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November 22, 2023

DR. CHRISTIAN ANTHONY C. AGUTAYA

OIC, University President

This University

Dear Sir;

Greetings of Felicity!

The extension program is an integral component of our university which is committed to extending services by helping beneficiaries improve their quality of life. These include the provision of other activities aligned with the university's curricular offerings, which will enhance the awareness and knowledge about relevant issues and concerns of the community.

In view of this, may I respectfully request from your good office the approval of the extension proposal entitled "Dissemination and Exhibit of the "Ecosystem-based Disaster Risk Reduction (Eco-DRR): Capacity of Mangroves in the Coastal Barangays of Bongabong, Oriental Mindoro" initiated by the College of Arts and Sciences which aims to disseminate the published mangrove research data to the concerned offices of LGU Bongabong and disseminate information regarding the significance, and exploitation of mangroves in the coastal areas with relation to disaster risk reduction brought by natural hazards. Likewise, the project will be implemented for 6 months with the budget requirement of 49, 425.00.

Thank you for the continuous support in the realization of our extension program/ projects and I am hoping for your positive response regarding this request.

Attached herewith is the extension proposal.

Respectfully yours,

Sgd

MARK JEANE S. LUBOS, PhD.

Campus Coordinator for Extension

Noted:

Sgd

CIEDELLE P. SALAZAR, PhD

Campus Executive Director

Sgd

LOURDES V. TAYLOR, DVM

Director for Extension and KTTO

Recommending Approval:

Sgd

CHRISTIAN ANTHONY C. AGUTAYA, PhD.

VP for Research, Development, and Extension

Approved:

Sgd

CHRISTIAN ANTHONY C. AGUTAYA, PhD.

OIC, University President



I. Basic Information

- A. Title: Dissemination and Exhibit of the "Ecosystem-based Disaster Risk Reduction (Eco-DRR)" Capacity of Mangroves in the Coastal Barangays of Bongabong, Oriental Mindoro
- B. Proponent: Dr. Randy A. Quitain
- C. Program Leader: Dr. Randy A. Quitain, BS Environmental Science Faculty
- D. Program Implementers: Engr. Wilma Delos Santos- Faculty BSES, Jaesma A. Asinas, Program, Chairperson, BS Envi. Sciences, Glanys Wajima Rocell A. De Guzman,
- E. Project Beneficiaries: MENRO and DRRM Unit of the Municipality of Bongabong
8 coastal communities of the Municipality of Bongabong
- F. Project Duration: 6 months
- G. Budget: Php 49,425
- H. Contact Person: Dr. Randy A. Quitain
+639758905497
quitainrandy@gmail.com

II. Rationale

Ecosystem-based Disaster Risk Reduction (Eco-DRR) is a solution that recognizes the ability of the environment to minimize the adverse impact of natural hazards. This strategy is a part of the Ecosystem-based Solution that deals with the action of reducing the impact of climate change and disasters through the proper management, restoration and conservation of the environment. This approach was originated from the ecosystem protection framework of Sustainable Development Goals, Sendai, CBD Strategic Plan for Biodiversity and Paris Agreement (IUCN, 2014b; Wang, 2012). The composition of this framework aims to strengthen resilience and adaptive capacity of climate-related hazards and natural disasters in all countries through the utilization of ecosystem services and integrate environmental approach as measures of DRR into national policies, strategies and planning.

Relative to this, one of the recognized ecosystems that plays a vital role in reducing the impact of natural hazards in the coastal zone is the mangrove forest. mangroves in the coastal areas associated with Eco-DRR tend to aid humans in the short term and long-term mitigation of the impact of natural hazards. Buffering storm surge and coastal flooding are the short-term mitigation rendered by these shrub communities (Faunce & Serafy, 2006). In the long run, they serve as an efficient sink of carbons and maintenance of sediment budget for the coastal line (Chmura et al., 2003). However, due to multiple anthropogenic activities, mangrove populations have experienced annual losses worldwide between 0.16 and 0.39 percent over the past two centuries. Extraction, degradation, and failure in the succession process are the critical problems of mangroves (Hamilton & Casey, 2016). Human activities such as wood extraction, aquaculture, housing development, and charcoal production exacerbate the world's mangrove forests without realizing the disadvantages of such actions.

The abovementioned scenarios regarding the importance of mangroves, and their fate in the future is a must concern that should be address in every region, down to the lower-level community or



The abovementioned scenarios regarding the importance of mangroves, and their fate in the future is a must concern that should be address in every region, down to the lower-level community or group. A protection mechanism should be done to intervene the enormous loss of mangrove population despite of the laws shielding them. The importance of their ecosystem services should be presented in a spectrum that can be easily understood by the community people regardless of their societal status and position. Through a simple but effective presentation of data regarding the usefulness of mangroves as habitat, spawning ground, and protection against natural hazards in the coastal zone will surely strengthen the campaign of protecting these saline trees.

Based on the study of the main project proponent regarding the mangroves of the Municipality of Bongabong, particularly the Sukol River mangroves, have the capacity to buffer upland flooding, sequester carbon to prohibit them in reaching the atmosphere as greenhouse gas, facilitate the production of oxygen, and harbor flora and fauna. The total estimated carbon stock of mangroves in Sukol River is $2,775.76 \text{ Mg} \cdot \text{Ha}^{-1}$ which is equivalent to $10,187.05 \text{ Mg} \cdot \text{Ha}^{-1}$ of absorbed carbon. These absorb carbons were intervene by the mangroves to reach the atmosphere that may impact global warming. The collected numerical data that represented the carbon stock of mangroves are used to validate their role in the climate change mitigation. The hamessed data are suitable parameter in discussing policy enhancement, programs and projects for the mangrove ecosystem with relation to climate change mitigation planning and Disaster Risk Reduction and Management (DRRM) program. Meanwhile, the oxygen release by the mangroves of Sukol River has an average of $7,402.04 \text{ Mg} \cdot \text{Ha}^{-1} \cdot \text{year}^{-1}$. In addition, the mangroves of the study site reduced 2691.64 cfs . flow rate of flowing water in the river to 0.57 m/s velocity, this shows that the pneumatophore, branches and trunk of mangroves provide friction to slow down the current (data of reduced velocity of water was based on the actual flow rate of the river water during data collection, it will vary depending on the condition of the current in the river) (Quitain, 2021).

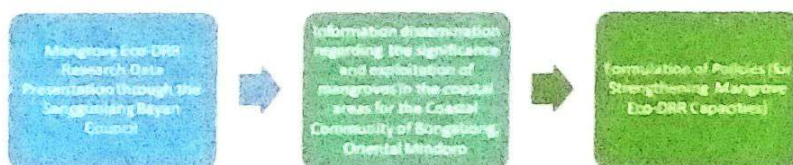
When these actual data will be presented to the community people living near the coastal zone of the Municipality of Bongabong together with the participation of the Local Government Unit (LGU); it will provide a promising impact in protecting mangroves because the above data regarding the significance of the mangroves in the coastal zone will be realized.

III. Objectives

1. To disseminate the published mangrove research data of MinSU faculty to the concerned offices of LGU Bongabong, Oriental Mindoro working for environmental issues through the Sangguniang Bayan.
2. To conduct an information dissemination regarding the significance, and exploitation of mangroves in the coastal areas with relation to disaster risk reduction brought by natural hazards.

IV. Program Components

Each objective of the proposed extension activity will be conducted based on the presented process below:





Project Components	Objectives	Specific Extension Activities	Target Beneficiaries
Research Data Presentation	1. To present the research data, and output regarding the Eco-DRR Capacities of mangroves in Sukol River.	Lecture regarding the research data, and output of Eco-DRR capacities of Sukol River mangroves against natural hazards	Sangguniang Bayan Members, MENRO, MDRRMO and MPDC
Information Dissemination	1. To provide information regarding the Eco-DRR Capacities of mangrove for the 8 coastal barangays of Bongabong (namely: Labasan, Aplaya, Anilao, Camantigue, Cawayan, Ipil, Masaguisi, Poblacion). 2. To discuss the anthropogenic exploitation done by humans to mangrove ecosystem, and mitigation.	Disseminate information regarding the Eco-DRR of mangroves against natural hazards, and anthropogenic exploitation done by humans to mangrove ecosystem, and mitigation.	Barangay Officials and community people of the 8 coastal barangays of Bongabong (namely: Labasan, Aplaya, Anilao, Camantigue, Cawayan, Ipil, Masaguisi, Poblacion)
Exhibit	1. To provide a display of mangrove Eco-DRR capacities of mangroves against natural hazards through video, posters and prototype.	Display of Eco-DRR Capacities of mangroves through videos, posters and prototype.	Sangguniang Bayan Members, MENRO, MDRRMO and MPDC Barangay Officials, and community people of the 8 coastal barangays of Bongabong (namely: Labasan, Aplaya, Anilao, Camantigue, Cawayan, Ipil, Masaguisi, Poblacion)

In the first process, the published research data of the proponent regarding the Eco-DRR capacities of mangroves will be presented to the concerned offices of LGU Bongabong, Oriental Mindoro. The purpose of the presentation is to provide information regarding the importance of mangroves in reducing the impact of natural hazards in the coastal zone, and initiate a possible Memorandum of Agreement (MOA) in establishing a policy development in strengthening the Mangrove Eco-DRR Capacities. Furthermore, encourage the protection of this ecosystem from anthropogenic activities. Through a communication letter, a request of presentation will be sent to the Sangguniang Bayan Chairman to allow the activity in their weekly session.



V. Activities

Activities	Oct. 2023	Nov. 2023	Dec. 2023- March 2024
1. Preparation of materials for the information dissemination and exhibit.			
2. Coordination with the Sangguniang Bayan to conduct presentation of research data regarding the Eco-DRR functions of Mangroves.			
3. Presentation of research data regarding the Eco-DRR functions of Mangroves to Sangguniang Bayan.			
4. Information dissemination of the significance of mangrove, and exploitation in the coastal communities of Bongabong, and exhibit.			

VI. Budgetary Requirements

Item	Price	Quantity	Total
EQUIPMENT			
Prototype wave tank 2m (L) x 0.3m (H) x 0.5m (W)	10,000	1	10,000
Tarpaulin 2m x 3m	1,500	4	6,000
Tarpaulin Stand (2.6 x 6 ft)	350	4	1400
Mega Box (L)	1,400	1	1400
FOODS			
Lunch with snack	125	245 pax (for 8 barangays)	30, 625
TOTAL			Php 49, 425

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VII. Expected Output

The expected output of this extension program is to capacitate the community people of the involved barangays in protecting the mangrove ecosystems of the Municipality of Bongabong, Oriental Mindoro.

Proposed/Prepared by:

Sgd

KARL A. LUTIMAN, Ph.D.
 PropONENT/CAS Faculty

Noted:

Sgd

MARY JEANE LUBOS Ph.D.
 Coordinator for Extension

Sgd

CIEDELLE NIOL-SALAZAR, Ph.D., PA
 Campus Executive Director

Sgd

LOURDES V. ICALLA, DVM
 Director for Extension

Recommending Approval:

Sgd

KATHERINE P. SANCHEZ-ESCALONA, Ph.D.
 Dean, College of Arts and Sciences

Sgd

CHRISTIAN ANTHONY C. AGUTAYA, Ph.D.
 Vice President for Research, Extension and Development

Approved:

Sgd

CHRISTIAN ANTHONY C. AGUTAYA, Ph.D.
 OIC-University President



**SYMPOSIUM ON THE ECOSYSTEM-BASED DISASTER RISK REDUCTION
CAPACITIES OF MANGROVE ECOSYSTEM**

November 15, 2023

Barangay Poblacion, Bongabong, Oriental Mindoro

NARRATIVE REPORT

The Extension Program titled **"DISSEMINATION OF THE ECOSYSTEM-BASED DISASTER RISK REDUCTION (Eco-DRR) CAPACITY OF MANGROVES IN THE COASTAL BARANGAYS OF BONGABONG ORIENTAL MINDORO"** has started on December 15, 2023 at Barangay Poblacion, Bongabong Oriental Mindoro with a theme "Symposium on the Ecosystem-based Disaster Risk Reduction Capacities of Mangrove Ecosystem". The program has started at 9:00 with the opening prayer and Pambansang Awit facilitated by the EMCEE/moderator of the event, Engr. Wilma C. De Los Santos (Figure 1 and 2).





After the Opening Prayer and Pambansang Awit, Barangay Kagawad Mr. Jeremie Alvaron gave his welcome remarks to the participants, Figure 3.



Then Dr. Randy Quitain, the program leader of the extension project gave the overview of the Extension Project and introduced the resource persons during the symposium, (Figure 4 and 5).





After the Overview of the Extension Program, the Pre-test has been conducted to assess the knowledge of the participants before the lectures have been provided to the participants, Figure 6 and 7.





After the Pre-test, the lecture has started given by the first lecturer, Engr. Wilma C. De Los Santos with the topic Disaster Risk Reduction (DRR) and Climate Change Adaptation and Mitigation (CCAM). Then the second lecture was also delivered by Engr. Wilma with the topic The Mangrove Ecosystem Services: The Role of Mangroves for DRR and CCAM, Figures 8, 9 and 10.





After the lecture of Engr. Wilma, Dr. Quitain has delivered his lecture titled "Mangrove Threats and Conservation, Figure 11, 12 and 13.





After the lecture of Dr. Quitain, Ms. Glanys Wajima ROcell De Guzman delivered her lecture about Policies on Mangrove Protection and Conservation, Figure 14, 15, 16.





After the lecture of Ms. De Guzman, Mr. Mark Reinier De Guzman delivered his lecture with title "Environmental Laws" (Figure 17, 18, 19).





After the last lecturer, there were some interviews with the participants asking what their take home, or what they have learned from the lecture. Most of them said that they learned the importance of mangroves on coastal protection from storm surge, flooding and strong winds. Others said that they have to take care of the environment and maintain cleanliness as means of their conservation and protection initiatives, Figures 20, 21, 22.





After the interview, the post-test has been conducted to measure their acquired knowledge on the topics that have been discussed. Also the satisfaction rating form has been also disseminated to rate how they were satisfied with the seminar that has been conducted, Figure 23, 24.





The seminar has been concluded at 5:03 pm with the following participants who were present during the group picture taking, Figure 25.



Prepared:

WILMA C. DE LOS SANTOS

Project Leader/Resource Person

Attested True and Correct:

RANDY A. QUITAIN

Project Leader



PARTICIPANTS' EVALUATION OF KNOWLEDGE ACQUIRED

Evaluation Process:

Before the lectures were disseminated, the participants were administered a pre-test to assess their initial knowledge on the subject matter. This test served as a baseline measurement to compare their knowledge level before and after the lectures. The participants were then provided with informative lectures on the topic of study. These lectures aimed to present new information, clarify key concepts, and engage learners through interactive discussions.

Knowledge Improvement:

After the lectures had been delivered, the participants were again evaluated through a post-test to determine their level of knowledge acquisition. Figure 26 displays the results of this evaluation. It is evident from the figure that the participants demonstrated a significant improvement in their knowledge following the lectures.

Implications:

The positive impact of lectures on knowledge improvement has several important implications for both educators and learners. Firstly, lectures can provide learners with a structured and comprehensive understanding of a particular subject. This allows students to grasp complex concepts and theories, which may have been challenging to learn through other methods. Moreover, lectures can serve as a platform for expanding knowledge, introducing new perspectives, and fostering critical thinking skills.

It is also worth noting that lectures can be tailored to address the diverse learning needs of students. By incorporating visual aids, interactive activities, and real-life examples, lecturers can enhance the engagement and participation of learners. This, in turn, facilitates effective knowledge transfer and retention.

Conclusion:

In conclusion, the evaluation conducted through pre and post-tests demonstrates the positive impact of lectures on knowledge improvement. The participants' knowledge on Disaster Risk Reduction, Climate Change Adaptation and Mitigation, The Role of Mangroves for DRR and CCAM, Mangroves Threats and Conservation, Policies on Mangrove Protection and Conservation and Environmental Laws noticeably increased after attending the lectures. Lectures not only provide the participants with a solid foundation of knowledge but also enhance their critical thinking and analytical skills.

As educators and extension workers, we are committed to providing effective lectures that break down barriers and make science accessible to all. Through the translation of science and technical terms into layman's terms, we foster an inclusive learning environment that promotes comprehension, engagement, retention, and application of knowledge. By bridging the gap between science and understanding, we empower individuals to confidently navigate the world of scientific discourse, equipping them with the tools necessary for success.

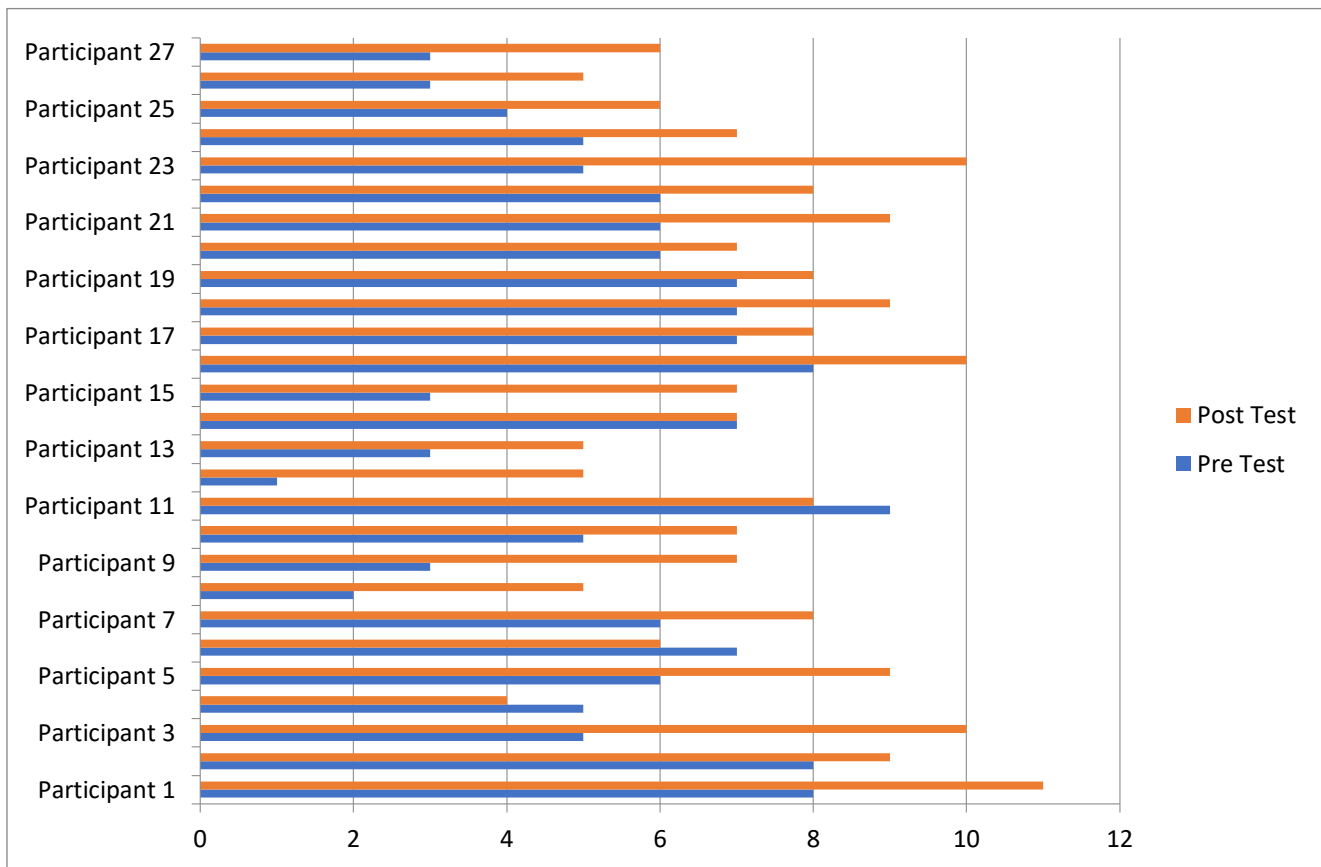


Figure 26. The result of the evaluation for Pre and Post Test.



Appendix 1. Program



MUNICIPALITY OF BONGABONG ORIENTAL MINDORO

SYMPOSIUM ON THE ECOSYSTEM-BASED DISASTER RISK REDUCTION CAPACITIES OF MANGROVE ECOSYSTEM

December 15, 2023

PROGRAM OF ACTIVITY

ACTIVITY	TIME	RESOURCE PERSON
Opening Prayer	9:00	Engr. Wilma C. De Los Santos - EMCCEE/Moderator
Pambansang Awit	9:10	Engr. Wilma C. De Los Santos - EMCCEE/Moderator
Welcome Remarks	9:20	Punong Barangay
Message	9:30	KINGBE C. UY, C.E. MENRO
Overview of the Symposium and Acknowledgement of the participants and Resource Persons	9:40	Dr. Randy A. Gultain
Pre-Test	10:00	Engr. Wilma C. De Los Santos - EMCCEE/Moderator
First Lecture: Disaster Risk Reduction and Climate Change Adaptation	10:30-11:30	Engr. Wilma C. De Los Santos, MSDRRM
Second Lecture: The Mangrove Ecosystem Services: The Role of Mangrove for DRR and CCA	11:30-12:00	Engr. Wilma C. De Los Santos, MSDRRM
Third Lecture: Mangrove Threats and Conservation	1:01-2:00	Dr. Randy A. Gultain
Fourth Lecture: Environmental Laws	2:01-3:00	Mark Reinier De Guzman
Fifth Lecture: Policies on Mangrove Protection and Conservation	3:01-4:00	Ms. Glanys Majima Rocell De Guzman
Post-test and Evaluation	4:01-5:00	Engr. Wilma C. De Los Santos, MSDRRM

Prepared:

Sgd

WILMA C. DE LOS SANTOS

EMCCEE/Moderator

Attested true and correct:

Sgd

KINGBE C. UY, C.E.

MENRO



Appendix 2. Attendance



Mindoro State University

Victoria, Oriental Mindoro 5205 Philippines

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Office of Extension

ATTENDANCE

Extension Program: "DISSEMINATION OF THE ECOSYSTEM-BASED DISASTER RISK REDUCTION (Eco-DRR) CAPACITY OF MANGROVES IN THE COASTAL BARANGAYS OF BONGABONG ORIENTAL MINDORO

Location/Venue: BARANGAY POBLACION, BONGABONG, ORIENTAL MINDORO

Date: NOVEMBER 15, 2023

Sponsor:

No.	Name	Age	Gender	Address	Signature
1.	Genta C. Bernaldo				
2.	Cora C. Manzano				
3.	Lucinda J. Sadung				
4.	Jim Banaga				
5.	Susan Mindoro				
6.	Amelia Vindoro				
7.	Johnathan P. Montaña				
8.	Myra Ballo				
9.	Wanda S. Montano				
10.	Benedicta Bantila				
11.	Monina P. Sadung				
12.	Maricel A. Morillo				
13.	Regina S. Bernaldo				
14.	Quincy B. Manzo				
15.	Leonore Maranta				
16.	Jesslyn J. Guarin				
17.	Rachel Antonio				
18.	PP Bernaldo Montano				
19.	SARITA Mindoro				
20.	JOEL B. ESCOBAR				
21.	Amyrlyn P. Garcia				
22.	Veronica M. Hussan				
23.	Michelle A. Gamalag				
24.	Christopher A. Alonzo				
25.	Yancy S. Yano				
26.	ROSA B. Montano				
27.	JOYCE P. LLETZ				
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Attested by: