UNIVERSITY OF THE PHILIPPINES VISAYAS

GRADUATE RESEARCH CONFERENCE 2025

"Graduate Research Towards Achieving Sustainable Development Goals"

UP VISAYAS ILOILO CITY CAMPUS

JUNE 21, 2025

BOOK OF ABSTRACTS

UNIVERSITY OF THE PHILIPPINES VISAYAS

GRADUATE RESEARCH CONFERENCE 2025

JUNE 21, 2025
UP VISAYAS, ILOILO CITY

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ABOUT GRC 2025

Graduate Research Conference 2025

Theme: "Graduate Research Towards Achieving Sustainable Development Goals"
Date: June 21, 2025
Venue: UP Visayas Iloilo City Campus

The UPV Graduate Research Conference (GRC) 2025 is a platform for graduate students of the University of the Philippines Visayas to showcase their scholarly work, engage in dynamic exchange of ideas, and foster interdisciplinary collaboration. Guided by the principles of the United Nations' Sustainable Development Goals (SDGs), this event highlights the relevance of academic research in shaping policy and driving meaningful change. With plenary talks from distinguished experts and government representatives, followed by parallel sessions of student presentations, GRC 2025 further emphasizes the vital role of graduate research in advancing the Philippines' sustainable development agenda, as championed by national planning bodies like the Department of Economy, Planning, and Development (DEPDev), formerly NEDA.

The GRC aims to:

1. Strengthen the capacity of graduate students in presenting and disseminating their research findings;

2. Provide a venue for the exchange of experiences and insights among graduate researchers and faculty mentors;

3. Foster a strong research culture in graduate-level scholarship; and

4. Promote collaborative research endeavors within UPV and with other HEIs/SUCs in the region.

General Program Flow:

The Graduate Research Conference 2025 opens with the registration of participants, followed by an opening ceremony. The morning session features a keynote address from an invited expert, highlighting the conference theme and its alignment with Philippine government initiatives, particularly those of the Department of Economy, Planning, and Development (DEPDev), formerly NEDA. A series of plenary talks follows, delivered by distinguished speakers on topics related to sustainable development, research, and policymaking. Before lunch, participants receive a briefing on the afternoon session guidelines. In the afternoon, the program continues with parallel student research presentations, grouped into thematic clusters aligned with the Sustainable Development Goals (SDGs), with breaks between sessions. The conference concludes with a closing program that includes final remarks, the awarding of certificates, and the announcement of the best presentations.

HISTORY OF GRC

Launched in 2005 by the UPV Graduate Program Office (now the Graduate School), the Graduate Research Conference (GRC) has become a biennial tradition that celebrates scholarly inquiry and interdisciplinary collaboration. Now on its 9th installment, the GRC continues to empower graduate students to share their research, engage in meaningful academic exchange, and build connections across UPV and other institutions in the region. The 2025 theme, "Graduate Research Towards Achieving Sustainable Development Goals," reflects GRC's commitment to scholarship that contributes to inclusive and knowledge-informed development.

No.	Title	Theme	Date	Venue
1	1st UPV Graduate Research Conference	*"Synergy in Graduate Research"*	Sept. 24 2005	UPV Auditorium
2	2nd UPV Graduate Research Conference	*"Fostering a Research Culture through Graduate Education"*	Dec. 15, 2007	UPV Auditorium
3	3rd UPV Graduate Research Conference	*"Advancing into New Frontiers."*	Dec. 05 2009	UPV Auditorium
4	4th UPV Graduate Research Conference	*"Addressing the Challenges of Changing Environments"*	Sept. 24, 2011	UPV Auditorium
5	2013 UPV Student Research Conference	*'Creating Knowledge towards Improved Productivity'*	Sept. 14, 2013	UPV Auditorium
6	2015 UPV Graduate Research Conference	*Meeting the Challenges of the 21st Century Landscape"*	Nov. 7 2015	UPV Auditorium
7	2017 UPV Graduate Research Conference	*"Graduate Research: Impetus to National Development"*	Nov. 11, 2017	Amigo Terrace Hotel
8	2019 UPV Graduate Research Conference	*"Cultivating a Graduate Research Culture for Knowledge and Technology Creation"*	Nov. 23, 2019	Grand Xing Imperial Hotel

MESSAGE

DR. CLEMENT C. CAMPOSANO
Chancellor
UP Visayas

It is with great pleasure that we welcome you to the Graduate Research Conference 2025 (GRC 2025), hosted by the University of the Philippines Visayas (UPV) Graduate School, here at our Iloilo City Campus on June 21, 2025.

With the theme "Graduate Research Towards Achieving Sustainable Development Goals," this year's conference serves as a vital platform for our graduate students to showcase their scholarship and engage in meaningful academic exchange. It also underscores our commitment to interdisciplinary research that addresses the pressing issues of our time—climate action, quality education, poverty reduction, good health and well-being, gender equality, and many more—through the lens of the United Nations Sustainable Development Goals (SDGs).

The GRC 2025 brings together a vibrant community of thinkers, researchers, and scholars who are united by a shared purpose: to generate knowledge that is both academically rigorous and socially relevant. As we navigate an increasingly complex world, we believe graduate research plays a crucial role in crafting innovative solutions and policy insights that contribute to inclusive and sustainable development in the Philippines and beyond.

We commend our graduate students for their passion and dedication to research excellence. We also thank their faculty advisers, panelists, and partners who continually guide and inspire them in the pursuit of transformative learning and research.

On behalf of the GRC 2025 Organizing Committee, we extend our warmest welcome to all participants, guests, and members of the UPV community. May this conference serve as a fruitful space for dialogue, collaboration, and inspiration. Let us continue to push the boundaries of research and work collectively toward a more sustainable and equitable future.

Mabuhay and welcome to GRC 2025!

MESSAGE

PROF. ENCARNACION EMILIA S. YAP
Vice Chancellor for Research and Extension
UP Visayas

UP is a graduate university… a research university… a public service university…

In an era marked by global challenges, such as climate change, environmental degradation, and the pursuit of sustainable development, the 2025 Graduate Research Conference serves as a vital contribution to UP Visayas' mission to address these challenges head-on. As we uphold our three-fold mandate, this academic gathering plays an essential role in advancing knowledge and generating science-based solutions that inform sound policy and public action. The research findings presented during this conference are part of a broader movement that believes in the power of science to improve lives and protect the planet. By aligning these graduate research works with the Sustainable Development Goals (SDGs), we are actively engaging in the urgent task of transforming our world for the better.

I extend my congratulations to the committee that spearheaded this conference, for providing a platform where emerging researchers can learn, grow, and contribute to solutions to pressing societal challenges. To the participants, I encourage you to reflect on the insights shared by our invited speakers, shaped by years of experience and commitment to sustainable development and academic excellence. Take time as well to listen to your fellow presenters; their work may further inspire your passion for research that addresses real-world challenges.

Let us continue what we have started… let us persevere in our research efforts in the service of our society.

MESSAGE

DR. FARISAL U. BAGSIT
Vice Chancellor for Administration
UP Visayas

On behalf of the UP Visayas, I would like to welcome everyone to this year's Graduate Research Conference with the theme: *"Graduate Research Towards Achieving Sustainable Development Goals,"*. The research outputs of the UPV graduate students form an integral part of the University's milestones in terms of advancement of knowledge, skills development, promotion of the different fields and disciplines of science and the arts, and the creation of meaningful impacts to the society.

The GRC serves as a venue for students and their mentors to showcase their research outputs through oral and poster presentations. Further, it provides graduate students an opportunity to think about, and address real-world problems that lead to innovations, policy reforms, and solutions that will benefit the society.

My sincerest gratitude to all our participants, guests, and friends who joined us in this endeavor. Thank you very much.

MESSAGE

DR. ALICE JOAN G. FERRER
Vice Chancellor for Academic Affairst
UP Visayas

Welcome to the Graduate Research Conference of the University of the Philippines Visayas!

With the theme "Graduate Research Towards Achieving Sustainable Development Goals (SDGs)," this gathering underscores the vital role of graduate research in addressing global and local challenges. Our graduate students contribute knowledge and solutions that align with the SDGs—from marine conservation and food security to health, education, and sustainable livelihoods. This conference is a platform to showcase these efforts, promote interdisciplinary exchange, and build collaborations that can drive meaningful change.

We encourage all participants to engage actively, share insights, and foster a spirit of critical inquiry and innovation. Congratulations to our presenters, and sincere appreciation to our mentors, organizers, and supporters who make this event possible.

As Iskolar ng Bayan, may we continue to uphold our responsibility to lead, serve, and contribute to a better and more sustainable future for all!

MESSAGE

DR. RHODELLA A. IBABAO
Vice Chancellor for Planning and Development
UP Visayas

Warm greetings to the organizers, panel evaluators, presenters, and participants of the 2025 Graduate Research Conference. This significant activity provides a venue for the formal presentation of meaningful research outputs among the faculty, the students, and their collaborators.

The university is committed to making resources available to UPV constituents for evidence-based research. The university provides its constituents access to facilities that have been and can be used for research initiatives, enhancing their academic journey at UPV. Congratulations to everyone for their dedication to research excellence and in reinforcing UPV's mission to generate scholarly outputs that align with the community's goals.

MESSAGE

DR. HAROLD M. MONTECLARO
Dean, College of Fisheries and Ocean Sciences
UP Visayas

Greetings to all participants of the Graduate Research Conference 2025 (GRC 2025).

The MS and PhD students at the College of Fisheries and Ocean Sciences have always looked forward to the Graduate Research Conference. Though disrupted during the pandemic, the GRC marks its return as a venue for UP Visayas graduate students to present their scholarly work and exchange ideas with the public. Graduate students are important creators of knowledge at the University. Through their research work, whether in the form of a Special Problem, Graduate Thesis, or Dissertation, graduate students offer massive potentials in generating technology that can advance industries and the economy in the country, as well as relevant information that can guide local and national policymakers in addressing societal problems.

Thus, this year's theme, "Graduate Research Towards Achieving Sustainable Development Goals", is a recognition of the important role of graduate research in attaining the sustainable development agenda of the country. I am confident that the University has imbibed the culture of research among our graduate students and instilled the importance of collaboration, research ethics, and commitment to rigor. May you all continue to be creators of knowledge and technology in our country, even beyond the halls of this University. Congratulations to the UPV Graduate School and the men and women who worked hard for the success of GRC 2025. I wish everyone a wonderful conference experience.

Mabuhay po kayo.

MESSAGE

PROF. PEPITO R. FERNANDEZ JR.
Dean, College of Arts and Sciences
UP Visayas

Dear esteemed scholars, researchers, and distinguished guests,

It is with great honor and enthusiasm that we welcome you to this "Interdisciplinary Graduate Research Conference", where research scholars converge to advance knowledge and innovation in pursuit of a sustainable future in various places and spaces . In a world confronted with pressing global and local challenges, graduate research serves as a cornerstone for transformative change—bridging disciplines, fostering collaboration among diverse actors, and generating solutions that propel us closer to the Sustainable Development Goals.

This conference stands as a testament to the power of academic inquiry and the critical role of interdisciplinary approaches in addressing complex socio-ecological issues and sustaining varied capital resources. As you engage in intellectual discourse, share pioneering research, and cultivate connections across diverse fields, may your contributions inspire actionable strategies and impactful innovations that will shape a more sustainable and equitable world.

We extend our deepest appreciation for your dedication and scholarship, and we eagerly anticipate the insightful discussions, discoveries, and meaningful collaborations that will emerge from this gathering. Together, let us reaffirm our commitment to research-driven progress and the collective vision of achieving sustainable development for future generations.

Welcome, and may this conference be a catalyst for knowledge, innovation, and glocal transformation.

MESSAGE

ATTY. CHRISTOPHER B. HONORARIO
Dean, College of Management
UP Visayas

We at the College of Management are pleased to welcome you to the Graduate Research Conference 2025 at the University of the Philippines Visayas. This event marks another meaningful milestone in our collective pursuit of academic excellence and research-driven solutions. With the theme "Graduate Research Towards Achieving Sustainable Development Goals," we gather as scholars, researchers, and educators to present and discuss research that addresses pressing global challenges and fosters sustainable development.

As an academic institution, research plays a vital role in advancing knowledge, fostering innovation, and ensuring that our collective efforts drive meaningful change. Through insightful discussions and collaboration, we reaffirm the power of research in shaping a better future and contributing to impactful solutions.

We extend our heartfelt congratulations to all paper presenters whose dedication strengthens the pursuit of scholarly excellence. Likewise, we commend the organizing committee for their tireless efforts in creating an environment that encourages knowledge-sharing, critical discourse, and meaningful engagement. Their commitment ensures that this conference remains a valuable platform for intellectual exchange and collaboration.

As we embark on this journey of research and discovery, may this gathering inspire us to continue pushing boundaries, exploring new ideas, and making significant contributions to society. Let this event be a testament to our enduring commitment to building a future that is innovative, inclusive, and sustainable.

Welcome, and may this conference be a rewarding and enriching experience for all.

MESSAGE

DR. JOHANNES M. MAGPUSAO
Dean, School of Technology
UP Visayas

Greetings!

The University of the Philippines Visayas (UPV), through the Graduate School, is honored to present the Graduate Research Conference 2025 (GRC 2025), to be held on June 21, 2025, at the UPV Iloilo City Campus. With the theme "Graduate Research Towards Achieving Sustainable Development Goals," this conference serves as a dynamic platform for UPV graduate students to share their research—particularly interdisciplinary work that advances the United Nations Sustainable Development Goals (SDGs).

More than just an academic gathering, GRC 2025 is a celebration of ideas, innovation, and meaningful impact. It is an opportunity for you to engage in thoughtful dialogue, connect with fellow scholars and mentors, and cultivate collaborations that may shape the future of your field. By sharing your work and receiving constructive feedback, you expand your perspectives, sharpen your thinking, and strengthen the foundations of your academic and professional journey.

We encourage you to make the most of this opportunity. Thank you for your contributions to this important event. Your dedication to graduate research is commendable, and we look forward to the ways your work will help build a better, more sustainable future. We are excited to witness the positive impact your research will have on our communities and beyond.

Padayon!

MESSAGE

DR. RODELIO F. SUBADE
Dean, Graduate School
UP Visayas

Welcome to the Graduate Research Conference 2025!

It is with deep enthusiasm and joyful excitement that we welcome you all to the resumption of our biennial Graduate Research Conference (GRC) 2025, that has been UPV tradition since 2015. Emerging from the pandemic-induced moratorium, the GRC is a fertile ground for inspiring our graduate students to research, and research-based learning.

Indeed, the UPV graduate school which was elevated into a full pledged college (April 2022) is now back in hosting this regular activity that will help elevate our graduate programs and school into a center of excellence for transdisciplinary research. In pursuit of UP and UPVs mandate to be a national university – i.e. a graduate studies university and a research university, we want to see new discoveries that solve real-world problems by bringing different academic areas together.

This year's theme *"Graduate Research Towards Achieving Sustainable Development Goals (SDGs)"* indicates that big global and local problems need ideas and solutions from many different fields, not just one. It stresses our country's commitment to the global challenge and the academe's role through transdisciplinary research in attaining the SDGs. It is imperative that we see different viewpoints, methods, and subjects come together to generate new discoveries and effective solutions. We hope this GRC will help grow a new group of researchers who can think across different areas, work with others, and create important knowledge for our country and the world.

To our graduate students, this conference is your moment to shine. It's an opportunity to present the culmination of your hard work, critical thinking, and dedication. Share your findings with confidence, engage with the questions, and embrace constructive feedback. This experience is invaluable for sharpening your communication skills, refining your research approach, and preparing you for the broader academic and professional world. Remember that every presentation, every poster, and every discussion is a step forward in your intellectual journey, pushing the boundaries of what we know.

Beyond the formal presentations, the GRC 2025 is also a great chance to **meet new people and find mentors**. We encourage everyone to connect with other students, professors, and experts. These connections are important for working together, sharing ideas, and building a strong academic community that goes beyond our campus in Iloilo City. Your presence and active involvement are key to making this conference a truly special and valuable experience for everyone.

We thank the UPV administration for the support, particularly the budget allocation from the OVCRE. We are grateful to the sponsors and alumni who shared their hard earned income to back up our financial needs. We thank the UPV GRC committee chaired by Dr. Nats Anasco for being the backbone in the preparations, undertaking and closing of accounts/ accountabilities for this university activity. We thank the keynote and plenary speakers for sharing their valuable time, insights and research perspectives with all of us.

We look forward to a conference full of interesting talks, lively discussions, and amazing chances to work together. These interactions will definitely help our community grow academically and strengthen our dedication to doing advanced, meaningful research that truly makes a difference. **Ultimately, every effort, every discovery, and every collaboration we foster here is a step towards building a better future for our nation.**

Again, welcome, and let's learn collaboratively! **Para Sa Bayan!**

KEYNOTE SPEAKER

USEC. CARLOS BERNARDO O. ABAD SANTOS

Regional Development Group
Department of Economy, Planning, and Development

Carlos Bernardo O. Abad Santos is an experienced development economist and policy professional currently serving as Undersecretary of the Regional Development Group at the Department of Economy, Planning, and Development (DEPDev, formerly NEDA). In this role, he oversees 16 regional offices and the Central Office's Regional Development Staff, guiding initiatives in regional economic planning, peace and security governance, and disaster risk resilience. His work focuses on integrating the Sustainable Development Goals (SDGs) into regional and local policy frameworks, building on his prior role as NEDA Assistant Secretary for Policy and Planning, where he coordinated cross-sectoral SDG implementation and facilitated partnerships across government and civil society.

With over 25 years of experience in rural development, Mr. Abad Santos combines policy expertise with practical engagement in grassroots challenges. Before joining DEPDev, he served as Executive Director and Senior Research Fellow at the Asia-Pacific Policy Center (APPC), leading multidisciplinary research on poverty alleviation, agribusiness value chains, and agrarian reform. His work has informed projects for institutions including the Asian Development Bank, the World Bank, and Save the Children, where he contributed to programs on economic resilience, governance reform, and community-driven development in Southeast Asia.

Mr. Abad Santos holds a Master's degree in Economics from the University of the Philippines School of Economics and a Diploma in Economic Development Planning from the Istituto di Studi per lo Sviluppo Economico. His career reflects a sustained commitment to bridging evidence-based policy and actionable research to address socioeconomic disparities.

PLENARY 1: NATURAL SCIENCES & FISHERIES

Biodiversity, "Blue Carbon", and Sustainable Development Goals: Hopes, Challenges and Opportunities for Graduate Students in the Philippines

Severino G. Salmo III, Ph.D.
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University of the Philippines Diliman
1101 Quezon City
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ABSTRACT

The United Nations Sustainable Development Goals (SDGs) is a global partnership that aims to improve health and education, reduce inequality, and spur economic growth alongside tackling climate change and protecting/restoring the environment.

Implementing the program needs to consider intricate complexities from environmental, social, and policy concerns. Post-graduate education is integral to the realization of the 17 goals primarily Goals 4 and 9 (and also Goals 16 and 17). Post-graduate programs are expected to provide innovative researches that will capacitate students (with knowledge, skills, attitudes and values) in order to contribute to a sustainable future. In the Philippines, there are several opportunities where graduate students can contribute to the realization of SDGs (mainly Goals 11, 13, 14, 15 and 17). Among the goals, "biodiversity" (e.g., biodiversity conservation) and "climate change" (e.g., "blue carbon" through conservation and restoration of ecosystems) could be the most straightforward and integrative topics that the graduate students can directly contribute. These topics would prove the effectiveness (or ineffectiveness) of conservation and restoration programs in the realization of a sustainable and climate-adaptive society. However, there are several challenges that may constraint studying these topics (e.g., coastal reclamation, conflicting policies, obsolete/lack of baseline data, etc.). Nonetheless, these challenges can be addressed through a targeted research supported with a network of institutions/students and complemented with a streamlined policy.

PLENARY SPEAKER
NATURAL SCIENCES AND FISHERIES

DR. SEVERINO G. SALMO III
Institute of Biology
University of the Philippines Diliman

Severino G. Salmo III (UP Scientist 1) is an Associate Professor, and Co-Laboratory Head of the Wetland and Linked Terrestrial Ecosystem Research (WATER) Laboratory of the Institute of Biology (IB) of University of the Philippines Diliman. He is a Postdoctoral Fellow at the University of the Ryukyus in Okinawa, Japan (2019). He is a recipient of the National Academy of Science and Technology (NAST) Environmental Science Award (2015), NAST Outstanding Publication Awards (Biological Science, 2016, 2020), and as co-awardee for the PCAARRD Dr. Elvira O. Tan Outstanding Publication (2019, 2021). He is a Reviewer and a member of editorial boards in international and national journals. He is a member of the International Blue Carbon Scientific Working Group (IBCSWG), the Asia-Pacific Biodiversity Observation Network (APBON), and the National Blue Carbon Action Partnership (NBCAP).

His expertise is on Mangrove/Restoration Ecology, Biodiversity, and Conservation Biology. His studies documented and assessed impacts of mangrove restoration projects. He developed vegetation and soil "restoration indicators" as a measure of in/effectiveness of restoration projects. His previous projects were funded by international and national institutions. His recent projects did a comparative assessment of the recovery of biodiversity and carbon stocks in different mangrove stands in the Philippines. An online/interactive Data Analytic Platform (DAP) was developed from these projects aiming to provide a real-time mangrove assessment and monitoring tool. The results of these projects were used by some LGUs to heighten community awareness and in developing mangrove management policies. These projects directly contribute to the attainment of several international and national programs (e.g., UNSDG, CBD/KMGBF, UNFCCC, among others).

I've always been convinced that doing science should help the nation progress. Seeing how my research improves mangrove conservation and restoration policies/programs in the Philippines, and how the communities benefit from it, inspires me to continue despite the challenges in doing research. As I've always advised my students and RAs, "Pag-ibig sa tinubuang lupa!"

PLENARY 2: MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES

From Research to Reaching Communities: Achieving the Sustainable Development Goals through Sustainable Social Science Research

Johnrev Guilaran, PhD
Division of Social Sciences, University of the Philippines Visayas

ABSTRACT

The social sciences is in a good position to aid communities in achieving the Sustainable Development Goals (SDGs) to address global challenges. As the disciplines under its umbrella focus on human behaviours and social dynamics, research in the social sciences may help us understand and explain behaviors and social interactions; build or strengthen institutions; create policies, promote social equity, equality, and inclusion; and, improve public communication and engagement in relation to hunger, poverty, climate change, and other pressing global concerns. Furthermore, social science research may also serve as an atrium where the natural sciences, technology, policy, and communities may intersect in understanding and solving these issues.

The social sciences successfully performing these roles requires the bridging of the gap between knowledge production and community transformation, and properly situating its various disciplines within the multi-, inter-, and transdisciplinary approaches to overcoming social challenges. It also demands that we do "sustainable" social science research. This talk teases apart the idea of sustainable social science research and its role in achieving the SDGs, drawing inspiration and examples from work surrounding disaster mental health, climate change psychology, and related areas. Ethical and methodological research issues are discussed, along with how these issues intersect with the impact of research on communities. The discussion also includes the pathways in which social science research may benefit communities, with emphasis on research rigor and collaboration. The important role of graduate students and university researchers are highlighted, particularly in asking the right research questions, building ethical relationships and mutually-beneficial partnerships with communities and other stakeholders, and utilising research to empower and to uphold social justice.

PLENARY SPEAKER
MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES

DR. JOHNREV B. GUILARAN
Division of Social Sciences
University of the Philippines Visayas

Dr. Johnrev Guilaran is an associate professor of psychology at the Division of Social Sciences, University of the Philippines Visayas. He was appointed UP Scientist I for the cycle year 2022-2024. He earned his PhD in Psychology from Massey University, Wellington (2019) under the New Zealand ASEAN Scholarships (now Manaaki), his MA in (Clinical) Psychology from UP Diliman (2013), and his BA (Psychology) from UP Visayas (2004). He trained in disaster mental health at the Hyogo Institute for Traumatic Stress in Kobe, Japan. His scholarly interests focus on disaster mental health, social support, traumatic stress, and climate change psychology. He is part of the International Association of Applied Psychology (IAAP) Task Force on Terrorism and Peacebuilding. He is an alumnus of the Integrated Research in Disaster Risk (IRDR) Young Scientist program. He currently serves as a member of the editorial board of the Journal of Traumatic Stress (Wiley) and as one of the associate editors of the Philippine Journal of Psychology. He is a member of the Mental Health Technical Working Group of the Department of Science and Technology – Philippine Council for Health Research and Development. His public service work spans from facilitating psychosocial interventions in communities to providing technical support to national agencies.

PROGRAM OVERVIEW

PRE-CONFERENCE EVENT

June 20, 2025
Venue: GCEB Training Room 1
UPV Iloilo City Campus

1:00 – 5:00

UPV Graduate Research Pre-Conference Event Lecture Series on Marine Ecology and Sustainability

Lecture 1: "Philippine Mangrove Biodiversity in the KMGBF and UNFCC: Uncertainties, Hopes and Inspirations"

Dr. Severino G. Salmo III
Associate Professor
Institute of Biology, College of Science, University of the Philippines Diliman, Quezon City

Lecture 2: "Marine Fisheries Ecology Amidst Sustainability Challenges"

Dr. Nathaniel C.Añasco
Professor
Institute of Marine Fisheries and Oceanology
College of Fisheries and Ocean Sciences
University of the Philippines Visayas

Lecture 3: "Climate Justice and Ecological Resilience in the Oceans"

Prof. Jessica Dator-Bercilla
Science Resilience Fellow
National Resilience Council

Assoc. Prof. Dr. Sheila Mae S. Santander-de Leon
Discussant

CONFERENCE PROPER

June 21, 2025
UPV Auditorium,
University of the Philippines Visayas,
Iloilo City Campus

8:00 – 8:30	Registration
8:30 – 8:55	Opening Program Prayer National Anthem Welcome Message **Prof. Dr. Clement C. Camposano** Chancellor UP Visayas Declaration of the Opening of the UPV GRC 2025 and Opening of the Plenary **Prof. Dr. Prof. Rodelio F. Subade** Dean Graduate School, UP Visayas
8:55-9:00	Introduction of the Keynote Speaker Prof. Dr. Prof. Rodelio F. Subade
9:00-9:40	**Keynote Talk:** Synergy in Action: Research, Policy, and Sustainable Development **Usec. Carlos Bernardo O. Abad Santos** Regional Development Group Department of Economy, Planning and Development
9:40-9:55	Snacks and Group photo session
9:55-10:00	Introduction of the First Plenary Speaker **Asst. Prof. Lhumen A. Tejano** Chair Cluster 1 - Natural Sciences and Fisheries

10:00-10:25	**Plenary Paper 1:** Biodiversity, 'Blue Carbon', and Sustainable Development Goals: Hopes, Challenges, and Opportunities for Graduate Students in the Philippines **Dr. Severino G. Salmo III** Associate Professor Institute of Biology, College of Science, University of the Philippines Diliman, Quezon City
10:25-10:30	Introduction of the Second Plenary Speaker **Prof. Dr. Reynold D. Tan** Chair Cluster 2 - Management, Professional Education, and Social Sciences
10:30-10:55	**Plenary Paper 2:** From Research to Reaching Communities: Achieving the Sustainable Development Goals through Sustainable Social Science Research **Dr. Johnrev Guilaran** Associate Professor Division of Social Sciences College of Arts and Sciences, University of the Philippines Visayas Miagao, Iloilo
10:55-11:00	Opening of Poster Session **Asst Prof. Dr. Cherry P. Anasco** Chair Poster Session
11:00 -12:00	Poster Session*
12:00 NN -1:00PM	Lunch (Packed Lunch)
1:00	Breakout Sessions

BREAKOUT SESSION (CLUSTER 1, COMPETING)

UPV Little Theater
University of the Philippines Visayas,
Iloilo City Campus

BREAKOUT SESSION (CLUSTER 1, REGULAR)

GCEB AVR
University of the Philippines Visayas,
Iloilo City Campus

BREAKOUT SESSION (CLUSTER 2, COMPETING)

UPV Auditorium
University of the Philippines Visayas,
Iloilo City Campus

BREAKOUT SESSION (CLUSTER 2, REGULAR)

GCEB Training Rooms 1 and 2
University of the Philippines Visayas,
Iloilo City Campus

POSTERS PRESENTATIONS

GCEB lobby
University of the Philippines Visayas,
Iloilo City Campus

CLOSING PROGRAM

UPV Auditorium

4:30-4:45 Synthesis and Summary of the Conference
Dr. Jonny B. Pornel
Chair, Documentation Committee
Division of Professional Education

4:45 - 5:00 Closing Remarks
Prof. Dr. Nathaniel C. Añasco
GRC2025 Chair
Steering Committee

Asst. Prof. Dr. Donne Jone Sodusta
Asst. Prof. Ysabella P. Cainglet
Masters of Ceremony

POST-CONFERENCE EVENT

UPV Graduate School Fellowship Night and Graduate Research Conference Awarding Ceremony

Theme:
"Grad & Gather: Minds, Mugs, and Mingling"

UPV Auditorium

6:00-6-30 Registration

Distribution of Human Bingo Cards

6:30-6:45 Opening Program

Prayer

National Anthem

Welcome Remarks
Prof. Dr. Rodelio Subade
Dean
Graduate School, UP Visayas

	Inspirational Message *A short inspirational talk emphasizing the value of scholarship, creativity, and community.* **Dr. Nathaniel Añasco** Graduate School Secretary
6:45 – 7:45	Dinner and Start of Human Bingo
7:45 - 8:00	Awarding Ceremonies
	Awarding of Best Oral and Poster Presentations
	Awarding of the Winner of the Graduate School Logo Making Contest
8:00 - 8:05	Closing Remarks **Danah Jalandoon-Nieles, MMPM** Chair, Graduate School Student Council Student of DURP
8:05 - 8:15	Photo Ops
8:15 -9:00	Finale (Sing and Dance!)

Fergie Joshua Lasugas
Grace Babiera
Masters of Ceremony

Cluster 1:
NATURAL SCIENCES & FISHERIES
Oral Presentations
Competing

Influence of squid by-product hydrolysate supplementation on diet attractability, palatability, and muscle growth of *Penaeus monodon* fed a plant protein-based diet

Maila V. Pan[1*] and Rex Ferdinand M. Traifalgar[2]

[1]College of Fisheries and Marine Sciences, Zamboanga State College of Marine Sciences and Technology, Fort Pilar, Zamboanga City

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The utilization of plant protein ingredients in aquaculture diets to minimize fishmeal use has negatively affected feed attractability and palatability, leading to reduced animal growth. Attractants and stimulants were incorporated in plant protein-based diets to increase its acceptability and value. Protein hydrolysates are considered active feeding attractants for shrimp due to their high free amino acid content and soluble low molecular weight peptides. To evaluate the potential of squid processing by- product hydrolysate (SH) as attractant, it was incorporated at 0, 0.5, and 1% levels in *Penaeus monodon* diets containing 0, 5, and 10% fishmeal. Diet attractability, palatability, growth, digestive enzyme activity, muscle growth-related gene expression, and muscle morphometric measurements were evaluated in a 56-day feeding trial. Diets with 10% fishmeal and those supplemented with 0.5% SH were more attractive to shrimp. Furthermore, diets with 5% fishmeal with or without 0.5% SH supplementation and full plant protein-based diets with 0.5 or 1% SH were more palatable to shrimp. The inclusion of SH as feed supplement at 1% in a fishmeal-free diet resulted in the highest growth performance, which was associated with increased feed intake, efficient feed and nutrient conversion and retention, enhanced digestive enzyme activity, and upregulation of muscle growth-related genes. Growth promotion was also linked to a significant increase in muscle fiber size, suggesting hypertrophic growth in shrimp. Overall, supplementation with 1% SH supported the growth of *P. monodon* on a plant protein-based diet without fishmeal.

Keywords: diet attractability, diet palatability, muscle growth-related genes, muscle morphometry, squid by-product hydrolysate

Field Evaluation of LED Lights and Electrical Stimulation for Bycatch Mitigation in Crab Pot Fishery, San Miguel Bay, Philippines

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This study evaluated the efficacy of blinking LED lights and an Electric Stimulation Device (ESD) in enhancing catch selectivity in the San Miguel Bay crab pot fishery. Field tests involved 70 crab pots categorized into control (natural bait) and treatment groups (blue, red, green, and white LED lights and ESD). Catch per unit effort (CPUE), size, and species composition were assessed. A total of 75 individuals from 10 species across five families were caught, with the highest species richness recorded in the control group. Statistical analysis indicated a significant reduction in bycatch, with blue LED lights eliminating non-target species entirely (100%), green LED lights reducing bycatch by 94%, and ESD use reducing it by 96% compared to the control. CPUE analysis revealed no significant difference ($p > 0.05$) in the catch of target species among treatments, while the frequency of non-target species was 0% to 40% lower than in the control group. The carapace width (11.96 ± 1.67 cm) of the caught crabs confirmed their sexual maturity. The results suggest that LED lights, particularly blue and green, and ESD use can enhance the selectivity of the crab pot fishery while maintaining catch efficiency. These findings provide valuable insights for fishery managers in developing sustainable measures to mitigate bycatch. Further studies in various fishing areas and field trials in actual fishing operations are recommended for validation.

Keywords: bycatch, crab pot, selectivity, stimuli

Isolation and identification of glycosaminoglycans from milkfish *Chanos chanos* processing wastes

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The increasing demand for milkfish products from processing industries has led to the generation of wastes such as heads and tails. These wastes are now being targeted for innovative applications as a sustainable source of raw materials for highly valuable compounds like glycosaminoglycans (GAGs). This study aimed to optimize the isolation of GAGs from milkfish processing wastes using Response Surface Methodology (RSM). The isolated GAGs were analyzed for their composition (total sugar, soluble protein, uronic acid, and sulfate) and chemical characterization through FTIR and NMR. The optimized hydrolysis condition for the milkfish head revealed a 1:10 (w/v) sample-to-water ratio, 2% enzyme concentration, and a hydrolysis time of 2.51 hours. Similar conditions were observed for milkfish tail, except for a shorter hydrolysis period of 1.11 hours. The chemical composition of purified GAGs from deproteinized milkfish head revealed elevated levels of sulfated GAGs, uronic acid, and carbohydrates, with lower protein content, indicating that deproteinization is an essential step in GAGs isolation. FTIR-ATR analysis confirmed that deproteinized and non-deproteinized samples are closely related to chondroitin sulfate, with quality scores of 96.31% and 95.26%, respectively. Similarly, ^{1}H NMR analysis indicated match factors of 0.86 and 0.82 for deproteinized and non-deproteinized samples, respectively. These results correspond to the structure of chondroitin sulfate, consisting of a disaccharide unit of N-acetyl galactosamine and D-glucuronic acid. These findings highlight the potential for utilizing milkfish processing waste in the production of high-value biochemicals, promoting waste reduction and resource sustainability in the industry.

Keywords: glycosaminoglycans, milkfish wastes, response surface methodology

Ice-ice maybes: Microbiome collaborates with and listens to temperature in the development of a disease in the carrageenophyte *Kappaphycus alvarezii*

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Ice-ice disease persistently remains the biggest challenge in cultivating the carrageenophyte, *Kappaphycus alvarezii*. Its pathogenesis remains obscure, but previous studies have implicated environmental conditions, bacterial pathogens, or their combination. This study investigated the influence of temperature on the microbiome of *K. alvarezii*, in relation to the development of *ice-ice* disease. Healthy thalli were incubated at four temperatures (25, 28, 31, and 34°C) for 11 days. Then, the initial and final microbiomes were evaluated by analyzing the V4 sequences of the 16S rRNA. *Ice-ice* symptoms exhibited increasing severity and rapid progression with rising temperatures, accompanied by a significant decline in bacterial diversity and richness between the initial and final states. This suggests the occurrence of microbiome dysbiosis during the development of *ice-ice* disease, characterized by the loss of initial beneficial bacteria, the proliferation of new dominant taxa, and the succession of pathogenic genera. Among the bacteria present in the healthy state were *Muricauda*, *Blastopirellula*, and *Ruegeria*, while the putatively pathogenic *Teredinibacter* and *Tritonibacter*-like roseobacter were enriched in the final microbiomes. The microbiome collaborates in biofilm formation, as predicted by rich functional traits related to chemotaxis and carbohydrate metabolism for extracellular polysaccharide synthesis. Temperature and microbiome dysbiosis collaboratively induced *ice-ice* pathogenesis by accelerating its progression and proliferating pathogenic bacteria. Elucidating the processes regulating microbiome dynamics and their consortia with the host clarifies the maybes of *ice-ice* disease, providing insights into microbiome manipulation to mitigate bacterial dysbiosis corresponding to algal diseases.

Keywords: 16S rRNA, dysbiosis, pathogens

Preliminary evaluation of big-leaf mahogany (*Swietenia macrophylla*) leaf extract as a natural piscicide for controlling invasive blackchin tilapia (*Sarotherodon melanotheron*)

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The proliferation of the invasive blackchin tilapia (*Sarotherodon melanotheron*) in brackishwater ponds poses a significant challenge to aquaculture operations, necessitating the need for effective and sustainable population control strategies. This study investigates the potential of big-leaf mahogany (*Swietenia macrophylla*) leaf extract as a plant-based piscicide through a 24-hour range-finding test conducted in plastic tanks containing 3 L of brackishwater (20 ppt). Fingerlings of *S. melanotheron* (20–40 mm) were used in the experiment at a density of 10 individuals per liter. Air- dried (14 days) *S. macrophylla* leaves were processed into an aqueous crude extract and applied at varying concentrations (0, 50, 100, 500, 1000, 3000, 5000 ppm). Mortality rates, behavioral responses, and water quality were monitored over the 24- hour exposure period. Complete (100%) mortality was observed within 3 hours (5000 ppm) and 4 hours (3000 ppm) of exposure. The results demonstrate the potential of *S. macrophylla* leaf extract as an environmentally friendly alternative to conventional chemical piscicides for managing *S. melanotheron* populations in aquaculture systems.

Keywords: invasive species control, leaf extract, plant-based piscicide, *Sarotherodon melanotheron*, *Swietenia macrophylla*

Extraction of carrageenan from *Eucheuma perlexum* using response surface methodology and characterization of its physicochemical properties

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Seaweeds are vital sources of carrageenan with extensive applications in emulsification across various industries. This study explored the extraction of carrageenan from *Eucheuma perplexum*, a red seaweed, using Response Surface Methodology (RSM) to optimize extraction parameters (temperature, time, and KOH concentration). The optimum conditions identified through RSM (temperature: 85°C, time: 3 h, KOH concentration: 2.581 M) resulted in 80.63% carrageenan yield. The derived carrageenan exhibited favorable rheological properties, including higher emulsifying activity (71.53 ± 2.41%) compared to commercial carrageenan, while its color attributes remained comparable to commercial samples. However, chemical analysis revealed that crude carrageenan contained higher sulfate levels (8.45 ± 0.16
%) than commercial products (5.27 ± 0.16%), whereas its total carbohydrate content was significantly lower ($p>0.05$). Attenuated total reflectance-Fourier transform infrared spectroscopy (ATR-FTIR) analysis confirmed that its chemical structure remained stable, spectral similarity to commercial samples. This study highlights the efficacy of RSM in optimizing crude carrageenan extraction, emphasizing its industrial potential. Future research should explore purification methods, conduct thorough characterization, and examine additional functional properties and bioactivity of carrageenan from *E. perplexum*.

Keywords: Carrageenan, *Eucheuma perplexum*, optimization, physicochemical properties, response surface methodology

Cluster 1:
NATURAL SCIENCES & FISHERIES
Oral Presentations
Regular

Bacterial community structure, diversity, and fertility of soil with and without press mud as organic fertilizer in two sites in panay, hilippines

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Sugarcane farmers commonly use press mud as organic fertilizer to improve the properties of soil and crop production. This study compared the effects of press mud on bacterial community structure, bacterial diversity, and physicochemical parameters of sugar mill soil in two sites, the URC Passi Sugar Central and Passi Sugar Central, Inc. in Panay, Philippines. DNA and soil analyses were conducted to characterize the soil samples with and without press mud from both sites. The results showed that all nutrient contents increased in both areas after press mud application, except in URC Passi Sugar Central, where no increase in phosphorus and sulfur was observed. Bacterial diversity increased six months after press mud application but not statistically significant. Community pattern results showed that if soil samples within sites were compared, soil with press mud was significantly higher compared to the soil without press mud in terms of OUT richness (Capiz sugar central: 46.00±1.00, 40.00±1.50, respectively; URC Passi Sugar Central: 48.00±0.50, 45.00±0.00, respectively) and carrying capacity (Capiz sugar central: 169±7.36, 125±9.48, respectively; URC Passi Sugar Central: 181±3.80, 162±0.00, respectively) ($p<0.05$). However, no significant difference was observed in soil with press mud between the two sites in OUT richness, carrying capacity, Shannon, and Evenness analyses ($p>0.05$). The phylogenetic tree analysis showed that *Massilia* sp. Is closely related to *Burkholderia arboris*, and *Lysobacter* sp. Is related to both *Massilia* sp. And *B. arboris*. Generally, press mud applications help increase the available nutrients, diversity, and community patterns in soil, making it good organic fertilizer.

Keywords: Bacterial community, Bacterial diversity, Organic fertilizer, Press mud

A preliminary study on the laboratory and tank-based cultivation of *Ulva* (Chlorophyta) from the Philippines by germling cluster technique

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Ulva species are cosmopolitan, fast-growing green macroalgae that establish natural beds in shallow waters. Although they contribute to nuisance green tides, *Ulva* provides significant benefits as a resource for food, animal feed, fertilizer, and biofuel. Despite the successful cultivation of *Ulva* in pilot commercial systems across countries such as Japan, Israel, South Africa, Germany, and the USA, its aquaculture in the Philippines is still in its early stages. This is attributed to several challenges, including uncertainties related to the species' biology, control over their complex life cycle, and difficulties in identifying the most productive species or strains. This study aimed to establish and maintain 'germling cluster' stocks of *Ulva spp.* under controlled laboratory conditions. Adult specimens were collected from the intertidal zones of Bantayan Island, Cebu, and reproductive induction was facilitated by washing thalli with freshwater, followed by a 24-hour incubation under continuous light (100 µmol photons m^{-2} s^{-1}). After 20–25 days, germlings were transferred to 1-L bubbler flasks containing Conwy medium at 500 clusters L^{-1} density, and were cultured at 23±1°C, with moderate aeration and a 12:12-hour light-dark cycle. The culture medium was renewed weekly. Germling clusters exceeding 5 mm were then moved to 10-L carboys and subsequently to 50-L tanks. Notably, a rise in specific growth rates of the cultivated seaweed over time was observed until day 21 (0.93-3.49% day^{-1}); SGR at Day 28 was 2.31 ± 0.24% day^{-1} (mean ± SEM), demonstrating the potential for successful indoor *Ulva* cultivation in the region.

Keywords: aquaculture, germling cluster, seaweed, *Ulva*

Changes in physicochemical properties and antioxidant activities during reduced-salt fermentation of green mussel (*Perna viridis*, Linnaeus 1758)

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Green mussels were homogenized and fermented with a 1:6 salt to mussel ratio for 60 days at room temperature (28–32°C) and compared its physicochemical changes and antioxidant properties with the control (1:3 salt to mussel ratio). Salt content in control and reduced-salt fermentation conditions was 14.62±0.03 and 8.74±0.03 %, respectively. The results indicated that fermented mussels with reduced salt content exhibited a significant increase in pH, ammonia nitrogen, and formaldehyde nitrogen during fermentation, which suggests a faster rate of protein degradation in the mussel meat compared to the control. This, in turn, led to a marked increase in the production of total soluble protein and phenolic compounds. Likewise, browning was observed, which may suggest MRPs production. The reduced-salt fermented mussels also demonstrated higher phenolic content and greater radical scavenging activity than the control. The antioxidant activity of the 80% ethanol extract at a concentration of 5 $mg \cdot mL^{-1}$ was 28.02% in the DPPH (2,2-diphenyl-1-picrylhydrazyl) assay and 89.66% in the ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) assay. A strong correlation (r = 0.754) between the physicochemical properties and antioxidant activities was observed, which indicates that bioactive compounds may have been produced during fermentation. The results also suggest that reduced-salt fermented green mussels could serve as a potential source of antioxidants.

Keywords: antioxidant activity, Maillard reaction products, mussel sauce, reduced-salt fermentation, *Perna viridis*

Microplastics in seaweed farms of Sibutu, Tawi-Tawi, Philippines

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Marine plastics pollution has been a prevalent threat in the Philippines, and one of its major contributors is the fisheries industry. Among the fisheries sector, eucheumatoid seaweed farming has one of the largest scopes, since seaweed is the country's leading fishery export commodity. Moreover, due to the country's archipelagic nature, reports from specific regions, particularly in the Sulu Archipelago, are lacking. As such, this study presents the first report of microplastics' presence and abundance in eucheumatoid seaweed farms from Sibutu, Tawi-Tawi, from surficial (0-1 cm layer) sediment samples. One hundred sixty-two sediment core samples were investigated from six stations under two cultivation methods, namely fixed-off bottom and floating long-line. A total of 280 microplastics (1 < 1000 µm) fibers and fragments were noted from the core samples, ranging from 1-16 microplastics counts per 19.63 cm3. Microplastics extracted are dominated by blue polypropylene fibers, presumably from degraded tie-ties used from cultivation lines. Across all stations, the abundance of microplastics was higher in the floating long-line cultivation method (103±11 counts) than in the control counterpart (54±7 counts). The data revealed key insights that contribute to the establishment of baseline data on marine plastics pollution in the Philippines, reduce gaps in geographical coverage, and emphasize the need for alternative and sustainable solutions in the seaweed industry.

Keywords: microplastics, seaweed farms, Sulu Archipelago

Effect of pot designs on crab catchability and selectivity

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Comparative fishing trials were performed using five types of pot designs to examine crab catchability and selectivity. Pots were set diagonally at the bottom of the Lagatik River in New Washington, Aklan, Philippines. Fishing trials were carried out using 12 hours of soaking time and using goby as a bait. The rectangular-shaped pot had significantly higher catches of crabs and non-crab organisms compared to the four types of crab pots in terms of catch per unit effort (CPUE) number of all species (H (4) =55.76, P=0.000) and CPUE of all weight species (H (4) =36.60, P=0.000). The result also showed that the crab pots were highly selective and efficient in catching crab species, as there was a significant difference (p<0.001) in terms of the weight of crabs versus non-crab species. .Furthermore, a behavioral experiment using two pot types (i.e., the rectangular pot representing the pot design with highest CPUE and the frustum pot representing the pot design with the lowest CPUE) to examine behavior of the two most-caught (*Charybdis hellerii* and *Portunus pelagicus*) and two least-caught (*Thalamita crenata* and *Scylla serrata*crab species in an experimental tank. The behavioral approach of the different species of crabs did not differ on the types of pot, but the location of the pot entrance, pot shapes, and the number of entrances were the primary factors affecting the catchability and efficiency of the pot wherein the circular-shaped pot and side entrance were the most effective design parameters in catching crabs.

Keywords: behavioral approach, CPUE, crab pots

Enhancing growth and survival of African catfish (*Clarias gariepinus*, Burchell, 1822) fingerlings through salinity optimization in a mixotrophic culture system

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Aquaculture plays a crucial role in global food security, but its rapid expansion presents challenges such as water quality deterioration, eutrophication, and disease outbreaks. Innovative culture systems integrating biofloc technology and tilapia green water offer sustainable solutions to improve productivity and environmental management. This study evaluates the effects of different salinity levels (0, 3, 5, 8 ppt) on the growth and survival of African catfish (*Clarias gariepinus*) fingerlings in a mixotrophic culture system. The experiment was conducted over 30 days using 75- L polyethylene tanks, with three replicates per treatment. Water quality parameters were monitored and maintained within optimal ranges throughout the culture period. Results showed that the highest growth performance was attained at 5 ppt salinity with average final body weight and weight gain of 2.48±0.36 g (mean±SD) and 1.75±0.31 g, respectively. Moreover, the highest percent survival was observed at 3 ppt salinity (96.67±5.77%), although this was not significantly different ($p<0.05$) from 5 ppt salinity (95.83±1.44%). These findings suggest that low salinity levels (3-5 ppt) improved catfish production, likely due to microbial activity, stable water quality, and reduced pathogen susceptibility. This study highlights the potential of low brackish water conditions and mixotrophic systems as a sustainable alternative to traditional freshwater culture of *C. gariepinus*.

Keywords: *Clarias gariepinus*, biofloc technology, mixotrophic culture system, tilapia green wate

Picophytoplankton abundance and its relationship to environmental factors in the Batan Bay Estuary, Aklan, Philippines

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The Batan Bay Estuary (BBE), Aklan, Philippines, plays a vital role in fisheries and biodiversity but remains understudied, particularly in microbial ecology. This study examined picophytoplankton samples from the bay zone (BZ) in May and September. Samples were preserved with 25% glutaraldehyde (0.1% final conc.) and analyzed using flow cytometry. Picophytoplankton abundance was observed to be higher in September (3.54×10^5 cells mL^{-1}) than in May (3.01×10^5 cells mL^{-1}). *Synechococcus* ($\bar{x}= 9.23\times10^4$ cells mL^{-1}) dominated both periods, with a notable increase in September, while *Prochlorococcus* ($\bar{x} = 6.16\times10^4$ cells mL^{-1}) and picoeukaryotes (Peuk; $\bar{x} = 9.10\times10^3$ cells mL^{-1}) were less abundant, with Peuk favoring lower salinity environments. The highest abundance occurred in semi-isolated middle stations near Tabon Island, Batan. A seasonal temperature shift was observed: in May, the highest temperature was at Station 3 (31.70°C), whereas in September, it peaked at Station 2 (32.28°C). Salinity was higher in May ($\bar{x}$=29.35 ppt) than in September ($\bar{x}$=28.35 ppt) but remained more stable across stations. The General Additive Model (GAM) showed strong relationships between nitrate, chlorophyll-a, and picophytoplankton. *Synechococcus* was influenced by nitrate, while *Prochlorococcus* and Peuk exhibited more flexible dynamics. Seawater intrusion from the Sibuyan Sea, tidal interference, weak river input, and estuarine topography contributed to water retention and picophytoplankton distribution. These findings highlight the importance of environmental factors in shaping microbial ecology in BBE.

Keywords: microbial ecology, picophytoplankton, Batan Bay estuary, environmental factors

Women in the current: perception of women in fisheries on the solarization program in Brgy. Nayon, San Enrique, Negros Occidental

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This case study explores the intersection of gender equity, climate resilience, and energy poverty through Project REconnect, a solarization program implemented in Barangay Nayon, San Enrique, Negros Occidental. The project responds to the unique challenges faced by women in small-scale fisheries, arising from the compounded impacts of the climate crisis, energy poverty, and systemic gender inequities. Through participatory action research (PAR), the study evaluates the role of women in small- scale fisheries and the probable impacts of the project on their lived realities. This study utilized key informant interviews (KIIs), focused group discussions (FGDs), and secondary data gathering.These methods examined the women's initial perception of the solarization project, identified areas for improvement, and assessed its potential to advance gender equity and sustainable development. Findings highlight the transformative potential of renewable energy in reducing post-harvest losses, improving livelihoods, and fostering women-led community governance— underscoring the critical role of women in advancing community- and nature-based solutions. The study also identifies systemic barriers to participation and leadership, including persistent traditional gender stereotypes, misalignment between local energy initiatives and national policies, and the absence of gender-responsive governance frameworks. The study contributes to the growing discourse on the Just Energy Transition Initiative, offering actionable recommendations for integrating gender mainstreaming into renewable energy transition programs. It serves as a vital proof of concept for community-led, gender-equitable energy transitions, aligned to support the global movement to combat climate injustice and allow gender and climate liberation.

Keywords: women in fisheries, solarization program, gender equity, just energy transition

Coastal Challenges and Economic Losses: Realities of Selected Subsistence Fishers in Sto. Niño Sur, Iloilo City, Philippines

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Subsistence fishers in the Philippines rely on coastal ecosystems for their livelihoods, but increasing environmental and human-induced pressures threaten their sustainability. This study examines the economic losses experienced by subsistence fishers in Barangay Sto. Niño Sur, Iloilo City, over the past 20 years due to coastal pressures such as waste pollution, coastal surges, and the encroachment of informal settlers. Data were collected through a mixed-methods approach that utilized surveys, interviews, focus group discussions with 42 subsistence fishers, and insights from key informants.Financial losses resulting from declining fish stocks, increased operational costs, and damage to fishing equipment were estimated using the market price method. Findings reveal that subsistence fishers in the community have lost over Php 2,000,000 in potential income due to these coastal challenges. Many fishers expressed frustration over ineffective government interventions and weak coastal management policies. To address these issues, this study recommends stronger enforcement of environmental laws, improved waste management, and increased fisher participation in decision-making processes. Promoting alternative livelihood programs and sustainable fishing practices can also help reduce the vulnerability of subsistence fishers. The results emphasize a community-based approach to coastal management, ensuring policies are responsive to fishers' needs. Moreover, this study serves as baseline data for future research and policymaking, offering insights into the long- term impacts of coastal pressures on subsistence fishers. This research aligns with Sustainable Development Goals (SDGs) 1, 2, 13, and 14, advocating for sustainable fisheries, climate resilience, and improved economic conditions for coastal communities.

Keywords: subsistence fishers, coastal pressures, economic losses, sustainable fisheries, climate resilience

Ingestion of Microplastics by *Encrasicholina punctifer* (Fowler, 1938) (Engraulidae) during Northeast Monsoon in Tangalan, Aklan, Philippines

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Microplastics (MPs), plastic debris measuring less than 5 mm, are easily ingested by marine organisms, including the Buccaneer anchovies (*Encrasicholina punctifer*), which is a vital dietary and economic resource in the Philippines. The *E. punctifer* is small in size and is processed and consumed without removing the gut, thereby raising concerns about food safety and trophic transfer. This study investigated the abundance and characteristics of microplastics ingested by *E. punctifer* sourced from the coastal waters of Tangalan, Aklan. A total of 50 *E. punctifer* specimens were collected in December 2024 and March 2025 to determine the MP abundance. Microscopic detection enabled MP size, shape, and color characterization. Water samples were collected to determine MP concentration, while parameters such as temperature, salinity, pH, dissolved oxygen, and pressure were monitored. The effects of MP exposure on fish health and reproduction were based on size, Fulton's index, and gonadosomatic index. The findings of this study reveal possible MP contamination in *E. punctifer* and provide a critical baseline for developing monitoring strategies and informed policymaking.

Keywords: Microplastics, Anchovy, *Encrasicholina punctifer*

Cluster 2:
MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES
Oral Presentations
Competing

Factors influencing teachers' intention to use game-based learning in secondary mathematics

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Games have become a popular way to teach math and deliver quality education, with research suggesting they can motivate students and help them learn more effectively. However, successful integration requires teachers to have knowledge and pedagogical skills in this area. This survey research addressed this gap by investigating the factors influencing secondary mathematics teachers' intentions to adopt game-based learning. The study involved 47 secondary mathematics teachers from five public high schools in the District of Kalibo, Aklan, Philippines. The researcher examined teachers' intentions, motivations, deterrents, needs, and skills related to game-based learning. Teachers' intentions were measured using Likert scales assessing attitudes, subjective norms, and perceived behavioral control. Proficiency skills were also measured using a Likert scale, while motivations, deterrents, and needs were determined through open- ended questions. The findings revealed a high overall intention to use game-based learning among teachers. Their primary motivations included fun, active learning, resource suitability, and interactive technology. Deterrents included time constraints, lesson suitability issues, potential distractions, and participation challenges. The teachers demonstrated high proficiency in game-based learning but indicated a need for training in game design, professional development, and ICT. Key areas of support required included financial assistance, ICT resources, and gaming design training. The respondents generally had a positive attitude towards game-based learning, showing strong subjective norms and perceived behavioral control towards its use. A significant difference was found in attitudes towards game-based learning based on age and educational attainment. A predictive model for teachers' intentions to use game-based learning was identified, with attitude and perceived behavioral control as key factors influencing confidence in adopting game-based learning.

Keywords: attitude, game-based learning, quality education, teachers' intention

"Panguyang" and its Relevance to Cultural Identity, Indigenous Knowledge and Sustainable Development

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This paper delves into the traditional fishing ritual of "Panguyang" as practiced in Barangay Malabor, Antique, Philippines. It describes the ritual and explores its potential applications for contextualized education and sustainable development. Informed by the principles of symbolic interactionism and sustainable development, this study explores the ways in which local culture and procedures of a traditional ritual embody the community's shared ecological knowledge, social values, and cultural identity. The study employed qualitative methods to collect insights from 24 key respondents representing diverse local community perspectives in the period 2023–2024. The results of the study uncovered the ways in which Panguyang connects historical traditions with contemporary realities, emphasizing its role in promoting sustainable socio-economic practices and facilitating the transfer of local knowledge and identity across generations. The alignment of Panguyang's socio-cultural structure and processes with principles of contextualization underscores its significance as a basis for the creation of an educational module on "society and culture" that cultivates respect for local heritage and fosters cultural sensitivity. Ultimately, this study advocates for the integration of indigenous knowledge systems, such as "Panguyang", into formal education in the study site to empower communities, preserve cultural identity, and improve ecological stewardship. The paper addresses SDG 11.4, which calls for greater efforts to protect cultural and natural heritage under the 2030 SDGs. The paper is also relevant in meeting SDG 4.7, 8.3 and 8.9.

Keywords: indigenous knowledge, Panguyang, traditional fishing practices, sustainable development

Visual thinking routines (VTR) applied in a world literature module: developing a culture of thinking and literary appreciation

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Critical thinking and affective learning are two of the most crucial aspects of learning, yet they are often difficult to observe in learners. Hence, there is a need for teachers to provide avenues for learners to think critically and reflectively in a more visible manner. Visual Thinking Routines (VTRs) are sets of questions or structured sequences of steps used to scaffold and support student thinking and affective learning. This study investigated how learners' culture of thinking is raised and how their appreciation for literature improves through the use of VTRs as incorporated in their literature module. The study utilized twelve (12) second-year Bachelor of Secondary Education students enrolled for the Academic Year 2022–2023. A researcher-made module where VTRs were applied was used by the students. They also participated in a focus group discussion (FGD) before the semester ended. The questions and responses documented in the module were analyzed to check whether they could be identified in the critical thinking level of Bloom's taxonomy. The FGD transcript was coded and analyzed, generating four themes that showed the manner in which VTRs enhanced students' appreciation and engagement in learning literature. Results revealed that the use of VTRs in a literature course module was found to be effective in developing a culture of thinking and literary appreciation among students. Findings further indicate that VTRs provided more opportunities for learners to express, explain, extend, and challenge their ideas, while also providing a structured and clearer direction for the students to reflect on literary texts.

Keywords: culture of thinking, literary appreciation, literary engagement, module-based learning, visual thinking routines,

Second language (L2) production: A conceptual framework of metacognitive attributes in online speech and language performance

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Understanding the processing demands of speaking in a second language (L2) is of both theoretical and pedagogical interest. Unfortunately, information on the nature of the thinking processes during online L2 performance remains scarce in psycholinguistics and cognitive linguistics literature. However, what is understood is that speaking is fundamentally a complex mental phenomenon, often constrained by working memory capacity. Current literature presents that this limitation is task-specific, inhibits simultaneous attention allocation, and demands self-regulatory controlled processing. Thus, speaking quality varies by task due to different cognitive demands. In response, this descriptive qualitative research explored the metacognitive attributes present during online speech and language performance. Ten AB-English students participated in an impromptu speaking task, and their performances were evaluated based on the general indices of complexity, accuracy, and fluency. Additionally, participants provided reflections on their performances through guided interviews, which were then analyzed through deductive and template thematic analysis. Findings revealed variations in speaking proficiency and speech characteristics across different proficiency levels. Moreover, regardless of proficiency, participants demonstrated the use of metacognitive attributes such as understanding, interaction, and control to facilitate their impromptu speaking performance. Out of these attributes, frameworks were generated to illustrate the metacognitive processes that have emerged at each proficiency level. Based on these frameworks, a conceptual model for the metacognitive attributes present during L2 speech and language production was generated. These findings present theoretical, practical, and pedagogical implications for optimizing the pedagogy of speaking in L2 classrooms where English serves as a second language.

Keywords: L2 (second language), language production, metacognitive attributes, speech production, proficiency dimensions

Documenting the local legends and using them as content of a lesson exemplar for developing a sense of identity among grade two social studies pupils

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Studies on the effectiveness of using culturally familiar instructional materials in enhancing students' learning are substantial. Nevertheless, the extent to which these learning materials contribute to developing a sense of identity remains unexplored. Hence, this study examined the implications of local legends, as determinants of cultural identity through place names, as content of contextualized instructional material for Grade II Social Studies pupils. The study employed a qualitative approach using constructionism and learning circle framework as epistemological and theoretical foundation. Constructionism was used in documenting the local legends and in the making of instructional material, while learning circle framework directed its processes. Moreover, narrative inquiry was utilized, with three purposefully selected informants participating in semi-structured interviews. The collected data were transcribed, translated, and coded into themes to construct the listening stories – local legends of *Alagingay* and *Pundokan*. The three-generation test of depth and member checking were used to validate the stories. Subsequently, these toponymic legends were utilized as content of a learning exemplar. The findings revealed two themes in the learning material: "Human and His Resources," which encompassed community activities like farming, fishing, alongside local resources such as plants, and animals; "A Place's Name as Identification of Cultural Identity," which highlighted local terminologies and values such as *mapisan* (industrious) and *madiskarte* (resourceful). These themes helped learners develop a stronger sense of place and belongingness, empowering them to embrace their heritage through indigenous knowledge acquisition, a significant contribution in the production of knowledge in education and humanities.

Keywords: *Alagingay,* learning exemplar*, Pundokan,* sense of identity, social studies

Factors influencing consumer demand for coworking spaces in Iloilo city

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As coworking spaces emerge and gain traction in growing urban areas outside the capital, understanding the local dynamics that drive its adoption is increasingly essential. The primary objective of this research was to determine the key factors affecting consumer demand for coworking spaces in Iloilo City and examine usage habits among identified user groups. A descriptive research design was employed, and a structured questionnaire was distributed to 96 respondents selected through quota sampling. Quantitative analyses were performed using the Statistical Package for Social Sciences (SPSS). Findings revealed that affordability, amenities and design, hybrid work arrangements, and location and accessibility are the top factors influencing user decision-making. Respondents also valued work productivity but placed lower importance on social networking opportunities. There was a significant difference in the influence of location and accessibility based on the respondents' educational attainment, indicating a strong preference for convenience. This paper offers actionable insights into designing coworking environments that meet the shifting consumer demand of younger, flexible, and budget-sensitive users while remaining cost-efficient and adaptable. In addition, the findings contribute to the expanding Southeast Asian literature on shared work environments, particularly in urban areas and beyond national capital regions. While the study is limited in terms of sample size and geographical scope, future investigation could benefit from comparative studies across provincial cities and more in-depth qualitative inquiry.

Keywords: affordability, consumer behavior, coworking spaces, flexible work arrangements, shared work environments

Cluster 2:
MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES
Oral Presentations
Regular

A cultural reading of the short film *Tiempo Suerte* for a development of a module for the *Sinesosyedad* course

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Filipino films serve as powerful storytellers, unraveling deep-seated social issues that shape the nation while uniting people and sparking awareness of real-world struggles. This study analyzed the short film *Tiempo Suerte* from Negros Occidental through a cultural reading based on the discourse of race, class, and gender discourse. Short films are valuable tools in education, facilitating teaching and learning processes. The analysis results were used to develop a module for teaching Social Film or *Sinesosyedad* course at the tertiary level. The study revealed several gaps in social discourse. These include the Filipino identity as Ati-Negritos and the fair skin as the color of the new race. The portrayal of landowners as idle, luxury and education as barriers to progress, the society's low regard for *sakadas* (migrant sugarcane workers), the assertion of female power, the historical depiction of female *sakadas*, and the dismantling of the notion that young women lack judgment. Through this analysis, the research emphasized the significance of short films in exposing and addressing societal issues.

Keywords: feminism, instructional material, Marxism, short film analysis, social discourse

Beyond the stage: Exploring the lived experiences of drag artists

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The Philippines has its own unique history and culture that differ from Western culture; therefore, assumptions, generalizations, and understandings of complex issues and phenomena that are specific to the West may not be applicable to the local context. Hence, understanding of phenomena such as 'drag' must be explored from the point of view and experiences of Filipino drag artists. This study utilized a qualitative phenomenological inquiry to explore the lived experiences of drag artists in the Philippine context. Through Collaizi's phenomenological analysis procedure, the researcher identified three major themes: lived experiences, perceived elements of drag, and conceptualizations of drag. The participants' lived experiences detail the various influences that prompted their eventual drag involvement, drag activities, challenges encountered, and opportunities. Among the notable responses was how the participants' motivation for drag involvement was primarily influenced by their exposure to RuPaul's Drag Race. Additionally, the elements of drag emerged as another fundamental factor. Shared themes show how drag is developed out of transformation and transgression, branding and aesthetics, costumes and dressings, talent, among others. Ultimately, the findings revealed that the participants regard drag as a form of self-expression, political expression, gender transgression, and a celebration of one's individuality. The researcher concluded that the understanding of drag in the Philippine context is not significantly different from the global understanding of the said phenomenon.

Keywords: drag, drag artists, lived experience

A teaching experience in problem-solving: Maritime school mathematics teachers' account

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This study investigated the lived experiences of mathematics teachers in a maritime school, focusing on their roles in teaching problem-solving and how the maritime educational context influenced their strategies and professional growth. Guided by Situated Learning Theory, the research explored the contributions of communities of practice in enhancing problem-solving skills among students and fostering collaborative professional development. Employing a qualitative phenomenological design, the study was conducted at John B. Lacson Foundation Maritime University (Molo), Inc. Three mathematics teachers were purposively selected for in-depth interviews, which were transcribed, validated, and analyzed thematically. The analysis revealed four key themes: Teaching in Context, Fostering Collaboration, Using Appropriate Scaffolding, and Growing Professionally. The findings underscored the significance of integrating maritime-specific examples and practical applications into problem-solving instruction. Teachers leveraged scaffolding, technology, and collaborative learning to enhance engagement and effectiveness. Communities of practice played a pivotal role in addressing challenges, sharing resources, and promoting continuous improvement through workshops and peer mentoring. The study concluded that adapting teaching practices to the maritime context enriches problem-solving instruction and prepares students for industry demands. It highlighted the importance of professional collaboration in overcoming challenges and advancing instructional practices. These insights contribute to refining mathematics education in maritime schools and encourage future research to expand on student perspectives and other maritime institutions.

Keywords: communities of practice, lived experience, mathematics education, maritime school, problem-solving

An exploration of the Tangyan River's *pamanlò* for the production of a contextualized educational module

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This participatory action research documented the Tangyan River's *pamanlò* fishing culture in riverine communities of Igbaras, Iloilo, Philippines. The study explored the tangible and intangible aspects of *pamanlò* fishing, the adaptation strategies in response to ecological changes in the Tangyan River, and the division of labor based on gender roles. To bridge the gap in contextualized learning within the K-12 Social Studies curriculum, the research integrated local fishers' knowledge into a contextualized educational module. We conducted the study in barangays Passi, Bagacay, and Pinaopawan, and collaborated with six local fishers with more than 15 years of expertise in *pamanlò*. Data were gathered through participant observation during fishing trips, ethnographic interviews, and detailed documentation. Thematic analysis was used to code, analyze, and interpret the findings. The results revealed that fishing gears and tools defined the *pamanlò* fishing methods. Despite the observable ecological changes in the Tangyan River, local fishers have employed adaptation strategies to sustain *pamanlò*. Men and women have specific tasks and roles before, during, and after fishing activities. Insights driven from the exploration of the *pamanlò* were utilized to develop a contextualized educational module as an instructional material in teaching specific topics in Grade 11- Understanding Society, Culture, and Politics. The process of module making was informed by theories of pedagogy. It adhered to a participatory and collaborative process involving the culture bearers of the community—*tumandok* and *pangayaw*aw, as well as local educators as research partners.

Keywords: contextualized module, local knowledge, *pamanlò*

Extent of the use of metacognitive problem-solving strategies in mathematics: Its relationship to the problem-solving performance of college freshmen students

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Learning requires using such processes as planning, application, regulation, and reflection, which are considered metacognition. Studies have shown that metacognition is associated with problem-solving skills. Studying metacognition opens the emergence of possible problem-solving strategies in mathematics instruction. This descriptive-correlational research primarily verified whether students use theory-based metacognitive problem-solving strategies when they solve problems in mathematics. It examined the relationship between metacognitive problem-solving strategies (MPSS) and the mathematics performance of freshmen college students. The research aimed to assess the extent of MPSS utilization and its impact on students' problem-solving performance. A descriptive-correlation method was employed, utilizing a 30-item multiple-choice problem-solving test and the Divinagracia-Villanueva Metacognitive Problem-Solving Strategies Questionnaire (DVMPSS) with 78 items across seven domains. The findings showed that while all seven MPSS domains were employed to a high extent, there was no significant correlation at $p<0.05$ between the use of these strategies and students' problem- solving performance. This lack of correlation suggests that the mere application of MPSS does not guarantee improved outcomes, aligning with the systematic grounded theory on how metacognition facilitates mathematical problem-solving, which posits that effective problem-solving requires not only the use of strategies but also a deep understanding of their contextual application. The result of this study highlighted the importance of integrating explicit instruction on MPSS within mathematics curricula, emphasizing the need for teachers to foster metacognitive awareness and adaptability among students, which will contribute to the enhancement of pedagogical practices in mathematics education.

Keywords: Mathematics instruction, metacognition, metacognitive problem-solving strategies, problem-solving performance,

Variation of pronominal and demonstrative pronouns in two towns of Aklan: Implications on teaching Mother tongue in Grades 1 to 3

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This study explores the variety of pronominal and demonstrative pronouns used in two towns of Aklan and its effect on the teaching of the mother tongue in Grades 1 to 3. The study aims to identify pronominal and demonstrative pronouns in two towns of Aklan, and compare the pronouns to those in Kalibonhon and Akeanon. The study analyzed the possible implications of the variations in pronouns used for teaching the Akeanon language in Grades 1 to 3. Data was collected from teachers of Grades 1 to 3 from selected public schools in two towns of Aklan. The results of the study showed that there is variation in the pronominal and demonstrative pronouns in the municipalities of Buruanga and Malay. These pronouns vary when compared to the pronouns of Kalibonhon-Akeanon, wherein Kalibonhon-Akeanon is the dominant language used in the province. The results of the study also revealed the difference between the language used in reference materials and the language used in the teaching process, which opened up the analysis of the problems and how teachers delve into teaching the mother tongue languages to students in the two municipalities.

Keywords: variations of language, language use, pronomial and demonstrative pronouns

Who's a good boy: Market segmentation of Ilonggo dog owners' spending and preferences

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The Philippine pet industry is rapidly expanding and reflects broader economic growth trends (SDG 8). A significant proportion of the Filipino household budget is now allocated for pet-related expenses, which highlights the evolving role of pet ownership in consumer behavior. However, despite this reality, sparse research has explored how socio-psychological dimensions of ownership influence purchasing decisions and market segmentation of pet owners. Understanding these patterns and segments are crucial not only for economic development promotion but also for fostering change to responsible consumption and production (SDG 12). Existing studies on pet markets limitedly focus on expenditure trends without recognizing the depth of human-animal relations, which is an essential consideration in shaping sustainable choices and pet welfare policies. Recognizing this gap, the study investigates how dog-human relationship dimensions (anthropomorphism, dog-oriented self-concept, and shopping-related behavior) shape consumer spending patterns and their preferred shopping channels. Using data from 184 Ilonggo dog owners, a data-driven clustering approach using principal component analysis and k- means clustering revealed four distinct dog owner profiles: (1) *Doggy Guardians*, the smallest group, with moderate engagement in pet ownership; (2) *Doggy Companions,* who show a stronger emotional bond with dogs; (3) *Doggy Friends*, who display high commitment to dogs and purchasing involvement; and (4) *Doggy Parents*, the largest group, who treat their dogs as integral members of their families. These segments provide understanding to businesses in developing targeted marketing strategies as well as to local and regional policymakers in addressing critical issues related to responsible pet ownership and industry regulations.

Keywords: pet-consumer segmentation, dog-human relationship, sustainable consumption, consumer behavior

Effects of Ecstatistakes on Students' Academic Performance and Intention to Play Educational Board Games

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The study explored how Ecstatistakes, an educational board game, affects the students' academic performance in trigonometry and their level of intention to play educational board games. Moreover, the study determined the different factors that affect students' engagement in playing educational board games. A quasi-experimental design was implemented in the study. The data needed in the study were gathered using the researcher-made assessment tool, the Educational Board Playing Intention Scale questionnaire, students' written feedback, and focus group discussions. To determine the effect of Ecstatistakes on the students' academic performance in trigonometry and their level of intention to play educational board games, the data gathered were analyzed through mean, standard deviation, Kruskal-Wallis's test, and Mann-Whitney test. In addition, to determine the factors that affect students' engagement in playing educational board games, the data obtained from the students' written feedback and focus group discussions were analyzed using thematic analysis. The result of the study revealed that educational board games significantly increased the students' academic performance. However, there was no significant increase in the students' level of intention in playing educational board games. Furthermore, it was also found that the following factors affect students' engagement in educational board games: game mechanics, questions and answer keys provided, association with others, and benefits of the game.

Keywords: Ecstatistakes, educational board games, academic performance

Short story writing experience through the experiential learning method among senior high school students

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This research focused on senior high school learners' short story writing experience through the experiential learning method. This study employed a qualitative design and integrated a thematic analysis of the short story writing experiences of the learners. Learners were instructed to come up with their short stories by utilizing a Short Story Writing Activity Guide based on the experiential learning cycle by David Kolb. We asked the learners to describe their short story writing experience and discuss it through experiential learning. Scaffolding was an effective technique applied by the learners in creating the short stories. The participants started with the planning, drafting, editing, and final version of their short stories, followed by the sharing of short story writing experiences. Learners derived their motivations from what they had read, watched, and heard-listened to, and popular personalities when planning for the topic of the short story. Learners had the flexibility to strategize in the drafting stage with the use of scaffolding. The editing process allowed the identification of errors in the learners' short stories. Through reflection and revision, they edited grammar, word choice, redundancy, mechanics of style, and cohesion through paraphrasing. The learners' experiences were used as the basis for assessing the usefulness of the Short Story Writing Activity Guide.

Keywords: experiential learning method, short story writing, scaffolding

Language anxiety among selected Filipino high school learners: A sequential explanatory analysis

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Understanding learners' levels of language anxiety and the factors that affect it is essential in helping them learn English more effectively. In the Philippines, despite the status and widespread use of English as one of the official languages of the country, Filipino high school learners still find language learning challenging. This mixed-methods study explored the nature of their language anxiety using the sequential explanatory design. The respondents were 59 learners, aged 14 to 16, enrolled in the blended distance learning modality of a public high school in Iloilo. Since the Foreign Language Classroom Anxiety Scale developed by Horwitz, Horwitz, and Cope (1986) is one of the most widely used instruments in studying language anxiety across different contexts, the same instrument, paired with individual interviews, was utilized to gather data. Mean and standard deviation were used to analyze learners' anxiety scores. Based on the quantitative data, 12 learners with moderate to high levels of anxiety participated in individual interviews, providing more insights into their responses in the survey and their anxiety levels. Participants also kept a journal as a supplementary source of data, and both interview responses and journal entries were analyzed thematically. Results show that the selected learners experienced language anxiety that negatively affected their learning. Aside from communication apprehension, fear of negative evaluation, and test anxiety, learners were also affected by other factors not covered by the FLCAS by Horwitz et al. (1986), especially that they were in a distance learning setup.

Keywords: language anxiety, language learning, ESL, distance learning

Cluster 1:
NATURAL SCIENCES & FISHERIES
Poster Presentations
Competing

Examining the perceptions of the community on the sustainability of ecotourism in Malalison island

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Small islands with rich marine ecosystems are popular ecotourism destinations, yet, they are also home to vulnerable communities that may experience both benefits and challenges from tourism. This study examines the sustainability of ecotourism in Malalison Island, Culasi, Antique, through the perceptions of the local community. A mixed-method approach was employed, which included a survey using a semi- structured questionnaire, key informant interviews (KII), and focus group discussion (FGD). Qualitative data from KII and FGD were analyzed using NVivo 12 to generate word cloud, highlighting the emerging themes categorized into the environmental, social and economic pillars of sustainable ecotourism. Findings reveal a general perception that ecotourism drives economic development (100%), provides supplemental livelihood (100%), helped increase awareness on the environment (91.67%), led to participation (100%) in conservation efforts, and has improved communication skills (86.11%) of community members involved in ecotourism activity. Increased waste generation and inadequate management (83.33%), as well as intensified water shortages (58.33%) are among the environmental issues identified by the respondents, critical for Malalison as an island community. Tourism managers and community leaders prioritized the economic potential of ecotourism while overlooking vital aspects of environmental protection, similar to observations in other studies. The decline in tourist arrivals raises additional concerns about ecotourism's long-term viability. Nonetheless, majority of the respondents (88.9%) believe that ecotourism in Malalison Island will thrive through stronger collaboration among stakeholders. Recommendations to promote sustainable ecotourism management on the island include the reorganization of the ecotourism community organization and the formulation of the ecotourism development plan.

Keywords: ecotourism, community perceptions, impacts, sustainable ecotourism, Malalison Island

Characterization of dominant bacterial pathogens in a river contaminated by swine wastewater

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The Philippine livestock sector is largely driven by swine production, accounting for 60% of the nation's meat supply, with the majority originating from backyard farms. In 2021, the Western Visayas region exhibited the highest hog production inventory at 12.1%. However, inadequate waste management practices within this industry contribute to environmental concerns, including air and water pollution, pathogen dissemination, and eutrophication, thereby negatively impacting aquatic ecosystems. This study investigated the presence of dominant bacterial pathogens in swine waste effluent collected from a municipality in southern Iloilo, Philippines. Water samples from a riverine environment affected by swine farm discharge were collected, and bacterial isolation was performed using culture-dependent methods. Isolates were identified based on morphological characteristics, molecular techniques targeting the 16S rRNA gene, and phylogenetic analysis to assess the extent of microbial contamination. Molecular characterization revealed the presence of *Enterobacter cloacae* and *Klebsiella pneumoniae*, both Gram-negative bacteria belonging to the Enterobacteriaceae family. The presence of antimicrobial resistance genes in these isolates poses significant public health and environmental risks. Detection of *E. cloacae* and *K. pneumoniae* in this environmental setting is crucial for understanding their ecological roles, environmental impacts, and potential effects on human health. This study underscores the environmental and public health hazards associated with these bacterial species, highlighting the urgent need for improved waste management strategies and robust infection control protocols. Addressing these issues is essential to mitigate the risks associated with swine production and protect both environmental and public health.

Keywords: *Klebsiella pneumoniae*, *Enterobacter cloacae*, Swine farm effluent, effluent-associated pathogens, polymerase chain reaction

Characterization and potential applications of cooking juice, a liquid by-product from skipjack tuna (*Katsuwonus pelamis*) processing

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Tuna processing is a major industry in General Santos City, Philippines, with skipjack tuna (*Katsuwonus pelamis*) landing in large volumes and primarily used for canning. However, large-scale production creates significant amounts of waste including the nutrient-rich cooking juice, which remains largely discarded, leading to a waste management challenge. This study characterized tuna cooking juice with (TCJE) and without entrails (TCJO) collected during the boiling stage of canned tuna production to evaluate their potential applications. Proximate analysis revealed that TCJE contains 95.27±0.03% moisture, 3.27±0.1% protein, 2.25±0.11% carbohydrate, 0.84±0.01% ash, 0.25±0.01% lipid, while TCJO has 93.66±0.45% moisture, 5.18±0.2% protein, 0.85±0.01% carbohydrate ,0.57±0.82% ash, and 0.26±0.01% lipid. Total soluble proteins were highest in TCJO at 57.82±5.56% as compared to TCJE at 39.42±4.29%. Histamine content is significantly lower than the allowed limit (200mg/kg) at 0.84±0.50mg/kg in TCJE and ≤0.2126mg/kg in TCJO. Low molecular weight proteins were found in TCJO samples with bands below 14 kDA as revealed by SDS-PAGE analysis. Moreover, the solvent fractions obtained from TCJE and TCJO contained various chemical constituents, namely alkaloids, linear and cyclic peptides, and sulfated steroids based on liquid chromatography-mass spectrometry (LC-MS) analysis. This study highlights the potential of tuna cooking juice as a useful resource for developing pharmaceutical and nutraceutical applications.

Keywords: tuna cooking juice, by-product, characterization, skipjack tuna, bioactive compounds

Antibiotic resistance patterns in bacterial isolates from loose shell syndrome-affected Mangrove crabs, *Scylla* spp.

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A decline in mangrove crab (*Scylla* spp.) production in the Philippines has been correlated with disease outbreaks, including Loose Shell Syndrome or LSS. The etiology of LSS remains unclear, but the potential involvement of multi-drug resistant bacteria necessitates interventions to protect aquaculture and public health. This study investigated the bacterial load and antibiotic susceptibility in the gills and gut of healthy mangrove crabs and those affected by LSS. Thirty mangrove crabs (15 apparently healthy and 15 with LSS) were collected from a mangrove crab farm in Pontevedra, Capiz, Philippines. Gill and gut samples were aseptically excised, homogenized, serially diluted, and plated on nutrient agar with 1% NaCl for bacterial enumeration. Representative colonies were subcultured, and antibiotic resistance was determined using nutrient agar supplemented with 0.3% chloramphenicol. Crabs with LSS exhibited a significantly lower body mass index compared to healthy crabs. The gut bacterial load in LSS-affected crabs was markedly higher than that observed in the gills. Furthermore, LSS-affected crabs harbored a greater abundance of antibiotic-resistant bacteria, predominated by presumptive *Vibrio* species, in their gut. These results indicate that LSS-affected mangrove crabs exhibit increased gut bacterial loads, decreased BMI, and a higher prevalence of antibiotic-resistant bacteria compared to healthy individuals. These findings provide baseline data for the development of targeted treatment strategies to mitigate the impact of LSS on mangrove crab aquaculture.

Keywords: aquaculture, mangrove crabs, antibiotic resistance, *Vibrio* spp.

Panikáb: A policy analysis of Local Scallop Fishery Laws in the Philippines

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Laws and policies on natural resources facilitate their access and extraction at present without compromising the quality of the resource habitat and the sufficient provision of the same resources to the future generation. When laws and policies are crafted in this way, they are not only consistent with the 17 SDGs of the UNDP but also promote sustainable economic and social development. However, when there are gaps within the laws and policies themselves, these may raise questions on how the laws and policies are to be implemented or if they should be enforced at all until the gaps are addressed and resolved. This paper examines the existing local laws and policies affecting the scallop fishery in the municipality of Carles, Iloilo, Philippines vis-à-vis its compliance to the provisions of the national fishery laws. Aside from having determined various conflicting provisions within the ordinances themselves and against the national laws, the study also revealed several implementation and enforcement issues – conflict in the use of marine and coastal resources, the presence of IUU fishing, the ban on compressor diving, the inadequacy of IEC campaigns, and the inadequacy of the capacity and resources of the local government – that emanated from the gaps identified relevant to the scallop fishery specifically in Gigante Norte island of Carles. The results of the study provide additional information which may serve as a guide to the local government and the coastal communities concerned in formulating future policies and laws for the sustainable management of the local scallop fishery.

Keywords: scallops, compressor diving, Philippines

Physicochemical and microbial changes in skipjack tuna (*Katsuwonus pelamis*) viscera during salt fermentation

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Tuna viscera is often regarded as waste by many canning industries around the globe. However, it also represents a potential source of various proteinases that can enhance fish fermentation. Salt-fermented fish viscera locally known as *dayok*, is a traditional fermented food popular in Mindanao, Philippines. This study aimed to investigate the changes in physicochemical properties and microbial populations of salt-fermented skipjack tuna (*Katsuwonus pelamis*) viscera over a 150-day fermentation period. The skipjack tuna viscera primarily consisted of 76.42% moisture, 17.27% protein, 3.64% lipid, and 1.37% ash. Results showed that during the salt fermentation of tuna viscera, pH decreased to 5.71, titratable acidity (TA) and degree of hydrolysis (DH) increased to 1.64% and 69.60%, respectively, while salt concentration remained stable in the range of 28.10% - 30.28%. Microbial population changes revealed a decline in the total viable count to 1.36 log CFU/g at the later stages of fermentation, and an increase in lactic acid bacteria (LAB) to 2.32 log CFU/g during the early stages of fermentation. The dominant LAB identified belonged to the genera *Bacillus*, *Staphylococcus*, and *Enterococcus*, potentially affecting the physicochemical and microbial properties of the salt-fermented tuna viscera. The most abundant genera of LAB may have contributed to the enhancement of flavor and aroma of the final product. This study will lay a foundation for standard tuna viscera production systems and quality improvement of fish paste and fish sauce made from tuna viscera.

Keywords: lactic acid bacteria, *Katsuwonus pelamis*, fish viscera, *dayok*, salt fermentation

Evaluating the effects of stocking density on growth, survival, and deformities of milkfish (*Chanos chanos*) fry in high density tank nursery rearing system

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This study evaluated the effects of different stocking densities on growth, survival, condition factor, feed efficiency, deformities, and length distribution of milkfish (*Chanos chanos*) fry reared in 200- liter concrete circular tanks over a 28-day nursery period. Five densities were tested: 2,000 (V2), 4,000 (V4), 6,000 (V6), 8,000 (V8), and 10,000 (V10) fry/m³. Growth performance peaked at V6 (0.198 ± 0.05 g), while the highest specific growth rate (SGR) of 9.61 ± 0.62%/day occurred at the lowest density (V2). Condition factor declined from 1.417 (V2) to 1.059 (V10), indicating stress at higher densities. Survival rates dropped sharply from 87.9% (V2) to 30.6% (V10), and deformities nearly doubled, with branchiostegal malformations increasing from 15.6% (V2) to 32.3% (V10). Economic feed conversion ratio worsened with density, rising from 0.86 (V2) to 3.53 (V10). Length distribution skewed increasingly shorter and less uniform with density; modal length decreased from 19.2–23.0 mm (V2) to 19.3–22.1 mm (V10), with variance shrinking by 25%, indicating intensified size disparity at higher densities. ANOVA and Tukey's HSD test revealed significant differences in survival and deformities ($p < 0.05$), with V2 showing significantly better survival and V10 significantly more deformities. Regression analyses confirmed strong trends: deformity rates rose linearly with density ($R^2 = 0.96$), and survival declined logarithmically ($R^2 = 0.94$), with optimal survival (~88%) at ~1,749 fry/m³. Findings suggest that moderate densities (2,000–6,000 fry/m³) offer a balanced approach for maximizing growth, minimizing deformities, and improving uniformity, providing a climate-resilient alternative to traditional pond-based milkfish nurseries.

Keywords: milkfish aquaculture, climate-resilient aquaculture, high density culture system

Biodiversity and community structure of chaetognaths (*Eumetazoa: Chaetognatha*) around Nogas Island, Philippines

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Chaetognaths (arrow worms) are an understudied yet major component of the mesozooplankton and are used as bioindicators due to their species-specific associations with different water masses and hydrographic changes. In this study, diversity, and community characterization of chaetognaths were conducted around Nogas Island, Philippines. Daytime horizontal tows were carried out during April and August to gather zooplankton community samples from 16 stations in 3 zones. Initial findings suggest significant differences in the physicochemical characteristics around the study area. However, very low chlorophyll (chl-*a*) values (<0.05 mg/L) were observed across all stations during April while in August, chl-*a* averaged at 0.40 mg/L. Chaetognaths were most abundant in the north to northwestern side of Nogas during April (0.3-134.9 ind./m^3). While larger abundance was also observed in the northern side during August (0.2-201.2 ind./m^3), a shift was observed to the northeastern side. Community structure revealed differences in species composition despite the microscale differences observed in the physicochemical parameters of Nogas Island waters across two sampling periods. In April, *Flaccisagitta hexaptera*, *Flaccisagitta enflata*, and *Mesosagitta decipiens* were dominant while *Sagitta tenuis*, *Flaccisagitta enflata*, and *Pterosagitta draco* were most abundant in August. More than 70% of the population for both months were composed of immature individuals dominated by *Flaccisagitta enflata* while less than 5% is at Stage 4 maturity and is consistently dominated by *Krohnitta subtilis*. As an exploratory study, the community composition shift in chaetognaths sampled around Nogas Island, describes the sensitivity of this zooplankton group in fine-scale hydrographic changes.

Keywords: planktology, bioindicators, hydrography, morphology

Proximate composition of smoked deboned milkfish (*Chanos chanos*) treated with brine solution

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Milkfish (*Chanos chanos)* is one of the top fishery commodities in the Philippines that has contributed significantly to the country's economy and food security. In response to increased milkfish production, the Institute of Fish Processing Technology at the University of the Philippines Visayas explored its potential as a raw material for smoked products that serve as nutritious and staple fishery food items. Here, we analyzed the proximate composition of smoked deboned milkfish treated with a 60% brine solution for 15–20 minutes to ensure low salinity in the final product. Moisture and total ash contents were determined using gravimetric analysis. Protein content was measured by the Kjeldahl method, lipids were extracted using the Bligh and Dyer technique, and carbohydrate content was calculated by difference. Results showed that the product was predominantly composed of moisture (54.22 ± 0.38%), followed by a high amount of protein (24.94 ± 0.26%), and considerable levels of carbohydrates (10.02 ± 1.34%), lipid (6.70 ± 1.73%) and ash (3.84 ± 0.29%). These findings align with published research works, which highlighted that smoked deboned milkfish is a good source of protein and lipids. Thus, making it a healthier dietary option for health-conscious consumers.

Keywords: brine solution, smoked milkfish, proximate analysis

Picophytoplankton community structure and responses to physicochemical variations in the Back- Barrier Zone of Batan Bay Estuary, Philippines

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Understanding picophytoplankton distribution as influenced by environmental attributes is crucial for managing estuarine ecosystems effectively. This study aims to investigate the impact of physicochemical variation on picophytoplankton community structure and abundance in the Back-barrier Zone (BBZ) of Batan Bay Estuary (BBE), Philippines. Fine-scale environmental parameters were measured and mapped at eight sampling stations in the river tributaries and Tinagong Dagat. Additionally, picophytoplankton abundance was assessed using flow cytometry. The results provided insights into their relationship with varying environmental parameters. Fluctuating temperatures (31.05 – 32.25 °C), salinity (20.34-29.64 ppt), and dissolved oxygen (0.54 – 2.80 mg L^{-1}) may be influenced by tidal movements and freshwater inputs. Nitrate levels (8.76 – 26.41 µM) and total suspended solids (8.80 – 18.90 mg L^{-1}) showed high variability further influencing picophytoplankton dynamics within the BBZ. Picophytoplankton abundance varied, with *Synechococcus* (SYN), *Prochlorococcus* (PRO), and Picoeukaryotes (PEUK) concentrations ranging from $2.93x10^4$ – $2.21x10^5$, $3.57x10^4$ – $2.32x10^5$, and $1.10x10^4$ – $9.08x10^4$ cells mL^{-1}, respectively. SYN, PRO, and PEUK exhibited distinct distribution patterns and responses to environmental factors, highlighting their niche preferences within the estuarine gradient. By elucidating these relationships, this study contributes to the understanding of estuarine ecosystem dynamics that is essential for the conservation and sustainable management of the Batan Bay Estuary as an important coastal area and aquaculture site in the Philippines. Moreover, this research will be valuable for future studies on resource management and contribute to scientific knowledge on picophytoplankton dynamics in diverse environmental settings.

Keywords: picophytoplankton, physicochemical, nutrients, estuary

Distribution, abundance and aspects of ecology of the non-indigenous mussel, *Mytella strigata* (Hanley, 1843) in Batan Bay, Aklan, Philippines

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This study investigated the distribution, abundance and characteristics of the habitat of *M. strigata* in Batan Bay, Aklan during wet and dry seasons. In 2022, no updated formal survey has been conducted in Aklan where oysters and mussels are cultivated for food. Quadrat sampling was used to assess the mangrove areas; transect and quadrat sampling including grab sampling on sediment substrate; and quadrat sampling on oyster floating rafts. On sediment substrate, charru mussels were found in the inner estuary (Brgy. Guinbaliwan); on oyster floating rafts, they were found also in inner estuaries (Brgy. Guinbaliwan, Pinamuk-an, and Lawaan); and no charru mussels were found in mangrove areas. *M. strigata* inhabits a wide range of physico-chemical conditions with salinity of 16.87 to 22.47 ppt; temperature of 28.97 to 30.40°C; dissolved oxygen of 4.75 to 6.44 mgL^{-1}; depth of 0.65 to 4.28 m and water velocity of 0.07 to 0.25 ms^{-1}. Sediment's Total Organic Matter content was 3.4 to 7.4% and sediment grain size analysis showed 48.0 to 95.7% sand 4.3 to 52.0 % silt-clay. Seasonal variations affect the abundance of the species in which it was noted higher in the wet season. Morphometric measurement (shell length and weight) was dependent on the density of charru mussels on the substrate. *M. strigata* on the sediment substrate were larger in size compared to the samples on the floating rafts which may be attributed to the abundance of food, competition with other organisms, habitat characteristics, and water quality.

Keywords: *Mytella strigata,* distribution, abundance, non-indigenous

Boiling the benefits: exploring the effect of blanching in photoprotective properties of *Kappaphycus alvarezii*

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Rising temperatures in the Philippines due to climate change heighten concerns over UV-induced skin damage. By evaluating the effects of hot water blanching on photoprotection properties of *Kappaphycus alvarezii*, a widely cultivated seaweed in the Philippines, this study aims to optimize processing conditions that enhance the photoprotective potential of the seaweed. Using Response Surface Methodology– Central Composite Design (RSM-CCD), 14 experimental runs were conducted with blanching temperature (X_1) and time (X_2) as variables, and in-vitro sun protection factor (SPF), erythema transmission (%T_E), and pigmentation transmission (%T_P) as response variables. Results indicated that blanching temperature (X_1) significantly affects SPF, %T_E, and %T_P, with higher temperatures enhancing photoprotection. However, the quadratic term suggests excessive heat may reduce benefits. Blanching time (X_2) had minimal influence, with longer durations slightly decreases photoprotection. Optimal conditions (X_1:76.84°C, X_2:139s) achieved a desirability of 1, yielding improved SPF (from 7.53 to 12.33), reduced %T_E (from 0.28% to 0.07%), and %T_P (from 0.55% to 0.50%). Further analysis was conducted to examine whether bioactive content correlated with functional performance. Blanched sample showed higher total carotenoids (11.24 mg/L), phenolic content (1.08 ± 0.71 mg GAE/g DW), and antioxidant capacity via ABTS assay (28.06 µg TE/mg DW) compared to unblanched sample. These findings suggest that optimized blanching enhances the photoprotective and antioxidant properties of *K. alvarezii*, supporting its potential use in natural skincare products. This study highlights the value-added potential of seaweeds and offers opportunities for local farmers and stakeholders in the Philippine seaweed industry amid rising demand for safe, eco-friendly alternatives.

Keywords: photoprotection, pre-treatment, seaweed, SPF

Physicochemical properties, bioactive compounds, antioxidant activity, and sensory characteristics of ready-to-drink beverage: Effects of garlic (*Allium sativum*) quantity and heat treatment

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Garlic contains bioactive compounds known for their health-promoting properties, yet it remains underexplored as a flavoring ingredient in commercial beverages. To leverage its potential health benefits, an optimized processing method is essential to preserve its bioactive components, many of which are sensitive to heat. This study investigated the effects of varying garlic concentrations and heat treatment durations on the physicochemical properties, bioactive compound retention, antioxidant capacity, and sensory attributes of a garlic-infused beverage. A general factorial design was employed with garlic level and heating time as independent variables, resulting in six treatment combinations analyzed using response surface methodology. Findings showed that both factors significantly influenced pH, titratable acidity, total phenolic content, and antioxidant capacity, while total soluble solids remained unaffected. Garlic amount and heating time exhibited linear effects on pH, vitamin C content, and antioxidant capacity, whereas their interaction significantly impacted titratable acidity and phenolic content. Higher garlic concentrations led to increased pH, vitamin C, and antioxidant activity. Among the formulations, the beverage containing 3.0 g of garlic and heated for 10 minutes was the most sensory-acceptable, receiving the highest just-about-right ratings across most attributes. These results highlight the potential of garlic as a functional ingredient in beverages when processed under optimized conditions.

Keywords: garlic, heat treatment, ready-to-drink beverage, antioxidant capacity

Isolation and characterization of amylase and protease- producing bacteria from the gut of Bigtooth pomfret (*Brama orcini*, Cuvier 1931)

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Bigtooth pomfret (*Brama orcini*), locally known as *Bilong-bilong ati*, is an underutilized, low-value, but widely abundant fish species, particularly in Panay Gulf. This study aims to isolate, identify, and characterize gut-associated bacteria exhibiting amylolytic and proteolytic activity from *B. orcini*. Preliminary enzyme screening of bacterial isolates resulted in three distinct colonies exhibiting both amylase and protease activity using starch and skim milk agar, respectively. Morphological and biochemical characterizations showed that several isolates are Gram-negative and capable of fermenting maltose but not lactose. All isolates tested negative for indole production, Sulfide-Indole-Motility, and Methyl Red-Voges Proskauer tests. Ongoing work includes qualitative and quantitative assessment of enzyme production, taxonomic identification using 16S rRNA gene sequencing, and phylogenetic tree construction. The results of this study will contribute to a deeper understanding of the microbial communities in the gut of *B. orcini*, particularly those exhibiting amylolytic and proteolytic activity, while highlighting the potential of marine-derived microorganisms as valuable sources of enzymes for biotechnological applications.

Keywords: *Brama orcini*, proteolytic bacteria, amylolytic bacteria, bacterial enzyme

Waste to wealth: Harnessing bioactive compounds from oyster processing waste using mass spectrometry

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Oysters contribute significantly to global bivalve production, accounting for 78.41% (40,038 metric tons) of shellfish production in the Philippines in 2022. Despite the high- quality protein and other nutritional components of oyster, improper management of waste and by-products from oyster processing presents environmental and health challenges. Therefore, this study investigated the bioactive potential of oyster (*Magallana bilineata*) powder residue, a solid waste product generated from oyster powder processing, via mass spectrometry. Our approach included solvent extraction, fractionation using octadecyl-silica (ODS) column chromatography, and liquid chromatography-mass spectrometry (LC-MS)-guided profiling of the active fractions. The active fractions were evaluated for antioxidant, anti-inflammatory, antimicrobial, and cytotoxic properties. Results revealed strong antioxidant activity against 2,2'- azino-bis (3-ethylbenzothiazoline-6-sulfonic acid (ABTS) and 2,2-diphenyl-1- picrylhydrazyl (DPPH) radicals, high total phenolic content, comparable anti- inflammatory activity to a pharmaceutical drug, significant anticancer activity against MCF-7 human breast cancer cells, and potent antibacterial activity against some pathogenic microorganisms. This study underscores the efficacy of mass spectrometry in harnessing the bioactive potential of oyster residue, offering a promising perspective on waste utilization and bioactive compound discovery for future biomedical applications. By leveraging these findings, new avenues for research and applications can be explored, contributing to sustainable waste management and the development of functional biomaterials.

Keywords: *Magallana bilineata*, oyster residue, mass spectrometry, bioactivity, antioxidant

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Bathymetric survey of the Batan Bay Estuary topography using echo sounder: Implications for sediment loading and estuarine management

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Bathymetric survey was conducted using echo sounder at the Batan Bay Estuary (BBE) in the province of Aklan. This study was able to produce the first detailed 2D and 3D bathymetric maps of the estuary and traced the sedimentation pathways for effective management of BBE. Results showed that the highest mound elevation reaches up to 15m with varying mound heights which indicates that sediment deposition in the area is multidirectional, influenced by the actions of the tidal cycle, as well as the current and wind direction. These differences in topography affect the distribution of water parameters, with fluctuating levels of salinity (31.61±0.41ppt), water temperature (31.37±0.22°C) and turbidity (3.02±1.24 NTU). A noticeable shallowing was also observed in Tinago Bay (TB), an area connected to BBE by a narrow channel, where sediment mound is less than 4m indicating higher sediment deposition in this area. Turbidity in TB showed a significant difference ($p<0.05$) compared to other stations suggesting a higher concentration of silt. This can be attributed to the negligible effect of tidal and current action due to the landlocked structure resulting in weak water circulation. Consequently, TB is experiencing heavy siltation intensified by soil erosion from surrounding terrestrial environment. This study confirms that tidal action, current, wave, and wind direction are key factors in sediment transport and deposition significantly impacting the topography of the BBE. Immediate action is recommended to address sedimentation particularly in TB and mitigate its effects on the fishery resources as it can affect the livelihood of local fishermen.

Keywords: current, deposition, mound, sediment pathway

Sediment profiling and total tin distribution in and around a seaweed farm in Northern Iloilo, Philippines

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Tin and its derivatives are commonly found in aquatic environments due to their widespread use, particularly as antifouling agents in boats and in various industrial and household applications. Their presence can impact marine organisms, including seaweeds, by disrupting physiological and biochemical processes. This study assessed sediment characteristics as well as total tin concentrations in sediments, seawater, and seaweeds in and around a seaweed farm in Concepcion, Iloilo. Sampling was conducted at 10 locations (three within the seaweed farm and seven outside). Sediment, water, and seaweed samples were collected alongside environmental parameters. Sediment redox potential ranged from 429 to 717 mV, while moisture content varied between 20.47% and 55.26%. Grain size analysis indicated a sand fraction of 8.64% to 99.80%, and total organic matter ranged from 4.21% to 17.78%. Total tin concentrations were recorded at 1.1–3.1 ppm in sediments, below 0.01 ppm in water within the seaweed farm, and below 0.5 ppm in seaweed samples. These concentrations are somehow higher than their expected concentration in the natural environment. The elevated tin levels may be attributed to various environmental factors, including household runoff, a municipal docking port, nearby aquaculture facilities, and a coal- fueled power plant at the periphery. Thus, further studies are recommended to assess the direct contributions of these sources and determine their specific influence on tin accumulation in different environmental matrices.

Keywords: total tin, pollution, seaweed farm, metals

Habitat and distribution of windowpane shell (*Placuna placenta*) recruits in Southern Iloilo, Philippines

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The windowpane oyster (*Placuna placenta*) is commonly referred to as lampirong or kapis in the local communities. It is a pearly iridescent shell that is sub-spherical in shape. In the Philippines, it is economically valuable due to its diverse uses in the food industry, pharmaceutical formulations, and artisanal crafts. However, only a few studies are focusing on windowpane oysters, particularly in Iloilo, Philippines. This study aimed to assess the ecology and distribution of windowpane oysters in Southern Iloilo Strait, specifically in the transplantation and core zones. Field sampling was conducted in December 2021, March 2022, and June 2022 using random sampling across three sediment depths (0–1 cm, 1–3 cm, and 3–5 cm). Water and sediment parameters were measured in situ and analyzed in the laboratory. MANOVA, correlation analysis, and partial effect plots, were used to determine the relationships among recruitment densities, environmental variables, spat size, sediment layer, and seasonal variations. Results indicated that core zones supported the highest recruitment and growth of windowpane oysters. These zones were characterized by silty-muddy sediments (75.54 ± 16.01% - 88.70 ± 5.05%) and high organic matter content (3.18 ± 0.34% - 3.54 ± 0.28%), providing favorable conditions for survival and proliferation of organisms. Recruitment density exhibited significant seasonal variation ($p = 0.00$), with the highest values recorded in December 2021 (898.83 ± 1754.87 ind • mm^3, 1109.69 ± 2214.38 ind • mm^3, 3.79 ± 8.82 ind • mm^3) and the lowest in June 2022 (4.24± 5.95 ind • mm^3, 38.86 ± 45.42 ind • mm^3, 81.57 ± 116.31 ind • mm^3), suggesting a pronounced effect of seasonality on the spatial distribution of windowpane oyster spats. Moreover, sediment depth also significantly influenced recruitment, with the shallowest layer (0–1 cm) exhibiting the highest densities and the deepest layer (3–5 cm) the lowest. This suggests that vertical distribution is abundant on the upper sediment layer, possibly due to higher oxygen availability and greater access to organic matter. These findings offer valuable insights into the habitat preferences and recruitment dynamics of windowpane oysters in the Southern Iloilo Strait.

Keywords: Windowpane oyster, kapis, *Placuna placenta*, distribution, recruitment

Microbial risks associated with undercooked oysters (*Magallana bilineata*): A foodborne pathogen study

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Slipper oysters (*Magallana bilineata*) are economically important in Philippine aquaculture but exhibit susceptibility to environmental changes, agricultural practices, and handling methods, increasing the risk of biotoxin accumulation. Inadequate regulation of oyster handling and preparation, coupled with a lack of pathogen screening, poses a potential public health concern. This study aimed to identify and characterize the predominant *Vibrio* species and other potential foodborne bacterial pathogens present in undercooked slipper oysters. Oyster meat homogenates were serially diluted in 0.9% normal saline solution and plated on thiosulfate-citrate-bile salts-sucrose agar. Bacterial colonies were enumerated, and predominant isolates were identified via 16S rRNA sequencing. Three Vibrio species were identified in undercooked oysters: *Vibrio alginolyticus*, *V. diabolicus*, and *V. parahaemolyticus*. Putative *Shewanella algae* and *S. aquamarina* were also isolated. Results indicated that partially cooked oysters can serve as reservoirs for pathogenic bacteria, particularly *Vibrio* spp., and that the microbial load is influenced by cooking duration. Appropriate oyster handling is critical to mitigate bacterial contamination and ensure food safety.

Keywords: consumption, microbial contamination, seafood quality, *Shewanella algae*, *Vibrio* spp.

Windowpane oyster (*Placuna placenta*) meat powder: Process optimization and characterization

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The present study investigated *Placuna placenta* (windowpane oyster) meat powder due to its high nutritional composition and its potential as an alternative protein source, particularly in coastal regions and communities reliant on underutilized marine resources. However, the high moisture content and perishability of the raw material present challenges for storage, handling, and distribution. To address these issues, the effects of controlled drying conditions—specifically temperature and time—on the quality attributes of the meat powder were evaluated. Drying parameters were selected based on preliminary trials and existing literature to optimize drying efficiency while preserving nutritional and functional qualities. A full factorial design using response surface methodology was used, with drying temperature (50°C, 60°C, and 70°C) and drying time (5, 6, and 7 hours) as independent variables. The response variables were water activity, bulk density, wettability, and solubility. The optimal drying condition was determined to be 70°C for 6.64 hours, resulting in a product with a water activity of 0.34, bulk density of 1.86 g/ml, wettability of 1.50 seconds, and solubility of 29.12%. These results suggest moderate solubility and wettability, low water activity, and high bulk density, which are favorable for storage and transportation. Nutritional analysis showed high protein content (51.79%), moderate carbohydrates (26.65%) and ash (7.64%), low fat (5.04%), and stable moisture (8.88%). The powder also contained all essential amino acids and significant levels of selenium, calcium, iron, zinc, and phosphorus. Microbial counts were within acceptable limits. Overall, windowpane oyster meat powder processed under optimal conditions is a nutritious, stable food additive.

Keywords: *Placuna placenta,* optimization, powder, cabinet drying

Behavioral response of terrestrial hermit crabs (*Coenobita* spp.) to varied habitats and an introduced attractant

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Terrestrial hermit crabs (*Coenobita*) are known as scavengers that depend on gastropod shells for protection. They also primarily rely on their olfactory and sensory cues in locating their food and decision-making processes, which allows them to respond and adapt to induced stimuli and environmental stressors. Despite their ecological importance, there is limited study on their behavioral responses influencing their habitat selection and foraging behavior in local settings. To examine their behavioral response (seeking shelter, burrowing, climbing, and aggregation), *Coenobita* spp. ($NN = 42$) collected from the coast of UPV Miagao, were introduced to two habitat scenarios: treatment 1 (absence of shelter) and treatment 2 (presence of shelter). Accordingly, both treatments were subjected to an attractant (rotten fruit). The study revealed that 69.16% of smaller-sized hermit crabs (15-19 mm shell length) are observed to be active burrowers, while 20% of big-sized hermit crabs (33-43 mm shell length) are often seen climbing atop the shelter. The presence of a shelter reduced their burrowing activity and was observed to have shallower burrows. In both treatments (treatments 1 and 2), hermit crabs respond positively to the attractant. However, Kruskal-Wallis H test showed that there is no significant difference between the behavioral response and treatments. The same result was observed between the behavioral response and size of the hermit crabs, except for burrowing activity and size that significantly differ from each other ($p < 0.05$). In general, the results suggest the adaptability of hermit crabs to varied habitats that have broader implications in the changing coastal environments.

Keywords: hermit crab, behavior, habitat, attractant, Miagao Coast

A review of milkfish aquaculture in Davao Region towards sustainability: Challenges, innovations and future prospects

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Milkfish (*Chanos chanos*), or "bangus," is a key aquaculture commodity in the Philippines, vital for food security and economic growth. This review focuses on the Davao Region, a major production hub due to its favorable geographic and climatic conditions. It examines the region's milkfish production milestones, highlighting strengths such as extensive aquatic resources, innovative farming techniques, and partnerships among government, private sectors, and academia. Despite its achievements, challenges like fry insufficiency, environmental pressures, and fluctuating production rates persist. Sustainability efforts, including mariculture parks, advanced technologies, and policy interventions, aim to address these issues. Comparative analysis with other regions reveals Davao's potential for growth, emphasizing the need for enhanced fry sufficiency, sustainable practices, and strategic resource management. The study concludes with recommendations to ensure the long-term viability of the milkfish industry, positioning Davao as a competitive player in national and global aquaculture markets.

Keywords: milkfish aquaculture, Davao Region, sustainable aquaculture, global aquaculture trade

Assessing the perceived ecotourism sustainability in Kuliatan Marine Sanctuary, San Joaquin, Iloilo through key informant interview

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Kuliatan Marine Sanctuary (KMS) is a community-based Marine Protected Area (MPA) and ecotourism site in San Joaquin, Iloilo, established through Municipal Ordinance No. 4-2011, with an aim to conserve biodiversity and provide economic benefits to the local community. The growing number of visitors in KMS has led to environmental problems, thus, the need for sustainable management guidelines and practices. This paper aims to assess the ecotourism sustainability in KMS as perceived by the sanctuary staff through the conduct of a rapid assessment and SWOT analysis based on Key Informant Interviews with five staff members of the management body. The results of the study revealed that the lack of a solid waste management system in KMS is a critical concern in its sustainability. Although contributing to the local economy through employment and income-sharing mechanisms especially felt during peak season, the livelihood of the employees and the income of small businesses dependent on the number of visitors, are left compromised during off- season. The strengths of KMS include its natural beauty, water quality, and their strict enforcement of rules. The weaknesses include poor waste management, fluctuating income, and limited support from the local government. Opportunities for improvement include better waste management systems, enhanced training for the staff and local community, and expanding marine conservation activities such as coral gardening. The threats to its sustainability include illegal fishing, climate change, and inadequate infrastructure support. Although KMS is a promising ecotourism site, there is still a need to address various environmental and socio-economic challenges to ensure its long-term sustainability.

Keywords: ecotourism, marine protected area, sustainability

Gut content analysis of mackerel scad, *Decapterus macarellus* (Cuvier, 1833), from Miagao, Iloilo

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Mackerel scad *(Decapterus macarellus)*, locally known as *galunggong*, is a commercially important pelagic species under significant fishing pressure. The heavy exploitation has contributed to stock depletion, highlighting the urgent need for effective management efforts. This study analyzed the gut content of *D. macarellus* (*n*=4), with total length ranging from 12.1 to 15.8 cm, and weights between 43.04 to 51.11 g, collected from the market of Miagao, Iloilo. Results revealed a Gastrosomatic Index (GoSI) ranging from 2.67 to 3.72, with all samples exhibiting a full stomach. The primary diet component was fish scales, with phytoplankton, and zooplankton present in smaller proportions. Calanoida and Cyclopoida were the only zooplankton groups identified, while phytoplankton diversity included *Bacteriastrum*, *Skeletonema, Protoperidinium, Diploneis, Tintinnopsis,* and *Surirella*. These findings provide valuable insights into the food preferences and feeding habit of *D. macarellus*, relevant for an informed resource management. Understanding its biology and functional ecology supports conservation efforts, ensuring fish stock stability and long-term fisheries viability.

Keywords: Carangidae, *Decapterus macarellus*, food preference, phytoplankton, zooplankton

Physicochemical and functional properties of fish solubles from tuna processing wastes

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Tuna processing is an important industry in the Philippines that produces high volumes of solid by-products. These by-products are processed into fish meal which further generate liquid wastes. Fish solubles is one of the protein-rich liquid by-products produced from fish meal processing, primarily utilized and sold as low-cost animal feed ingredient. In this study, the physico-chemical and functional properties of fish solubles were determined. Results revealed that it is composed of 41.73% moisture, 38.48% protein, 11.73% ash, and 4.22% lipids. The fish solubles were shown to possess antioxidant properties as revealed by 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity (15.98 to 31.80%), 2,2'-azino-bis(3- ethylbenzothiazoline-6-sulfonic acid) (ABTS) radical scavenging activity (13.04 to 54.59%), and reducing power (6.17 to 50.40 mg AA/g). The protein solubility from pH 2 to 12 ranges from 47.30 to 64.43%. It also has a foaming expansion and stability in the range of 4 to7% and an emulsion activity index ranging from 1.28 to 1.40 m^2/g. Furthermore, liquid chromatography- mass spectrometry (LC-MS) data identified various possible metabolite compounds found in the fish solubles that could be responsible for its functional properties. Overall, the results indicate the potential of fish solubles as a functional ingredient to be utilized by food, feed, or pharmaceutical industries. This study signifies the importance of the recovery of valuable products from tuna processing wastes to promote a more sustainable aquatic food industry.

Keywords: fish solubles, tuna processing by-products, antioxidant, waste utilization

Vitellogenin gene expression and testis histology of Eyebrow goby (*Oxyurichthys ophthalmonema*) after injection with 17β-estradiol

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It has been demonstrated that 17β-estradiol (E2) exerts an estrogenic effect in several teleost species. The present study investigated the effects of E2 on male eyebrow goby, *Oxyurichthys ophthalmonema* vitellogenin (VTG) mRNA level, and testicular structure. Using the qPCR assay established for eyebrow goby VTG and β-actin, the gene expressions in the liver of developing male eyebrow goby were determined after being injected once with E2 of various concentrations of 1, 5, and 10 mg kg^{-1} E2 after one week. The application of the qPCR assay for eyebrow goby showed interesting results. Although no dose-dependent effects of E2 on VTG gene expression were noted, the highest VTG mRNA level was observed at 10 mg kg^{-1} E2. Histological alterations such as an increased number of Sertoli cells and testicular changes were observed in both 5 mg kg^{-1} E2 and 10 mg kg^{-1} E2 treated fish. There were no significant differences in the VTG gene expression in eyebrow goby between treatments. This study demonstrated the first indication of the risk of estrogen contamination for eyebrow goby as shown in the VTG induction and alteration in testis histology of eyebrow goby treated with E2.

Keywords: vitellogenin, 17β-estradiol, testis, qPCR, *Oxyurichthys ophthalmonema*

Textural and compositional insights into the sediment provenance of Nogas Island Beach, Philippines

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Nogas Island, an established marine sanctuary under Municipal Ordinance No. 2018-09, is located at the southern tip of Panay Island. The island spans 98.23 hectares with a coastline of 3.83 kilometers and is home to 149.64 hectares of coral reefs, 2 hectares of seagrass beds, and 24.86 hectares of mangroves. It is an uninhabited island, with a lighthouse and a growing tourist attraction for swimming, snorkeling, and diving. Its accessibility makes it vulnerable to coral walking and pollution. Nogas Island is also a critical habitat for various bird species, sea turtles, and dugongs. This study aims to assess the sediment characteristics and determine the sediment provenance in Nogas Island Beach through grain size and compositional analysis. Grain size analysis of Nogas Island Beach revealed a range of variations across 28 sampling stations throughout the island's exposed beach. The prevalence of multimodal grain size distributions, with dominant modes at 8mm and 250µm, suggests fluctuating energy regimes capable of transporting and depositing coarse and fine sediments. Mean grain sizes ranged from very coarse sand to medium pebbles. Poor to very poor sorting, along with variable skewness and kurtosis, were observed across stations, suggesting inconsistent energy inputs and multimodal deposition. Compositional analysis indicates carbonate-dominated sediments composed primarily of coral, mollusk, and foraminiferal fragments. Larger grain fractions (8mm–2mm) were mainly coral and mollusk fragments, while finer fractions (1mm to 63µm) included foraminifera and fragmented bioclasts. The absence of any riverine input highlights the presence of biogenic sediments.

Keywords: Nogas Island Beach, sediments, grain size analysis

Diet composition of Slender red scad, *Decapterus smithvanizi Kimura, Katahira & Kuriiwa, 2013* from Miagao, Iloilo

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The Slender red scad (*Decapterus smithvanizi)* was described as a new species of red-fin *Decapterus* group by Kimura et al. in 2013. Locally known as one among the "galunggong" group (*Decapterus* spp.), its first record in the Philippines was reported in 2021 in Miagao, Iloilo. Given its recent identification, studies on its diet and feeding ecology remain lacking. This study examined the diet composition of *D. smithvanizi* collected from the Miagao, Iloilo, Philippines market. All five (5) fish specimens were measured for total length (TL), with a range of 13.5 to 16.7 cm, and body weight (BW), with an average of 37.59 g. Additionally, body depth (BD) was recorded, sexual maturity was assessed, and the gut contents were subsequently extracted for analysis. The results showed that the stomach of *D. smithvanizi* was mainly composed of fish scales. Other diet items included fish larvae, zooplankton, phytoplankton, and debris. Additionally, male fish samples examined were found to be sexually immature, while female fish samples were sexually mature. The results drawn from this study could provide a valuable primary reference on the diet and food preference of *D. smithvanizi*.

Keywords: *Decapterus,* Carangidae, feeding habits, food preference, Philippines

The life history and the environmental factors influencing the growth of the Indian squid, *Uroteuthis duvaucelii*

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Understanding squids' age and growth patterns is critical for evaluating their life history, ensuring the sustainability of their fisheries. Hence, this study investigated the life history of the Indian squid, *Uroteuthis duvaucelii*, by characterising the age and individual growth variability through statolith microstructure and the environmental factors that influence it. Specifically**,** the early growth of Indian squid, was examined in specimens measuring 41 and 215 mm mantle length (ML), collected from fisheries catches in the coastal waters of the Central Philippines. The results showed a linear relationship between mantle length and statolith radial length, indicating that statolith growth is proportional to body size growth. Meanwhile, growth trajectories exhibited significant individual variability at 60 days post-hatching across different months. At this age, monsoons influenced growth variations and the seasonality of *U. duvaucelii*, demonstrating the squid's considerable growth plasticity and adaptability to environmental changes. Conversely, during the first 40 days, the growth of female *U. duvaucelii* was significantly affected by ambient temperature and food availability, underscoring the importance of these factors for the survival of their young. Furthermore, hatching occurs continuously throughout the year, with notable peaks in July and October, indicating that this squid spawns all year round. The study's findings provide new insights into how environmental conditions influence squid growth, paving the way for further research that governs their age and development, including the chemical composition of the statolith.

Keywords: cephalopods, statolith, Western Visayas

Bioecology of *Selar crumenophthalmus*: Diet, Habitat, and Otolith Morphology

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The bigeye scad (*Selar crumenophthalmus*)—a crucial species for Southeast Asian fisheries and coastal economies—remains understudied regarding its precise ecological requirements. This study provides a bioecological profile of *S. crumenophthalmus* from Miagao, Iloilo, Philippines, integrating dietary analysis, habitat suitability modeling, and otolith morphology characterization. Analysis of gut contents revealed a prevalence of fish scales, suggesting opportunistic feeding, while morphometric analysis indicated a strong positive correlation between body size and gut content weight. Habitat suitability modeling identified optimal conditions as low current velocity (<0.5 m/s), moderate salinity (30–36 PSU), warm SST (28–33°C), and moderate chlorophyll-a concentrations (0.2–0.8 mg/m3). Otolith analysis revealed a heterosulcoid, ostio-caudal structure. These findings highlight the species' neritic habitat preference and dietary flexibility, emphasizing its vulnerability to overfishing and environmental stress. Locally-focused bioecological studies are crucial for effective fisheries management.

Keywords: *Selar crumenophthalmus*, habitat suitability, feeding ecology, otolith morphology, fisheries management

Characterization of *Priestia flexa* from earthen pond sediments: A potential probiotic to improve water quality in Pacific white shrimp (*Litopenaeus vannamei*) grow-out culture

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The accumulation of nitrogen compounds, such as ammonia and nitrite, in culture water is one of the major problems in shrimp aquaculture. Ammonia and nitrite are toxic to shrimps with effects ranging from limiting their growth to lethality. In this study ammonia and nitrite-remediating bacteria were isolated from and earthen pond sediments and characterized for potential probiotic activity to help reduce ammonia and nitrite levels in shrimp culture. Soil samples were collected from earthen ponds in Leganes, Iloilo. The bacterium was isolated through an enrichment method and identified using 16S rRNA sequencing. The isolated bacterium was identified as *Priestia flexa.* This strain showed optimal growth at pH 6-7 after 24-hour incubation. It was then inoculated to ammonia- and nitrite-specific media. Results showed 94.51% reduction in ammonia levels after 3 days of incubation, while nitrite levels remained unchanged. These initial results showed the potential of the isolated bacteria *Priestia flexa* as probiotics in maintaining good water quality through reduction of ammonia concentration in water.

Keywords: ammonia, nitrite, *Priestia flexa*, probiotics

Growth and salinity stress tolerance in early juvenile milkfish (*Chanos chanos*): Effects of dietary ulvan from *Ulva intestinalis*

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In brackish water pond systems, early juvenile milkfish *Chanos chanos* are frequently exposed to sudden salinity fluctuations caused by rainfall, tidal changes, and freshwater inflows. These abrupt environmental shifts can impair growth and increase mortality, posing a significant challenge to sustainable milkfish nursery production. Nutritional strategies offer a viable means of enhancing resilience under such conditions. This study was conducted to evaluate the effects of ulvan, a sulfated polysaccharide extracted from *Ulva intestinalis*, on the growth performance and salinity stress tolerance of early juvenile milkfish *Chanos chanos*. A 30-day feeding trial was conducted using a completely randomized design with five dietary treatments in triplicate: a control diet without ulvan and four diets supplemented with increasing levels of ulvan (10, 50, 100, and 500 mg/kg). Fish fed ulvan-enriched diets exhibited improved growth performance and feed utilization efficiency compared to the control group (One-way ANOVA, $p < 0.05$). Specifically, diets containing 10 and 50 mg/kg of ulvan significantly enhanced weight gain (WG), specific growth rate (SGR), and protein efficiency ratio (PER) while reducing feed conversion ratio (FCR), whereas higher ulvan doses (100 and 500 mg/kg) had less pronounced effects. To assess the effects of ulvan on stress response, fish were exposed to salinity fluctuations over 28 hours. Fish receiving ulvan-supplemented diets demonstrated greater salinity stress tolerance, as indicated by higher cumulative stress index (CSI) values (One-way ANOVA, $p < 0.05$). CSI values ranged from 2.12 to 7.47, with the control group exhibiting the lowest stress tolerance. Overall, results suggest that supplementing *C. chanos* diets with 10 mg/kg of ulvan from *U. intestinalis* is a viable strategy to enhance growth and immunity, contributing to the sustainability of milkfish nursery production.

Keywords: ulvan, *Ulva intestinalis*, *Chanos chanos*, growth-promoting, salinity stress tolerance

Effects of short-term low pH exposure on morphology, behavior, survival, and histopathology of saline-tolerant tilapia (UPV SpiN) fingerlings

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Interest in small-scale commercial farming of UPV SpiN tilapia in brackish water ponds has grown rapidly. However, mass mortalities caused by acidic water conditions continue to pose a major challenge. Acidic water in brackish ponds often forms from the oxidation of acid sulfate soils, which contain iron sulfides like pyrite. When these soils are exposed to air, sulfuric acid is produced, lowering the water's pH to below 4. This acidification poses serious risks to farmed species, causing stress and mortality. This study investigated the effects of low pH levels on the morphology, behavioral responses, and tissue integrity of UPV SpiN tilapia fingerlings. A completely randomized design (CRD) was employed, testing three water pH treatments: a control (pH 8) and two acidic conditions (pH 6 and pH 4). Fingerlings exposed to pH 4 exhibited rapid onset of stress symptoms, including skin discoloration, excessive mucus secretion on gill surfaces, and erratic swimming behavior, leading to 100% mortality within 30 minutes. In contrast, fish in the pH 6 treatment initially displayed signs of distress, such as panic swimming and schooling disruption, but acclimated over time, with survival comparable to the control group. Histopathological analyses revealed significant tissue alterations in fish exposed to low pH levels. Observed pathological changes include gill epithelial lifting, lamellar hypertrophy, necrosis of secondary lamellae, muscle fiber degeneration, ocular necrosis, renal tubular damage, hepatocellular vacuolation, and accumulation of melanomacrophages in the spleen. These findings indicate that UPV SpiN tilapia fingerlings are unable to tolerate extreme acidity (pH 4), which induces severe behavioral disruptions and systemic tissue damage leading to rapid mortality.

Keywords: saline-tolerant tilapia, UPV SpiN, pH, survival, histopathology

Green banana flour (*Musa acuminata* × *balbisiana*): Characterization and potential applications in food

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A considerable number of mature green bananas are discarded during harvest because they fail to meet commercial specifications, despite their economic and nutritional values. This study aimed to characterize the physicochemical properties of Green Banana Flour (GBF) derived from off-spec unripe *Saba* bananas (*Musa acuminata x balbisiana*), including pH, moisture content, and water activity, and to evaluate its potential as a technofunctional ingredient compared to commercially available GBF and wheat flour. To assess its application in food products, GBF with and without peels was incorporated at varying levels into chocolate cupcakes. The resulting products were evaluated for physical attributes (height, diameter, weight, texture, and moisture content), chemical properties (water activity), and sensory acceptability. Physicochemical analysis revealed that GBF exhibited lower moisture content, higher pH, and reduced total soluble solids compared to commercial flours, suggesting potential advantages for extended shelf life and reduced sugar formulations. Additionally, GBF demonstrated an enhanced water absorption and solubility relative to wheat flour and commercial GBF. In cupcake formulations, wheat flour yielded the most preference in terms of ranking preference test. However, GBF- containing formulations remained acceptable and exhibited consistent rankings across attributes. These findings show the potential of GBF as a functional flour alternative, particularly in gluten-free and fiber-enriched food products. Further research is needed to optimize GBF formulations, enhance sensory attributes, and expand its applications in diverse food applications.

Keywords: green banana flour, physicochemical properties, gluten-free flour

Assessment of tide pools and associated benthic organisms in Nogas Island, Anini-y, Antique, Philippines

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Tide pools, which are micro-ecosystems within the intertidal zone, are distinguished by high biodiversity and dynamic environmental conditions. The benthic organisms inhabiting these ecosystems exhibit broad adaptations to fluctuations in temperature, light intensity, nutrient concentrations, and other factors. Tidal pools serve as habitats, breeding grounds, and refuges of various marine organisms. However, in the Philippines, these complex ecosystems remain relatively understudied. Therefore, this study was conducted to characterize the tidal pools and the associated benthic communities. Ten tidal pools within the intertidal zone of Nogas Island, Anini-y, Antique, were randomly selected and assessed during low tide. The dimensions, water depth, environmental parameters (temperature, salinity, and dissolved oxygen) and substrate type were assessed. Seagrass and seaweeds were identified at the species level, while macrofauna were classified to the lowest possible taxon. The tidal pools varied in size, and the average temperature, salinity, and dissolved oxygen were 28.68 ºC, 34.28 psu, and 8.36 mg L^{-1}, respectively. Three seagrass species, *Thalassia hemprichii, Halodule pinifolia,* and *Cymodocea rotundata* were identified, along with seaweeds such as *Sargassum* sp.*, Gracilaria* sp.*, Padina* sp were also observed. Macrofaunal assemblages were predominantly composed of gastropods, hermit crabs, and ophiuroids, with three ophiuroid species recorded: *Ophiocomella alexandri, Ophiocomina negra,* and *Echinometra mathaei.* Species distribution was influenced by substrate type, as sandy pools supported diverse seagrass and seaweed species, while pools with coral rubbles hosted additional echinoderms. Furthermore, substrate type and shoreline topography influenced species distribution, with gastropods primarily occupying rock crevices, indicating habitat stability and food availability.

Keywords: tide pools, benthos, macrofauna, biodiversity

Evaluation of golden apple snail (*Pomacea canaliculata*) foot tissue meal as an ingredient in the gonad maturation diet of female shrimp (*Penaeus vannamei*) broodstocks

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A 32-day maturation trial evaluated the effects of Golden Apple Snail (GAS) foot tissue meal on ovarian maturation of Pacific white shrimp (*Penaeus vannamei*) female broodstocks. Five isonitrogenous and isolipidic experimental diets containing increasing levels of GAS foot tissue meal (Control (0%), T1 (25%), T2 (50%), T3 (75%) and T5 (100%)) were formulated. Polychaetes/squids and Basal Control Diet were used as the positive and negative controls, respectively. Each treatment with triplicate groups of fifteen unilaterally eyestalk-ablated shrimp female broodstocks at early stages of ovarian development were fed with test diets. The ovarian development was tracked every four days. The maturation response (MR), defined as the proportion (%) of individuals achieving ovarian maturity among the total number of experimental broostocks within each treatment group, exhibited notable variation throughout the trial. The results showed that the maximum ovary shadow ratios (OSR) did not significantly differ among treatments. Ovarian maturation time (OMT) is defined as the period between the initial and maximum OSR development. The OMT in shrimp female broodstocks fed with test diet containing 75% GAS foot tissue meal and basal control diet were significantly shorter than those of other treatments. Results also indicated that test diet containing 100% GAS foot tissue meal was most effective in promoting ovarian maturation, closely followed by the test diet containing 75% GAS foot tissue meal. These findings suggest that incorporating GAS foot tissue meal in the diet of shrimp *Penaeus vannamei* female broodstock during early ovarian development significantly enhances ovarian maturation and improves reproductive performance.

Keywords: Golden apple snail, pacific white shrimp, test diets

Fibroblast growth factor (FGF) signaling regulation in the pentaradial symmetry of the painted sea urchin (*Lytechinus pictus*)

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This study investigated the role of the fibroblast growth factor (FGF) signaling pathway in the development of pentaradial symmetry in the late-stage larvae of the painted sea urchin *Lytechinus pictus*. Although pentaradial symmetry is a key feature of echinoderms, the molecular mechanisms behind the formation of pentaradial symmetry and the contribution of signaling pathways like FGF to its regulation are insufficiently characterized at the molecular level. The study evaluated the effects of different types and concentrations of FGF inhibitory drugs on *L. pictus* larval development by determining FGF pathway genes involved in pentaradial symmetry formation and analyzed their expression patterns in *L. pictus* larvae. The functional impacts of FGF pathway disruptions on pentaradial symmetry formation by FGF inhibitors PD173074 and SU5402 at different concentrations were also assessed by gene expression analysis. FGF pathway genes, including ligands (f*gfa, fgf8/17/18)*, receptor (*fgfr1)*, transcription factor (*ets1/2*), and target genes (*foxc* and *twist*), were determined to be associated with the FGF signaling pathway, and their activity during late-stage larval development was observed. The results confirmed that FGF disruption in the presence of FGF inhibitors at multiple concentrations caused clear developmental abnormalities, confirming that the FGF signaling pathway plays a critical role in the regulation of pentaradial symmetry formation in *L. pictus*. This study advanced our understanding of echinoderm development and highlighted the potential developmental risks for sea urchins and other marine organisms in the presence of FGF inhibitors in the marine environment.

Keywords: FGF inhibitors, PD173074, SU5402, echinoderms, gene expression analysis

Evaluation of mycomeal as soybean meal replacement in the diet of freshwater tilapia (*Oreochromis niloticus*)

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Expansion in Philippine tilapia aquaculture has been adapted to meet the increasing demand for cheap fish protein. This intensification requires higher feed inputs, and currently, this industry depends on expensive and unsustainable feedstuff such as fish meal and soybean, thus, there is a need to develop alternative feed ingredients for aquaculture use. A 10-week growth trial experiment was conducted to evaluate the effects of replacing soybean meal (SBM) by mycomeal (MM) on the growth performance, feed utilization, and survival of freshwater tilapia (*Oreochromis niloticus*). The experiment was conducted in a completely randomized design with five treatments and four replicates each treatment. Five isonitrogenous and isolipidic experimental diets were formulated with five MM replacement levels (0%, 25%, 50%, 75%, and 100%) replacing soybean meal by weight. Results showed that MM could replace SBM up to 100% without significantly reducing growth performance and feed utilization. Increasing inclusion of mycomeal did not significantly affect the % weight gain and specific growth rate ($p>0.05$). High survival was observed in all treatments and feed intake showed no significant difference among treatments ($p>0.05$) implying that palatability of the diet was not affected by MM replacement. Moreover, mycomeal inclusion did not significantly affect the carcass composition of freshwater tilapia fed with the control and treated diets ($p>0.05$). Results of the present study showed that mycomeal can replace soybean meal up to 100% in the diet of freshwater tilapia without compromising the growth performance, feed utilization, and survival.

Keywords: mycomeal, freshwater tilapia, soybean meal

The heat is on: Blanching to enhance the photoprotective potentials of *Kappaphycus alvarezii*

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Sunlight offers several health benefits; however, rising temperatures in the Philippines due to climate change raise concerns about prolonged UV exposure and skin damage. Synthetic sunscreen agents like oxybenzone have been linked to coral reef degradation, and recent reports of benzene contamination in sun care products have heightened safety concerns. These issues have led to increased consumer demand for safe, natural, and eco-friendly alternatives. Red seaweeds, such as *Kappaphycus alvarezii*, have shown promising photoprotective properties. Hence, this study aimed to optimize blanching conditions to enhance the photoprotective potential of *K. alvarezii* using Response Surface Methodology – Central Composite Design (RSM-CCD). Fourteen experimental runs were performed using three solvents (distilled water, ethanol, and methanol), with blanching temperature (X_1) and time (X_2) as factors, and sun protection factor (SPF), erythema transmission (%T_E), and pigmentation transmission (%T_P) as response variables. Results showed that higher blanching temperatures improved photoprotection, but excessive heat and time reduced these benefits. Optimal conditions were identified for each solvent extract with a desirability of 1: 76.90 °C for 139 s (B_H_2O), 82.82 °C for 139 s (B_EtOH), and 88.52 °C for 139 s (B_MetOH). Among all formulations, B_H_2O exhibited the highest SPF (12), and the lowest %T_E (0.07) and %T_P (0.502), outperforming unblanched samples. These findings underscore the potential of optimally blanched *K. alvarezii*, particularly in water-based formulations, as a natural alternative to conventional sunscreens. Beyond its functional benefits, this study also supports the sustainable utilization of Philippine seaweed, opening new economic opportunities for local seaweed farmers and contributing to a greener, safer skincare industry.

Keywords: optimization, pre-treatment, RSM-CCD, seaweed, SPF

Photosynthetic response and recovery of *Kappaphycus spp.* on short-term crude oil exposure

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Oil spills provide substantial hazards to marine ecosystems and coastal populations, notably affecting sectors such as seaweed farming. Nonetheless, little information exists on the direct impact of crude oil on the photosynthetic efficiency of economically significant seaweeds and their potential for recovery. This study examines the immediate impacts of oil exposure on the photosynthetic efficiency and recovery of *Kappaphycus* spp. Seaweed samples were gathered from Brgy. Tiabas, San Dionisio, Iloilo, Philippines. The experiment had two main phases: oil exposure and recovery. Photosynthetic activity was evaluated using a Pulse Amplitude Modulated (PAM) fluorometer at various time intervals throughout a 24-hour period of oil exposure. After exposure, seaweed samples were rinsed with seawater or freshwater and assessed for recovery at 2-hour, 6-hour, and overnight intervals. Findings demonstrate that extended oil exposure significantly diminishes photosynthetic efficiency. The initial effective quantum yield of photosystem II (ΦPSII) readings (0.6129±0.0787) decreased to 0.3074±0.1513 after 24 hours. Recovery occurred within 6 hours of exposure when rinsed with freshwater (0.6050±0.0539 to 0.5582±0.0218) and seawater (0.6104±0.0544 to 0.5596±0.0655). Nevertheless, exposure over 6 hours led to restricted recovery, suggesting persistent damage. The principal factor contributing to this reduction is the oil slick, which impedes light photochemistry and restricts carbon dioxide absorption, both vital for photosynthesis. Thus, these results stress the need to examine further how seaweed exposed to oil spills alters physiologically and biochemically, including changes in cellular structure, chlorophyll concentration, and nutrient absorption processes.

Keywords: oil spill pollution, *Kappaphycus*, photosynthesis, oil spill recovery

Development of functional canned Bigtooth pomfret (*Brama Orcini*, Cuvier 1931) for commercial production

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The use of underdeveloped fisheries resources to improve food security and product diversity is becoming a greater priority for the seafood industry. Among these resources, the *Brama orcini* is an underutilized but abundant species in the Philippines. This study conducted a preliminary investigation on the effect of thermal processing on the physico- chemical properties and sensorial quality of *B. orcini*. A total of nine cans were subjected to thermal processing at 121°C for 15 minutes to evaluate their quality characteristics. Physico-chemical analysis showed that *B. orcini* undergone thermal processing has a percent yield of 44% and pH value of 4.5±0.08, indicating its suitability for processing and preservation under acidic conditions. Sensory evaluation (on a 10-point hedonic scale) yielded scores of 6.5±0.58 for color, 10.0±1.00 for odor, 8.5±1.00 for texture, and a general acceptability of 8±0.82, suggesting favorable consumer acceptance. Thermal processing effectiveness was further supported by lethal rate values in retort and canned *B. orcini* calculated using Fo values (lethality of the curve) and Patashnik method, which showed 60.59±0.60 and 62.47±26.91, respectively. Cut-out analysis showed a gross weight of 230.85±0.49. Vacuum values also reached 11±0.71 mmHg, indicating a more effective air removal process during canning. Overall, this study suggests that the thermal processing of *B. orcini* significantly ($p<0.05$) enhanced its quality, highlighting its strong potential for value addition and product development.

Keywords: *Brama orcini*, thermal processing, sensory evaluation, quality

Cluster 2:
MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES
Poster Presentations
Competing

PANAkaYon: Development of contextualized 3H's game-based learning material

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This study developed and evaluated the PANAkaYon game. It is a contextualized hands-on, heads-on, hearts-on (3H's) game-based learning material to enhance numeracy skills among Grade 8 students, with a specific focus on the four fundamental operations on integers. Employing a quasi-experimental design, the research involved two groups of students to assess the effectiveness of the intervention. Findings revealed a statistically significant improvement in students' numeracy performance following the implementation of the game-based learning material. Furthermore, students reported high levels of engagement and enjoyment, indicating that the intervention was both pedagogically effective and motivationally enriching. Beyond improving computational proficiency, the PANAkaYon fostered critical thinking, problem-solving, and spatial reasoning through interactive manipulatives among students. The game also served as a cultural and contextual learning tool by familiarizing students with the geography of Panay Island, thereby integrating local knowledge with mathematical instruction. Additionally, the intervention facilitated collaborative learning among students and teachers, reinforcing social interaction and cooperative problem-solving. Affective and emotional engagement were also observed, contributing to increased motivation and sustained interest in mathematics.

Keywords: Panakayon game, Cultural & Contextual learning, Game-based learning, Hands On-Heads On-Hearts On, Numeracy skills,

A rapid assessment criteria for a city jail establishment in Cadiz city, Negros Occidental

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This research proposed a data-driven approach to guide the relocation of the Bureau of Jail Management and Penology (BJMP) facility in Barangay Tinampa-an to two (2) possible sites in Barangays Tiglawigan and Daga in Cadiz City, Negros Occidental. The existing co-housing of male and female inmates within a single space-constrained facility located in the proposed economic center was not in conformance with the United Nation (UN) Minimum Standards for the Treatment of Prisoners and BJMP standards. This study was conducted to establish criteria guidelines and framework to assess the proposed three (3) potential relocation sites of the BJMP Facility of Cadiz City in terms of technical (site access and infrastructure capacity), legal (land ownership, zoning regulations and compliance with BJMP standards), and environmental factors. The three (3) sites were situated in the barangay of Tinampa-an, Tiglawigan, and Daga. The study used Key Informant Interview (KII's) as a research methodology to acquire initial information from experts and key personnel by individual discussion guided by predefined criteria and open-ended inquiries. This was participated by the LGU Offices such as the office of the City Mayor, City Planning and Development Officer, Zoning Officer, City Assessor and BJMP representatives. The study's methodology prioritized legal and technical assessments in determining suitable jail locations. A comprehensive social impact assessment, though essential, will be undertaken in a separate, future study to ensure thorough consideration of its complexities.

Keywords: Jail capacity, congestion, site suitability, city jail, BJMP

Who values what? A study of non-monetary incentive preference in Iloilo City's BPO sector

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The Business Process Outsourcing (BPO) sector in Iloilo City has become a cornerstone of economic growth, yet attracting and retaining skilled talent remains an ongoing challenge. While competitive wages form the foundation of compensation packages, non-monetary incentives are emerging as crucial differentiators in the battle for top talent. This study examines the evolving landscape of employee preferences in Iloilo City's BPO sector, with a particular focus on how demographic factors shape the perceived value of various workplace perks. Employing a quantitative descriptive-correlational approach, this research investigates the relationship between employee demographics including age, gender, civil status, educational background, income level, and family responsibilities and preferences for specific non-monetary incentives. The study focuses on Customer Service Representatives across multiple BPO firms in Iloilo City, analyzing their valuation of benefits such as flexible scheduling, professional development opportunities, health and wellness programs, and work-life balance initiatives. This research provides critical insights for BPO companies seeking to optimize their employee value proposition in Iloilo City's competitive labor market. By systematically examining how different workforce segments prioritize various non- monetary benefits, the study aims to inform more targeted and effective human resource strategies. The findings will contribute to both academic discourse on employee motivation and practical applications in talent management, offering a framework for developing compensation packages that resonate with the diverse needs of the modern BPO workforce.

Keywords: Non-monetary incentives, BPO sector, Talent Acquisition and Retention, Workforce Demographics, Iloilo City

Cluster 2:
MANAGEMENT, PROFESSIONAL EDUCATION, AND SOCIAL SCIENCES
Poster Presentations
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Teaching photosynthesis and cellular respiration: analyzing biology 9 teachers' TPACK mastery, practices, challenges and resources

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Photosynthesis and cellular respiration are two complementary reactions operating in our environment, however, considered among the most difficult topics to teach and learn being the least mastered topics in science 9 among public schools (Santos *et al,* 2021). To investigate in local context, this study assessed the level of mastery of Science 9 teachers in teaching photosynthesis and cellular respiration in terms of three domains of knowledge: technology, pedagogy and content using TPACK (Technological Pedagogical and Content Knowledge) Model (Schmidt *et al.,* 2009) as a theoretical framework and a tool. This study employed descriptive research design utilizing qualitative and quantitative data analysis of the responses of the 27 purposively selected teachers in the 5th Congressional District of Iloilo. The quantitative data analysis revealed that the respondents when taken as an entire group registered a high level of mastery in TPACK, however, there were gaps in technological and content knowledge. Specifically, 12 of the teachers reported rarely using science-based inquiry virtual apps like Photosynthesis Lab, and 11 of the respondents noted a lack of sufficient lab equipment and/or time to conduct experiments. Furthermore, 16 rarely attended relevant professional development opportunities to upgrade their content knowledge. The study found significant differences in TPACK mastery based on age and years of service, with older and more experienced teachers showing higher pedagogical competence. The qualitative data analysis further uncovered the challenges and difficulties encountered by the teachers with the lack of DepEd-prescribed laboratory resources in four public schools, which pushed teachers to be innovative by resorting to alternative activities (e.g., video presentations and/or virtual simulations). In general, the results of the study enjoin DepEd to give attention to the technological, pedagogical, and content knowledge of teachers, starting with equipping schools with adequate learning resources and/or continuous training of teachers to address students' misconceptions and be very highly competent in teaching photosynthesis and cellular respiration.

Keywords: cellular respiration, photosynthesis, teaching strategies, TPACK

Developing a lesson plan in Pearson sample moment correlation that promotes statistical thinking

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This study employed a Design-Based Research (DBR) approach within a lesson study framework to design, implement, and refine a lesson plan on correlation aimed at developing students' statistical thinking. Statistical thinking involves the ability to collect, analyze, interpret, and present data while understanding variation, probability, and uncertainty. A total of 102 Grade 12 students from a public senior high school were selected through purposive sampling. The collaboratively developed 5E's lesson plan integrated real-life data collection, group analysis, teacher scaffolding, and student reflection. Its core components included inquiry-based tasks, peer collaboration, and both formative assessments such as observation checklists and student journals, and summative assessments including written data interpretations and presentations. Data were gathered through classroom observations, student outputs, and focus group discussions. Findings revealed that the Statistics Instructional Strategy (SIS) led learners to experience a developmental process starting with Scratching the Surface (SC) and progressing through Reflection, Enjoyment, Collaboration, Resourcefulness, and Independence, ultimately resulting in Achievement. These stages collectively contributed to the enhancement of their statistical thinking. The study concludes that lesson study provides an effective, iterative approach to designing meaningful lesson plan that fosters statistical thinking through structured and reflective learning experiences.

Keywords: Lesson study, Statistical Thinking Skills (STs), Lesson Planning

Coastal resource management of the local government unit of San Joaquin

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The study focuses on the coastal management program of Marine Protected Areas (MPAs) of the municipality of San Joaquin and aims to assess the management efforts of the local government unit (LGU) in preserving the said MPAs. In investigating and assessing the coastal management program (CRM) of the municipality, the researchers interviewed key personnel regarding the CRM implementation and reviewed secondary data, particularly ordinances that were passed by the Sangguniang Bayan. The data gathered through interviews with four key personnel was analyzed using the Management Effectiveness Tracking Tool (METT), a scorecard formulated by the World Wildlife Federation (WWF) to assess the effectiveness of the management of protected areas. The scores reflected in the METT analysis that the management demonstrated very satisfactory implementation and performance, with all of the aspects receiving ratings above 50%. The analysis also showed that the CRM implementation is in line with the United Nations' principles of Good Governance. Furthermore, this study recommends actions that the municipality can use to address the issues that threaten and/or hinder its implementation, specifically the conflict between the barangays and the private owners for the use of land. In addition to the collaboration as CRM strategy, this study also recommends fund allocation for the provision of activities, management, and implementation for the sustainability of the CRM programs.

Keywords: Municipality of San Joaquin, Marine protected areas, coastal management

Inside BIR Iloilo: Understanding the drivers of job satisfaction

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Job satisfaction is a key predictor in determining employee motivation, retention, and turnover intention and has a direct impact on an organization's bottom line. Despite this, little is known about what drives job satisfaction in public-serving government institutions in the Philippines, particularly at the provincial level. This study examined organizational, personal and psychological, and demographic influences on job satisfaction among employees of the Bureau of Internal Revenue (BIR) Revenue Region (RR) No. 11 in Iloilo City, recognizing their critical role in tax administration and public service delivery. Anchored on Herzberg's Two-Factor Theory, Maslow's Hierarchy of Needs, and Vroom's Expectancy Theory, the study used a cross- sectional design and administered a self-developed job satisfaction questionnaire to 66 full-time employees across the regional and five (5) district offices. The questionnaire measured specific dimensions of job satisfaction, including Work Environment, Compensation and Benefits, Career Growth and Fulfillment, Stress and Burnout, etc. These domains were informed by relevant literature and motivational frameworks and were reviewed before being pilot-tested to ensure reliability and validity. Internal consistency across most scales were excellent (Cronbach's $\alpha \geq 0.80$). Results showed that BIR RR No. 11 personnel are generally satisfied with their jobs, with an average satisfaction index of 72.40%. Multiple linear regression revealed significant positive predictors: Work Environment ($p = 0.001$), Compensation and Benefits ($p = 0.002$), and Career Growth and Fulfillment ($p = 0.065$). Stress and Burnout was a significant negative predictor ($p = 0.004$; $t = -2.9783$). While most demographic variables were not significant, Revenue Office (Location) had a modest influence ($p = 0.039$). Findings emphasize the importance of employee-centered policies that reduce burnout and enhance satisfaction. The revision of current practices aids in retaining an empowered workforce that delivers quality public service.

Keywords*:* Job satisfaction, government institutions, BIR, employee motivation, stress and burnout

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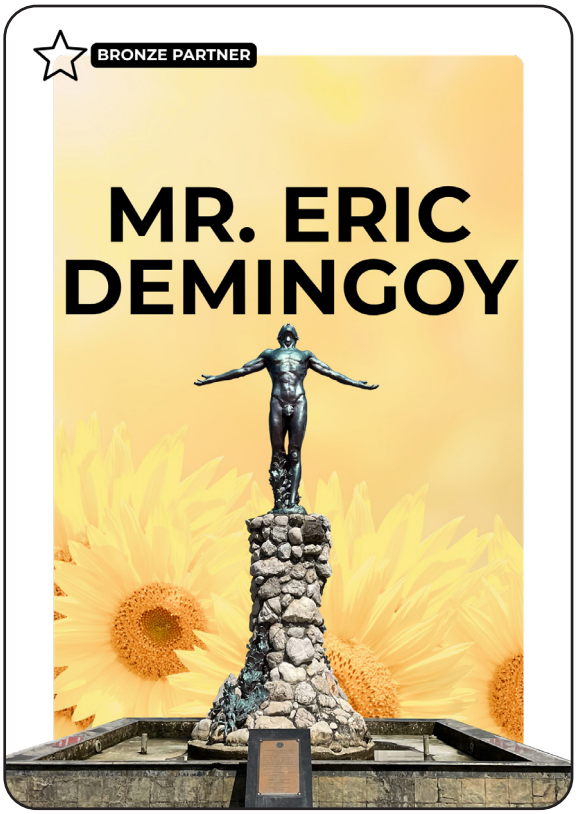
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