Philippine Society for the Study of Nature (PSSN), Inc.
TIN 005-866-117-000 SEC Reg. No. B200000647
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Website: http://www.psssnonline.org

Philippine Society for the Study of Nature, Inc.
BPI checking account no. 000911-0146-45
Los Baños Branch

PSSN stands for the Philippine Society for the Study of Nature, Inc. It was organized in a national conference on networking for the wise and sustainable use of nature at the University of the Philippines College Baguio (now University of the Philippines Baguio) in April 2000. The participants saw the need for a network to address nature and nature-related problems on the country. Thus, the society was established in order to provide a venue for the development pf strategies for the sustainable utilization of nature and its amenities. On September 16, 2000, the society was registered with the Securities and Exchange Commission (SEC) as a non-profit, non-stock, non-partisan organization of Professionals, researchers, administration policymakers, practitioners, students, and organizations involved in nature studies and its related activities.

The society's objectives are to provide and develop strategies towards wise and sustainable use of nature and to ensure a faithful representation of responsible thinking and sentiment regarding issues about nature. It also seeks to establish partnership and/ or collaboration with local government units and other institutions that are involved in the development, conservation, and management of nature resources, Its various activities serve as a channel for the exchange of information, sharing of professionals expertise, networking, and strengthening of camaraderie and cooperation among members and partner's institutions.

PSSN's annual conference in nature studies has been successfully conducted for the last 15 years. With the first conference held in Los Baños in 2001, the conference has been collaborated with various institution in different areas in the country, since then, in Baguio (2002) with UP Baguio and University of Cordilleras (formerly Baguio Colleges Foundation); Cebu (2003) with UP Cebu College; Bohol (2004); Pampanga (2005) with Pampanga Agricultural College; Davao del Norte (2006) with University of Southern Mindanao and Local Government of Kapalong; Palawan (2007) with Palawan State University; Ilocos Norte (2008) with Don Marcos Mariano State University; Iligan City (2009) with Mindanao State University-Iligan Institute of Technology; Baguio City (2010) with UP Baguio; Los Baños (2011) with University of the Philippines Open University and University of the Philippines Los Baños, General Santos City (2012) with Sultan Kudarat State University, Cebu City (2013) with Cebu Technological University and Benguet Province (2014) with Benguet State University. These conferences provided important avenue attracting researchers, engineers, scientists, students, environmental advocates, and other professionals from many parts in the country.

The success of these annual conferences reflects the critical environment topics that are discussed as well as the quality of the presented papers. All the papers that are selected for either oral or poster presentation underwent a review process.

This year's conference theme "Nature Studies and Innovations In An Era of Changing Global Climate and Environment" aim to create an ideal atmosphere for cross-cultural discourses in environmental topics across disciplines and to gain a multi-perspective view of environmental issues and concerns, solutions, management innovations, as well as advances in developing conservation, restoration, education, research methods, and policy advocacy. This multi-perspective view is important for the creation of a sustainable and healthy environment for the next generation. In addition, it aims to provide avenue for sharing and consultations with experts regarding their research works and expertise for potential collaborative development endeavors.

The following are the Conference sub-themes:

1. Climate Change and Risk Management Stream
2. Community and Health Stream
3. Communication and Conservation Stream
4. Innovation Stream

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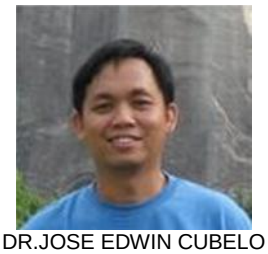

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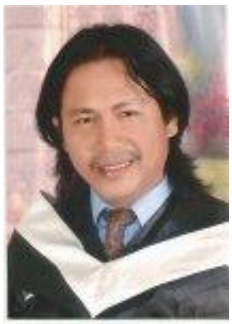

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120. Tapay, Nenita E (retired)
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122. Tranquilan, Jane B
123. Urbiztondo, Lorna
124. Villafaña, Abel P. (retired)
125. Zapico, Florence Lasalita*
126. Zulueta, Diosdado P.

MESSAGE FROM THE KEYNOTE SPEAKER

Good day to all of us!

First of all, congratulations to the indefatigable organizers of this important event. Second, I would like to thank the participants who I understand come from various academic disciplines for devoting their precious time to this worthy undertaking.

This gathering is an important segment of the several important initiatives towards developing the appropriate strategies to tackle climate change. I cannot over emphasize the critical attention required to address the destructive impact of climate change. We cannot prevent disasters. But somehow we can mitigate the magnitude of the havoc wrought by disasters. The Department of Science and Technology (DOST) has made significant inroads in the areas of disaster risk reduction and management. This was made possible through the steadfast and unwavering support of the present administration. Since 2011, the average annual increase in the GAA Funds of DOST hovers in the second highest rung. The only other Department that wrested the top honor is none other than the Department of Social Welfare and Development (DSWD). However, looking back at the numbers and extent of fury of recent disasters that hit our hapless country, I can not help but appreciate the underlying logic behind the GAA figures for the DOST and DSWD. I cannot fathom in its strictest sense the peripheral motives of the detractors of this Administration. However, I would rather not dwell on this futile exercise.

It would be much better to spend the efforts in more productive exercises, such as dealing with people who are part to the solution instead of people behaving like water dousing the fires of enthusiasm. All of you gathered here are parts of the solution. We will not solve all the issues in one sitting. However, Rome was not built in a day. The LORD agreed not to obliterate Gomorrah as long as there is one person in there who believed in Him. Considering that in this gathering, not only one but perhaps more than 100 subscribe to the faith in our innate abilities to

formulate the appropriate solutions, there will always be ample number of people who do the right things for the right reasons. At this juncture, what matters most, is for us to be firm in our resolve to our commitments, concentration, coordination, communication, and continuity.

God bless all of us!

(Sgd)Dir.VICTOR B. MARIANO, DBA
Regional Director
DOST-Region III

In behalf of the PAMPANGA STATE AGRICULTURAL UNIVERSITY (PSAU) Administration, Faculty, Non-Academic Staff and Students, I extend my warm welcome and greetings to the participants of the International Conference on Nature Studies and Innovations for the Environment and 15th Annual Scientific Convention of the Philippine Society for the Study of Nature (PSSN) on May 26-31, 2015 at Stotsenberg Hotel, Clarkfield, Angeles City.

The PSAU is greatly honored and privileged to co-sponsor this prestigious scientific convention of the PSSN where international and national research scientists, faculty researchers and stakeholders gather to share knowledge, information and technology as endpoints of scientific research towards a better world.

The conference theme: "Nature Studies and Innovations in an Era of Changing Global and Environment" is very relevant to our present national situation. I am confident that various scientific papers lined-up for presentation will serve as touchstones to address our global and environmental issues.

I congratulate the PSSN officers, secretariat, organizers and all the participants of this very noble and timely undertaking.

May God richly bless us!

HONORIO M. SORIANO JR. Ph.D.
University President
Pampanga State Agricultural University

First and foremost, thank you for graciously allowing us to be a part of ICoNSIE 2015. We are more than honored to be a part of this activity. It is very important to have conferences like this to discuss the environment, as we are all a part of it.

When an opportunity arises, we must grab it, not just for our sake, not just for the sake of those around us, but also for the sake of the world we live in. It begins with a simple idea, in this case, a conference, and then we plan for action. We are all a part of this world and we must do our very best to preserve it.

We live in a world of technology where we are able to predict when a natural disaster will occur, how big its impact is, and how we will be able to help in the aftermath. But this is not enough, we must not stop there. We must not only prepare for the aftermath, but we should also be ready before and during, because natural disasters are inevitable. We all just have to be prepared, and if we are able, lessen the impact. With talks like this, we will learn how to be prepared and what we can do.

And please allow me to end this message by sharing a Native American proverb, which says: 'We do not inherit the Earth from our ancestors; we borrow it from our children.'

Thank you very much and God bless us all!

DEXTER R. BUTED, DBA
University President
Pangasinan State University

Let me begin by extending my utmost gratitude to God Almighty, all our officers and members for believing in me and giving me the great honor of being the president for 2014-2015. The Philippine Society for the Study of Nature's (PSSN) International Conference in Nature Studies and Innovations for the Environment will not be successful without your full support. Thank you very much!

The Philippines like other ASEAN countries are endowed with natural resources, marine and freshwater resources, forest, biodiversity and other land resources that need to be protected to ensure long term local and global environmental benefits. Global warming, industrialization, urbanization, increasing demand on commodities and environmental services that result to overfished seas, fragmented forest, and polluted air and waters, the need to empower local communities and strengthen private-public partnership locally and globally, and governance are just a few challenges that must be addressed immediately as changing global climate and environment make our region more vulnerable.

Through this conference, it is the hope of PSSN that new knowledge, innovations, best practices towards environmental protection and social safeguards as outcome of the researches and studies will strengthen the commitment of everyone and every agency to environmental stewardship and global partnership for a sustained but healthy environment.
Again, thank you very much for everyone who has come out and joined us for IConSIE 2015. None of this would have been possible without you.

IRENE A. DE VERA, Ph.D
PSSN President 2014-2015

Program at a Glance

Date (2015)	**Time**	**Activity**
Tues, 26 May	AM	General Registration Setting up of posters
	PM	Preconference Activities on "Automating Biodiversity Indices Calculation and Analysis" by Mr. Ronaldo de Jesus, UPOU-UPLB Team Leader, UP ITTC
Wed, 27 May	AM	Opening Program Inspirational Message by Dr. Honorio M. Soriano Jr., PSAU President Keynote Speech by Dr. Victor B. Mariano, Director of Department of Science and Technology, Region 3 Best Paper Competition (Undergraduate Category)
	PM	Best Paper Competition (Professional Category) 1st Plenary Talk by Dr. David Hall on the subtheme "Innovations, Climate Change and Risk Management" 2nd Plenary Talk by Dr. Chew-Tin Lee, Universiti Teknologi Malaysia with the title, Towards Low Carbon Society in Iskandar Malaysia: Implementation of Community Food Waste Composting) Parallel Sessions
Thurs, 28 May	AM	3rd Plenary Talk by Prof. Minerva Calimag, MD, PhD on the subtheme "Community and Health Stream" Parallel Sessions
	PM	BOT Nomination and Election Parallel Sessions Poster Competitions Fellowship Night and the awarding of Plaque of Appreciation to the Host University and the Service Award
Fri, 29 May	AM	4th Plenary Talk by Dr. Ravindra C. Joshi, UPB Visiting Professor, on the subtheme "Conservation and Communication Stream" (Biodiversity Restoration and Enhancement through Ecological Engineering: Examples from the ASEAN Rice Landscapes for Pest Management) International Forum on Sustainability Science Parallel Sessions
	PM	Parallel Sessions General Assembly, Induction of New Members and Officers Awarding of Certificates and Closing Ceremony
Sat, 30 May	AM	Post-conference to Subic Nature Trip, Olongapo, Zambales
	PM	Homeward bound

Invited Talks: Plenary Sessions

Dr. David Hall is a consultant in higher and vocational education and a former senior University Administrator with more than 25 years of professional experience specializing in engineering, science, and technology (S&T). He has developed many new S&T programs in developing countries, and is experienced in the start-up, funding, accreditation, and management of new university centers, and management and program development in existing universities. He has served as Dean of Computing and Engineering at the University of Huddersfield, UK; Dean of Engineering and Information Technology (IT) at the Higher Colleges of Technology in the United Arab Emirates (UAE); and Director of the Appropriate Technology Center at Kenyatta University in Kenya. Currently, Dr. Hall is Chief of Party for the USAID Science, Technology, Research and Innovation for Development (STRIDE) program in the Philippines. Prior to this he was Chief of Party for the USAID/Liberia project Excellence in Higher Education for Liberian Development (EHELD), managed by RTI. He has extensive experience in working with counterparts in host-country governments where he was stationed, forging partnerships among universities and between universities and private companies for specific initiatives and projects. With the University of Huddersfield, he led a regional innovation strategy in collaboration with a consortium of 13 universities. In the UAE, he was responsible for income generation, industrial links, strategic planning, and academic provision in engineering and IT. In Kenya he led curriculum development for a master's program in appropriate technology. He is a skilled communicator, presenter, negotiator, facilitator, and arbiter, with an inclusive and consultative approach, and sensitive to cultural aspects of communication. Dr. Hall's success in assisting technology-based programs to get started and thrive is measured by private funding his programs have attracted.

INNOVATIONS, CLIMATE CHANGE AND RISK MANAGEMENT

ABSTRACT

Climate change and the associated risks are increasing in importance as the consequent effects ae seen to influence aspects of everyday life such as livelihoods, communications and food and water security. The science and technology communities are regularly pressed to respond to climate related emergencies in increasingly shorter timescale while, at the same time, seeking long term prevention and mitigation solutions and strategies.

These demands require a more efficieint approach to problem solving both incremental and "step-change" innovation. The required solutions should be need to consider not only scientific and technological aspects but also environmental, economic and sociological ned, constaints and issues. Perhaps there needs to be a greater focus on problem-driven "step-change" innovation.

The most vibrant innovation activity occurs in the private sector, driven by the competitive needs of business. Such overt competition does not exist in sectors such as climate change or international development and there is increasing focus in these sectors on how to adopt the innovation approaches of the successful private sector organizations.

This presentation will illustrate some of the tools, techniques, and strategies and cultural approaches to more efficient, solution-focused innovations and will discuss how these might be transferred to climate change and the associated management of risks.

Dr. Chew-Tin Lee is an Associate Professor at the Department of Bioprocess Engineering, Faculty of Chemical Engineering at the Universiti Teknologi Malaysia (UTM). She obtained her PhD in Biochemical Engineering at University of Cambridge, United Kingdom. Currently, she is the Director for Global Education in the same university, a Key Advisor for International Educational Tours for UTM Students to China (2006, 2010, 2013) & Taiwan (2007), and a great mentor to her undergraduate and graduate students and postgraduate researchers. She has attended numerous International Networking and Higher Education Events/Conference in Partner institutions. Her research interests include: community Food waste recycling; characterization of organic wastes-biological (enzymatic), chemical, physical for GHG emission, maturation and quality during composting; and modeling for integrated solid waste management. Dr. Lee is actively involved in international and local research projects resulting to numerous publications. She is a prominent figure in the scientific community having been invited as resource speaker or a paper presenter. Because of her excellence in her field of specialization, she has received numerous awards from different Scientific Award giving bodies. She is likewise a recipient of the EU Erasmus Mundus Scholarship in Universidad Polytechnica Madrid, School of Agricultural Engineering (Oct-Dec 2015) and Cambridge Commonwealth Trusts- Partial Bursary Scholarship in 2000-2013.

TOWARDS LOW CARBON SOCIETY IN ISKANDAR MALAYSIA: IMPLEMENTATION OF COMMUNITY FOOD WASTE COMPOSTING

ABSTRACT

Rapid population growth and urbanisation generate large amount of municipal solid waste (MSW) in many cities. The present practice for MSW management is still depending on landfilling in many developing countries including for Malaysia. The operating cost for MSW management in Malaysia was reported as USD300Mil in the year 2014 alone. To date, Malaysia is at the stage of transition towards sustainable and effective MSW management. Many cities including Putrajaya and the Iskandar Malaysia region have launched their Low Carbon Society Blueprint where effective MSW management is one of the key pillars to sustain efficient cities for living.

In this study, the implementation of community food waste composting in a village within Iskandar Malaysia is presented as a case study to showcase effective MSW management and for mitigation of GHG emission. Up to 40-60% of Malaysian MSW is reported as organic or food waste where such waste is highly putrescible and can cause bad odor and public health issue if its disposal is delayed. The selected village, Felda Taib Andak, is located within a palm oil plantation and a crude palm oil processing plant. This project showcases a community-composting prototype to compost food and palm wastes into valuable compost of high quality. This project is in line with Malaysia's National Blue Ocean Strategy in terms of: fast execution, low cost, waste-to-wealth, job creation and sustainability. The challenges of this project include education of sustainability and 3R practices to the villagers and the setup of a viable model for sustaining the operation and maintenance. In a nutshell, this paper shares the great challenges for university to transfer knowledge and technical skills to the community, where efficient communications with the multiple stakeholders including the villagers, government agencies, SMEs and NGOs play vital roles to realise the implementation of such innovative move. If such programs can be sustained in long run and duplicated in many other communities, it would significantly reduce the cost of MSW management in Malaysia and also for the mitigation of GHG from waste transportation and at the landfill sites.

Plenary Speaker on the Subtheme

Community and Health Stream

Dr. Calimag is Full Professor in Pharmacology, Anesthesiology and Clinical Epidemiology at the UST Faculty of Medicine and Surgery; Professorial Lecturer in Health Informatics at The Graduate School; Senior Associate Researcher, the Research Center for Culture, Education and Social Issues and the Research Center for the Health Sciences all at the University of Santo Tomas, Manila, Philippines. She holds the following academic degrees: BS Pre-Med(Magna cum laude); Doctor of Medicine (Benemeritus); and a Master of Science in Clinical Epidemiology (at UP College of Medicine under scholarship with the Philippine Council for Health Research and Development); and Doctor of Philosophy in Education Major in Educational Management (Summa cum Laude) specializing in Educational Technology Innovation and Distance Education. She is an alumna of the UST High School Class of 1973.

She is a Fellow and Past Vice-Chair of the Philippine Board of Anesthesiology; 2-term President of the Manila Medical Society; 2-term President, Philippine Society of Anesthesiologist; and presently the President of the Asian and Oceanic Society of Regional Anesthesia and Pain Medicine (AOSRA-PM) and the 93rd President of the Philippine Medical Association (PMA), recently reelected for a second term. She is only the 7th female and the 2nd anesthesiologist to hold this post in the 111- year history of the Association.

She was awarded the Most Outstanding Professional in the field of Medicine in 2012 and bested 39 other outstanding professionals from various fields to win the First Eric Nubla Award for Excellence in the Professions in 2012 by the Professional Regulation Commission.

MARIA MINERVA P. CALIMAG, M.D. Ph.D., F.P.B.A.
President, 2014-2015; 2015-2016
Philippine Medical Association

"PMA: Empowering the Filipino Physician for Nation Building"

Dr. Ravindra C. Joshi is an Indian citizen, and his current positions are Adjunct Professor of Agriculture, University of South Pacific, Fiji, and Visiting Professor of Biology, University of the Philippines at Baguio, Philippines. He started his career as an entomologist with the Commonwealth Agriculture Bureau International (CABI)'s Institute of Biological Control in India. Throughout his scientific life, he preferred biological control, or natural methods in managing plant pests, and integrated pest management. He worked for many years with rice, this being the staple food of more than half of the world's population. From the International Rice Research Institute (IRRI), based in the Philippines, he moved on to the International Institute of Tropical Agriculture (IITA), Nigeria, where root crops are the main staples. His research interests include addressing family food and nutrition security in Asia, Africa and the Pacific, through local production of a diverse range of nutritious foods using sustainable farming practices. He is particularly interested in helping communities living in small outer islands where the threats from climate change on food and nutrition security are most serious

Dr. Joshi obtained his PhD degree from University of the Philippines at Los Baños. He is the newly appointed Tropical Agriculture Association (TAA) regional coordinator for the Pacific and will be able to network between the TAA and regional/international organizations, regional and national universities, and Government Ministries of Agriculture in Philippines, Solomon Islands and Fiji.

Biodiversity Restoration and Enhancement through Ecological Engineering: Examples from the ASEAN Rice Landscapes for Pest Management

ABSTRACT

E-mail: rcjoshi4@gmail.com, rcjoshi@up.edu.ph

Ecological Engineering (EE) for pest management is an approach to restore or enhance biodiversity in the rice landscape, both of floral and faunal species, so that resources for natural enemies, such as shelter and food, are enhanced for sustainable rice production in the Philippines. In this presentation, the EE concepts and techniques to increase ecological functions, selected case studies from ASEAN countries, and the prospects for ecological engineering of rice pests will be discussed.

Best Paper Competition
(Abstracts of Entries)

DETECTION OF *Staphylococcus aureus* IN SELECTED COSMETIC BLEMISH BALM CREAM

Charlene S. Caberic, Rhocell Lovely B. Luterte, Chona Bandelaria
Biological Sciences Department
College of Science and Computer Studies
De La Salle University - Dasmariñas
City of Dasmariñas, Cavite

ABSTRACT

Different samples of BB cream were collected on side walk vendors at Calamba Laguna and Dasmarinas Cavite. It was done on July 2014. Detection of Staphylococcus aureus were done on the experiment at Research Institute of Tropical Medicine Laboratory. The study has 12 samples of BB cream. Those samples undergo standard procedure to detect microorganism. Only sample B showed a *S. aureus* morphology based on gram staining while other has also microorganism like *Diptheroids.* Bacteria found in sample B is not identified as Staphylococcus aureus when undergone coagulase tests. It was found negative on coagulase test so it means it belongs to other species of Staphylococci. Those microbial contaminated blemish balm creams lacks the efficiency of the preservative. The preservative used in it doesn't stop microbial proliferation thereby protecting the cosmetic from degradation and malodor and protecting the consumer from the problems attending microbial contamination. There was no presence of Staphylococcus aureus on the BB Cream samples but 2 out of 12 samples got contaminated of different bacteria. The preservatives included in the formula of blemish balm cream like liquidum glycerin, methyl-paraben and propyl paraben are found that they are not efficient in inhibiting growth of microorganism in the blemish balm cream. Furthermore, the result obtained in this study showed that the creams are not contaminated by pimple causing bacterium *S. aureus* but it does not mean that it is safe to use, some of the product may contain harmful chemicals that can cause irritation and other skin diseases.

EFFECT OF *Sechium edule* (CHAYOTE) LEAF EXTRACT ON ALT AND AST LEVELS OF *Rattus norvegicus (*MALE ALBINO RATS)

Isabu Kelvin O[a], Mojica Merlene Alyssa[a] and Pareja Marlon C[b]

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[b] Environmental Resource Management and Campus Development Office, De La Salle University-Dasmarinas, Dasmarinas City, Cavite 4115 Philippines

ABSTRACT

This study tested the effect of chayote (*Sechium edule)* leaf extract on ALT and AST levels of male albino rats (*Rattus norvegicus)*. The study utilized the potential of chayote leaf extract in lowering ALT and AST. Twenty-four male albino rats were acquired for the RCBD research design. 10% concentration of ethanol was used to induce damage to the liver of the test organisms. The test organisms were divided into four groups, (T_0) being the control group, serving as a cross reference to the other group, with only administration of ethanol and normal

saline solution. The second group (T_1) was given 50% of the chayote leaf extract and 10% ethanol, which was administered after an hour of administering the chayote leaf extract. The third group (T_2) was given 75% chayote leaf extract and 10% ethanol while the fourth group (T_3) was given 95% chayote leaf extract and 10% ethanol. The liver enzymes namely Alanine aminotransferase (ALT) and Aspartate aminotransferase (AST) were used as biochemical liver markers to determine the presence of liver damage. An increase in these enzymes would indicate liver damage, while a decrease would show hepatoprotection or prevention. Results showed that chayote leaf extract exhibit effect on the alcohol-induce male albino rats. $T_{1,}$ with 50% concentration exhibited an increase in AST but decrease in ALT. $T_{2,}$ with 75% concentration, showed increased ALT but decreased AST enzyme levels. T_3 with 95% concentration exhibited to be the most effective in decreasing both ALT and AST liver enzymes, and can be said to possess the greatest potential for hepatoprotective effect.

***Keywords**: AST, ALT, Ethanol, male albino rats*

EFFECTS OF *Acalypha amentacea* ETHANOLIC LEAF EXTRACT IN LOWERING THE CHOLESTEROL LEVEL OF ALBINO RATS

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ABSTRACT

Many studies have shown that numerous plants from the family Euphorbiaceae have the ability to lower cholesterol levels, such as *Acalypha wilkesiana*. It is a subspecies of *Acalypha amentacea* and they are closely related to each other, therefore probably sharing the same phytochemicals. The aim of this study is to determine the effect of the ethanolic leaf extract of *A. amentacea* in lowering the cholesterol level of albino rats, and which among the test dosages is most effective. Twenty-four rats were used and they were divided into four groups: T0 (control), T1(375mg/kg), T2(750mg/kg), and T3(1500mg/kg). They were acclimatized for three weeks, induced with hypercholesterolemia for another three weeks, and treated with the extract for four weeks. Cholesterol levels were analyzed before and after the administration of high fat diet, and after administration of treatment. The data were analyzed using paired t-test and One Way ANOVA. The dosage of 375mg/kg was not able to lower the cholesterol levels at all while the dosage of 750mg/kg was able to lower them but not significantly ($p>0.05$). Only the dosage of 1500 mg/kg caused a significant decrease in blood cholesterol level ($P=0.027$), and was able to return the levels to its normal base line.

***Keywords**:* Acalypha amentacea*, cholesterol, dosage*

BIOGEOGRAPHY OF THE FAMILY RANELLIDAE (GRAY, 1854) IN THE PHILIPPINES

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ABSTRACT

The family Ranellidae (class Caenogastropoda, phylum Mollusca) is composed of large, tropical and subtropical marine predatory gastropods. Although the Ranellidae has been recorded in the Philippines, no comprehensive data is available for its distribution in the country. Geographical distribution is significant for conservation, ecology and biology of different taxa, including molluscs. In this study, the geographical distribution of the Ranellidae in the Philippines was investigated via data mining and the generation of distribution maps. Occurrences of ranellid species across the country were obtained using museum catalogs, publications and online databases. Results showed that the Ranellidae is widely distributed and is composed of eight genera, *Biplex, Charonia, Cymatium, Distorsio, Gyrineum, Linatella, Ranularia, Sassia,* distributed across 80 species. There are four possible endemics. Visayas region is found to have the most number of species and unique taxa. The most occurrences in the data were *C. pileare, C. muricinum* and *G. gyrinum* found most commonly in Bohol, Palawan and Cebu.

Keywords: gastropod, mollusc, Ranellidae, geographical distribution, Philippines

ANTI-QUORUM SENSING POTENTIALS OF *Ehretia microphylla*, *Mentha arvensis* AND *Vitex negundo* AGAINST SELECTED BACTERIA

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ABSTRACT

The study was carried out to detect anti-quorum sensing activity of methanol and deionized extracts of *Ehretia microphylla Lam*., *Mentha arvensis Linn.* and *Vitex negundo* against *Pseudomonas aeruginosa* and *Staphylococcus aureus* selected virulence factors at the translational level. All extracts did not exhibit antibacterial activity against *S. aureus* and *P. aeruginosa* through disk diffusion. However, only the methanol extracts of *Ehretia microphylla Lam*., *Mentha arvensis Linn.* and *Vitex negundo* exhibited AQS activity towards *Chromobacterium violaceum*. Nevertheless, virulence assays revealed the presence of anti-quorum sensing activity in water extracts of *M. arvensis* and *V. negundo* against alpha hemolysis but none of the extracts inhibited the DNase of *S. aureus*. In *P. aeruginosa*, only the methanol extracts of *V. negundo* decreased the swarming motility, while all the methanol extracts of *Ehretia microphylla Lam*., *Mentha arvensis Linn.* and *Vitex negundo* caused significant reductions in pyocyanin production at 520nm. *Vitex negundo* extracts exhibited the most AQS activity against the test bacteria in three of the four virulence assays. The results show a considerable potential of the selected medicinal plants as an alternative to antibiotics in preventing pathogenicity through inhibition of virulence factor production, while more importantly, preventing selective pressure for development of resistance.

Keywords: *Quorum sensing, Virulence factor, DOH- approved medicinal plants, Pseudomonas aeruginosa, and Staphylococcus aureus*

POTENTIAL ANTI-DIABETIC ACTIVITY OF Cymbopogon citratus (TANGLAD) ON ALLOXAN-INDUCED MALE ALBINO MICE

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ABSTRACT

The effect on different concentrations of Cymbopogon citratus (Tanglad) leaf extracts on the blood glucose of albino mice was determined in this study. Twenty four (24) mice were grouped into four treatments corresponding to four concentrations of Tanglad namely, T1- 25% leaf extract, T2- 50% leaf extract, T3 - 75% leaf extract and T4 - 100% leaf extract. All treatments were done in quadruples and mice were subjected to a week of acclimatization followed by induction of Alloxan. Different concentrations of Tanglad leaf extracts were orally given to the mice for 19 days. Blood glucose analysis was obtained using tail-sectioning technique and analyzed with the use of glucometer. Results of the hispathological observations showed that the 100% Tangald leaf extract concentration caused mild degeneration of β-cells and an average within normal limits. A highly significant difference ($p = 0.001$) was also found between Alloxan induced with and without Tanglad treatment. Moreover, multiple comparison suggested that 100% Tanglad concentration proved to be the best in alloxan induced samples. The efficiency of the plant to reduce the blood glucose level of the mice is suggested to be due to phytochemical components such as dietary fiber, essential fatty acids, amino acids, vitamins and minerals

PHYSIOLOGICAL RESPONSE OF THE PECTINATE VENUS CLAM, *GAFRARIUM PECTINATUM* (BIVALVIA: VENERIDAE) TO INCREASING TURBIDITY CONCENTRATIONS

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ABSTRACT

This study is a first step in evaluating the potential of the filter-feeding clam *Gafrarium pectinatum* as an aquaculture species in northern Philippines. Effect of increasing turbidity concentrations on the filtration and pseudofaeces production of small-sized (25.52 ±1.24 mm shell length) and large-sized (36.36 ±1.42 mm shell length) clams were quantified under laboratory conditions. Filtration rates and pseudofaeces production significantly increased (p<0.05) with increasing turbidity concentrations. Shell size was not a factor that influenced the feeding physiology of the clams. Strong linear relationship (r^2=0.71) was observed between the

filtration rate and pseudofaeces production of *G. pectinatum*. The result of the study showed the *G. pectinatum* is a sturdy bivalve and could be a potential species for aquaculture.

Keywords: *Gafrarium pectinatum*, filtration, pseudofaeces, turbidity, Santiago Island

HIDING IN PLAIN SIGHT: USING PRODUCT PLACEMENT AS A MARKETING STRATEGY AND THE LEVEL OF ITS EFFECTIVENESS: AN EXPERIMENTAL RESEARCH

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ABSTRACT

This experimental research paper is an attempt to determine the level of effectiveness of product placement as a marketing strategy used in a short film. This paper uses the application of Integrated Marketing Communication Model as a backbone to communicate the message to the respective respondents. In addition, Hierarchy-of-Effects Model is used to determine the level of effectiveness product placement has attained in a specific type and group of respondents. Mixed quantitative and qualitative methodologies are used to determine product placement's level of effectiveness in a short film. In order to do so, researchers produced a short film and inserted product placement, integrated explicit and implicit types respectively; and show it to 200 respondents simultaneously. Also, Focus Group Discussions are made to justify the respondent's attitude towards the product. In this paper, product placement's level of effectiveness is defined as brand recognition, brand recall, and purchase intention. As a result, this paper has found out that integrated explicit product placement is recognizable, could be recalled and initiates purchase intention more effectively than that of implicit placement. However, FGD's reveal that implicit type of placement generate reasons in accordance to the film itself.

Keywords: *Integrated Marketing Communication Model (IMC), Hierarchy-of-Effects Model, Integrated Explicit Product Placement, Implicit Product Placement, Brand Recognition, Brand Recall, Purchase Intention, Focus Group Discussion (FGD)*

SEQUESTERING NICKEL IONS USING MOLECULARLY IMPRINTED POLYMERS FOR SURFACE WATER FROM KAYAWYAWAN RIVER, SURIGAO DEL SUR

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ABSTRACT

In this paper, the viability of sequestering nickel in nickel contaminated surface water using molecular imprinting technology (MIT) was being looked into. Molecularly Imprinted Polymers (MIP) was prepared via precipitation polymerization method using nickel (Ni) as template, methacrylic acid (MAA) as the functional monomer, ethylene glycol dimethacrylate (EGDMA) as cross-linker and azobisisobutyronitrile (AIBN) as initiator. Non-imprinted polymer (NIP) were also prepared to compare the imprinting value (I value) of MIP relative to the NIP. Three (3) different ratios of Ni: MAA: EGDMA were prepared (1:2:2, 1:2:4, and 1:4:4). Investigation on the adsorptive capacity of these ratios was carried out by using these polymers to sequester nickel

ions in the nickel-spiked aqueous solutions. Results showed that MIP ratio 1:4:4 has the highest nickel adsorptive capacity of 81.80%. The above synthesized polymers were characterized by FT-IR and SEM analysis. The ratio 1:4:4 was selected to treat the surface water samples collected at the three (3) established sampling stations of Kayawyawan River, Carrascal, Surigao Del Sur. An average of 80.00 % Nickel was removed from the surface water sample. This result conveys that the synthesized MIP is viable for sequestering nickel from the nickel contaminated waters.

***Keywords**:* Molecularly Imprinted Polymers; methacrylic acid; ethylene glycol dimethacrylate; azobisisobutynitrile

MITIGATION OF ENVIRONMENTAL PROBLEMS IN THE HEADWATER: CAUSAL CHAIN AND POLICY OPTION ANALYSES

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ABSTRACT

Degradation of the headwaters is widespread particularly in developing countries, mainly as a result of the intensification of agriculture. The pattern and extent of agricultural land influences infiltration properties, transpiration rates, and runoff patterns, which in turn impact the physico-chemical characteristics of the water. Current and future degradation of these systems affects a rich array of species. The assessments determined that water pollution and microclimate change are the primary environmental issues in Guinzadan, Bauko, Mt. Province that affect population density of juvenile anurans and species diversity of lithophytes. The GIWA approach, through assessing root causes of environmental concerns, enable the development of policy approaches for mitigating environmental degradation. This paper explores policy options for mitigating the impacts, and reducing the drivers, of two environmental concerns – population density of juvenile anurans and species diversity of lithophytes – addressing cause and effects. The common theme in this case study is the need to develop integrated ecosystem and policies, and mechanisms to manage conflicting interest and to limit threats to natural processes.

***Keywords:** headwater, mitigation, policy option, causal – chain analysis*

GEOREFERENCING AND CHARACTERIZATION OF NESTING TREES OF COMMONLY TRADED WILD BIRDS: A COMMUNITY CONSERVATION STRATEGY

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ABSTRACT

Forest degradation endangers the survival of nesting trees in the wild. Despite this threat, the nesting trees that support the commonly traded birds in Talakaigan Forest are not well documented. Hence, the study was conducted to provide information on the characteristics,

species composition and geographical distribution of nesting trees. The study was participated by the indigenous Tagbanua bird poachers in the area. Preliminary information was obtained using focused group discussion and parabiology training was conducted to equip the participants with practical skill needed in the data gathering. The study unfolded that there were only two species of birds commonly poached in the watershed, the *Tanygnathus lucionensis* and *Gracula religiosa*. These birds nest only on four species of trees which typically towers above the canopy layer. Remarkably, more than 60% of the recorded nesting trees belong to single species of tree, the *Koompasia excelsa*. The GIS analysis unveiled that most nesting trees were located in the interior part of the forest. The skill needed to venture into the jungle highlights the role of Tagbanua Tribesmen in the poaching activity in the area. The study recommends an education campaign focusing on both the nest trees and the poached bird species be implemented.

Keywords: *georeferencing, avifauna, poaching, nesting tree*

MEASURING HOUSEHOLD SOCIAL VULNERABILITY TO CLIMATE CHANGE: A CASE OF LAGUNA STATE, THE PHILIPPINES

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ABSTRACT

This study empirically investigates household social vulnerability in relation to the impact of natural disasters associated with severe climatic events. It is considered that social vulnerability in this respect should be reduced accompanying infrastructure construction for climate-damage reduction, as the exposure to severe climatic events is increasing worldwide. In this study, data were obtained from experts and through household surveys conducted in the state of Laguna in the Philippines. The results of the index analysis are summarized as follows. Firstly, the weights for components of the vulnerability index are insignificantly affected by geographical features and the experts ' specialty and their personal traits. Secondly, the social vulnerability index is determined by multiple factors and therefore should not be assessed by a single variable; and thirdly, the characteristics of "low educational attainment," "low labor rate," and "a lack of economic resources" are crucial in determining the social vulnerability class of households. This suggests that local governments should develop an information system that identifies socially vulnerable households, increase the knowledge of less-educated residents in relation to climate change and learn how to reduce their risk from severe climatic events.

Keywords*: Social vulnerability, Household survey, Community based disaster management, Philippine*

PRACTICES, SYSTEMS AND ISSUES ON SOLID WASTE MANAGEMENT IN CATBALOGAN CITY, PHILIPPINES

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ABSTRACT

This study aimed to assess the current practices, systems, and issues of MSW Management of Catbalogan City, Samar. Specifically, it seeks to estimate the average per capita of MSW generation and its total quantity determine the current practices of the MSW Management in terms of segregation, collection, treatment and final disposal and identify and recommend solutions for improving the MSW Management of Catbalogan City. Document reviews, direct observation, interviews and questionnaire survey were used to obtain a general overview of the SWM of the city. A total of 1,740 key informants were involved in the study. They were purposively selected based on the following criteria: member of waste management council, LGU, overall responsibility on waste management. Households were selected through systematic random sampling to generate a sample of 1,664 in total. Results showed that the average resident waste generated daily is 0.66 kilogram and an estimated 77.24 tons of solid waste. 69% of the waste composition in Catbalogan City was organic matter followed by plastics. It is recommended that the local government of should seriously undertake material resource recovery and recycling programs. The LGU should also provide technical facilities, intensive awareness campaign and strict implementation of RA 9003.

***Keywords**: solid waste management, Catbalogan City, households*

REAL-TIME WATER LEVEL MONITORING SYSTEM

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ABSTRACT

Real Time Water Level Monitoring System is designed as an alarm system during floods. The study aims to develop a system and device that could monitor and identify the changes or trends in water in real-time mode. Specifically, the project aims to: (1) to develop the real time water level monitoring system; (2) to provide a system with fast notification system; (3) to provide a web page for information updates; and (4) to provide a standalone android application. This project is composed of *microcontroller* which is connected to the *IP Camera* ; a *mobile application* which can control the time of monitoring the areas and automatically send SMS; a *web-based information system* that can help to determine real-time river conditions; a *siren*, and; a *solar panels* as a backup source of energy after energy from the battery is depleted. Based on the data gathered upon testing, the device can send updates of water level (in cm) and battery status for every 5 seconds. Responses include siren and SMS notification. Change in water level gives of at most 2 seconds before an expected response happen. A mobile app output includes graph and livestreaming of the water surroundings.

***Keywords*:** Real-Time, Monitoring System, Water Level Monitoring System, Mobile Application, Web-Based Information System

REMEDIATION OF DIESEL OIL-CONTAMINATED SOIL BY AN INDIRECTLY-HEATED MICROWAVE THERMAL DESORPTION TECHNOLOGY

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ABSTRACT

In this study, the feasibility of an indirectly-heated microwave thermal desorption technology was investigated to treat the diesel oil-contaminated soil. An indirectly-heated microwave thermal desorption technology has been recently developed in Korea, which can substantially reduce the remediation cost of diesel oil-polluted soil with low electric power consumption. This technology uses microwave absorber in order to effectively develop the microwave heating temperature. Based on the laboratory test results, it is found that this technology can effectively complete the remediation process of the diesel oil-contaminated soil.

Keywords: *Microwave, Thermal Desorption, Diesel Oil-Contaminated Soil, Microwave Absorber*

FLOOD RISK ASSESSMENT OF THE ANTIAO RIVER CONTROL PROJECT IN CATBALOGAN CITY, SAMAR PHILIPPINES

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ABSTRACT

Flooding in Catbalogan City, Samar Philippines is perennial. Factors causing floods are due to increasing population, outdated and non-functional drainage system, heavily silted and reduced river size, poor waste management, no erosion control measures, reduced vegetative cover and the unusually heavier precipitation. In response to this flood problem, the local government asked help from the Department of Public Works and Highways which in turn developed a Flood Management and Drainage System Master Plan wherein a River Control Project which includes disilting of almost 2km stretch of the river and the construction of river walls are currently being implemented. Using a hydrologic modeling system (HEC-HMS) version 4, river discharge was calculated for at least 4 extreme events. Results have shown that the project will not solve the flooding problem due to extreme precipitation. The river walls are more needed upstream than downstream portion of the river while the disiltation of the river is not enough to carry storm

water. There is therefore an urgent need to construct river walls in the upstream as well as other interventions specified in the master plan to manage the flooding problems in Catbalogan.

***Keywords**: River Flooding, Rain Induced Risk, Flood Mitigation, Flood Management, Engineering Solutions*

REDUCTION ESTIMATES OF CO_2 EMISSION USING SOLAR PANEL AT RELOCATION SITE IN CAGAYAN DE ORO

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ABSTRACT

The energy crisis worldwide and the mitigation of greenhouse gases that causes global warming are the major forces that challenges every country to search for alternative energy sources. Putting it into context, this study attempted to quantify the carbon account reduction in the households using solar panel at the relocation site of Typhoon Sendong victims situated at the elevated part of Cagayan de Oro. A total of 30 households were purposively selected to answer the survey questionnaire in relation to the family income, the components of solar system installed and its estimated costs. From the data gathered, calculations on generated electricity in kW/hr, the payback time and the avoided carbon emission were tabulated and compared. Findings revealed that most of the households were using the basic solar system that supplies energy for lighting, battery charging and operating mini electric fans. But with different solar panel wattage used, the amount of electricity generated per household also varied. The lower the energy generated, the longer the payback period with 56.7%, generating an average of 7.2 kW-hr per month. Quantitatively, the CO_2 emission being avoided can be more than 1 metric ton per year for households using the 50-watts solar panel system. Moreover around 3 metric ton per year of carbon emission can be reduced for the 30 household respondents ranging from 50 watts to 200 watts usage of solar panel. In general, the decision of each household to spend for solar panel had reduced the carbon dioxide emission. Furthermore, the carbon account reduction at the relocation site, manifested a good exemplary of environmental concern and sustainable living.

***Keywords**: Energy Crisis, Renewable Energy, Solar Energy, Greenhouse Gas, Carbon Reduction*

A GREEN DETERMINATION OF PHASE DIAGRAMS

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ABSTRACT

Phase diagrams are essential for science and technology. Researchers, R&D engineers, even jewelry craft makers use them to find materials suitable for their needs. The traditional determination of phase diagram costs energy, time and often is harmful for environment. Application of computational thermodynamics allows for more ecological approach to

preparation of this kind of charts. Application of the computational thermodynamics to determination of lead-free solder material and discussion about influence of this method on natural environment is shown in this paper.

***Keywords**: Alloys, Calphad, Materials Thermodynamics, Materials Science.*

PULANGI IV HYDROELECTRIC POWER PLANT DAM SPILLAGE FORECASTING USING 3-2-1 NEURAL NETWORK ARCHITECTURE

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ABSTRACT

This paper presents the use of Radial Basis Function 3-2-1 Network in forecasting the monthly dam water spillage in Pulangi IV Hydroelectric Power Plant. This hydro power plant is the main source of electrical energy and water both for drinking water and for farm irrigation for the province of Bukidnon. When heavy rainfall and storm occurs, heavy dam water spillage can have a great impact to the nearby communities below the dam. Using three (3) variables: monthly rainfall and river inflows which are the input variables while the monthly water spillage is the output variable used in the 3-2-1 designed network architecture. Radial Basis Function Neural Network is used as predictor for the calculation of monthly dam water spillage forecasting. Thirty-seven (37) months of data were gathered and 90% of the data set was used as a training set and the remaining 10% as the testing set. The Mean Absolute Percentage Error was used in determining the efficiency of the design architecture. Results showed that the Radial Basis Function 3-2-1 Network architecture model provide high level of accuracy in forecasting the monthly water spillage.

***Keywords:** Forecasting, Dam Spillage, Neural Network*

TREE SPECIES DIVERSITY OF REGENERATING FOREST WITHIN ANCESTRAL DOMAIN OF MAGBUKÜN AETA MORONG, BATAAN, PHILIPPINES*

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ABSTRACT

This research focused on the study of a tropical semi-evergreen rain forest community structure within the ancestral domain of Aetas in Morong, Bataan. Point-Centered Quarter Method (PCQM) was used where five 200m transects were laid across 28 ha study site. Trees with ≥1cm diameter at 1.3m from the ground (DBH) were sampled. Trees encountered were categorized into three groups: seedling, sapling and adult based on girth classes. A total of 75

tree species belonging to 61 genera and 31 families were recorded. The most represented families were Moraceae, Dipterocarpaceae, Sapindaceae, Malvaceae and Lauraceae. The species with highest Importance Percentage (IP) were *Shorea contorta* Vidal (Dipterocarpaceae), *Macaranga tanarius* (L.) Muell.-Arg (Euphorbiaceae) and *Canarium europhyllum* (Burseraceae). Very high values of species diversity were calculated (*H'*= 3.817; *D'*= 0.968). The area was previously a dipterocarp forest and can now be classified as a young regenerating forest, composed primarily of seedlings many of which are dipterocarps. There were 17 threatened species, including two critically endangered and four endangered species (listed in IUCN Red List of Threatened Species and DAO 2007- 01) and six endemic species identified as present in the area. This forest is a biological hotspot that needs outmost protection and conservation.

Keywords: *Forest Regeneration, PCQM, Tree Species Diversity, Biological Hotspot*

STATUS REPORT OF HERMATYPIC CORALS IN CARIAS AND QUEZON REEF STATIONS, HUNDRED ISLANDS NATIONAL PARK

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ABSTRACT

The current distribution, diversity, and condition of hermatypic corals in two reef stations of the Hundred Islands National Park (Alaminos, Pangasinan), namely Carias and Quezon, were evaluated in this study. Line Intercept Transect (LIT)-based photography was used during the survey. Generated photographs were analyzed using Coral Point Count with Excel Extensions (CPCe) version 4.1software. A total of 25 and 51 coral species were recorded in Carias and Quezon, respectively. The Reef Condition Index revealed a shift from the previous "excellent" condition (84% live coral cover [LCC]) of Quezon in 2008 to a "good" condition (66.54% LCC). Mortality Index (MI) value, however, has shown that both reef stations are in excellent status due to the small proportion of dead corals. Quezon reef station was more diverse (H = 2.94; 1-D = 0.91) and even (EH = 0.74) compared to Carias. Difference in coral distribution and diversity were associated to the prevailing environmental gradients which may affect the corals' affect the physiology, growth, and reproduction. Findings of the present study may be used to predict the effects of human activities to ecological processes and to make appropriate decisions on how to further enhance the control, supervision, and management of the Park.

Keywords: *Hermatypic Corals, Coral Point Count With Excel Extensions (Cpce) Software, Hundred Islands National Park, environmental gradients*

MANGROVE FOREST AND SEAGRASS BED OF EASTERN SAMAR: EXTENT OF DAMAGE BY TYPHOON YOLANDA

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ABSTRACT

Three months after typhoon Yolanda hit the Philippines, the mangrove forest and seagrass bed in Eastern Samar, Philippines was assessed to determine the extent of damage by comparing the status of mangrove and seagrass in the same area in 2009. A 10 m X 10 m plot was used for mangrove assessment and 0.50 x 0.50 m quadrat for seagrass assessment. The extent of mangrove damage in terms of tree density and basal area were 86 percent and 68 percent, respectively; while the saplings and seedlings density were 79 and 93 percent, respectively. *Sonneratia* is the only species with high percentage of survival. Typhoon Yolanda did not negatively affect the condition of the seagrass, instead it contributed to the increase of density of *E. acoroides* by 40 percent and *C. rotundata* by 18 percent but it decreased the density of *T. hemprichii* by 29 percent. Damaged mangrove areas should be replanted with *Sonneratia* and *Avicennia* species, which are found to be storm surge resilient, especially in the seaward zone. However other species previously present in the area should also be planted to maintain biodiversity.

***Keywords**: Mangrove forest, Seagrass bed, Storm surge, Typhoon Yolanda, Sonneratia, Avicennia*

POPULATION DYNAMICS AND AQUACULTURE POTENTIAL OF THE MUD CLAM, *POLYMESODA EXPANSA* (MOUSSON 1849) (BIVALVIA: CORBICULIDAE) IN LOAY-LOBOC RIVER, BOHOL, CENTRAL PHILIPPINES

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ABSTRACT

The status of *Polymesoda expansa*, an important bivalve in the artisanal fisheries of Loay-Loboc River, was assessed using monthly shell length frequency data (October 2012 to January 2015) to estimate population parameters. Growth parameters derived were L_∞ = 90.50 mm, K = 0.50 yr^{-1} and t_0 = -0.24. Predicted L_{max} was 89.29 mm. Estimated growth rates showed fast growth for the first three years of existence. Longevity of the clams is approximately 20 years. The population length-weight relationship showed a positive allometric growth (r^2 = 0.94). Total mortality (Z = 1.60 yr^{-1}) was estimated based on a length-converted catch curve analysis. Natural (M) and fishing (F) mortalities estimates were 1.23 yr^{-1} and 0.37 yr^{-1}, respectively. Estimated exploitation rate (E = 0.23) was lower than the predicted maximum sustainable exploitation (E_{max} = 0.36). Two recruitment pulses were derived with unequal strengths and

duration. Monthly condition index (CI) suggested that spawning is year-round peaking during wet season (July to November). It appeared that the CI is fairly associated (r = 0.67) with salinity. Based from these results, *P. expansa* has high potential for aquaculture.

Keywords**:** *Polymesoda expansa*, Population Dynamics, Aquaculture, Bivalve, Bohol

SURVIVAL OF ARABICA COFFEE (*Coffea arabica*) CUTTINGS IN DIFFERENT STAGES OF MATURITY

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ABSTRACT

A study titled **SURVIVAL OF ARABICA COFFEE *(Coffeaarabica)* CUTTINGS IN DIFFERENT STAGES OF MATURITY** was conducted to test the survival of Arabica coffee cuttings in different stages of maturity specifically on its percentage survival, number of meristem emergence , number of lateral meristem emergence and the number of newly developed leaves. It also aimed to determine the significant differences in the survival of Arabica coffee cuttings in different stages of maturity. The study in the survival of Arabica coffee cuttings in different stages of maturity was arranged in Completely Randomized Design (CRD) with five (5) treatments, replicated three (3) times. The treatments were as follows: shoot tip (T_1), young cutting (T_2), semi matured cutting (T_3), matured cutting (T_4) uniformly soaked for 24 hours in Alpha Napthalene Acetic Acid (ANAA) and transplanted seedlings were the control treatment (T_0). Results showed that the use of young stem cutting of Arabica coffee gives higher percentage survival, higher emergence of lateral meristem and more development of new leaves.

Key words: *Arabica coffee, Survival, Meristem, Maturity, ANAA*

ANTIMICROBIAL ACTIVITY OF ETHANOLIC EXTRACTS OF BAYATING (*ANAMIRTA COCCOLUS*) AGAINST *STAPHYLOCOCCUS AUREUS* AND *ESCHERICHIA COLI*

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ABSTRACT

Bayating (*Anamirta cocculus*) is a wild woody climber belonging to the family Menispermaceae. The antibacterial properties of the species found in the province of Abra is not yet fully documented and evaluated as to its antimicrobial activity especially for its utilization as an indigenous herbal plant. The study determined if there is a significant difference between the diameters of growth inhibition of *Staphylococcus aureus* and *Escherichia coli* subjected to *Bayating* at 75%, 50%, and 25% concentrations of ethanol

extract as well as to determine which of the three concentrations has the best potential antimicrobial activity. The experimental method of research was utilized using the factorial design and results were subjected further with ANOVA and DMRT at 0.01 level of significance. Finding shows that *Anamirta coccolus* extract works best at higher concentrations in inhibiting the growth of Staphylococcus aureus and Escherichia coli. This implicates that *Staphylococcus aureus* and *Escherichia coli* are moderately susceptible to the effect of the plant extract at 75% concentration. This means that the higher the concentration, the stronger the antibacterial property. Basing from the results, a wider exploration and analysis of Bayating (Anamirta coccolus) species as to its potential uses should be further tested and documented.

***Keywords**: Bayating, Antimicrobial, Zone of inhibition, S. aureus, E.coli.*

ISOLATION, IDENTIFICATION, AND CHARACTERIZATION OF ANTHOCYANINS FROM *BIGNAY* (*ANTIDESMA BUNIUS* SPRENG) BERRIES

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ABSTRACT

Anthocyanins from *bignay* (*Antidesma bunius* Spreng) berries were isolated, identified, and characterized. The purified methanolic anthocyanin was subjected to UV-VIS analysis and the results reveal an absorption profile resembling that of cyanidin-3-glucoside (C3G) and delphinidin-3-glucoside (D3G). The total amount of monomeric anthocyanin content was determined at 247 mg of C3G equivalent per 100 g of fresh weight (FW) by pH differential method. HPLC analysis shows the D3G and C3G content at 135.6 mg and 307.5 mg respectively. The total anthocyanin value of 443.0 mg per 100 g FW is higher than many other berries from temperate regions. Finally, DPPH free radical scavenging assay shows an average IC_{50} value of 48.4 ppm. This is a much more potent antioxidant activity than ascorbic acid and comparable to that of quercetin. The over-all results reveal that *bignay* has a high amount of anthocyanins and exhibits a potent antioxidant activity.

***Keywords**: Antidesma bunius Spreng, Anthocyanins, Berries, Antioxidants*

CLIMATE CHANGE ADAPTATION AND RESILIENCY OF COASTAL COMMUNITIES IN THE RED RIVER DELTA BIOLOGICAL RESERVE, VIETNAM

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ABSTRACT

This case study assessed the climate change adaptation and resiliency of coastal communities in Giao Thien and Giao Xuan in Giao Thuy District, Vietnam. Methods used include survey, key informant interview, and review of documents of which 194 households served as the sample

size. A pre-tested interview schedule was used to gather data. Descriptive statistics were done to describe the data. Inferential statistics was employed in determining the relationship between climate change adaptation and resiliency. Result revealed that majority prepared materials to shield their houses, prepared food, and monitored weather bulletin. The communities received help from various organizations and have talent and skills to adjust to climate change. Majority observed that the ecosystem has worsened due to environmental pollution and lack of awareness in environmental protection. Communities perceived that the mangrove forests have the full ability to protect the environment. Coastal communities have limited knowledge on climate change adaptation. The most common plan in preparation for climate change is on house renovation. Infrastructure in the communities is not enough to cope with climate change. Natural resources have decreased due to mining, destructive fishing, and pollution which also contribute to climate change. The mangrove forest resources have the capability to combat climate change. The relationship among the climate change adaptation and resiliency variables have positive linear association but all are found to have weak association.

Key words: *Climate Change Adaptation, Resiliency, Knowledge*

ITEM BIAS ANALYSIS THROUGH DIFFERENTIAL ITEM FUNCTIONING DETECTION MODELS

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ABSTRACT

Differential item functioning (DIF) analysis is an essential element in the evaluation of the fairness and validity of educational tests. This study utilized Mantel-Haenszel Chi-Square Statistic, Logistic Regression, Transformed Item Difficulty, and Rasch Model in detecting DIF items. Descriptive-comparative research design was employed in the DIF analysis of the test based on students' differences in age, sex, grade point average in Calculus I, grade point average in English I, socio-economic status and school type. Results of the study revealed that the elimination of the potentially biased items in the test resulted to a more valid test. Also, the number of test items is directly proportional to the reliability coefficient of the test. The results also showed that the parametric methods of DIF detection have higher detection rate as compared to nonparametric methods. Further, the Item Response Theory Models, particularly the Rasch Model, is the most sensitive in detecting DIF items.

Keywords: *Item Bias Analysis, Differential Item Functioning, Reliability, Validity*

Abstracts on Sub-theme

Climate Change and Risk Management

DISASTER PREPAREDNESS AND RISK ASSESSMENT OF THREE SOUTHERN COASTAL BARANGAYS OF BOTOLAN, ZAMBALES

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ABSTRACT

Botolan, Zambales is prone to natural calamities such as flash floods, typhoons, storm surges as well as volcanic eruption. Due to climatic changes and relentless logging and mining, instances of flash floods damaged lives and properties of the residents. In order to determine the level of security and preparedness of the Botolenos from possible property and industry damages, a disaster risk study in three coastal barangays (Panan, Binoclutan and Porac) was conducted. Survey of structures and awareness on occurrence of disaster was piloted. A Rapid Earthquake Damage Assessment System (REDAS) software was utilized to estimate the possible physical and economic losses; and fatalities in a given barangay. Study revealed that 82% experienced the occurrence of volcanic eruption brought about by Mt. Pinatubo. Few have experienced flooding and fires. Risk assessment revealed that 54,497m2 structural floor area will be damaged amounting to PhP 305,102,210.10 due to hazards brought about by natural calamities. An economic loss of PhP 1,000,000,000 for all the basic physical properties of the entire population and 269 casualties were estimated. Hence, it is recommended that the Local Government Unit may mobilize the concerned authorities to conduct awareness on the services of the Council and conduct information dissemination campaign to cope with the occurrence of any disaster.

Keywords: *Awareness, Disaster, Hazard, Preparedness, Risk*

GENDER ROLE AND CLIMATE CHANGE IMPACT AND ADAPTATION STRATEGIES ON UPLAND RICE PRODUCTION SYSTEMS IN ARAKAN VALLEY COMPLEX

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ABSTRACT

The study was conducted to determine gender role and climate change impact and adaptation strategies on upland rice production systems in Arakan Valley Complex. Descriptive analysis and evaluation method using structured questionnaires, focus group discussion and interview of 500 upland rice farmers in the 5 Municipalities of Arakan Valley Complex namely Arakan, Antipas, Magpet, Matalam, and Pres. Roxas Cotabato. Results revealed that the role of women in upland rice farming is highest in planting operation (22%), harvesting (13.9%) and the least is in farm maintenance (6%). On climate change mitigation and adaptation strategies;

intercropping of upland rice in plantation crops, cash crops and pasture crops is at most. Early preparation of farms and adjustment of planting calendar from March or April to February or March is evident (70.8%). Planting of multiple crops, utilization of animal manure/farm residues, making of water edges around the farm, tree planting and seed storage for coming planting season is being practiced by the farmers. The effect of climate change to upland rice as revealed in the survey includes; damaged to farm areas, presents of harmful insects, occurrence of bird eating rice resulting to reduction of farm income. Its environmental effects include; occurrence of longer droughts, landslide, soil erosion, flash floods, sudden heavy rains, and destruction of houses and farm to market roads as well. Therefore, women are an essential work force in farming system particularly upland rice farming.

Keywords: *Gender Role, Climate Change, Adaptation Strategies, Upland Rice, Production System, Arakan Valley Complex*

HOUSING RECOVERY OF HOUSEHOLDS IN MANICANI ISLAND, GUIUAN, EASTERN SAMAR, PHILIPPINES FOLLOWING TYPHOON HAIYAN (YOLANDA)

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ABSTRACT

Housing recovery is one of the most basic components of disaster recovery. A total of 114 households in Manicani Island, Guiuan, Eastern Samar were surveyed to determine their awareness of Typhoon Haiyan, the housing damaged experienced by the households and their housing recovery strategies. Results showed that: (a) all households were informed about the typhoon; (b) about 81% of the households in Manicani Island lost their houses; and (c) the housing recovery strategies of the households include acquiring housing materials, building makeshift structure, and reconstruction of their damaged houses, and (d) households who reconstructed their damaged houses immediately after the typhoon were found to have recovered in a shorter period of time. Results of the chi-square test found the condition of the house after the typhoon, length of time before house reconstruction and person in-charge in reconstruction to have a moderate to relatively strong association (.28 to .44) with the housing recovery of the households at.01 significance level. These imply that self-reliance, ingenuity and external assistance can hasten household recovery. The results of this study can be used to improve the disaster risk reduction plan of the government.

Keywords: *Housing recovery, Typhoon Haiyan aka Yolanda, Manicani Island*

DEVELOPMENT OF RAINFALL THRESHOLD FOR LANDSLIDE EARLY WARNING SYSTEM IN THE CAMERON HIGHLAND DISTRICT, MALAYSIA

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ABSTRACT

Landsliding are natural denudational and degradational processes, unless they are affecting human life. Malaysia had experienced numerous landslide occurrences in the past. This has both social and economic impacts, namely loss of life, agricultural land and crops as well as destruction of the infrastructure. In Malaysia, Landslide Early Warning System (LEWS) was developed based on rainfall monitoring to minimise the impact of landslide. LEWS can provide ample warning for the related community to react or to execute further action upon receiving the warning. In this paper, development of rainfall thresholds that trigger landslide in Cameron Highlands District will be described. It was developed based on empirical correlation of rainfall and landslide occurrences, where the effect of Working Rainfall (antecedent rainfall prior to landslide occurrence considering decaying effect of rainfall by time) and Rainfall Intensity during landslide was studied. The method was introduced by the Ministry of Land, Infrastructure and Transport (MLIT), Infrastructure Development Institute, Japan in 2004. This threshold was then incorporated into rainfall monitoring system as a warning mechanism. Observation on rainfall events (monsoon season) in 2013 and 2014 was carried out. Based on the observation, we modified the warning criteria to minimise false alarm.

Keywords: *Landslide; Early Warning System; Rainfall Thresholds; Antecedent Rainfall*

DISASTER RISK REDUCTION AND MANAGEMENT IMPLEMENTATION AMONG SECONDARY SCHOOLS IN REGION III, PHILIPPINES

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ABSTRACT

The study aimed to describe the implementation of disaster risk reduction and management of secondary schools in Region III, Philippines. This descriptive study used a survey questionnaire supported by unstructured interviews. Both administrator (153) and parent (147) respondents were selected through random and convenience sampling. The data collected were processed and treated using frequency count, percentage, mean, weighted average mean, t-test, Likert Scaling Technique, Analysis of Variance. The mean summary of the administrator-respondents perception on disaster risk reduction and management are all satisfactory which are arranged from highest to lowest based on its mean values: Phase V Preparedness and Response; Phase IV Underlying Risk Factors; Phase I Disaster Risk Reduction Prioritization; Phase II Risk

Assessment, Monitoring and Warning; and, Phase III Knowledge and Education. On the other hand, the mean summary of the parent-respondents perception which are arranged from highest to lowest based on its mean values: Phase V. Preparedness and Response; Phase I Disaster Risk Reduction Prioritization; and Phase IV Underlying Risk Factors are all satisfactory; Phase III Knowledge and Education; and Phase II Risk Assessment, Monitoring and Warning, are both fair. Overall the mean perception on Disaster Risk Reduction and Management is satisfactory.

Keywords: *Disaster Risk Reduction and Management, Perception, Administrator, Parent, Descriptive, Region II Philippines*

TEACHERS AWARENESS AND PREPAREDNESS ON CLIMATE CHANGE RELATED RISKS

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ABSTRACT

As the frequency and seriousness of extreme climatic events is increasing, there is a need to improve public awareness as well as preparedness in order to reduce the potential catastrophic consequences of natural hazards related to climate change. This study examines the level of awareness and preparedness on climate change related risks among K-12 Science Teachers in selected high schools in Camarines Sur. A questionnaire survey was administered to examine teachers: knowledge about global climate change and its information channel; sense of safety and preparedness to natural hazards; source of information and communication; and volunteering. Findings indicated that teachers in general are informed about climate change and natural hazards are affecting their sense of safety. Most teachers are not able to determine precisely whether they are fully prepared for natural disaster. Majority of them feel that they do not get enough information from official sources about the potential hazards and about the ways to get prepared for them. Teachers, though, find it important to take active part in disaster prevention or rescuing actions. Personal competence and material resources influence the level of awareness and preparedness on climate change related risks of teachers. Future work may be done to determine how these competencies on climate change related risks are integrated on teachers teaching strategies and content.

Keywords: *Awareness, Preparedness, Climate Change, Risks*

TEACHERS' UNDERSTANDING OF GLOBAL CLIMATE CHANGE: THE REAL SCORE

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ABSTRACT

The World's Risk Report in 2011, ranked the Philippines 3rd highest disaster risk in the world. Every year, in varying frequency and intensity, the country is devastated by typhoons, heavy monsoon rains, earthquake, etc., destroying lives and properties. Thus, climate change seemed an easy concept for everyone to get well-aware of. Teachers, themselves are scoring excellent in the awareness of climate change survey as many researches are reporting. Yet, in the context of global climate change, how do teachers fare? The study examines secondary science teachers' in Camarines Sur, their understanding of climate change in the global context. A questionnaire survey was administered to test teachers' knowledge of the science of climate change, including causes and effects, evidence for global climate change and factors that are needed to mitigate and adapt to climate change. Analysis showed 22 mean score (59.97%) out of 36 possible score on teachers' knowledge of the science of climate change. A very low 26.8% mean percentage score is observed for questions under consequences of human influence on global climate change. A high 86. 96% mean percentage score on evidence for global climate change is noted. The low score of teachers' in the human influence on global climate change suggests further realization to level up from the concept understanding of the subject. Teachers' must put themselves "in" rather than just an observant. Despite the misfortune of the country and the eventual 3rd highest ranking in natural disasters, teachers' aren't completely aware of one's participation of being an "agent" and/or a "victim" of climate change. In addition, teachers' must learn climate change in a more global context rather than just local.

Keywords: *Global Climate Change, Human Influence, Evidence*

EFFECTS OF GLOBAL CLIMATE CHANGE ON NIGERIAN AGRICULTURE: AN EMPIRICAL ANALYSIS

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ABSTRACT

This paper presents an empirical analysis of the effects of global warming on Nigerian agriculture and estimation of the determinants of adaptation to climate change. Data used for this study are from both secondary and primary sources. The set of secondary sources of data helped to examine the coverage of the three scenarios (1971-1980; 1981-1990 and 1991-2000). The primary data set consists of 900 respondents' but only 850 cases were useful. This study analyzed determinants of farm-level climate adaptation measures using a Multinomial choice

and stochastic-simulation model to investigate the effects of rapid climatic change on grain production and the human population in Nigeria. The model calculates the production, consumption and storage of grains under different climate scenarios over a 10-year scenery. In most scenarios, either an optimistic baseline annual increase of agricultural output of 1.85% or a more pessimistic appraisal of 0.75% was used. The rate of natural increase of the human population exclusive of excess hunger-related deaths was set at 1.65% per year. Results indicated that hunger-related deaths could increase if grain productions do not keep pace with population growth in an unfavourable climatic environment. However, Climate change adaptations have significant impact on farm productivity.

Keywords: *Climate Change, Agriculture, Nigeria*

CASCADING RESPONSIBILITIES OF HEI ADMINISTRATORS TOWARDS THE ESTABLISHMENT OF SCHOOL SAFETY

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ABSTRACT

It is the intention of this study to determine how the cascading responsibilities of HEI administrators established school safety. It is anchored on RA 10121 which adheres to the vision of "a safer, adaptive and disaster-resilient Filipino communities towards sustainable development". This qualitative-quantitative study made use of an interview and focus group discussion to identify the responsibilities of each school sector; and a likert scale of the modified and contextualized instrument from United Nations International Strategy for Disaster risk-reduction (UNISDR) to evaluate the level of awareness and level of safety. The 22 school representatives specifically comprised of Vice President for Administration, university engineer, college deans, administrative staff, faculty members and students. The study focused on selected universities in Cebu City particularly, two state universities, two private sectarian and two private non sectarian universities. Findings revealed that HEI's have made efforts to establish a culture of safety in the institution. Each stakeholder purported responsibilities played, nevertheless, efforts is still a work in progress and does not warrant safety. School safety is a corporate responsibility, hence in order to weave all efforts the need for a disaster framework is hereby recommended.

Keywords: *Disaster Risk Reduction, School Safety, Higher Education Institution*

DETERMINANTS OF ADAPTIVE CAPACITY TO CLIMATE RISK AMONG VEGETABLE FARMING HOUSEHOLDS IN LA TRINDAD, BENGUET, PHILIPPINES

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ABSTRACT

Dependent on agriculture-based livelihoods and receiving the highest annual rainfall amount in the country, the province of Benguet, Philippines is one of the most vulnerable to climate risks. To identify potential points of intervention for the local government to increase the adaptive capacity of farmers, this study assessed the main determinants of adaptive capacity among organic and conventional vegetable farming households in La Trinidad, Benguet. The study followed the Sustainable Livelihoods Approach with thirty variables under five livelihood capitals used as indicators and weights generated through Principal Component Analysis (PCA). Household survey was the main data gathering instrument. Based on the PCA weights, the main determinants of adaptive capacity of vegetable farming households were found to be crop diversity (species and genetic), implementation of sustainable land management practices, access to markets and access to roads, stability of market price of produce to provide agricultural income stability, attendance to relevant training, access to technical assistance, and participation in organizations. The local government can consider enhancing these factors among vegetable farming households in order to increase their adaptive capacity and reduce their vulnerability to climate risks.

EU-UNDP INTEGRATED RECOVERY AND REHABILITATION IN CENTRAL MINDANAO

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ABSTRACT

Generally, the study will aimed to evaluate and assess the level of satisfaction and impact of the project implemented by Mindanao Development Authority (MinDA) in partnership with different Non-government Organization (NGOs) as Local Services Providers (LSP) with funding support from European Union (EU) through United Nation Development Program on Early Recovery and Rehabilitation project in Central Mindanao after 4 years of the implementation. Specifically, it described the socio – demographic profile of the respondents such as age, sex, civil status, number of children, highest educational attainment, receive recovery and rehabilitation project, major source of income, and monthly income, the intervening factors in the study; such as infrastructure development, basic services, livelihood assistance, rebuilding social cohesion,

capacity building of LGUs and the dependent variables such as economic, education, leadership, technical skills, health and sanitation and peace and development. The study employed Stratified sampling with a proportionate allocation procedure in gathering data from the beneficiaries of integrated recovery and rehabilitation project implemented by Mindanao Development Authority (MinDA) in partnership with Non-government Organization as Local Service Providers (LSP). Weighted means was used to quantify the level of satisfaction and impact of the integrated recovery and rehabilitation project in central Mindanao. Respondents were 300, mostly were farmers, 34 years old above, majority received basic services, were secondary level and had monthly income below 5,000.00 pesos. Majority were male. Finding implies that respondents with a very minimum monthly income were positively satisfied on the IRR project in terms of rebuilding social cohesion particularly training on leadership and management; while the level of satisfaction and impact of the recovery and rehabilitation project were respondent highly satisfied in terms of Infrastructure development, Basic services, livelihood assistance and building social cohesion and highly impact in terms of economic, leadership and health and sanitation.

Influence of socio-demographic profile of the respondents with the level of satisfaction on impact of the integrated recovery and rehabilitation project implemented by MinDA in partnership with NGOs in the returned 30 IDPs site both ARMM and Non-ARMM.

Keywords: *EU-UNDP Integrated Projects, Mindanao, Rehabilitation*

DISASTER PREPAREDNESS AND RISK ASSESSMENT OF THREE SOUTHERN COASTAL BARANGAYS OF BOTOLAN, ZAMBALES

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Government Unit may mobilize the concerned authorities to conduct awareness on the services of the Council and conduct information dissemination campaign to cope with the occurrence of any disaster.

Keywords: *Awareness, Disaster, Hazard, Preparedness, Risk*

GENDER ROLE AND CLIMATE CHANGE IMPACT AND ADAPTATION STRATEGIES ON UPLAND RICE PRODUCTION SYSTEMS IN ARAKAN VALLEY COMPLEX

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ABSTRACT

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Keywords: *Gender Role, Climate Change, Adaptation Strategies, Upland Rice, Production System, Arakan Valley Complex*

Abstracts on Sub-theme

Community and Health

ACCEPTABILITY AND QUALITY EVALUATION OF SEAWEED FILLED PUTO BAGOL

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ABSTRACT

This study was conducted to determine the most acceptable puto bagol filling and determine the chemical, nutritional, microbial and heavy metal content. The fillings tested comprised of the commercial filling (100% coconut), and variations of this experimental fillings (i.e. 75% coconut+25% seaweed, 50% coconut + 50% seaweed, 25%coconut +75% seaweed and 100% seaweed). The taste panel was composed of 5 trained and 45 untrained tasters randomly chosen from would-be consumers of the product. The most accepted formulation was submitted to the Food and Nutrition Research Institute for microbial and chemical analysis and to the Regional Standard and Testing Laboratory, DOST, Cebu for heavy metal analysis. Regardless of filling, both commercial and experimental fillings were either "like very much" or "liked extremely" in terms of its color, aroma, flavor and texture. Heavy metals and minerals of the Puto Bagol with the highest acceptability rating were well below safe limits for food standards (1.6.1 PNS). Calcium, potassium, and Vitamin A contents were 9mg, 107mg and 8(ugRE) higher than the RENI (US-DRV) respectively, for males 19 years old and above.

Keywords: *Acceptability, Seaweeds, Kappaphycus, Puto bagol, Quality evaluation*

A SPATIAL HETEROGENEITY PERSPECTIVE IN ANALYZING CANCER MORTALITY DISTRIBUTION USING GIS

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ABSTRACT

An ecological spatial variation analysis of cancer incidence and mortality is increasingly important, as cancer has become a major cause of death across the globe. Using the concept of spatial heterogeneity as analytical framework, a spatial distribution analysis that used GIS was conducted for the cases of cancer mortality in Los Baños, Laguna. Complete data retrieval was conducted for cases between 1990 and 2010 from the Registry Office of the Municipality. Data visualization and analysis were done using the graduated color legend type of the GIS software. Spatial units were delineated following the barangays political boundary of Municipality. Descriptive statistics were computed to describe spatial variations of cases. Results indicate that cancer mortality is highly heterogeneous across spatial units. The highest number of cases is in barangay Batong Malake. The number of cases reduces as it moves away from this area. It is recommended that an in-depth study be conducted to determine the causes of these spatial trends of cancer mortality to contextualize its interventions or reduction and/or management programs.

Keywords: *Spatial Heterogeneity, Cancer Deaths, Geographic Information System, Los Baños, Laguna*

COMMUNITY ENGAGEMENT AS A KEY FACTOR TOWARDS SOCIAL WELLBEING

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ABSTRACT

One facet of social wellbeing is satisfaction in its present life in the community. Leisure activities provided by the local leaders can enhance the level of satisfaction of each stakeholder. This has become venues for more community engagement thereby improves the social network among immediate neighbours in the community. Somehow with the so many things in the priority list especially how to survive economically, the time for quality leisure has been forgotten. It is the purpose of the paper to determine the existing activities for community engagement towards leisure and its significance to wellbeing. Furthermore, it explores the changes of the outlook of the young and older members of the community involve through the evolutionary theory. A face to face survey interviews are conducted with the informants. Thematic analyses are done to the narratives. The narratives of the informants explore on two themes: assurance of livelihood for family's future and protection from criminality and natural diseases. The youth is looking for an assurance of a better future perhaps. While parents have always wanting to have real values instilled in their children in order to be assured of productive individual to be part in constructing a healthy community.

***Keywords**: Confidence, Evolutionary Theory, Satisfaction, Stress, Quality Of Life*

CULTURAL AND MANAGEMENT PRACTICES OF WATERMELON FARMERS IN PANGASINAN

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ABSTRACT

The popularity of watermelon has become widespread in all tropical and subtropical regions of the world. Locally known in the country as "pakwan" it is one of the most popularly grown fruit vegetable in the country today during summer. Watermelon production is becoming one of the most lucrative industries along Agriculture although watermelon is considered minor fruit in the Philippines. The significance of the industry in providing a source of livelihood to the poor and average income family, it is important to assess the present status of watermelon production in different farming areas so that development/expansion could be made to enhance watermelon production in the country. The study assessed the cultural and management practices of the farmers engaged in watermelon production. Descriptive survey research design was employed to 42 farmers as respondents from the major producers of watermelon in Western Pangasinan namely Alaminos City, Anda and Bani. Results of the study has shown that watermelon production is highly profitable, however, as caused by various constraints such as lack of capital, the farmers do not engaged in large scale production. Watermelon production is highly beneficial to the farmers' families as it improves the quality of their lives. The farmers rely on their experiences in watermelon production and do not embrace innovative practices. This was shown by the fact the farmers do not follow manufacturers' recommendation in applying

fertilizers and pesticides. With the non-existence of farmers' organization, the farmers engaged in watermelon production do not receive adequate government support.

Keywords: *Socio-economic profile, culture and management practices, watermelon production*

PHYSICO-CHEMICAL AND BIOLOGICAL ASSESSMENT OF WATERS IN SELECTED AQUACULTURE SYSTEMS IN CEBU, PHILIPPINES

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ABSTRACT

Assessment of water quality within the aquaculture systems is essential to determine whether the water quality in the area can still support marine life and suitable for aquaculture purposes. Eight aquaculture systems were assessed which include fish cages, fish pens, fishponds and fishpond outlets where fresh water and seawater meets. Surface water samples were analyzed for BOD, Total Coliform, Nitrate, Phosphate and Ammonia. While water temperature, pH, D.O, conductivity, TDS and salinity were measured in-situ. Results revealed that most water parameters were within the water classification standard set by DENR. However, dissolve oxygen in fishpond outlets were below the minimum standard limit which could be attributed by effluents discharge. Total coliform exceeded the maximum standard limit. The pH within the fish cages and brackish water fishponds exceeded the standard limit, while dissolve oxygen falls below the minimum standard limit yet the values fall within the desirable and ideal growth of species cultured. The total coliform count in freshwater ponds exceeded the maximum standard limit. Findings showed the need for proper water management and monitoring relative to total coliform contamination which may pose threat to health and environment.

Keywords: *Water Quality, Total Coliform, Nitrate, Ammonia, pH*

ANTI-DIARRHEAL AND ANTI-MOTILITY PROPERTIES OF *Persea americana* Mill. (AVOCADO) LEAF EXTRACT IN MICE

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ABSTRACT

Persea americana Mill. (Avocado) ethanol leaf extract was studied for its anti-diarrheal and anti-motility properties in mice using castor-oil induced diarrhea and charcoal meal tracing assay. Anti-diarrheal property was determine in terms of the percent inhibition of fecal number, fecal weight at 5^{th} hour after oral administration of the various treatment and anti-motility property based on percent inhibition of intestinal transit based on the distance traveled by the charcoal meal along the intestines of mice. The ELEPA administered orally (200, 300 and 400 mg/kg) resulted to a remarkable reduction in the degree of diarrhea in terms of the fecal number and fecal weight comparable to the standard drug (T_1- Lomotil). For the evaluation of the gastrointestinal motility, the same doses of the leaf extract elicited a remarkable percent inhibition on the intestinal motility. These results suggest that the ELEPA inhibit gastrointestinal motility as indicated by the appreciable mean % inhibition on the charcoal meal tracing assay.

This study demonstrates therefore that *P. americana* can be a good source of compounds that may prevent diarrhea which are beneficial in conditions of acute diarrhea such as: traveler's diarrhea, acute infectious diarrhea and enterotoxigenic diarrhea.

Keywords: *Avocado, Castor Oil, Charcoal Meal, Diarrhea, Gastrointestinal Motility*

EXTENT AND INTENSITY OF PESTICIDE USE BY CABBAGE FARMERS IN NEGROS ORIENTAL, PHILIPPINES

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ABSTRACT

The vulnerability of vegetable crops to attacks by different types of pests has compelled farmers to embrace crop protection strategies that have the potential to prevent or diminish losses in crop yield and income. This study sought to determine the extent and intensity of pesticide use on cabbage crops, and the type and toxicity profile of chemicals used. Using a pre-tested structured interview schedule, a survey was conducted among 64 randomly selected cabbage growers in two municipalities in Negros Oriental by trained enumerators. Results of the study show that all of the surveyed cabbage farmers have adopted the use of pesticides as a principal pest control strategy. All applied insecticides, while a few used fungicides and a biopesticide. Chemicals used belonged to 11 groups/families with Class IV to Class II toxicity classifications. Chemicals belonging to the phenoxy-pyridaloxy derivative group with pyridalyl as active ingredient, was used by the greatest number of cabbage farmers. Many farmers also applied pyrethroids,organophosphates, carabamates, nereistoxin analogues, and others. Cabbage farmers used at least two pesticides per cropping. More than half used Category II chemicals such as chlorpyrifos, metamidophus, lambdacyhalothrin, esfenvalerate, beta-cypermethrin, and methomyl. Irrespective of chemicals used, pesticide-use intensity for cabbage in grams of active ingredient per hectare, averaged 788.8 g a.i./ha with an inter-farmer variation ranging from 20 g a.i. to 5,760 g a.i./ha. Most applied less than 1000 g of a.i. of pesticides/ha. Frequency of pesticide application ranged from 3 to 16 per cropping with an average of 13 applications. The study recommends the intensification of government extension programs on integrated pest management and other environment-friendly pest control measures for vegetable crops in the farming communities of the province.

Keywords: *Pesticides, Pesticide Toxicity, Pest Management*

IMPACT ASSESSMENT ON COMMUNITY-DRIVEN DEVELOPMENT PROJECTS IN SELECT BARANGAYS IN MUNICIPALITY OF SAN ISIDRO, NORTHERN SAMAR

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ABSTRACT

This study presented impact assessment on the community-driven development project dubbed as Kapit-Bisig Laban sa Kahirapan – Comprehensive Integrated Delivery of Social Service (KALAHI-CIDSS) implemented by the Department of Social Welfare and Development which empowered communities and their Local Government Units (LGUs) to identify, design and implement projects which are most appropriate based on the community needs. The research locale includes select barangays San Juan, Salvacion, Palanit, Seven Hills and Caglanipao of the Municipality of San Isidro, Northern Samar. The researchers employed mixed qualitative and quantitative methods using non-probabilistic sampling. The study revealed that among the projects implemented in the respective barangays have alleviated and empowered peasants and fisher folks socio-economically through Basic Social Services, Basic Access Infrastructure, Community Production, Economic Support, and Common Service Facilities, Environmental Protection and Conservation, and others. KALAHI-CIDSS is socially impacting and that the government should have measures to sustain the projects, and that further empirical validation and field investigation in provincial, regional and national level.

Keywords: *Community Project, Impact Assessment, Social Services, Environmental Protection, KALAHI-CIDSS*

HONEY COLLECTING WITH THE AETA IN QUEZON PROVINCE, PHILIPPINES

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ABSTRACT

This study is to find the causes of livelihood vulnerabilities of the Aetas in southern Quezon and to find out possible ways to reduce their susceptibilities through assessment involving combination of social and economic factors; ethnographic; and melissopalynology. The Aeta collect honey from the endemic species of honeybees such as the *Apis dorsata bereviligula* Maa and *Apis cerana* Fabricius. Honey is collected using the traditional smoker which prohibits sustainable honey production since it can displace and even a number of bees along with queen. The significant floral species which constitute valuable sources of nectar and pollen from the early August and predominantly during the dry season in the month of May. A total of twenty-five (25) pollen types from twenty-three (23) families were identified. This paper define pragmatic action plans that "bridge from the future back to the present" and align the traditional honey collecting of the Aeta vis-à-vis additional livelihood options through honey collecting,

environmental education in community-based approach using a module suited to their practices and beliefs, and viable resource enhancement plan which would result to increase crop yield and income.

Keywords: *Aeta, Native Honeybees, Honey, Honey Collecting*

SYNERGISTIC EFFECT OF *Nephelium lappaceum* L. (RAMBUTAN) AND *Lansium domesticum* C. (LANZONES) LEAF EXTRACTS TO MALE ALLOXAN INDUCED DIABETIC *Mus musculus* var. *albinus* L. (ALBINO MICE)

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ABSTRACT

Diabetes is now a growing disease worldwide and can be acquired through genes or through lifestyle. Diabetes is a disease where in the glucose of the blood is higher than the normal level (120 – 140 mg/dL). It is characterized by chronic hyperglycemia which can lead to visual impairment, blindness, kidney disease, nerve damage, amputations, heart disease, and stroke. Diabetes has several types and among which are Diabetes Mellitus Type 1 and Type 2, Gestational Diabetes, Diabetes Insipidus, Cranial Diabetes Insipidus, and Nephrogenic Diabetes Insipidus. This stud ais to evaluate the ability of the methanolic leaf extracts of *Nephelium lappaceum* and *Lansium domesticum* to male alloxan-induced albino mice. The results showed that there is significant difference in lowering blood glucose levels between the leaf extracts of *Nephelium lappaceum* and *Lansium domesticum*. However, there is no significant differences in the effect of the different concentrations of the leaf extracts of Nephelium lappaceum, Lansium domesticum, and their synergism.

Keywords: *Diabetes, Nephelium lappaceum, Lansium domesticum, Leaf Extract, Albino Mice*

ENVIRONMENTAL PROTECTION PRACTICES OF NORTHERN CEBU BEACH RESORTS

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ABSTRACT

Environmental protection is one of the concerns of Cebu Technological University, Danao Campus, researchers. The research is focused on how the identified beaches of Northern Cebu, protected the environment. In this study, the researchers conducted baseline data on how the operators and tourists protected the area like waste segregation, cleaning and landscaping activities and the application of the 3R's of waste management. Out of the identified five (5) Northern Cebu beaches, including Alegre beach resort of Sogod, Cebu; Recuerdo beach resort of Catmon, Cebu; El Salvador and Coco Palms beach resorts of Danao City and Stakili beach resort of Liloan Cebu; privately-owned beach resort protected the area by

landscaping the whole portion of the resort, reforestation with endemic species of trees and fish sanctuary. The common environmental practices of the Northern Cebu beach resorts made the ecotourism successful. Thus, the environmental protection practices of the identified tourist destination should be sustained.

Keywords: *Beach Resort, Eco-Tourism, Environment, Protection, Northern Cebu*

DYNAMICS OF PHYTOPLANKTON DENSITY IN HEAVILY CONTAMINATED WATER BY EFFLUENTS IN CAGAYAN DE ORO CITY, PHILIPPINES: IMPLICATIONS FOR HARMFUL ALGAL BLOOM FORMATION

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ABSTRACT

This paper presents the existing brackishwater conditions in Bulua, Cagayan de Oro City as impacted by the intensive activities in the area from a public wet market and fish farm. In this investigation, phytoplankton species composition, cell density and total coliform level were determined in six sampling stations along with its temporal and spatial distribution. Findings revealed a severe water contamination from coliform bacteria. The planktonic cell density is found highest in the market area and recorded highest during high tide period. The blue - green algae has the highest cell density, followed by the green-algae and diatoms. Species identified with high cell density includes Oscillatoria sp., a bloom-forming species, Nitzschia sp, Navicula sp. and Scenedesmus sp., are good indicators for a polluted waters. The presence of these species further highlighted the inefficient disposal of domestic waste to the receiving brackishwater. A strong positive correlation coefficient, (r) of 0.875 exist between phytoplankton density and the nitrates & phosphates and a positive correlation, (r) of 0.615 between phytoplankton density and the amount of lead (Pb) content.

It is concluded that the occurrence of Navicula sp.1, Navicula sp. 2, Nitzschia sp., Oscillatoria sp., Scenedesmus sp. and Cymbella sp. signifies that the brackishwater is under stress from inputs of market and fishpond activities.

Keywords: *Phytoplankton, Microbiological, Aquatic Ecosystem, Brackishwater, Philippines*

ISSUES IN THE IMPLEMENTATION OF GULAYAN SA PAARALAN IN SELECTED SCHOOLS IN BONDOC PENINSULA

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ABSTRACT

Schools have become aware of the multiple benefits of school gardening for students, teachers, schools, and communities. Gulayan sa Paaralan (School's Vegetable Gardening Program) is an

ongoing agenda in different schools in the Philippines in order to sustain the feeding program. This was launched as an inter- schools contest and the winners received recognition and cash prizes, but despite of this it is unclear why many schools failed in terms of implementing the said program. The main purpose of this research is to identify the current issues in the implementation of Gulayan sa Paaralan in selected schools in Bondoc Peninsula where farming is the main source of living. The study involved sixty (60) selected elementary and secondary teachers. The questionnaire consisting of issues which are divided into three categories: (a) attitude towards the behavior of the students about the program; (b) the subjective norm of the stakeholders; and (c) perceived behavioral attitudes observed during the execution of gardening in school. In conclusion, the teachers' awareness about the benefits of gardening in school is evident, thus the issues of unsustainable program and interests of the students must be given an attention.

Keywords: *Gulayan sa paaralan, Bondoc Peninsula*

RISK INDEX OF SELECTED PESTICIDES USING THE PESTICIDE OCCUPATIONAL AND ENVIRONMENTAL RISK FACTOR

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ABSTRACT

The use of pesticides is more and more regulated hence fewer products are now allowed in the market. One of the solutions to solve the problems on pesticides in crop protection is to focus more on the use of adjuvants. This study aims to determine the contribution of adjuvants through the use of risk index for possible environmental benefits due to reduction of pesticide used during application. Risk indicators were calculated using the pesticide occupational and environmental risk factor (POCER). POCER Risk Indicator is only theoretical and have no direct link with pesticide use on the field. However, the goal of this theoretical approach is to show the environmental impact of the use of adjuvants in the case of chlorpyrifos, cypermethrin and metalaxyl. Results indicated that the use of adjuvants lowers the risk to humans and environment which indicates that risk index such as the POCER can be a meaningful index in determining the risk of pesticide use. This implies that use of adjuvants can reduce the normal application rate of pesticides used in the field which benefits the environment. Adjuvants are inexpensive compared to pesticides so that reduction of cost due to pesticide use could also be attained.

Keywords: *Risk Indicators, Pesticides, Adjuvants, POCER*

WATER QUALITY AND PLANKTON DIVERSITY OF SELECTED COASTAL AREAS NEAR NICKEL MINES IN SURIGAO DEL NORTE

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ABSTRACT

Anthropogenic activities are factors that affect and contribute to changes in the quality of coastal areas. Hence, the present study was undertaken to characterize coastal waters in the municipality of Gigaquit and Claver, Surigao del Norte by determination of water quality parameters and plankton diversity. Coral reef, sea grass, and mangroves communities were represented in the sampling sites. Relationship between parameters on different areas in sampling seasons was identified by Cluster Analysis (CA), Principal Component Analysis (PCA), and Canonical Correspondence Analysis (CCA).All physical and chemical parameters for water quality were within desirable limits. There were 127 species of plankton identified in Gigaquit coast and 159 species in Claver coast. Cluster analysis identified three clusters categorized as communities less affected, moderately affected, and highly affected by anthropogenic activities. Higher pollution index score was found in Claver coast which implies the probability of organic pollution in the area. Moreover, Gigaquit coast was found to have high diversity of plankton species. Plankton species such as *Climacosphenia elongatae, Naplius sp, Foraminiferan, Ceratium sp., Phizosolenia alata* and *Chaetoceros sp.* were found to prefer in waters with high DO values and may serve as indicator species in that type of environment.

Keywords: *Water quality Assessment, Diversity, Principal Component Analysis, Plankton*

ENVIRONMENTAL KNOWLEDGE, AWARENESS AND ATTITUDE OF A FISHING COMMUNITY IN NORTHERN POLILLO ISLAND, QUEZON PROVINCE

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ABSTRACT

Polillo Island is an isolated and subsistence-based fishing community. Due to its geographical location, cash income and alternative livelihood opportunities are scarce and local people heavily depend on the local resources for their daily survival. However, the natural wealth of Polillo Island is in danger of irreparable destruction and extinction due to illegal logging, mining, degradation of mangrove forests due to reclamation of shoreline and wetlands for human settlements, utilization of destructive fishing techniques such as blast fishing and poison fishing, and overfishing. An instrument was developed to determine the local people's socio-demographic characteristics, local ecological knowledge, awareness and perception to local environmental issues and problems, and attitude to pro-environmental activities. Key informant interview revealed the characteristics of the community: appreciably homogeneous faith and ethnic origin, young population, high literacy and considerably high education, existence of perceived environmental crisis and associated socio-environmental issues. The guardians/parents generally have higher environmental knowledge than the students but both failed to reflect on the interconnectedness of upland and coastal ecosystems. Both groups expressed pro-environmentalist attitude and concern to local environmental issues and fisheries management problems. This study showed that the community in northern Polillo Island

possess positive characteristics favourable for successful establishment and implementation of a community-based coastal resources management project.

PHYTOCHEMICAL ANALYSIS AND ANTIOXIDANT ACTIVITY OF *BRYUM BILLARDIERI*

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ABSTRACT

Mosses contain active constituents that exhibit various biological activities. Studies on this field, however, are not exhaustive in the Philippines. This study provides additional information on the potential of mosses as natural sources of biologically active compounds that can be used as medicines. The antioxidant potential of *Bryum billardieri* Schwaegr. (Bryaceae) is herein studied by analyzing its phytochemicals and its radical scavenging activity. Ethanolic extract of *Bryum billardieri* was prepared, and its active constituents ware determined using qualitative and quantitative phytochemical tests. The antioxidant potential of the plant ethanolic extract was analyzed using DPPH (2,2'-Diphenyl-1-picrylhydrazyl) radical scavenging assay, with ascorbic acid as positive control. Phytochemical tests revealed the presence of phenols, carbohydrates, phytosterols, saponins, and terpenoids. The % scavenging activity of *Bryum billardieri* ethanolic extract and ascorbic acid were measured to be 74.88% and 81.18% respectively.

Keywords: *Moss; Bryum Billardieri; Antioxidant; Ethanolic Extract*

STRESS LEVELS INDUCED BY TRANSPORTATION AND PRE-SLAUGHTER OF CARABAOS FOR FINISHING IN LANAO DEL NORTE, MINDANAO, SOUTHERN PHILIPPINES

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ABSTRACT

The total blood lipids based on Total cholesterol (TC), Triglycerides (TG), High-density lipoprotein (HDL), Low-density lipoprotein (LDL), RBC, hematologic profiles such as WBC and indices, and muscle polypeptides of different groups of non-descriptive buffaloes according to live body weight, wherein G1 (160-180kg), G2 (130-150kg), and G3 (100-120kg) of carabaos (carabeef) in abattoir of Balo-i, Lanao del Norte, Mindanao, Philippines, used to determine the stress conditions upon arrival and before sacrificing. Standard readings of the mean TC values of 45.58, 49.25, and 39.76 mg/dL for G1, G2, and G3, respectively; the mean TG values of 13.90, 11.02 and 5.25mg/dL; and HDL and LDL of 32.32 and 11.37, 33.85 and 13.20, and 24.73 and 13.98mg/dL for each group, all represented the total blood lipids of 3 to 4 days of restraining and starvation prior to slaughter. The complete blood counts supported the overall conditions of carabaos wherein high WBC counts and WBC indices were recorded. The muscle polypeptide profiles revealed highly expressed medium molecular weight to high molecular weight ranges which may also be used as indicators of stressed conditions. Generally, the

carabeef show possibilities of bacterial infections of some extent but nevertheless acceptable for human consumption.

BANGSA MORO ORGANIC FARMING PRACTICES

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ABSTRACT

The research work is designed to documents and evaluates the organic farming practices of Magindanawn rice farmers in the Bangsa Moro Province. Specifically, it aims to; a.) describe the demographic and socio-economic profile of organic farmers in Mindanao b). describe the Magindanawn organic rice farming practices in the Bangsa Moro Province; c.) determine the level of adoption of Magindanawn organic farming practices from cultural management; d.) determine if there is a significant difference among the independent and dependent variables; and e.) determine if organic farming practices are related to economic viability and improved practices of the Magindanawn farmers. Thirty percent of the Magindanawn farmers using fully or partly organic farming technologies were interviewed and asked to fill up the prepared formal questionnaire to satisfy the necessary information. The nature of data gathered was described by analytical and descriptive methods. Pearson's correlation analysis was employed in determining the relationship and influence of the measured variables. The wider farm sized of the Magindanawn farmer was 3 hectares and above, followed by 2-2.9 hectares, and 0.25-1.9 hectares. The highest farming experience was 32 percent and lesser than 5 year or equal was the lowest. The educational attainment of the rice farmers in the Province of Maguindanao was found 54 percent attended elementary; 38 percent high school, 2 percent College, 1 percent master, and 5 percent never attended school. Seventy nine percent of the respondents are none member of the any organization. While DA recorded 17 percent member and 4 percent enjoyed cooperative. The moderate response of the respondents about the organic farming is due may be to the "WAIT AND SEE" philosophy of the farmers in this region. On-farm income was found significantly influences weeding activities as revealed in the analysis. The correlation coefficient value is interpreted moderate. The negative correlation coefficient r value implies a reversed relationship which means that when off-farm income increases, plowing, weeding, and pest & diseases control activities would be decreases. This is true because, the organic farmers will have financial capabilities to alternative farming operations that will lessen efforts on enumerated farming activities using modern technologies such water management techniques. On-farm income significantly influenced seed selection in production stage of organic farming. On-farm income is not actually intended for seed selection.

Keywords: *Bangsa Moro, Organic Farming, Cultural Practices, Maguindanao*

CHEMICAL WASTE MANAGEMENT SYSTEM OF LEVEL III HOSPITALS IN CEBU CITY

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ABSTRACT

There is a dearth of data regarding the chemical waste management (CWM) in Asian countries. Hence, the current descriptive study assesses the CWM of five out of the eight tertiary hospitals in Cebu City by utilizing adapted survey tools, checklist, and interview guides out of revising the WHO Regional Office in Southeast Asia and WHO Rapid Assessment Tool. In addition, empirical data collection, laboratory qualitative testing of wastewater samples, and document analysis are also used to triangulate the data obtained from the specific hospital area personnel believed to deal with chemicals on a regular basis. The data also are validated by interviewing people in-charge of waste management or a representative from DENR-EMB, DOH-CHD, and TSDs (Treatment/Storage & Disposal facilities). The profile of the tertiary hospitals are identified as well as the identity of the chemical wastes, best practices and problems encountered within the hospital system on CWM in order to come up with an improved CWM system that can be adopted by the aforesaid hospitals. On the whole, the identified tertiary hospitals in Cebu City remain below minimum WHO standards that might be posing significant chemical health, and environmental risks. The reasons for the below satisfactory rating of chemical waste management of tertiary hospitals in Cebu City are the little awareness about the health and environmental hazards related to chemical waste, inadequate training in chemical waste management, absence of chemical waste management and disposal systems in some hospitals, insufficient financial and human resources, and the low priority given to chemical wastes within the health-care system as can be gleaned from the budget allocated for its management. The problem has little to do with "what to do" but greatly about "what more to do" and "how to do it". The proposed improved system requires collaboration among the health personnel, support services, management, and private and public institutions to contain the chemicals within the hospital system through waste reductive and eliminatory strategies first and foremost. The environment must be the end in mind in the improved CWM.

Keywords: *Chemical Waste Management, Tertiary Hospitals, Chemical Wastes, Health-Care Waste Management*

CULTURAL PRACTICES ON ORGANIC RICE FARMING IN RELATION TO AGRO-ECOLOGICAL SOUNDNESS IN MAGUINDANAO PROVINCE

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ABSTRACT

The study attempted to analyze the socio economic factors and organic farming practices of farmer's respondents and its contributing to organic rice farming productivity and agro-ecological soundness. Descriptive statistics, correlation and regression were used to analyze data. Variables from socio-economic revealed, years in organic farming had highly significant contributors to overall ecological soundness Results revealed that fertilizer used, weeds, pest and diseases control, harvesting, and drying were moderately practiced and likewise found to

be highly significant contributors to ecological soundness. In socio-economic, household size was found to have significant relation to presence of harmful insect. Years in irrigation farming was found to have highly significant relation to the presence of useful insect, overall ecological soundness. Year in organic farming was found to have highly significant relation to presence of useful insect, presence of microbes, appearance of grasses and overall ecological soundness. Membership in organization was found to have significant relation to appearance of grasses. In organic farming practices, planting was found to have highly significant relation to presence of useful insects, presence of microbes and to overall ecological soundness. Pest and diseases was found to have significant relation to overall ecological soundness.

The regression results revealed that in socio-economic showed that the years in organic farming had highly significant effects contributory to the presence of useful insect, presence of microbes, overall ecological soundness and significant effects contributory to the appearance of grasses, and in membership of organization had significant effects contributory to the appearance of grasses all of which were in the ecological soundness.

In organic farming practices also showed that the planting had highly significant effects contributory to the presence of useful insects, presence of microbes and overall ecological soundness. Drying had highly significant effects contributory to the presence of useful insect. The overall practice showed had highly significant effects contributory to the presence of useful insect. Based on variable selection procedures, the planting methods was considered the best predictor of farming practices with the T-value of 6.476**, this means statistically that for every unit change of planting methods a corresponding degree of change in the agro-ecological soundness of organic farming occurs.

Keywords: *Organic farming, Cultural Practices, Agro-Ecological Soundness, Maguindanao*

FACTORS MOTIVATING WOMEN IN LOWLAND RICE FARMING

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ABSTRACT

The study was conducted at Maguindanao Province covering five Municipalities like: Datu Paglas, Sharriff Saydona, Sultan sa Barungis, Paglas, and Mamasapano. The study aimed to determine the motivating factors for women farmers in lowland rice farming. Specifically it aimes to : a.) describe the attributes of women's in lowland rice farming system in Maguindanao; b.) determine the women's participation in lowland rice farming system; c.) identify the relationship between the demographic factors with the extent of women's participation in lowland rice farming; d.) describe the relationship between the motivational factors with the extent of women's participation in lowland rice farming; and e.) determine the influence of demographic and motivational factors to the women's participation in lowland rice farming. Purposive sampling was used with interview schedule consisting of structured questions. The questionnaire has four parts to draw data for the following: (I) demographic factors; (II) motivational factors; (III) and extent of participation; and (IV) problem and solution. Descriptive statistics such as frequency counts, percentage and means will be used to answer

objectives 1 and 2. Pearson Product Moment Correlation Coefficient and Multiple Regression was used. All motivational factors have positive and significant influence on the production as well as post-production activities of women in lowland rice production. This positive relationship implies that when motivational factors increases, the production and post-production activities of the women in lowland rice will also be improved. On the other hand, all predictor variables did not significantly influence the participation of women respondents in the pre-production phase of lowland rice farming. This implies that this factors will not improve the women participation in seed selection and land preparation because of reasons that land preparation is with in the domain of male farmers and rice seeds are mostly coming farm the DA.

Keywords: *Women, Motivating Factors, Lowland Rice, Pre-Production, Production, Post-Production*

LOCALLY-ISOLATED ENTOMOPATHOGENIC MICROORGANISMS AS BIOLOGICAL CONTROL AGENTS OF INSECT PESTS OF CRUCIFERS

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ABSTRACT

The study assessed the effects of different local isolates of entomopathogenic microorganisms on the population of insect pests associated with crucifers using cabbage as test plant. It involved weekly application of the following treatments on potted cabbage: T1 – distilled water (control), T2 – entomopathogenic nematodes, T3 – PCN 2011-003 (Bacillus subtilis), T4 – PCN 2011-005 (B. subtilis), T5 – ST 2011-001 (B. subtilis), T6 – Verticillium sp., T7 – Nomuraea sp., T8 – Metarhizium sp., T9 – nucleopolyhedrosis virus, and T10 – Bacillus thuringiensis insecticide. Insect pests associated with cabbage were cabbage aphid (Brevicoryne brassicae), cabbage butterfly (Pieris rapae), cutworm (Spodoptera litura), whitefly (Bemisia tabaci), and leafminer (Lyriomyza trifolii). Results showed that EPN, Metarhizium, Nomuraea, ST 2011-001, and PCN 2011-003 were effective against cabbage aphid. The control agents were ineffective in controlling the population of and injuries inflicted by P. rapae, S. litura, B. tabaci, and L. trifolii. Further studies to verify the effectiveness of EPN, Metarhizium sp., Nomuraea sp., and the B. subtilis isolates ST 2011-001 and PCN 2011-003 against cabbage aphid are needed. Determining the most appropriate concentrations of the biological agents to verify their efficacy must also be considered.

SURVEY OF FISHING GEARS AND METHODS OF ARTISANAL FISHERS IN THE MUNICIPAL WATERS OF DIPACULAO, AURORA PROVINCE

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ABSTRACT

A survey of fishing gears and methods utilized by artisanal fishers drawn in municipal waters of Dipaculao, Aurora was carried out from the December 2014 to February 2015. Socio-demographic profile of the respondents described that fishermen in the municipality were males

(94%), aged 21-30 (47%), Roman Catholics (78%), attended school, and has a household members of 1-3. It was noted in this study that fishermen were engaged in fishing within 1-10 years, have other sources of income (88%), and most of them has an average monthly household income of 1,000 to 10,000 pesos. It was identified that there were fourteen (14) fishing gears utilized by the artisanal fishermen in the town. The commonest gears used by the fishermen were floating line (13%) and surface gill nets (13%). The time of fishing operation using individual gear is not identical. In terms of specific time of fishing operation, majority of the fishing gears were utilized both during daytime and night time. Crab lift net, fyke net, filternet, fishpot, crab trap, shrimp trap, and rama (artificial fish shelter) were operated in 24 hours. Other gears such as handline, floating line, surface gill net, encircling gill net, cast net, and speargun were used during the day. Catch biomass by fishermen considerably varies per fishing gear utilized. Estimated catch biomass for most of the gear types is only ranging from 1 kg – 10 kg per fishing operation.

***Keywords**: Fishing Gears, Artisanal Fishers, Fishing operation, Catch biomass*

UNIVERSAL FAMILY DESIGN FOR DEVELOPING CUSTOMIZED AND SUSTAINABLE PRODUCTS AND SERVICES

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ABSTRACT

Design has been adapted to changing environments, such as customers' preferences, technologies, economic situations, company's strategies, regulations, and competitive moves. Strategic adaptability is essential in capitalizing on future investment opportunities and responding properly to market trends in sustainability. Universal design is a recently suggested term in designing products, systems, and environments for everyone as well as persons with a disability. In this research, we propose a strategic decision-making method for determining a platform design strategy to support universal family design by considering economic, environmental, and social issues. To determine a platform for family design, the proposed method uses market-based decision-making, involving a market-based negotiation mechanism and a game theoretic approach based on module-based platform concepts and a mathematical model. Real options analysis is applied to estimate the valuation of options related to introducing new modules as a platform in a universal product family. A coalitional game is employed to evaluate which design strategies provide more benefit when included in the platform based on the marginal profit contribution of each strategy. The proposed method can help develop design strategies to manage and create a cost-effective variety of products and services based on a platform in support of mass customization and sustainability.

***Keywords:** Mass customization, Product family and platform design, Sustainability, Universal design*

PROSPECTING FOR BIOACTIVE COMPONENTS FROM TRADITIONAL MEDICINAL PLANTS USED BY INDIGENOUS PEOPLE'S (IP) GROUPS IN THE SOCSARGEN REGION THROUGH ETHNO-BOTANICAL APPROACH

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ABSTRACT

Ethnobotanical approach was used to select traditional medicinal plants used by four (4) indigenous people's groups, the Obo in Lake Sebu, South Cotabato, T'boli in Maitum, Sarangani Province and B'laan and Tagakaolo in General Santos City for bioactive component prospecting. One hundred fifty four (154) plants species have been recorded with the corresponding conditions or illnesses in which they are believed to exert therapeutic effect and the corresponding ethnomedicinal knowledge based on interviews of identified traditional healers and elders in the community as well as household members. Fifteen (15) plant species selected based from 1) the claimed illness a plant can treat and which associates to the pre-determined test assays, 2) with the highest ICF value in the disease category, and 3) the availability and abundance of plant sample in the area were subjected to phytochemical screening and pharmacotoxicological tests for its potential cytotoxicity, angiogenic, and antioxidant activities. Phytochemical and bioactivity profile of identified traditional medicinal plants supported most of the claims of IP groups with two species Cinnamomum mindanaense and Lycopodium clavatum showed potential for the identification of bioactive components. These two species were further used for the bio-assay guided fractionation of active components.

SOCIAL CARRYING CAPACITY ASSESSMENT OF TOURISM DEVELOPMENT IN MT. BALUNGAO HOT AND COLD SPRINGS RESORT AND HILLTOP ADVENTURE IN BALUNGAO, PANGASINAN, PHILIPPINES

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ABSTRACT

Social carrying capacity (SCC) assessment in the context of tourism development is used in the analysis of the current scenario of tourism destinations which considers the viewpoint of local residents and visitors. It aids in the identification of opportunities for improvement towards sustainable tourism development. SCC of tourism development in Mt. Balungao Hot and Cold Springs Resort and Hilltop Adventure in Balungao, Pangasinan, Philippines was assessed by conducting surveys. Data gathered were used in the evaluation of attitude of resident-respondents towards visitors and tourism in the area using Doxey's Irridex and in the assessment of recreation satisfaction of visitor-respondents using the result of their evaluation of the factors that influenced their recreation satisfaction in the resort. Resident-respondents were found to have positive attitude towards tourists and tourism in the area and this is interpreted to be at the stage of euphoria. With weather and value for money as top factors that influenced their satisfaction, visitor-respondents were found to be generally satisfied with their vacation experience in the resort despite some deficiencies in facilities and personnel. These findings signify that the SCC of tourism development in the municipality is not yet exceeded.

CEBU CITY RESIDENTS' PREFERENCES IN DENGUE FEVER (DF) TREATMENT

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ABSTRACT

This study documented Cebu City residents' choices in (DF) treatment and the identified factors for utilization to come up with a dengue-prevention management plan. This descriptive study involved 107 randomly chosen respondents and key informants, through formal-informal interviews. Results revealed that majority with DF were below 18-years old children (84.1%), with one inflicted family member (87.4%). Majority had monthly income of 10,000.00 pesos for 5-8 family members (91.6%) with employment as the main income source (73.8%). The ranked healthcare agents were physicians, barangay health workers, *tambalan*, and referred individuals. Physicians (80.4%) were the most preferred health provider in the DF treatment, with home medication as the prime intervention mode (53%) citing family members (mothers = 89.7%; fathers = 54.7%) as the primary healthcare givers. DF management stressed their knowledge on the symptoms (85%): high fever (96.3%), joint pains (77.6%), stomach pains (72%), headache (63.6%), rashes (58.92%), muscle pains (29%), bleeding (29%), vomiting and nausea (.9%). Weakening physical condition of the patient (40.5%) became the primary factor in hospital confinement, while physician's advice (15.3%) as secondary. DF treatments administered *mangagaw* (Euphorbia hirta) (70.3%), apple juice or tonic (38.7%), virgin coconut oil (VCO) (1.8%), and young papaya leaves juice extract (23.4%) on their patients. On the potency of the medication used, local knowledge (42.1%), testimony (27.1%), and experiences of those who had tried the intervention used (12.1%) were identified. As to the condition of the immediate environment, respondents were aware that sanitation can be a control of the dengue mosquitoes. However, the following were observed: presence of uncovered water containers (81.3%), garden within the homestead vicinity (49.5%), utilization of domesticated animal dens (48.6%), and household refuse to garbage (39.3%). Thus, Cebu City families with 5-8 members belongs to the below the poverty threshold level are knowledgeable about the symptoms of DF and preferred treatments. It is recommended that environmental sanitation be maintained to control the occurrence of DF.

RURAL INDUSTRIALIZATION: TRANSFORMING HUMAN AND ENVIRONMENTAL LANDSCAPE

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ABSTRACT

Modernization, rural industrialization, and urban expansion have resulted in the transformation of the general landscape of the countryside. The development path taken by the peri-urban or urbanizing *barangay* (or community) studied was influenced by internal and external factors. Overall, the most influential factor was the establishment of industrial estates in nearby *barangays.* The impacts of rural industrialization spilled-over to the peri-urban *barangay* and affected its natural and financial assets. The beneficial spill-over effects of rural industrialization include improved access to and delivery of educational, health and other social services,

improved physical infrastructure, strengthened aspirations for better education, better housing and housing facilities, generation of more employment opportunities, increased female labor participation rate, regularity and increased income, and more diverse business prospects. In spite, however, of the beneficial effects, industrialization has likewise led to a number of negative outcomes like rapid increase in population which eventually gave way to the conversion of lands to settlement sites for housing and to commercial use to cater to the service needs of migrants as well as temporary settlers. While the concept of peri-urbanization has been studied by academicians, it is not yet integrated in most curriculum planning and policy making activities. More in-depth study of its theoretical and practical bases is needed to determine its applicability and typology for more realistic planning and policy making both at the school level and the local government units.

Keywords: *Rural Industrialization, Environmental Landscape*

ENVIRONMENTAL PROTECTION PRACTICES OF THE RIVERS OF BOJO AND LOBOC

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ABSTRACT

Environmental protection is one of the concerns of Cebu Technological University researchers. The research is focused on how the identified tourist destinations, namely the rivers of Bojo, Aloguinsan, Cebu and Loboc, Loboc, Bohol, protected the environment. In this study, the researchers conducted baseline data on how the operators protected the area like reforestation with endemic species, cleaning and landscaping activities and the application of the 3R's of waste management for the Bojo river of Aloguinsan, Cebu, while Loboc river protected the area by landscaping the riverbanks 5 meters away from the privately owned area, reforestation with endemic species of trees and mangrove propagules, prohibition of any agricultural activities like poultry, piggery and fish farming and issuing a penalty with P10,000.00 if guests throw the wastes to the rivers. The common environmental practices of the two tourist river destination made the ecotourism successful. Thus, the environmental protection practices of the identified tourist destination should be sustained.

ETHNOMEDICINAL KNOWLEDGE OF PLANTS AMONG TAGBANUA HERBOLARIOS IN CABIGAAN, ABORLAN, PALAWAN AND PHYTOCHEMICAL ANALYSIS OF SELECTED MEDICINAL PLANTS

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ABSTRACT

The ethnomedicinal knowledge of plants among Tagbanua herbolarios in Cabigaan, Aborlan, Palawan was assessed through key informant interviews, while selected medicinal plants utilized by the herbolarios were analyzed for the presence of some phytochemicals. The herbolarios disclosed at least 54 medicinal plant species, mostly collected from the forest, being

used to treat different kinds of illnesses. Leaves were the most commonly used plant parts while boiling and scraping were the predominant mode of preparation. Oral was the most common mode of application. The presence of terpenoids, flavonoids, alkaloids and tannins on the 5 indigenous medicinal plants utilized by the herbolarios to treat the highest number of illnesses may explain their effectiveness. The Tagbanua herbolarios had very rich knowledge on ethnomedicine, however, the perpetuation of such knowledge to the next generations is not assured as young Tagbanuas are no longer interested to learn the traditional ways of healing.

Keywords: *Ethnomedicine, Tagbanua Tribe, Plants, Phytochemicals, Palawan*

ACADEME AND COMMUNITY PARTNERSHIP: A STRATEGY TOWARDS THE STRENGTHENING OF THE VILLAGE-BASED MUSHROOM INDUSTRY IN THE PHILIPPINES

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ABSTRACT

The mushroom industry in the Philippines remains to be an emerging industry which is valued at 619.59 million pesos. Its volume of production of 541 metric tons is far below the domestic consumption of 10,764 metric tons. Thus, the country still imports 10, 245 metric tons of mushrooms from China, Australia and USA. Though Filipinos are known to be consumers of mushrooms, mushroom technology was only introduced in the Philippines in the 1950's which was anchored on the cultivation of straw mushroom on beds of rice straw and/or banana leaves. In the 70's, production technology for the cultivation of other species of exotic mushrooms such as oyster mushrooms and rat's ear mushroom were introduced in the country. At the turn of the 21st century, a paradigm shift in the behavior of the Filipinos towards mushrooms i.e. from being a culinary ingredient to high value nutraceuticals and cosmeceuticals has been realized through the introduction of novel mushroom – based products in the local market. With this recent development, mushroom research and development efforts have been reactivated. Academic institutions and other government agencies such as the Departments of Science and Technology, Trade and Industry, Agriculture, Labor and Employment, Bureau of Plant Industry and Local Government Units concerted their development efforts to strengthen this emerging industry in the country. The Center for Tropical Mushroom Research and Development of the Central Luzon State University and its development partners on the other hand spearheaded the generation of practical and innovative research-based mushroom technologies using locally available materials for both exotic and native species of medicinal mushrooms. Consequently, intensive capacity building effort on the establishment of a village – based spawn and

mushroom production was initiated by our team. Television as a form of mass media was also used to popularize the technology. As a result, mushroom spawn laboratories were established in the country resulting in a sustainable supply of quality spawn to prospective growers.

Keywords: *Medicinal Mushrooms, Mushroom Nutraceuticals, Mushroom Research and Development, Philippine Mushroom Industry*

PHILIPPINE PROCESSED FOOD PRODUCT RECALLS (1999- 2014)

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ABSTRACT

A food recall may be initiated by the manufacturer, distributor or government agencies when there is reason to believe that a food may cause harm to consuming public. At present, there are no data summaries and analysis of food product recalls in the Philippines that can be used as public food safety education materials. Product recalls from 1999 to 2014 issued by the Philippine Food and Drug Administration under Department of Health, Republic of the Philippines as appeared on their website were downloaded, analyzed and evaluated in terms of associated food vehicles and etiologic agents. Descriptive statistical analysis was conducted. Results showed that peanut butter accounted for the greatest number among the products recalled with *Salmonella* and aflatoxin as the most often etiologic agents. Food product recalls can be prevented through intensified food safety education among stakeholders.

Keywords*: Food recall, Food safety, Salmonella, Aflatoxin*

WOMEN PARTICIPATION IN CORN FARMING PRACTICES

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ABSTRACT

The study was conducted in the Bangsa Moro Region covering three Municipalities like Datu Paglas, Paglat, and Sultan sa Barongis with a total of 180 Magindanawn corn farmer respondents. Generally the objective of study is to document and assess the degree of Magindanawn women participation in Corn Farming System. The specifically aims to: a.) describe the Magindanawn farmers Socio-Demographic characters; b.) determine the demographic elements that are related to Magindanawn women's participation; c.) determine the motivational factors that are related to Magindanawn women's participation; and e.) Identify the needs and problems encountered by the Magindanawn women relative to their participation in Corn Farming activities. The study was guided by the correlational research design analysis with the used the interview schedule guide formal questionnaire. The study tested the relationships and influence of the selected characteristics of the Magindanawn farmers with the degree of their participation. Thirty (30) respondents were taken in each barangay making a total of 180 corn farmer respondents. Purposive sampling with proportionate was employed to identify the respondents. Among180 Magindanawn farmers respondent 41% were in the age of

41 year-old with an average household of 5.57 members. Majority earned an income from 11,000.00-20,000.00 per month with 6-10 years farming experience. And 138.6 of the respondents are enjoying membership in cooperative organization. The respondents participated high in attaining trainings, and Frequency of extension agents appeared to be strong determinant for farmer participation in corn production systems. Farmers have been discovered that they are wishing to acquire best social prestige. Farm income was the primary and major driving factors that motivate farmers to valiantly engage and participate in Agricultural venture.

Farm inputs such as seeds and chemical (e.g.: pesticides/herbicides) were moderately expected by the farmer. They highly participated in planting, fertilizer application, weeding, and harvesting. While moderate in seed selection, corn drying, and marketing.

The research proved statistically that educational attainment and farm experience were positively related to pre-production of corn farming. Number of women in the household is out dated by men. Organizational membership is positively related to production. The Age and educational attainment have positive effect on pre-production stage. This implies linear relationship between the two variables with pre-production stage. Hence, older and highly educated women have higher participation during pre-production activities.

Keywords: *Women, Corn Farming, Production, Maguindanao*

EXPECTANT MOTHERS' AND MOTHERS AWARENESS ON NEWBORN SCREENING IN THE LARGEST BARANGAY OF CATBALOGAN CITY, PHILIPPINES

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ABSTRACT

Newborn Screening is a system that helps tell whether your baby is at increased risk for certain serious medical conditions. This study aimed to assess the expectant mothers' and mothers awareness on newborn screening in the largest barangay of Catbalogan City. It utilized the descriptive method of research in to100 respondents. The instrument that was used was adopted from Suayan and Angoy in their study "Newborn Screening Awareness: with 0.91 reliability. This study was conducted at the largest barangay of Catbalogan City province of Samar (Brgy. Canlapwas). Findings indicated that respondents are "Not so aware" in the Nature of Newborn Screening (m=2.37), Availability and Accessibility of the Program with a grand (m=2.35). While majority of the respondents are "Aware" on the significance of Newborn Screening Program (m=2.6). Moreover, findings suggest that there is a significant relationship between respondents' awareness in Newborn Screening and their Educational Attainment & Family Monthly Income. Government and Healthcare Team should continue to strengthen their activities, and information dissemination related to Maternal and Child Health especially on Newborn Screening Program through symposiums, campaigns and activities that it could reach far flung areas and City Health Unit, encourage every barangay health centers to conduct health teachings regarding the importance of Newborn Screening Program as well.

Keywords: *Newborn Screening, Health Care, Catbalogan, Samar*

AGRONOMIC CHARACTERISTICS OF INDIGENOUS LOWLAND RICE CULTIVARS OF LIGAWASAN MARSH UNDER UPLAND CONDITON: VERIFICATION STUDY

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ABSTRACT

Increased rice production in the upper valley has been the clamor of rice researchers. Thereby, the belief of Ligawasan Marsh (LM) farmers that the LM traditional cultivars originally came from uplands, there are possibilities that one or several of the LM cultivars is promising for upland propagation. In this regards, it is imperative for this research to evaluate the agronomic characteristic of Ligawasan indigenous rice cultivars under upland condition of Arakan during rainy and dry season cropping. This study includes the adaptability, suitability in the upland and its resistance to pest and diseases. Objectives of the Study was to determine the agronomic characteristics of Indigenous Ligawasan marsh (LM) rice cultivars under upland condition, To determine which cultivars of Ligawasan Marsh (LM) can thrive in dry and rainy conditions.To identify the promising cultivars of Ligawasan Marsh (LM) indigenous rice thru its agronomic characteristics, The study was conducted at CFCST, Doroluman, Arakan, Cotabato from September 2006 to February 2007. Five (5) Ligawasan Marsh (LM) rice cultivars (Kawilan, Manigkad, B3, Kayopo, Tanggiling) and one (1) local upland rice variety (Dinorado) as a check. A laboratory and field experiments were performed to determine the morphological and/or agronomic characterization of Ligawasan marsh (LM) cultivars. Experimental Design of the study was laid out in a Randomized Complete Block Design (RCBD). Five (5) Ligawasan Marsh (LM) cultivars and one (1) local upland rice variety were randomly distributed into six treatments and replicated three times. The Treatment were as follows: Treatment 1- Dinorado (control), Treatment 2- Kawilan, Treatment 3- Manigkad, Treatment 4- B3, Treatment 5- Kayopo, Treatment 6- Tanggiling, The result of the study indicates that the indigenous lowland Ligawasan rice cultivars can thrive or survive in the upland condition (wet season) and attained normal growth and development up to maturity (agronomic characteristics) although there was an infestation of rice bugs and no added inputs during the study. Further study or evaluation of their agronomic characteristics, availability and adoptability of indigenous lowland Ligawasan marsh rice cultivars in uplands condition (dry or wet season) in different areas of Arakan Valley Complex is highly recommended especially with deferent inorganic and organic fertilizer application. Ligawasan Marsh rice cultivars cultivated by farmers but not documented. In which, further field data gathering shall be undertaken. The other identified Ligawasan Marsh rice cultivars that was not included in the study shall be undergo trials recommendation by the Philippine Seed Board to be qualified as rice variety.

Keyword: *Trial Verification, Indigenous Lowland Rice Cultivars of Ligawasan Marsh, Upland condition*

WILDLIFE HUNTING, USE, AND BELIEFS OF INDIGENOUS PEOPLE IN MT. APO NATIONAL PARK, MINDANAO ISLAND PHILIPPINES: IT'S IMPLICATION TO CONSERVATION

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ABSTRACT

Wildlife hunting and trade are considered as serious threats to biodiversity worldwide and these activities contribute largely to the decline of many wildlife species. On Mindanao Island, information on the understanding of wildlife hunting and trade in protected areas is scarce, as is the information on indigenous knowledge on biodiversity conservation. The main goal of this project is to document indigenous practices and knowledge on wildlife hunting and trade in Mt. Apo National Park. It also aims to determine local beliefs towards wildlife species and its feasible implication to conservation. A total of 165 locals from three villages were interviewed using a semi-structured questionnaire. Our study revealed that most of local hunters or have knowledge and experience in hunting were male and married (87%) between 35-60 years old. Most of the species hunted and traded were larger species such as *Sus* sp., *Rusa* sp., *Paradoxurus hermaphroditus,* and other large vertebrates. Main drivers of hunting and trade includes poverty, most species were hunted for food and bushmeat. With these, local communities may play important roles in conserving the remaining wildlife species in conservation areas. It is by providing alternative livelihood to circumvent poverty will decrease demands for wildlife encroachment in conservation sites.

Keywords: *Conservation, Hunting, Mt. Apo National park, Trade, Wildlife*

INDIGENOUS PRODUCTION OF FOXTAIL MILLET BY MANOBO TINANANON OF ARAKAN, COTABATO

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ABSTRACT

This study uses descriptive case study method with 10 Manobo Tinanon key informants from 3 barangays of southeastern of Arakan municipality, most of them were male (90%) foxtail millets farmers. Majority is elders/senior citizen with mean age of 66.7, 90% married and unschooled with formal education. The average number of children is 9.5 owning an average of 7.9 hectares of land. They professed traditional religious beliefs which are Panubad-tubad or Meghalaya and believers of Manama (God) and dieties (100%). The foxtail millet farmers are respected community leaders, as tribal chieftain (Datu) 10%, council of elders (odbuy-yahon) (80%) and 10% as traditional healers (tohovowiyan). Socio-historical profile of Foxtail millets production has been culturally practiced since time immemorial. Its importance was described as 1) Cereal food source. 2) Food for chicken and other birds. 3) use as amulet "pangal-lang/*kovo/domotan*" 4) A food offering for ritual (*tubad-tubad*) for farming, abundance, travel and safety, special day "new year day" and 'all souls day". 5) Bat'tam is use in fortunetelling.

The Manobo Tinanaon farmers choose the variety/line of Bat'tam millets, through color like yellow , red, and violet color. A healthy seeds of foxtail millets is observed through: 1) grains is taken from the stalk without spike (*indang*); 2) vigorous seeds is taken from half inch from the tip of the stalk (*kangoy*), 3) grains that are yellowish, reddish, and violet color and shiny (*masel-la/mon-nas*); 4) hand feeling with thumb and second finger (*od-pibpiluwon*) which are glossy and sturdy grains 5) Good seeds is taken from the uniform length of the stalk (*kangoy)* of the matured foxtail millet grains. The availability of the seeds (*korokol-loy to bo-ni*) will determine the area to be planted with foxtail millet which is usually garden plot size (approximately 10 meters square) and planting schedule was from July to September, a rainy season and the second cropping is every October to December. The farm implements use in land preparation (*daadu*)are the dibble stick (*tudak*), lagaraw (scythe), limpisa (*kal-lo*) (scythe) were use by Bat'tam farmers (100%).

Keywords*: Foxtail millet, Manobo tinananon farmers, Arakan Cotabato*

ETHNOPHARMACOLOGY OF THE CLAIMED HERBAL PLANTS OF THE I'WAKS OF AMELONG-LABENG, KAYAPA, NUEVA VIZCAYA

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ABSTRACT

Ethnopharmacology is the use of traditional medication by indigenous groups. In this study, Ethnopharmacological knowledge was gathered from the ethnolinguistic group *I'waks* of Amelong-Labeng, Kayapa, Nueva Vizcaya. The claims were confirmed especially on the wound-healing herbal plants. The herbal plants used by the *I'waks* are *lantana, tab-an, ganupgup, gipas, gulon, pakak, payong-payong, kubangbang*, and *palai.* These plants are used by the *I'waks* as part of their holistic belief of good health and total well being. This study utilized several techniques like phytochemical screening, total phenolic content using ascorbic acid, DPPH radical scavenging activity, brine shrimp lethality assay, minimum inhibitory concentration (MIC) against bacteria, and in-vitro anti-inflammatory assay using HRBC membrane stabilization method. The TLC spot test presented several phytochemicals such as flavonoids, triterpenes, anthraquinone, coumarins, phenols, sterols, essential oils, and alkaloids which initially confirms the medicinal claims on the herbal plants. The total phenolic content of the herbal plants ranged from 8.16 to 113.37 AAE/g sample, in which *gipas* had the highest total phenolic compounds. The DPPH radical scavenging activity exhibited by the plants ranged from 17.11 to 70.50% scavenging activity with *gipas* as the most effective antioxidant with an EC_{50} of 3.4 mg/mL. The wound-healing herbal plants (*lantana, tab-an,* and *gipas*) are found to have minimal cytotoxic effect on brine shrimps and are non-lethal to humans. These plants exhibited antibacterial activity against *E. coli* and *S. aureus* with MIC values ranging 0.25 to 1.00 mg/mL. The HRBC membrane stabilization method showed that the crude extracts of the wound-healing herbal plants exhibit dose-dependent anti-inflammatory activity. The result of the assays initially confirms the medicinal claims on the herbal plants by the *I'waks* especially on the wound-healing herbal plants.

Keywords: *Ethnopharmacology, Herbal Plants, Wound-healing*

SOIL AND LITTER INSECTS IN REHABILITATED NICKEL MINE AREAS IN CARAGA REGION, PHILIPPINES

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ABSTRACT

The continuous expansion of mining in Caraga Region to extract nickel resulted to habitat patchiness. This is due to strip mining technology adopted which divested the mountain slopes of topsoil and the associated vegetation. Since nickel mining started, significant hectarage of mined-out areas have been rehabilitated. Rehabilitation is done mostly through planting of Agoho (*Casuarina equisetifolia* J.R. and G. Forster) during the earlier period when mining companies started addressing environmental footprints in 2000. For rehabilitation efforts to initiate ecological restoration, identification of indicators is crucial. Among the indicators, soil and litter insect diversity is regarded as critical in determining soil quality supporting vegetation. Assessment was conducted by sampling soil- and litter-inhabiting insects. The result shows only 4 species of beetles and 1 species of ants from the litter of 4-year old Agoho, while 4 species of beetles and 2 species of ants are sampled in 10-year old Agoho litter. Identification of microscopic insects from soil samples of mined lands rehabilitated 4 and 10 years ago are still underway. In 1-year old Agoho plantings, there are no insects yet found since the litter fall is still very thin and the soil is not yet favourable to host soil-inhabiting insects.

Keywords: *Nickel Mine, Mined-Out Area, Mined Land Rehabilitation, Soil-Inhabiting Insects, Litter-Inhabiting Insects*

SOCIO-ECONOMIC CONSIDERATIONS OF SELECTED AQUACULTURE SITES IN CEBU, PHILIPPINES

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ABSTRACT

Aquaculture sites in Cebu were studied based on the municipality's active involvement in the ICRMP projects. The socio-economic considerations in terms of culture management, contribution to local economy, market and employment generated were taken into account employing Focus Group Discussions (FGDs), Key Informant Interview (KII) and actual surveys using structured questionnaires. Results showed that the dominant aquaculture ponds are in the brackish-water, followed by freshwater, fish cages and pens. Common species cultured includes *Chanos chanos, Oreochromis mossambicus, Siganus gutatus, Litopenaeus vannamei and Caulerpa lentillefera*. Majority of the production were semi-intensive. Market of products is by contract and most of the buyers are middle men from Cebu City. Employment is mostly permanent and more than 5 years working in aquaculture, while compensation is below Php5,000 ($119) per month. Limited contribution to the local economy was attributed to non-payment of dues and business permits, low employment generated and minimal taxes collected.

Keywords: *Fish ponds, Fish cages, fish pen, focus group discussion, key informant interview*

GREEN OFFICE PRACTICES OF TRAVEL AGENCIES IN CEBU CITY

Kafferine D. Yamagishi

ABSTRACT

This study was designed to explore travel agency's green practices in the office on the four environmental concerns in waste, water, energy and purchasing policy. This is with the aim to develop a concept of eco-travel agency in line with the operation and management basing on environmentally sound decisions. Data were collected from the representative sample of 25 travel agencies around Cebu City. The percentage method was used in profiling the respondents and the weighted mean and the average weighted mean was utilized in determining the degree of office practices of the agencies. It was found out that the Agencies have generally green practices inclination on waste, water, energy and purchasing policy and not well enough to practice it religiously on a daily basis. It was also found out that the company is not implementing these practices nor there are no provisions of guidelines or green office policies for the employees' strict compliance. The green practices showed that individual efforts of agents have contributed much to the sustainability of the agencies but there is a considerable lack of company efforts through the initiative development of company green programs that is clearly stated on the agencies vision and mission, the lack of participation to various Non-government organizations advocating environmental protection or any recognition for green management activities for the agencies' social responsibility. It is concluded that travel agents need to turn their practices into administrative plans, programs and policies for sustainable guidance and compliance.

Keywords: *Travel Agents, Green Practices, Sustainable Tourism*

STUDY ON SOME EPIDEMIOLOGICAL ASPECTS OF *HELICOBACTER PYLORI* INFECTION AND TRANSMISSION IN EGYPTIAN WESTERN DESERT

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ABSTRACT

In the Egyptian western desert we observed that unusual high number of inhabitants suffer from symptoms of *H. pylori* infection. So we tried to investigate the prevalence of the infection among the population and the correlation between the infection and some sociodemographic factors. Also, we achieved microbiological and molecular examination for the groundwater (the suspected source of infection).

Methods:

- Using ELISA we investigated H. pylori-specific antibodies in blood samples of 95 volunteers.
- DNA of H. pylori was investigated in the groundwater using PCR.
- We attempted to isolate viable H. pylori from the groundwater using selective media followed by gram staining and biochemical testing.
- DNA of the isolated bacteria was investigated using PCR targeting some genes (16S rRNA, glmM, and urea).

Results:

Prevalence of *H. pylori* infection was 90% and there was a significant correlation between this high prevalence and some sociodemographic factors.We detected DNA of *H. pylori* in groundwater. *H. pylorus was* present also in a viable status. Fecal contamination was confirmed by detection of large number of *E. coli* and *salmonella spp.* in water.

Conclusion:

Heavily contaminated groundwater is most likely to be a suitable reservoir where *H. pylori* can grow and transmit from person to person.

Keywords: *H.pylori; Egyptian; western Desert; groundwater*

ENERGY UTILIZATION, POLICY AWARENESS AND CONSERVATION PRACTICES OF RURAL WOMEN IN ANTIPAS, COTABATO

Marie Grace A. Langote, Aren Joe V. Pareñas and Harris M. Sinolinding (2015).

ABSTRACT

This study was undertaken to determine the energy conservation practices and utilization of women in Antipas, Cotabato. Specifically, the study endeavored to find out the socio-demographic profile, level of energy consumption; awareness on energy conservation policy and correlate this to the level of their energy conservation practices. This study was conducted in 6 barangays in the Municipality of Antipas which comprises namely; Malire, Camutan, Dolores, Malatab, B. Cadungon and Datu Agod. Sixty rural (60) women were randomly selected as respondents through multistage random sampling method. Survey method of research by using a set of survey questionnaire and key informant interview using unstructured questionnaire for narrative case presentation were used in data collection. Data gathered were analyzed using the mean and Pearson r correlation technique analysis. Rural women households were under poverty threshold limit, married with an average of 10.77 children in the family owned a semi-concrete house. Majority was educated formally with high school diploma, housekeeper, no electric connections, relied on firewood for cooking, and used deep well as a source of water supply. They seldom did the conservation on electricity, sometimes on the conservation of water, petroleum gas, did the proper utilization on laundry detergent, sometimes observed on conserving firewood.

The respondents were not fully aware on the existing energy conservation policy, but exercised the modest way of conservation in their own level. The household size, monthly income, occupation and water bill showed effect to the conservation practices on energy. Big family conserved more energy but households with lower status of occupation were forced to conserve due to the lack of electric connections, less amenities and appliances. There is a significant relationship with the consumption for vehicular gas and use of laundry detergent during washing. The higher the rate of utilization of energy such as fuel and detergent the household tend to consume less doing extra measures same as in dealing with the electric bill. The more the amount of laundry detergent is used, the higher the electric bill is consumed. A significant relationship exist between the awareness on the energy conservation policy and the conservation practices towards the use of petroleum since petroleum is expensive and when awareness comes in due to information, household tend to conserve energy.

Abstracts on Sub-theme

Communication and Conservation

PHYSICAL CONDITION AND SUPPORT SYSTEMS EMPLOYED IN THE MANAGEMENT OF FRESHWATER RIVERS IN EASTERN PANGASINAN, PHILIPPINES

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ABSTRACT

Eastern Pangasinan which composed of the municipalities of San Nicolas, Natividad, San Manuel, Urdaneta City, Sta. Maria, Asingan, Tayug, San Quintin, Umingan, Rosales, and Alcala, Pangasinan is endowed with freshwater rivers which are important water resources of these municipalities. These water resources serve as source of water irrigation for crops, source of drinking water for livestocks, and serve as fishing ground for the community. With the "ilog ko aroen ko tan bilayen ko" project of the provincial government of Pangasinan, there is a need to evaluate these freshwater rivers in terms of their physical condition and the extent of support systems employed by the local government units in the conservation and management of these water resources. Three river systems for each municipality were evaluated on the (1) physical condition of the river (30%) which include visibility/clarity of the water, absence of visible of floating and/or submerged wastes, absence of foul odors coming from domestic sources and other local industries, absence of excessive growth of aquatic plants on water surface, absence of illegal structures, absence of quarrying and other small mining activities and/or management system of existing quarry sites, and tourism; (2) physical condition of the river bank (20%) which include absence of garbage deposits, degree of proliferation of informal settlers, riverbank protection and management, animal tending and astray animals, burning activities; and (3) support systems relative to environmental protection and management program (50%) which include the presence of Functional Organizational Structure to handle environmental concerns, enactment of Local Ordinances, adoption of relevant National Laws and enforcement of same, budgetary support and Projects/Activities implemented, community mobilization, approved specific plans and accomplishments, information, education and campaign (IEC) programs, and related awards received. Result of the evaluation showed that the freshwater rivers and riverbanks had a good to moderately good physical conditions and had low to high extent of support systems employed by the local government units in the management of their freshwater rivers. Of the 11 municipalities, the municipality of Sta. Maria had the best support systems in managing their freshwater river.

Keywords: *Freshwater River, Riverbank Protection And Management, Physical Condition Of River,LGU Support Systems, Water Resources*

AVIAN ASSESSMENT IN SALADENGEN-DIMAPATOY WATERSHED FOREST RESERVED: ITS' IMPLICATION FOR PROTECTION AND CONSERVATION FROM EXTINCTION

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ABSTRACT

Avian assessment plays an important role in addressing the environmental problem on biodiversity loss. The study was conducted to assess avian species in Saladengen-Dimapatoy Watershed Forest Reserved: Its' Implication for protection and conservation from extinction. Descriptive survey was used in the study include the Identification, Status, Conservation status

of avian species existing in the study area. Three transect line measuring 20m x 100m was established for data gathering during conduction. There were twenty nine (29) total individual avian species found and recorded in the two transect line with thirteen (13) family and family

Nectariniidae has the most numbered bird species of five (5). For conservation status, most of species were found least concern and as to their status most of the avian were found resident. The researcher observed that part of Saladengen, a bird species seen were the following: Brahminy kite (*Haliastur indus)* family Accipitridae and Purple needletail (*Hirundapus celebensis)* Apodidae. Existence of the vegetation indicates that the area is a habitat of the said bird species. The local government unit with the DENR should conduct educational advocacy on birds in order the area will remain its vegetation as habitat, then birds species will be protected and conserved from extinction.

Keywords: *Avian, Assessment, Least Concern, Transect Line, Extinction*

TAXONOMY OF SELECTED PHILIPPINE FOLIOSE AND FRUTICOSE LICHENS FOUND IN THE PROVINCE OF NUEVA VIZCAYA

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ABSTRACT

This study dealt with the taxonomic identification of foliose and fruticose lichens collected from mountainous parts of Nueva Vizcaya; Imugan in Sta. Fe, Mt. Palali in Quezon and Mt. Pullol in Ambaguio. Taxonomic characters of the thallus, vegetative parts, reproductive structures, and ascospores, the color reactions to KPC; and, the lichen acids identified from TLC test were used in the identification of the lichens. Multivariate two-way hierarchial analysis using PCORD v5 was used in phenogram construction. Clusters in the phenogram were determined and similarities of lichens in a cluster were supported by the overall percent of similarity. A dichotomous taxonomic key intended for field sampling was also constructed based on the characters assessed in this study. Herbaria were prepared for these lichen collections and deposited at the SMU Biology Laboratory. The identified foliose lichens (16) are the following: *Coccocarpia palmicola*, *Collema* sp., *Heterodermia japonica*, *Leptogium asiaticum*, *Lobaria isidiophora*, *Lobaria rhaphispora*, *Lobaria* sp., *Leptogium wilsonii*, *Pannoparmelia angustata*, *Parmotrema cristiferum*, *Peltigera membranaceae*, *Physcia sorediosa*, *Pseudocyphellaria aurata*, *Pseudocyphellaria glabra*, *Physma byrsaeum* and *Dictyonema glabratum.* The fruticose (8) lichens include *Cladonia rangiferina, Usnea filipendula, Usnea himalayana, Usnea hossei, Usnea nidifica, Usnea* sp., *Ramalina* sp.1 and *Ramalina* sp.2.

Keywords*: Systematics, Lichenology*

INDIGENOUS WOMEN'S ROLE IN UPLAND RICE FARMING SYSTEM

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ABSTRACT

The study was conducted to determine the participation of indigenous women in upland rice farming system in Arakan Cotabato particularly in Brgy. Katipunan, Kabalantian, Gambodes, Napalico, and Datu Mantangkil using descriptive correlational methods in determining the relationship between the socio-economic factors and the extent of indigenous women's role in upland rice farming. Results indicated 28 to 86% involvement of indigenous women in pre-farm activities, 56% in farm establishment particularly slashing, 86% in planting operation, 84% in farm maintenance, 98% in harvesting, and about 40 to 76% participation in post- production particularly, seed storage and drying. On household activities, it was found out that only about 20% involvement

in nursery establishment, 16% for water collection, 44 to 84% in health and economy activities, and 72% participation in food security of the family. These household activities were significantly related to women's participation in farm activities such as in pre-production, production and post-production with correlation interpretation from moderate to very strong relationship. The findings concluded that indigenous women participated in all phases of upland rice farming, showing gender equality in this phase of activity.

Keywords: *Indigenous Women, Role, Upland Rice, Farming System*

CURRENT STATUS OF THE BIODIVERSITY OF MUSHROOMS IN THE NORTHWESTERN SLOPE OF MOUNT ARAYAT

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ABSTRACT

The study was conducted to identify and classify the different species of mushrooms in the northwestern slope of Mt. Arayat, to know which among the species is the most diverse, and to determine the relationship of environmental factors of the area to the occurrence and distribution of mushrooms. The study made use of the descriptive survey method of research which was designed to gather data about the existing conditions. It employed the Fixed Area Cluster Method and environmental factors were noted. Mushrooms were photographed, collected, and preserved for identification using a taxonomic key and were verified at the National Museum. Analysis of population was done using the diversity indices. The study revealed the following: (1) there were 30 species identified and classified under 15 families; (2) among the species collected, *Daldinia concentrica* (Bolt.ex Fr.) Ces. & de Not. had the highest frequency and relative frequency. *Marasmius sp*. had the highest density, relative density,

dominance, relative dominance and importance value since this species had the highest number of individuals. Species diversity (0.9733) was quite low; (3) the existence and survival of the species of mushrooms was dependent on the existing temperature, humidity, altitude, soil moisture, soil pH, and soil organic content.

Keywords: *Biodiversity, Mushroom, Mount Arayat, Fixed Area Cluster Method, Diversity Indices*

PESTS AND PEST MANAGEMENT STRATEGIES IN EGGPLANT FARMS IN NEGROS ORIENTAL

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ABSTRACT

Pests pose a major threat to the yield performance of vegetable crops. To reduce the risks of potential financial losses caused by pest attacks, farmers may opt to choose from a range of available pest management strategies. This study sought to determine the extent and severity of pest infestation in eggplant farms, and the management strategies employed by farmers to deal with these pests. A total of 52 eggplant growers from two municipalities in Negros Oriental were randomly selected and personally interviewed using a structured interview schedule. Results of the study show that severe cases of insect pest infestation were reported by 63.5% of the surveyed eggplant farmers. Less than half indicated severe cases of disease infestation, while weeds were not considered as problematic. The most common insect pests causing damage on the crop included *eggplant f*ruit and shoot borer (EFSB) (*Leucinodes orbonalis* Guenée), fruit fly (*Bactrocera latifrons L.);* aphids (*Myzus persicae* Sulzer.); leaf roller (*Lineodes integra* Zeller); and cutworm (*Agrotis ipsilon* Rottenburg). EFSB affected the most number of farmers, the majority of whom reported severe attack of the organism causing high yield losses. More than 70% of the farmers adopted a pesticide-based pest control strategy, along with cultural methods. Pesticides, mostly insecticides, were applied on the crop at least eight times per cropping, prior to and after the occurrence of pests. The majority claimed to have practiced Integrated Pest Management (IPM) strategies including crop rotation. Almost all implemented field sanitation to minimize pest incidence, but less than half synchronized their cropping schedule with neighboring eggplant growers. A quarter used resistant varieties, but very few practiced the use of trap crops for pest control. Eggplant farmers feared yield losses due to pests, and resorted to pesticide use to ensure better crop yield and improved profit.

KeyWords: *Crop pests, Pest Management, Pesticide Use*

SPECIES ASSEMBLAGE OF MACROBENTHIC ALGAE IN A COASTAL COMMUNITY IN PARAOIR, NORTHERN LUZON PHILIPPINES

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ABSTRACT

Macrobenthic algae form an important community of organisms in many coastal areas their role as producers is very critical in the proper functioning of the ecosystems. In the Philippines, algae also serve as an important resource because most species have economic value. However, these species are also one of the most highly threatened by humans and changing climate. Most species of algae in coastal communities have long been identified, however, ecological studies and monitoring has not been regularly done. A study was conducted in a coastal community in La Union to determine the species assemblage of algae in the area using line transect and random sampling methods. Forty-three species were recorded, from 108 quadrats, and this comprise mostly of green algae. Economically important species like those of *Caulerpa* and *Gracillaria* were still in the area while species of *Codium* was never recorded. At present, there are no existing resource management and biodiversity protection that are implemented in the area. Knowledge on species assemblage are critical in ensuring sustainable use of resources because it provides a good inventory of the economically-important species in given area.

Keywords: *Macrobenthic Algae, Coastal Communities, Green Algae*

SUSTAINABILITY OF MUNICIPAL FISHERIES RESOURCES OF THE COASTAL MUNICIPALITY OF INFANTA, PANGASINAN, PHILIPPINES

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ABSTRACT

Infanta is one of the coastal municipalities of the province of Pangasinan located along the West Philippine Sea . It is divided into 13 barangays broken down into seven coastal barangays of Cato, Poblacion, Nayom, Atel-Batang, Bayambang, Maya and fatima, and 6 non-coastal barangays of Bamban, Nangalisan, Potol, Doliman, Babuyan and Pita. The sustainability of the municipal fisheries resources of Infanta was studied by conducting a survey on the socio-demographic and socio-economic profile of the 201 municipal fisherfolks, the types of fishing gears and fishing boats used, and the species of fish caught. Results showed that the municipal fisherfolks of Infanta are all males with age ranging from 16 to 70 years, or an average age of 40 years, most of them are married (71.64%) and members of the Roman Catholic Church (72.14%). About fifty percent (50%) of the fisherfolks have 4 to 6 numbers of household members and most of them are elementary graduates (39.8%) and high school graduates (53.24%). About eighty three of the fisherfolks had a monthly household income of less than ₱5,000.00 while the rest (17%)had a monthly household income ranged from ₱5,000.00 to ₱10,000.00. About 88% of the fisherfolks had 1 to 30 years of fishing experience while 12% had longer years of fishing experience which ranged from 31 to 55 years. They spent 1 to 9 hours in

fishing along the coastal areas of Infanta but those who were fishing outside the municipal waters, they usually spent 1 week of fishing operation. The most commonly used fishing gears by the fisherfolks were Hook and Lines which can be simple, multiple or modified hooks and lines. Others used seine net, gill net scoop net, bottom set net and spear gun. Almost all of the respondents (93.03%) used motorized boat in fishing while only very few used non-motorized boats. The most common species of fish caught by the fisherfolks in the municipal waters of Infanta include frigate tuna (bonito), oceanic trigger fish (papakol), while the fish species caught outside the municipal waters include yellowfin tuna, skipjack tuna, big-eyed tuna, dolphin fish (Dorado) and tanigue. Squid was also a part of their catch for they used squid lure in fishing.

Keywords: *Municipal Fisheries, Municipal Fisherfolks, Socio-Demographic, Socio-Economic, Municipal Fishing Gears,*

SYNERGISTIC EFFECT OF *Nephelium lappaceum* L. (RAMBUTAN) AND *Lansium domesticum* C. (LANZONES) LEAF EXTRACTS TO MALE ALLOXAN INDUCED DIABETIC *Mus musculus* var. *albinus* L. (ALBINO MICE)

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ABSTRACT

Diabetes is now a growing disease worldwide and can be acquired through genes or through lifestyle. Diabetes is a disease where in the glucose of the blood is higher than the normal level (120 – 140 mg/dL). It is characterized by chronic hyperglycemia which can lead to visual impairment, blindness, kidney disease, nerve damage, amputations, heart disease, and stroke. Diabetes has several types and among which are Diabetes Mellitus Type 1 and Type 2, Gestational Diabetes, Diabetes Insipidus, Cranial Diabetes Insipidus, and Nephrogenic Diabetes Insipidus. This stud ais to evaluate the ability of the methanolic leaf extracts of *Nephelium lappaceum* and *Lansium domesticum* to male alloxan-induced albino mice. The results showed that there is significant difference in lowering blood glucose levels between the leaf extracts of *Nephelium lappaceum* and *Lansium domesticum*. However, there are no significant differences in the effect of the different concentrations of the leaf extracts of Nephelium lappaceum, Lansium domesticum, and their synergism.

Keywords: *Diabetes, Nephelium Lappaceum, Lansium Domesticum, Leaf Extract, Albino Mice*

PEST AND DISEASES OF OIL PALM

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ABSTRACT

This research study was conducted to determine the different and identify pest and diseases affecting oil palm in the 5 municipalities of the province of Maguindanao such as: Municipality of

Sultan Kudarat, Sultan Mastura, Talayan, Ampatuan and Datu Hoffer. This is a baseline study to serve as a benchmark in the conduct of future studies on pests and diseases of oil palm. The survey and identification of pest and diseases was taken in a 1 hectare oil palm plantation in each municipality identified. There were 20 hills of oil palm served as sample taken from each sample area. This does not take responsibility in the deeper analysis and identification of the pest and diseases specially those pathogen that needs a more thorough diagnosis. Identification was merely based on the actual observation on symptoms and signs. In the determination and identification of the pest and disease of the oil palm, stratified sampling using X- method at 20% sampling intensity was used. While in the identification of the taxonomic characteristics of insect and determination of diseases, descriptive identification was employed. Data were analyzed using descriptive statistics. Result revealed that there were 11 species of insect pest counted and 9 diseases with 4 useful insects. Most were defoliator or leaf feeding insects. In the nine identified diseases, six were caused by fungus and three caused by virus. On the other hand, the pressing problems identified by the researcher were lack of technical know-how of owners and caretaker, unstable and low market price, poor farm to market road, no mobilization of concern agencies to cater the needs of oil farm operators and distance to oil palm processing plant. Further observed that oil palm of minimum fertilizer application showed poor production, this confirm the fact that if you do not apply fertilizer to your tree, you will never expect good harvest. It is concluded therefore, that oil palm is fertilizer based crop introduced in the Philippines.

Keywords: *Oil Palm, Pest, Diseases, Maguindanao*

VARIATIONS OF THE CATCHES OF THE ARTISANAL FRESHWATER PRAWN FISHERY IN CATUBIG RIVER: IMPLICATION ON RESOURCE SUSTAINABILITY

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ABSTRACT

The multi-species *Macrobrachium* fishery in Carubig river is exploited with stake net locally called 'Pabhas', fish corral, cast net, fyke net, shrimp trap, cast net, 'bitana' and electrofishing. Five dominant species were recorded in the catch. The abundance and size of the freshwater prawn species in the catches of the artisanal fishermen was compared. The fishing gear'bitana'caught the smallest size of these freshwater prawns. In terms of biomass, the species *M. dacqueti* dominated the catches followed by *M rosenbergii, M. weberi, M. equidens* and *M. Mammillodactylus*. The high catches of the species *M. dacqueti* and *M. weberi* coinciding with the recorded spawning months have serious implications on the sustainability of the fishery. Continued exploitation of downstream migrating ovigerous population and upstream migration of juveniles would reduce the number of hatching adult prawn. The freshwater prawn is under heavy pressure both from exploitation and erratic river flows as a consequence of climate change. Therefore there is an urgent need to formulate and adopt an integrated river management system among the three municipalities.

Keywords: *Biomass, Downstream, Downstream Migration, Resources Sustainability*

BIRD COMMUNITIES AND HABITAT ASSOCIATION IN SELECTED KEY MINE AREAS OF CARAGA REGION, PHILIPPINES: BASIS FOR BIRD CONSERVATION

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ABSTRACT

Caraga region is the mining capital of Mindanao. The overlapping of mining concessions with mature forests in the region is quite alarming. The scarcity of ecological studies on birds might exacerbate the risk of losing the threatened species and their habitats. Hence, in this research, we examined the bird communities using point-counts and habitat characteristics across various habitat types in Masabong and Philsaga, Rosario, Bunawan, Agusan del Sur and AMRI, Claver, Surigao del Norte. A total of 155 bird species were detected in four sites, of which, 9.03% were Mindanao-endemics, 34.84% were Philippine endemics, 6.45% were near-threatened and 7.1% were vulnerable. One endangered bird was also observed. We used Canonical Correspondence Analysis (CCA) to determine habitat gradient across the landscape and categorize the bird species according to their habitat association. Threatened endemics were found to have narrow niche width and are considered mature forest-dependent. Species distribution modeling results revealed that areas with high land cover are those with high habitat suitability for forest-dependent birds and with high congruence of bird species. Our study suggests that proper conservation strategies of the forest-dependent threatened endemics must focus on policy reform and proper coordination among concerned stakeholders towards regulating mining expansion.

Keywords: *Caraga, Bird, Habitat Association, Mine Areas, Species Distribution Modeling*

ESTABLISHING THE PLASMA LARGE PROTEIN FAMILY PROFILES OF THE PHILIPPINE NATIVE BUFFALOES IN MINDANAO, SOUTHERN PHILIPPINES

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ABSTRACT

Large protein families and polypeptides have physiological importance pertaining to health such as the albumin and globulins in circulation. Information on plasma proteins and polypeptides on Philippine native buffaloes still want, hence, this study attempted to provide for future uses in various fields. Male (n=3, two for slaughter) and female (n=7, one for slaughter) native buffaloes of different age ranges from a remote farm (Lanao province, n=5) and peri-urban (El Salvador, Misamis Oriental, n=5) communities for comparison of large protein families in the plasma by denaturing-non-reducing and denaturing-reducing electrophoresis. Resolved bands revealed large protein families with >460kDa, 117kDa, >71kDa, and the dominance of the estimated 66kDa fractions related to dense albumin expression from all samples as circulated for various physiological functions except for the female (n=1) and male (n=2) for slaughter, where it was absent. The expression of high molecular weight (HMW) polypeptides (171kDa to >460kDa) were noted in buffaloes and the medium molecular weight (MMW) at >71kDa related to

lipopolysaccharide-associated protein characterized here as diffused bands due to high sugar and lipid (hydrophobic) components. All established biochemical profiles of native buffaloes from this work serve as baseline information for further purification and elucidation on Philippine native buffaloes.

Keywords: *Electrophoresis, Health Status, Large Protein Families, Total Serum Protein*

HOST PREFERENCE AND HOST-SELECTIVITY OF SOME IDENTIFIED FUNGAL LEAF ENDOPHYTES FROM TWO *PANDANUS* SPECIES

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ABSTRACT

Endophytic fungi are now of interest because of their novel bioactive compounds. Studies about these endophytes were also expanded to the relationship between endophytes and their hosts. To date, there are limited studies about the endophytic fungi of *Pandanus* spp. in the Philippines. In this study, we explored the endophytic fungi present in *Pandanus* species specifically *P. tectorius* and *P. veitchii*. The isolated EF were morphoculturally characterized and molecularly identified. Host preference and host selectivity were analyzed using isolation rate, colonization rate and relative frequency assessments. DNA isolation and sequencing were done using ITS1, ITS3D, ITS4 and ITS4r primers. Identities were confirmed through BLAST analysis based on the ITS region using ITS primers. There were 99 isolates obtained, grouped in 21 morphospecies: 13 from *P.tectorius* and 8 in *P. veitchii* based on morphological appearance. Out of 21 morphospecies, 10 were successfully identified molecularly and 5 were morphoculturally identified. Colonization rate was higher in *P. tectorius* (78%) than in *P. veitchii* (62%). Also, isolation rate was higher in P. tectorius (1.12) than in P. veitchii (0.86%). Among all the fungal species, *Guignardia* sp. exhibited host-selectivity to *P. veitchii*; *X. venosula (*12.5%), *T. hirsuta* (10.7%), *A. medicaginis* (10.7%), and *Colletotrichum* sp. 1 (10.7%) displayed host preference to *P. tectorius* and *C. gloeosporoides* and *C. lacerata* exhibited host preference to *P. veitchii* with RF values of 39.5% and 20.9% respectively.

Keywords: *endophytic fungi, host preference, host-selectivity, P. tectorius, P. veitchii*

LIVELIHOOD PROGRAMS FOR CLIMATE CHANGE MITIGATION AND ECONOMIC DEVELOPMENT IN SOUTHERN MINADANAO COASTAL AREAS

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ABSTRACT

The problem of the study is to find out the extent of the Bureau of Fisheries and Aquatic Resources Livelihood Program and its relation to Climate Change in Southern Mindanao Coastal Areas. The descriptive survey and correlational methods was used. The

respondents of this study were 270 BFAR's Integrated Livelihood Program beneficiaries in the coastal areas of 3 Provinces of Maguindnao namely; Jolo Sulu, Tawi-Tawi, and Basilan. Multi-stage sampling design had been used in this study. Frequency count, percent, and mean had been used for the description of the variables of the study. Likewise, correlation and regression analysis will use to determined relationship of the variables of the study. Results revealed that the BFAR livelihood assistance program help alleviate the economic condition of the direct beneficiaries and other members of the community in the coastal area. Results further revealed that the program also improves the environment through the climate change mitigation practices of the community like mangrove areas were utilized as aqua-marine and aqua-silviculture which became shelter of various fishes providing more income to the community. The non-motorized banca also promotes environmental enhancement for non-utilization of carbon-release motorized machineries that may destruct the ozone layer contributing global warming.

Keywords: *Livelihood program, BFAR, Climate change, mitigation, economic development, coastal areas*

A TAXONOMIC REPORT ON PHILIPPINE ENDEMIC PLANTS FOUND IN THE PROVINCE OF NUEVA VIZCAYA

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ABSTRACT

Philippines is one of the megadiverse countries on earth, yet, it is also considered as a biodiversity hotspot due to numerous endemic plants being threatened and endangered. This study aimed to produce a taxonomic report, permanent slides of plant tissues and herbaria of the Philippine endemic plants found in Nueva Vizcaya based on their morphological and anatomical features.

The plant samples were collected from Mt. Palali of Quezon, Nueva Vizcaya and mountains of Brgy. Imugan, Sta. Fe, Nueva Vizcaya. Stems, leaves, roots, flowers and fruits of the following Philippine endemic plants: 1) *Antidesma bunius* (L.) Spreng (*Bignay*), 2) *Areca ipot (Ipot palm),* 3) *Medinilla pendulla* Merr. (*Baladu*), 4) *Nepenthes ventricosa (Pitcher plant)*, 5) *Saurauia subglabra* Merr. (*Dagwey*), 6) *Shorea contorta* Vidal (*White lauan)*)and 7) *Solanum cumingii* Dun (*Talong-talongan*) were collected and characterized through the produced plant herbaria and prepared permanent slides of their tissues. The findings showed that the *Bignay* tree, *Baladu* shrub, *Dagwey* tree, White lauan tree and the *Talong-talongan* are dicot plants while the *Ipot* palm and pitcher plant are monocot plants. Brgy. Imugan, Sta. Fe is a more diverse collection site than Mt. Palali of Quezon, Nueva Vizcaya in terms of the number of endemic plants because six (6) of the collected Philippine endemic plants were found there.

Keywords: *Systematics, Plant Morpho-Anatomical, Herbaria*

ENVIRONMENTAL PRACTICES OF GARMENT INDUSTRY IN CEBU, PHILIPPINES

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ABSTRACT

The study aimed to assess the environmental practices of the different garment industries in the identified cities of Cebu. It focused mainly on the aspects in the management and conservation of waste, water, and energy as well as its purchasing policy. This utilized descriptive method to determine the environmental practices of the garment industries in the three industrialized cities in Cebu. Evaluation sheet was researcher made questionnaire that focuses on the areas of profile of the garment industry, and the environmental practices of waste, water, energy and purchasing policy. The profile of the dress shop/company was employed to distinguished the capital, production of clothes, years of operation and number of workeras. Data were analyzed to formulate interpretations and conclusions. The findings of the study showed that 90% of the needed capital ranging from 50,000-250,000 only. It also produces garments for both men and women, with 5-15 years of operation. Areas of environmental practices for waste showed a verbal description of practiced, while water is not practiced. In the area of energy and purchasing policy, the verbal description of its performance was slightly practiced. It can be concluded that the average of the four significant areas being practiced in the garment industry got a verbal description of slightly practiced, with a not practiced scheme of water, which is one of the most important element in our environment. It is recommended that awareness of environmental practices is a must in the garment industries in Cebu. Awareness program is recommended to let them know the latest technology and system on environmental practices.

Keywords: *Environmental Practices, Industry, Garments Sector*

NOTES ON SOME DUNG BEETLES (COELOPTERA: SCARABIDAE) RECORDED IN NABUNTURAN, COMPOSTELA VALLEY, MINDANAO ISLAND, PHILIPPINES

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ABSTRACT

The present paper is the pioneering work of dung beetle studies in Compostela Valley. Two transect lines with a total length of seven kilometers with standard dung beetle bait-traps installed every 50 meters were set in Barangay San Vicente and the whole stretch of Cabalinan Creek. Opportunistic sampling was also employed to search dung beetle along rotten organic matter. A total of 289 individuals belonging to the genus *Onthophagus* were recorded representing ten species. Two species were identified to species level while the others required further comparison with type materials of known species. Three species represent a potential new species to science.

Keywords: *Dung beetle, Onthophagus, Nabunturan*

REASSESSMENT OF COMMUNITY STRUCTURE OF INTERTIDAL BIVALVES IN BUCANA, BGY.IWAHIG, PUERTO PRINCESA BAY, PALAWAN, PHILIPPINES IN RELATION TO THE INFLUX OF RELOCATED RESIDENTS IN THE AREA

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ABSTRACT

The study on community structure of intertidal bivalves of Puerto Princesa Bay, Palawan was done to re-identify and reassess its bivalve's abundance now that there is an influx of relocated residents in the area for almost seven years. A transect of 1 X 100 meters was established on site. All bivalves within the transect were collected by hand picking, placed in a net bag with a tag representing the site and transect number. In the laboratory, they were sorted, weighed, measured and counted by species. Results revealed that in 2004, there were 11 species belonging to 11 genera and five families, now also 11 species but only 9 genera and three families found. The most abundant species before was the Katelysia hiantina now was Anomalocardia squamosa. The dominant family was still the Veneridae composed also of 7 species but now with two new unidentified species. The density of bivalves before ranged from 0.498 individual/500 m^2 to 212.502 individual/500 m2, currently from 1 individual/500m^2 to 170 individual/500$m^{2.}$ The area is observed now as less abundant. It is recommended that the City government should give alternative livelihood to relocated residents to avoid intensive use of available resources before all bivalves become endangered.

Keywords: *Community Structure, Intertidal Bivalves, Influx*

EVALUATION INTEGRATED PEST MANAGEMENT (IPM) ADOPTION IN MINDANAO

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ABSTRACT

The study was conducted at Magindanaw covering three (3) Municipalities like; Pagalungan, Paglat and Shariff Saydona Mustapha. Three barangays for every municipality were considered as major sources of respondents. Generally, the objective of the study is to assess the level of adoption of the IPM technology on the production of rice farming. Specifically, this study aims to: a.) describe the socio-demographic profile of the respondents; b.) determine the adequacy of LGU and DA support services extended to the rice growers; c.) determine the level of adaption of recommended IPM technologies on rice production system; d.) determine the influence of the socio-demographic characteristics on the level of adaption of the recommended IPM technologies on rice grower productivity; e.) determine the influence of the adequacy of LGU and DA support on the level of adaption of the recommended IPM technologies on rice grower productivity; and f.) determine the effectiveness of the program implementation. Descriptive statistics such as frequency distribution, percentage, average, and weighted means and multiple

regression analysis was employed in the data analysis. The educational attainment of the beneficiaries was 96.77% obtained elementary, 3.23% high school holder, and none of them steps in College. The family size ranged from 4-6 members, and majority obtained an annual income range from 50,001.00-70,000.00 pesos while highest was from 70,001.00 – 100,000.00 plus, with a farming experience of 9-12 years, and they are all member of the farmer's group organization.The overall means of all the qualitatively measured parameters on the adequacy of DA and LGU support services were rated adequately and moderately adequate, respectively. The effectiveness of program implementation was rated as effective. The level of adoption of IPM technologies showed "moderately adopted". The National Irrigation Administration found to have significant effect on control of weeds and the overall IPM technologies. This implies that irrigation project must be sustained to continually improved the IPM programs, Nonetheless, the adequacy of DA and LGU support services, only the former support services has shown a significant influence on the level of adoption of recommended IPM program technologies in the rice farming system.

***Keywords**: IPM, Evaluation, Adoption, Rice Farming*

CALANASAN FORESTLAND USE PLAN, A SUCCESS STORY OF PARTICIPATORY APPROACH PLANNING: OBSERVATION AND EXPERIENCES FROM A BENEFICIARY AND MEMBER OF THE PLANNING TEAM

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ABSTRACT

"A progressive Calanasan as the biodiversity center of the North", this is the municipality's vision statement of the Municipality of Calanasan, Province of Apayao. Exotic, forbidding but hospitable "land of plenty" Calanasan's wonder and beauty has been shaded from total exposure to nature's wanderlusts because of its aloofness from travel conveniences. In spite of its being still traversed by vehicular roads, Calanasan is always visited by high government officials and tourists, some of whom merely descends from the heavens by helicopter and light planes, and still by others who prefer hiking through Calanasan's leech-infested foot trails. The municipality is located in the northwestern part of Apayao bordering the province of Cagayan, on the Southeast by the municipality of Kabugao on the west by Luna and part of Kabugao. About 97.95% or equivalent to 139,386.940 hectares belongs to the forestlands based on DENR Land Classification. About 2,911.06 hectares or 2.05% is alienable and disposable lands. It is envisioned to be the biodiversity center of the North, it is also dubbed as the Philippine Eagle Sanctuary earlier in 2011. This indicates that it still a haven of rich biodiversity of both endemic and endangered species. This paper presents the experiences (participation) and observations of the author in the crafting and initial implementation of the Municipal Forest Land Use Plan of the Municipality of Calanasan, Province of Apayao. It reveals the roles of the stakeholders and the main actors like the Department of Environment and Natural Resources, the Local Government Units of the province, the municipality and the Barangays. It is a story of how the problems are reconciled and how different perspectives of the different stakeholders are addressed from the LGU, DENR, Non-government organizations, people's organizations, tribal groups, National line agencies, forestry industries, religious sector, the academe and farmer individual.

Keywords: *Participatory Approach Planning, Participatory Governance*

ECOLOGICAL VALUE OF THE STRUCTURE AND DYNAMICS OF FOREST BIOMASS AT MERU BETIRI NATIONAL PARK, EAST JAVA, INDONESIA

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ABSTRACT

*T*his research study was done to determine the ecoval of structure and dynamics of forest biomass at Meru Betiri National Park (MBNP), East Java, Indonesia. Because the biomass within forest ecosystem is mainly contained in plant species, this study focus on investigating the structure of plant community, forest biomass, and ecological value of forest biomass. Plot method of 20x10m^2 was used to sample plant species in different level of heights. Semi destructive method was used to collect wood chips of plant species for biomass allometric estimation. Using 0.5 conversion factor, the biomass was converted into carbon content. The volume and carbon content parameters were used to calculate forest biomass ecoval. There were about 62 families, 67 genera, and 78 species of plants found in TMBNP. The diversity index of plant species varied from low to moderate. The *Aglaia argentea-Streblus spinosus* were dominant plant species ≥1 m height, seedlings–*Tetracera scandens, Donax canniformis-Panuicum repens* were dominant species of understory, while *Schizostachyum zollinger* was the dominant species of tree like. The plant species in ≥1 m height of MBNP contributed the highest forest biomass (nearly 3,500Mg/ha) resulted in high ecoval of carbon content (1,749 Mg/ha). Based on cost approach, the ecological value (EV) of forest biomass accounted about 567,787-992,934 USD or 7,249,672,954.73-12,722,884,464.21 IDR per ha.This high EV indicated that there were tremendous ecoval of forest structure and biomass in the MBNP. So the forest is a huge carbon sink in Java Island in particular and Indonesia in general. This EV is used to get information how much valuable is our natural resources so the government or management in charge can use this information to conserve the existence of forest structures and functions and to generate plan, actions and policy for sustainable this forest ecosystem.

Keywords: *Ecoval, Forest Biomass, Forest Structure, Forest Function, EV*

THE CALCAREOUS SPICULES OF TWO COMMON SEA CUCUMBER SPECIES FOUND IN LA UNION, PHILIPPINES

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ABSTRACT

The present research described and/or re-described collected common species of sea cucumbers from La Union, Philippines which includes mature Actinopyga echinites and Holothuria impatiens. The characterization was done by spicule analysis. Investigation showed presence of different spicule formations in A. echinites like rosette, rod-like plate, bone-shaped rod, X-shaped rod and table. Meanwhile, H. impatiens' spicule analysis revealed C-shaped rod,

spinous rod, table, buttons of varying forms and rosette. Actinopyga echinites was observed to exhibit abundance of rosette spicules while H. impatiens spicule is dominated by buttons. The researcher recommends further investigation on Holothuria impatiens and Actinopyga echinites using spicule analysis by considering the effect of varying habitat conditions such as salinity, temperature, turbidity and level of maturity of samples to be used. The spicule analysis aims to provide a guide by presenting pieces of information to efficiently identify the species as available references or publications about sea cucumber species composition, identification, and abundance in the Philippines are lacking and mostly limited to local description. Information gathered through the spicule analysis will increase the present level of information about the species and will also provide useful insights on their biology which is essential in management endeavors and future researches.

Keywords: *Actinopyga echinites, Holothuria impatiens, Spicule*

RAINFOREST TECHNOLOGY: EX SITU CONSERVATION STRATEGY ON NATIVE FOREST TREE SPECIES

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ABSTRACT

Most of the native forest tree species in the country have been reduced in terms of population due to intensive utilization and destructive method of resource extraction. Rehabilitation of these forest resources are nearly impossible to achieve in a short period of time. However, the technology on forest restoration which is called Rainforestation can be applied to forest areas that still have the potential to be productive in terms of ecological and economic aspect in a considerable time period. The Pampanga State Agricultural University have adopted the technology were it has established an Rainforestation Demonstration Farm to conserve the native forest tree species found in Mount Arayat National Park. Selected forest native tree species were studied particularly the phenological characterisitics and nursery practices which includes the following: Dungon (*Heritiera sylvatica*); Anubing (*Artocapus ovatus*); Kupang (*Parkia roxburghii*); Bignai (*Antidesma bunius*); Molave (*Vitex parviflora*); Kusibeng (*Sapindus saponaria* forma *microcarpa*) and other species. Sustaining the project is one of the priorities of the PSAU in protecting the remaining forest resources found in Mount Arayat National Park.

ANTAGONISTIC RELATIONSHIP OF CO-OCCURING PHYTOPATHOGENIC AND NON-PHYTOPATHOGENIC FUNGI ASSOCIATED WITH GUAVA FRUITS

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ABSTRACT

This study dealt on the *in vitro* antagonistic relationship of co occuring fungi in guava fruits infected with crown rot. Three species of non phytopathogenic fungi (*Fusarium verticillioides* (Saccardo) Niremberge, *Fusarium sambucinum* Fuckel and *Lasiodiplodia theobromae* (Patouillard) Griffon & Maublanc) were grown in dual culture with five phytopathogenic fungal species of *Aspergilli* (*Aspergillus flavus* Link, *Aspergillus fumigatus* Fresenius, *Aspergillus japonicus* Saito var *japonicus*, *Aspergillus tamarii* Kita, *Aspergillus niger* van Tiegh). *In vitro* interaction resulted to fungistatic trophic antagonistic association of *L. theobromae* and *F. sambucinum* with all the phytopathogenic fungi thus suppressing the growth of the latter. Meanwhile mutual antagonism was observed between *F. verticillioides*, *A. japonicus*, *A. flavus* and *A. fumigatus*. Antagonistic capabilities of the non phytapathogenic fungi suggest their potentially as biological control agents against the phytopathogenic fungi associated with crown rot of guava.

Keywords: *Aggressor, Antagonism, Biological Control, Mutualism, Fungistatic, Mycotoxins, Mycelia, Pathogen, Victim*

AGRICULTURAL STRESSORS OF SAN JORGE, SAMAR WATERSHED

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ABSTRACT

The paper presented the current land use specifically agricultural use. The extent of agricultural utilization was correlated with flooding and erosional characteristics in the watershed and the river. Primary and secondary data were gathered through actual survey of the watershed, interviews and maps from various offices mostly from the local government unit of San Jorge. Analysis of data revealed that one-third of the watershed used for agricultural purposes with rice farming of up to three times a year. It was shown that the uncontrolled agricultural activities influenced flood occurrence due to increasing runoff and reduction of rivers carrying capacity due to increased siltation.

Keywords: *Watershed, Agricultural Stressors, Samar, River Flooding, Erosion, Siltation*

MANGROVE COVER CHANGE IN EAST COAST OF ABORLAN, PALAWAN, PHILIPPINES USING REMOTE SENSED DATA

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ABSTRACT

Mangrove cover change in eastern part of Aborlan, Palawan were analysed using Landsat images to map the current extent of mangrove forest, and to identify the changes in the extent using remotely sensed satellite images. This study suggests that the mangrove forest in the area had increased by 372.06 hectares of mangrove for the period of 1992-2014. Existing government policies on mangrove management and community driven mangrove planting activities caused the substantial increase in areal extent of mangrove area. The results of this study may act as baseline-information for future studies, for planning and management of Palawan mangrove area. With this, the need to protect this vast mangrove areas, a communication, education and public awareness (CEPA) campaign regarding the status, benefits, threats and different management strategies. Moreover, exploring the potential of adopting incentive-based conservation programs such as payment for environmental services (PES) to stimulate protection and enhance biodiversity, carbon stocks, , aesthetics and local livelihoods.

Keywords: *Palawan Mangrove, Change Detection, Landsat, Remote Sensing*

DIVERSITY OF HOLOTHURIANS IN THE ISLAND MUNICIPALITIES OF NORTHERN CEBU, CENTRAL, PHILIPPINES

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ABSTRACT

Sea cucumbers are very valuable resource are the target animals by the collectors for food and for other purposes. Extraction of the resource was great and declined catch was felt by the gleaners. Hence, this study was conducted to find out the species diversity in Camotes Islands and Bantayan Island for possible conservation and sustainability purposes. Camotes Island is composed of four municipalities namely: San Francisco, Poro, Tudela and Pilar.Bantayan Island is composed of 3 municipalities namely: Sta. Fe, Bantayan and Madridejos. Field collection was done in the field during the day and night and an interview guide was used to gather socio-economic data. Morphomeristic and spicules analysis were made to determine species of sea cucumbers in Northern Cebu.

Results show that there are 54 species of sea cucumbers found in Camotes Islands and Bantayan Islands belonging to 4 families namely: Family *Holothuriidae*, *Stichopodidae*, Synaptidae and *Phyllophoridae.*

Keywords: *Holothurians, Diversity, Northern, Cebu, Philippines*

MICROPROPAGATION OF *LILIUM PHILIPPINENSE* BAKER FROM ILOCOS SUR, NORTHERN LUZON, PHILIPPINES AS A MEANS OF CONSERVATION

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ABSTRACT

Benguet lily (*Lilium philippinense* Baker) is an endemic plant to the Philippines and is listed as an endangered species. The remaining more than a hundred natural populations consisting of 10 to 50 individuals is geographically distributed in Benguet, Mountain Province and in some areas of Ilocos Sur, Northern Luzon, Philippines in a narrow and fragmented manner. Propagation of this plant using seeds and bulb scales under greenhouse conditions showed only 27.63% and 16.67% germination success, respectively. This study aimed to propagate the native Benguet lily (*L. philippinense*) from Bessang National Park, Cervantes, Ilocos Sur using bulbscales, receptacle and young ovaries as explants. Results showed that *L. philippinense* can be micropropagated *in vitro* using bulb scales. Bulblets from bulbscales started forming after 28 days of incubation in MS media supplemented with 2% sucrose and 0.5mg/L NAA. 70% of the bulbscale cultures produced 1 bulblet, 20 % produced 2 bulblets, while 10% did not produce any bulblets yet. Only 10% of the bulb scale cultures formed callus with noticeable roots after 28 days of incubation. 75% of the bulblets from the bulb scales cultures were successfully acclimatized to the natural environmental conditions after 8 weeks when grown in pasteurized soil.

Keywords*: Lilium philippinense, Benguet lily, Micropropagation*

Abstracts on Sub-theme

Innovation

STUDENTS-BASED PARTICIPATORY RESEARCH FOR THE WATERSHED RESOURCES MANAGEMENT IN DMMMSU-NLUC, BACNOTAN LA UNION

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ABSTRACT

A watershed is a basin-like landform defined by highpoints and ridgelines that descend into lower elevations. We need to remember that we all live downstream and that our everyday activities can affect downstream waters. In this regards, the entire community needs to get involved to spare our watersheds. The study involved 33 students subdivided into three groups. The three groups were assigned to interview a total of 132 respondents constituting of 33 students, 33 instructors, 33 local citizens 33 government officials. The level of awareness and initiatives of respondents with regards to watershed resources management were determined. The first group of students found that government officials have the lowest level of awareness (69%) and initiatives (71.82%). Same results were obtained by the second and third group. The students' experiences on this participatory research were also investigated. According to the students, most government officials did not take the survey questionnaire seriously. Students also mentioned that some government official though that the survey is unnecessary because they are aware of their environment. The results of the survey questionnaire tell otherwise. A spatial water quality assessment will be conducted to strengthen the purpose of this research to conserve the watershed resources of DMMMSU-NLUC.

Keywords: *DMMMSU-NLUC, watershed management, participatory research, students-based, innovation stream*

IMPROVEMENT OF OIL PALM – BASED CORSAGE AND LEI

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ABSTRACT

African oil palm is one of the high-valued and priority crops in the province of Sultan Kudarat. It is also considered as top commodity in the research agenda of the province and specifically in SKSU. The wastes products which are considered untapped in the oil palm industry are the shavings from inner portion of the palm fronds, unproductive/male flowers, roots, leaves and the nut when the loose fruits grew in the field. Corsage and lei were developed and initially reproduced. Thus, this study aimed to develop the said product for value-adding and commercialization and becoming one distinct product of the province. This study utilizes product development and evaluation design using a structured questionnaires administered by jurors. Study found out that a Maharlika design, Executive and Exclusive designs were developed branded as Gandara which means *"Ganda mula sa Palmera"*, or beauty from oil palm tree. Generally, it was rated very beautiful, very handy and very much authentic. It can generate a return of investment (ROI) of 90% based on the adaptors experiences making and selling the products during graduation, wedding, welcoming programs and other occasions. Gandara corsage and lei are potential for global market as complementary handicrafts.

QUORUM-QUENCHING ACTIVITY OF *MORINGA OLEIFERA* LAM. (MALUNGGAY) LEAVES AND FRUIT IN *STAPHYLOCOCCUS AUREUS* AND *PSEUDOMONAS AERUGINOSA*

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ABSTRACT

Quorum quenching (QQ) involves the mechanism of preventing bacterial communication through the detection of high cell density. Plant extracts have phytochemicals that have been found to have QQ capability, thus, this study made use of *Moringa oleifera* (Malunggay) leaf and fruit plant parts in aqueous and methanol solvents to determine its QQ activity against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Preliminary disk diffusion assay of the plant parts did not display QQ against *Chromobacterium violaceum* since no inhibition of the production of violacein was found. *S. aureus* virulence assay testing for its DNase activity was reduced by *M. oleifera* leaf methanol, showing QQ, while alpha-hemolysis toxin production was not inhibited by all extracts, exhibiting absence of QQ. For *P. aeruginosa*, virulence assay on swarming motility and pyocyanin production were done. Swarming motility was inhibited by all extracts apart from *M. oleifera* fruit aqueous extract, demonstrating QQ. Pyocyanin production was inhibited by *M. oleifera* leaf methanolic extract with significance of ($P < 0.05$; $t = 0.5679$) using Independent T-test. The study reveals that *M. oleifera* leaf methanolic extract shows potential for QQ activity against *S. aureus* and *P. aeruginosa*.

Keywords: *M. oleifera leaf; M. oleifera fruit; Quorum quenching*

EFFECTS OF *ARMORACIA RUSTICANA* P. GAERTN., B. MEY & SCHERB. (HORSERADISH) WITH SUPPLEMENTATION OF VITAMIN K ON COLON-TUMOR INDUCED SPRAGUE-DAWLEY RATS

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ABSTRACT

The study determined the histopathologic effects of *Armoracia rusticana* P. Gaertn., B. Mey & Scherb. (Horseradish) with and without Vitamin K supplementation on colon tumor-induced Sprague-Dawley rats. Intraperitoneal administrations of 30 mg/kg body weight 1,2-dimethylhydrazine and 50 mg/kg body weight 7,12-dimethylbenz[a]anthracene for three weeks were done to induce colon tumor. Readily available capsules and tablets of Horseradish and Vitamin K dissolved in water were used to achieve the 50% and 75% concentration. Post tumor induction, the extracts and 5 – fluorouracil as the positive control group was administered orally and intravenously, respectively, for two weeks. After the treatment period, the surviving ten rats out of twenty-four were euthanized and dissected. The lungs, stomach, liver, small intestine and large intestine were subjected to histopathological examination. Results show halting of tumor development in all treatment groups for both the small and large intestine. Incidental lung lesions from an infection were also observed. The liver from all treatment groups showed

hepatocyte necrosis while the stomach remained its normal architecture. By scoring the histopathological characteristics observed on all organs, it was concluded that the extracts with Vitamin K supplementation showed slightly better results than those without.

Keywords: *Armoracia rusticana, Horseradish, Vitamin K, Histopathology, Colon tumor*

NEUTRALIZING EFFECT OF *COLEUS AROMATICUS* BENTH (OREGANO) IN *NAJA NAJA PHILIPPINENSIS* (PHILIPPINE COBRA) VENOM AS OBSERVED IN THE CNS FUNCTION PARAMETER OF *MUS MUSCULUS* (ALBINO MOUSE)

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ABSTRACT

Venom of *Naja* species constitutes neurotoxic effect particularly acute neuromuscular paralysis. Varying concentrations of *Coleus aromaticus extract* were tested for neutralizing effect when combined with pre-extracted *Naja naja philippinensis* venom as observed in the CNS activity of albino mice. The leaves of the plant were collected, verified, and the crude methanolic extract was concentrated using heating magnetic stirrer. The preparations were injected into test mice (approx. 20g) and the effect on CNS function was compared with the activity of anti-serum as positive control, while the negative control group was injected with venom only. The number of mortalities was observed after 24 hours. The treatment groups gave the lowest score in the CNS depression test while high score in the CNS stimulation test. Compared to the positive control, the treatment groups exhibited no significant difference. The treated mice were able to survive after 24 hours of administration. Due to the presence of various phytochemicals determined by previous studies, a conclusion has been made that it probably supports the neutralizing effect of *Coleus aromaticus* extract when combines with *Naja naja philippinensis* venom. Threfore, *Coleus aromaticus* extract is likely effective as antivenin substance

Keywords*: Neutralizing effect, Coleus aromaticus, Naja naja philippinensis, anti-venom, CNS activity*

YANBU INDUSTRIAL CITY IS A MODEL FOR SUSTAINABILITY

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ABSTRACT

Sustainability is one of the important factors in environmental footprint evaluation. Yanbu was ahead of its time when the Royal Commission started in 1975, the formation of new city with a wide range of attractive sustainable features surpassed any EIA by today's standards due to the endless positive outputs on socio-economic, ecological and environmental aspects. Sustainable practices started in Yanbu before the UN in 1987 with the definition of the modern

SUSTAINABLE DEVLOPMENT concept, which is the reference background for all sustainability activities. Royal Commission's role in preserving its natural resources is by way of sustainable development and will be presented focusing on solid infrastructure components in both industrial and community zones with built to last specifications – High standards industrial projects – EIA process for all new projects – How to be a green industry – Some examples and case studies of green technologies applied in Yanbu and how they reduce environmental impacts. Moreover, the coming future of Yanbu will also be highlighted and all its successful projects with their positive socio-economic impressions and green input to living communities in the whole western region.

Keywords: *Socio Economics, Green Technologies, Sustainable Development*

HEPATOPROTECTIVE EFFECT OF FERMENTED WATER KEFIR ON SPRAGUE-DAWLEY RATS *(Rattus norvegicus)* INDUCED WITH SUBLETHAL DOSE OF ACETAMINOPHEN

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ABSTRACT

The study evaluates the hepatoprotective effect of water kefir in Sprague-dawley rats. Four treatment groups were administered with varying doses of water kefir (1ml, 2ml, 3ml) for seven days. After which, sub-lethal dose of acetaminophen (640mg/kg) was given to induce hepatocellular injury. The effects of water kefir were measured based on the aspartate aminotranferase (AST) and alanine aminotransferase (ALT) levels. According to the results, water kefir promotes hepatoprotective effect by significantly decreasing ($p<.05$) the levels of enzymes, AST and ALT. The probiotic dosage which provided the greatest hepatoprotective effect is 3ml and 2ml for AST and ALT, respectively. The results of the study show that as the concentration of water kefir increases, the AST level of blood samples decreases. On the otherhand, the results for ALT assay tests yielded an optimum concentration of 2ml. The more prominent effects of water kefir in AST levels suggest that its mechanism of action is to protect the mitochondria from oxidative stress induced by acetaminophen toxicity, hence maintaining its integrity inside the mitochondrial membrane.

Keywords: *Acetaminophen**,** Fermented Water Kefir, Hepatoprotective, Optimum Concentration*

PRODUCTION OF ORGANIC FERTILIZER AS AFFECTED BY SELECTED INDIGENOUS MICROORGANISM AND FERMENTING AGENTS UNDER ANAEROBIC CONDITION

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ABSTRACT

This study was conducted to determine the performance of selected microorganism and fermenting agents as enhancers for anaerobic composting an alternative method for organic

fertilizer production. The Experimental Method following the Complete Randomized Design(CRD)was used. There were four treatments and each treatment was replicated three times. The treatments were as follows; T1-250 g Rice bran + 500 g kitchen refuse + 250 g veg. refuse + 250 wild sunflower + 3.25 g (commercial effective microorganism); T_2- 250 g Rice bran + 500 g kitchen refuse + 250 g veg. refuse + 250 wild sunflower + 3.25 g IMO; T_3 - 250 g Rice bran + 500 g kitchen refuse + 250 g veg. refuse + 250 wild sunflower + 3.25 g native bubod; T_4 - 250 g Rice bran + 500 g kitchen refuse + 250 g veg. refuse + 250 wild sunflower + 3.25 g ghamu. The salient findings of the study revealed that employing anaerobic composting method, the organic substrate when added with Indigenous Microorganism (commercial and those derived from alnus) or fermenting agents such as native bubod and ghamu have a compost maturity ranging from 45 to 55 days. Substrate added with native bubod produced a good quality of solid organic fertilizer product in terms of organic matter, nitrogen, phosphorous and potassium contents. In terms of liquid fertilizer products, incubation period affects the NPK contents. Substrate added with native bubod and ghamu registered the highest potassium content at 30 days after incubation but tend to reduce at 45 to 60 days incubation period prior to extraction. It was also noted that the liquid fertilizer products registered optimum NPK contents when extracted 45 days of incubation regardless of whether these are added with IMO or fermenting agent. Based on the result of this study, it is recommended that the use of native bubod as additive in anaerobic composting method. In the production of liquid fertilizer using anaerobic composting method, it is suggested that extraction on should be made 45 days after incubation to obtain the optimum NPK contents.

Keywords: *Microorganisms, Fermenting Agents, Bubod, Ghamu, Organic Matter, NPK*

PHYTOCHEMICAL SCREENING AND ANTIMICROBIAL ACTIVITIES OF LEAF EXTRACT OF Typhonium trilobatum L. Schott (ARACEAE)

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ABSTRACT

Typhonium trilobatum is native in Southeast Asian countries and widely distributed throughout the Philippines. Aroids, particularly of the genus Typhonium, contribute to the enormous importance of herbal treatment for curing variety of diseases in tropical areas. Typhonium trilobatum's phytochemical constituent has not yet been established explicitly and the biological activities of this plant had been continuously studied until now to contribute to its pharmacological use. This study was conducted to determine the presence of secondary metabolites, and to evaluate the potential antimicrobial property of the methanolic leaf extract of this species. The methanolic extract was subjected to phytochemical analysis and Agar-well diffusion method against bacterial and fungal strains. Results showed the presence of alkaloids, flavonoids and tannin while antimicrobial activity against Escherichia coli, Staphylococcus aureus, Candida albicans and Saccharomyces cerevisae were absent and therefore not an effective treatment for diseases.

CULTIVATION- DEPENDENT DIVERSITY ANALYSIS OF THERMOPHILIC BACTERIA FROM A GEOTHERMAL SITE IN TIWI, ALBAY PHILIPPINES AND SCREENING FOR POLYSTYRENE BIODEGRADATION POTENTIAL

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ABSTRACT

The bacterial populations associated with the geothermal site in Tiwi, Albay Philippines were investigated by cultivation-dependent approach. Fifty strains were isolated using different enrichment media at incubation temperature of 50 °C. To select the bacterial strains for further characterization, screening was done on the basis of temperature tolerance, phenotypic and biochemical characteristics of the isolates. A total of 10 aerobic, thermophilic bacteria were further subjected to phylogenetic analysis using 16S rRNA gene sequences. Phylogenetic analysis revealed that the isolates were phylogenetically affiliated with phylum Firmicutes (low G+C gram-positive bacteria) represented by the genera *Bacillus, Paenibacillus* and *Thermoactinomyces.* The isolates were further characterized based on their potential to degrade polystyrene and the results showed that isolates LBB-B (83% similarity with *Bacillus licheniformis*), NA-D (99% similarity with *Paenibacillus ginsengihumi*) and LBM-A (100% similarity with *Bacillus licheniformis*) caused a significant change in the weight loss of polystyrene compared to the soil burial set-up and the control set-up. Isolate LBB-B had the highest potential for polystyrene biodegradation resulting in 15.38% weight loss. Results of Scanning Electron Microscopy indicated the presence of surface morphological alterations during bacterial hydrolysis of the polystyrene cubes incubated for 30 days. This study demonstrated the presence of interesting groups of thermophilic polystyrene-degrading microorganisms with potential biotechnological importance.

Keywords: *Thermophilic; 16S rDNA; Polystyrene degradation; Geothermal Site, Phylogenetic Analysis*

ONLINE BEHAVIOR OF DISTANCE LEARNERS: CONSIDERATIONS FOR BIODIVERSITY EDUCATION IN THE WEB

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ABSTRACT

The rapid advances in information and communication technologies allow academic institutions to offer courses via the net. This study looked at the behavior of distance learners in an online course in Natural Sciences, and identified potential considerations in developing and implementing web-based biodiversity education. The study employed log file analysis (LFA) as a method of inquiry, where a total of 6,107 logged data in modular object-oriented dynamic learning environment (MOODLE) learning management system were mined and analyzed to discover connectivity patterns of the students. A total of 23 students participated in the study. Three pattern analysis parameters were pre-determined, and used as filters, namely: (a) number of visits (*nov*), which measures the number of times that a student visited the course site within the semester; (b) time of visits (*tov*), which indicates the specific time of the day when

the student logged on to the course site; and (c) length of visits (*lov*), which measures the number of hours that a specific student stays in the course site, and is computed as the difference between the log on time and log out time. Three socio-economic factors (i.e. age, work status and internet connection status) were used as explanatory variables for the observed access patterns. Results showed that an online learner visits 265 times in a semester, and is spending an estimated 19.56 hours in the course site. Learners are more active during the night (mean *tov*night = 3,366) than during the day (mean *tov*day = 2,895), and spent more time at night (mean *lov*night = 5.78 hrs) than on day (mean *lov*day = 4.46 hrs). Working learners are understandably less active (mean nov = 220) than non-working (mean *nov* = 325), and mostly active during the night (mean *nov*night = 109) than on day (mean *nov*day = 81). Though age did not affect the choice of the time of visit, learners' internet connectivity (either at home or elsewhere) showed significant influence ($p < 0.05$). These patterns can help online educators evaluate and assess learners' learning process, track learners' actions and develop support system to address learning divides in an online biodiversity education.

Keywords**:** Logfile Analysis, Connectivity, Distance Education Learners, Online Course, Biodiversity

INVASIVE GIANT EARTHWORMS: IDENTIFICATION, CONCERNS, AND STATUS IN BESAO, MOUNTAIN PROVINCE

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ABSTRACT

The invasive giant earthworms have been spreading to the rice terraces of Besao, Mountain Province posing threat to the economic development and the preservation of the cultural heritage of the area. This study addresses the issues concerning the identification of the species and some of its impact to the community. The collected samples were identified using morpho-anatomical data and DNA barcodes. These were identified as *Pheretima* based on their taxonomic characteristics. It is suspected that the samples are parthenogenetic due to signs of male sterility. This research pioneers on presenting the DNA barcodes from the seven species acquired from two collection sites in the area. The cytochrome c oxidase subunit I (COI) gene of the specimens, with 563 base pair (bp) length, was analyzed and were compared to the COI sequences of earthworms under the Families of Lumbricidae, Moniligastridae, and Megascolecidae accessed from Genbank. Among those COI sequences, an unidentified Megascolecidae species has the closest match (89% similarity) with the collected samples. DNA barcoding was carried out to supposedly verify the identity of the samples but all of the DNA barcodes point out that the collections belong to a single unidentified species. It is suspected to be a novel type belonging to genus *Pheretima* under the Family Megascolecidae. Interviews and Focus Group Discussions (FGD) were done to initially assess the impact of the spread of this species to the community. While the community agrees that these earthworms have become invasive, they are still uncertain whether these earthworms are native or introduced to the area.

Keywords*: Invasive species, Pheretima, Megascolecidae, DNA barcoding, COI gene*

HEPATOPROTECTIVE POTENTIAL OF *NEOLAMARCKIA CADAMBA* (*ROXB.*) BOSSER ETHANOLIC LEAF EXTRACT AGAINST IBUPROFEN-INDUCED LIVER DAMAGE ON ALBINO RATS (*RATTUS NORVEGICUS*)

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ABSTRACT

The hepatoprotective potential of *Neolamarckiacadamba*ethanolic leaf extract alone and its combination with Silymarin against ibuprofen-induced liver damage on albino rats was evaluated using ALT level and histopathologicalassessment. The results indicated that *N. cadamba*extract and its combination with Silymarin has no significant effect ($p>0.05$) on the ALT level of serum and size of hepatocytes. But crude data yielded closer results to normal values. Histopathological assessment of the damaged liver indicated that *Neolmarckiacadamba*is better than Silymarin in restoration of hepatic tissue however, the combination of the plant extract and Silymarin showed no hepatoprotective activity. It was concluded that N. cadambaethanolic leaf extract has hepatoprotective potential but has no synergistic effect when combined with Silymarin.

Keywords: *Hepatoprotective, Neolamarckiacadamba, Silymarin, Ibuprofen*

COMPARATIVE STUDY ON THE ANGIOGENIC EFFECTS OF *Artocarpus heterophyllus Lam.* (Langka) and *Artocarpus odoratissimus Blanco* (Marang) CRUDE LEAF EXTRACTS ON CAM OF A 10-DAY OLD DUCK EMBRYO

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ABSTRACT

Angiogenesis, which is the formation of blood vessels normally occurs and affects normal and pathologic conditions. The study tested two plants in a 10-day old duck embryo for angiogenic activity using CAM assay. The leaves of *Artocarpus heterophyllus Lam.* (Langka) and *Artocarpus odoratissimus Blanco* (Marang) were the samples used where approximately 300g of each were collected. The leaves were extracted using mortar and pestle and different concentrations namely 100ppm, 200ppm, and 300ppm were obtained and administered on the test eggs. After 48 hours of incubation, CAM of test eggs was harvested and collaterals were counted. Results showed that both plant extracts showed anti-angiogenic activity indicated by a decrease in the number of collaterals. In the two plant samples, 300ppm of *A. odoratissimus* exhibited the highest inhibitory effect due to the presence of artosimmin in its crude leaf extract which is not present in *A. heterophyllus*.

Keywords: *Angiogenesis, Artocarpus heterophyllus Lam, Artocarpus odoratissimus Blanco, Langka, Marang*

INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION RESEARCHES ACROSS ASIAN COUNTRIES

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ABSTRACT

The role of Information and Communication Technology in economic, social, and educational change in the 21st century must be studied within the broader context. This study investigates the emerging themes of researches on Information and Communication Technology (ICT) in Education in Asia for the last five years (2008-2012). Data were gathered from the different international research journals and conferences. Descriptive method was used in the study with the randomly selected 75 researches per year across the 24 Asian countries. Three emerging themes were revealed in the study, namely: curriculum, assessment and pedagogy. Results showed that the prevailing theme for the last five years was pedagogy and that most research outputs were from Asian countries with a developing economic status. It was found out that collaborative researches were done within countries, Asian region and other regions throughout the world. ICT Education research had the theme which confirmed the distinct desires of the country to access quality education. Furthermore, the United Nations (2005) revealed the potential of ICT to expand access to quality education, to boost literacy, and to provide universal education in developing countries.

Keywords: ICT in education, Curriculum, Assessment, Pedagogy, Descriptive Design

THE DEVELOPMENT OF AN INTEGRATIVE MODEL FOR THE IMPLEMENTATION OF EDUCATION FOR SUSTAINABLE DEVELOPMENT IN CURRICULAR PROGRAMS IN STATE UNIVERSITIES AND COLLEGES OF PALAWAN

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ABSTRACT

This is a quantitative-qualitative descriptive study that described the implementation of Education for Sustainable Development in the Curricular Programs of Higher Education Institutions in Palawan. This study involved the Administrators, faculty members and the students of State Colleges and Universities (SUCs) in Palawan. The students and faculty members of the SUCs assessed the implementation of ESD in the curricular offerings and its integration in the subject and teaching methodologies used by the faculty. The study found that the ideas of administrators about ESD do not pertain only to environment, but in all aspects including their life practices. This refers to developing students as a total person by training the students from theory to practice. ESD is also somehow similar to "mentoring the mentors". The T-test conducted to find out the implementation of ESD in the curricular offerings revealed in the areas of Environmental Integrity, Socio-cultural Acceptability, and Economic Viability is **moderately implemented.** It was also found out that the status of integration of ESD in the curricular programs of HEIs on ESD is **moderately integrated** as seen in the means in the curriculum and teaching methodology. T-test was performed to find out the difference between students and faculty members perception on the implementation of ESD in the SUCs and the integration of ESD in the curricular programs of SUCs. It revealed that the implementation and

integration of ESD in the curricular programs of SUCs as assessed by the faculty members and the students do not show any significant difference; neither do they show any significant relationship. The one-way ANOVA performed to determine the mean difference between groups revealed that students and faculty members' perception had statistically significant difference on the implementation and integration of ESD in different areas in the different curricular programs of the SUCs.

A Scheffe Test was done to determine the difference between the perception of students and faculty on the implementation and integration of ESD across the curricular programs of SUCs. It was found out that the implementation and integration of ESD across the curricular programs of SUCs had statistically significant difference in all programs. Finally, the findings of the study also revealed that there were only two (2) items among the list that weakly hinders the implementation and integration of ESD and the remaining eight (8) items moderately the implementation and integration of ESD in the curricular programs of SUCs.

DNA BARCODING AND PHYLOGENETIC ANALYSIS OF AIRBREATHING FRESHWATER FISHES IN CENTRAL LUZON, PHILIPPINES

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ABSTRACT

The study was conducted to barcode selected airbreathing freshwater fishes (*Anabas testudineaus, Clarias batrachus and Trichogaster pectoralis*). The samples were collected in selected freshwater regions in Central Luzon and were barcoded using the partial DNA sequence of the mitochondrial cytochrome c oxidase 1 (CO1) gene. A phylogenetic tree (N-J tree) was generated to determine the phylogenetic relationship of the fish species. Sequences from the GenBank were taken for further comparison and validation of the freshwater fishes examined. Divergence of sequences within species was determined by Pairwise distance. Results on construction of phylogenetic tree (N-J tree) revealed a distinct cluster or clade among closely related species. The data revealed the differences between the sequences of each of the sample species and those sequences that were taken from the GenBank. Using NCBI's Blast program, the percentage similarities among freshwater fish species were determined. Climbing perch (*A.testudineaus* samples 1 and 2), showed 17% difference among each other. *A testudineaus* 1 revealed 4.7% difference with that from the GenBank(*A.testudineaus* HQ682664,HQ682666) while the second sample showed 16.9% difference. Thai-catfish (*C.batrachus*) showed no difference with that of *C. batrachus* taken from the GenBank Accession number HQ682681. However, it had 11.8-13.8% difference with other C. batrachus taken from the GenBank(FJ459458, JN628924 and FJ459458). Shakeskin gourami (*T.pectoralis*) samples 1 and 2 showed no difference with each other while a 5.3% difference was observed with *T.pectoralis* 3. *T.pectoralis* 1 and 2 as compared with the T.pectoralis taken from the GenBank (HQ682729, HQ682730) showed 3.8-4.4% difference. Sample 3 also revealed 6.8-7.4% difference with the specimens taken from the GenBank.

Keywords: *Barcode, Freshwater fish, GenBank, Phylogenetic, Central Luzon Philippines*

BETA-GLUCANS AND TOTAL CAROTENOIDS QUANTIFICATION FROM THE THALLUS OF THE FUNGUS *Galiella* sp.

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ABSTRACT

Mushroom is a diverse group of macrofungi that thrives on moistened environment containing numerous bioactive compounds. The utilization of these compounds has been massive giving pharmaceutical companies increased interest on their production for commercial products. Beta-glucans and carotenoids are bioactive compounds that are not naturally occurring on human and animals but are greatly essential for their nutritive value and immune-boosting activity. This study concentrates on the quantification of beta-glucans and total carotenoids present on extracts of *Galiella* sp. (Figure 1) collected at Mt. Palali. Beta-glucans were extracted through microwave-assisted method and precipitated through ethanol. Carotenoids were obtained from the extracts of acetone and petroleum ether. Using the dry weight formula, the total beta-glucans was quantified as 1.38 g/kg. Using the formula by Davies (1976), the total carotenoids was quantified as 7.48 mg/kg. These quantified values are relatively comparable to known natural sources reported in literatures.

Keywords: *Beta-glucans, Total carotenoids, Quantification, Galiella*

INSECTICIDAL EFFECT OF HORNED SEA STAR (Protoreaster nodosus) METHANOLIC CRUDE EXTRACT IN DOMESTIC INSECT PESTS

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ABSTRACT

Domestic insect pests are considered as the most dominant form of life on earth due to its life cycles numerous numbers of offspring within short period of time. This behavior increases insects' adaptability thus making mutations which may enhance an individual's ability to compete for its needs or to adjust changes in its surroundings causing a rapid growth of insects in population, sometimes harming the human and environment. The study assessed the potential insecticidal property of methanol crude extract from Horned Sea Star in three domestic pests namely Musca domestica (House Fly), Culex pipiens (Common House Mosquito) and Periplaneta americana (American Cockroach). The methanolic crude extract of Horned Sea Star were administered starting from 100% concentration with 10 samples of species placed on a jar with a net cover. Moreover, there was 10% decrement of the concentration for every trial up until only half of the number of the sample in the trial died. The results showed that the methanolic crude extract of Horned Sea Star do have an insecticidal property among domestic insect pests.

GROWTH AND SURVIVORSHIP OF ABALONE HALIOTIS ASININA IN SEA CAGES FED WITH SINGLE-SPECIES AND MIXED-SPECIES OF RED ALGAE IN TONDOL, ANDA, PANGASINAN

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ABSTRACT

A growth experiment was conducted to determine the effect of culturing abalone Haliotis asinina using only a single species red algal diet, Hydropuntia edulis and a mixed red algal diet (H. edulis, Eucheuma arnoldii, and Halymenia durvillaei), which were all locally abundant in Tondol, Anda, Pangasinan. Small abalone found in the area were collected by fishers and stocked in cages (25 cm X 25 cm X 20 cm). Two trials with two treatments were conducted with five replicates per treatment. Stocking density was 15 abalone per cage. Results of Trial 1 showed that those fed with a single species diet grew from 40.30 mm to 44.67 mm in shell length and 14.71 g to 19.73 g in weight whereas those fed with mixed algal diet grew from 40.45 mm to 46.74 mm in length and 14.67 g to 23.20 g in total weight after 135 d in culture. There was a significant difference in length and weight after 135 d using the t-test ($P<0.05$). Results for trial 2 were similar in that a significant difference was observed between the two treatments after 120 d using the t-test ($P<0.05$). In trial 2, abalone fed with a single-species diet grew from 37.48 mm to 43.72 mm in shell length and from 13.47 g to 19.00 g in weight whereas those fed with mixed-algae grew from 37.84 mm to 44.85 mm in shell length and from 13.27 g to 20.73 g in weight. In both cases, mixed-species of red algae produced better growth in shell length and weight. This may be because abalone in the wild rarely feed on single species and they frequently encounter a variety of drift algae. It may also be due to the fact that nutrients lacking in single-species diets may be provided and/or fortified using a variety of seaweeds. Survival rate was 100% in all cages.

LOAF BREAD ENRICHED WITH KALABASA *Cucurbita maxima*

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ABSTRACT

Kalabasa *Cucurbita maxima* can be incorporated in some culinary products like loaf bread. The study determined the effects of kalabasa on the acceptability of loaf bread with the following treatment, i.e.R_0 - loaf bread recipe as control; R1 – loaf bread enriched with 10% kalabasa; R2 – loaf bread enriched with 20% kalabasa; and R3 - loaf bread enriched with 30% kalabasa. The most preferred loaf bread enriched with kalabasa was subjected to sensory evaluation based on descriptive and preference testing and proximate composition of the most preferred carrageenan loaf bread enriched with kalabasa. Out of the four formulations of loaf bread, loaf bread with 10% kalabasa obtained the highest sensory rating scores in all sensory attributes undertaken. The color and flavor of loaf bread with 10% kalabasa marked best formulation with a descriptive rating of **like very much.** After a series of analyses of the acceptability of the most preferred loaf bread with 10% kalabasa as revealed from the data gathered based on the perceptions of the experienced and consumer panelists, the product had 27.92% moisture, 6.96% protein, 4.13% fat, 1.06% ash and 59.93% carbohydrates content. The loaf bread with

10% kalabasa had light yellow color, slightly kalabasa flavor, slightly baked odor and slightly soft texture.

Keywords: *Yellow Squash, Loaf Bread, Enrichment, Baked Products*

PRELIMINARY LIST OF BRYOPHYTES IN TAGBAOBO, KAPUTIAN, ISLAND GARDEN CITY OF SAMAL, PHILIPPINES

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ABSTRACT

In the framework of the on-going biodiversity research program of the University of Mindanao in Samal Island entitled From Ridge to Reef: Biodiversity Assessment and Conservation of Terrestrial, Freshwater, and Marine Ecosystems of Barangay Tagbaobo, Island Garden City of Samal (IGACOS), Mindanao a preliminary list of bryophytes is presented. Bryophytes is one of the important component of the program since they are excellent indicators of air quality and environmental disturbance hence a preliminary survey of this flora group would give us a preliminary assessment on the air quality and dwindling population of biodiversity in Tagbaobo, a very important marine reserve in IGACOS. A five kilometer transect was established in three sites surveyed: Magongawong, Santo Nino Falls, and near the shoreline using opportunistic sampling during the months of April and October 2014. All specimens were air dried, labeled, and stored in the Math and Science Department of University of Mindanao, Matina, Davao City. Twenty three (23) species consisting of 12 mosses under 6 families with 1 endemic Ectropothecium ferrugineum (C.Mull.) Jaeg. and 11 liverworts under 4 families with 3 rare species Cheilolejeuneav inertexta nigricans (Lindenb.) Schiffn, Marchantia acaulis,and Lopholejeunea nigricans (Lindenb.) Schiffn were recorded. This present list especially the discovery of rare species can be used by the City and Local Tourism Office in promoting sustainable eco-tourism in the area leading to preservation and protection of Tagbaobo biodiversity. Meanwhile, more collection is recommended to discover more bryophyte species in Samal particularly in the municipalities of Babak and Penaplata.

Keywords : *Checklist, Mosses, Lichens, Liverworts, Conservation*.

CLONAL PROPAGATION OF LUBEG (Syzygium lineatum) USING STEM CUTTINGS IN DIFFERENT ROOTING MEDIA

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ABSTRACT

Lubeg (Syzygium lineatum) is one of the indigenous tree species with multiple uses and a potential crop for upland rehabilitation. Thus, a nursery experiment on clonal propagation was conducted using Lubeg. Clonal propagation was done as an alternative method for Lubeg's propagation. This was done using stem cuttings from Lubeg seedlings and was observed for the formation of adventitious roots. Rooting of stem cuttings was done using different rooting media such as sand and coir dust (T1), sand and charcoal (T2), sand and vermicompost (T3) and sand and rice hull in 2:1 ratio by volume. The following parameters were used: percent survival, percent sprouting, percent rooting, length of sprouts, length of adventitious root and number of adventitious roots produced to assess the rooting of the species in the different rooting media. Results showed that the different rooting media used in the study gave significant effect on the macropropagation of Lubeg using stem cuttings.Lubeg cuttings survival and root formation potential were affected by the rooting media used in the study. Among the four media used, Lubeg cuttings grown in sand and coir dust gave higher percent survival, percent rooting, percent sprouting, length of roots and number of adventitious roots over other treatment used in the study. From the results, Lubeg cuttings best survival and rooting formation potential were achieved using sand and coir dust and therefore is recommended for used for rooting the said species using stem cuttings collected from seedlings.

Keywords: Syzygium Lineatum, Stem Cuttings, Macropropagation, Rooting Media, Percent Survival

FLORAL INITIATION OF POINSETTIA *(Euphorbia pulcherrima)* AS AFFECTED BY PHOTOPERIOD AND DIFFERENT RATES OF PACLOBUTRAZOL

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ABSTRACT

The study aimed to determine the effect of paclobutrazol on the growth and flowering of poinsettia.Specifically, it aimed to: determine the flowering response of poinsettia applied with different rates of paclobutrazol; determine the rate of paclobutrazol most suited for the flowering of poinsettia; and determine the effect of daylength on the growth of poinsettia. This study was conducted at Sultan Kudarat State University, Tissue Culture Nursery, EJC Montilla, Tacurong City, from September- December 2014. The study was laid in a 3x3 factorial in Completely Randomized Design. Treatments consisted of the following: Factor A was daylength, categorized into 8 hours (control); 10 hours (2 hours extended); and 12 hours (4 hours

extended), and Factor B dealt with the rates of paclobutrazol with the following applications: water only (control); 50 ppm, and 100 ppm. Each was replicated (3) three times with 10 experimental plants per treatment. Results showed that in terms of plant height and shoot length, poinsettia responded better when exposed to 12 hours daylength. The earliest number of days to floral initiation was reached by poinsettia exposed to 10 hours daylength, while the earliest number of days to flowering and better plant vigor was 8 hours daylength. The application of 50 ppm paclobutrazol favors the growth and flowering of poinsettia.

Keywords; *Daylength, Floral Initiation, Paclobutrazol, Photoperiod, Poinsettia*

BACTERIAL DIVERSITY OF SUBTERRESTRIAL HIGH PH GROUNDWATER IN ZAMBALES, PHILIPPINES AS REVEALED BY 16S RRNA GENE SEQUENCE ANALYSIS AND SCREENING FOR ALKALINE ENZYME PRODUCTION

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ABSTRACT

Aerobic and alkaliphilic bacteria were isolated and characterized from water samples collected from Los Fuegos Eternos Hyperalkaline spring in Zambales, Philippines having a pH of 11.5. Seventy nine strains were isolated using different enrichment media. Screening was initially done on the basis of pH tolerance, and the selected strains were subjected to further morphological and biochemical characterization. A total of 13 distinct isolates were assessed according to enzyme profile, and was subjected to phylogenetic analysis using 16S rRNA gene sequences. Phylogenetic analysis revealed that most of the bacterial isolates were related to the phylum Firmicutes, containing low G+C gram positive bacteria represented by the genera *Exiguobacterium* and *Staphylococcus*. Only 4 isolates were high G+C, Gram- positive bacteria associated with phylum Actinobacteria represented by the genera *Brevibacterium*, *Microbacterium*, *Nesterenkonia and Microcella.* Most of the bacterial isolates were alkalitolerant. Production of alkaline enzymes amylase, protease, lipase and cellulase was observed from most of the isolates, some are even multiple and high producers. This study demonstrates the presence of interesting groups of microorganisms capable of producing biotechnologically important enzymes.

Keywords: *Alkaliphilic Bacteria, 16S rRNA gene, Alkaline Enzyme, Phylogenetic Analysis*

SECONDARY METABOLITE FINGERPRINTS AND BIOACTIVITY PROFILE OF ENDOPHYTIC FUNGI ISOLATED FROM BOTH *Pandanus amaryllifolius* and *Pandanus simplex*

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ABSTRACT

Endophytic fungi isolated from various plant species are being studied worldwide for their ability to produce bioactive secondary metabolites. The study aimed to isolate the species of endophytic fungi from two different hosts, Pandanus amaryllifolius and Pandanus simplex; detected the presence of secondary fungal metabolites produced by the endophytes and compare their bioactive components. TLC fingerprinting was done to compare the metabolite profiles of the endophytes and TLC bioautography was done to determine and compare the bioactive compounds of the fungal metabolites. Morphological and molecular techniques were done to identify the fungal endophytes. Results showed Colletotrichum gloeosporoides and Colletotrichum sp. were inhabiting both host plants. These endophytes produced wide array of secondary metabolites which include steroids, triterpenes, phenolic, fatty acids, anthraquinones and anthrones. Alkaloids were also found to be present but in small amount. It was found out that there were slight differences in the metabolites of the endophytes when taken in different hosts. Furthermore, there were also slight differences in the bioactive components of fungal endophytes. Thus, this study confirms that some biological activities and compounds isolated from endophytic fungi are dependent on the hosts from which they were harnessed.

Keywords: *Endophytic Fungi, Secondary Metabolite Fingerprints and Bioactivity Profile*

ANTIBACTERIAL PROPERTIES OF SELECTED PHILIPPINE FRUTICOSE LICHENS FOUND IN NUEVA VIZCAYA

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ABSTRACT

This study focused on the antibacterial properties of seven (7) fruticose lichens of the genera *Usnea*, *Ramalina* and *Cladonia* which were collected from forests parts in Nueva Vizcaya, Philippines. Taxonomic identification was done morphoanatomically and by the thalline spot test. Lichen acids present were determined using thin layer chromatography. Thalli extracts of these lichens were tested against four (4) disease-causing Gram-positive bacteria: *Bacillus subtilis, Bacillus megaterium, Staphylococcus aureus* and *Streptococcus mutans.* The antibacterial properties of the lichens were determined using bioassays where zones of inhibition were measured against the test bacteria. Streptomycin was used as control. Determination of the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC) were also done by plate serial dilution method. Statistical analyses were

done using means, ANOVA, Scheffe's Post Hoc Test and Independent Sample t-test for Equality of Means. All analyses were run with SPSS at 0.05 level of significance. Results led to the identification of various lichen acids. All the lichens exhibit antibacterial properties and significant differences between and among the lichens and the control were identified. The lichens also show potentials of being bactericidal and bacteriostatic drugs.

Keywords: *Lichenology*, *Microbiology*

DESIGN AND IMPLEMENTATION OF PARTICIPATORY NETWORK USING ANT-BEE COLONY ALGORITHM AND RASPBERRY PI MODEL B+ MICROCONTROLLEr

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ABSTRACT

Due to increased in numbers of crimes recorded in the recent years, community participation in ensuring meaningful engagement in crime prevention and resolution has been a necessity. The Local Government Code of the Philippines 1991 with the vitality of the barangay as the basic political unit, and serves as the primary planning and implementing unit of government policies, plans, and programs created under the Section 385 with barangay officials and offices including the Lupong Tagapamayapa as anti-criminality and public safety strategy. In highly urbanized cities and metropolitan, CCTV and other technologies are used in aid of barangay peacekeeping operations. The study presented cutting edge technology using Ant-Bee Colony Algorithm in a Participatory Network and Raspberry Pi Model B+ Microcontroller. This study used the environment scan-developmental research designs. Environment scan is used to assess the current geographical, physical, economic and technological status of the barangay. Waterfall Model was used in the development stage. A purposive sampling has been employed to identify respondents in system evaluation using the ISO/IEC 9126 Quality Model and Likert Scale. The study revealed significant to crime investigation and public safety strategy and that further studies can be done on impacts assessment, technological development, and empirical investigation.

Keywords: *Participatory Network, Raspberry Pi Model, Ant-Bee Colony Algorithm, criminal investigation, public safety*

PERFORMANCE OF NEWLY INTRODUCED LINES OF PEANUT IN PAMPANGA DURING WET SEASON

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ABSTRACT

Peanut (*Arachis hypogea L.)* or groundnut is considered as one of the major field legumes commonly grown by farmers during dry season. In the Philippines peanut is one of the important

cash crops, both in vending and in local markets. In 2013, Pampanga rank 3rd in terms of peanut production in Central Luzon with 145 tons/ha having Aurora as first followed by Tarlac (BAS, 2013). At present, one factor the limits the peanut production is the unavailability of improved varieties. To enhance production and increase farmers' profit, newly introduced lines of peanut are evaluated hence, tis study was conducted mainly to evaluate the performance of newly introduced lines of peanut in Pampanga during wet season. Specifically, it aimed to determine the agronomic characteristics and yield potential of different lines of peanut. The area was laid out following Randomized Complete Block Design (RCBD). Data were analyzed using Analysis of variance Honest Significant Difference (HSD) test was used to compare treatment means. Results reveal that all lines of peanut were significantly different from each other relative to days to maturity, number of pods/plant, shelling percentage, weight of 100-seed (g) and pod yield.

The ICGV 96176 significantly obtained the highest pod yield when compared to the remaining lines and even out-yielded the check varieties, NSIC Pn18 and NSIC Pn13 by 41.6% and 114.9%, respectively. The increase in yield may be attributed to the fact that the ICGV 96176 obtained the most number of pods/plant and got the highest shelling percentage.

Keywords: *Arachis hypogaea, Introduced Lines, Wet Season*

EFFECT AND MYCOREMEDIATION OF LEAD (PB) IN KABUTENG TIGRE *LENTINUS TIGRINUS* (BULL.) FR.

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ABSTRACT

Lead pollution in the Philippines is enormously increasing due to the rapid industrialization that could pose health threat to mankind. Hence, many researchers are exploring new biotechnology-oriented and environmentally friendly technologies in order to rehabilitate contaminated areas. This work highlighted the effects and mycoremediation of lead in the mycelia and fruiting body of *Lentinus tigrinus*, a wood-rotting mushroom. Potato sucrose gulaman treated with lead sulfate ($PbSO_4$) concentrations were used in the evaluation of mycelial growth, density and inhibition. The mycoremediation ability of fruiting bodies was evaluated in lead-infused rice straw-sawdust based substrate. The accumulated amount of lead in the fruiting bodies was analyzed using atomic absorption spectrophotometer. Lead at 100 ppm significantly recorded the lowest mycelial growth diameter (83.33 mm) and highest growth inhibition (7.41%) after 5 days of incubation. No variation in mycelial density was noted between lead free and lead treated media. However, lead treated substrate significantly recorded shorter period of fruiting body development (35 days) and improved the yield (146.3 g). Fruiting bodies accumulated 14.5 mg/L while the substrate spent had 6.8 mg/L of lead. Therefore, based on the lead tolerance and accumulation ability, *L. tigrinus* could play major role in environmental protection and conservation through mycoremediation.

Keywords: *Lentinus tigrinus, Kabuteng Tigre, Mycoremediation, Heavy Metal,*

STUDENTS' ACHIEVEMENT, ATTITUDE, AND MOTIVATION IN SCIENCE

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ABSTRACT

The transformation of Science instructional environment to an inquiry-based, student centered approach using 5E Model could develop the rich Science background of students. This descriptive experimental research determined the students' achievement, attitude, and motivation in Science through 5E Model. Using purposive/deliberate random sampling technique, 237 Grade 7 students were chosen and grouped according to ability. The Motivation towards Science Learning, Scientific Attitude Inventory, Biology/Physics Achievement test were administered. Statistical data were treated using weighted means, frequency counts, percentages, Pearson moment correlation, t-test, Analysis of Covariance (ANCOVA), Multivariate Analysis of Variance (MANOVA) and Regression Analysis. Results showed that Science achievement, attitude, and motivation of ability-grouped students differ significantly. Basic science process skills were used as covariate. Improvement in Science achievement and grade in all students regardless of their ability groupings are significant using 5E Model.

Keywords: *Ability, Groupings, Inquiry, Student-Centered*

COMPARATIVE STUDY ON THE HEALING POTENTIAL OF CUCUMIS MELO L. (CANTALOUPE MELON) AND SECHIUM EDULE J. (CHAYOTE) FRUIT EXTRACTS ON THE INCISED WOUND OF MUS MUSCULUS (ALBINO MICE)

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ABSTRACT

Sechium edule J. (chayote) and Cucumis melo L. (cantaloupe melon) fruits have the essential components vitamins A, C and the minerals zinc and iron that are necessary for wound healing to take place. As such, their efficacy in wound healing was tested. A total of 21 male albino mice randomly grouped into three were used as a model for the infliction of wound. Each group was subjected to the administration of commercial ointment which served as the positive treatment (+), T1 chayote 50%, T2 chayote 75%, T3 chayote 100%, T4 cantaloupe 50%, T5 cantaloupe 75% and T6 cantaloupe 100% ointments. The treatments were applied immediately upon the incision of wound and were continuously applied twice a day until the wounds were completely healed. Data showed that chayote and cantaloupe indeed had an effect on the healing of the wounds of albino mice as observed on the different parameters used which were: blood clotting, removal of redness and swelling, scab formation, scar formation and growth back of fur - which

indicated that the wounds were completely healed. However, cantaloupe 100% (T6) surpassed the ability of all ointments with different concentrations including the commercial ointment.

SOLAR-TRACKING SYSTEM USING LABVIEW DATA ACQUISITION

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ABSTRACT

This study is applicable to the analysis of Solar Power System and issues related to acquiring maximum amount of energy sources. This emphasized a design for acquiring solar energy in multipositions compared to a typical solar energy acquisition to improve the efficiency of the system. Instrumentation of the project was built using NI LabVIEW with the aid of a microcontroller to acquire the needed data. This project focuses on building a model to show how solar energy is generated by choosing a 500 watts output power to simulate a typical household load. Based on the gathered data, the system delivers maximum power to enable the system to achieve a higher charging efficiency to maintain the life of the battery. This enable acquiring maximum amount of energy as compared to acquisition of a typical solar panel with fixed position. It was found out that the average power delivered by the solar panel is 14Watts and with the system it produces 60 watts of average power delivered. With the use of LabVIEW based data acquisition, reading required parameters was made easy.

Keyword: *Tracking System, Solar Power System, Data Acquisition, Labview, Solar-Tracking System*

LENGTH-WEIGHT RELATIONSHIPS OF THE ASIAN GREEN MUSSEL, *PERNA VIRIDIS* (LINNAEUS 1758) (BIVALVIA: MYTILIDAE) POPULATION IN BOLINAO BAY, PANGASINAN, NORTHERN PHILIPPINES

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ABSTRACT

Biometric study was conducted on the population of *Perna viridis* in Bolinao Bay to assess the ideal weight growth estimator. A total of 243 individual mussels were used to determine the relationships of shell length (SL), shell width (SW) and shell thickness (ST) with the total weight (TW) and soft tissue weight (STW) of the bivalve. All length-weight relationships established showed negative allometric growth with B-values ranging from 2.30-2.71. Highest correlation values were observed in the SL-TW (r^2 = 0.82) and SL-STW (r^2 = 0.85) relationships. This indicates that shell length is the ideal weight growth estimator for the green mussel population in Bolinao Bay.

A REVIEW OF *ARTEMISIA ANNUA* L.: ITS GENETICS, BIOCHEMICAL CHARACTERISTICS, AND ANTI-MALARIAL EFFICACY

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ABSTRACT

This paper presents a review on the genetics of A. annua as an important plant species for the treatment of malaria. A short history on the discovery of the plant is discussed. Furthermore, a clear description of the characteristics of *A. annua* is presented as the plant's chemistry, mechanism of action and efficacy are thoroughly discussed. Many cytogenetic studies on *A. annua* focusing on the production of the antimalarial drug, artemisinin are also presented. New technologies on artemisinin production are also discussed focusing on the use of microorganisms. The last part of the review discusses issues and future prospects of *A. annua* and artemisinin production for malaria therapy.

Keywords: *Artemisinin, Biochemical Property, Anti-Malarial Efficacy, Mechanism of Action, Essential Oil*

FORMULATION AND ACCEPTABILITY OF BLACK TEA PRODUCTS FROM THE INDIGENOUS *HAG-OB (Sarcandra glabra* THUNB*.)* PLANT OF BRGY. IMUGAN, STA. FE, NUEVA VIZCAYA

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ABSTRACT

Tea is produced and manufactured in 30 countries, including Philippines. For quality tea production and safe consumption, appropriate tests and measures must be conducted. This study formulated tea products from an indigenous plant named "*hag-ob*," with the scientific name *Sarcandra glabra* from the Kalahan Community of Sta. Fe, Nueva Vizcaya. Antioxidant screening was done to determine the total scavenged free radical DPPH and the total phenolic compounds present in the formulated three black tea products: leaf tea, stem tea and mix tea. Basic toxicological testing was also done for the Black Tea Extract infusion concentrations. At 2.5% concentration, both leaf and stem tea infusions elicited stimulation of the central nervous system (CNS) of the test mice compared to NSS-treated groups of mice, including increase in motor activities, startle reflexes, body tremors and sustained erections of their skin hairs. In general, the mice in all test groups for the general test observation for the toxicological effects reacted normally. Respondents of 32 randomly selected HRM students who had expertise on tasting beverages were involved in the sensory evaluation for the acceptability of the tea products and same respondents indicated that the three black tea variants (leaf, stem and mixed tea infusions) are acceptable. The *hag-ob* mix tea product is highly acceptable in terms of its color and taste.

Keywords: *Sarcandra Glabra, Antioxidant Property, Scavenging Activity, Total Phenolics Content, Tea Product Formulation, Basic Toxicological Effects, Sensory Evaluation, Product Development*

ANTIBACTERIAL ACTIVITY OF *Garcinia binucao* (Blanco) Choisy (BATUAN) EXTRACT ON SELECTED GASTROINTESTINAL PATHOGENS

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ABSTRACT

The ethanolic leaf, seed, and fruit extracts of *G. binucao* were utilized in this study to evaluate its antibacterial activity against *Salmonella sp, Shigella sp,* and *Vibrio cholerae*. Disk diffusion assay was used to determine the antibacterial activity of *G. binucao* extracts on the selected gastrointestinal pathogens by measuring the zone of inhibition (ZOI). One hundred percent (100%) crude extracts for each indicated plant part was used as treatment. Commercially-available antibiotic disks (Tetracycline, Ampicillin, Ciprofloxacin) were used as control group. Results showed that *G. binucao* leaf and seed extract did not manifest any inhibitory activity towards any of the selected gastrointestinal pathogens (ZOI = 6mm). However, it was only the fruit extract that showed inhibitory activity towards *Salmonella sp*(ZOI = 10.20mm)*, Shigella sp* (ZOI = 12.50mm), and *Vibrio cholerae* (ZOI = 13.30mm). Hence, the inhibitory activity revealed that the gastrointestinal pathogens were resistant to the fruit crude extract. With the two-way ANOVA analysis, the inhibitory activity of the fruit extract showed significant difference (p=0.472557) than the leaf and seed extract, which means that the fruit extract is considered the most efficient part in inhibiting the growth of the given enteric pathogens. Hence, it was less efficient than the given common control antibiotics. Such inhibitory activity of the *G. binucao* fruit extract was indicative for the presence of phytochemical constituents such as terpenes and phenols.

Keywords: *Inhibitory Activity, Garcinia binucao, Terpenes, Phenols, Zone Of Inhibition*

HABITAT CONNECTIVITY OF SEAGRASS BED AND THE PROTECTED MANGROVE AREA AS SHOWN IN THE INTERTIDAL MOLLUSCAN DIVERSITY AND FISH ASSEMBLAGE IN CATANDUANES ISLAND, LUZON

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ABSTRACT

Seagrass beds are extensive shallow water habitats in the Philippines, but few reports have assessed the extent to which gastropods and fish assemblage explain within the notions of the source-sink theory that can contribute an understanding of the function of mangrove protected areas as population sources. Mangrove reserves are favored as management tools maintaining good quality and rich habitat, thus improving population productivity by enhancing larval supply and recruitment in neighboring habitats such as the seagrass beds in Philippine shores. As claimed by many researchers' recent advances in the study of protected areas in the context of source-sink theory remains largely unexplored. This preliminary study investigated the role of a protected mangrove area as population sources by looking into whether there is a mirroring

beyond the reserve boundaries; and investigated whether the gastropods and bivalves are segregated from or integrated with fish seagrass beds. Field surveys by visual census were carried out to describe bivalve-gastropod abundance and diversity indices together with the fish richness in the seagrass beds compared to that in the in the protected areas at two locations in Catanduanes island, Bicol region in North Philippine Sea. Diversity of juveniles and adults of fish species were recorded and segregation of bivalve-gastropod mollusks were described. Based on the richness and abundance, a discussion is hereto presented as to the predicted notion that recruitment would mirror adult abundances that the mangrove reserves may act as important refuges. Moreover, a discussion on habitat segregation among life stages of some nursery species of bivalves and mollusks were emphasized here.

SENSORY QUALITIES OF JACKRFUIT (*Artocarpus heterophylus*)CANDY ENRICHED WITH MASHED SEEDS

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ABSTRACT

The jackfruit (*Artocarpus heterophylus*) candy can be enriched with mashed jackfruit seeds. This study determined the sensory qualities of jackfruit candy enriched with mashed jackfruit seeds. The treatment recipes are the following: R_0 - jackfruit candy containing 0% mashed cooked jackfruit seeds; R1 – jackfruit candy containing 4% mashed cooked jackfruit seeds; R2 – jackfruit candy containing 6% mashed cooked jackfruit seeds; and R3 - jackfruit candy containing 4% mashed cooked jackfruit seeds. Based on sensory evaluation using descriptive and preference tests, the most preferred jackfruit candy with 4% mashed cooked jackfruit seeds obtained the highest sensory rating scores in all sensory attributes marked best formulation with a descriptive rating of "**like very much".** The most preferred jackfruit candy with 4% mashed cooked jackfruit seeds had light brown color, jackfruit milky flavor, slightly jackfruit odor and very fine gritty texture.

Keywords: *Jackfruit, Bulb, Seeds, Candy Products*

NUCLEAR RIBOSOMAL DNA INTERNAL TRANSCRIBED SPACER REGION (ITS) AND RIBULOSE 1,5 – BISPHOSPHATE CARBOXYLASE OXYGENASE LARGE SUBUNIT (RBCL) CHLOROPLAST DNA GENE MARKERS REVEAL THE IDENTITIES OF THREE ETHNOBOTANICALS UTILIZED BY THE IGOROT COMMUNITY OF IMUGA

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ABSTRACT

The Philippines is the 23rd most plant- species rich country in the world, with around 8,000 species of flowering plants and around 4,500 species of non-flowering plants. Among these, around 30-40 percent is endemic. This study aimed to identify ethnobotanicals utilized by the

Igorot of the Kalahan Community in Imugan, Nueva Vizcaya. Identification of plants is serious to their discovery and conservation. Ethnobotanicals have remained untapped despite their various medicinal purposes. There are several techniques in order to identify plant samples. DNA barcoding has been considered a powerful tool for species identification. In this study, DNA Extraction, PCR amplification and sequencing analysis were done to discover the identity of these plants. Construction of the phylogenetic trees was also done. Sequences of rbcL and ITS generated using Codon Code Aligner v 3.0 were subjected to BLAST and revealed the identities of Dama de noche as Cestrum nocturnum, Panawel as Ageratina adenophora and Palay as Alstonia scholaris. Alignment and phylogenetic analysis UPGMA method were done through MEGA 6.06. Findings of this study will serve as a preliminary assessment of these ethnobotanicals with pharmacological potential.

Keywords: *Ethnobotanials, DNA Barcoding, rbcL, ITS*

ECO-FRIENDLY CONCRETE USING STEEL SLAG FOR THE RAILWAY INFRASTRUCTURE

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ABSTRACT

Eco-friendly concrete was developed in Korea, which was mixed using steel slag as main ingredients for railway infrastructure. Prestressed concrete (PSC) sleeper was manufactured by eco-friendly concrete which reduces the usage of cement and natural fine aggregate. For the eco-friendly PSC sleeper, the ground granulated blast furnace (GGBF) slag was partially (30%) utilized as alternative to high-early-strength Portland cement for the reduction of CO2 emissions, and sand as fine aggregate was replaced by rapid cooling electric arc furnace (EAF) slag for the preservation of the natural resources. From a series of laboratory and field tests, the newly developed PSC sleeper satisfied its required performances by Korean railway standard (KRS) and European standard (EN). As conclusion, eco-friendly PSC sleeper mechanically, environmentally, economically showed the superior performances to the conventional sleeper.

ANTIBACTERIAL POTENTIAL OF *RHODOBRYUM GIGANTEUM* (SCHWAEGR.) PAR.

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ABSTRACT

The strengthening advocacy of using natural medicine is evident in the worldwide market. Plants are the most readily available sources of the biological compounds, isolated and marketed by the pharmaceutical industries. Mosses contain active constituents that exhibit various biological activities including antibacterial and antioxidant. In this study, qualitative and quantitative phytochemical tests were done in *Rhodobryum giganteum* (Schwaegr.) Par.. Carbohydrates, terpenoids, phytosterols, phenolics, and tannins were present in the ethanolic

extract of *R. giganteum*. Determination of the antibacterial potential of *R. giganteum* was performed using the Kirby-Bauer Method. Out of six species of bacteria, *E. coli* and *S. aureus* showed greatest resistance to the plant ethanolic extract and controls, while it had a significant difference in antibacterial activity on *B. subtilis* and *P. vulgaris* against negative and positive control implying moderate antibacterial activity of the species. *R. giganteum* test for Minimum Inhibitory Concentration revealed bacteriostatic effect at 100 percent concentration.

Keywords: *Moss, Plant Antibacterial Activity, Bryophyte Extract, Ethanolic Extract, Rhodobryum*

ANTIFUNGAL ACTIVITY OF LEMONGRASS (*Cymbopogon citratus*) EXTRACT AGAINST *Rhizopus microsporus*

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ABSTRACT

Lemongrass (*Cymbopogon citratus*) is a perennial tropical grass belongs to the family Poaceae. This plant is abundant and grows around the world especially in tropical and subtropical regions, while in the Philippines it is commonly found in the Filipino's backyard. It has a citral aromatic compound that usually used as condiments and flavouring in the dishes. Aside from food and flavor, lemongrass has the antimicrobial, antifungal and antiviral properties that can be used in the wide range of pharmaceutical and cosmetics, as well as in agricultural industries. *Rhizopus microsporus* is a fungal plant pathogen that is widely distributed is soil where decaying plant debris and foodstuff can be found. This fungus can cause mucormycosis which generates human infection in sinus, gastrointestinal tract and skin. Aside from affecting the human race, *R. microsporus* can cause seedlings blight of grain plant which can decrease the agricultural production. Experimental method using Completely Randomized Design (CRD) with five (5) treatments and five (5) replications was used in this study to determine the effect and most effective solution of lemongrass extract on the growth inhibition and biological assessment of *Rhizopus microsporus*. Lemongrass stalk was collected and extracted. A measurement of the average zone of inhibition was done after the spore germination has started. Based from the results of the study, the lemongrass extract had growth inhibitory effect on the microbial petri plate cultures of *Rhizopus microsporus* after the spore germination has started. Analysis of Variance (ANOVA) revealed that the inhibition in microorganism's growth in T_4 (30% lemongrass extract) and T_5 (40% lemongrass extract) are not significantly different from each other but is significantly different from T_1 (control), T_2 (10% lemongrass extract) and T_3 (20% lemongrass extract).

Keywords: *Lemongrass, Rhizopus Microsporus, Biological Assessment, Growth Inhibition, Spore Germination*

DETERMINATION OF THE POLLUTION LOAD USING DIATOMS AS INDICATORS AND KNOWLEDGE, ATTITUDE, AND PRACTICES OF THE RIVER SIDE DWELLERS ON THE USE OF IMUS RIVER

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ABSTRACT

This study conducted a research on the pollution load of Imus River by the use of the presence of diatoms. Water samples were collected from the three main points of the river: upstream (Palico), midstream (Anabu II), and downstream (Gate 3 Dasmariñas). The Diatoms were collected by the use of submerging a 7 x 11 glass into the river, which was left for two weeks. It was then scraped by the use of a sharp spatula to avoid breakage of the diatoms and was preserved with 95% Ethyl Alcohol along with distilled water. After preserving the Diatoms, it has undergone centrifugation for separation of the diatoms and water. The attained clear samples were mounted on a glass slide with the use of Canada Balsam and were viewed under the microscope. After the experiment, the result showed that the water from the three points of the river were polluted due to the high presence of diatoms namely: *Nitzchia sculpta, Gomphonema parvulum,* and *Gomphonema olivaceum.* The KAP survey showed that residents along the Imus river used it for their daily activities such as fishing, taking a bath, as well as throwing their wastes which contributed to added water pollution.

Keywords: *Pollution Load, Diatoms, Knowledge, Attitude, Practices*

COCONUT WATER-BASED PICKLED FISH PRODUCTS

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ABSTRACT

Pickled fatty species of fish can be enhanced with coconut water as one of the ingredients in maninade solution. This study determined the sensory qualities of pickled fish products with varying coconut water concentration of marinade solution. The treatment recipes, i.e.R_0 - marinade solution with 50% vinegar containing controlled seasonings; R1 – marinade solution with 25% vinegar and 25% coconut water containing controlled seasonings; and R2 - marinade solution with 50% coconut water containing controlled seasonings to determine the effects of coconut water on the quality of frozen marinated mullet chunks and sardines. The most preferred mullet chunks and sardines soaked in marinade solution containing varying concentration of coconut water was subjected to sensory evaluation based on descriptive and preference testing. Out of the three formulations of marinade solutions, mullet chunks and sardines soaked in marinade solution containing 50% coconut water obtained the highest sensory rating scores in all sensory attributes undertaken. The color, flavor, odor and texture of marinated mullet chunks and sardines revealed that all attributes with coconut water as basic ingredients of marinade containing 50% coconut water marked best formulation with a descriptive rating of "**like very much".**

Keywords: *Mullet, Sardines, Coconut Water, Pickled Products*

TACKLING A "PUZZLE" IN THE SYSTEMATICS OF THE OVOVIVIPAROUS PACHYCHILID FRESHWATER GASTROPODS: MORPHOMETRICS OF TWO SPECIES OF "TABAGWANG" UNDER *JAGORA* GLAUBRETCH & KOHLER 2002 *GEN. NOV*

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ABSTRACT

An evaluation of the geometric morphology of the ovoviviparous freshwater gastropod (locally known in Bicol as "Tabagwang") in the new genus *Jagora* Glaubretch & Kohler 2002 *gen. nov.* was carried out to further strengthen the puzzling systematics of this pachichilid group. The notion being pursued relates to Glaubretch's thinking that is whether there is only one widely distributed and highly variable species or many Philippine species with more limited distributions within the archipelago. Two similar species (*Jagora asperata* and *Jagora dactylus*) found in the mountain streams of Catanduanes island in Luzon, Philippines were investigated to describe their shell morphology as to geometric shape analysis. A total of 100 shells were obtained in Virac, San Miguel and Viga towns for this analysis. After field collections, these samples were brought to the Catanduanes State University's Undergraduate Biology Laboratory and processed prior to evaluation. In order to further provide evidence to separate into two species instead of subsuming *J. dactylus* from *J asperata*, geometric analysis based on centroid shape was undertaken contrary to previous reports. Following procedures on geometric morphometry, the specimens of *Jagora* from Catanduanes were processed prior to the study. Samples were fixed in 70% formalin and 30% alcohol and dried. Shell specimens are measured by metal Vernier caliper up to 0.01 mm. Whole length was obtained from the axis of the shell. Each whorl length and length of aperture was obtained by measuring the length of the parietal wall of the shell taken from the outer lip of aperture to the columellar wall, and whorl width was obtained by measuring the distance of parietal wall to the palatal wall. From testing the differences of the two species, the gathered data revealing the morphometric characteristics showing differences will help give the idea what part of the shell is to be computed to get the centroid. The centroid of a configuration is literally its center: the x- and y- (and z-) coordinates of the configuration's centroid are simply the mean values of the x- and y- (and z-) coordinates for all k landmarks in the configuration. Centroid size is the square root of the sum of the squared distances between each landmark and the centroid of the form. Using t- testing, the two species of *Jagora* exhibit significant differences ($P<0.05$) in whorl 1, whorl 5 and aperture. As referenced from the previous reports that a single species is found is hereto being updated. Recent finding of this study adds to the record on the Philippine distribution of Philippine *Jagora* in this island of the Bicol region.

Keywords: *Catanduanes, "Tabagwang", Gastropod, Ovoviviparous, Jagora, Pachychilidae*

A COMPARATIVE STUDY ON THE ANGIOGENIC EFFECTS OF *Aleurites moluccanus* (L.) Willd. (LUMBANG) AND *Macaranga tanarius* (L.) Mull. (BINUNGA) LEAF EXTRACTS ON THE CHORIOALLANTOIC MEMBRANE (CAM) OF A 10 DAY OLD DUCK EMBRYO

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ABSTRACT

Angiogenesis is a naturally occurring process in the body which can be described as the formation of new blood vessels from pre-existing blood plexus. The rate of the formation of new blood vessels can be related to many diseases. The study conducted a comparative study on effects of different concentrations of Aleurites moluccanus (L.) and Macaranga tanarius (L.) leaf extracts on the angiogenesis of a 10-day old duck embryo. Ethanolic extracts of lumbang and binunga were used and were prepared into 7 treatments, including the control group. Concentrations of 100, 200 and 300ppm were used for both test plants. The collaterals were counted 48 hours after administration of leaf extracts. The results of the study showed that lumbang and binunga have an anti-angiogenic effect because of decrease in number of collaterals. Statistical analysis on the data showed significant difference between the control group and all concentrations. Pairwise comparison also showed that 300ppm concentrations of both test plants had the greatest inhibitory effect and the greatest potential to be used as treatment for angiogenic related diseases particularly those that are caused by excessive angiogenesis. Both lumbang and binunga have flavonoids and tannins which are phytochemicals having angiogenic-inhibiting property.

Keywords: *Angiogenesis, Lumbang, Binunga, Anti-Angiogenic Effect*

RAPID MULTIPLICATION OF COFFEE STEM CUTTINGS WITHVARYING LEVELS OF VERMICOMPOST

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ABSTRACT

The study was conducted to determine the propagation and production of coffee stem cuttings with varying levels of vermicompost. Specifically, it aimed to identify the effect of varying levels of vermicompost on the survival of coffee stem cuttings in terms of number of shoots, length of shoots, number of newly developed leaves, plant vigor, root index and percentage survival; determine the suitable proportion of vermicompost as potting media on the growth of coffee stem cuttings; determine the percentage survival of coffee stem cuttings planted in varying levels of vermicompost as potting media. This study was conducted at SKSU Tissue Culture Laboratory Center and Nursery, EJC Montilla, Access Campus, Tacurong City. The duration of

the study was five (5) months (June to November 2014) and covered the stages from preparation of cutting until rooting and hardening. The study was conducted in a 2 x 4 factorial in a Completely Randomized Design with different coffee stem cuttings as factor A (Robusta – (A1); Arabica – (A2)), while varying levels of vermicompost as potting media served as Factor B. Treatment was replicated three (3) times. Results showed that Robusta coffee stem cuttings planted in 50% ordinary garden soil + 50% vermicompost highly influenced the different parameters gathered such as number of newly developed leaves and percentage of survival. However, in terms of number of shoots; length of shoots; plant vigor, and root index, 25% ordinary garden soil + 75% vermicompost was found to be the more suitable proportion for the growth and development of coffee cuttings. The use of Robusta coffee stem cuttings planted in 50% ordinary garden soil + 50%vermicompost is best utilized for the rapid multiplication technique in the propagation of coffee by nursery growers.

Keywords: *Arabica, Potting Media, Robusta, Stem cuttings,Vermicompost*

ITEM BIAS ANALYSIS ON DICHOTOMOUSLY SCORED TEST THROUGH DIFFERENTIAL ITEM FUNCTIONING DETECTION MODELS: A COMPARATIVE STUDY FOR TEST RELIABILITY AND VALIDITY

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ABSTRACT

Differential item functioning (DIF) analysis is an essential element in the evaluation of the fairness and validity of educational tests. This study utilized Mantel-Haenszel Chi-Square Statistic, Logistic Regression, Transformed Item Difficulty, and Rasch Model in detecting potentially biased items. Descriptive-comparative research design was employed in the DIF analysis of the dichotomously scored achievement test based on students' differences in age, sex, grade point average in Calculus I, grade point average in English I, socio-economic status and school type. Results of the study revealed that the elimination of the potentially biased items in the test resulted to a more valid test. Also, the number of test items is directly proportional to the reliability coefficient of the test. Further, the Item Response Theory Models, particularly the Rasch Model, is the most sensitive in detecting DIF items.

Keywords: *Item Bias Analysis, Differential Item Functioning, Reliability, Validity*

VERTICAL GARDENS

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ABSTRACT

The purpose of this study was to create a new model of the garden is a garden with a vertical instead of horizontal like the media in general, as an effort to green the environment and add beauty to the coolness in the urban areas which have a narrow field of gardening around the house. This research was conducted at my house. These research actions using a simple model and equipment as a result of imagination and creativity will help some gardeners of Yogyakarta. This research is still in the process of making a little tricky because of the

technique. And still there is a lack in this vertical garden that can only be planted with short plants with a height of approximately 30 cm. Thus, the needed improvements to the amplifier planting medium.

Keywords: *Vertical Garden, Greening The Urban Environment And The Narrow Area, Short Plants, Simple Model, Technique Complex, And Short Plants.*

PANDAN SCENT-BASED COCONUT CHARCOAL DEODORIZER

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ABSTRACT

Charcoal is traditionally used as deodorizer. This study determined the effects of dried pandan strips on the properties of coconut charcoal deodorizer. The following treatments are T_0 - crushed coconut charcoal without dried pandan strips; T1 - crushed coconut charcoal with 10% dried pandan strips; T2 - crushed coconut charcoal with 15% dried pandan strips; T3 - crushed coconut charcoal with 20% dried pandan strips. Out of the four varying concentrations of dried pandan strips, treatment with 20% pandan obtained the highest sensory rating scores in all sensory properties if placed in offices, while 10% pandan is acceptable as car deodorizer/freshener. The product had comfortable organic scents, affordable and well presented using native packaging with an acceptability rating of "like very much" in all properties. The most preferred scented coconut charcoal deodorizer is composed of 10 and 20% dried pandan (dry weight) concentrations and 90 and 80% crushed coconut charcoal, respectively. After a series of analyses of the acceptability test for offices and cars operators of the most preferred concentration of pandan scented coconut charcoal deodorizer/freshener as revealed from the data gathered both from the perceptions of the consumer panelists, the following conclusions are formulated: only 10 and 20% dried pandan strips concentration is appropriate to be used as car and office deodorizers/freshener, respectively.

Keywords: *Pandan, Coconut, Charcoal, Deodorizer, Freshener*

HYDRILLA VERTICILLATA: A PHYTOACCUMULATOR OF HEAVY METAL IN AQUATIC ENVIRONMENT

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ABSTRACT

Balatoc, a small community in Benguet, Philippines had catered to a big mining company, the Balatoc Gold Mines. Still, small scale mining operations are seen contributing to the heavy metal contamination in the locality. The study aimed to determine the quality of water sources in Balatoc Main Camp, Benguet, Philippines. The aquatic plant *Hydrilla verticillata* was used as phytoaccumulator of the presence of heavy metal pollutants. A higher concentration of mercury was detected in the plants after eight days of exposure to water from Balatoc River. The Balatoc

river sample contains the highest level of mercury as compared to the tap and spring water samples. Lead and cadmium concentrations were below detectable levels. Hydrilla can adapt to the presence of heavy metals/mercury as shown by increase in leaves, length of stem and fresh weight of the Hydrilla plants exposed to the river water. Although the hydrilla plants in all water samples were able to adapt, the most important indicator is the number of leaves produced throughout the experimental period. The highest number of new leaves produced was identified among hydrilla in Balatoc river. Based from the findings of the study, the hydrilla plants can accumulate mercury from polluted water environments.

Keywords: *Hydrilla Verticillata, Phytoaccumulator, Heavy Metal, Atomic Absorption Spectrophotometry*

GOAT EPIDIDYMAL SPERM FROM POST MORTEM TESTES REMAIN ALIVE IN REFRIGERATED SEMEN EXTENDER FOR 72 HOURS

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ABSTRACT

Philippine non-descript/native goat are a common sight in farming communities due to their innate reproductive prolificacy, disease resistance traits and adaptability to harsh environmental conditions. With the infusion of foreign caprine breeds, native goat sperm preservation is necessary before loss of genetic diversity occurs. However, native bucks are not usually trained for semen collection, thus slaughterhouse-derived testes could be a potential source for short term sperm preservation and storage. Epididymal sperm recovered from paired testes (n=18) within 1-2 hours post slaughter displayed initial percentage sperm motility between 60-75% with an average sperm concentration of 1.90 ± 0.2 billion sperm per mL. After preservation with semen extender and storage at 4-5°Celsius, percentage motility displayed 51% after one day, 36% after two days, 30% after three days and weakened considerably on days 4 and 5 leaving motility scores of 22% and 17%, respectively. Microscopic evaluation of eosin-nigrosin stained sperm on day of recovery showed 88.7±3.3% live sperm. Daily evaluation for live sperm after 24h, 48h and 72h of refrigeration revealed 71±3.53%, 58±2.79% and 38±1.39%, respectively. Based on these findings, live epididymal sperm rescued from post mortem testes of native goats will survive for 72 hours in semen extender maintained at refrigerated temperature.

Keywords: *Native/Nondescript Goats, Slaughterhouse-Derived Testes, Viable Epididymal Sperm*

INTESTINAL PROTEIN EXPRESSION AND KIDNEY ADAPTATION OF JUVENILE OREOCHROMIS NILOTICUS ON SHORT-TERM TRICHANTHERA GIGANTEA LEAF MEAL ADMINISTRATION IN AQUAPONICS SYSTEM+

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ABSTRACT

TheTrichanthera gigantea leaf meal (TLM) has not been investigated in terms of protein expression by the small intestinal cells and the corresponding changes in kidney histology in juvenile tilapia Oreochromis niloticus. Short-term feeding administration in aquaponics system with TLM has not been a subject in local aquaculture studies or even abroad. The expression of large protein by intestinal cells and the adaptive renal structures to pure commercial feeds (T0) and TLM (T1-50% and T2-100%) are specifically assessed after one month. Comparative protein profiles of small intestine revealed in CF-fed (T0) tilapia suggesting trypsin (22.4kDa) and Na+/Pico-transporter (70kDa) families. Highly expressed unique proteins in TLM-fedtilapia such as the 45kDa and >500kDa fractions are to be identified. The number of proteins remarkably reduced with increased TLM was observed. Thekidney histology of tilapia given 50% TLM (T1) showed mildly degenerated and dilated lumen, while constricted lumen and reduced glomerular diameter with edema was observed in the 100% TLM (T2) with notable melanomacrophages and blood occlusion. Renal structures and small intestinal protein expressions in juvenile tilapia can provide biochemical and structural information when administered with TLM in aquaponics system.

SALINITY TOLERANCE OF NEW TILAPIA HYBRIDS (Oreochromis aureus x Oreohromis mossambicus) AT VARYING SALINITY LEVELS

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ABSTRACT

The study was conducted to determine the salinity tolerance of a new tilapia hybrids from the cross of Oreochromis aureus x Oreohromis mossambicus. A total of 144 new hybrids (1.2g) were used in the study. One hundred twenty (120) of which were directly stocked in 20 pieces plastic container (5L capacity) at different salinity levels (0, 3, 5, 10 and 15 ppt) and tested for 96 hours. Some 24 pieces of the new hybrids (same size) were subjected to increasing salinity levels (from 3 ppt and increased of 3ppt daily until 30ppt) for 216 hrs (9 days). The same sizes and stocking density (2pcs/L) were used in the study. The new hybrids in were fed with fry mash at a rate of 5% BW. Each container was provided with aeration and one half of the water was siphoned out daily. Aside from water salinity, temperature, pH and dissolved oxygen were monitored daily. Results of the study revealed that the new hybrids have high tolerance to salinity. For the whole duration of the experiment, only one (1) mortality was noted (T6, 15ppt) during the 89th hr. The rest (143 or 99.31%) of the new hybrids in all treatments including those tested for increasing salinity levels (up to 30ppt) survived until the last day of the experiment.

BACTERICIDAL ACTIVITY OF LACTIC ACID BACTERIA ISOLATED FROM PHILIPPINE FERMENTED FOODS AGAINST CLINICAL PATHOGENS

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ABSTRACT

Recent studies have focused on developing antibiotics from various microorganisms that could produce compounds that can inhibit the activities of other microorganisms. One group of microorganisms that have gathered interest is lactic acid bacteria, which have shown antagonizing activities against pathogenic bacteria (Srinu et al. 2013). Lactic acid bacteria were isolated from the Philippine fermented foods. The isolates (independent variable) were subjected to fermentation process to extract anti-microbial substances. Clinical pathogens were subjected to these substances to determine the bactericidal activity (dependent variable) of the isolates against clinical pathogens. Thirty samples were gathered and isolated the lactic acid bacteria. Lactic acid bacteria isolates were identified based on their biochemical characteristics. Their bactericidal activity was tested using agar disk diffusion test that measured the zone of inhibition. The fermented foods such as vinegar, soy sauce, and bagoong isda contain lactic acid bacteria, specifically Lactobacillus delbrueckii subsp. bulgaricus and Lactobacillus plantarum. The isolates showed bactericidal activity against Escherichia coli, Pseudomonas aeruginosa and Salmonella Typhi. Further investigation towards ability of LAB to inhibit the growth of drug resistant clinical pathogens and infectious fungi.

GROWTH AND YIELD PERFORMANCE OF MILKY WHITE CORN (KLASIKA F1 VARIETY) FERTILIZED WITH FISH WASTE LIQUID FERTILIZER IN SANDY POND DIKES OF PSU-BINMALEY

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ABSTRACT

This study was conducted at Pangasinan State University-Binmaley Campus, Binmaley Pangasinan to verify the growth and yield performance of milky white corn (Klasika F1 variety) in sandy pond dikes of PSU Binmaley Campus. This is to find out which concentration is best for growth and yield performance of corn planted in the area. Seedlings grown on a disposable plastic cups is been transplanted after a week of sowing the seed. Initial measurement is obtained prior to transplanting and it is noted that they had a close similar measurement. On the first sampling it is noted then that treatments fertigated with lower concentrations performs better. However, on the next sampling and onward it is noted that T4 or treatment fertigated with 4% of the said fish waste liquid fertilizer dominated the other four treatments. This is on the average mean length and width of leaves, diameter of the stem and height. It shows that he average width of leaves as obtain in the final sampling, that for T4 is 9.87 cm compared to T3 which is 9.58 cm followed by T1 which is 9.54 cm and T5 having 8.97 cm and 8.94 cm for T2. With regards to the diameter of the stem, T4 obtain the highest of 3.13 cm followed by T3 of 3.101 cm, T3 of 3.002 cm, followed by T1 having 2.45 cm and the least is

T5 having 2.087cm. For height gain, T4 gains 144.46 cm followed by T3 of 138.42 cm, T5 of 137.63 cm, T2 of 132.34 cm and T1 with 122.12 cm.

Same trend happens on it yield performance to which the average mean of T4 greatly dominated the other on both ears of corn harvested at 68th days after transplanting as fresh one for boiling for food for pleasure eating. T4 obtain the main weight per ear of 382.27 g, followed with T2 with 297.67, T5 with 284.97 g, T1 with 261.42 and T3 of 258.76 g. For the harvested dry corn ears after 85 days after transplant and intend for seeds purposes shows that T4 again gain the highest average mean of weight of individual corn ear of 10.29 g followed with T3 with 10.02 g, T1 with 9.93 g, T2 of 8.87 g and the least is T5 with a mean of 8.73 g. It is noted further that T2 obtain the lowest mean performance of milky white corn.

Keywords: *Concentration, Disposable Plastic Cups, Growth Performance, Fertigated, Yield Performance*

TRICHANTHERA LEAF MEAL AND THE EARLY DEVELOPMENT OF MALE AND FEMALE NILE TILAPIA (OREOCHROMIS NILOTICUS) GONADS

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ABSTRACT

The study assessed the condition of the ovary and testes of juvenile Nile tilapia Oreochromis niloticus fed with Trichanthera gigantea leaf meal (TLM) for a duration of one month reared in backyard scale aquaponics system. Specifically, the tilapia gonadal development by morphological, histological, and biochemical analysis on three feeding treatment groups consisting of pure commercial feed (T0), 50% TLM (T1), and 100% TLM (T2), were determined. Feeding was done twice daily with 0.5g/fish/feeding at stocking density of 36 juveniles/tank. After one month, female and male juvenile tilapia were smaller in size when given 100% TLM (T2) compared to T1 and to T0 but with significantly higher GSIs than T0 and T1 (5.84±2.61, pvalue<0.05). The estimated female fecundity of 2,184-7,344 oocytes (TL=11.5-16.3cm) was directly correlated to TL, BW, and GW and with remarkable mean oocyte diameter of 108-504um. The T2 testes were dominated by spermatids and mature sperm or advanced secondary growth phase and the surprising spent juvenile ovaries and testes on the 30th day of feeding experiment. It was shown that the juvenile tilapia ovaries and testes can be directly influenced by TLM in aquaponics. Results from this work are promising specifically for the breeders and fry producers.

COMPARATIVE EFFECTS OF FRUIT PEEL AND PSEUDO-STEM METHANOLIC EXTRACTS OF *MUSA × SAPIENTUM VAR. COMPRESSA* ON INDUCED SKIN WOUNDS OF ALBINO MICE (*MUS MUSCULUS*)

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ABSTRACT

Wound healing is a complex process that involves the regeneration of the physical structure and function of a disrupted tissue or skin. Many over-the-counter medications are used in treating different types of wounds but it may cause side effects. As an alternative, herbal medicines are used in treating wounds. Other species of Musa family have been established to promote wound healing. Since no detailed scientific data are conducted regarding the wound healing activity of *Musa* x *sapientum* var. *compressa* fruit peel and pseudo-stem, the proponents came up to study its wound healing effect. A total of 20 albino mice were used as a model for the infliction of wound. Three treatments were used: the Terramycin (To), *M* x *sapientum* fruit peel (T1) and *M* x *sapientum* pseudo-stem (T2). The treatments are applied twice a day until the wound is completely healed. The wound healing is observed based on the following parameters: Blood clotting, removal of redness and swelling, scab formation, removal of scab, scar formation and fur growth. Results showed that *M* x *sapientum* fruit peel is significantly different with Terramycin at 0.05 alpha in all the parameters except in scab formation while *M* x *sapientum* pseudo-stem only showed significant difference with terramycin in removal of redness and swelling. Therefore, *M* x *sapientum* fruit peel surpassed the ability of Terramycin to treat wounds while *M* x *sapientum* pseudo-stem has the same effectivess with Terramycin

Keywords: *Musa X Sapientum Var. Compressa, Wound Healing, Fruit Peel, Pseudo-Stem, Terramycin, Parameter*

COMPARISON OF QUALITY OF SPERMATOZOA FROM THE EXCURRENT DUCTS OF PHILIPPINE LOCAL CHICKEN RETRIEVED BY SWIM-UP AND MINCING METHODS

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ABSTRACT

In poultry species, semen cryopreservation is currently the most practical method for long-term storage of genetic material. The quality of semen serves as the indicator of the suitability of semen for cryopreservation. Only good quality ejaculates are used for cryopreservation as they are more likely to withstand the cryopreservation process. Dorso-abdominal massage is the

commonly used method of semen collection, however, urine, blood and fecal contaminations are often encountered in this method. Post-mortem epididymal sperm retrieval is an alternative method to do away with these contaminants and no studies on the characterization of spermatozoa retrieved from the excurrent ducts of Philippine roosters have been done. This study compared parameters of spermatozoa retrieved by swim-up method (SUM) and mincing method (MM) from the excurrent ducts of Philippine local chicken. Results showed that the motility, viability, concentration and percent abnormality of spermatozoa retrieved by SUM were not significantly different from those retrieved by MM which indicated that the retrieval method of spermatozoa from the excurrent ducts did not influence the resulting semen parameters and therefore both retrieval methods used yielded semen samples with comparable semen parameters and that good quality spermatozoa could be collected from the excurrent ducts of Philippine local chicken.

***Keywords**: Excurrent Ducts, Swim-Up Method, Mincing Method*

POTENTIALS OF AROMATIC RICE CULTIVARS PLANTED ON VARIOUS SPACING WITH VARYING LEVELS OF ORGANIC FERTILIZERS

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ABSTRACT

The study was conducted at the Sultan Kudarat State University, College of Agriculture, Lutayan, Sultan Kudarat from June to October 2013. This was conducted to determine the potentials of aromatic rice cultivars planted on various spacing with varying levels of organic fertilizers. Three replications were arranged in 3x2x5 factorial experiment in Randomized Complete Block Design. Treatment were composed of three (3) organic fertilizer as factor A, two (2) as factor B and Five (5) aromatic rice cultivars as factor C. Findings revealed that in terms of the number of tiller per hill, number of productive panicle, and plant height, there was a significant difference as indicated by the different growth parameters on the agronomic and yield characteristics of aromatic rice cultivars applied with varying levels of organic fertilizers. Likewise, in terms of physical characteristics, amylose content and crude protein exhibited a significant effects on the fertilizers used. On the other hand, there was no significant effects on aromatic rice cultivars applied with varying levels of organic fertilizers in terms of the number of days to panicle initiation, number of days to harvest, panicle length, filled grains, unfilled grains, weight of 1000 grains, yield (t/ha), grain size, grain shape, brown rice recovery, total milled recovery, head rice recovery, gelatinization temperature and even in insect pest and disease infection. In terms of plant spacing, it significantly affect the number of tillers per hill, number of productive panicle and crude protein of aromatic rice cultivars planted on various spacing applied with varying levels of organic fertilizers. However, there was no significant differences on the aromatic rice cultivars planted on various spacing applied with varying levels of organic fertilizers in terms of the number of days to panicle initiation, number of days to harvest, plant height, panicle length, filled grains, unfilled grains, weight of 1000 grains, yield (t/ha), grain size, grain shape, brown rice recovery, total milled recovery, head rice recovery, gelatinization temperature, and even in the insect pest and disease infection. In terms of aromatic rice cultivars planted on various spacing applied with varying levels of organic fertilizers, Basmati and NSIC RC 238 significantly affect the numbers of tillers per hill, number of days to panicle

initiation, number of productive panicle, number of days to harvest, filled grains, unfilled grains, yield (t/ha), grain size, brown rice recovery, total milled rice recovery, amylose content, gelatinization temperature and crude protein.

Keywords: *Agronomic Characteristics And Yield, Physicochemical Characteristics, Pests And Diseases, Organoleptic Characteristics, Cost And Return Analysis*

MORPHO-ANATOMICAL STRUCTURE AND DNA EXTRACT OF SUN AND SHADE LEAVES OF JUTE (*Corchoruscapsularis L.)*

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ABSTRACT

A study on the comparison of morpho-anatomical structure and DNA extract of sun and shade leaves of jute (*Corchoruscapsularis L.)* was done. Morphological structure of exposed jute (*Corchoruscapsularis L.)* are taller, leaves are lighter, thicker, bigger and broader than shaded. Anatomical form of exposed jute have many stomata on the leaf, two layered palisade and compact spongy layer of leaf lamina, compact cells of the mesophyll of midrib, compact parenchyma cells of the cortex of the stem, and larger vacuole in the pith of the stem. While shaded jute has less stomata on the leaf, one layered palisade and loosely arranged cells in the spongy layer of leaf lamina, loosely arranged cells of the mesophyll of midrib, loosely arranged parenchyma cells of the cortex of the stem, and small vacuole in the pith of the stem. In terms of DNA extract, exposed leaves of jute (*Corchoruscapsularis L.)* have more DNA extract than that of the shaded leaves. Thus, morpho-anatomical structure and DNA extract of exposed and shaded jute (*Corchoruscapsularis L.)* differ.

Keywords.*Jute, DNA Extract, Stomata, Mesophyll, Parenchyma, Palisade, Morpho-Anatomical Structure*

ENVIRONMENTAL AWARENESS AND ENVIRONMENT-RELATED BEHAVIOR AMONG COLLEGE STUDENTS: THE CASE OF A PRIVATE COLLEGE IN LAGUNA, PHILIPPINES

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ABSTRACT

Environmental issues have increasingly become important and received much attention, particularly because many environmental related problems, such as pollution and climate change, have progressively affected the lives of many people. To effectively deal with these problems it will require a well-educated and trained, professional work force with a sound understanding, knowledge and awareness about environment. This research looked at the level of environmental awareness and environment-related behavior of Business, Management and Accountancy students in a private college in Laguna, Philippines. Data were collected through questionnaire to 131 students as respondents. The data were analyzed by Pearson Correlation for relationship between environmental awareness and environment-related behavior and t-Test

for Independent Means. The results showed that the students have high environmental awareness and sound environment-related behavior. There is positive significant relationship between environmental awareness and environment-related behavior. However, it reveals that there is no significant different in the level of environmental awareness and environment-related behavior with respect to gender, major of the study, and years attended. Nevertheless, this study proposes that school should provide more information and knowledge about environment and integrate it into environmental education curricula to equip the students better for their work in the future.

EFFECTS OF SINGLE AND COMBINED SEED EXTRACTS OF *Sechium edule Jacq.* (CHAYOTE) AND *Cucumis melo L.* (MELON) IN THE BLOOD SUGAR LEVEL OF ALLOXAN-INDUCED *Mus musculus L.* (ALBINO MICE)

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ABSTRACT

The study evaluated the hypoglycemic effect of seed extracts from *Cucumis melo* (melon), *Sechium edule* (chayote) and combined plants. Crude extract (100%) was used in preparation for each of the plant species and 50%:50% for the combined effect. Twenty four (24) mice were induced with Type 2 Diabetes Mellitus using commercially available Alloxan Monohydrate. The following treatments were utilized in the study: T0 positive – Metformin-Glibenclamide (0.4 ml/day), T1- 100% chayote seed extract (0.4 ml/day), T2 – 100% melon seed extract (0.4 ml/day) and T3 – 50% melon and 50% chayote seed extract (0.4 ml/day). Results indicated that all seed extract treatments were effective in reducing the blood glucose level ($p < 0.05$). This may be due to the natural compounds including triterpenes, flavonoids, sterols, coumarins, saponins, tannins and polysaccharides. Hence, there is no significant difference ($p \geq 0.05$) on the ability of each treatment to reduce blood glucose level.

CATCHING TRIALS OF MULTIPLE HANDLINE USING COLORED SILK AS ARTIFICIAL BAIT

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ABSTRACT

This study used colored silk as bait of multiple hand line in catching fish contrary to the traditional bait of trash fish. Colored silk can be reused many times in contrast to the trash fish which is used only once. Four fishing replicates were done using red, orange, green, yellow green and blue silk. Orange has the highest catch of 7,200 grams and the species of fish caught were stripe mackerel (boraw or anduhaw) redspine threadfin bream (lagaw) brush teeth lizardfish (tambud) and round scad (malatindok or galunggong). Red silk came next with 6,300 grams and the species caught were brush teeth lizardfish (tambud) wraze (labayan) and round scad (malatindok or galunggong). Green silk has 3,690 grams and the species caught were Stripe mackerel (boraw or anduhaw), redspine threadfin beam (lagaw) and round scad (malatindok or galunggong), yellow green has 2,650 grams catch and the species are all stripe mackerel (boraw or anduhaw). Blue silk has a lowest catch of 1,000 grams and the species

caught are all redspine threadfin beam (lagaw). Considering that the fishing operation was done for about 4 hours only (7am-10am) this fishing method can be a good source of additional income.

Keywords: *Fishing Operation, Replicates, Trash Fish, Catch, Bait*

COMPARATIVE STUDY ON THE ANGIOGENIC EFFECT OF THE CRUDE LEAF EXTRACT OF *Sandoricum koetjape Merr.* (SANTOL) AND *Chrysophyllum cainito Linn.* (STAR APPLE ON THE CHORIOALLANTOIC MEMBRANE OF A 10 DAY-OLD DUCK EMBRYO

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ABSTRACT

Angiogenesis is a normal and important process in the body both during normal and pathological conditions. It literally means the formation of new blood vessels. The study tested two plant samples to determine their angiogenic effects on a 10 day-old chick embryo via choriallantoic membrane assay. The leaves of Santol (*Sandoricum koetjape Merr.*) and Star Apple (*Chrysophyllum cainito Linn.*) are the plant samples used, wherein 500 grams of each sample are collected. The samples were homogenized and extracted using cheesecloth. Different concentrations of 100 ppm, 200 ppm, and 300 ppm of each plant extract were prepared and administered to the chorioallantoic membrane of the chick embryo. After 48 hours of incubation, the CAM of the chick embryos was harvested and the number of collaterals was counted. The collaterals of the control group were compared to the different plant concentrations of the experimental plants groups. The results showed that both plant exhibited an inhibitory effect because there is a decrease number of collaterals. Compared to both plant, Santol has decreased more collaterals than Star Apple. Based on statistical analysis 300 ppm of Santol has better angiogenic effects than the rest for its leaves contains koetjapic acid that is not present in star apple.

Keywords: *Angiogenesis, Sandoricum koetjape, Chrysophyllum cainito, Santol, Star apple*

IN VITRO ANTI-INFLAMMATORY ACTIVITY OF THE CRUDE EXTRACT FROM THE THALLUS OF *Galiella* sp. A WILD FUNGUS COLLECTED FROM MT. PALALI

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ABSTRACT

Lifestyle ailments nowadays like diabetes, high cholesterol, high blood pressure, and even cancer are associated with chronic inflammation. Medical treatments are now available to these ailments but they offer limited benefits and unwanted side effects. Fortunately, medicinal mushrooms possess compounds that can inhibit inflammation process in diverse ways. However, mushrooms collected from the wild require adequate description of biologic features

for proper utilization. This study focused mainly on the evaluation of anti-inflammatory activity of *Galiella* sp., a wild edible mushroom collected from Mt. Palali, Nueva Vizcaya. *In vitro* anti-inflammatory activity was evaluated using Human Red Blood Cell (HRBC) stabilization method. Serial dilution technique was used to prepare various concentrations of the crude extract and *Diclofenac*, a known anti-inflammatory drug, was used as control. The prevention of hypotonicity-induced HRBC membrane lysis was taken as a measure of the anti- inflammatory effect. All the concentrations exhibited an effect on the membrane stabilization with a maximum percentage inhibition of 56.85%. Therefore, *Galliela* sp can be an anti-inflammatory agent however, these result need to be confirmed using in vivo models and clinical trials for its effective utilization as therapeutic agent.

Keywords: *Biological Activity, Anti-Inflammatory, Thallus*

BIOMETRY OF FRESHWATER AND SEMI-TERRESTRIAL CRABS OF CATANDUANES ISLAND, BICOL REGION, LUZON

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ABSTRACT

The freshwater and semi-terrestrial crabs of Catanduanes island in the Luzon Biogeographic Province (LBP) are studied on the basis of field collections carried out from 2004 to 2013 in selected rivers, streams, canals and other wetlands. A total of 120 crab samples were obtained, preserved and diagnosed in the laboratory for taxonomic characters. The crabs identified belong to four (4) families, namely: Potamidae ORTMANN, 1896; Parathelphusidae ALCOCK, 1910 (*sensu* NG, 1988); Grapsidae MCLEAY, 1838 (PARTIM); and Gecarcinidae MCLEAY, 1838. A potamid crab is identified as *Ovitamon* sp. from Solong Falls, San Miguel, Catanduanes. Although, the specimens examined from this watershed area show some striking morphological similarities with *Ovitamon artifrons* BURGER, 1894, the structure of male gonopodium (G1) does not resemble to that of the specimens described previously by Ng & Takeda (1992). Two riverine crabs belonging to the family Parathelphusidae are tentatively reported here as *Sundathelphusa* sp. 1 and 2 from the abaca plantation in the municipality of southeast if Catanduanes. Two species of the widely distributed grapsid crabs of the genus *Varuna* H. MILNE EDWARDS, 1830 are reported here (*Varuna litterata* FABRICIUS, 1798 and *V. altimana*). Among the semi-terrestrial crabs, *Sesarmops* (*Sesarma*) *impressum* H. MILNE EDWARDS, 1887 from the Lictin and the ancient Early Cretaceous river in Comagaycay in the municipality of San Andres in south western Catanduanes is also reported here. Finally, an unconfirmed semi-terrestrial grapsid crab living in felled abaca (*Musa textilis*) pseudostems is also described tentatively described as *Grapsus (Pseudograpsus*) sp.

Keywords: *Freshwater Crabs, Brachyuran, Catanduanes, Semi-Terrestrial Crabs, Biometry*

A GREEN DETERMINATION OF PHASE DIAGRAMS

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ABSTRACT

Phase diagrams are essential for science and technology. Researchers, R&D engineers, even jewelry craft makers use them to find materials suitable for their needs. The traditional determination of phase diagram costs energy, time and often is harmful for environment. Application of computational thermodynamics allows for saving resources as well as makes whole process more ecological. The paper shows application of the computational thermodynamics to determination of lead-free solder material and discusses influence this method on natural environment.

Keywords: *Phase Diagram, Science and Technology, Computational Thermodynamics*

POTENTIALS OF ORGANICALLY GROWN TRADITIONAL RICE CULTIVARS IN LOWLAND CONDITION

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ABSTRACT

Major problems of farmers in rice production in the Philippines are the pests and diseases, soil conditions, drought and other adverse climatic conditions resulting to the reduction of yields. This work presents yield performance of selected traditional rice cultivars grown in lowland condition and the economic value of traditional rice cultivars grown organically. The response of selected varieties on conventional and organic fertilizer management was studied using a split plot randomized complete block design replicated three (3) times. Result showed no significant difference between and among treatment means in all the parameter gathered. It was found that each cultivar had its own advantage over the others. Katipungan variety had lesser average number of unfilled grains per panicle and lesser number of unproductive tillers while Jasmine variety had the highest dry weight and number of filled grains per panicle it also had had the shortest plant height mean and has the earliest days to panicle initiation. Pinopoy variety had the longest length of panicle. Traditional rice varieties had the ability to withstand adverse conditions thus, must be recommended to be planted at areas to explore more its characteristics. Thus, the study was conducted to determine the yield of selected traditional rice cultivars grown in lowland condition and to determine the economic value of traditional rice cultivars grown organically.

Keywords: *Conventional Farming, Traditional Rice, Organic fertilizer, Rice Cultivars*

LARVICIDAL EFFECT OF SOLVENT- FREE CRUDE EXTRACT OF LEMON GRASS (CYMBOPOGON CITRATUS) AND SUGAR APPLE (ANNONA SQUAMOSA)

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ABSTRACT

The shocking increase of dengue incidents year after year is a concern of our health department and the society; incidents affect children and adolescent people. Nowadays, frequent recurring of floods is very alarming to the increasing cases of dengue. This study aimed to determine the larvicidal effect of the combined extract of lemon grass and sugar apple with the following objectives: to know the onset of action and potency of the larvicidal effect of lemon grass and sugar apple and to determine if is a significant difference of the larvicidal effect between the crude extract of lemon grass and sugar apple versus the commercially sold repellent spray. Experimental research design was employed. The data were analyzed using percentage on the onset of action and potency of lemon grass and paired t-test at 0.05 level of significance on the relationship between the combined lemon grass and sugar apple extract versus the commercially sold mosquito repellent spray. The study revealed that combined lemon grass and sugar apple extracts can be a good domestic biopesticides repellents for conventional mosquito repellent spray, moreover a cheaper way to make a mosquito larvae killer out of these herbs as these are widely available in our locality. Keywords: incident, larvicidal agent, extract, subsitute, conventional repellent, biopesticides repellent

Poster Presentation

QUORUM-QUENCHING ACTIVITY OF MORINGA OLEIFERA LAMS (MALUNGGAY) LEAVES AND FRUIT IN STAPHYLOCOCCUS AUREUS AND PSEUDOMONAS AERUGINOSA

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ABSTRACT

Quorum quenching (QQ) involves the mechanism of preventing bacterial communication through the detection of high cell density. Plant extracts have phytochemicals that have been found to have QQ capability, thus, this study made use of *Moringa oleifera* (Malunggay) leaf and fruit plant parts in aqueous and methanol solvents to determine its QQ activity against *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Preliminary disk diffusion assay of the plant parts did not display QQ against *Chromobacterium violaceum* since no inhibition of the production of violacein was found. *S. aureus* virulence assay testing for its DNase activity was reduced by *M. oleifera* leaf methanol, showing QQ, while alpha-hemolysis toxin production was not inhibited by all extracts, exhibiting absence of QQ. For *P. aeruginosa*, virulence assay on swarming motility and pyocyanin production were done. Swarming motility was inhibited by all extracts apart from *M. oleifera* fruit aqueous extract, demonstrating QQ. Pyocyanin production was inhibited by *M. oleifera* leaf methanolic extract with significance of ($P < 0.05$; $t = 0.5679$) using Independent T-test. The study reveals that *M. oleifera* leaf methanolic extract shows potential for QQ activity against *S. aureus* and *P. aeruginosa*.

Keywords: *M. oleifera leaf; M. oleifera fruit; Quorum quenching*

MOLLUSCICIDAL AND PISCICIDAL EFFICACY OF NICOTINAMILINE SULPHATE

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ABSTRACT

The molluscicidal and piscicidal efficacy of a commercial molluscicide containing nicotinamiline sulphate was evaluated. Molluscicidal evaluation included bioassay in laboratory conditions and in simulated field trial (with soil substrate) and were done in four replicates using Pond snail (Cerithidea cingulata). Piscicidal evaluation was done in triplicates using Tilapia (Oreochromis sp). The laboratory and piscicidal bioassays have six concentrations (20ppm, 10ppm, 5 ppm, 2.5ppm, 1.25ppm and 0 ppm) and the simulated field trial has four concentrations (20ppm, 5ppm, 1.53ppm and 0 ppm), with one concentration (1.53 ppm) based on package application rate. In all trials, 10 organisms were stocked for each replicate container and the bioassays were conducted for 96 Hr. Further, a schematics was designed to determine dead snails while dead fish was determined visually. Nicotinamaline sulphate was found to have low molluscicidal activity. Peak mean mortalities (<30%) were observed in the 72 Hr. In this period, significantly higher mortalities ($P < 0.05$) were observed in low concentration (1.25 ppm) in the laboratory conditions and in high concentration (20 ppm) in simulated field trial. The difference could be

due to snail response. However, it was toxic to fish with 96 Hr Lc50 value recorded at 3.497 ppm.

WATER QUALITY AND CHITOSAN-SAND FILTRATION TECHNIQUE FROM THE WATERS OF TAGUIBO RIVER, BUTUAN CITY

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ABSTRACT

Taguibo River has been subjected to alterations from natural and anthropogenic activities over the years. This study aimed to evaluate the temporal and spatial variation of water quality of the river by analysis of its bacterio-physico-chemical parameters and determined the effectiveness of chitosan-sand filtration to improve the river water quality. The study was undertaken for five months which covered four sampling stations defined according to possible factors that contribute alteration of the river. All the physico-chemical parameters at four sites in five months were within the standard acceptable value for Class A surface fresh waters except for DO (4.43mg/L) in site 3, pH (9.11) and EC (1686µS/cm) at site 4. Significant differences were found in average spatial variation of all physico-chemical parameters except for pH and temperature. Fecal coliform however, has exceeded the given standards of DENR. Occurrence of typhoon Henry, structural changes as well as domestic and industrial waste discharges has affected the river. The river water could not be used without further treatment. Chitosan-sand filtration results revealed no reduction of pH while TDS and EC reduction was found only at site 3 where pH is at its lowest. Chitosan binds effectively at low pH.

Keywords: *Taguibo River, Water Quality, Chitosan, Filtration*

INFLUENCE OF CONDITIONAL CASH TRANSFER PROGRAM TO THE LIVING CONDITION OF THE HOUSEHOLDS

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ABSTRACT

Almost half the world lives on less than $2.50 a day. Since of the growing poverty incidence around the world, some of the countries made several programs to alleviate the said poverty. One of which is conditional cash transfer programmes (CCT). This study aimed to assess the influence of the conditional cash transfer (CCT) to the living conditions of its beneficiaries. A descriptive correlational research design was utilized in this investigation. The personal outlooks of families enrolled in conditional cash transfer programs (CCT) were undecided. The study population included 161 households' beneficiaries in the village of Bunu-Anan, Catbalogan City, Samar. The program improves the lives of poor families through cash interventions incentives. The recipients, who were mainly women headed shows affirmation on the requirements of the government as a beneficiary. In identifying relationship personal outlook and their personal variates, it found out that the sex variable shows a significant relationship to the personal outlook. Another show significant relationship in terms of education and monthly family income. The findings should be taken with caution since the program is still on the early years and not

directly address the problem in terms of poverty alleviation, and cannot explicitly incorporate impact evaluations.

ACCEPTABILITY AND QUALITY EVALUATION OF SEAWEED FILLED PUTO BAGOL

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ABSTRACT

This study was conducted to determine the most acceptable puto bagol filling and determine the chemical, nutritional, microbial and heavy metal content. The fillings tested comprised of the commercial filling (100% coconut), and variations of this experimental fillings (i.e. 75% coconut+25% seaweed, 50% coconut + 50% seaweed, 25%coconut +75% seaweed and 100% seaweed). The taste panel was composed of 5 trained and 45 untrained tasters randomly chosen from would-be consumers of the product. The most accepted formulation was submitted to the Food and Nutrition Research Institute for microbial and chemical analysis and to the Regional Standard and Testing Laboratory, DOST, Cebu for heavy metal analysis. Regardless of filling, both commercial and experimental fillings were either "like very much" or "liked extremely" in terms of its color, aroma, flavor and texture. Heavy metals and minerals of the Puto Bagol with the highest acceptability rating were well below safe limits for food standards (1.6.1 PNS). Calcium, potassium, and Vitamin A contents were 9mg, 107mg and 8(ugRE) higher than the RENI (US-DRV) respectively, for males 19 years old and above.

Keywords: *Acceptability, Seaweeds, Kappaphycus, Puto bagol, Quality evaluation*

BUILDING A CULTURE OF RESILIENCY: UNIVERSITY OF SANTO TOMAS AS A CONTEXT

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ABSTRACT

This study analysed the strategies and policies of the University of Santo Tomas in collaboration with outside agencies such as LGUs and MMDA in addressing flood risks in the University. This study is based on the model entitled Disaster Risk Framework by Davidson (1997). The model views risk as the sum of hazard, exposure, vulnerability, and capacity measures of an institution. Interviews, participative observation, and review of related literatures were utilized in seeking pertinent data related to the study. Results show that the University, with its Crisis Committee Manual, has an extensive policy in preparation, response, and rehabilitation process on flooding events. The LGUs address flooding through clean-ups, providing transportation, and communication services to affected constituents. Whereas, the MMDA continuously dredge, declog, and desilt major drainage systems along the peripheries of the university. The LGUs and MMDA maintain close collaboration. Although all institutions are open to establish one, the university have no existing institutional arrangements with both LGUs and MMDA. In conclusion, it is essential for the university to establish and strengthen institutional arrangements with the LGUs and government agencies for a more holistic approach on flood management.

Keywords: *Hazard, Exposure, Vulnerability, and Capacity Measures.*

HOW SOCIAL NETWORKING AFFECTS THE STUDY HABITS OF THIRD YEAR BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING STUDENTS OF CEBU TECHNOLOGICAL UNIVERSITY – MAIN CAMPUS

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ABSTRACT

This study inquired into the lifestyle of third year Bachelor of Science in Electrical Engineering (BSEE) students of Cebu technological University – Main Campus in using the social networks which affect their study habits within the school year 2014 – 2015. The presentation, analysis and interpretation of data discussed the profile of the respondents in relation to their age, gender, attitude and study habits. It also tackled the accessibility of computers and the social networks and the number of hours allotted in using the social networks which could affect their lifestyle in studying their lessons. The gathering of data was undertaken using the necessary documents and the self-made questionnaires. There were twenty (35) respondents who were purposively chosen to answer the questionnaires. After the necessary data were collected, the same were collated and thereafter analyzed to establish a valid reliable findings, conclusions and recommendations. It was found out that majority of the respondents had the accessibility of using the social network sites and hooked up on the average of 5 hours per day during school days and 8 hours per day during weekends or holidays. It is very alarming because majority of them did not use internet for research but use it for gaming, interacting with other people and watching videos. Their school grades were affected by the heavy use of social networking. Lastly, the recommendations towards the regulated and controlled use of social networking were proposed to improve the study habits of third year BSEE students of Cebu Technological University – Main Campus.

Keywords: *Social Networking, Study Habits, BSEE Students, Gaming, Interacting, Watching Videos*

POSSIBLE SEDATIVE EFFECT OF ETHANOIC LEAF EXTRACT OF *Arachis pintoi* on *Mus musculus*

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ABSTRACT

This study generally aimed to determine the possible sedative effect of *Arachis pintoi* on *Mus musculus.* The process that was conducted in testing the ethanoic leaf extract of *A. pintoi* was to test different concentration of *A. pintoi* to evaluate the sedative effects on the brain measurable by the reflex activity of *Mus musculus. A. pintoi* Leaf Extract (APLE) was obtained by using the rotary evaporator. Animal experiments were performed De La Salle University –Dasmariñas. For the administration, three tests were used to evaluate the sedative effect of APLE, the Flip Test, Water Test, and Heat Stimuli. Three concentrations of APLE was given, 50%, 75% and

100%, in addition, chlorpromazine was also induced as the positive control. It was found that in every reflex test, the movement and the reflex activity of the mice at 50% concentration of APLE has decrease the most and yielded a significant difference compared to the 75% and 100% concentration of APLE. Hence, the optimal concentration is the 50% concentration of APLE. The suspected compound responsible for sedation is Linalool, Linalool is effective at dosages 200mg/kg to 100mg/kg which was closest to the dosage of the 50% concentration of APLE, 250 mg/kg.

Keywords: *Arachis pintoi, Sedative, Linlool*

TEACHERS' INSTRUCTIONAL STRATEGIES AND PUPILS' INTEREST TOWARDS MATHEMATICS

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ABSTRACT

Generally, this study was conducted to examine the teachers' instructional strategies in Datu Montawal District, Datu Montawal, Maguindanao on their grade six pupils' interest in Mathematics subject for the school -year 2014-2015. Specifically, this ascertained the teachers' instructional strategies in terms of discourse, cooperative learning, problem-solving and technology-aided learning; the degree of pupils' interests towards Mathematics, such as; confidence, importance, complex activities, enjoyment and motivation towards Mathematics. It futher examined the significant influence of teachers' instructional strategies in terms of discourse, cooperative learning, problem-solving and technology aided learning on the pupils' interest towards Mathematics such as: confidence, importance, complex activities, enjoyment and motivation towards Mathematics.Purposive sampling was utilized in determining the 291 Grade six pupils as respondents in the selected elementary schools of Datu Montawal District, in Datu Montawal, Maguindanao. Majority of the respondents oftentimes observed their teachers employed instructional strategies like discourse, cooperative learning, problem-solving and technology aided learning and likewise; they also oftentimes observed their interest through confidence, importance, complexity, enjoyment and motivation on their Mathematics subject. On the basis of the results, the teachers' instructional strategies such as: discourse, cooperative learning, problem-solving and technology aided learning significantly influenced pupils' interest in terms of confidence, importance, complexity, enjoyment and motivation on their Mathematics subject. It is deduced that teachers' instructional strategies in Mathematics suited the learning needs of the pupils.

Keywords: *Teachers, Instructional Strategies, Pupils' Interest, Mathematics*

DETECTION OF ANTIMICROBIAL DRUG RESIDUES IN COMMERCIAL EGGS AND CHICKEN

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ABSTRACT

The uncontrolled and unlimited use of antimicrobial drugs has led to the build-up of residues in the treated animals as well as their products. This study was conducted in order to determine the prevalence of antimicrobial drug residues in chickens and commercial eggs. A total of 15 whole chickens and 15 eggs were collected in five poultry farms in Cavite. Different parts such as legs, thighs, wings, breast, neck, and liver, and eggs were homogenized and subjected to agar well diffusion assay to detect drug residues. *Salmonella* Typhi and *Escherichia coli* were used as the test bacteria. Ten of the 15 (66.7%) chicken samples rendered positive to drug residues whereas one of 15 (6.7%) egg samples was positive to drug residues. There was a significant difference (p=0.044) between chicken and egg samples. Of the chicken parts that were tested, the liver accounted for the highest percentage of residues in which 40% of the 15 samples showed resistance and is the most significantly different (p=0.05). The presence of drug residues is not associated (p>0.05) to the site of collection nor the test bacteria used. However, the presence of these antimicrobial residues may pose health risks to consumers.

Keywords: *Residues, Commercial Eggs, Chicken*

DETECTION OF THE PARASITES FOUND IN IMUS RIVER AND ITS *Ipomoea aquatica* FORSSK. (WATER MORNING GLORY) IN CAVITE PHILIPPINE

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ABSTRACT

Parasitic infection has been a global health problem over centuries, especially on the developing countries like Philippines. Imus River has been a standard source of water and food consumption in many ages, wherein *Ipomoea aquatica* or Water Morning Glories are in most abundant. The present study attempts to evaluate the presence of possible parasites attached in *Ipomoea aquatica* and in the waters of Imus River in the three different sampling points: the upstream, midstream and the downstream. The results of the present study have shown that out of all 78 samples, an array of 10 parasites were detected with seven (7) waterborne pathogens (eggs of *Hymenolepid* and *Trichurid*, *Trichuris lobus,* an unfertilized *Ascaris,* species of *Isospora* and *Balantidium*), trematode (*Schistosoma japonicum),* an unknown oocyst, *Trichomonas tenax* and one unknown parasite with *Trichomonas vaginalis,* has been reported with the highest abundance (92.65) found in the plant samples of *I. aquatica.* Furthermore, it has been concluded there is higher diversity in the water samples than of the plant and upstream among the three sampling points of Imus River.

Keywords: *Parasite, Ipomoea aquatica, Water Morning Glory, Imus River*

TAXONOMIC STUDY OF MARCHANTOPHYTA (*LIVERWORTS*) IN IMUGAN, STA FE, NUEVA VIZCAYA, PHILIPPINES

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ABSTRACT

Bryophytes are usually small organisms, typically green, and lacking some of the complex structures found in vascular plants. These include mosses, hornworts and liverworts. These groups are all moisture loving plants and grow on a wide variety of substrates but differ in their anatomical features. Here, we subjected two specimens of liverworts for taxonomical characterization collected from mountain of Imugan, Santa Fe, Nueva Viscaya. Morphological measurements were recorded while authentication process was made by the National Museum of the Philippines. We have described and classified each specimen up to genus level. These were *Conocephalum sp.* from which under the class Marchantiopsida, order Marchantiales and family Conocephalaceae and *Pellia* sp*.* which is under the class Jungermanniophyta, order Metzgeriales and family Pelliaceae. These two specimens of liverworts varies in their morphological characteristics as well as in their physical parameters.

Keywords: *Bryophytes, Conocephalaceae, Pelliaceae*

PERFORMANCE MANAGEMENT SYSTEM VIS-À-VIS ITS ADHERENCE CYCLE

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ABSTRACT

Human resources are an agency's most valuable asset. They define the efficiency, effectiveness and over-all quality of service in any industry. The government sector is no exception. The need to establish an effective system that accurately evaluates the performance of its workers for the purpose of determining tenure, transfers or promotions, and appropriate incentives is of absolute urgency. The purpose of this study is to determine the performance management system in the College of Arts and Sciences, Cebu Technological University-Main Campus, Cebu City for the Academic Year 2010-2012. Specifically: to examine the performance appraisal report of the faculty: as to teaching competencies; professionalism; and services to the college and the community; supervisor: as to professional competence; supervisory competence; leadership skills; and personal characteristics; students/clientele: as to management; and performance. The descriptive-qualitative fish-bowl method was utilized in this study. Our study indicates that based on the implementation, the Cebu Technological UniversityMain Campus particularly College of Arts and Sciences, Very Satisfactorily Complied the variables indicated as success indicator of the Performance Management System (PMS) for the Academic Year 2010-2012.

Keywords: *Teaching Competencies; Professionalism; Professional Competence; Supervisory Competence; Leadership Skills; and Personal Characteristics*

EFFICIENT PUBLIC SERVICE DELIVERY MODEL FOR GOVERNMENT OFFICIES

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ABSTRACT

This study analyzes the implementation of the public services of the practitioners in the in the government office, in the implementation of Anti-Red Tape Act of 2007 otherwise known as Act to Improve Efficiency in the Delivery of Government Service to the Public by reducing Bureaucratic Red Tape preventing Graft and Corruption, and Providing Penalties; in a government offices and agencies including local government units and government-owned and controlled corporations among national and local agencies of Metro Cebu for calendar year 2014, towards efficient model. The salient findings of the study are the following: The implementation of the public services of the practitioners in the government office, in the implementation of Anti-Red Tape Act of 2007 among national and local agencies of Metro Cebu for calendar year 2014 was implemented. However, the existing law was partially accepted by the clients.

Keywords: *Public Services, Feedback Mechanism, Implementation Of ARTA*

EFFECTS OF COMBINED *Zea mays* L. (CORN) HUSK AND *Spirulina platensis* ON N-PHENYLANTHRANILLIC ACID (MEFENAMIC ACID)-INDUCED NEPHROTOXICITY *Rattus norvegicus* (WISTAR RAT)

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ABSTRACT

The kidney, as one of the essential organs in the human body, has numerous functions such as removing waste products from the body and stabilizing body's chemical processes. However, these functions and metabolic activities of this excretory organ can also be disrupted by some biologic agents. The study assessed the nephroprotective effects of *Zea mays* L. (corn) husk and *Spirulina platensis* on mefenamic acid-induced nephrotoxicity Wistar rats. Mefenamic acid was administered to the control and treatment groups for seven days. Corn husk and *Spirulina* extracts were given to the three treatment groups according to different combined concentrations of 25%:75%, 50%:50%, and 75%:25%, respectively. Blood urea nitrogen, serum creatinine, renal size index and histologic features of the kidneys were examined and showed insignificance difference ($p>0.05$) among the treatment group. Histopathologic assessment indicated no further damage after the administration of extracts. The findings suggest that corn husk and *Spirulina* extracts have nephroprotective effects on the kidneys of the test organisms.

Keywords: *Zea mays L., Spirulina platensis, Mefenamic Acid, Nephrotoxicity*

ASSESSMENT OF THE DIVERSITY OF MANGROVE SPECIES AND ITS CARBON STORAGE CAPACITY INBRGY SAN RAFAEL IV MUNICIPALITY OF NOVELETA, CAVITE

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ABSTRACT

Mangrove forests are well-documented as effective carbon sink and believed as potential solution to mitigate human-induced climate-change. The current study performed a preliminary assessment on carbon storage capacity of the rehabilitated mangrove area in Barangay San Rafael IV, Noveleta, Cavite using reconnaissance survey method. Two sampling sites were purposively selected with 6 plots each measuring 10 m x 10 m quadrats. Using standard calculations, the DBH of adult trees were measured for the determination of tree carbon density and soil samples were analysed for the soil and bulk carbon densities. Diversity indeces (H') of 0.5301 and 1.0631 were calculated for site 1 and site 2, respectively, with *Avicennia marina* as the most abundant mangrove species. As predicted, site 2 has higher soil carbon density of 174.67 t/ha^{-1} with 125 mangrove trees. Surprisingly, site 1 has higher tree carbon density (39.88 t/ha^{-1}) than site 2 (4.86 t/ha^{-1})due to the presence of more fully developed trees. Overall, the Total Carbon Stock (161.13 t/ha^{-1}) of the area can be credited to the existing mangrove vegetation as a major determinant of carbon storage. T-test ($p < 0.01$) revealed a positive relationship between mangroves and its carbon storage capacity: more trees would mean higher carbon stock in the soil and biomass. In conclusion, high carbon storage capacity of the on-going mangrove rehabilitation project in Noveleta serves as good indicator and efficient approach for climate change mitigation and adaptation for the local community.

Keywords: *Mangrove Forest, Reconnaissance Survey, A.Marina, Climate Change, Carbon Stock*

ASSESSING THE RESISTANCE AND BIOREMEDIATION ABILITY OF BACTERIAL SPECIES ISOLATED FROM MINE TAILINGS OF BENGUET, PHILIPPINES TO COPPER AND CHROMIUM

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ABSTRACT

Bacterial populations associated with Philex Mines' tailings pond in Itogon, Benguet were isolated and cultured. Isolates were screened for tolerance to copper and chromium at concentrations 0.5 mM, 3.0 mM, 6.0 mM, 10.0 mM, 15.0 mM, 30.0 mM and 50 mM. At 50 mM concentration of copper and chromium, a total of 14 aerobic, copper and chromium- tolerant bacteria were cultured for phylogenetic analysis and bioremediation potential. Analysis of 16S rDNA revealed that the isolates were phylogenetically affiliated with Phylum Firmmicutes, Actinobacteria, and Proteobacteria, represented by the genera *Bacillus, Staphylococcus,*

Micrococcus, and *Pseudomonas.* The isolates were further characterized based on their efficiency to bioremediate the heavy metals copper and chromium. Results showed that *Bacillus circulans* was the most efficient bioremediator of chromium at 5.0 mM which reduced the metal present in solution by 36.25% and *Staphylococcus lentus* for chromium at 20.0 mM with 25.18 %. For copper remediation, *Micrococcus luteus* was able to bioremediate the said metal by 82.08 % at 5.0 mM and *Bacillus subtilis*by 23.83% for 20.0 mM copper. This study showed the presence of bacterial strains that can be exploited for use in bioremediation of copper and chromium.

Keywords: *16S rRNA Gene Analysis, Bioremediation, Mine Tailings, Heavy Metals*

PHYSICO-CHEMICAL AND MICROBIOLOGICAL QUALITIES OF VIRGIN COCONUT OIL

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ABSTRACT

Virgin coconut oil is one of the coconut meat products that can be served as food supplement. This study determined the physico-chemical and microbiological qualities of virgin coconut oil. Specifically, this determined the physico-chemical quality of virgin coconut oil based on moisture and volatile matter, color, percent Lauric fatty acid, peroxide value, iodine value, iron, copper, lead & arsenic and microbiological quality particularly *Staphyloccocus aureus*, *Salmonella*, *E. coli* and *Coliform count*. Based on laboratory analyses conducted by the Plant and Soil Analysis Laboratory and Product Quality Control Laboratory, the newly extracted virgin coconut oil had physico-chemical quality results of 0.19% moisture & volatile matter; 0.2R/1.2Y color (5 ¼" cell); 0.09% Lauric fatty acid; 7 meq/kg peroxide value; 0 iodine value 0.072 ppm Fe, 0.005 ppm Cu, ≤LLD (0.0001 ppm Lead and Arsenic; and negative results for *Staphyloccocus aureus*, *Salmonella* and *E. coli* and ≤ 10 cfu/ml for *Coliform* count. Thus, the quality of virgin coconut oil met the grades and standards sets by the Philippine Coconut Authority, Diliman, Quezon City.

Keywords: *Quality, Virgin Coconut Oil, Physical, Chemical, Microbiological*

BRIGADA ESKWELA TO IMPROVE KEY PERFORMANCE INDICATORS

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ABSTRACT

This study endeavored to determine the variables on Brigada Eskwela to improve key performance indicators, in terms of; conceptual skills, human skills, and technical skills of managers; and the extent of the DepEd Brigada Eskwela program implementation in terms of resource mobilization, participation of stakeholders, social marketing and linkaging. Further, it determined the significant relationship between the management skills and the key performance indicators such as; access, quality and efficiency; the significant relationship between the Brigada Eskwela Program and the key performance indicators; the significant influence of the management skills to dependent variables of the study in terms of: (a)Conceptual skills with

access, quality and efficiency, (b) Human skills with access, quality and efficiency, and (c) Technical skills with access, quality and efficiency. (6) Is there significant influence of the Brigada Eskwela Program in terms of: (a) Participation of stakeholders with access, quality and efficiency, (b) Resources mobilization with access, quality and efficiency, (c) Social marketing with access, quality and efficiency, and (d) Linkaging with access, quality and efficiency. The study employed descriptive survey method using structured questionnaire to gather information and correlational research method. The survey questionnaires were distributed to the 100 respondents; 60 at Cotabato City division and 40 at Tacurong City division. The non-parametric statistics was used on the descriptive data such as Pearson product moment correlation and regression. The study result showed that the conceptual skills, human skills, and technical skills of the school administrators were all rated above average.
The Brigada Eskwela Program indicator on resources mobilization, stakeholders' participation, social marketing, and linkages/partnership were all rated above average.

***Keywords**: Brigada Eskwela, Performance Indicators, Secondary school, Elementary School, Region XII*

ANALGESIC EFFECT OF CRUDE LEAF EXTRACT OF BASIL (*OCIMUM BASILICUM)* TO ALBINO MICE (*MUS MUSCULUS)*

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ABSTRACT

Pain is a natural condition yet unpleasant sensory experienced by millions of people worldwide caused by damaging stimuli. Phytochemicals present in many plants are long established centuries ago. Owing to its medicinal properties and one of the well-known spices in the world, Basil was tested its analgesic effect on 16 male albino mice. Using RCBD, three pain tests were employed to the mice: Tail Clip, Tail Flick, and Tail Immersion with three treatments of leaf extracts: T1 = 5 ml/kg, T2= 10 ml /kg and T3=15 ml/kg body weight of albino mice while T0= 2 ml/kg distilled water served as negative control. Results showed that among the treatments, T1 had the most delayed reaction time in reference to the control group. Furthermore, the mean average of time demonstrated that both Tail Clip and Tail Immersion Tests had the lowest pain sensitivity at 60 mins while Tail flick test showed highest in resistance to pain at 30 mins. Two-way ANOVA ($p<0.05$) revealed that Tail Clip test had a significant difference between treatments and time while Tail Immersion test had a significant difference among treatments but not among time. Surprisingly, Tail Flick test had no significant difference among treatments and among time.

***Keywords:** Crude Leaf Extract, Basil, Ocimum Basilicum, Mus Musculus*

ANTIMICROBIAL RESISTANCE OF *SALMONELLA SPP.* ISOLATED FROM CHICKEN INTESTINES IN SELECTED POULTRIES IN CAVITE

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ABSTRACT

A study was performed in order to determine the proportion of samples positive to *Salmonella* spp. isolated from chicken intestines. The antimicrobial resistance profile of the isolates and its multidrug resistance was also identified. A total of 9 samples were collected and purchased from Tagaytay City, Dasmariñas City and Imus City. Using the conventional culture method, all of the nine samples rendered positive with a total of 32 isolates conforming to *Salmonella* spp. With the use of oxidase test, nine isolates rendered negative, indicative of *Salmonella* spp. It was further confirmed using the API kit leading to a result of three isolates conforming to the characteristics of *Salmonella* spp. In the antimicrobial susceptibility testing, two of the isolates were resistant to ampicillin, chloramphenicol, co-trimoxazole and tetracycline showing multidrug resistance whereas one isolate was resistant to ampicillin.

Keywords: *Antimicrobial Resistance, Conventional Culture Method, Salmonella Spp.*

IMPACT OF FOREST CONVERSION TO OIL PALM *ELAEIS GUINEENSIS* PLANTATIONS ON AVIFAUNAL DIVERSITY

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ABSTRACT

Oil Palm (*Elaeis guineensis*) is one of the recently introduced crops in Palawan. Its widespread monoculture plantations replaced most of the promising bird habitats such as riparian forests, secondary forests and some portions of residual primary forest. To determine the impact of forest conversion to oil palm plantations on bird community, standard avifaunal transect walk surveys were conducted from August to November 2013 in selected oil palm plantation and adjacent primary forest in Aborlan, Palawan. The species richness, abundance and diversity index of birds in oil palm monoculture plantation were compared with bird community in the nearest primary forest. The study unfolded that the bird community in oil palm plantation was depauperate as indicated by the extremely low species richness, abundance and diversity index relative to the primary forest. The low community similarity index between oil palm plantation and primary forest indicated that most of the forest dwelling species were replaced with open dwelling generalist species. A remarkable decline in the number of species and abundance of endemic and high conservation priority birds in oil palm plantation further emphasized the impact of widespread oil palm plantations. Conserving extant forest fragments within or near the oil palm plantations is highly recommended.

Keywords: *Oil Palm, Avifauna, Forest*

TRUST LEVEL OF STAKEHOLDERS ON THE PERCEIVED EFFECT OF COMPREHENSIVE AGREEMENT ON THE BANGSAMORO (CAB)

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ABSTRACT

This research aimed to assess the trust level of stakeholders on the perceived effect of Comprehensive Agreement on the Bangsamoro (CAB) in Datu Montawal District, Maguindanao. Specifically, it aimed to find out the socio-demographic characteristics of the respondents, the trust level of stakeholders on Comprehensive Agreement on the Bangsamoro (CAB) particularly on Annex on Transitional Modalities and Arrangements, Annex on Revenue Generation and Wealth Sharing, Annex on Power Sharing, and Annex on Normalization. It likewise determined the perceived effect of the respondents on societal development in terms of political, economic, social, cultural, and spiritual. Further, it determined the significant influence of socio-demographics on the level of trust in the components of CAB; the significant influence of socio-demographics on the perceived effect particularly societal development; and the significant influence of trust level on CAB components particularly the perceived effect on societal development in Datu Montawal District, Maguindanao. Complete enumeration was used to get the stakeholders participation with total number of 9 barangays rated by 150 respondents. Data gathered were tabulated and the demographic characteristics of the respondents were analyzed using the frequency and percentage. Trust level of stakeholders was analyzed using mean, while hypothesis were tested using multiple linear regression techniques. The findings revealed that respondents had 51 years old and above; most were females and were college graduate. As to the affiliation, 25 were engaged in business and 9 were in the government. Respondents had trust on the CAB and agreed on the perceived effect on societal development.

Findings revealed further that socio- demographic characteristics of the respondents significantly influenced the CAB Annex on Transitional Modalities and Arrangements, , Annex on Power Sharing, and Annex on Normalization and on societal development in terms of political and economic. It revealed further that the trust level of the respondents influenced the stakeholders' perception on societal development in terms of political, economic, social and cultural but did not influence on spiritual. CAB Annex on Normalization and power sharing were considered significant predictors. Based on the findings of the study, it is concluded that stakeholders had trust on Comprehensive Agreement on the Bangsamoro (CAB).

Keywords: *Bangsamoro, Comprehensive Agreement, Transitional Modalities, Arrangement, Power Sharing*

DETECTION OF ENDOPARASITES AND ECTOPARASITES IN *Pterygoplichthys disjunctivus* (JANITOR FISH) FOUND IN LAGUNA DE BAY

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ABSTRACT

The study aimed to determine the endoparasites and ectoparasites in *P. disjunctivus* found in Laguna de Bay. The researchers also determined the occurrence of the detected parasites, and

which organ had the highest parasitic load. Twenty (24) live *P. disjunctivus* were randomly collected in Laguna de Bay at Pila, Laguna. Thermal Shock Freezing was done to retain the fresh condition of the fish. For the examination of external organs, mucus scrapings were collected from the skin and fins of the fish. As for the examination of internal organs, the fish was dissected longitudinally on its ventral side to expose its internal organs. Mucus scrapings and contents collected from the intestinal organs and internal organs were placed on a glass slide, stained with methylene blue, and mounted with a cover slip. Observations were done using a photomicroscope. The parasites detected and identified found were *Acanthocephala*, *Dactylogyrus sp., Isospora sp,, Toxocara sp.,Gyrodactylus sp.*, and Trichodina. Results show that *Dactylogyrus sp*. was 41.50% of the total parasites detected and exhibited the highest occurrence. The organ which had highest parasitic load was the skin. The researchers recommend the further detection of parasitic infections of *P. disjunctivus* in other areas of Laguna de Bay.

Keywords: *Janitor Fish, Laguna de Bay, Fish Parasitism, Fish Parasitology, Parasitology*

PREVALENCE AND PARASITE BURDEN OF Cryptosporidium spp. IN Perna viridis (ASIAN GREEN MUSSEL) IN 3 DIFFERENT SITES IN BACOOR BAY DURING WET SEASON

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ABSTRACT

This is a descriptive study of the prevalence and parasite burden of Cryptosporidium spp. in Perna viridis (Asian Green Mussel) in the wet season. The samples were collected in the wet season of the year 2014. The collection of the green mussels will be distributed in three sites in Bacoor Bay. Cryptosporidiosis is one of the most communal enteric infectious diseases of humans, affecting patients in both the developing and developed world. It is also one of the causes of diarrheal disease worldwide and is known as anthropozoonotic parasites because it is transmissible from animals to humans. This protozoan parasite, if not diagnosed, can be life-threatening for immunocompromised patients while others can be subjected to severe acute illness. Though Cryptosporidium spp. is commonly associated with cattle and swimming pools, researches have evidence that their oocysts can survive in marine water.

PREVALENCE AND INTENSITY OF ENDOPARASITES IN THE HINDGUT OF COCKROACHES AND ITS RELATION TO THE KNOWLEDGE, AWARENESS AND PRACTICES OF THE HOUSEHOLDS IN BRGY. SAN ISIDROLABRADOR II DASMARIŇAS CITY

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ABSTRACT

The study determined the prevalence and intensity of the endoparasites within the hindgut of cockroaches and knowledge, awareness and practice of households in Brgy. San Isidro Labrador II Dasmariñas City. In this study, 75 cockroaches were collected from 15 households. All cockroaches were caught by the use of pesticide. Direct smear and Giemsa staining were used to identify the endoparasites. All households were given survey to assess their knowledge, awareness, and practice on dealing with cockroaches. The results showed that 88% of the cockroaches harbored parasitic organisms. Of these, 17.3% were protozoa, 20.0% were helminthes and 50.7% were infected with both. Of the protozoa, species included *Chilomastix mesnili* (9 trophozoite, 9%), *Entamoeba hystolitica* (38 cyst/trophozoite, 27.3%), *Giardia lamblia* (4 cyst/trophozoite, 3.0%), Isospora belli (54 trophozoite, 33.3%), *Microsporidia* sp. (214 spores, 9.0%), and *Trichomonas tenax* (22 trophozoite, 3.0%). The helminthes species that were identified included *Ascaris lumbricoides* (308 eggs, 57.5%), *Dipylidium caninum* (160 eggs, 10.6%), *Enterobius vermicularis* (7 eggs, 9.0%), *Schistosoma spp.* (7 eggs, 4.5%), and *Taenia spp.* (136 eggs, 34.8%). Survey resulted in high level of knowledge and awareness, yet low level of practice on dealing with cockroaches. These results showed that cockroaches contribute to parasitic infections in the area.

Keywords: *Endoparasites, Protozoa, Helminthes, Cockroaches, Dasmariňas City*

ASSESSMENT OF COMMERCIALLY IMPORTANT MARINE INVERTEBRATES IN SELECTED AREAS IN ANDA, PANGASINAN, NORTHERN PHILIPPINES

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ABSTRACT

A survey was conducted to assess the status of the commercial marine invertebrate resources in Anda, Pangasinan. For echinoderms, 10 species of sea cucumbers were recorded in 3 sampling stations (Cabungan, Imbo, and Imondayon), of which two were commercially important Stichopus horrens and Actinopyga echinites, and only 1 commercially important sea urchin Tripneustes gratilla was found particularly in one site (Imondayon). Holothuria scabra noted to be found in the surrounding areas was not osberved within the belt transects. For molluscs, only 2 high-value gastropods were observed, the abalone, Halitois asinina and top shell Trochus niloticus. Many other molluscs are found but considered low-value or non-commercial species and gathered only for home consumption and/or for the shell trade. Low densities of these commercial marine invertebrates were found in the survey sites. Based on interviews, the artisanal multi-species fishery is at present primarily based on 3 sea cucumbers - Holothuria scabra, Stichopus horrens and Bohadschia marmorata, one sea urchin, Tripneustes

gratilla, and two gastropods, Haliotis asinina and Trochus niloticus, although there are indications that other high-value species were fished to local extinction. For sea cucumbers, the small sizes (<15 cm body length) observed in this study, their low population densities, and the continuous decrease in catches are clear signs of an overexploited fishery that will likely collapse without management intervention. The abalone fishery is likewise observed to be overfished with densities of 1 individual per 300 m2, a density much lower than earlier surveys. Adaptive management strategies for Anda, such as protection of critical nursery areas where juveniles of high-value species were found, stock enhancement, size restrictions, and mariculture to serve as reproductive reserves and supplemental livelihood, are recommended based on the findings of this survey.

DETECTION OF PARASITES IN *Chanos chanos* (MILKFISH) AND *Oreochromis niloticus* (NILE TILAPIA) FROM LAGUNA DE BAY

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ABSTRACT

Fishes provide great benefit to the human population from food source to business venture. Despite all the benefits that fishes provide, fishes like other animals, are also susceptible to disease-causing parasites that may affect fish health, fish productivity, and in some cases, human health. This research determined the presence of parasites in 15 *Chanos chanos* (Milkfish) and 15 *Oreochromis niloticus* (Nile tilapia) collected from Laguna de Bay covering San Pedro, Laguna via purposive sampling. Standard protocols were used in the process of euthanasia and the extraction of the fishes' organs. Compression method was applied in each fish tissue stained with methylene blue before observing under a compound microscope. Overall, 26.67% of *Chanos chanos* (Milkfish) and 73.33% of *Oreochromis niloticus* (Nile tilapia) examined were positive for parasites with *Dactylogyrus sp.* being the predominant parasite species in both fishes. This study concluded that *Oreochromis niloticus* (Nile tilapia) was more susceptible to parasitic infections than *Chanos chanos* (Milkfish).

Keywords: *Laguna de Bay, Chanos chanos, Oreochromis niloticus, Dactylogyrus sp.*

HAZARD ANALYSIS CRITICAL CONTROL POINT PRACTICES OF NORTHERN CEBU FOOD CATERERS

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Main Campus

ABSTRACT

Hazard Analysis Critical Control Point practices are vital for food caterers for the safety of the consumers. The research focused on how the identified food caterers of Northern Cebu, practiced the hazard analysis critical control point before and during preparation of foods and serving food to consumers. In this study, the researchers conducted baseline data on how the food caterers protected the consumers by observing the safety practices before, during and after the catering event. Out of 10 identified food caterers of Cebu City, Danao City and

Carmen, Cebu, the food caterers protected the consumers by preparing the foods at controlled temperature, utensils are heat treated before, during and after serving the foods, the personal hygiene are observed by the crews. Thus, safety practices of the identified food caterers should be sustained.

Keywords: *Food Caterers, Safety Practices, Northern Cebu*

CARBON STOCKS OF SELECTED CANARIUM OVATUM ENGL. (PILI) TREES IN SORSOGON PROVINCE, PHILIPPINES

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ABSTRACT

Canarium ovatum Engl. or pili is widespread in the Bicol provinces of the Philippines. Its nut is commercially important being demanded in the global market with the likes of almond and macadamia. It is also ecologically valued being a durable wood product. Pilus is recognized as a reforestation tree in the country's National Greening Program and as a windbreak tree in typhoon belt areas. The present study employed the non-destructive biomass estimation method and calculated the carbon content at 45%. Pili trees with promising characteristics were identified by farmers from ten villages in the municipality of Gubat Sorsogon province. A total of 76 female trees of different ages were investigated. The mean diameter breast height (DBH) ranges from 53.12 $\pm$ 10.89 cm to 95.47 $\pm$ 10.37 cm. Moreover, the inventoried trees have a mean total aboveground biomass (AGB) value of 30,749.63 kilograms and store 12.45 tons of carbon.

Keywords: *Pili Tree, DBH, Biomass, Carbon Stock, Sorsogon*

GENDER PARTICIPATION IN WATERMELON PRODUCTION

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ABSTRACT

In the Philippines that is predominantly agriculture; men and women play different roles within particular systems of agricultural production, and occupy different socioeconomic positions as a result of these different roles. With the important role of women in rural growth and agriculture development as independent food producers or agricultural workers, this research is being conducted to determine gender participation in watermelon production. This is to possibly encourage greater participation of women in watermelon production in order to promote greater productivity among women in the rural areas. Descriptive survey research design was employed to 42 farmers as respondents from the major producers of watermelon in Western Pangasinan namely Alaminos City, Anda and Bani. Results of the study show that watermelon farmers are predominantly males who are middle adults and adults, head of the family, non-professionals and are generally poor. Females can actively participate in the production of watermelon as shown by the fact that many of the activities can be performed by both gender except with fertilizer application and pest management.

Keywords: *Socio-Economic Profile, Socio-Economic Status*

INVESTIGATING THE RISK-REDUCTION CLAIMS OF DIETARY SUPPLEMENT BASED ON EXPERIMENTS IN CANCER-INDUCED MAMMARY GLAND IN ALBINO RATS.

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ABSTRACT

The therapeutic claims of a commercial dietary supplement to a cancer induced albino rat was determined, different dosage of the supplement was applied to each set (T0, T1, T2, T3) of the sample; T0 having no supplement dosage, T1 having 1 dosage/day, T2 having 2 dosage/day, and T3 having the maximum 3 dosage/day, after 30 days of supplement taking, we performed the cancer induction for two days having 1 dose (0.01mg) of DMBA per day. The researchers conducted a biopsy in order to observe the prevention of cancer growth. The results showed that the supplement didn't take effect in preventing the carcinoma on growing in the mammary gland of the albino rats.

Keywords*: DMBA- 7,12-Dimethylbenz[a]anthracen, Dietary Supplement, Albino rats*

EFFECTS OF *CAULERPA LETILLIFERA* (LATO) EXTRACT IN BLOOD CHOLESTEROL LEVEL OF *MUS MUSCULUS* (ALBINO MICE)

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ABSTRACT

This study was undertaken to determine the possible effects of *Caulerpa lentillifera* (lato) extracts on lowering the blood cholesterol level of albino mice. Various concentrations of lato extracts were prepared and orally administered to the mice two times a day for four weeks. 18 albino mice were divided into 3 treatment groups, T1 (50%), T2 (75%), and T3 (100%) lato extract. Each treatment was done in duplicate. The mice were acclimatized for 7 days before administration of high fat diet was given. After acclimatization, two weeks was given for the induction of pellets with commercial margarine to obtain hypercholesterolemia on the mice. Thereafter, four weeks was allotted for the administration of treatments. Three sets of blood samples were collected: After acclimatization, after high fat diet, and after treatment. Blood samples were analyzed using a Kernel multi check device. Results show that each concentration significantly decreased the blood cholesterol levels of albino mice. Similarly, the efficiency of each treatment to reduce the blood cholesterol level manifest significantly difference. The results are indicative of efficiency range of $T_3>T_2>T_1$. The ranking shows that the more the concentrations, the more it is effective in lowering the blood cholesterol level. 50% lato extract was the least effective, 75% lato extract was the second most effective, and the pure 100% lato extract which was the most effective of all the treatment. This may be attributes to its

bioactive compounds such as dietary fibers, essential fatty acids, vitamins and minerals present in different dosages. Thus, the higher dosage of the seaweed extracts, the more it is effective.

Keywords: *Cholesterol Level, Blood Serum, Cholesterol, Hypercholesterolemia*

ANTIMICROBIAL SCREENING OF ISOLATED ACTINOMYCETES FROM DE LA SALLE UNIVERSITY - DASMARIÑAS ECOLOGY CENTER

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ABSTRACT

The study aimed to uncover the potency of actinomycetes found in compost soil as antibiotic-producing bacteria that act against pathogenic microorganisms such as *Bacillus cereus, Pseudomonas aeruginosa*, *Staphylococcus aureus, Escherichia coli* and *Candida albicans*. The soil samples utilized were collected from a composting area located at De La Salle University-Dasmariñas, Cavite. The novel actinomycetes were isolated in specific media by the use of Glycerol Yeast Extract Agar. A total of 4 actinomycetes strains were subjected for isolation and screening for their *in vitro* antagonistic activities against a panel of test microorganisms. The actinomycetes strains were subjected to primary screening using Cross perpendicular streak method on nutrient agar and secondary screening performed by Disc-diffusion assay. The isolated actinomycetes expressed antimicrobial properties with high inhibitory potential against the five test microorganisms. This study implied that actinomycetes isolated from unexplored environments namely, composting areas, can be great sources of modern antibiotics treating such pathogenic microorganisms which were resistant to some antibiotics.

Keywords*: Actinomycetes, Antibiotics, Compost soil, Isolation, Screening, Pathogens*

COMPARATIVE ANTI-INFLAMMATORY ACTIVITY OF Jatropha pandurifolia Andr. (SHANGHAI BEAUTY) LEAF AND ROOT METHANOLIC EXTRACT IN FORMALIN-INDUCED PAW EDEMA IN Mus musculus (ALBINO MICE)

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ABSTRACT

The pursuit for new anti-inflammatory agents from unexplored plants, like Jatropha pandurifolia Andr., holds a promise. It has been ethnopharmacologically used as a healing agent and belongs to Family Euphorbiaceae, along with J. curcas and J. gossypifolia which were studied for their anti-inflammatory properties. In this study, the anti-inflammatory activity of J. pandurifolia was confirmed in formalin-induced edema. The J. pandurifolia root and leaf methanolic extracts were investigated for possible anti-inflammatory activity against formalin-induced edema. J. pandurifolia root and leaf extract was orally administered to mice with formalin-induced paw edema within the root (T1) and leaf group (T2), respectively at a dose of 200 mg/kg body weight for seven days. Control group (T0), which were also injected by 2% formalin, did not receive any treatment. Inflammation in the mice was determined by monitoring volume and thickness of paw using water displacement method and vernier calliper. Paw edema was significantly decreased by the oral administration of J. pandurifolia root and leaf

methanolic extracts. However, J. pandurifolia root extract showed higher anti-inflammatory activity, basing on percent inhibitions. These results strongly suggest the presence of optimal anti-inflammatory agents in root methanolic extract while leaf methanolic extract of J. pandurifolia possesses moderate anti-inflammatory agents.

EVALUATION OF THE NATIONAL IRRIGATION ADMINISTRATION (NIA) PROJECTS IN KABULNAN

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ABSTRACT

The study was conducted at municipalities of Ampatuan, Shariff Aguak, Mamasapano, Datu Unsay and Datu Saudi Uy Ampatuan primarily to evaluate the project performance of the National Irrigation Administration in Kabulnan specifically to: a.) determine the impact of the NIA projects to the economic condition of the farmer community through their household income; b.) evaluate the project implementation of the National Irrigation Administration in Kabulan; c.) determine the extent of project inputs implemented by the National Irrigation Administration in Kabulnan; d.) correlate systems project implementation with the NIA project implementation performance. The respondents were randomly selected among members of the National Irrigation Administration-Farmers Irrigators Association. Descriptive statistics and Pearson's correlation was used in the analysis of data. The average age of the respondent was 34 years old, and all male. Three point nine (4) was the average number of family, with an average farming experience of 7.5 years, and they are all member of the National Irrigation Farmers Irrigators Association. Fifty Eight percent or majority obtained elementary education and their income is within the poverty line. The results of the study revealed that the National Irrigation Administration office obtained a performance rating of 66%-85% in terms implementing project such as Diversion works, Concrete canals, Service roads, and terminal facilities. It also disclosed the poor performance rating (46%-65%) NIA-Regional level in the implementation of farmers training, including monitoring and extension activities. Pearson correlation analysis revealed that Irrigation Facilities and Equipment & Vehicles claimed highly significant relationship to NIA project implementation performance with correlation coefficients of r=0.461 & r-0.449 respectively. Nevertheless, statistical analysis posted insignificant effect of the communal project with the overall performance of the National Irrigation Administration in Magindanaw.

***Keywords**: NIA Projects, Evaluation, Diversion Work, Concrete Canals, Service Roads*

DEVELOPING HUMAN CAPITAL ON ENVIRONMENTAL ADVOCACIES THROUGH ONLINE LEARNING AND REPOSITORIES

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ABSTRACT

Integration of environmental advocacies to programs and curriculum has long been implemented to support measures for sustainable development. The recent natural hazards and catastrophes' because of the Philippines geographical location, thereby learning institutions and universities upheld to augment data back-ups and data center risk mitigation strategies. This has been implemented through online repositories, use of online databases and the tenet of internet of things. Using these online repositories as supports for e-learning and promotion of a paperless classroom thereby it managed 21st century learners practiced the 21st century skills. This paper presents the software application used and customized for the administration, documentation, tracking, reporting and delivery of electronic educational technology for information technology and engineering courses. The researchers employed mixed quantitative and qualitative methodology. Researchers designed survey questionnaires have been administered to randomly selected higher education students of Jose Rizal University. Based on the results, Moodle, Schoology, Wikispaces, Blackboard Learning System, and Edmodo were the most commonly used learning management. With this, the variety of learning management system being used by learning facilitator should be given a mandate by the university to have a parallel system aside from Moodle which have been used by the university Institute of Technology-Based Learning to flip the classrooms of general education courses. Further studies should be conducted to validate and assess the effectiveness of the learning management and identify another LMS based on the university needs.

Keywords: *E-Learning, Paperless Classroom, Human Capital Investment, Learning Management System, Flipped Classroom*

INTEGRATIVE APPROACH TO THE DEVELOPMENT OF TECHNOLOGIES AND APPLICATIONS ON ENVIRONMENT, DISASTER PREVENTION AND DISASTER MONITORING

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ABSTRACT

The College of Computer Studies and Engineering of Jose Rizal University research program is multi-faceted and reflects the diverse demands for knowledge associated with existing, emerging, and increasingly complex engineering and information technology-based issues involving environment, technologies, medical, instructional, and disaster prevention and monitoring. This paper presents technologies and application designed and developed gauge to a resounding social significance, economic value, environment and cultural benefit locally and internationally. The researchers used descriptive secondary data analysis and environment scan. Based on the results, the researches include automated agricultural system, irrigation system, smart house technologies, mobile applications for soil characterizations, information systems for primary sectors of the economy and renewable energy. These are under the strands and priority areas Internet of Things and Cloud computing, Scientific Computing and Technology Entrepreneurship, Game Development, Web Sciences, robotics and motion planning, embedded, real-time, and hybrid systems. The results showed that integrating environment as research areas aid the higher education students in developing engineering solutions towards building responsive agents, resilient community and sustainable development.

Keywords: *Integrative Approach, Environment Scan, Disaster Prevention, Emerging Technologies, Automation*

PERFORMANCE AUDITING OUTCOMES: EVALUATING THE EFFECTIVENESS OF RESEARCH ADVISOR IN UNDERGRADUATE RESEARCHES AND SYSTEM DEVELOPMENT

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ABSTRACT

Research methods are imperative courses for any higher education degree program in like-minded institutions. The College of Computer Studies and Engineering research program is multi-faceted and reflects the diverse demands for knowledge associated with existing, emerging, and increasingly complex engineering and information technology-based issues involving environment, technologies, medical, instructional, and disaster prevention and monitoring. The research must be of high quality as it produces new knowledge, contributes to the existing repositories and provide societal impact and significant implications for policy development and project implementation. Research adviser plays crucial role, from the facet of knowledge and ignition of ideas, as research supervision is an integrative part of knowledge transfer. This paper investigates the effectiveness of the program and measures the survival rate of the information technology student researchers from proposals to camera ready papers. The researchers employed mixed quantitative and qualitative methodologies. Statistical Process Controls (SPC) has been used in the study including Supplier, Input, Process, Outcome and Customer (SIPOC) model were used to capture environmental and technical requirements. Based on the results, First Yield Pass depicts group researchers survival rate is 81%. The study

revealed that supervisions provided support in students writing skills, structured documentation and system development, appropriateness of materials and tools monitoring of deliverables, communication, and independence. The study showed that the program is effective and that the university must develop a comprehensive policy related to the program. Further studies should be done by empirical investigation of the same program on the university level.

***Keywords**: Technical Adviser, System Development, Statistical Model, Performance Auditing, Research Outcomes*

PERFORMANCE OF GRADE 1 PUPILS IN ENGLISH AND MATHEMATICS USING MOTHER TONGUE INSTRUCTION IN SELECTED PRIVATE AND PUBLIC SCHOOLS

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ABSTRACT

The study determined the performances of Grade 1 pupils in English and Mathematics subjects using mother tongue instruction in selected private and public schools. Specifically, it attempted to answer the respondents' profile with regards to age, gender, and educational attainment of the parents; performance of the pupils in English and Mathematics subjects in private and public schools and find out whether or not there is significant difference between the two mentioned subjects when mother tongue instruction is being used. As per findings as to age, pupils aged six and below were the highest number of enrollees in both public and private schools while on gender, male pupils have the higher number of enrollees than the female pupils in both public and private schools. On educational attainment, the high school graduate parents have the highest number of percentage. As for academic performance in public and private schools in Mathematics and English subjects, Advanced (A) got the highest percentage of 28.91 and 27.34 percent, respectively. When the performances in Mathematics and English subjects of the two schools were correlated, it was found out that that the null hypotheses of the two subjects were accepted; hence, there is no significant difference between them.

***Keywords:** Mother Tongue, Performance, Correlation, Significant Difference, Academic Performance*

GRADUATE TRACER STUDY OF THE BACHELOR OF SCIENCE IN HOSPITALITY MANAGEMENT OF THE CEBU TECHNOLOGICAL UNIVERSITY DAANBANTAYAN CAMPUS

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ABSTRACT

This study sought to gather information on the employability of the graduates of the four-year Bachelor of Science in Hospitality Management It further determines the percentage of graduates from 2009-2013 who are employed and their employment profile. It used the descriptive-normative survey method using the questionnaires adapted from the CHEd and was

quantified using simple percentage. As per findings of the study, with regards to their personal profile, most of them were female, single and 27-29 years old. As to employment status, most of them were employed but contractual and worked in hotels and restaurants in Cebu City. There were few who worked abroad. Furthermore, the respondents' reasons why they stayed for more than a year in their job were: Because of the salaries and wages, the job is related to special skills and it is a career challenge for them and as to the source of information in finding their first job, they are "walk-in" applicants and others responded to an advertisement. As to the length of time in landing their first job, they said, it took them 7-11 months of waiting and they were hired because of human relation skills followed by their communication skills.
Keywords: *Employability, Contractual, "Walk-In", Hiring, Skills*

SUSTAINABILITY OF HIGHER EDUCATION INSTITUTIONS IN MUSLIM MINDANAO

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ABSTRACT

Generally the study aimed to determine the sustainability of HEI's through its resource capabilities, job performance of the employees, and various sustainability indicators. Three HEI's in Muslim, Mindanao were chosen as subject in this research, to wit: Upi Agricultural School-Provincial Technical Institute of Agriculture, Lanao Agricultural College and Gani L. Abpi College, Inc. The respondents were the faculty, staff and students of the said HEI's. The research instrument used in gathering data was a questionnaire checklist, and purposive stratified systematic sampling was used as sampling procedure. Based on the result of the study, the Resource Capability of HEI's was Moderate Adequate, in the aspects such as physical facilities, human resources capability, instructional facilities, and financial aspect. There are some items which were rated inadequate or weak, but generally, its resource capability is adequate. These situations attribute much to the sustainability of operation of the school. In terms of Human Resources Job Performance such as teaching competencies and personal and social competencies, it was rated Very Much Satisfactory. Sustainability Indicators such as Social Justice, Economic Viability, Cultural Acceptability and Ecological Friendliness were rated High or 81-90% sustainability. However, the Technological Soundness was rated Poor. The researcher hereby recommends that the identified weak aspects of the HEI's must be developed and improved to meet the best academic standards in the future and maintain HEI's sustainability. A similar study should be conducted to verify the veracity of this work, and an in-depth study should be conducted on the factors that influence the sustainability of HEI's in Muslim Mindanao.

Keywords*: Sustainability, HEIs, Muslim Mindanao, Resources Capability*

MICRONUCLEI AND NUCLEAR ALTERATIONS IN MUDFISH (*Channa striata*) ERYTHROCYTES FROM PAMPANGA RIVER AND CANDABA SWAMP

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ABSTRACT

The study generally aimed to determine the micronuclei and nuclear alterations in the mudfish (*Channa striata*) erythrocytes for evaluation of aquatic pollution in Pampanga River and Candaba Swamp. Heavy metal concentrations in both waters and gills were also determined using Atomic Absorption Spectrophotometer (AAS). The analysis of micronuclei and nuclear alterations from different stations of Pampanga River (S1–Station 1 and S2–Station 2) and Candaba Swamp (S3–Station 3 and S4–Station 4) had the following mean frequencies decreased in the order of S3(6.85)>S4(6.81)>S2(1.70)>S1(1.48) for micronuclei; S1(0.29)>S2(0.07)>S4(0.04) for lobed nuclei; S1(1.18)>S3(0.85)>S2(0.52)>S4(0.33) for blebbed nuclei; S4(0.48)>S1(0.44)>S3(0.33)>S2(0.18) for notched nuclei; and S1(0.41)>S4(0.26)>S2(0.11) for binucleated. Water samples from all stations were detected for the presence of <0.006 ppm Cadmium and <0.05 ppm Lead; both Stations 1 and 2 had 0.01 ppm Arsenic, while Stations 3 and 4 had <0.01 ppm and 0.5 ppm Copper, respectively. Fish gills were also detected for the presence of Arsenic in Stations 1 (0.06 ppm) and 2 (0.03 ppm), while 0.4 ppm Copper in Stations 3 and 4. The study successfully established a baseline data on micronuclei and nuclear alterations of the four stations which could be used as basis for further toxicological test and possible remediation.

Keywords: *Micronucleus, Nuclear Alteration, Channa Striata, Erythrocyte, Heavy Metal*

GENOTOXICITY ASSESSMENT OF *Perna viridis* (GREEN MUSSELS) USING MUSSEL MICRONUCLEUS CYTOME (MUMNCYT) ASSAY IN BACOOR BAY, BACOOR CAVITE

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ABSTRACT

This study aimed to identify if selected mussel harvesting sites in Bacoor bay may contain genotoxicants as revealed by the presence of micronucleus in the hemolymph of green mussels (*Perna viridis*) using the method of Mussel Micronucleus Cytome Asssay (MuMNCyt). Micronucleus is an established indicator of genotoxins present in the environment. Only agranular hemocytes which contain the micronucleus from the hemolymph of mussels were considered for assessing genotoxicity. Three sites in the bay were considered. A total of 60 mussels were harvested from the three sites. Approximately, 0.02 ml of hemolymph was collected from the posterior adductor muscle of each mussel and underwent histotechnique preparation using Giemsa Stain Set. The mussels obtained from the three sites in Bacoor bay were found to exhibit micronucleus. Occurrence of micronucleus from the mussels harvested from the three sites indicated that there may be a presence of genotoxins in Bacoor bay coming from its surrounding residential and industrial areas. The mean occurrence of micronucleus in Site 1, 2, and 3 were 5.85, 2.00, and 7.55 respectively.

Keywords: *Genotoxicty, Perna viridis, Micronucleus, Agranular Hemocyte, Bacoor Bay*

THE PERFORMANCE OF MICROCONTROLLER-BASED COMPUTER COOLING SYSTEM

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ABSTRACT

Monitoring the temperature inside the System Unit of a computer is critical task, to ensure the performance is not disturbed by excessive temperature. This paper presents an innovative prototype design of a microcontroller-based computer cooling system with smart characteristics. The device uses AT89C2051 microcontroller and DS18B20 Thermal Sensor. It is equipped with a seven-segment display to provide monitoring of the System Unit's temperature. In the Philippine setting, it is necessary to incorporate a separate cooling system to maintain computers from getting damaged by heat since these computers where designed in other countries where the room temperature is much lower. The aim of this project is to cool components inside the System Unit to avoid damage to hardware parts. The microcontroller will take the temperature reading from the temperature sensors. It will then make decisions whether to turn on the fan and control its speed depending on the temperature of the heated component or to keep it off if its temperature is lower than the trigger temperature. T-test revealed that the computer that uses the Microcontroller-based Computer Cooling System exhibits lower temperature as compared to the computer that uses the built in cooling system in its chassis. This implies that the device provides benefit in cooling the heated components inside the System Unit.

Keywords: *Temperature, Microcontroller, Thermal Sensor, System Unit, Cooling Fan*

DETECTION OF THE PARASITES FOUND IN IMUS RIVER AND ITS *Ipomoea aquatica* FOR SSK. (WATER MORNING GLORY) IN CAVITE PHILIPPINES

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ABSTRACT

Parasitic infection has been a global health problem over centuries, especially on the developing countries like Philippines. Imus River has been a standard source of water and food consumption, wherein *Ipomoea aquatica* or Water Morning Glories are in most abundant. The present study attempts to evaluate the presence of possible parasites attached in *Ipomoea aquatica* and in the waters of Imus River in the three different sampling points: the upstream, midstream and downstream. A total of 18 500mL river water and 60 plant samples were collected from Imus River, detected with parasites by subjecting to water decantation and isolating the plant sediments via centrifugation and identified for possible manifestations. The results of the present study have shown an array of 10 parasites detected including seven waterborne pathogens (eggs of *Hymenolepid* and *Trichurid*, *Trichuris lobus,* an unfertilized *Ascaris,* species of *Isospora* and *Balantidium*), trematode (*Schistosoma japonicum), Trichomonas tenax* and one unknown parasite and an oocyst with *Trichomonas tenax,* has been reported with the highest abundance (141.4) found in the plant samples of *I. aquatica.*

Furthermore, it has been concluded there is higher diversity in the water samples than of the plant and upstream among the three sampling points of Imus River.

Keywords: *Parasite, Ipomoea aquatica, Water Morning Glory, Imus River, Trichomas tenax*

PREVALENCE OF ECTOPARASITES IN EXOTIC PETS FOUND IN THE PROVINCE OF CAVITE

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ABSTRACT

Purchasing exotic animals as pets has gained popularity, thereby increasing the selling, smuggling and the trading business of endangered animals. One of the effects of exotic animal trading is that these animals, when captured, become isolated from their natural habitats. This situation can lead to problems such as diseases, stress and malnutrition. This research determined the presence of ectoparasites in 30 vertebrates obtained from selected households in Cavite via purposive sampling. Ectoparasites were recovered from the animals through acetate strip method and removal by forceps. The parasites recovered were preserved in several mixtures of ethanol from 75% to 95% followed by soaking the specimen in xylene and observed under a photomicroscope. Among the exotic pets examined, only the *Columba livia (Rock pigeon)* was found positive of the ectoparasite *Columbicola columbae (*10.53%). This study concluded that exotic pets were highly maintained in households and birds like pigeons are susceptible to ectoparasites due to its environmental exposure.

Keywords: *Ectoparasite, Parasite, Exotic Animals, Birds, Pets*

PRELIMINARY STUDY OF BAT ECTOPARASITES IN SITIO COSIP, BAYUGAN 3, ROSARIO AND TAGBAYANGBANG BUNAWAN, AGUSAN DEL SUR

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ABSTRACT

Agusandel Sur has a wide variety of habitat types that harbour several number of bat species however their ectoparasites are least studied. Rosario and Bunawan sampling area were located in the surrounding areas of mining sites in Agusan del Sur. Mist netting was employed in various habitat types for each sampling area for 8 nights, 10 species were captured in Rosario and had a diversity of H'=1.89, most abundant species *Ptenochirus minor*(23.17%), H'=1.68 in Bunawan with 11 bat species captured, most abundant *Cynopterus brachyotis (*45.65%).The morphology of bats, their ectoparasites taxonomical classification, prevalence, mean abundance and intensity were determined. Bats ectoparasite collected in Rosario and Bunawan belong to the family Spinturcinidae (abundant), Glycyphagidae, Ischnopsyllidae, Nycteribiidae and Streblidae. With sufficient number of individuals, the most infested bat species were *Ptenochirus minor* and *Rousettus amplexicaudatus*. 88.24 % of *Ptenochirus minor* and 75% of *Rousettus amplexicaudatus* were infested. In Rosario, Nycteribiidae infested bat family Pteropodidae,

Streblidae infested family Rhinolophidae and Spinturcinidae infested both Pteropodidae and Rhinolophidae while in Bunawan most ectoparasites were collected only in bat family Pteropodidae. Adult bats have the highest infestation rate and male adult bats. Co-occurrence of bats ectoparasites was due to shared shelter that may cause transitory parasitism.

Keywords: *Prevalence, Ectoparasites, Co-Occurrence, Spinturcinidae, Parasitism*

ANTI-QUORUM SENSING ACTIVITY OF MEDICINAL PLANTS *Blumea balsamifera* L. (SAMBONG), *Momordica charantia* L. (AMPALAYA), AND *Quisqualis indica* L. (NIYOG-NIYOGAN)

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ABSTRACT

Quorum sensing (QS) controls the pathogenesis of many medically important organisms. Because of this, inhibition of QS appears to be a promising strategy to control these pathogenic bacteria. Anti-quorum sensing (AQS) is now being pursued and considered as a novel strategy to combat drug-resistant bacteria by attenuating bacterial virulence. Three medicinal plants namely, *Blumea balsamifera* L. (sambong), *Momordica charantia* L. (ampalaya), and *Quisqualis indica* L. (niyog-niyogan) were screened for the detection of AQS activity using *Chromobacterium violaceum* ATCC12472 through inhibition of its violacein production. Methanolic extracts of *M. charantia* and *Q. indica* inhibited violacein production, a QS-regulated behavior in *C. violaceum.* Methanol extraction of *M. charantia* gave the highest zone of inhibition with 14.6 mm followed by *Q. indica* with 8.3 mm zone sizes respectively. The inhibition of violacein production may be due to the direct or indirect interference of the QS system of *C. violaceum* by the constituents of the extracts sans the bactericidal or bacteriostatic effect. The findings indicate the potential of the medicinal plants as sources of anti-virulence drugs, a new mode of disease therapy without the fear of resistance development among bacteria.

Keywords: *Quorum sensing (QS), Blumea balsamifera L., Momordica charantia L., Quisqualis indica L., and Chromobacterium violaceum*

BENEFICIAL MICROBES CONTROL FUSARIUM WILT IN 'CAVENDISH' BANANA FARMS IN DAVAO REGION, MINDANAO, PHILIPPINES

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ABSTRACT

Fusarium wilt or Panama disease now threatens the 400 million-dollar export banana industry of the Philippines with the occurrence of *Fusarium oxysporum* f. sp. *cubense* Tropical Race 4 (Foc TR4). Field trials were conducted in 2013 and 2014 in three sites in Davao Region to test the efficacy of five microbial agents. Vesicular-Asbuscular Mycorrhizae (VAM), Effective Microorganisms Activated Solution (EMAS), *Trichoderma harzianum*, *Bacillus subtilis*, and Plant-Growth Promoting Rhizobacteria (PGPR) were applied individually or in combination with calcium nitrate on susceptible Grand Nain. VAM, *T. harzianum,* and EMAS and their combinations were further evaluated using Grand Nain while resistant Giant Cavendish Tissue-1vCultured Variants (GCTCV) 218 and 219 were treated with individual microbial agents. Microbial agents were applied as pre-plant, basal and post-planting treatments. Results of the field trials showed that, generally, combinations of VAM and *T. harzianum* or EMAS, and *T. harzianum* + EMAS, as well as VAM and *T. harzianum* applied individually significantly reduced Fusarium wilt incidence in Grand Nain. *T. harzianum* or EMAS significantly reduced the disease in GCTCV 218. Very low incidence was recorded in GCTCV 219. Based on the results, *T. harzianum,* VAM and EMAS are potential microbial agents against Fusarium wilt in 'Cavendish' banana.

Keywords: *Fusarium wilt, Microbial agents, Vesicular-Arbuscular Mychorrhizae, Effective, Microorganisms*

ANTIBACTERIAL POTENTIAL OF SELECTED *XYLARIA* SP. COLLECTED FROM MINALUNGAO NATIONAL PARK GENERAL TINIO, NUEVA ECIJA AGAINST *ESCHERICHIA COLI* AND *STAPHYLOCOCCUS AUREUS*

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ABSTRACT

This study was conducted to determine the antibacterial properties of the extracts of *Xylaria polymorpha* (Pers.) Greg., *Xylaria longiana* Rehm., and *Xylaria fissilis* Ces. against *Escherichia coli* and *Staphylococcus aureus*. Hot water and ethanol extraction were used in the study. The positive control used was streptomycin sulphate while distilled water served as the negative control. Results revealed that *Xylaria* species tested in this study exhibited antibacterial properties against the *E. coli* and *S. aureus.* Interestingly, the *X. polymorpha* having the largest zone of inhibition against *E. coli* was found to have similar result with that of the positive control after 12 and 48 hours of incubation. On the other hand, *X. longiana* ethanol extract showed the largest zone of inhibition against *S. aureus*, which are comparable to the positive control after 12 to 24 hours of incubation. The ethanol extract of the *Xylaria* species has the larger zone of inhibition observed against the two bacterial isolates compared to hot water extract. This suggests that ethanol extraction showed better than that of the hot water extraction in extracting bioactive compounds from the *Xylaria* species for the determination of its antibacterial potential.

Keywords: *Xylaria, antibacterial, bioactive compounds*

EFFECTS OF PHASEOLUS LUNATUS LINN. (LIMA BEANS) SEEDS ON THE BLOOD CHOLESTEROL LEVELS OF RATTUS NORVEGICUS (ALBINO RATS)

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ABSTRACT

Grain legumes have been known to be a major source of dietary fiber and plant sterols. Phaseolus lunatus or Lima bean, a legume, was studied for the purpose of knowing its effects on the blood cholesterol level of albino rats. A total of 24 albino rats were induced to have hypercholesterolemia for 1 week and treated with 5-gram and 10-gram powdered lima bean seed for 4 weeks. Blood cholesterol level of albino rats was tested every week and show that it lowered when treated with 5-grams and 10-grams lima bean seed by 10% and 27% respectively, in 4 weeks treatment. It also showed that the 10-gram treatment has greater effect in lowering the blood cholesterol level of albino rats compared to the 5-gram treatment. In conclusion, both treatments of P. lunatus are effective in lowering the blood cholesterol level of albino rats but a higher dosage gave a more significant result.

BACTERIOLOGICAL ANALYSIS OF PIPED WATER AND PURIFIED DRINKING WATER IN DASMARIÑAS CITY AND BACOOR CITY

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ABSTRACT

This study assessed the bacteriological quality of piped water and purified drinking water in Dasmariñas City and Bacoor City, Cavite. Forty-eight water samples were collected at random from two cities. The water samples were subjected to heterotrophic plate count (HPC) method. Afterwards, positive results from HPC were transferred to Salmonella-Shigella Agar (SSA) and Eosin Methylene Blue Agar (EMBA). The isolates from the SSA and EMBA were enriched to nutrient broth. In Dasmariñas City, 33.3% was observed in purified drinking water, while no sample rendered positive in piped water. In Bacoor City, both of the samples showed positive results. In purified drinking water, 33.3% was observed, while in piped water, 58.33% was positive to HPC. No significant difference ($p>0.743$) was observed between the type of water source in relation to HPC. However, there was a significant difference ($p=0.035$) between the sample collection site in relation to HPC. The 4 isolates were confirmed as *S*. Typhi (one isolate) and *E. coli* (three isolates) using analytical profile index (API) 20 E identification kit. This study concluded that water samples collected in two cities that showed positivity in HPC and presence of *S*. Typhi and *E. coli* are not safe for human consumption.

Keywords: *HPC, API, S. Typhi, E. coli*

DETERMINATION OF THE POLLUTION LOAD OF CAÑAS RIVER USING DIATOMS AS INDICATORS BASED ON THE ANTHROPOGENIC FACTORS

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ABSTRACT

The diatoms are one of the largest and ecologically most significant groups of organisms on Earth. They are also one of the easiest to recognize, because of their unique cell structure, silicified cell wall and life cycle. Diatoms are universal in the marine ecosystem despite marked gradients in environmental properties. Our studies have shown that diatoms in varying abundance were found at all times on the lake bottom, submerged rocks and other objects, but very few diatoms were found in the open water of the river. The samples were collected from the artificial substrata to be placed beside the river. Artificial substratum was an improvised device which is purposely placed for colonization of organisms such as diatoms. The study observed the anthropogenic impact, the possible wastes thrown or discharge in the river, population, and meteorological condition of Cañas river. The entire array of life in the river was affected due to the pollution load of water. The problem of water quality deterioration was mainly due to human activities such as disposal of industrial and sewage wastes and agricultural runoff which are major cause of ecological damage and pose serious health hazards.

EFFECTS OF Muntingia calabura (ARATILIS) AND Antidesma bunius (BIGNAY) FRUIT CRUDE EXTRACT ON THE BLOOD GLUCOSE AND CHOLESTEROL LEVELS OF ALLOXAN-INDUCED MALE ALBINO RATS.

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ABSTRACT

The effects of different concentrations of Muntingia calabura (Aratilis) and Antidesma bunius (Bignay) fruit crude extracts on the blood glucose an cholesterol levels of albino rats was determined in this study. Twenty-four (24) albino rats were used in this experiment and group into three treatments namely, T1–alloxan (120mg/kg) induced with bignay fruit extract, T2 – alloxan (120mg/kg) induced with aratilis fruit extract and T3 –alloxan (120mg/kg) induced with of combined aratilis and bignay extract with triplicates. Albino rats were subjected to a week of acclimatization. Prior to administration of crude extracts, alloxan was administered to induce hyperglycemia and hypercholesterolemia. Different treatments were intraperitoneally given to the rats for two weeks. Blood glucose kits and cholesterol kits were used in monitoring serum levels throughout the experiment. Results showed that of Muntingia calabura (Aratilis) and Antidesma bunius (Bignay) fruit crude extracts can significally reduce blood glucose and blood cholesterol levels ($p \leq 0.05$

PHYTOCHEMICAL SCREENING OF THREE SELECTED WILD TOXIC AND MEDICINAL PLANTS IN LUZON, PHILIPPINES

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ABTRACT

Phytochemical screening was conducted to determine the secondary metabolites present on toxic-medicinal plant ("Marapait/Pantaleon") of the Aeta in Imugan, Sta Fe, Nueva Viscaya, "Bilanti" from La Trinidad, Benguet, Province and plant ("Kadel") from the Dumagat communities in Casiguran, Aurora ("Kadel"). The determination of the plants as medicinal or toxic plants was based on ethnobotanical studies that have been conducted. Crude ethanol extracts of the selected plants were prepared and used for the detection of secondary metabolites. Presence of secondary metabolites was detected following the point scale system as follows; (+) present in trace amounts (++) present in appreciable amounts (-) phytochemical is not detected. Results showed that tannins were present in "Marapait/Pantaleon" (*Ageratina adenophora*) and "Bilanti" while saponins were present in both "Kadel" and "Bilanti" all in varying concentrations. Presence of tannins and saponins on the tested plants validates their use by the Aeta and Dumagat communities.

Keywords: *Tannins, Saponins, Phytochemical*

HEALTH NEEDS ASSESSMENT AS BASIS FOR PROGRAM DEVELOPMENT IN PALAWAN STATE UNIVERSITY

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ABSTRACT

This is a descriptive-correlation study on the health needs of PSU Narra students and the degree by which they were met as a standpoint for the formulation of a Health Services Program for said school. The study involved a random sample of six hundred twenty seven (627) students who answered a 58-item researcher made questionnaire about the four FRESH (Focusing Resources on Effective School Health) Core Components. The study found that majority of the students of PSU Narra were mostly 19 years of age, female, of low income, and on the first two years of Business Courses. They considered all four FRESH components namely health related policies, provision of safe water and sanitation, skills-based health education and school-based health and nutrition services as their health needs but that these needs were only FAIRLY MET by the school.The health component with the largest gap between need and degree met was in the area of Skills-based Health Education.Only sex and curriculum year had a significant relationship with the students' health needs.Moreover, women are more likely concerned about skills-based health education and the school's health related policies. On the other hand, freshmen and sophomores were the ones more likely concerned about all the health needs under study. Consequently, a Proposed Health Program is brought forward that focuses on skills-based education and health-related policies for students of lower

levels. Emphasis is also made on sex education especially for female young adolescents who compose the majority students who have been found to need these health services the most and have found the school lacking in the same.

A STUDY ON THE ANGIOGENIC EFFECT OF LEAF EXTRACT OF *Plumeria acuminata* Ait. (KALATSUTSI) ON THE CHORIOALLANTOIC MEMBRANE OF A 10 DAY-OLD DUCK EMBRYO

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ABSTRACT

The study determines the angiogenic effects of the leaf extract of Kalatsutsi on the chorioallantoic membrane (CAM) of a 10-day old duck embryo and if there are any significant differences on the different concentrations administered on the CAM. The sample plant was tested at different concentrations, 100 ppm, 200ppm and 300 ppm, respectively. This test aimed to attain sufficient and accurate data, which determined the validity of the potential of *P. acuminata* as a promoter or inhibitor. The extract was injected to the test eggs through a small hole, and then sealed afterwards. The test eggs were incubated for another 5 days then were harvested for observation of the chorioallantoic membranes. The number of collaterals per test eggs were counted, added up and averaged every test. In the concentration 100ppm and 300ppm, number of collaterals were noticeably high comparing it to the control group thus, making this concentration a promoter of angiogenesis. However in 200ppm, number of collaterals were low compared to the control group therefore, making this concentration an inhibitor of angiogenesis.

Keywords: *Angiogenesis, Chorioallantoic Membrane, P. Acuminata*

GROWTH PERFORMANCE OF RED YEAST (MONASCUS PURPUREUS) ON DIFFERENT VARIETIES OF MILLED RICE GRAINS

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ABSTRACT

Red yeast (Monascus purpureus) which naturally produces a red pigment is traditionally used by the buro (fermented rice and fish) makers in the Philippines to enhance its color and appearance. This fungus is inoculated on milled rice grains until red coloration of the grains is attained. The red yeast – coated milled rice grains popularly called as angkak is being sold in the different wet markets in the buro producing provinces of Pampanga, Bataan, Nueva Ecija, Tarlac and Pangasinan. The technology for the non – science based production of angkak by the local people is based on the traditional knowledge which the angkak producers learned from their ancestors. Our research team attempted to develop a science-based production technology for angkak. Initially, we evaluated the growth performance of M. purpureus on the different varieties of rice grains. Solid culture media (i.e. decoction from a 5% milled rice

grains/variety in a liter of water and solidified using 2% gelatin) of different varieties of rice such as Maharlika, Jasmine, Bigante, Sinandomeng and R-42 were prepared. Ten mm fungal disc of M. purpureus was aseptically inoculated at the center of the previously prepared culture medium and subsequently incubated at ambient room temperature (32°C). Daily readings on the radial fungal growth as well as time of the first appearance of the red pigmentation were recorded. Results of our investigation revealed that among the different varieties of milled rice grains, Jasmine, Bigante and Maharlika yielded the fastest mycelial growth of 90.00mm, 76.52mm and 64.99mm, respectively after 10 days of incubation with uniform mycelial density. R-42 variety on the other hand did not stimulate the growth of M. purpureus.

Keywords: *Red yeast, Monascus purpureus, Milled Rice*

CHIROPTERA AND ASSOCIATED ECTOPARASITES OF MINALUNGAO NATIONAL PARK, NUEVA ECIJA, PHILIPPINES

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ABSTRACT

The Order Chiroptera is considered as the most diverse order of mammals and presumably the most poorly known mammalian order in the Philippines. Species of chiroptera were collected from 3 caves at Minalungao National Park, a 2000-hectare protected area located at Nueva Ecija in Central Luzon, Philippines, which has not yet been identified for research and scientific studies. Minalungao hosts a high diversity of chiropteran species representing around 12% of the total reported chiropteran species in the Philippines. A total of 8 species representing 2 suborders (Megachiroptera and Microchiroptera) and 5 families (Vespertilionidae, Hipposideridae, Emballonuridae, Pteropodidae, and Rhinolophidae) were identified using morphological characterization. These are: Miniopterus australis (Kulilit), Hipposideros pygmaeus (Tengang Baboy), Taphozous melanopogon (Ngusong Kabayo; brown and black), Rhinolophus arcuatus (Panget), Ptenochirus jagori (Bangaag) and Rousettus amplexicaudus (Bayakan). Mitochondrial COI sequences revealed the identities of four collected bats: Hipposideros rotalis, Taphozous melanopogon brown and black, and Cynopterus sphinx. This study reported an unrecorded Chiroptera species in the Philippines Cynopterus sphinx, based on the report on Philippine bats by Ingle and Heaney (1992). Five ectoparasites were identified representing 2 families (Strebliidae and Nycteribiidae) and 5 genera, namely Cyclopodia sp., Brachytarsina sp., Eucampsipoda sp., Nycteribia sp., Penicillidia sp.

Keywords: *Chiroptera, Minalungao, Ectoparasites*

CONFLICT MITIGATION OF UNITED YOUTH FOR PEACE AND DEVELOPMENT (UNYPAD) IN MINDANAO

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ABSTRACT

This study was conducted to ascertain the roles of United Youth for Peace and Development (UNYPAD) in relation to conflict mitigation intervention. Specifically, it determined the socio–demographic profile of the responding team and core group members of the conflicting clans that served as negotiating panels; the effectiveness of the roles of UNYPAD; the acceptance on the responding team by the conflicting parties; the assistance extended by the GO and NGO's; and the problems and challenges encountered along the mitigation process. Further, it determined the influence of the socio–demographic profile on conflict mitigation intervention. Descriptive survey method was used. Frequency and percentage and mean were used to determine the role of UNYPAD and conflict mitigation intervention; and regression analysis to test the hypothesis. The respondents were 100 responding team members from 4 selected municipalities of Cotabato and 40 members of the organized core groups of the conflicting families. The responding team had a very satisfactory negotiation, mediation, monitoring, and suggestion of options. Being effective in the mitigation process, the team was accepted by the involved parties. Moreover, the socio–demographic profile of the responding team significantly influenced the conflict mitigation made in terms of acceptance of the involved parties; whereby age and position were considered significant predictors. The roles of UNYPAD significantly influenced the conflict intervention in terms of acceptance of the conflicting parties where monitoring came out as significant predictor. Negotiation and suggestion of options were considered best predictors of the conflict mediation particularly in the effectiveness of the team in mitigation process. The assistance extended by the government and INGOs, such as; resources, security, technical assistance, and materials and equipment significantly influenced the conflict mitigation intervention. On the basis of the result, conflict mediation is effective if the members of the responding team are older, hold position in any organizational affiliation and when there are enough resources, security personnel and funding support from the Government and INGOs. Technical assistance, materials and equipment are equally important.

Keywords: *UNYPAD, Conflict Mitigation, Negotiation, Intervention, Peace, Development*

SUSTAINABILITY ANALYSIS OF THE AGRI-PINOY RICE PROGRAM

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ABSTRACT

The study was undertaken to determine the sustainability analysis of the Agri-Pinoy rice program in Maguindanao and Lanao del Sur provinces covering different municipalities. Sustainability was measured using the following indicators: Ecological Soundness, Economic Viability, Technological soundness, Cultural acceptability, Social justice. The correlational research design and survey method in data gathering using personal interview technique was

employed. A total of 140 farming households were selected from the different municipalities that served as the unit of analysis. Data were analyzed using descriptive statistics, Pearson Product Moment Correlation and multiple regression analysis to test the hypotheses. Results showed that the household respondents had low educational attainment. The computed mean of farm income per cropping session of the respondents is Php34, 149.00. Most (55) of them have gone schooling in the primary grades. Only about 48 respondents have organizational membership, but most (68.75%) of them were members of the Irrigation Association. The methods used to control pests and diseases of rice production of the Agri-Pinoy Program were mechanical/manual; chemical; integrated pest management technologies and traditional methods. Results indicated that the farming practices had a significant influence particularly the methods used, varieties used, and farmer's training on the sustainability of the Agri-Pinoy Rice Program; significant influence was also observed in the support factors such as fertilizer application on the economic viability pertaining to farm income and crop pest incidence; educational attainment and access to agricultural information were the significant predictors on the sustainability analysis of Agri-Pinoy rice program in Maguindanao and Lanao del Sur provinces. The problems identified by the respondents were farm to market roads and mobilization of different agencies to cater to the pressing needs of the Maguindanao lowland rice farmers. On the basis of the results, it could be deduced that the farming practices such as; methods used, varieties used, fertilizer application, educational attainment, access to agricultural information and farmer's training contribute to the sustainability of Agri-Pinoy rice program's economic viability vis-a-vis farm income and crop pest incidence.

Keywords: *Sustainability, Analysis, Agri-Pinoy, Rice Program*

STAKEHOLDERS SUPPORT ON THE ACADEMIC PERFORMANCE OF ELEMENTARY PUPILS

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ABSTRACT

This study determined stakeholders support on the academic performance in English, Science and Math (ENSCIMA) of elementary pupils in Hinundayan Central School. The study sought to further determine profile as to highest educational attainment; number of hours attended in seminars and training in teaching of English, Science and Math and teaching experience. The level of support as perceived by the teachers, administrators in involvement of the parents and community; and to determine if there is a significant difference of the test scores of grade I to grade VI pupils with and without stakeholders support and significant relationship between academic performance of the pupils and the stakeholders support from both parents and community. It was concluded in this study that there was a significant difference of the test scores of grade I to grade VI pupils with and without stakeholders support and there was no significant relationship between academic performance of the pupils and the level of stakeholders support from both parents and community.

Keywords: *Stakeholders, Support on the Academic Performance, Involvement of the Parents, And Community*

PROPAGANDA ABOUT THE ENVIRONMENT TOWARDS CIVIC MINDSET

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ABSTRACT

This Research Is A Political Prescriptive-Normative Qualitative Study About The Propaganda Of The Environment Towards Civic Mindset. As Such, Its Main Goal Is To Rationalize The Environment Affecting Propaganda So To Address A Political Conduit Towards Bridging The Gap Between Misinformation And Information. The Researcher Recommends Constant Reinforcement Through The Use Of Propaganda To Shape The Mind Of The Individual Citizen (The Political Animal) Consequently Unraveling "Intentions" As A Way Towards Suggestive Empirical Researches.

ETHNOMYCOLOGICAL SURVEY OF MACROFUNGI UTILIZED BY GADDANG COMMUNITIES IN NUEVA VIZCAYA, PHILIPPINES

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ABSTRACT

Questionnaires and formatted interviews were used to determine mushrooms used as food and as materials for societal rituals and beliefs among Gaddang indigenous communities covering the municipalities of Bagabag, Solano and Bayombong in Nueva Viscaya. Ten records of mushrooms are declared to be utilized as food by the communities, however during the collection period only 7 were encountered, collected, identified and verified: *Auricularia auricular, Auricularia fuscosuccinea, Schizophyllum commune, Volvariella volvacea, Lentinus* sp., *Pleurotus* sp., and *Polyporus* sp. The Gaddangs have several indigenous beliefs when it comes to mushroom collection and utilization, one of their indigenous knowledge is to ask permission from the spirits before mushroom collection and occurrence of spontaneous lightning indicates the growing of the mushroom. Their medicinal practices were also documented. This is the most extensive ethnomycological study on the Gaddang indigenous communities in Nueva Vizcaya.

Keywords: *Edible fungi, Ethnomycology, Indigenous communities, Macrofungi*

THE ACADEMIC PERFORMANCE OF THE BSED STUDENTS OF CTU DAANBANTAYAN CAMPUS, SAN REMEGIO EXTENSION, BEFORE AND AFTER "YOLANDA"

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ABSTRACT

This study was conducted to assess the academic performance of the first year Bachelor of Secondary Education students of the Cebu Technological University Daanbantayan Campus, First and Second Semester of Academic Year 2013-2014 with the end in view of knowing whether or not there was significant correlation of their performance before and after "Yolanda". The data were gathered through the document approach and were treated through the use of the percentage and the Pearson-r. Findings revealed that the academic performance of the students during the first semester was generally very good with a rating of 1.9-1.5 evidenced by 66% of the entire class. The catastrophe did not affect the students' desire to excel. Instead, it challenged them to do their best indicated by an increase of percentage of the students with very good performance (1.9-1.5) during the second semester. This could be attributed to the statement that there are blessings amidst adversities. Despite what happened, students still aimed for excellence and deemed the super typhoon "Yolanda" not as a hindrance but a challenge to strive more. Further analysis of the findings showed that there is a significant correlation of the performances using the Pearson statistical computed using SPSS.

***Keywords**: Academic, Performance, Academic Performance*

EFFECTS OF Basella alba var. rubra L. (ALUGBATI) LEAF EXTRACT AGAINST PHENYLHYDRAZINE-INDUCED ANEMIA IN Mus musculus (ALBINO MICE)

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ABSTRACT

This study was focused on the observation of the effect of Alugbati leaf extract to the phenylhydrazine-induced hemolytic anemia in albino mice. The test organisms were composed of twenty males. Four of five groups exposed to phenylhydrazine showed a relative decrease in RBC. No decrease of red blood cell count was observed in $\mathbf{T_0^-}$ (non anemic control group) as compared to groups administered with phenylhydrazine $\mathbf{T_0^+}$ (anemic control ferrous sulfate), $\mathbf{T_1}$ (anemic mice 25% alugbati extract), $\mathbf{T_2}$ (anemic mice 50% alugbati extract), and $\mathbf{T_3}$ (anemic mice 75% alugbati extract). All of the treatment groups administered with the alugbati leaf extract had an increase in RBC level of the anemic mice. This study aims to demonstrate that Alugbati can aid in the prevention and cure of hemolytic anemia. The effectiveness of the commercial drug, ferrous sulphate, was found to be better than all of the leaf extract treatments. However, the results obtained in this study showed the potential of alugbati leaf extracts in treating anemia. Therefore, alugbati can be used as an ideal home remedy in treating anemia since it is cheaper than ferrous sulphate, and it can also be included in the daily diets of individuals.

***Keywords:** Basella alba var. rubra l. (alugbati), leaf extract, phenylhydrazine, anemia Mus musculus (albino mice)*

ACCEPTABILITY OF CRACKERS USING DIFFERENT LEVELS OF GONADS OF SEA URCHIN (*TRIPNEUSTES GRATILLA*)

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ABSTRACT

Sea urchins are valuable resource most especially their gonads which are eaten raw or pickled. That is why gonads of sea urchin were tried out as component of crackers as finger foods in gathering and leisure time. This is an experimental research using five (5) treatments where T0 is without adding gonads of sea urchin, T1 cracker ingredients were added with 25 percent sea urchin gonads; T2 – added with 50 percent gonads, T3 – added with 75 percent gonads and T4 added with 100 percent gonads. All the treatments were subjected to sensory evaluation using color, palatability, texture, flavor and general acceptability as indicators. Results show that all levels of gonads mixed with the crackers ingredients were acceptable by the trained panelists. ANOVA results show that there are no significant differences among the different treatments in color, palatability, texture and general acceptability but is significant only in terms of flavor.

Keywords: *Tripneustes gratilla, Gonads, Crackers and Acceptability*

EPITHELIAL MICRONUCLEI OCCURRENCE AMONG THE SCHOOL CHILDREN IN THE PROVINCE OF CAVITE, PHILIPPINES

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ABSTRACT

The problem of pollution emanating in the environment is a pressing environmental health problem as it brings about numerous problems to people who are exposed to it. Children are one of those individuals who are vulnerable and sensitive to these harmful pollutants emanating in the environment. In assessing their exposure to the harmful pollutants especially to genotoxicants in the environment, this study aimed to assess the epithelial micronuclei occurrence among the school children in the province of Cavite. Consenting public and private school children of the municipalities of Bacoor and Alfonso were involved in this study. Smears of the exfoliated epithelial cells from the buccal mucosa were prepared. A total of 911 consenting school children participated in this study. The prevalence of epithelial micronuclei occurrence observed among the school children in the province of Cavite was 20.5%. School children in the urban areas showed more micronuclei occurrences compared with those school children in the rural areas. More epithelial micronuclei occurrences were observed among those studying in public schools compared with those in private schools. Females had more epithelial micronuclei frequencies compared with males. Despite the results, no significant differences on the epithelial micronuclei occurrences of the school children living in urban and rural areas and those studies in private and public schools in Bacoor and Alfonso and gender ($p > 0.05$).
Keywords: *Public Health Biomonitoring, Children*

COMBINED EFFECTS OF *Cucumis melo* Linn. (CANTALOUPE MELON) and *Psidium guajava* Linn. (GUAVA) PEEL EXTRACTS ON THE BLOOD CHOLESTEROL LEVEL AND LIVER HISTOPATHOLOGY OF HYPERCHOLESTEROLEMIC *Rattus norvegicus var. albinus* (ALBINO RATS)

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ABSTRACT

Cucumis melo L. (CME) and *Psidium guajava*L. extracts (PGE) and their combination (CM/PGE) were tested in terms of their potential to lower blood cholesterol level and hepatoprotective activity in high fat diet-induced hypercholesterolemic rats. All extracts exhibited cholesterol lowering activity but PGE showed the most dramatic decrease of 27.17%. The positive control group using simvastatin exhibited lowered blood cholesterol level, while the negative control still had high cholesterol level. Therefore, the peel extracts from *Cucumis melo* and *Psidium guajava* and their combination have hypocholesterolemic activity. However, the peel extracts of *Psidium guajava* and *Cucumis melo* and their combination is not significant with the simvastatin treated group. Based on histopathological assessment of the liver of treated hypercholesterolemic rats, both CME and CM/PGE treated groups exhibited minimal fatty degeneration and mild centrilobular necrosis which coincided with effect of simvastatin in the positive control and the untreated normal rats. The PGE treated group however exhibited fatty degeneration with mild to moderate centrilobular necrosis due to hepatotoxic property of the extract at the level administered in the experiment. Although the combined peel extracts of *Cucumis melo* and *Psidium guajava* exhibited a relatively minimal hypocholesterolemic activity, the combination resulted into a noticeable hepatoprotective effect.

Keywords: *Cucumis melo L., Psidium guajava L., Hypercholesterolemia, Centrilobular necrosis, Fatty degeneration*

DISASTER MANAGEMENT PRACTICES OF SCHOOL ADMINISTRATORS AND TEACHERS IN PUBLIC SECONDARY SCHOOLS

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ABSTRACT

The study aimed to determine the disaster management practices of school administrators and teachers in the public secondary schools of Zone II, Division of Zambales. The descriptive research design was used making use of the questionnaire checklist in gathering the necessary data. The data from 327 teacher and 13 principal respondents were analyzed using the weighted arithmetic mean, percentage distribution, and ANOVA. The school administrators in Zone II perceived that they "Moderately Practiced" disaster management practices with an overall mean of 2.96 and standard deviation of 1.25. In all the four (4) aspects they "Moderately Practiced" evacuation contingency measures (3.03), information dissemination (2.99), disaster recovery (2.93) and relief operations (2.87). On the other hand, the public secondary teachers in Zone II perceived that they "Moderately Practiced" disaster management practices with a mean

of 2.70 and standard deviation of 1.03. All the four (4) aspects were perceived "Moderately Practiced" such as in information dissemination (2.75), evacuation contingency measures (2.70), relief operations (2.69), and disaster recovery (2.65). The study reveals no significant difference on the perceptions of the school administrators and teachers in Zone II, Division of Zambales towards disaster management practices {$F_{computed}$ (1.6774) < $F_{critical}$ (3.8724);p-value (0.1963) > α}.

Keywords: *Disaster Management, School Administrators, Profile, Descriptive, Zambales Philippines*

SIX ADAPTIVE QUANTITATIVE TRAITS OF GERMINATION ABILITY IN THREE INDIGENOUS RICE CULTIVARS FROM CATANDUANES, BICOL REGION, LUZON

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ABSTRACT

An understanding of the complex adaptive traits on seed dormancy and germination of three IRCs are influenced by a large number of genes and environmental factors have been the focus of the Catanduanes Indigenous Rice Development Program (CIRDEP) at CSU funded by the DA RFU5. In exploring the genetic structure and diversity of these IRCs in the island, we initially described the different IRCs using the agro-morphological characters and adaptive quantitative germinability traits. We identified ten (10) IRCs with different local names that differed in phenotypes as to germination ability using six germination traits: imbibition rate (IMR), germination rate (GMR), germination index, (GMI), root length (ROL), shoot length (SHL) and vigor index (VGI). This paper also presents the results on four panicle traits—numberof florets per panicle (FPP), number of primary branches per panicle (BPP), number of florets per primary branch (FPB), and frequency of pre-anthesis floret abortion (FA) of selected IRCs and also the root architecture at 20, 41–43, 73–75, 85–87, and 100–102 days after direct seeding as to root length and root diameter. Such traits are now amenable for the genetic analysis because the individual positions will be determined using quantitative trait loci (QTL), a focus in the succeeding inquiries. A thematic scope of the proposed Center for Island Research and Innovations is the Indigenous Rice Development is clearly envisaged after these inquiries on seed dormancy and germination.

Keywords: *Agro-morpological Diversity; Germination, Quantitative Genetic Diversity; Island Rice; Seed Dormancy, Catanduanes*

SID-SIN-SEN: A SCHEME FOR DEVELOPING EARLY STAKEHOLDER DEVELOPMENT PLAN FOR MARINE PROTECTED AREAS (MPAS)

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ABSTRACT

Stakeholder involvement is largely recognized as a mechanism that can help in managing MPAs effectively and efficiently as co-managed relationship of the municipal or barangay local government units (LGUs), the local people through peoples' organizations (POs), intervening institutions, NGOs and the local stakeholders who can significantly contribute to solving complex management planning and implementation questions. This paper develops a stakeholder involvement plan through *SID-SIN-SEN* [*Stakeholder Identification (SID) - Stakeholder Inputs (SIN)-Stakeholder Engagement (SEN)*-] scheme in the planning and implementation of small-scale MPAs Catanduanes Island, Bicol Region (Luzon) in the Philippines. Analysis based on this scheme is discussed and lessons learned in Agojo Marine Reserve and Fish Sanctuary (Lat. 13.67°, Long. 124.1167°) as to stakeholder's involvement in planning and implementation. In preparing to enforce a MPA in Kalapadan Bay Area (KBA) in Baras, Catanduanes (Lat. 13.64306 to Long. 124.3613), researchers from the island university's S.E.E.D. *(Society, Environment, Economics and Development*) Research Group for a proposed Water Policy Lab for Marine Spaces developed the said scheme. This scheme explored the importance of identifying the stakeholders, linking their inputs and engaging all major and minor stakeholders in the co-management process. The said early involvement scheme can help MPA managers, Pos, NGOs and academic institutions in developing MPA management plans and monitoring stakeholder interactions in marine space protection of the island province and possible upscalability in other locations.

Keywords*: Community Protected Marine Spaces (CPMS), Marine Protected areas (MPAs), Stakeholder identification-Stakeholder inputs-Stakeholder engagement (SID-SIN-SEN) scheme, fish sanctuary, Catanduanes*

EFFECTS OF FILIPINO VERBAL TRANSLATION AND DEFINING NON-SCIENTIFIC TECHNICAL TERMS ON MATHEMATICS WORD PROBLEM SOLVING PERFORMANCE

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ABSTRACT

This study investigated the effects of using Filipino verbal translations and defining non-scientific technical terms on the mathematics word problem solving performance. This study used the posttest only experimental design in order to determine whether there is a significant difference in the performances of the students. The students' performances in the midterm grade in algebra and in the Mental Ability test were used as covariates to take care of pre-experiment variations. The Mental Ability test used in the study was the Science Research Associates (SRA) Verbal Form Test. Findings showed that mental ability is a good covariate for determining the performance of the students in mathematics word problem solving exposed to Filipino verbal

translations of mathematics word problems, defining non-scientific technical terms and both Filipino verbal translations and defining non-scientific technical terms on mathematics word problems. In addition, the study showed that the problem solving performance of students who are exposed to Filipino verbal translation is significantly different from that of students who are exposed to defining non-scientific technical terms. Further, the findings revealed that the use of Filipino verbal translation of mathematics word problems can enhance students' mathematics word problem solving performance.

CHARACTERIZATION OF COACHES IN HIGHER EDUCATION INSTITUTION (HEI) MATHEMATICS COMPETITIONS

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ABSTRACT

This study analyzed the characterization of coaches in Higher Education Institutions' mathematics competitions and their problems as coaches. The descriptive method of research was used. Findings showed that the Mathematics teacher-coaches are young and competent in coaching. In addition, the most important indicator for values held is "determination to win", for the concept of review is "teacher-coach as a source of motivation", for discipline "they know when to use discipline and when not to", for the system of review "giving practice for mastery", and for the commitment is "bring honors to the school through their contestants". Further, results showed that the teacher-coaches often prepare review materials, always prepare in their coaching strategies and implement their review schedules. Generally, the coached students' performance in Mathematics competitions is associated with the extent of review for content mastery and not associated with the extent of coaching by the teacher-coaches. No clear budget allocation for the mathematics competitions and lack of professional development among teacher-coaches are the serious problems encountered by the coaches.

***Keywords**: Mathematics' Coaches, Characterization, Competitions*

EVALUATION OF K-12 TEACHERS' CONTINUING PROFESSIONAL DEVELOPMENT

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ABSTRACT

The world continuously changes. Technology provides new and innovative ways of teaching and learning. Hence, teachers' must be involved in a professional development to keep up with changing tools, practices and student needs. After 3 years of implementation, the K-12 program, although relatively young must have been able to provide teachers the requisite of a 21st century teacher with its continuing professional development program. Thus, securing our active participation in the world and in the ASEAN region. The study assesses secondary science teachers' participation in professional development activities in selected High Schools in the province of Camarines Sur. A questionnaire survey was administered to evaluate teachers' involvement in activities that develop individual skills, knowledge, expertise and other

characteristics as a teacher. It also evaluates teachers' needs and barriers in professional development within the period of K-12 implementation. Analysis showed that nearly 60% of the science teachers had participated in at least one professional development activity during the entire implementation of the K-12 program. Teachers' identify teaching students with special needs; knowledge and understanding of instructional practices; knowledge and understanding of my main subject field; teaching in a multicultural setting and student counselling in descending order as high level of need. While, professional development was too expensive; professional development conflicts with my work schedule; I did not have the pre-requisite; there was no suitable professional development offered, were ranked as barriers to participation in professional development. Learning should not stop once teaching begins. Teachers must set the example of being lifelong learners and the Department of Education must provide the necessary platform for it to happen.

Keywords: *Continuing Professional Development, K-12, 21st century teacher*

PREVALENCE OF ECTOPARASITES FOUND IN STRAY DOGS IN AN ANIMAL SHELTER IN BACOOR, CAVITE

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ABSTRACT

The prevalence of ectoparasites found in stray dogs in an animal shelter in Bacoor, Cavite is conducted to determine the ectoparasites present among stray dogs and how each individual parasite prevails in the area. The study was conducted in Strike Animal Welfare Shelter in Bacoor, Cavite. 30 dogs were chosen by purposive sampling choosing only dogs with medium weight. Collection was done through the use of forceps, cotton swabs and tape. Ectoparasites were collected from the ears, back, elbows, abdominal area and toes of the dogs. The ectoparasites were placed in glass vials with 70% ethanol to avoid desiccation. Identification of ectoparasites was done in De La Salle University – Dasmariñas through the keys from Wall and Shearer (2001) and Matthison and Pritt (2014). From the 30 dogs examined, 96.67% of them are infested with parasites. Two species of ectoparasites are found which are *Rhipicephalus sanguinues* and *Otodectes cynotis* with 30% and 93.33% individual prevalence rate respectively. Infestation is reported not influenced by sex, age and coat color.

Keywords: *Ectoparasites, Parasitology, Dogs*

STRESS AND COPING MECHANISM EMPLOYED BY TEACHERS

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ABSTRACT

Generally, this study aimed to determine the mechanisms employed by teachers of Pagalungan District in coping stress. Specifically, it sought to determine the personal factors of the teachers, sources of stress, level of stress coping mechanism, and influence of socio – demographic profile and sources of stress on the stress coping mechanism. There were 127 teachers in

Pagalungan District that served as the respondents of the study. Personal factors of the teachers were evaluated using frequency and percentage; stress sources and coping mechanisms were determine using mean; and hypotheses were tested using regression techniques. Research has three parts of the questionnaires used to get the information needed in the study. Most of the school heads were under the age bracket of 41 – 45 years old, male, BS degree with MA units, and 25,000 – 30,000 monthly income. Teacher respondents agreed that loss of family members, illness, planning for marriage, economics, and psychological were considered sources of stress. Moreover, they further agreed that environment like catastrophe, ailment, and school work were also another source of stress. Furthermore, teachers agreed that there were many ways of mechanisms to cope stress like reality – focused, problem – focused, and emotion – focused. Finding revealed that personal factors significantly contributed to stress coping mechanism. It also revealed that the sources of stress like family significantly contributed to stress coping mechanism in terms of problem – focused but not on reality – focused and emotion – focused. Likewise, sources of stress like environment significantly contributed to stress coping mechanism particularly problem – focused but not on reality – focused and emotion – focused. Finding concluded that personal factors and the different sources of stress significantly contributed to the stress coping mechanism.

Keywords: *Stress, Coping Mechanism, Teachers, Emotion*

GUIDE ON SAFE HANDLING, STORAGE AND DISPOSAL OF CHEMICALS

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ABSTRACT

Chemical laboratory safety can be defined as the control of exposure to potentially hazardous substance to attain an acceptably low risk of exposure. Chemical laboratories may contain many types of hazards such as occupational hygiene, anticipation, recognition, evaluation and control, to minimize the risk from various specific types of laboratory hazards (Walters, 2010, p 50). The study used descriptive method. It was divided into three (3) phases. The first phase was the inventory of risk assessment. During this phase, the researchers distributed questionnaires (adopted from Suico et al of the University of San Carlos) to the faculty members, laboratory staff and students taking Sciences subjects. The next phase was the Labeling of Chemicals and Equipment and last phase is the conduct of Safety Orientation and Training Program for all Sciences Faculty and Laboratory Staff. Statistical Analysis such as percentage, weighted mean, were used to described the Chemical Management Practices. The study was conducted in all campuses of Cebu Technological University. The Chemistry Laboratory In-charge or the Chemistry laboratory users were the respondents.The results showed that no warning signs/labels of chemicals were posted in the laboratory areas such as Laboratory Safety Guidelines, Globally Harmonized Symbols (GHS); chemical inventory is not updated, no designated chemical storage for non flammable substances; no fire blankets and no fire exit. However around 90% of the respondents implemented the use of the personal protective equipment such as using laboratory gown and wearing of close-toe shoes.

Keyword: *Chemical laboratory safety, Toxic Substances and Hazardous and Nuclear Waste*

ECONOMIC VIABILITY OF FISHING AND SEAWEED FARMING IN GREEN ISLAND, TUMARBONG, ROXAS, PALAWAN

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ABSTRACT

This study assessed the economy viability of fishing and seaweeds farming in Green Island, Roxas, Palawan. A stratified random sampling and mini-workshop were used to select the 67 household respondents and 26 participants respectively. Data collected were analyzed using descriptive statistics, frequency and mean. Results showed that the majority of the household respondents were Cebuano, Roman Catholic, male, married, middle age with the average household size of 6. The average years engaged in fishing was 21 while 14.89 in seaweeds farming. The result of the economic value showed that fishing could have a net income of P 281, 092.80, while in seaweed farming, a total net income for a year could be P 180,503.30. Engaged in these ventures can be seen more sufficient to sustain household expenditures. Constraints perceived by the respondents were high cost of fishing, depletion of fish resources and market price fluctuation of seaweeds. Significant level of profit obtained is evident that it has the potential in alleviating household poverty in the province. Thus, government should also give technical knowledge and training on proper production and funding to have a farm nursery in the island and provide credit services with small interest rate to fishers and farmers.

Keywords: *Economic Viability, Fishing, Seaweed Farming, Socio-Economic Status*

THE IMPLEMENTATION OF ON-THE-JOB TRAINING PROGRAM AMONG STATE UNIVERSITIES AND COLLEGES IN REGION I

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ABSTRACT

This study dealt on the extent of implementation of on-the-job training (OJT) program among State Universities and Colleges (SUCs) in Region I. It also looked into the problems encountered as perceived and the compliance to the requirements. The study likewise determined the extent of adequacy and condition of required facilities of the Host Training Establishment (HTEs). The descriptive correlation method was used in this study. Samples were taken using stratified random sampling. Two sets of questionnaires were given to the fifteen OJT Advisers/Coordinators and 290 OJT students which were formulated based from the CHED Memorandum Order (CMO No. 23, Series of 2009) known as Guidelines for Student Internship Program in the Philippines (SIPP) for All Programs with Practicum Subject, and also books and manuals. The salient findings revealed that, from the fifteen (15) OJT Advisers/Coordinators, there are six (6) belonged to 31 – 40 age group while only four are within the age group of 51 – 60 years old. Nine (9) out of fifteen OJT Advisers are graduates of BS Business Admnistration/Management, two (3) are graduates of BS Information Technology and three (3) are graduates of BS Computer Science, while out of 290 OJT students, the most number of respondents (84) are enrolled in BS in Information Technology and (65) are enrolled in BSBA major in Financial Management and the BS Information System (11) has the least number of population. The relationship between the sex of the OJT Advisers/ Coordinators and

SUCs' compliance of the requirements during on-site deployment showed the lowest r-value or very negligible relationship with the r-value of 0.016, and showed no significant relationship (sig. = 956). Based on the salient findings of the study, the researcher concluded that the profile the of the OJT Advisers/Coordinators, OJT students, SUCs in Region I, and HTEs vary in terms of variables included in this study. The extent of implementation of on-the-job training conforms to the different area-components included and used in this study and SUCs, HTEs and OJT students have not experienced serious problems in the implementation of OJT. The academic degree earned by the OJT Advisers/Coordinators is the only one among the profile variables that influenced in the preparation of the set requirements during post deployment of the OJT students.

Keywords: *Implementation, On-The-Job Training, Deployment, Compliance*

EFFECTS OF *ACALYPHA HISPIDA* BURM F. (CHENILLE PLANT) ETHANOLIC LEAF EXTRACT ON BLOOD GLUCOSE LEVEL OF ALLOXAN-INDUCED DIABETIC ALBINO RATS (*RATTUS NORVEGICUS* BERKENHOUT)

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ABSTRACT

Diabetes mellitus is a chronic disease that impairs glucose homeostasis and its complications are becoming a serious threat to the health of mankind. Many medicinal plants provide a potential source of hypoglycemic drug; thus the study was carried out to determine the potential of *Acalypha hispida* leaf extract on lowering the blood glucose level of alloxan-induced albino rats. Twenty four (24) albino rats were divided into four groups: $T_{0\ (diabetic\ control\ )}$, $T_{1\ (375\ mg/kg)}$, $T_{2\ (750\ mg/kg}$, $T_{3\ (1,500\ mg/kg)}$ and were acclimatized for three weeks prior to alloxan induction to induce diabetes. Four weeks was allotted for administration of different treatments via oral gavage method. Blood samples were then collected after alloxan induction, and after treatment through tail snipping method. Blood glucose level analysis revealed that all the three doses of leaf extract exhibited a significant decrease on their glucose level however there is no significant difference among the different treatments with respect with its reducing potential.

Keywords: *Acalypha hispida, diabetes, medicinal plants, blood glucose level, alloxan*

TEACHERS-IN-CHARGE AND SCHOOL PERFORMANCE

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ABSTRACT

The objective of the study was to determine the performance of teachers in-charge in Arakan Valley Complex. Specifically, the profile of the respondents; level of dual role of teacher-in-charge as school administrator on administrative management; and instructional leadership; performance level of teacher-in-charge as class adviser; level of school performance in NAT MPS in Science, English, and Math subject. It examined further the significant relationship between the socio-demographic profile and NAT performance; significant influence of teacher-

in-charge as school administrator: on administrative management; and instructional leadership and NAT performance; significant influence on Performance Appraisal System for Teachers (PAST) on NAT the performance; and the significant influence on Performance Appraisal System for Teachers (PAST) on NAT the performance. Three sets of instruments were used in gathering data. Multi- stage sampling was employed to determine the municipalities in Arakan Valley complex as source as respondents using stratified sampling and complete enumeration in the schools identified. One hundred forty-two 142 were the respondents coming from seven (7) districts which composed of 31 DepEd schools in Arakan, Valley Complex. As a result, the socio-demographic profile and the NAT performance in Science, English, and Math subjects; SHAC in Math has a significant relationship. On instructional leadership of SHAC and NAT in Math and English; the PAST and NAT; the instructional competencies in Science; professional personal characteristics, punctuality, class adviser in professional interpersonal characteristics, punctuality and attendance on Science, and Math has significant influence. The relationship between socio-demographic profile and SHAC; has significant degree of relationship is observed between position and professional interpersonal skills and public relation, and community partnership; educational attainment and school planning and implementation. However, lesson planning, school, home, and community involvement was observed to have a significant relationship. Socio-demographic profile and class adviser has a significant degree of relationship observed between position on the punctuality and attendance. Generally, it was observed that a significant relationship exists between the professional and personal characteristics and the punctuality and attendance of the respondents. On the other hand, the class adviser with the variables mentioned found to have significant degree of relationship.

Keywords: *Teacher's in Charge, School Performance, Personal Characteristics, Professionalism*

BRIGADA ESKWELA TO IMPROVE KEY PERFORMANCE INDICATORS

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ABSTRACT

This study endeavored to determine the variables on Brigada Eskwela to improve key performance indicators, in terms of; conceptual skills, human skills, and technical skills of managers; and the extent of the DepEd Brigada Eskwela program implementation in terms of resource mobilization, participation of stakeholders, social marketing and linkaging. Further, it determined the significant relationship between the management skills and the key performance indicators such as; access, quality and efficiency; the significant relationship between the Brigada Eskwela Program and the key performance indicators; the significant influence of the management skills to dependent variables of the study in terms of: (a)Conceptual skills with access, quality and efficiency, (b) Human skills with access, quality and efficiency, and (c) Technical skills with access, quality and efficiency. (6) Is there significant influence of the Brigada Eskwela Program in terms of: (a) Participation of stakeholders with access, quality and efficiency, (b) Resources mobilization with access, quality and efficiency, (c) Social marketing with access, quality and efficiency, and (d) Linkaging with access, quality and efficiency. The study employed descriptive survey method using structured questionnaire to gather information and correlational research method. The survey questionnaires were distributed to the 100

respondents; 60 at Cotabato City division and 40 at Tacurong City division. The non-parametric statistics was used on the descriptive data such as pearson product moment correlation and regression. The study result showed that the conceptual skills, human skills, and technical skills of the school administrators were all rated above average. The Brigada Eskwela Program indicator on resources mobilization, stakeholders' participation, social marketing, and linkages/partnership were all rated above average.

***Keywords**: Brigada Eskwela, Performance Indicators, Secondary school, Elementary School, Region XII*

LEAD AND CADMIUM BIOACCUMULATION IN *Clupea harengus* (HERRING) FROM ROSARIO BAY, CAVITE

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ABSTRACT

This study determined and compared the lead and cadmium present in the gills and muscles of herring. The herring samples were obtained on October 2013. Results were reinforced using Flame Atomic Absorption Spectrometer and quantitative analysis confirmed the presence of lead and cadmium in all fish samples. One-way ANOVA determined the significance between the levels of Pb and Cd concentration, which were found to be 0.7648, 0.3766, 3.7161 and 0.6990 ug/g. F-values were found to be 6.047, 4.390, 13.816 and 6.306, respectively. Lead in gills was found to have the highest concentration of 0.7648. Mean Cd concentration in gills is found to be significantly higher than in muscles. Significant difference is due to the increased Pb and Cd concentration in the environment, which may be in ionic form, thus, easily accumulated, and the prolonged and direct exposure of gills to the water than muscles, metallic adsorption, and presence of mucus and feeding habit. The Pb and Cd mean concentrations also exceeded the permissible therefore; it is not advisable for public consumption.

***Keywords**: Bioaccumulation, Lead, Cadmium, and Clupea harengus*

THE IMPACT OF PHYSICAL, BIOLOGICAL, AND CHEMICAL FACTORS OF THE TROPICAL RAINFOREST FOREST IN MT. PALAY-PALAY IN TERNATE, CAVITE TO THE LIFE OF THE ANIMALS INHABITING IN IT

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ABSTRACT

As this study's title suggests, the physical, biological, and chemical factors of the tropical rainforest in Mt. Palay-Palay in Ternate Cavite were studied to comprehend its impact to the life of the animals living in it. Physical factors like the quality of soil, light, temperature, and relative humidity were tested to relate its contribution to the life within the said forest. The soil moisture percentage was measured by drying a pre-weighed sample then subtracted its value in grams to its initial weight then dividing the difference to the initial weight and multiplying it to 100%. To

identify the soil texture, the dried soil was filtered using sieve plates and a soil triangle was used as a reference. Light, temperature, and humidity were measured using a light meter, thermometer, and sling psychrometer, respectively. Biological factors were known by identifying the species of animals and trees in accordance with their relationship with each other in the said area. Chemical factors were obtained by using the soil test kit to identify the amount and the presence of phosphorus, nitrogen, potassium, and organic matter. Litmus paper was also used to measure the pH of the soil. It was found out that the physical factors of the forest was enough to sustain life and the chemicals present in the soil were sufficient for the healthy growth of vegetation especially, trees that dominates the area and where most animals depends on.

Keywords: *Tropical Rainforests, Mt. Palay-Palay, Cavite*

SOIL CHARACTERIZATION AND NUTRIENT COMPOSITION OF MANGROVE VEGETATION IN CARMEN, CEBU

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ABSTRACT

Mangrove Soils are estuarine and marine alluvium transported and deposited as sediments and nutrient particles through the influence of tidal inundation by rivers and seas. Its characteristics and nutrient load is one factor that would help in understanding mangrove vegetation recruitment and structure. Soil samples were gathered from 6 coastal Barangays of Carmen, Cebu; namely, Puente, Luyang, Dawis Norte, Dawis Sur, Cogon East and Poblacion using 100 meter transect in connection with methods describing mangrove structure. Soil samples were dried and subjected to different laboratory analyses. Other soil parameters were determined in situ. Results revealed that soil acidity and salinity in these mangrove areas are ideal for mangroves to flourish with mild to moderate brackish water. Nutrient levels have significant difference throughout the sites. High concentration of nutrients is interpreted as sandy loam to loam soil with more species growing than with less concentrated one. Findings suggest that soil characteristics and nutrient load could be an attribute to the abundance and diversity of mangrove vegetation.

Keywords: *Alluvium, Mangrove Soil, Nutrient Load, Tidal Inundation*

ASSESSMENT OF HOSPITALITY MANAGEMENT SKILLS OF CTU- SAN FRANCISCO CAMPUS RESTAURANT PHASE INTERNS

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ABSTRACT

This survey assessment aimed to determine the performance level of restaurant phase student interns Cebu Technological University- San Francisco, Campus in terms of hospitality management skills, work values and attitudes. Furthermore, this also determines the problems encountered by the practicum students and the level on how they felt such difficulties. As perceived from the student intern's baseline competence results showed that it has a grand mean of 4.21, with descriptive rating of exceeds expectation. Personality skills competencies is

4.33 which is exceptional while for interpersonal skills it has grand mean of 4.25 which is exceeds expectations. Cognitive and affective skills, has a grand mean of 3.97, expressive and reflective skills were 4.22, all were fall under exceeds expectations in description. For the perceived problems felt by the student intern respondents a grand mean of 1.56 that falls under "not a problem scale". Thus, student interns assigned in different cooperating agencies during their restaurant phase training had exceptional performance and they consistently exceeded expectations in all essential areas of responsibility, and the quality of their work was excellent.

Keywords: *Hospitality Management Skills, Restaurant Phase Interns, Exceptional Performance*

SENSORY QUALITIES OF MODIFIED QUESEO

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ABSTRACT

Modified queseo contains cows' milk, gelatin, rennet and salt. The study determined the sensory qualities of modified queseo. The study had the following treatments like .R_0 - unpasteurized milk; R1 – 75% unpasteurized and 25% pasteurized; R2 – 50% unpasteurized and 50% pasteurized milk. The most preferred texturized queseo was subjected to sensory evaluation based on descriptive and preference testing. Out of the three formulations of texturized queseo, texturized queseo with 50% unpasteurized milk and 50% pasteurized milk obtained the highest sensory rating scores in all sensory attributes undertaken. The color, flavor, odor and texture of texturized queseo with 50% unpasteurized milk and 50% pasteurized milk revealed that all attributes marked best formulation with a descriptive rating of "**like very much".** After a series of analyses of the acceptability of the most preferred texturized queseo as revealed from the data gathered based on the perceptions of the experienced and consumer panelists, the following conclusions are formulated: The texturized queseo with 50% unpasteurized milk and 50% pasteurized milk had flesh color, moderately milk flavor and odor and odor and slightly soft texture.

Keywords: *Cow's Milk, Pasteurized, Unpasteurized, Queseo*

PROPOSED PHYSICAL EDUCATION PROGRAM OF THE PANGASINAN STATE UNIVERSITY

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ABSTRACT

This study sought to assess the Physical Education Program of the Pangasinan State University. It also sought to find out the extent of seriousness of the problems encountered by the five (5) PE department heads and twenty-two PE instructors. Also, it sought to propose a development program to improve PE instruction. This study used the descriptive method of

research. Both respondents possess educational qualifications, but have limited in-service trainings. Thus, a proposed development program in this study can help solve the problems. As a result of the findings made, the following conclusions were drawn; 1) Both respondents possess the needed educational qualification, young in experience but they have not enhanced their professional growth by attending graduate studies classes and in-service trainings. 2) Activities in PE I and PE II were done to a little extent therefore there is a need to implement properly all the activities; 3) Physical Education equipment and supplies and library facilities were not given due importance for improvement of PE subject.

TREE SPECIES COMPOSITION OF TROPICAL LOWLAND EVERGREEN RAIN FOREST IN LUNA, APAYAO

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ABSTRACT

This study was conducted to determine the altitudinal variations of species composition of the Tropical Lowland Evergreen Rain Forest or Lowland Dipterocrap forest in Luna, Apayao. A total of 3 plots with a dimension of 50 m x 50 meter were established in the different elevations purposely to indicate altitudes. Sample plot 1 represents lower altitude, plot 2 represents mid altitude and plot 3 represents high altitude. The location of the sample plots were originally located using a topographic map. At the field, GPS receiver was used to determine the location and elevations. Sample plots were established using the compass of the GPS and a tape measure. Abney hand level, diameter tape was used in determining the diameter, and the height of the trees under study. Tabulation of trees and regenerants were conducted per quadrant basis. Trees with 5 cm and up are considered trees and 5 cm and below are considered regenerants. Quadrant 1 is actually the North-west face, quadrant 2 for the north-east, quadrant 3 for the south-east and quadrant 4 is the south-west face of the plot. Microsoft Excel was employed in the data processing for the purpose. The total number of trees in the sample plots is 412. Plot number 3 or the high altitude sample plot has the highest number of trees with 170 individual trees. The study site is considered to be a Tanguile-Narek, Tanguile-Mayapis and or Tanguile-Red Lauan stands. For the tree diversity, the Shannon's Diversity index or H' values were used in this study. The higher the altitude the higher the tree diversity is. The sample plot at the high altitude ranks 1 and followed by the sample plot at the mid altitude with H' values of 2.27533 and 2.227689. The computed H' value for the whole study site is 2.4834.

Keywords: *Species composition, Diversity, Tropical Lowland Dipterocarp Forest*

PRELIMINARY STUDY ON THE EFFECT OF LAMININE FOOD SUPPLEMENT ON UV-INDUCED SKIN TUMOR OF *Mus musculus* (ALBINO MICE)

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ABSTRACT

Sixteen 6-7 week old male albino mice were used as test subjects. The albino mice were divided into control group and experimental group (T1, T2, T3) which consist 2 mice each with replicates. After a week of acclimatization, the albino mice were exposed to UV radiation for a month. Then they were subjected to biopsy for confirmation of skin tumor. Then the control group was administered with fluorouracil, a topical chemotherapeutic drug. The experimental group were administered with different doses of Laminine, which are dosage advised to human with cancer stage 1, 2, 3 that were converted in proportion to the weight of albino mice. The computed dose were T1=0.744Mmg, T2=1.488mg, nd T3=2.232mg. The duration of administration of treatment were 4 weeks. Then the mice were subjected again to biopsy. The histopathological findings in the biopsy conducted before and after the administration of Laminine were compared. According to the histopathological analysis, all albino mice were induced with sebaceous adenoma and after a month of Laminine intake, the skin of the mice in T2 and T3 became normal. Based on these results, Laminine showed inhibitory potential against the proliferation of cancer cells.

Keywords: *Laminine Food Supplement, Uv-Induced Skin Tumor, Mus Musculus*

AN EVALUATION OF THE FISHERIES COLLEGES IN CEBU TECHNOLOGICAL UNIVERSITY WITH FOCUS ON STUDENTS' ACHIEVEMENT

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ABSTRACT

This study draws attention in knowing the status of the four fisheries colleges in CTU system with special focus on students' achievement. The four fisheries colleges are located in the campuses of Daanbantayan, Moalboal, Camotes, and Carmen. It was found out that only one school has adequate facilities and equipment based on CHED statutory and regulatory requirements. The students' achievement over-all mean rating is categorized as good only with a computed general average of only 83. This could be attributed to some factors that affect the learning process such as adequate facilities and equipment and the student-classroom ratio. In this study the student-classroom ratio is 40:1 while CHED prescribed 35:1 It was also found out that those who have pre-school education perform better. Their attitude towards school and self study habits also affects achievement. It was also that the students' means of transportation affects performance as many students go on foot especially those from mountain barangays where there is no available means which may cause to be late in class. With these findings the CTU management may provide school bus to augment the students' problems on transportation especially the night class students. Facilities and equipment must be upgraded in compliance with CHED standards and remedial measures can be imposed to develop proper study habits.

Keywords*: Students' achievement, learning process, rating, fisheries, CHED*

PROGRAM SERVICES OF SCHOOL AND ADHERENCE TO CORE VALUES

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ABSTRACT

Generally, this study pursued to determine the adherence on core values of Pagalungan District and program services. Specifically, it sought to determine the profile of the school heads, implementation of program services, adherence to core values of the district, and influence of the heads' profile and program services on the district core values. There were 19 school heads and 119 teachers in Pagalungan District who served as the respondents of the study. Profiles of the school heads were determined using frequency and percentage; extent of program services and core values of the district were determined using weighted means; and hypotheses were tested using regression techniques. The research instrument to gather data had four parts. Most of the school heads were within the age bracket of 41 – 45 years old, male, BS degree with MA units, and 25,000 – 30,000 monthly income. School heads implemented the program services like social services in terms of medical and educational services. Likewise, capability building was properly implemented by the school heads like conducting operational skill training, administrative skill, and financial skills trainings. Moreover, Pagalungan District core values like maka–tao, maka–Diyos, maka–kalikasan, and maka–bansa were properly adhered by the school heads. Profiles of the school heads significantly influenced the district core values like maka–Diyos and maka–bansa. Moreover, social services and capability building significantly affected the district core values such as maka–tao, maka–Diyos, maka–kalikasan, and maka–bansa. It could be concluded that the profile of the school heads and different program services contribute to the adherence of the core values of the school district.

Keywords: *Program Services, School, Adherence, Core Values*

INTERVENTION PROGRAMS AND SUPPORT SYSTEM ON SCHOOL PERFORMANCE

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ABSTRACT

This study examined the Department of Education's intervention programs, support system and its influence and relationship on school performance in Cotabato Division. Specifically, it aimed to determine the extent of school-based, teacher-centered and learner-centered programs; the extent of support system and school performancein terms participation rate, drop-out rate, survival rate and National Achievement Test MPS. Descriptive survey using correlation method was employed in the study. Mean was used to describe the extent of school based program and support system. Multiple linear regression technique and Pearson Product-Moment Correlation were used to test the significant relationship and influence of the intervention programs and support system on school performance. The sample consisted of 260 teachers from the respondent schools in the Cotabato Division. Result revealed that the respondents strongly agreed on school-based programs; the teachers always adopt learner-centered programs and

strongly agreed on the teacher-centered programs. Whereas, they agreed that there were bothinternal and external support to the school. Regression results also showed that among the school-based intervention programs, DSWD's Pantawid Pampamilya Pilipino Program (4P's) has significant influence on survival rate; whereas, reading program, remedial instruction are important predictors of NAT MPS of pupils. In the same manner, internal and external support had significant influence on school performance.
It can be deduced from the findings of the study that intervention programs and initiatives coupled with strong support from different sectors had improved the school performance and pupils' achievement.

K***eywords***: *Intervention Programs, Support System, School Performance*

STUDENT ASSESSMENT SURVEY BASES FOR CONTINUAL IMPROVEMENT FOR CAS-FACULTY (CTU-MC)

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ABSTRACT

The goal of this study is to enhance the teaching, and to better support the student's learning. SAS result for A.Y. 2010-11, 2011-12, 2012-13, 2013-14 bases for continual improvement of CTU-MC-College of Arts and Sciences faculty members teaching performance had several aims: management and performance evidences; descriptive method is used in the study to pull together insights gained and lessons learned from SAS results as secondary instrument that covers a broad range of responses by students. The result shows that the management and the performance aspects vary according to the approach of the individual faculty. It varies little or more than a simple mark; it varies written comments on the College instructors' management and performance. Some students provide lengthy comments but the quality of these comments can be varied or simply unhelpful/helpful. Indeed, the variability of assessment and feedback techniques has led Knight (2002) to argue that they make up the 'Achilles' Heel of quality'. Thus, the general result turns out positive towards CAS Faculty members. Student comments can help a number of unlikely concerns about management and performance of the instructors like terror, harsh, unprofessional, green joker, strict, inconsiderate, slow-voice, lazy no discussion happened more on reporting, late or absent in the class, boring no strategies in teaching, and discussion is too fast cannot be understood. It is sufficient to note that student comments on completed questionnaires suggest a general appreciation of the importance of feedback. The promptness of their feedback although they must always be taken as indicative of concerns rather than represent the views of all students. The proposed continual improvement for professional development towards management and performance would be series of schedule for reorientations, retraining and seminars/workshops on Teaching Goal Inventory for College, Techniques for Assessing Course-Related Knowledge and Skills, Techniques for Assessing Learner attitudes, Values, and Self-Awareness, Techniques for Assessing Learner Reactions to Instruction.

SPORE CULTURE OF *NEPHROLEPIS FALCATA* (CAV). C. CHR.

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ABSTRACT

Spore culture of *Nephrolepis falcata* (Cav). C. Chr. was undertaken to propagate *Nephrolepis falcata in vitro* using the spores. Specifically, it aimed to find out the duration of the germination of *Nephrolepis falcata* spores and observe spore germination and prothallial development.*Nephrolepis falcata* is a fern plant under family Lomariopsidaceae which is found on shaded areas (Smith et al., 2006). Its rhizome is creeping, frond is simple pinnate, sori round and spores bilateral, monolete. This species was used as ornamental. Thus, there is a need to conduct an *in vitro* (spore) culture of this plant. *In vitro* culture of this species revealed a rapid spore germination of 3 days after inoculation. Germ filament formation of one to twelve cells was observed from 3rd to 16th day after inoculation, and prothallial plate formation was noticed 19th day after inoculation. Correspondingly, *Nephrolepis falcata* (Cav.) C. Chr. spore germination is of Vittaria type and its prothallial development follows Adiantum-type.

Keyword: *Monolete, In Vitro, Germination, Prothallial Development, Inoculation, Spore Culture*

POPULATION SIZE OF *TRIDACNA SQUAMOSA* (FLUTED CLAM) IN CORRELATION WITH THE PHYSICO-CHEMICAL FACTORS OF MARINE WATER IN MATABUNGKAY, LIAN, BATANGAS

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ABSTRACT

The giant clam *Tridacna squamosa* is a species of least concern around the world. It is also known as the fluted clam is known from the Red Sea and east African coast across the Indo-Pacific to the Pitcairn Islands, and an introduced population exists in the waters around Hawaii. It is able to thrive in tropical waters and it is used as a shelter of other marine life such as small fish and crab. The *T. squamosa* is a popular food item and is traded domestically and internationally, with 34 countries recorded to export the species over the period from 1994 to 2003. Live specimens have also been exported for the aquarium trade. Harvest of wild specimens is either regulated or prohibited completely although illegal harvesting still occur. Matabungkay, Lian, Batangas is a tourist spot with very rich marine life and natural resources. They have abundant coral reef which is a favorable habitat for the *Tridacna squamosa*. They also have rich biodiversity (Aclan 2014) were the *T. squamosa* can be found. Our study raised the awareness of the people about the status if the *Tridacna squamosa* will encourage them to protect the species by educating the people living in the coastal areas on how they can care for the marine life near them. The physico-chemical factors of the marine water are tested to see how it affects the *Tridacna squamosa* by surveying the population characteristics of the *T. squamosa* in different stations in Matabungkay Beach, Lian, Batangas. This study has encouraged the participation of the public to protect the *T. squamosa* and not to harvest it for personal gain or as tourist attraction. This study also determined the economic importance of

the *T. squamosa* to the fishermen, vendors, tour guides and boat operators who harvest them because an its their source of income, sufficient to live on.

Keywords: *Tridacna squamosal, Matabungkay, Population*

DETECTION OF ENDOPARASITES IN SARDINELLA TAWILIS IN CORRELATION TO THE PHYSICOCHEMICAL PROPERTIES OF TAAL LAKE, BATANGAS

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ABSTRACT

This study aims to detect the presence of endoparasites found in Sardinella tawilis in Taal Lake, Batangas for four months of the researchers testing. There were three points in the lake where the researchers gathered their water samples: near to the community, in the middle of the lake, and near the volcano. Fifteen pieces of Freshwater Sardinella were collected for four months. A total of 60 fishes will be collected This paper serves as an update on the physicochemical properties of Taal Lake as well as its correlation with the parasites found in Sardinella Tawilis. This will include 5 parameteres such as: BOD, TDS, water temperature, DO and pH.

COMMUNITY PARTICIPATION AND PUPILS' DEVELOPMENT

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ABSTRACT

This study aimed to determine the community participation and pupils' development in Kabacan West District, Kabacan, Cotabato. Specifically, it aimed to find out the demographic characteristics of the respondents; level of the community participation in terms of PTCA, BHW, BLGU, Church/ Mosque on pupils' development; degree of pupils' development in terms of behavior, social, leadership, spiritual, health and sanitation. It likewise determined the significant influence of the socio-demographic characteristics of the teachers' on community participation; significant influence of the community participation on the pupils' development; and significant influence of the socio-demographic characteristics of the teachers' on pupils' development. Using complete enumeration, the 17 teachers from 16 schools were taken as respondents to rate the stakeholders. Frequency and percentage were used to describe the demographic characteristics of the respondents and community participation was analyzed using mean; while, hypotheses were tested using multiple linear regression techniques. Most of the teachers' age fell within the bracket of 49 years and above; female and were married. There were 6 principals and 8 masters with doctoral degree; and 7 out of 16 had been school administrators in 25- 30 years. The socio-demographic characteristics of respondents significantly influenced the pupils' development in terms of behavior and social aspects, leadership, spiritual, and health and sanitation. Monthly net income was the leading predictor on behavior; while age was the best for social; and sex was to leadership. Findings manifested that community participation of the members/ group significantly influenced the pupils' development; where PTCA and BLGU

were the most significant predictors on leadership and social aspect respectively. The Local Government Unit (BLGU) and Parents Teachers and Community (PTCA) participation are assumed to have great influence to pupils' development particularly on behavior and social aspects.

Keywords: *Community Participation, PTCA, BHW, BLGU, Pupil's Development*

METHOD OF PRODUCING AND USING ORGANIC MOLLUSCICIDE FROM SANDORICUM SPECIES

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ABSTRACT

Golden Apple Snail/Golden kuhol (Pomacea canaliculata Lam.) is a serious pest in lowland irrigated rice fields and now including the upland rice terraces in the Cordillera where heirloom rice are grown organically. Inorganic molluscicide could easily control golden apple snail but does not support organic rice farming, hence, there is a need to uncover an organic molluscicide that can effectively control golden kuhol. Series of experiments and field trials have been conducted until a simplified method of producing an organic molluscicide from Sandoricum species was developed and is presented in this paper. The proper use of the organic molluscicide is also described.

Keywords: *Organic molluscicide, Golden apple snail, Sandoricum species*

EMBRYO-TOXICITY AND TERATOGENICITY OF *DERRIS ELIPTICA* LEAF EXTRACT ON ZEBRA FISH (*DANIO RERIO*) EMBRYOS

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ABSTRACT

Derris eliptica or "Opay" locally known by the Ikalahan indigenous community in Imugan, Sta. Fe, Nueva Vizcaya, is typically being used for fish poisoning. Using the leaf extract using hot water extraction and the zebra fish (*Danio rerio*) as a model organism, the assessment of its teratogenicity and embryo-toxicity potential was conducted. Concentrations of .05% (T2) and .050% (T3) were used, while embryo water medium was used as the control (T1). Percent mortality was observed after 12, 24, and 48 hours, while percent hatchability was observed after 48 hours only. The number of heart beats per minute of the zebra fish embryo within 48 ours post treatment was also recorded. The results showed that zebra fish embryos treated with .05% extract showed reduced hatchability rate, lower heartbeat rate and delayed formation compared with the control. On the other hand, embryos under 0.5% manifested undeveloped head and tail region, coagulation and death of embryos. It was concluded that teratogenic and lethal categories were noted on the different treatment concentrations used respectively.

Further, investigation on this plant species affecting other animals with ethanol and acetone extracts are also recommended.

Keywords: *Teratogenic, Embryo, Zebra Fish,*

CULTURE TRIAL OF WHITE LEG SHRIMP *Pennaues vannamei* IN TANK USING SUPPLEMENTAL FEEDS

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ABSTRACT

White leg shrimp locally known as "vannamei" is known to be of high tolerance to salinity fluctuations and temperature changes in contrast to pennaues monodon locally known as "pansat". And vannamei species also commands a high market value both local and abroad. The purpose of this research is to find out the viability of culturing in tank the white leg shrimp *Pennaues vannamei* using supplemental feeds particularly trash fish and paprika. The rate of growth and survival rate was high after 60 days of culture trial. Out of 40 pcs fingerlings stocked, 38 survived or 95% and the average growth rate during the two samplings is 94.4%. Considering that the supplemental feeds used are cheap and readily available, the result of this study could be a good basis for commercial tank culture of *Pennaeus vannamei.*

Keywords: *Fingerlings, Tolerance, Salinity Paprika, Trash Fish*

HOUSE DUST MITE ALLERGY-LIKE SYMPTOMS AMONG SCHOOLCHILDREN IN RELATION TO HDM ALLERGEN SENSITIZATION AND OTHER VARIABLES

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ABSTRACT

An allergy is a sensitization to allergens causing the immune system to overreact when defending itself. Allergens are substances that can be found in house dust mites, pets, pollen, insects, molds, foods and in some medicines. In the Philippines, several factors are considered as triggering stimulants for asthma attack which include the weather, environment and kinds of pollutions. The main concern of this study was focused on allergic asthma and allergic rhinitis as atopic diseases because these two frequently co-exist. This study established the prevalence of asthma and rhinitis among 6 – 7 year old schoolchildren in 9 elementary schools in Bayombong, Nueva Vizcaya and identified the presence of HDM allergens in respondents' household. Questionnaires based on the International Study of Asthma and Allergy in Children were completed and initiated by parents to associate the presence and absence of symptoms to the detected HDM allergens. In addition, house dust collected from the bedroom of 13 schoolchildren were assayed for mite Group 2 allergen using Ventia Rapid Allergen Test and the blood collected from the 15 schoolchildren were subjected to the whole blood test Airborne

Allergy Screen Kit from Immunotest which can detect the IgE reactivity of the common airborne allergens from cat, pollen and dust mites. The estimated prevalence of asthma was 20.9% and that of rhinitis was 26.7%. House dust collected from the bedroom was found to contain low levels of mite Group 2 allergens. There was no significant difference (p = 0.251) in the IgE reactivity and (p = 1.000) in the level of mite Group 2 allergens associated with their HDM allergy-like symptoms. But there was a significant association whose mothers have acknowledged having asthma (p = 0.028), those who live with pets in their households (p = 0.36) and those who had a prior diagnosis of asthma and/or rhinitis (p = 0.0005) in symptomatic schoolchildren. There is a high prevalence of asthma and rhinitis among schoolchildren in Bayombong. However, those who claimed not having the allergic symptoms can have the IgE reactivity of the airborne allergens without showing any obvious symptoms. And that those who had claimed having the allergic symptoms are prone to have the HDM allergy-like symptoms with the 3 significant factors e.g. whose mothers having asthma, those living with pets and those who had been diagnosed with asthma and/or rhinitis. Therefore, further researches are necessary to understand the role of other airborne allergens and other factors in the prevalence of allergic diseases amongthe children of Bayombong.

Keywords: *Asthma, Rhinitis, Allergy, Allergens, House Dust Mite allergy-like symptoms, IgE reactivity, House Dust Mite allergens, Mite Group 2 Allergens*

ALTERNATIVE TRANSISTORIZED HEARING AID: SOUND AMPLIFIER

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ABSTRACT

Hearing loss interferes with communication efficiency and hinders interpersonal communication, the most basic of all human attributes. Many of the unfortunate people are suffering of the said problem but cannot afford to acquire expensive hearing aid. The study aimed to produce an affordable alternative transistorized hearing aid with a rechargeable battery and test its benefits to the selected hearing impaired respondents. The respondents underwent two laboratory tests namely: Pure Tone Audiometry (PTA) Test and Aided Test to determine the respondents' threshold of hearing and aided threshold respectively. The benefits of the device are measured utilizing a Glasgow Benefit Inventory questionnaire. Results showed that most of the respondents have difficulty in detecting low and high frequency components of speech, however upon wearing the device those with mild to severe hearing loss has improved their hearing ability to normal speech conversation level and reasonably satisfied of the device. However, those respondents with profound hearing loss do not benefit the device although it lessens the degree of their hearing loss. Hence, the device is applicable only to persons with mild to severe hearing loss.

Keywords: *Pure Tone Audiometry, Aided Test, Hearing Impairment, Amplifier, Transistor*

PHYSICAL FITNESS PRACTICES AND STATUS OF FRESHMEN STUDENTS IN HEIS

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ABSTRACT

This study was conducted to determine the physical fitness practices and status of freshmen students in State HEIs. Specifically, it determined the personal information of the respondents such as age, gender, body mass index; the level of physical fitness practices such as exercise, diet, sleep, recreation and discipline of the respondents; the physical fitness status in terms of health related such as muscular strength, muscular endurance, cardio-respiratory endurance, flexibility, and body composition of the respondents; and the skill related in terms of speed, power, agility, balance, and coordination skill of the respondents. It further determined the significant relationship between personal information and physical fitness status in terms of health related of the respondents; and the significant relationship between the level of physical fitness practices of the respondents and physical fitness status. An aggregate of 170 freshmen students served as respondents to this study obtained through purposive sampling based on their age. Most (97) were within 17-18 years old; 56 were within 19 and above, and 17 were within 15-16 years old. The physical fitness practices of the respondents were rated as good; likewise with the level of physical fitness status that includes health-related and skill-related were generally good. Per result of Chi-square test, personal information showed no significant relationship with physical fitness status in terms of health-related; however, BMI had significant relationship with health-related particularly muscular strength, muscular endurance, cardio-respiratory endurance, and flexibility. On the other hand, physical fitness practices such as exercise, diet, sleep, recreation, and discipline showed significant relationship with physical fitness status in terms of skill-related particularly on speed, power, agility, balance, and coordination as result of chi-square test. Particularly, recreation turned out best predictor on flexibility. Freshmen students in the state HEIs in North Cotabato have enough and good physical fitness practices with suitable body mass index that contributed to a considerable level of physical fitness status on health and skill-related indicators. This implies that substantial amount of exercise, good diet, enough sleep and rest, commendable recreation, and discipline make a person to become physically fit.

Keywords: *Physical Fitness, Practices, Freshmen Students, HEIs*

MANGROVES UTILIZATION, DEPENDENCY AND MANAGEMENT: THE CASE OF CARMEN, CEBU, PHILIPPINES

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ABSTRACT

Coastal Barangays in Carmen Cebu were surveyed and their extent of dependency and utilization on mangroves were accounted for. Results revealed that gleaning and fishing are major activities in the mangrove areas. Catch were primarily for home consumption. Dependency on mangroves ranges from 50% to 100%. Presence of mangroves is highly

important for it serves as breeding, feeding and nursery grounds for many estuarine and marine organisms as well as protects the coast against erosion and big waves. Protection and management of mangrove communities are of high priority and is significant ($p<.05$) thus leads to increase in species diversity and composition.

Keywords: *Mangroves, Dependency, Breeding Ground, Gleaning, Fishing*

SWEET POTATO (*Ipomea batatas* L. Jam) AS BREAD FILLING

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ABSTRACT

The study aimed to find out whether sweet potato locally known as "camote" could be a sweet filling to bread to improve its flavor, palatability and nutritive value. The bread preparation was treated in five treatments where treatment 0 (T_0) is the control, milk and butter as filling (Spanish bread) T_1 is 75% milk and 25% camote as bread filling; T_2 is 50% milk and 50% camote); T_3 is 35% milk and 65% camote and T_4 which is 25% milk and 75% camote. All the treatments were subjected to organolyptic tests in terms of taste, texture, flavor, odor and general acceptability by the different panelists who are students and teachers. Results showed that in terms of taste, flavor, odor, texture and general acceptability, all the treatments (T_1 to T_4) were rated like very much with average range rating of 7.25 to 7.86. The control treatment (T_0) is rated like moderately (6.79). Results further showed that treatment 3 (35% milk and 65% camote as filling to bread) got the highest average rating of 7.86 like very much followed by T_1, T_2 and T_4. ANOVA results show that there is no significant difference on all the attributes and treatments and that computed Ft is higher in terms of odor attribute (5.65) and small in taste attribute (1.37).

Keywords: *Camote, Milk, Treatments, Organolyptic test, ANOVA*

CEBUANO PRACTICES ON THE NEEDED SKILLS IN THE TRAVEL INDUSTRY

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ABSTRACT

The study assessed the specific criterion of skills needed of the travel industry as perceived by the practitioners as to Itinerary Planning and Packaging, Travel Counseling, Reservation, Tour Guiding and General Operation Management Skills.The data were gathered and collected from the representative sample of fifty around Cebu City and Lapu-Lapu City travel establishments. The weighted mean and the average weighted mean were computed onthe respondent's extent of skills needed. In identifying the skills needed the following categorized response of Mostly Needed, Needed and Less Needed are utilized. The study had found out that itinerary planning and packaging, reservation, travel counseling, tour guiding and general operation management skills in the practice of their field is mostly needed.Good travel planning skill is one of the basic in the industry with the knowledge on the various IATA codes and entry commands in AMADEUS and techniques in tour guiding which can also provide counseling. It is highly recommended that a skill criterion is develop on the core skills of Travel Management must be

adopted to provide guidance on the competencies to be taught to the students as well as the accurate strategies and activities to evaluate the skills acquired to fully respond to the need of the industry. This will create uniformity in the topics and knowledge to be discussed among all the students in all levels thus making the university a replica of the industry.

Keywords: *Tourism, Travel, Skills, Practices, Industry*

ETHNOBOTANICAL USES AND PHYTOCHEMICAL ANALYSIS OF TWO *AMORPHOPHALLUS* SPECIES (BALBAG) IN PALAWAN, PHILIPPINES

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ABSTRACT

The study dealt only on the ethnobotanical uses and phytochemical analysis of two *Amorphophallus* species found in Palawan, Philippines. This was also conducted to find out the industrial and medicinal potential of the plant and not just only a "hog meal." Actual collection of *Amorphophallus* species was done by the researchers. Air-dried plant parts were used to test for inorganic substances like iron and calcium. Alcohol extract of leaves, stalks and corm of two plant species were used to test its phytochemical content. Tests procedure such as Culvenor-Fiztgerald test, using the Liebermann-Burchard reaction, Wilstatter "Cyanidin" test, froth test, Ferric Chloride test, and Keller & Killiant test were used to determine the presence of phytochemicals in different plant parts such as leaves, stalk and corm. The two *Amorphophallus* species in Palawan is still utilized by the indigenous people as famine food and feed extender to hogs. Results of the phytochemical screening revealed that one of the species of *Amorphophallus* has more phytochemicals particularly saponin than the other species. But both *Amorphophallus* species contains inorganic substances such as iron and calcium; and phytochemicals like alkaloids, steroids, flavonoids and tannins.

Keywords: *Amorphophallus, Ethnobotany, Phytochemicals*

NUTRIENT AND CHEMICAL COMPOSITION OF THE SEA HARE, DOLABELLA AURICULARIA IN DAVAO ORIENTAL

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ABSTRACT

Determination of proximate analyses, macro, and micro nutrients content were conducted on the mature sea hare, *Dolabella auricularia*, and its egg strings. The standard chemical analyses of Association of Analytical Chemists were followed. The egg strings had the highest concentration for moisture (93.32%), crude fat (2.01%), phosphorus (0.2266%), potassium (0.000869%), sodium (8.69%), magnesium (1.01%), Iron (0.175%) and Zinc (0.0282%). On the other hand, the mother sea hare showed high concentration for ash content (39.78%), crude protein (33.25%) and calcium (8.77%). The results implied that sea hare egg strings can be a

good alternative source of nutrients based on the Recommended Energy Nutrient Intakes (RENI).

Keywords: *Proximate Analyses, Macronutrients, Micronutrients, Sea Hare Resources*

OCCUPATIONAL HEALTH AND SAFETY OF WOMEN AND CHILDREN IN SMALL SCALE MINING IN ARAKAN VALLEY COMPLEX.

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ABSTRACT

The study sought to determine the occupational health and safety of women and children in small scale mining in Arakan Valley Complex from January 2014 to June 2014. Specifically it aimed to: identify the socio-economic and habitat profiles of Small Scale Mining informants in the Arakan Valley Complex; determine the roles and responsibilities and occupational safety practiced by household head, women, and children in Small Scale Mining (SSM) in the Arakan Valley Complex; and determine the health condition of women and children in Small Scale Mining (SSM) in the Arakan Valley Complex. This study used qualitative method, detailed description through case presentation on the status of households head, women and children in relation to their occupational health and safety, while descriptive analysis was utilized to describe statistically the socio-economic profile and its relationship to occupational health and safety. Majority of the interviewed respondents were Manobo (*Kidapawanen)*, aged 25-50, married, father, Magbabaya (*Local Religion among the Manobos),* elementary level of education, with cash cropping such as rice and corn as their other sources of income aside from small scale mining. Since the mining area was along the river and creeks were the water level was low during summer months. Miners mined without mining license, most were diggers and processors and members of the family especially women and children helped the head of the family. As young as 10 years old, children already helped their parents to earn a living. The mining sites were 1-5 kilometers from their home. *Margaha* (ore) was the type of deposit mined. It was also abundant especially after a huge flood or continuous rain. They mined with an average of 5-8 years after the discovery of gold in the river. Their income was mostly spent on food, health, school fees, clothing, transportation and energy. They mined an average of 2-8 grams of gold per week depending on the mining equipment used with a selling price of P1, 300.00 per gram on the black market as well as the supply of the mercury that was used in the amalgamation was also taken. Women and children in small scale mining commonly experienced difficulty in breathing, severe cough, muscle and joint pain, weakness or exhaustion and chest pain. The mining activities were very vulnerable not only to women and children but also to the head of the family since they did not use any safety gears equipment and they lack the knowledge on the danger of mercury on health and environment especially that the amalgamation process was commonly done in the mining site. Their long exposure under the heat of the sun and water can be very dangerous on their health as well. Poverty is still very high among the small scale miners.

Keywords: *Small Scale Mining, Occupational Health and Safety, Upper Pulangi Cotabato*

PERFORMANCE OF STUDENT TEACHERS OF WESTERN PHILIPPINES UNIVERSITY-QUEZON CAMPUS

Dr. Cecilia S. Santiago, Ms. Aprilyn B. Dimalaluan

ABSTRACT

This study was conducted to determine the performance of student teachers of Western Philippines University-Quezon Campus. Specifically, the study aimed to: determine the following: level of performance of student teachers of WPU-Quezon with regards to their student teaching as rated by themselves and their Cooperating Teachers; the problems encountered and the solutions made; and their recommendations to improve the student teaching program of the university. Complete enumeration of the student teachers and cooperating teachers was considered in this study. A total of 29 student teachers and 28 cooperating teachers served as respondents. The performance of student teachers were rated based on the following areas: lesson planning and preparation, content of the lesson, teaching methods and instructional delivery, classroom management, questioning skills and how they carried out their duties and obligations. Descriptive statistics was used in the data analysis. Results revealed that the student teachers rated their performance in all the areas as "very satisfactory". This self-evaluation is supported by the evaluation of the Cooperating Teachers that their student teachers have "very satisfactory" performance except in questioning skills where they only rated as "satisfactory". The overall level of performance of the student teachers based on their self-ratings and the ratings of the cooperating teachers were found to be "very satisfactory". It revealed that WPU-Quezon campus is providing quality training in its pre-service teachers. However, the administration should provide intervention activities to further enhance the questioning skills among its pre-service teachers.

Keywords: *Student Teaching, Performance, Cooperating Teachers, Pre-Service, Questioning Skills*

ASSESSMENT OF WATER SAMPLES FROM TINANAN RIVER IN ARAKAN VALLEY PHILIPPINES:BASIS FOR WATER MANAGEMENT

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ABSTRACT

A study was carried out to assess the suitability of water samples from Tinanan river for domestic activities in Arakan municipality. Water analysis was done using Standard Methods for Examination of Water and Wastewater, 16th edition. The assessment was done for a period of 5 – months which started from October 2009 up to February 2010. Samples were taken from the identified sampling stations. Tinanan rivers showed the following results. pH (8.31±0.13), temperature (24.8±0.4), dissolved oxygen (8.89±0.62), biochemical oxygen demand (0.96±0.62), total suspended solids (40±27), total dissolved solids (194±53), and total solids (244±43). All levels and concentrations of the investigated parameters from water samples of Tinanan rivers were found to fall within the standard set by DENR. Results showed that Tinanan river is classified as Class A to Class B category which would mean that water from Tinanan river is still suited for recreational purposes such as bathing, swimming and the like (DAO # 34).

Keywords: *Physico-chemical properties, Dissolved Oxygen, Biochemical Oxygen Demand, Total Dissolved Solid, Total Suspended Solid, Total Solid*

MACROALGAL DIVERSITY AND PEOPLES' PERCEPTIONS OF BEACH RESORTS OF CAMOTES ISLANDS, CENTRAL, PHILIPPINES

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ABSTRACT

Camotes Islands is known to be one of the tourist destinations in the Philippines because of its beach resorts. It is composed of 3 Islands namely Pacijan, Poro and Ponson. Plants have been a component of its beach resorts. Hence, their study therefore was done to determine their status, composition and abundance. There are 9 beach resorts in Pacijan Island; 5 in Poro and 4 in Ponson Island. This study used the transect- quadrat method laid in the beach resorts to determine its richness, species composition, occurrence and conditions. Peoples' perception on the condition of the beach resorts was also taken using an interview guide. Results show that there are 38 macroalgal species found throughout Camotes Islands belonging to 3 families (Chlorophyceae, Phaeophyceae and Rhodophyceae) which is dominated by Chlorophyceae. People's perceptions on the condition of beach resorts shows that for the last 10 to 20 years more macroalgae are found in the beach resorts compared to the present. There are more gleaners today than the past. Beach sizes differ according to activities of the waves. Many flocked into settlements in beaches unlike before that they are less inhabited. Problem on garbage disposal and segregation was not properly followed by the beach users and harassment of foreigners to some beach owners and personnel was felt.

Keywords: *Macroalgae, Beach Resorts, Pacijan Island*

A STUDY ON WETTABILITY FOR BIOMIMETIC RIBLET SURFACE LIKE SHARK SKIN

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ABSTRACT

Shark skin has known as having functional performances such as self cleaning and anti-fouling as well as excellent drag reduction due to a unique skin structure with riblet. In this study, the hydrophobicity properties for the biomimetic surfaces that replicate shark skin are evaluated. First of all, the shark skin replicas are obtained using the micro molding technique directly from a shark skin template. The contact angle in solid-air-water interface is evaluated for shark skin replicas. We also simulated the behavior of contact angle for the numerically generated riblet surface like shark skin. The variations of contact angle with fractional depth of penetration are

demonstrated, and the experimental and simulated results are compared. As results, it is also observed that the shark skin replica by the micro molding technique gives better effect on the wetting performance. The riblet structure of shark skin makes higher static contact angles due to that air pocket formation between riblets on shark skin. For the result of simulation, overall, it is shown that the simulation results cover the experimental ones.

***Keywords**: Wettability, Shark Skin, Riblet Structure*

ANALYSES OF SWEETPOTATO VARIETIES IN CORDILLERA: POTENTIALS FOR NUTRITION SECURITY

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[1]College of Agriculture, Benguet State University; [2] Northern Philippines Root Crops Research and Training Center, Benguet State University; [3]Nutritional Scientist –Consultant FoodSTART

ABSTRACT

This study was done to determine and provide the proximate analyses of the ten sweetpotato varieties grown and consume in the Cordillera (particularly in Ifugao and Benguet) which might help promote the consumption sweetpotato varieties. Ten sweetpotato cultivars most commonly produced and consumed by local farming households were selected for the study. Selections were based on root color and cultivars grown across focal sites. Fresh samples were steamed and peeled for proximate compositions, vitamins, minerals and total dietary fiber analyses. All varieties were good sources of calcium and dietary fibers with Taba-ao, Haponita and Bengueta were highest in calcium; Atok, Lubeki, Gislayan and Mammot were highest in dietary fibers; Taba-ao and Pacac were highest in Vitamin C ; Immitlog had highest B carotene content followed by Kapangan. Gislayan had the highest antioxidant content while Bengueta had the lowest antioxidant content but the highest antioxidant activities. Because of these varying nutritional content, it is recommended to select varieties/cultivars for different deficiencies. People with diabetes or cardiovascular diseases, consumption of Bengueta and Gislayan is recommended; for children under 5 years old, Immitlog, Taba-ao and Mammot; for people who want to control blood glucose level should consume Atok, Kapangan, Lubeki varieties of sweetpotato.

***Key words:** Poximal Analyses, Antioxidant Activities*

MARKETING AND CONSUMPTION OF SWEET POTATO

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ABSTRACT

Sweet potato, and other root and tubers crops is seasonal, but is always available in the market because of produce from swidden farms. Higher supply is observed from January to May. Price of sweetpotato is almost stable at P25-35 per kgs, due to increase in demand because of restaurants using sweetpotato as side dish and some bakeries. Consumers/buyers of sweetpotato and other rootcrops are household consumers, restaurants, processors of camote,

turon and bakeries. The most popular rootcrop is sweetpotato. Almost all the respondents purchase/consume sweetpotato, many for taro corms and stalks, very few for ube and cassava. Sweetpotato is consumed as snack food, ingredient for *pinakbet* and *buridibod* recipes. For the Cordillerans, sweetpotato is part of their culture. It is boiled and served during festivals such as *canao* and other special occasions. In relation to demographic profile of consumers on the consumption of root and tubers crops (RTCs), results show that there is no significant difference as to the age of respondents on consumption of RTCs, that age factor does not affect the consumption of RTCs. As to sex, educational attainment, ethnicity, occupation and income, there is significant difference in relation to consumption of RTCs.

***Keywords**: Swidden Farms, Seasonal*

DESIGN, CONSTRUCTION AND PERFORMANCE EVALUATION OF NEW INDIRECT SOLAR DRYER DESIGN FOR DRYING FERMENTED CACAO BEANS

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ABSTRACT

The drawbacks of indirect solar dryer from previous studies usually occupy large space and complexity of design as compared to direct solar dryers because the solar collector is a separate item as reviewed by El-Sebaii and Shalaby (2011). Reflective and absorptive inner surfaces indirect solar dryers were developed; integrating the drying chamber and solar collector with a black cloth provided as partition which serves as heat absorber. The significant advantage of indirect solar dryer is better quality of dried products (Bolaji (2005), Pangavhane(2002), & Madhlopa (2002)) because exposure to ultra-violet rays is avoided. Temperature profile from no load experiments (no drying product) of the two solar dryers during selected days of February, June and July year 2014 ranged an average of 40 to 90^{O}C and 40 to 70^{O}C for the full load (with fermented cacao beans) during the month of March 2014 and January 2015. Drying of fermented cacao beans was done in triplicate at a loading rate of 40.5 kg/m^2. The average final moisture content and titratable acidity from the solar dryers ranged from 6-8% and 10.91-17.5 meq NaOH per 100 g respectively.

***Keywords**: Black Cotton Cloth; Integrated Solar Collector And Drying Chamber; Reflective-Body; Absorptive-Body*

ZOOPLANKTON ASSESSMENT AND MACRO INVERTEBRATE IDENTIFICATION: A BIOINDICATOR OF BITAN-AG CREEK, CAGAYAN DE ORO CITY

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ABSTRACT

Physico-chemical analyses determine the water quality and the goodness of a body of water for particular purpose, be it in streams, rivers and oceans. Testing water quality and characterizing

the presence of organic or inorganic wastes in the sediments in particular can give information about the health of the river system. By testing the water over a period of time, the changes in the water quality of a particular ecosystem as well as the diversity of zooplankton and macro invertebrates can be use to predict the damage of a body of water. An assessment of the diversity of an aquatic organism can also provide relevant indication of the water quality of an aquatic ecosystem. More over the presence and absence of some of these aquatic microorganisms serve as biological indicators of the characteristics found to be important in determining local richness of an ecosystem. Unfortunately, some rivers like that of Bitan-ag Creek in Cagayan de Oro City, Mindanao Philippines have become highly endangered due to the impacts of anthropogenic activities, habitat degradation, exotic species introduction, water diversions, pollution, and global climate changes. The study focuses on the zooplankton assessment and macro-invertebrates identification as a bioindicator to identify the current scenario of the Bitan-ag Creek.

***Keywords**: Zooplankton, Ecosystem, Macro Invertebrates, Anthropogenic, Physico-Chemical Analyses*

SPECIES LIMITS IN TWO WIDESPREAD ENDEMIC PHILIPPINE BIRDS, ELEGANT TIT AND SULPHUR-BILLED NUTHATCH

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ABSTRACT

Biodiversity threats in Philippine birds are becoming more serious, stressing the urgency of in depth understanding of the Philippine avifauna not only for classification but also for conservation. This study aimed to determine the validity of the *Sitta oenochlamys* species status, and examine the species limits of *Periparus elegans* and *Sitta oenochlamys.* Study skins of *S. frontalis palawana*, *S. oenochlamys* and *P. elegans* were evaluated for phenotypic differences and scored using Tobias et al. (2010) criteria for delimiting taxa. Results showed that *S. oenochlamys* is a valid species as it reached the threshold (7) compared to *S. frontalis*. Northwestern race *S. o. mesolueca* scored 7 with the southern races. *P. elegans* northern and southern races, *elegans* and *mindanensis* respectively also scored 7. Moreover, Leyte population scored 7 with *mindanensis* and 4 with *elegans.* Thus, recommending the elevation of *S. o. mesolueca* along with *P. e. mindanensis* into species level and the recognition of Leyte population as a new subspecies. Both species exhibit clinal variation, the splits which are at either ends of a cline show that further studies should be made to look into the possibility of special considerations in the application of the method in such cases.

***Keywords**: Species limits, Philippine birds, Periparus, Sitta*

OPTIMUM CONDITION FOR MYCELIAL GROWTH OF PHILIPPINE WILD EDIBLE MUSHROOMS

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ABSTRACT

The Philippines is blessed with rich mycological resources which are growing on different substrates and geographical locations. Recently, there is a growing interest on mushroom as a source of nutraceutical and pharmacological compounds. In our desire to isolate novel compounds from Philippine wild edible mushrooms, we evaluated the optimum growth conditions for mycelial growth of four species of mushrooms namely: *Ganoderma lucidum, Lentinus tigrinus, Volvariella volvacea* and *Coprinus comatus* using indigenous culture media.

Results showed that the different mushroom species can grow on different culture media evaluated. *G. lucidum* and *L. tigrinus* recorded wider mycelial diameter and thick mycelial density in coconut water gulaman. On the other hand, *V. volvacea* and *C. comatus* produced larger mycelial diameter and thick mycelial density in in potato sucrose gelatin. Smaller mycelial diameter and very thin mycelial density was observed in corn grit decoction gelatin. Moreover, all species can also grow in wide range of pH (6-8) in sealed petri dish incubated in either light or dark condition at room temperature.

***Keywords**: Philippine Wild Edible Mushrooms, Optimum Conditions*

CONTRIBUTION OF ROOT AND TUBER CROPS TO FOOD AND NUTRITION SECURITY IN THE PHILIPPINE HIGHLANDS

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ABSTRACT

Root and tuber crops (RTC's) are recognized for food security of the world's poor. Asia-Pacific has the highest production and utilization of these crops. In the Cordilleras, these are very important as food source and its role in the cultural activities of the marginalized indigenous peoples. Food intake was assessed on children 0-5 and 6-12 years old and adult male and female in the months when food was scarce. Carbohydrates were the main source of energy followed by protein and fat as the least source. For protein, 81% of 0-5 years old children, 79% of 6-12 years old children while only 31% of the adults met the daily protein intake. No repondents met the daily fat intake requirement. The sufficient macronutrient intake was based on 55% of energy from carbohydrates, 20% from fat and 15% from protein (RENI 2002). RTC's contributed 26% carbohydrates in children 0-5 years old, 22% for children 6-12 years old and adults. It also contributed iron and Vitamin C intake at 26% and 61% in children 0-5 years old ;

10-11% to vitamin A intake and 52-58% to vitamin C intake. Insufficiency in fat, protein, iron and vitamin A was more pronounced in adult women.

Key words: *Nutrition Security, Macronutrient Intake*

GROWTH, MORTALITY AND RECRUITMENT OF THE MUD CLAM, POLYMESODA EROSA (SOLANDER 1786) (BIVALVIA: CORBICULIDAE) IN SANTIAGO CREEK, DAGUPAN CITY, NORTHERN PHILIPPINES

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ABSTRACT

Stock assessment on the natural population of the mud clam, Polymesoda erosa in Santiago Creek was conducted. Population parameters were assessed using monthly shell length frequency data (October 2013 to December 2014). Derived asymptotic length (L∞) and growth coefficient (K) were 83.90 mm and 0.40 yr-1, respectively. Estimated maximum length (Lmax) was 82.93 mm. Fast growth was predicted for the first four years of existence. Longevity of the clams is approximately 20 years. The population length-weight relationship showed a positive allometric growth (r2 = 0.98). Total (Z), natural (M) and fishing (F) mortalities were 1.77 yr-1, 1.07 yr-1 and 0.70 yr-1, correspondingly. Estimated exploitation rate (E = 0.40) was higher than the predicted maximum sustainable exploitation (Emax = 0.35). Single recruitment pulse wa derived. Monthly condition and gonadosomatic indices suggested that spawning is year-round peaking in the months of January to March. The fishery in the clam bed appeared to be in the early stage of overexploitation. Regulation is being recommended to avoid further depletion of the stock.

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