we prepared for this wild eventuality? There are no easy answers. But the point it there are more questions than answers. So let us keep on providing answers now and in the future!

I hope that in one way or another, I have given you some points to ponder as you move on towards conducting more research and generating information on Kuroshio science. The whole world puts the burden on our shoulders to provide the answers. With our closer collaboration, I believe that we will be successful in all our future endeavors.