

Philippine Society for the Study of Nature (PSSN), Inc.

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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 of strategies for the unscrupulous 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 primary 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.

Objectives

The society's objectives are:

- Provide and develop strategies towards wise and sustainable use of nature;
- Ensure a faithful representation of responsible thinking and sentiment regarding issues about nature;
- Establish partnership/collaboration with LGU and NGO;
- Establish local institutional chapters;
- Strengthen camaraderie and cooperation among members

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 UO Baguio; 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 with Benguet State University. These conferences provided an important venue that attracts researchers, engineers, scientists, students, environmental advocates, and other professionals from many parts in the country.

Scientific studies in nature are creating knowledge that could enhance resiliency and sustainability. In an era where global environment and climatic conditions are continuously changing, scientific knowledge is an important input in the process of making ecological, societal, and politico-economic systems resilient and sustainable. Such knowledge should be shared, exchanged, or disseminated across the globe and disciplinary boundaries.

ICoNSIE 2016 will serve as a venue for multicultural and multidisciplinary conversations of nature studies outputs that could promote socio-political, economic, and environmental resiliency and sustainability. Specifically, the conference aims to:

1. provide scientists, researchers, academic personnel, and other individuals across the globe the opportunity to exchange scientific knowledge and experiences in studying and managing the environment, resiliency, and sustainability
2. provide capability building to participants in writing publishable papers
3. expose the participants to important ecological and cultural heritage sites
4. enhance scholarly relationship among participants for possible networking and collaborations

This year's theme, “Nature Studies: Creating knowledge and building bridges for resiliency and sustainability” focuses on the role of nature studies in building knowledge base for resiliency and sustainability. It was developed around the following topics:

1. Resiliency and sustainability initiatives
2. Disaster risk reduction, management, collaborations, and partnerships
3. Green economy, technology, and policy
4. Environmental knowledge creation, sharing, and management

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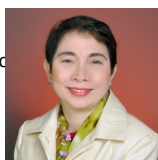


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DR. LITA SOPSOP



BOT

DR. LITA SOPSOP
Ex-Officio

Palawan State University

Palawan State University



Republic of the Philippines
House of Representatives
Quezon City, Metro Manila



MESSAGE

It is my pleasure to welcome all of you extraordinary people of different orientations for gathering in this auspicious place in the City of Dumaguete for the ICONSIE 2016. I am singularly impressed by your aspiration, talents and desire to make a difference in our community and beyond.

This gathering I believe is very indispensable because this is what we need to do when faced with life's investable difficulties. Your output would be the most useful, powerful tool or publicized research information that everybody should know for certainly this will teach us the steps to take, now and the days ahead on how to bounce back or to rise-up from the trials and tribulations that may come our way, making us stronger, smarter and with more self-esteem. Likewise, your output will lead us to a more inspiring, exciting and challenging ways aimed at helping us to survive in this highly precarious world we live in.

As Charles Darwin simply put it and I quote. "It is not the strongest of the species that survives, nor the most intelligent. It is the one that is most adaptable to change."

Collaboration is nothing new, it is becoming increasingly important in the modern world as we become more connected around the globe. Yes, while we cannot protect everyone especially our young people from the things that may cause them distress throughout their lives, at least we can help them become more resilient so that they are more able to adjust to the uncertainties and challenges that life may bring.

I would like to commend the organizers and everyone involved in this particular endeavor for coming up with their scientific, up to date, state of the, method of gathering information and collaborative efforts geared towards achieving a more progressive and habitable place in this part of the planet. I salute all of you for a job well done. Congratulations and more power.

GEORGE P. ARNAIZ
Representative
2nd Congressional District
Province of Oriental Negros

Message of dumaguete city mayor

Message from Silliman University

Message from Dr. Edwin Cubelo

Program at a Glance

Date (2016)	Time	Activity
Tues, 24 May	AM	General Registration Setting up of posters Preconference Workshop on “Writing a Publishable Paper” by Dr. Leni Yap-Dejeto, Associate Professor UP Visayas Tacloban College
	PM	Workshop continuation
Wed, 25 May	AM	Opening Ceremony Keynote Speech by Dr. Resurreccion Rex Sadaba, UP Visayas First Plenary Speech, Dr. Hugo Vulkaert Kasetsart University, Thailand Second Plenary Speech, Mr. Manuel Palis APPEND, Philippines
	PM	Best Paper Competition 3 rd Plenary Speech, Ms. Veronica Magli Etimos, Italy Election of Officers
Thurs, 26 May	AM	Parallel Sessions
	PM	Parallel Sessions General Assembly Induction of New Officers and Members
Fri, 27 May	AM	Parallel Sessions
	PM	Awarding of Winners Awarding of Certificates and Closing Ceremony
Sat, 28 May	AM	Post-conference Tour
	PM	Homeward bound

Invited Talks: Keynote



RESURRECCION B. SADABA, PHD

Dr. SADABA co-authored two award-winning books (by NAST) *Handbook of Mangroves in the Philippines* (2004) and *Beach Forest Species and Mangrove Associates* (2012). These books are now being used as major references by scientists, researchers, teachers, students, and the public. His research projects included focused mainly on the mangroves and beach forests species. Knowledge derived from the researches were presented as lectures and poster exhibits in various scientific conferences for various audiences, locally and internationally. His recent awards include the 2015 Distinguished Alumnus Award. University of the Philippines Los Banos, School of Environmental Science and Management Association; 2014 Metrobank Foundation Inc. Outstanding Teacher of the Philippines and as Scientist 1, UP System Scientific Productivity Award for the period 2013-2015 and recently inducted as member of the Phi Sigma Biological Sciences Honor Society. Currently, he is the Dean of the College of Arts and Sciences, UP Visayas, Miagao, Iloilo.

Nature Studies: Creating Knowledge and Building Bridges for Resiliency and Sustainability

The academic research community continues to play an important role in generating knowledge for sustainable development and improving resiliency in various sectors of society through nature studies. However, such knowledge will only be useful if a genuine collaboration exists between knowledge-generators and knowledge-users. This also calls for responsible environmental stewardship that relies on decisions based on science or an evidence-based approach. While significant knowledge have been generated in establishing the concept of sustainable development and resiliency, much is desired on how to apply such knowledge with actions to achieve sustainable development and resiliency. This presentation will highlight the importance of nature studies/research and collaborations in building bridges for resiliency and sustainability across sectors of the society. Specifically, it will discuss issues related to 1) promoting connection of basic research with needs of society, (2) developing effective mechanisms for integrating knowledge from various sources, (3) enhancing communication between scientists and decision-makers, (4) enhancing productive partnerships with various

stakeholders, (5) harmonizing and integrating available knowledge, (6) harmonizing outcomes and goals between scientists and practitioners/users, and (7) improving environmental stewardship through enhanced participation among knowledge-generators and knowledge-users. Examples will be drawn from author's researches on mangroves and oil spills to illustrate the above-mentioned issues for better appreciation on the role of nature studies in our lives.

Keywords: sustainable development, resiliency, environmental stewardship, mangroves, oil spills

Invited Talks: Plenary



HUGO VOLKAERT, PH.D. (THAILAND)

BIOTEC Plant Research Unit, Thailand Science Park, Khlong 1, Khlong Luang, Pathumthanee 12120, Thailand
Center of Excellence in Agricultural Biotechnology, Postgraduate Education and Research Development Office, Commission on Higher Education, Ministry of Education, Bangkok 10900, Thailand
Center for Agricultural Biotechnology, Kasetsart University Kamphaengsaen Campus, Nakhon Pathom 73140, Thailand

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Preparing Crop Breeding Programmes for Global Climate Change

A consensus is growing that human activities are contributing to global climate change. Although the exact changes are still impossible to predict, one thing that generally comes out of the computer models is that weather will be more unpredictable in the future. As such, even though some large biotechnology companies have released “climate-change-ready” crop seeds, there is going to be a lot of uncertainty about food production in the future. As we do not know yet the trends how climate will change in a particular region or country, we do not need climate ready seeds now, but we need to work very urgently on climate-ready breeding programmes.

Tremendous progress has been made in molecular genetic technologies and now gene editing tools are coming on the stage. However, all these tools will not deliver the desirable results unless there is better understanding of the linkage between genotypes and phenotypes. For a plant breeding program to be ready for future climate changes, the genetic resources of the crops and their wild progenitors should be conserved in situ and ex situ, the phenotypic diversity and plasticity should be described, and the molecular genetic diversity should be known. Currently, there is much emphasis using

“genomics” to study genetic diversity. Genomics data can be obtained within a very short time, weeks or months. However, the PHENOME is much more important, more difficult to study, and takes much longer time to observe, over several growing seasons and in different environments.



MANUEL K. PALIS (PHILIPPINES)

Program Manager-APPEND, Inc. 2015-to date

Chief Executive Officer, VisionFund International, Mongolia 2012-2013

Managing Director, HOPE International, Republic of Congo, 2010-2012

Managing Director, World Relief, Kosovo, 2006-2009

Microenterprise Development Technical Advisor, World Relief,

Mongolia, 2003-2006

Talent Bank Consultant, Women’s World Banking, Sri Lanka, 2003

Microfinance Technical Advisor, Opportunity International-Australia and Bank of Papua New Guinea, 2001

Microfinance Specialist, UNDP, Fiji Islands, 1997-2001

Program Manager, TSPI Development Corp, Makati City, 1993-1997

The Role of Inclusive Microfinance Towards a Sustainable Community Development

This paper attempts to describe the definition, concepts, operationalization and contribution of microfinance to people, particularly the poor towards sustainable community development. Microfinance Institution Non-Government Organizations (MF NGOs) have many types of financial services and non-financial programs, which assist community to become socially and economically empowered, and eventually attain sustainable development. The speaker will share some of these financial services and non-financial programs that microfinance intervenes, such as inclusive finances, capacity building and self-reliance in some places where he served. Microfinance programs improve the economic well-being of community by job creation and income generation. In the long run, this economic empowerment will contribute to sustainable community development. The MFI NGOs, through capacity building, enhance community capacities such as ability, skill and knowledge of entrepreneurs, developing and managing social entrepreneurs, and solving problems to gain the mastery over their lives. It also motivates the community to participate in the projects and community initiatives and help them to improve quality of their lives. In this way, MF NGOs contribute towards sustainable community development. Furthermore, MF NGOs assists the community to discover their own potentials and become good stewards on their own resources. In short, this paper demonstrates that all these programs and functions of MF NGOs

through inclusive microfinance could contribute towards the realization of sustainable community development.



VERONICA MAGLI (ITALY)

Etimos' country officer in the Philippines.

Support to the writing and management of some macro-finance based development projects:

“Remploy III – Support to the experimentation of new roadmaps for the voluntary return of particular immigrants categories” project, funded by the Italian Ministry of the Interior and in partnership with the International Organization for Migration, involving 7 countries (Bolivia, Ecuador, Ghana, Morocco, Peru, Senegal and Tunisia);

“Cultivate a different future – A micro-credit rural fund to improve the smallholders' lives” project, funded by an international Oil & Gas private company, in partnership with a local Microfinance Institution in Cameroun.

FROM THE DISASTERS' RECOVERY TO THE DEVELOPMENT OF A LONG-TERM COOPERATION: THE ETIMOS' APPROACH

This paper attempts to describe the fundamental steps and actions to recover from an economic and social crisis, typical of a post-emergency context, analysing in particular the process that can lead from an initial urgent intervention to a development of a durable partnership.

Based on the Etimos' experience (an Italian foundation involved in post emergency microfinance), the analysis will describe the circumstances and the needs that occur in a post-disaster situation, comparing some specific calamitous events: the Sri Lanka Tsunami in 2004, the devastating earthquake in Abruzzo (Italy) in 2009 and the super strong typhoon Yolanda that hit Central Visayas in 2013.

During all these calamities, Etimos worked with the existing indigenous organization and local people. This collaboration aimed to generate a long-term impact, by helping communities to increase and enhance their skills and become more resilient in case of future calamitous events. Under this paradigm, a combination between grants and finance for the development to invest in the local organizations' resilience will help to have a positive cascade effect on the damaged community.

In the same terms, the presence of a technical assistance component in the financial programs will help to strength the share of knowledge among people converting a

simple post-emergency intervention in a larger action, with the aim of creating the conditions for a durable and sustainable development path.

Invited Speaker: Pre-Conference Workshop



ROLLY G. FUENTES, PhD

Associate Professor 1

University of the Philippines Visayas Tacloban College

Education:

Doctor of Philosophy (Pharmaceutical Sciences) Graduate
School of Medical and Pharmaceutical Sciences

Chiba University, Japan

Advisor: Prof. Dr. Masami Ishibashi

Research Interest:

Natural Products Chemistry; Signaling Pathways; Plant Physiology

Some Featured Publications

R. G. Fuentes, M. A. Arai, and M. Ishibashi, "Natural compounds with Wnt signal modulating activity" *Natural Product Reports*. **2015**, 32, 1622-1628. IF: 10.107

Arai, M. A.; Kofuji, Y.; Tanaka, Y.; Yanase, N.; Yamaku, K.; **Fuentes, R.G.**; Karmakar, U.K.; Ishibashi, M. "Synthesis of rocaglamide derivatives and evaluation of their Wnt signal inhibitory activities". *Organic and Biomolecular Chemistry*. 2016, 14, 3061-3068. IF: 3.562

Fuentes, R. G.; Arai, M. A.; Sadhu, S. K.; Ahmed, F.; Ishibashi, M. "Phenolic compounds from the bark of *Oroxylum indicum* identified as Ngn2 promoter activators" *Journal of Natural Medicines*. **2015**, 69, 589-594. IF: 1.593

Fuentes, R. G.; Toume, K.; Arai, M. A.; Sadhu, S. K.; Ahmed, F.; Ishibashi, M. "Scopadulciol, isolated from *Scoparia dulcis*, induces β -catenin degradation and overcomes TRAIL resistance in AGS human gastric adenocarcinoma cells" *Journal of Natural Products*. **2015**, 78, 864-872. IF: 3.798

Fuentes, R. G.; Toume, K.; Arai, M. A.; Sadhu, S. K.; Ahmed, F.; Ishibashi, M. "Limonoids with Wnt signal inhibitory activity isolated from the fruits of *Azadirachta excelsa*" *Phytochemistry Letters* **2015**, 11, 280-285. IF: 1.45

Best Paper Competition Abstract of Entries

**Morphological and Cellular Biochemical Responses of Resurrection Plant *Selaginella tamariscina* (Beauv) Spring Following Desiccation and Subsequent Rehydration
(FINALIST)**

Angelo R. Agduma^{1,2*} and Maribel L. Dionisio-Sese²

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ABSTRACT

Morphological and biochemical changes in resurrection plant *Selaginella tamariscina* (Beauv.) Spring as induced by dehydration and subsequent rehydration were explored. Plants were allowed to dehydrate naturally by withholding irrigation until shoot's relative water content (RWC) reached <10%. Dehydrated plants were then watered to reach fully hydrated state to about 90% RWC or more. *S. tamariscina* slowly closed the face of its fronds by folding them upward as dehydration progressed exposing the abaxial surface while curling them intensively. Microscopic observations revealed intense curving of the fronds exposing only the abaxial surface of the larger outer microphylls while protecting its adaxial side and the smaller inner microphylls. Upon rehydration desiccated plant slowly revived by opening its ball-shaped crown to expose the face of its microphylls. As it reached full turgor (rehydrated state) the plant appeared similar with the fully hydrated (control) plants. Membrane integrity was maintained during desiccation phase and subsequent rehydration. Pigment analyses revealed conservation of some of the chlorophylls and carotenoids during desiccation and reaching the control levels following rehydration. Meanwhile, determination of compatible solute concentration showed rise in total sugar and proline contents of desiccated *S. tamariscina*, indicating presen protection machineries in this species during dehydrating conditions.

Keywords: Biochemical, Desiccation, Morphology, Resurrection plant, Rehydration, *Selaginella tamariscina*

Spatial Distribution Modeling of Mangrove Species in Central Cebu, Philippines (FINALIST)

Leviticus M. Barazon Jr¹, Dexter S. Ontoy² and Simeon Rosel³

¹Antonio R. Lapiz National High school, City of Naga Division, DepEd, Naga City, Philippines, ²Center for Research and Development, Cebu Normal University, Cebu City, Philippines, ³Coastal and Marine Management Office, CENRO Cebu City, DENR-7, Philippines

ABSTRACT

Impertinent planting of Mangrove Species has been prevalent in the approach to mangrove conservation. A Species Distribution Modeling Approach (SDM) was used to find the probability of the scope's geographical space to each of the mangrove species.. Results reveal three important information regarding mangroves; (1) Distribution of species in scope's geographical space, (2) Description of highly suitable areas for each species, and (3) Factors that predict the *Spatial Distribution of Mangrove Species*. The mangrove species distribution were processed using ArcGIS software and were presented as points in maps. In general, *Avicennia marina* and *Rhizophora* species were the most widely distributed. The description and location of highly suitable areas were derived by superimposition in google earth software. This has important implications for the conservation of mangrove species in Central Cebu since pertinent sites were described for each species being studied. Factors that contributed to its suitability were also discussed. For instance "Annual Mean Temperature and Soil Type for *Avicennia marina* was the most important variable while the endangered species *Camptostemon philippinense* has "Mean temperature of the Wettest Quarter" as the most important. The results of this study can be useful in crafting a more ecological approach to mangrove conservation.

Keywords: Mangrove Species, MAXENT, Species Distribution Modelling, Suitable areas for mangroves

Production Performance of Red Jungle Fowl Versus Native Roosters Under Confinement System: A Comparative Study

Francisco F. Buctot Jr.

Southern Leyte State University-San Juan
San Juan, Southern Leyte

ABSTRACT

This study was conducted to determine the production of Red Jungle Fowls and Native roosters mated with Native hens under confinement system. A total of two Red Jungle Fowl roosters, two native roosters and 8 native hens were randomly assigned to two treatments with two replications. Each replicates was composed of one rooster and two hens that were randomly laid out in a Randomized Complete Block Design. The result on egg weight showed highly significant difference at $t < 0.05$ and revealed heavier weight (39.5 g). While comparable results % egg production, %fertility, % hatchability rates, yolk and shell weight, egg length and width, egg shape index and yolk color score were obtained.

Keywords: egg shape index, fertility, hatchability and native chicken

Air Pollution Tolerance Index (APTI) Assay of Selected Plant Species in Puerto Princesa City for Strategic Urban Forest Planning (FINALIST)

Caabay, Jessa Marie S.

Palawan State University

ABSTRACT

Air pollution gives negative effects to human beings as well as to plants which are exposed all throughout the day in these pollutants. Assessment of plants' response to air pollutants may serve as a fundamental method in terms of environmental monitoring and management. Sensitive group of plants can serve as an indicator of air quality while the tolerant ones can be sink for air pollutants. This study evaluated Air Pollution Tolerance Index (APTI) of selected plant species in Puerto Princesa City, namely: *Bougainvillea spectabilis* (bougainvillea), *Ixora coccinea* (santan), *Delonix regia* (fire tree), *Duranta repens* (golden bush), and *Samanea saman* (Acacia tree) using relative water content, ascorbic acid content, leaf extract pH, and total leaf chlorophyll content. It was found out that *B. spectabilis* was the most tolerant species, followed by *S. saman* while *D. regia* has an intermediate index. *D. repens* and *I. coccinea* on the other hand were found to be sensitive plant species. Plants with high APTI values are the tolerant

ones and are recommended to be planted in urban areas to absorb and thus, screen off certain harmful gaseous pollutants.

Keywords: Air Pollution Tolerant Index (APTI), Urban Forest Planning, Phytoremediation

Profile of Copper, Nickel and Zinc on Three Selected Vegetable Farms at Cabintan, Ormoc City, Philippines

Rabigh F. Kangleon¹ and Felix M. Salas²

¹Researcher, Department of Pure and Applied Chemistry, College of Arts and Sciences, Visayas State University, Baybay City, Leyte, Philippines
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²Professor, Department of Pure and Applied Chemistry, College of Arts and Sciences, Visayas State University, Baybay City, Leyte

ABSTRACT

The study was conducted to (a) determine the levels of copper, nickel, and zinc on three selected vegetable farms at Cabintan, Ormoc City, Leyte, (b) investigate the distribution of copper, nickel and zinc on the soil profile of the three selected vegetable farms, and (c) evaluate whether the copper, nickel and zinc contents of the vegetable farms are within the standard set by the United States Environmental Protection Agency (US EPA) for agricultural soils. The three heavy metals were analyzed through Flame Atomic Absorption Spectrophotometer at the Central Analytical Services Laboratory of the PhilRootcrops, Visayas State University, Baybay City, Leyte. Results showed that Farm 1 had the highest Cu concentration (0.413 ± 0.136 ppm) and Farm 3 had the highest Ni and Zn concentrations of 0.058 ± 0.045 ppm and 0.393 ± 0.456 ppm, respectively. The levels of Cu, Ni, and Zn were statistically the same in the surface, subsurface, and subsoil soil layers in each vegetable farms. The soil pH (4.1 ± 1.6 , 4.5 ± 0.3 and 4.6 ± 0.2) of the farms which considered the major contributing factor for the heavy metals' vertical mobility was acidic and more or less the same. This study revealed that the levels of the three heavy metals were still below the tolerable limits of US EPA for contaminated agricultural soil. The three selected vegetable farms were considered safe for agricultural use.

Keywords: Copper, heavy metal, nickel, soil profile, zinc

Yield and Postharvest Qualities of Two Genotypes of Eggplant (*Solanum melongena* L.) Applied with Different Levels of Chicken Dung

**Rosario A. Salas^{1*}, Reyda Mae R. Godoy², Felix M. Salas³, Neal Menzies⁴,
Stephen Harper⁵, and Victor B. Asio⁶**

^{1*}Associate Professor, Department of Horticulture, College of Agriculture & Food Science, Baybay City, Leyte (rasalas_horti@yahoo.com); ²Research Assistant, Department of Horticulture, College of Agriculture & Food Science, Visayas State University, Baybay City, Leyte; ³Professor, Department of Pure & Applied Chemistry, College of Arts and Sciences, Visayas State University, Baybay City, Leyte (fmsalas-dopac@yahoo.com); ⁴Professor, University of Queensland, Australia; ⁵Principal Scientist, Queensland Department of Agriculture and Forestry, Australia; ⁶Professor, Department of Soil Science, College of Agriculture & Food Science, Baybay City, Leyte (vbasio@yahoo.com).

ABSTRACT

This study was conducted to evaluate the effects of the different levels of chicken dung on the yield, and postharvest qualities of two genotypes of eggplant. The pot experiment was laid-out in a split plot randomized complete block design with chicken dung levels as the main plot and eggplant genotypes (Casino & Morena) as subplot. The levels of chicken dung were divided as T1 (zero), T2 (200 g/plant), T3 (400 g/plant), T4 (600 g/plant), T5 (800 g/plant), T6 (1.0 kg/ plant, and T7 (2.0 kg/ plant). Casino genotype produced higher yield than Morena genotype under Visca agro-climatic condition. The application of 400 grams of chicken dung per plant (T3) showed the highest yield in both genotypes which were significantly different from the control (T1), T2, T6, and T7. This simply means that a cost-effective application of chicken dung at 5 tons per hectare is worth recommending for optimum eggplant production. Casino has a higher oxidation-reduction potential and ascorbic acid values but with lower electrical conductivity than Morena hybrid. This means that Morena contains higher amount of electrolytes with better storability for a longer period of time but with lesser vitamin C content than the Casino genotypes. Ascorbic acid content and electrical conductivity were enhanced by the application of chicken dung, which declined beyond 800 grams per plant or at an application of 10 tons per hectare particularly with Casino hybrid for ascorbic acid and Morena hybrid for electrical conductivity. All these results would indicate the importance of organic fertilizer application to attain highest yield with best postharvest qualities of eggplant.

Keywords: Chicken dung, Eggplant genotypes, Postharvest quality

Phylogenetic Analysis of Liverworts (Marchantiophyta) in Imugan Falls, Sta Fe, Nueva Vizcaya using the *rbcl* gene marker

Maybell DM. Banting, John Dave C. Aquino, Jerwin R. Undan

Molecular Biology and Biotechnology Laboratory, Department of Biological Sciences,
College of Arts and Sciences, Central Luzon State University, Science City of Munoz,
Nueva Ecija, Philippines

ABSTRACT

A widely held view of land plant relationships places liverworts as the first branch of the land plant tree. In the past several years, the application of molecular methods to the unravelling of liverwort phylogeny has generated new insights into their evolutionary history and revolutionized their classification. This study identified and classified the liverworts using both morphological and molecular approaches. The liverworts were collected through transect walk along Imugan falls, Santa Fe, Nueva Vizcaya. After morphological characterization, the genomic DNA of liverworts were extracted and was amplified using *rbcl*, and then the PCR products were sent to 1st BASE Laboratory for PCR purification and sequencing analysis. Sequences were used for BLAST analysis to determine sequence similarity of the sequences available from NCBI GenBank. From this study, we have identified two species, these are *Dumortiera hirsuta* and *Targioniahypophylla* both with 99% maximum identity. For phylogeny analysis based on the *rbcl* region, the proximate clade was made up of complex thalloid genera and comprises the monophyletic marchantiaceae, targioniaceae, and wiesnerellaceae in a well-supported sister relationship, it also include the more simple thalloid monocleaceae. Accessions of *Dumortiera hirsuta* and *Wiesnerella* sp. are in a robust sister relationship and sister to the remainder *Targionia hypophylla* and *Monoclea forsteri*.

Keywords: Phylogeny, marchantiophyta, *rbcl*, thalloid, liverwort

Solid Waste Management of Households in Salcedo, Eastern Samar, Philippines

Noba F. Hilvano^a, Rashayne G. Cielo^a, Lita E. Boco^a, Maricel A. Garcia^a, Rovinson D. Gaganao^a, Amalia Paraluman B. Lombrio^a, Paul Anthony A. Torres^a, Lito D. Lacaba^a, Rogelio L. Padit^a

^aEastern Samar State University-Salcedo Campus

ABSTRACT

About 281 households in Salcedo, Eastern Samar were surveyed about their knowledge, attitudes and practices (KAP) on solid waste management, and willingness to pay for an

improved solid waste management service. Key informant interviews and focus group discussions were conducted to supplement and validate results of the survey. The key findings of the study were the following: (a) about 54% of the households observed several solid waste management problems such as irregular collection of waste, improper waste disposal, and burning waste; (b) nearly half (43%) of the households were not satisfied of the waste collection service mainly because of the irregular schedule of waste collection (85%); (c) households practice sorting (60%), composting (32%), recycling (38%), and burning (44%) of wastes; (d) educated households with income are more knowledgeable in proper solid waste management, have better ability to identify problems related to solid waste management and are less likely (-0.23) to burn their solid waste; (e) and education and income were weakly to moderately associated (.14 to .27) with the willingness-to-pay for an improved solid waste management at 0.05 and .001 significant level, respectively. The Local Government of Salcedo can use these results to improve and revise its solid waste management plan.

Keywords: Household solid waste management, KAP on solid waste management, Willingness-To-Pay

Estimating Carbon Emissions of Central Mindanao University using COOLCAMPUS, a Web-based Carbon Footprinting Tool for Academic Institutions (FINALIST)

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ABSTRACT

To determine the environmental impact of Central Mindanao University, a carbon emissions inventory was conducted. Data from carbon emission sources such as fuel use, agricultural production, electricity consumption, food purchases, and travel were gathered from various offices of the university. Consumption data were then processed and converted using carbon emission factors derived from previous literature and studies. An online software called Climate Oriented Online Carbon Assessment and Monitoring Program for Universities and Schools (COOLCAMPUS) was developed for this study to ensure convenience in converting consumption data into its carbon dioxide equivalent with the hope of utilization in future related studies and for use in other academic institutions. Using COOLCAMPUS, results revealed that the total annual carbon emissions of CMU based on the determined sources is 2,271.26 tCO₂e. The primary carbon emission source is agricultural production which comprises 61% of the total carbon emissions computed. The least source of carbon emission is food purchase

which is 0.3% of the total carbon emissions. A carbon offsetting feature of COOLCAMPUS helps by suggesting strategies for attaining carbon neutrality for CMU.

Keywords: *Carbon Emissions, Campus Sustainability, Online Tools, Carbon Offsetting*

Liquid Nutrient Formulations for Honeydew Melon (*Cucumismelo* L.) Production Under Aggregate Hydroponic System (FINALIST)

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ABSTRACT

This study was conducted to investigate the effect of liquid nutrient formulations on the horticultural characteristics, yield, and free radical scavenging activity (FRSA) of honeydew melon under aggregate hydroponic production system. The ferments derived from golden kuhol, madre de agua, and malunggay were formulated as FGK, FMA, and FMY nutrient solutions, respectively. The aggregates were composed of river sand and coco coir in a 3:1 ratio by volume. The FRSA was determined through an ultraviolet-visible spectrophotometric method using 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical and Trolox as standards. Results have indicated that honeydew melons grown on FGK1, FGK2, and FMA2 had comparable fruit size, number of fruits, and weights of marketable fruits with the melons grown on commercial solution. Honeydew melons grown on commercial solution exhibited the largest fruit size, highest number of fruits, weight of marketable fruits, and total fruit yield. However, honeydew melons applied with FMA2 and FMY2 showed comparable yield of 960.4 grams and 936.1 grams, respectively, with those plants grown on commercial solution which yielded 1,163.2 grams per plant. This means that an organic fertilizer solution is possible for melon aggregate hydroponic production system. Free radical scavenging analysis showed that honeydew melons grown on FGK2 manifested the highest FRSA; nevertheless comparable with those plants grown on FGK1, FMA1, and FMY1, but significantly different from the melons grown on commercial solution. The results of the study indicate the potential of golden kuhol, madre de agua, and malunggay as valuable sources of organic fertilizer materials for honeydew melon production under aggregate hydroponic system. Furthermore, this gives insight on the potential benefits that can be derived from these local and indigenous resources for organic agriculture.

Keywords: Free radical scavenging activity, Honeydew melon, Liquid nutrient formulations

Mapping, Diversity and Conservation of Traditional Agronomic Crops for Resiliency and Sustainability in the Cordillera, Philippines (FINALIST)

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ABSTRACT

Mapping, documentation and diversity assessment of traditional agronomic crops (TACs) are important steps in conserving these valuable genetic resources. TACs are known to be resilient in their tolerance to pest and abiotic stress and are usually grown with minimal inputs and management. A total of 26 species and 445 varieties of different TACs were documented in the six provinces of CAR. These crops were mapped on the six provinces of the Cordillera Administrative Region (CAR). Morphological characterization, diversity and cluster analyses of corn, cowpea, and rice bean revealed low to moderate diversity indices for both quantitative and qualitative characters. Two to three clusters were formed based on quantitative and qualitative characters. CN 2013-018 (corn from Mt. Province); CP 2013-020 (cowpea from Ifugao); and RB 2013-011 (ricebean from Ifugao) produced the heaviest one-hundred seeds. Farmer respondents (n=221) revealed that TACs are sources of income, have resistance to pest and diseases, resilient to climate change, have good eating quality and nutritious. Existing conservation practices are seed exchange among farmers, continuous planting, and the use of traditional storage.

Keywords: Morphological diversity, Utilization, Sustainable conservation, Traditional agronomic crops

Disaster Resiliency Related Theory among Typhoon Haiyan Survivors (FINALIST)

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ABSTRACT

Disaster Related Resiliency Theory among older adults came to the forefront towards recovery, rising from difficulties and trials in their life experience. Constructivist grounded theory method was used in the study. The aimed of this study is to explore and build a Theory on Disaster Related Resiliency among survivors. The locales of the study were Basey, Samar, Marabut, Samar, and Tacloban Leyte. The data were analyzed using open coding, focused coding, theoretical coding, and constant comparative methods. Theoretical sampling technique was used to reach saturation from the 14 participants. Key findings were:(1)The extent of trauma experience by the elderly regardless of their pre-disaster preparation or just take for granted behavior is a contribution of the multiple factors such as previous experiences, cultural norms, information loading and the social support. The extent of trauma in turn plays a role in the development of resiliency from a traumatic event. (2)Resiliency is an innate predisposition in every person. It starts within the individual's inner self. (3)Resiliency is predicted by the person's attitude (positive or negative), locus of control (internal or external), sense of person orientation and concern (towards self or towards others), and extent of satisfaction of needs.

Keywords: Grounded theory, Locus of control, Resiliency, Trauma, Satisfaction of needs, Survivors

Typhoon Seniang: Loboc Municipal Leaders' Lived Experiences (Finalist)

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ABSTRACT

This study described the meaning of lived experiences of the municipal leaders of Loboc, Bohol prior, during and after typhoon Seniang in 2014. It investigated the initiatives and practices of the local government unit (LGU) and captured the household experiences through a qualitative research approach following the Husserlian descriptive

phenomenology utilizing the Colaizzi’s method of data analysis. Purposive sampling was employed through face-to-face interviews. All narrative accounts were transcribed and served as the primary source of qualitative data. The extracted accounts were organized through thematic categorization yielding 77 significant statements, 28 formulated meanings, 15 clustered and 4 emergent themes. These emergent themes include awareness of disaster, experiences during the disaster, good local governance practices and experienced challenges. Grounded on these findings, it is concluded that effective disaster response and quick and successful recovery fundamentally depend on authentic and effective governance by Loboc local leaders concretized through collaborative, concrete observance, implementation of responsive policy processes and harmonious team works among community members. Altogether, pro-active involvement makes a community more resilient. The researchers recommends that Loboc local leaders, employees and residents, altogether put premium on active participation, profess positive outlook with enduring commitment to immediately rebound from any experienced disaster.

Keywords: Flood disaster, typhoon, local governance, descriptive phenomenology

**Fern Diversity in the Center for Ecological Development and Recreation (CEDAR),
Impalutao, Impasug-ong, Bukidnon Province (FINALIST)**

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ABSTRACT

Ferns are non-seed bearing but spore forming vascular plants (Wilson, 2010) and are very diverse in the Philippines. The objectives of the study are: to identify the fern species, determine the diversity of ferns in terms of species richness, evenness and importance values and to compare the diversity index values of the three established transects in the provincial recreational park of CEDAR, Impalutao, Impasug-ong, Bukidnon Province. Modified Whittaker Plot Method was used as the sampling technique. There were ten identified fern species namely, *Asplenium nidus* Linn., *Pleocnemia irregularis* (Presl) Holtt., *Cyclosorus* sp., *Asplenium decorum* Kunze, *Microlepiaspeluncae* (L.) T. Moore, *Pleocnemia macrodonta* (Fee) Holtt., *Sphaerostephanos unitus* (Linn.) Holtt., *Coniogramme microphylla* (Blume) Hieron, *Nephrolepis cordifolia* Linn., and *Arachnoides aristata* with a total of 1,246 individual species. Using Shannon-Weiner diversity index, results revealed that *Nephrolepis*

cordifolia is the most diverse species with an H value of 0.358 and the most important species having an importance value index of 68.64%. Results revealed that the area in CEDAR is able to supply the requirements of the ferns to thrive naturally.

Genotoxicity of Two Food Additives on *melanogaster* Using Wing Somatic Mutation and Recombination Test (FINALIST)

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ABSTRACT

Sodium nitrates and sodium nitrites have been used as food additives in cured meats for many years primarily to prevent growth and toxin production of microorganisms that improved the microbiological safety and extend the shelf life of processed foods, however, it is important to evaluate its genotoxicity. Thus, this study investigated the genotoxicity of sodium nitrate and sodium nitrite on the third generation of *Drosophila melanogaster*. Three-day old larvae of *D. melanogaster* were exposed to varying concentrations of the chemical tested by allowing them to feed on media, containing sodium nitrate or sodium nitrite. The treated series were compared to the control group (media mixed with distilled water). The Wing Somatic Mutation and Recombination Test (SMART) were used to assess the degree of genotoxicity. The wings of the adult flies were scored for the presence of single and twin spots. Results showed that the wings of the flies treated with sodium nitrates and sodium nitrites have small single spots, large single spots and twin spots. Varying doses of sodium nitrate and sodium nitrite have different level genotoxicity, as the dose increases, the rate of the genotoxic effect of both food additives also increases. Statistical comparisons were made using conditional binomial test and chi-square test for proportions at 0.05 level of significance showed a significant difference on the control and the treatments. The implication of the study then could raise awareness among consumers relative to the use of processed foods that could alter the genetic material of a cell.

Keywords: Genotoxicity, SMART, Sodium Nitrate, Sodium Nitrite, *D. melanogaster*

Oral Presentation

Disaster Risk Collaborations

Trauma and Coping Strategies of Typhoon Survivor Students in Eastern Philippines

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ABSTRACT

Typhoon Haiyan hit the country, leaving a trail of damage in its wakes, wiping out coastal villages leaving trauma among survivors especially among college students. This study utilized descriptive research design using correlational and comparative analysis determined the status of Samar State University Students in terms of Trauma and coping strategies. Using evaluation of Trauma Symptom Inventory and the coping strategies of the respondents, it revealed that respondents' used coping strategies like problem solving, cognitive restructuring, express emotion, social support, problem avoidance and wishful thinking. Self-criticism and social withdrawal are the less used coping strategy of the respondents. Finally, the respondents did not experience any trauma symptoms after the Typhoon.

Flood Risk Analysis of Borongan City, Eastern Samar

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ABSTRACT

The three rivers that traverse Borongan City, Eastern Samar have high impact to life and properties. Hence, flood analysis was conducted to determine the potential levels of risk. It validated and evaluated the natural characteristics of Borongan in terms of: geology; topography; hydrology; and land use. The flood history was studied and evaluated based on average recurrence interval of 5-, 25-, 50-, 100-year and flood risk levels were evaluated based on flood depth (inundation height and flood risk precincts simulated using hydra flow software. It was found out that Borongan City is vulnerable to floods due to the three rivers located within the city proper with flood levels ranging from 0.10 meter to 6.0 meters. The flood risk map was developed and flood precincts were identified as high, medium and low. Hence, there will be greater number of households and commercial properties, which may be affected by flood. The natural characteristics of Borongan City should be disseminated to the planners, designers, local leaders, and general public relative to the flood consequences and events. The local government should come up ordinances to control the construction of residential

houses and commercial buildings in identified high flood risk precincts in order to avoid if not minimize the damage during flood.

Keywords: Borongan City, flood risk analysis, flood, flood history, rivers of Borongan City

Enhanced Rock Mounds for Growing Rock Oyster and as Breakwater System

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ABSTRACT

The existing rock mound technology specifically those erected for rock oyster (*saccostreacucullata*) posed several problems such as growth efficiency, water circulation, sediment accumulation and durability against waves. This paper investigated in a laboratory scale using a physical model of a coastal zone. About 10 trial set consisting of different rock mounds design and arrangement were tested. Sediment transport and deposition, water circulation, and rock mounds durability was evaluated. The best design was an inverted teardrop shaped mounds arranged in staggered manner resulting into about 80% less sediment accumulated, 91% better water circulation and 68% more resilient to waves. Validation of the design in an actual environment is recommended.

Keywords: rock mounds, coastal protection, *sisi*, *sacostreacucullata*, tidal waves

Adversities of Agroforestry Farmers in BagongSilang, Los Banos, Laguna

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ABSTRACT

Adversity is the negative experiences that disrupt adaptive functioning or development. Adverse experiences may damage the adaptive capacity of an individual or undermine the development of an individual's adaptive systems with long-term consequences. The study focused on the adversities experienced by the agroforestry farmers in BagongSilang, Los Banos, Laguna. The objectives of the study include to describe the adversities of the farmers, to identify the origin of the adversities, and determine the category of the agroforestry farmers. Research methods used include interview, key informant interview, and focus group discussion. Result revealed that the adversities experienced pertain to natural calamities causing landslide, destruction of agricultural

crops and houses, and pests attacking their crops thereby adversely affecting their income. The agroforestry farmers have differences in coping with adversities. They were categorized as campers, climbers, and quitters depending on how they cope with adversities.

Keywords: adversities, agroforestry, natural calamities

School-Community Environment Partnership: A Strategy for an Effective Community Education Intervention

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ABSTRACT

Cited in many documents of the Education for All of the United Nations is the significance of engaging communities to improve the quality of education offered by academic institutions. This body of information supports that collaborative efforts provide the learners with richer, authentic learning experiences that only the community environment can provide. In turn, the partnership leads to capacity building and empowerment among its members to better understand their needs and interests thereby improving their quality of life. While there may be exemplary cases of these partnerships, the paper identifies some challenges that could hinder an effective school-community environment collaboration. At the core, this paper presents a framework for building and sustaining school-community partnerships that are mutually beneficial to involved parties. In particular, the framework identifies critical factors that make for a workable and sustainable collaboration between the school and the community. These factors include, among others, trust, mutual respect and efficient use of available resources. Finally, the paper also tackles some classifications of collaborative efforts currently being practiced in some institutions of higher learning.

Keywords: School-community environment partnership, community education, institutional development

Practices of Alaminos City Government and Partner Agencies on Risk Reduction Management

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ABSTRACT

Alaminos City is at northern part of Luzon in Western Pangasinan. Surrounded by bodies of water, the place is frequently visited by typhoon and natural calamities. Alaminos City Disaster Risk Reduction and Management Council (CDRRMC) was created in 2015 as mandated by RA 10121. This study was conducted to determine the practices of the CDRRMC of Alaminos City and its partner agencies on the root causes of vulnerabilities to disasters, strengthened institutional and community's capacity for disaster risk reduction and management and built the resilience of the local community to disasters. The case study was made using secondary data taken from the office of the CDRRMC and its partner agencies. Results of the study show that the CDRRMC and its partner agencies was able to respond to natural and man-made disasters during and after occurrences. This was brought about by the different practices, projects and activities implemented by the CDRRMC not only to capacitate the members of the CDRRMC but also the people. Likewise, information dissemination and posting of updates about the calamities has helped the Alaminians not only to become prepared but for them to know what to do during said calamities.

Keywords: Risk ,Reduction, Practices, Hundred Islands, Calamities

**Management Competence and Decision Making Style of the Campus Administrators:
Their implications to the Sustainability of Western Philippines University external
Campuses in Palawan, Philippines**

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ABSTRACT

The study was conducted to assess the management competence and the decision making style of the Western Philippines University External Campuses, Campus Administrators. Specifically, it aimed to describe the management competence and decision making style of the campus administrators; determine the sustainability of the WPU External Campuses, determine the significant relationship between the management competences of the campus administrators and the sustainability of WPU External Campuses and between the decision making style of the campus administrators and the sustainability of WPU External Campuses. It was conducted to 372 respondents from 6 External Campuses all over Palawan. The parallel researcher-made survey questionnaire using a 5 point rating was employed. The data were analyzed through descriptive-correlational statistics. The respondents assessed the campus administrators as *competent*. They are also *agreed* as to the decision making style of the campus

administrators. Further, the respondents assessed the External Campuses as *moderately sustainable*, and it was proven that the management competence and the decision making style of the campus administrators have significant relationship to the sustainability of the External Campuses. Finally, the respondents had similar assessment on the management competence and decision making style of the campus administrators and the sustainability of External Campuses.

Keywords: Western Philippines University External Campuses, Assessment, Administrators, Palawan

Disaster Risk Reduction of the Local Government Units in Calamba, Laguna

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ABSTRACT

The study focused on the disaster risk reduction (DRR) activities employed by the LGU's among the households of Canlubang, Calamba, Laguna. The objectives of the study includes to determine the DRR activities of the LGU's, identify the level of awareness of the households, and assess the relationship between socio-demographic and economic characteristics, level of awareness of the households and the sources of information. Research methods used include survey, key informant interview, and review of documents. Data were analyzed through descriptive and inferential statistics. Result of the study revealed that the DRR activities of the LGUs include seminars, distribution of IEC materials, earthquake drills, and walk in the fault line. Majority of the households are knowledgeable on the massive earthquake and needs to be prepared. Television and radio are the most answered source of information in terms of natural disasters. Age and length of stay in the area were found to be positively associated with their level of awareness. The respondents' gender, civil status, educational attainment, household size, number of children attending to school, and number of household members who are employed are found not to be related with their awareness. Occupation is highly related to the level of awareness on the massive earthquake. Result of inferential statistics revealed that there is positive association between the respondents' awareness and perceived effectiveness of IEC materials.

Keywords: disaster risk reduction, earthquake, information education communication

Environmental Knowledge Creation

Intersection Between Rapid Urbanization and Coastal Survival: Case Study of Las Pinas Paraque Critical Habitat Ecotourism Area (LPPCHEA) in Manila Bay

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ABSTRACT

This research aims to illustrate how LPPCHEA a RAMSAR site is being managed amidst rapid urbanization of coastal cities and reclamation on one side and survival of natural amenities at the other side along the coastal corridor of Manila Bay. Anchored on the Russian Doll model of Sustainable Development (O’Riordan et al, 2001), the paper argues that LPPCHEA, a wetland has economic and ecological viability with social and environmental limiting factors. Methods used are interviews, field observation, and review of secondary data. Initial results show that Las Pinas and Paranaque are expanding seaward toward the Manila Bay due to rapid urbanization and economic development. At the same time, such expansion threatens LPPCHEA an important resting area of migratory birds from North Asia to New Zealand, has one of the remaining mangroves in Metro Manila, and naturally protect coastal communities from tropical typhoons, as well as source of income for the fisher folks. LPPCHEA is caught in between conflict of interest among the fisher folks and civil societies on one hand and government at the other side. In conclusion, there is a need for a strong collaborative management among the stakeholders of LPPCHEA to further protect the critical habitat, as well as create live able coastal communities.

Keywords: land reclamation, rapid urbanization, wetland, coastal communities

Pollen Load Assessment of the Long-tongued Nectar Bat (*Macroglossus minimus*) from the Impact Areas of Sibulan Hydroelectric Powerplant in Davao del Sur

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ABSTRACT

Assessment of pollen load of *Macroglossus minimus* in the impact areas of the Sibulan Hydroelectric powerplant was done. This aims to understand the role of bats as

pollinators in a disturbed habitat. *M. minimus* was captured using mist nets and pollen from different body parts (snout, head, chest, back) were sampled using the scotch tape technique. Results showed that only 30% out of the total captures have pollen, and mostly are concentrated in the snout and head regions. In terms of sex, pollen carriers are mostly males with an average pollen density of 75 cm² compared to females which is 55 per cm². Data also suggest that based on the morphology of the pollen observed, there are three pollen types and one is probably from the genus *Musa*. Considering the number of *M. minimus* that has pollen, the long-tongued nectar bat as a pollinator is vital for the restoration of the disturbed habitat.

Keywords: Bat, Disturbed habitat, Ecology, *Macroglossus minimus*, Pollen

Optimal Vehicle Routing for Relief Goods Delivery in District IV, Nueva Ecija, Philippines

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ABSTRACT

Being a lowland area, Nueva Ecija experiences massive flooding during typhoon. This causes the residents to be trapped in their homes without enough food and basic commodities. To address such problem, the local government delivers relief goods to every barangay during typhoon; however currently there is no systematic way of distributing the goods. Hence, an efficient system in delivering the relief goods was developed. Specifically, this study provided a set of routes for relief goods delivery such that the demand of all the barangays is satisfied and total travel time is minimized. This problem is classified as a Vehicle Routing Problem (VRP) which is an NP-hard problem. Primarily, Clarke and Wright's Savings Algorithm (CW) was used in determining the set of routes. Subsequently, the Improved Clarke and Wright's Algorithm (ICW) was used to further develop the solutions. ICW is a hybridized version of CW which makes use of tournament and roulette wheel selection mechanism. On the average, the Improved Clarke and Wright's Algorithm reduced the total travel time in distributing the relief goods.

Keywords: relief goods delivery, vehicle routing problem, improved Clarke and Wrights algorithm

Climate Change Adaptation Online Course: Students' Reflection on Its Relevance

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ABSTRACT

Online learning has been integrated in the mainstream education in recent years. In the Philippines, open and distance learning has been strengthened with the law, RA 10650. UP Open University has been identified as the academic institution that should provide leadership and support in the development of this learning mode in the country. Hence, an online course in climate change adaptation (CCA) and disaster risk management (DRM) for an inclusive and sustainable agricultural and rural development was developed and offered in the University. The course is a collaborative effort between SEARCA and the Faculty of Management and Development Studies, UP Open University to provide a non-formal education to all individuals interested in CCA and DRM. The study looks at the relevance of this online course to students' environmental context by analyzing their self-reflection submitted in the course. A thematic analysis was done to determine and analyze the various themes at which the course has been associated with the students' context. The analysis generated the following themes: relevance to work, sustainable development, climate change-related decision-making, climate change communication, human rights and development, peace process, ICT and climate-related information dissemination, land use management, safety and protection, and the like. Analysis of the students' reflection indicated that their learning experiences in the course proved to be fitting in their own environmental and work context and had contributed much in their enlightenment as to what, when, and how they should approached CCA and DRM in their own work environment. It is recommended to continue offering the course to develop the human capital of the nation for CCA and DRM.

Keywords: online learning, climate change adaptation, disaster risk management, self-reflection, UP Open University, SEARCA

Climate Change Vulnerability Assessment of Cassava-Based Farming Communities in Apayao Province

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ABSTRACT

The research was undertaken to assess the vulnerability of cassava-based farming communities in Apayao Province to climate change hazards. Specifically, the study was intended to: a. describe the biophysical and socio-economic characteristics of the cassava-based communities in Apayao; b. describe the nature of natural hazards experienced by the communities in the past ten years c. determine the exposure, sensitivity and adaptive capacities of the communities to climate change hazards; and d. estimate the vulnerability indices and resilience of the communities to climate change hazards. The field survey was used with questionnaire, VA tool, observation, focus group discussion and secondary data analysis in gathering data. The dominant economic opportunities and activities in the province of Apayao are agriculture based. Palay, corn, vegetables and roots crops are the primary crops raised in the province while citrus, rambutan, pineapple and banana are the main fruits produced commercially. Typhoon, heavy rain, drought and increased incidence of pests were the main climate change hazards affecting cassava-based production in the studied communities. Based on the exposure, sensitivity, and adaptive capacity assessments, both cassava –based farming communities are vulnerable to climate change hazards. For specific climate change hazards, the cassava-based farming communities are vulnerable to heavy rains and typhoon but moderately resilient to drought.

Keywords: Climate Change, Climate Change Hazards, Exposure, Sensitivity, Adaptive Capacity

Optimization of pH and Carbon Sources in the Protease and Amylase Production of *Exiguobacterium aurantiacum* and *Oceanobacillus oncorrynchi* from a Hyperalkaline Spring

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ABSTRACT

Protease and amylase are industrial enzymes which acquired crucial importance and interest in industry and biotechnology. This study aimed to determine the optimum conditions for the production of alkaline protease and amylase from *Exiguobacterium aurantiacum* and *Oceanobacillus oncorhynchi* respectively. The effect of pH and carbon source on the maximum production of alkaline protease and amylase was investigated one factor at a time through shake flask culture. Enzymes production was obtained after 48 hrs of incubation in a medium at 37°C under continuous agitation at 150 rpm. Results revealed that protease activity was highest (2472.85 ± 3.96 U/ml/min) at pH 9.0 with glucose as the carbon source however; maximum soluble protein content of the *E. aurantiacum* supernatant was obtained at pH 8.0. The highest amylase activity (116.736 ± 0.091 U/ml/min) and the maximum soluble protein content of the *O. oncorhynchi* supernatant, on the other hand, were found to be at pH 10.0 with starch as the carbon source. The extracellular enzymes were observed to be produced from the microorganisms over a wide range of culture pH (8.0-11.0). Though the supplementation of wheat flour as carbon source in the fermentation medium gave higher yield of both enzymes than the rice husk, the yields were significantly lower compared to the yields using the glucose and starch as initial carbon sources for protease and amylase respectively. Both enzymes have their optimum activity at alkaline pH thus making them suitable for various practical applications especially in detergent industry.

Keywords: alkaliphiles, hyperalkaline spring, alkaline protease, alkaline amylase

Population Density of Black Shama (*Copsychus cebuensis* Steere) in Mt. Lantoy Key Biodiversity Areas in Argao, Cebu, Philippines

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ABSTRACT

Distance sampling point transect method was used to determine the population density of *Copsychus cebuensis* on the selected forest patches in Mt. Lantoy Key Biodiversity Areas in Argao, Cebu. Distance 6 Release 2 software program was used in estimating the population density of the *C. cebuensis* in three sampling sites: Site 1-Tabayag, Site-2 Cansuje, and Site-3 Canbantug. Results have shown that Tabayag has 26 individuals per hectare for mixed and pure forest strata with coefficient of variation (CV) at 18.29%, Cansuje has 49 individuals per hectare (CV of 14.53%) both for mixed and pure strata, and Canbantug has 36 individuals per hectare (CV of 59.23%) for mixed and 31 individuals per hectare (CV of 59.37%) for pure strata. The higher CV obtained in Site-3 is attributed to the lesser number of samples (n=36). *C. cebuensis* is widely distributed

along median to lower elevation especially at valley bottom on areas with higher canopy cover and higher relative humidity. Though the target species is globally endangered yet at the local level especially on forest patches being sampled they are still widely distributed due to its tolerance across all habitat type be it mixed, pure and plantation forest.

Keywords: Distance point transect sampling method, Population Density, Mt. Lantoy Key Biodiversity Areas in Argao, Cebu, Black Shama *Copsychus cebuensis* Steere

Households' Adoption of Pre-Determined Natural Disaster Preparedness Plans: A View from a Second Class Municipality in a Developing Country

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Abstract

The increasing frequency of natural disasters occurrence and severity of climate change impacts in recent years makes disaster preparedness a vital decision among households especially in developing countries like the Philippines. The study was conducted to determine the households' adoption of pre-determined disaster preparedness plans and if an empirical relationship could be established between the adoption of a plan and some selected household socio-demographic variables (e.g. age, gender, household size, income, length at residence, etc.). Using a stimulus-response framework, a natural disaster preparedness survey protocol with emphasis on households' preparedness plans was developed and implemented from May-July 2015 in one of the typhoon and flood-prone municipalities in the Philippines. With 577 respondents, the average households in the study site consist of 5 members, are below estimated poverty threshold, and residing in the area for more than 30 years. Household income, household size, and length at residence influenced their decision to adopt a natural disaster preparedness plan. These findings call for the expansion of the current climate change adaptation and disaster risk management programs and initiatives of the municipality to include enhancement of households' capacity to prepare and deal with impacts of natural disasters.

Keywords: natural disasters, households' disaster preparedness practices, stimulus-response, survey, Philippines

Open Education Resources (OERs) in ODeL of ASEAN Geography and Environment

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ABSTRACT

In this digital age, sustainability, climate change and green technology have become favorite buzzwords, emphasizing the importance of the environment for our common future. The study will describe the framework and process in which the University of the Philippine Open University (UPOU) has addressed the need for graduate environmental education in the ASEAN region using Open Education Resources (OERs). As a response to ASEAN integration and the development of a community of ASEAN scholars, the UPOU, as the Center of Excellence for Open and Distance e-learning (ODEL) in the Philippines, has started offering the Graduate Certificate in /Master of ASEAN Studies in August 2014. The UPOU developed the ASEAN Studies program in collaboration with four open universities in the ASEAN region, namely Hanoi Open University (Viet Nam), Open University of Malaysia (Malaysia), Sukhothai Thammathirat Open University (Thailand), and Universitas Terbuka (Indonesia). Two courses, namely ASEAN 206 Comparative Study of the Geography and Natural Resources of ASEAN Countries and ASEAN 241 Environmental Issues in ASEAN, were created to address global and ASEAN concerns about the environment. Open educational resources (OERS) or “technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes (UNESCO, 2002) as used in the ODeL of ASEAN geography and environment are presented with the over-all vision of strengthening regional cooperation and understanding of the ASEAN environment towards our common future.

Keywords: Open education resources, ASEAN environment education, open and distance e-learning

Connected and Separate Knowing in Web-Learning as an Approach in Evaluating the Learning of Online Diploma in International Health Students in Health Promotion and Sustainable Development Course at University of the Philippines Open University, Laguna Philippines

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ABSTRACT

A cross-sectional study on Connected and Separate Knowing in Web-Learning as an approach in evaluating the learning of on line diploma in international health students in health promotion and sustainable development course at University of the Philippines Open University, Laguna Philippines was explored. The objectives of the study were to determine the socio-demographic characteristics of the respondents, evaluate the learning of international health students in health promotion and sustainable development course using connected and separate knowing in web learning and correlate the learning of the students to their socio-demographic characteristics. Cluster sampling was used to 80 Diploma in international health students. (DIH students) The questionnaire was validated, and reliability was tested. Online survey was carried using the Google docs program from August 2014- April 2015. Analysis of data was processed using SPSS version 20. Mean and frequency were calculated and spearman's rank correlation was used to determine the relationships of the variables. Recommendations were suggested.

Keywords: Connected and Separate Knowing in Web learning, DIH Students.

Density, Size Structure and Growth Patterns of Charru Mussel, *Mytella Charruana*(D'orbigny 1846)(Bivalvia: Mytilidae) in the Riverine System of Dagupan City, Northern Philippines

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ABSTRACT

The density, size structure and growth patterns of Charru mussel (*Mytella charruana*) were assessed in the aquaculture and fishing priority zones of Dagupan City riverine system. The zones were characterized by assemblages of fish pen/cage structures adjacent to the river banks in a chain-liked formation. Three (3) aquaculture structures (fore, middle, aft) from established sampling stations were used to collect mussels. Highest density of mussel was observed in Carael area with 235 ind. m⁻². Size range was between 33 to 44 mm with an average length of 36.92 mm. The growth pattern of the *Mytella charruana* demonstrate negative allometric (b=2.662) which means that weight increase faster than the length as it grows. Results showed that this Charru mussel is a potential aquaculture mussel species in Dagupan City riverine system.

Keywords: Charru mussel, riverine system, growth pattern, size structure, Dagupan City

Speech Smart Module and Articulatory Fluency

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ABSTRACT

The Speech Smart Module is a compilation of topics in English Speech that aims to develop effective communication skills specifically on articulatory fluency. The module was utilized in the study with the purpose of measuring its effectiveness concerning the articulatory fluency of the college students. The study aimed to evaluate, validate and determine the effectiveness of the Speech Smart Module conducted to the second year college students of SKSU – College of Teacher Education. English-teachers from the same university served as evaluators of the module to validate its content, relevance, acceptability and instructional quality. The design involved the experimental group and control group which were carefully selected through randomization process. The data gathered were analyzed using both descriptive and inferential tools such as mean, standard deviation and t-test. The result revealed that students placed under traditional approach have a mean gain score of 1.02 in pronunciation and 0.77 in accent while on the experimental group, the mean gain scores in pronunciation and accent are 2.75 and 2.53 respectively. It was statistically verified that the use of the Speech Smart Module in teaching speech and oral communication apparently promotes better learning among college students. Though, other approach demonstrated a considerable gain yet it appeared that the latter resulted to a higher and subsequently tested as remarkably more effective. This result exposed a vivid manifestation that the introduction and utilization of the Speech Smart Module served a good attribute on articulatory fluency of the college students.

Keywords: Speech Smart Module, communication, effective and articulatory fluency

Fruits Collected and Used as Food by the Pala'wan Tribe in Southern Palawan, Philippines

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ABSTRACT

This study was conducted in response to the rapid deterioration and degradation of the forest covers of the province as a result of the influx of settlers coming in looking for available lands to till for agriculture. Before it is too late to identify the indigenous fruit-bearing plants in Southern Palawan, an inventory should be done. Thus, this study was implemented to identify the fruit-bearing plants in the study sites employing a qualitative approach in data collection. Indirect-participant observation, community immersion, unstructured interviews with key informants and triangulation method with the tribal members were the strategies employed in the data collection. Pictures on parts of such fruit-bearing plants were also taken. Based on the results of the study, there are 37 fruit-bearing plants identified as sources of edible fruits. These are categorized into tree-type, vine/climbing type, and other types of fruit-bearing plants. For tree-type fruit-bearing plants, 27 are identified; common of these plants are the wild mango, wild *rambutan* (several kinds), and durian. There are five kinds of vine/climbing type of fruit-bearing plants of which *tabo* is popular; and, six for other types.

Keywords: Indigenous fruit-bearing plants, Pala'wan tribe

Indigenous Food Crops Cultivated and Collected In the Forest by the Pala'wan Tribe in Southern Palawan, Philippines

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ABSTRACT

Food shortage is one of the prime indicators of poverty, especially in rural areas. In fact, it is reported that about 795 M of the 7.3 billion people of the world are hungry people suffering undernourishment; and, they are found in developing countries. In the Philippines, about 28 percent of the 100 million Filipinos found in the rural areas are living below poverty line. Alternative sources of nutritious but natural and cheap food sources must be found; must be identified so as to contribute in easing such food shortage. This premise was the basis in conducting this anthropological study among the Pala'wan tribe in Southern Palawan who has wealth of knowledge regarding indigenous

sources of food. The results of the study indicated that there are 23 sources of carbohydrates identified; 14 of these food crops are cultivated; and nine were collected from the wild. These food sources are classified as grains, tubers, corms, and palm. For grain crops, rice – the staple food of the tribe – has 55 lines/cultivars identified. For vegetables, which are mostly foraged in the forest, 48 kinds were identified of which young/tender leaves/shoots and hearts are utilized for food.

Keywords: Indigenous food crops, Pala’wan tribe

State of the Art of Mycophagy in Los Rios, Babahoyo, Ecuador

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ABSTRACT

This paper is the first report on mycophagy in Los Rios, Babahoyo, Ecuador. Mycoexpedition was conducted between December 2015 to early part of January 2016 in order to gather information on mushroom utilization and consumption among the local people in the target area. Survey questionnaire, which was supported by focus group discussion was administered. Results of the investigation revealed that the majority of local people prefer to consume mushrooms primarily as food ingredients. Majority of the respondents expressed their interest to cultivate mushrooms but the unavailability of production technology prevented them from doing so.

Nature, Culture and Community: Transforming Local Funds of Knowledge into Science Literacy through Cultural Memory Banking Ethnomethodology

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ABSTRACT

Originally conceived as a tool to preserve heritage seeds and agricultural biodiversity, cultural memory banking has evolved into a versatile and flexible research method to elicit “mine” local funds of knowledge in the context of communities and locals. This

paper discusses the framework and paradigm in selecting cultural memory banking as a tool to gather information about the people in the coastal community without necessarily including agricultural elements. In the adapted version of memory banking, “seeds” were facets of the culture such as practices, beliefs, indigenous ecological knowledge, history and collective memory, both past and present; which were of interest and could illuminate norms and typical ways of living in a place. With this, funds of knowledge represent a major, undeveloped resource for academic instruction that can be provided by teachers with cultural congruence. The data generated through ethnographic means were then transformed into meaningful germane science lessons. In a way, previous scholars who utilized the method had the objective of envisioning science education as a socio-cultural practice that evokes a deeper connection between the home, school and their community.

Keywords, local funds of knowledge, culture, science literacy, ethnomethodology, cultural-memory banking, ethnography

Perceived Incidence, Severity, and Yield Impacts of Major Insect Pests and Diseases on Fruit Bearing Carabao Mango Trees in Negros Oriental, Philippines¹

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ABSTRACT

Fruit bearing carabao mango trees are highly susceptible to a wide range of insect pests and diseases particularly during their flowering and fruit development stages. The study sought to examine mango farmers’ and sprayer contractors’ experiences on the level of incidence and severity of damage caused by major insect pests and diseases and their impact on yield performance as a basis for future pest management decisions. Data were obtained from a total of 100 mango farm owners and 100 sprayer-contractors in selected municipalities of Negros Oriental using face to face interviews during the months of June to September, 2016. The surveyed respondents reported varying levels of incidence of a total of 7 insect pest species, the most intense or serious of which were mango hoppers, fruit flies, and cecid flies. Significant differences in the levels of incidence of cecid flies between dry and wet seasons were noticed. Among the occurring insect pests, mango hoppers, fruit flies, and cecid flies were reported to have caused severe damage on mango fruits, with mango hoppers assessed to be the most destructive. Pests reported to be of highest incidence, and most damaging were perceived to have caused the highest yield losses. Among the diseases, respondents were particularly concerned with fungal diseases such as anthracnose, scab and sooty mold, the incidence and severity of which were generally considered to be low, thereby considered not as serious as the major insect pests. The study recommends using the

current findings and adequate field surveillance of insect pests and disease incidence as basis for pest management decisions.

Keywords: Pest Incidence, Severity, Pest Damage

Effect of Lunarcycle on the Sex Ratio Catches and Catch Per Unit of Effort (Cpue) to *thalamitacrenata*

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ABSTRACT

Usually, all the behavior of organisms were governed by the influence of lunar cycle that made it a basis in the study of fishery biology. *Thalamitacrenata* was used in this study where it was caught with baited crab lift net for two hour fishing operation. Each catch were sorted according to sex and the female was sorted by gravid and non-gravid status. A 1:1 sex ratio was observed in the morning of full moon and in the evening of the last quarter. There were more males caught in the evening during the first three quarters of the lunar phase and in the morning of new moon lunar phase. Catches of non-berried crenates were high in the first quarter of the lunar phase while berried crenate crabs were dominant during the last quarter. Average catch frequency of female crab and the average catch per unit of effort (CPUE) was high during the first quarter except during new moon. Therefore, catches across sexes and the unit of effort were influenced by the phases of the moon.

Keywords: Lunar cycle, gravid, sex ratio, catch per unit effort, crenate crabs, *Thalamitacrenata*

Growth, Movement and Recovery of Tagged Topshell, *Trochus Niloticus*, Juveniles in Imondayon, Anda, Pangasinan

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ABSTRACT

In the present study, the growth, movement and recovery rates of tagged wild *Trochus niloticus* juveniles were assessed after deployment in Imondayon, Anda, Pangasinan. Two batches composed of 51 (35.88 mm \pm 3.60 shell diameter, SD) and 35 (36.56 mm \pm 3.73 SD) juveniles were tagged and released into an intertidal flat with coral rubble near

a sand bar in Imondayon reef on November 27, 2014 and December 18, 2014, respectively. In the first batch, only 5 live specimens were retrieved after 89 days (9.80% recovery rate). On the other hand, in the second batch a lower recovery rate of 5.88% was observed after 68 days. Observed growth rates in both batches ranged from 0.082 to 0.096 mm/day, which is similar to that observed in other previous studies on same sized juveniles. There was a decreasing trend in recovery rates as the juveniles are highly mobile and tend to move away from the release site. Some shells were also recovered dead but whole and with observed growth, which indicates predation by non-crushing predatory gastropods and/or hermit crabs. Wild trochus are cryptic and highly mobile, moving into deeper areas as they grow in size, which also explains the low recovery rates observed in the present study.

Keywords: *Trochus niloticus*; Translocation; Growth; Movement; Survival

Preliminary Screening of *Nepenthes alata* for Secondary Metabolites

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ABSTRACT

Nepenthes alata is a group of endemic *Nepenthes* species that is diverse in Mindanao and extends throughout the Philippines except Palawan. *Nepenthes* species are the largest group of all carnivorous plants capable of digesting small amphibians and mammals. Plants are known to produce chemicals which may or may not help in growth and development; and not necessarily for survival. Being partly carnivorous, *N. alata* may produce specialized chemicals that may be beneficial to humans or the environment as well. Ethanolic extracts of the stem, leaves and lower pitchers of *N. alata* were tested to determine the secondary metabolites present by using different phytochemical screening tests. This preliminary screening suggests that all parts of *N. alata* contain phenols, quinine, tannins, starch and xanthoprotein. In addition, coumarines and steroids are present in leaves and lower pitchers. While the reducing sugars and flavonoids are present in stems also. Only the lower pitchers have alkaloids that may act as antimicrobial barrier of the plant. This plant may contain natural products that may be beneficial to humans either as health or industry products.

Preliminary Study of Some Pili (*Canarium Ovatum* Engl.) Varieties Native to Sorsogon Province

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ABSTRACT

Pili or Philippine nut significantly contributes to the region's agro-economy being the popular source of confectioneries/ *pasalubong* in Bicol. It is believed to have its centre of genetic diversity in the Province of Sorsogon. Nevertheless, characterization studies on native varieties of pili from the province and those maintained *in situ* are limited. An ecogeographic survey of 154 pili trees native to Bulan and Gubat, Sorsogon was undertaken. Majority of the pili trees were sourced from natural vegetation in sloping areas with variety B as the most popular among farmers. Cluster analyses of the fruit characters revealed two main branching wherein thirteen (13) short varieties and one (1) long variety belong to separate groups. However, it does not necessarily distinguish the genetic identity of the varieties. Thus, more research on genetic diversity assessment and use is recommended. With anticipation, the ecogeographic data generated can supplement in the establishment of a knowledge baseline for pili in the province of Sorsogon.

Keywords: Pili, ecogeographic survey, characterization, Sorsogon

Geographic Patterns in Tracing Evolutionary Relationships of *Decatopecten radula r radula* (Bivalvia: Pectinidae) from Philippine Islands

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ABSTRACT

Molecular markers have been widely used by evolutionists to determine phylogenetic relationships among various species of organisms in the tree of life. As part of the Coral Marine Triangle, the Philippines host diverse mollusk species to include the bivalved scallops. *Decatopecten radula radula* (Linnaeus 1758) is one of the scallop species harvested commercially in the Central Philippines because of its highly priced meat supporting the local fisheries in certain parts of the Islands. We made use of molecular markers from the mitochondrial (12S rRNA and 16SrRNA) and nuclear (histone) genes to trace island biogeography patterns of the scallop species *D. radula radula* collected from

eight different localities in the Visayas and Mindanao areas. Results from Bayesian inference revealed that the samples from Palawan Islands were the oldest while samples from Bantayan Islands were the most recent ones. These results provide evidence of geographical patterns of *D. radula radula* reflecting the islands geological history and origin.

Keywords: island biogeography, *Decatopecten radula radula*, mitochondrial DNA, nuclear DNA

Pesticide Usage on Fruit-Bearing Mango Trees and Residue Determination on Mango Fruits in Negros Oriental, Philippines¹

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ABSTRACT

Susceptible to a variety of pests and diseases at their flowering and fruit development stages, "Carabao" mango trees are pervasively applied with pesticides as a principal pest management strategy. This study examined the extent, types, and intensity of pesticide usage on bearing "Carabao" mango trees, and determined the presence of pesticide residues on harvested fruits from randomly selected mango farms in the province. Pesticide usage was determined through structured personal interviews with 100 randomly selected sprayer-contractors. On the other hand, pesticide residue determination on freshly harvested and ripened mango fruits from the surveyed farms was conducted by the National Pesticide Analytical Laboratory of the Bureau of Plant Industry, Quezon City using the Gas Chromatographic method. Results show that insecticides were used in all of the surveyed farms at least six (6) times using chemicals that belong to eight (8) subgroups, the most frequently used of which were organochlorines (87%) and Thiocarbamate (50%). A total of 13 different active ingredients were applied, with Endosulfan and Cartap Hydrochloride having the greatest number of users at 87% and 43%, respectively. Fungicides were used at least once, with Strobilium (Azoxystrobin) as the most frequently used (46%). Reportedly, respondents applied a "cocktail" of pesticides per application. The rate of pesticide application per fruiting season was relatively high averaging 1138.88 grams of active ingredient/ tree. Most of the pesticides used were moderately hazardous (Category II), although 34% were highly hazardous (Category IB). Results of the Multi Residue Test show that residues of organophosphates specifically, Chlorpyrifos, were detected in a total of 11 fruit samples out of 60 tested. Thus, it is argued that the current pesticide management strategy in a number of mango farms in the province has resulted in fruit contamination with pesticide residues rendering some of these fruit potentially unsafe for human consumption. It is recommended that a Pesticide Education program be vigorously

implemented among sprayer-contractors and farm owners to heighten awareness on the dangers of improper pesticide use, and enforce safer pest management strategies.

Keywords: Pesticide usage, pesticide residue,

Potential Impacts of Current Pest Management Strategies on Fruit-Bearing “Carabao” Mangoes in Negros Oriental, Philippines¹

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ABSTRACT

The Philippine mango industry is a significant contributor to the country’s agricultural export earnings. However, the continued viability of this sector has been continuously threatened by a variety of pests which affect yield performance and quality of produce. The study examined the pest management strategies employed in mango farms in Negros Oriental, Philippines and their impact on pest reduction, yield, profitability, and the environment. Face to face interviews were conducted with 100 randomly selected owners of “Carabao” mango trees and 100 sprayer-contractors in selected southern and northern municipalities in the province. Results show that the surveyed farmers had an average of 33 fruit-bearing Carabao mango trees, all of which were artificially induced to flower. Except for six farmer respondents, the rest hired sprayer-contractors to perform floral induction and manage the entire fruit development stages. Respondents reported that In the absence of reliable alternatives, pesticides constitute the core pest management strategy, together with such practices as fruit bagging, pruning of infected parts, and sanitation. In all farms, insecticides were applied on scheduled timings at least six times between bud emergence to fruit maturity, while fungicides were utilized at least once in only 54% of the surveyed farms. Respondents indicated that pesticide application reduced pest damage by more than 50%, significantly increased harvestable yield, and made mango production profitable. However, respondents averred that excessive pesticide use is potentially hazardous to human health, destroys beneficial organisms, and results in the contamination of produce, air, soil, and water resources.

Keywords: Pests, Pest Management, Pesticide Use

Land Snail Community Structure Across the Forest Disturbance Gradient in Mount Makiling, Philippines

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ABSTRACT

The Philippines supports many endemic land snails which are threatened by habitat destruction and exotic species invasion. To address this, I determined how anthropogenic-induced disturbance affect the community structure of native and invasive land snails. Quadrat sampling was conducted for four years across a forest disturbance gradient (old-growth, secondary, plantation forests and former slash and burn sites) on Mount Makiling, Luzon Island. Biotic and abiotic environmental variables that could influence snail population were also measured. Disturbance score was computed for each species while generalized linear mixed-effect modelling (GLMM) was performed to select the best predictor of species richness and abundance. Native pulmonates and prosobranchs have lower disturbance scores compared to the invasive snails. In old-growth forests, only native pulmonates and prosobranchs were present. Diversity was highest in secondary forests having species representing various ecological successional stages. In plantation and former slash and burn sites, tolerant native pulmonates and invasive species thrive while native prosobranchs were absent. GLMM revealed that forest disturbance was the main factor in predicting land snail species richness while abundance was influenced by multiple variables. The present findings demonstrated the potential of land snails as possible alternative models to vertebrates for efficient and non-intrusive assessment of habitat quality.

Keywords: land snails, community, disturbance, forest, Mount Makiling

Finding the Optimal Locations of Cassava Postharvest Facilities in Surallah, South Cotabato, Philippines

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ABSTRACT

The municipality of Surallah has the highest production capacity of cassava in South Cotabato. In this study, the optimal number and locations of cassava postharvest facilities to be built in Surallah were determined using the formulated *p-center* facility location model which minimized the total transportation cost. Results showed that barangays Centrala, Lamsugod and Naci were the best locations for the postharvest facilities. This study was also able to determine which postharvest facility each barangay in Surallah shall use. Through the use of these postharvest facilities, a kilogram of cassava tubers processed in a postharvest facility will give a profit of 2.74 PHP and a hectare of land planted to cassava will give an estimated profit of more than 93,000 PHP.

Keywords: p-center facility location, binary integer model, transportation cost, cassava postharvest facility

Vegetation Analysis and Carbon Stock Estimation in Baluan Mangrove Forest, General Santos City, Philippines

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ABSTRACT

Mangrove ecosystems, with their wide range of ecological functions, play a key role in the global climate change mitigation. The Baluan Mangrove Forest (BMF) is one of the few remaining mangrove stands along the Sarangani Bay Protected Seascape, which is apparently threatened by anthropogenic disturbances. Vegetation structure and carbon stocks of BMF were assessed using diversity indices and allometric equations. Twenty 10m x 10m plots were established in the area. A total of six mangrove species were identified. *Avicennia marina* (Bungalon) dominated the stand with an importance value index of 71.76%. Diversity is low ($H' = 0.726$) with only two equally common species ($ENS = 2.066$). In terms of carbon sequestered, the aboveground component had 296.41 Mg C ha⁻¹ (81%) while the root biomass had 68.17 Mg C ha⁻¹ (19%). Overall, the forest stored a total of 364.58 Mg C ha⁻¹ which is equivalent to 1337.99 Mg CO₂ ha⁻¹. This suggests that the Baluan Mangrove Forest has the potential to sequester and store considerable amounts of atmospheric carbon. Conversely, this implies that degradation of BMF could release huge amounts of carbon back to the atmosphere, hence the need to protect and sustainably manage the mangrove forest.

Keywords: *Avicennia marina*, CO₂sequestration, diversity indices, mangrove biomass

Correlation Between Environmental Awareness and Solid Waste Management Practices of Siargao Coastal Communities

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ABSTRACT

This study explored the correlation between environmental awareness and solid waste management practices of Siargao coastal communities. Three hundred coastal communities (300) were the respondents of the study. A descriptive research design was used. The gathered data were analyzed using the frequency and percentage count for profiling. Mean (M) and Standard Deviation (SD) were used to determine the extent of solid waste management practices. One-way Analysis of Variance (ANOVA) was used to determine the significant difference in the perceptions of the respondents when grouped according to their profile variables. Based on the findings of the study There is a significant difference on environmental awareness and waste management practices of the respondents when grouped according to their profile. Awareness on air pollution is significantly correlated to garbage recycling and reduction. Awareness on land pollution is significantly correlated to waste management practices except on recycling and awareness on water pollution is significantly correlated to garbage disposal, segregation, and collection ; Hence constant monitoring on these is suggested and keeping coastal communities of Siargao Island need to sustain their awareness on environmental concerns and keeping the programs working all year round in order to make the place environmentally-friendly.

Keywords: Siargao Island, Environmental Awareness, Solid Waste Management, Coastal Communities

Levels of Cadmium, Copper, and Lead in Salog River System at Hilongos, Leyte, Philippines

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ABSTRACT

The study was conducted to determine the levels of total cadmium, copper, and lead in the sediments and water of Salog River System at Hilongos, Leyte, Philippines and evaluate the quality of the river system based on the statutory limit set by national and international environmental agencies. Three sampling stations were established to represent the upstream (Brgy. Sta. Margarita), midstream (Brgy. Tambis), and downstream (Brgy. Liberty) portions of the river. Sediment and water samples were collected during the months of April, June, and August 2015. The three heavy metals were analyzed through an atomic absorption spectrophotometry at the Central Analytical Services Laboratory of the PhilRootcrops, Visayas State University, Baybay City, Leyte. Results showed that the sediment had 0.5304 ± 0.0598 ppm Cd, 43.6 ± 4.9 ppm Cu, and 11.3031 ± 6.0268 ppm Pb. The water samples, on the other hand, gave 0.0084 ± 0.0004 ppm Cd, <0.003 ppm Cu, and 0.0130 ± 0.0101 ppm Pb. The differences in heavy metal levels at the three sampling stations might be attributed to the extent of quarrying activities observed in the study sites. However, Salog River System is still below the tolerable limits and standards set by the Department of Environment and Natural Resources, United States Environment Protection Agency, and World Health Organization in terms of the three heavy metals. In other words, this particular river system is still in good condition and safe for humans and aquatic species.

Keywords: Cadmium, Copper, Lead, Salog River System

Awareness and perception of college students to energy resources and sustainability

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ABSTRACT

The study assessed the awareness and perception of college students regarding energy resources and sustainability in Xavier University-Ateneo de Cagayan. The survey was composed of two parts: i) awareness and perception of students on sustainability and; ii) awareness and perception of students on energy resources. The two parts have sets of modified questionnaires adapted to literature. One set with 20 questions and the other with 16 questions. Likert scale was used in evaluating the students' awareness about sustainability. For the first part (awareness and perception of students on

sustainability), 300 students were surveyed and 90% of this respondents are strongly aware about sustainability. Administering further two questions showed that students have different perception about sustainability but majority answered correctly to these questions. For the second part, descriptive survey design was used and 50 students were surveyed. Overall student's perceived energy as a product of certain processes (84%) followed by fuel or functional (72%).

Keywords: sustainability, energy, perception of sustainability, awareness of sustainability, college students

Optimum Conditions for the Efficient Mycelial Growth of the Different Strains of *Volvariella volvacea* from Ecuador

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ABSTRACT

Volvariella volvacea is a tropical species of edible and nutraceutical mushroom that usually grows on cellulosic plant residues. In the Philippines, this mushroom has already been domesticated and its production technology on banana leaves and rice straw has been introduced and developed since 1950. However, *V. volvacea* in Ecuador remains to be in the wilderness that normally grows on piles of decomposing banana leaves during wet season. Thus our research team initiated basic study on the optimization of physical and nutritional conditions for the efficient growth of the mycelia of the three wild strains of *V. volvacea* from Ecuador. The mycelial growth was evaluated on commercially available culture media namely potato dextrose agar, Saboraud dextrose agar and malt extract agar. Subsequently the following physical conditions were optimized; aeration, illumination, pH of the culture medium and temperature. Results of the investigation revealed that the 3 strains grew luxuriantly in Saboraud dextrose agar followed by potato dextrose agar and malt extract agar. Further evaluation confirmed that plated cultures grown in Saboraud dextrose agar which was previously pre-adjusted to pH 7.0 regardless of strains grew efficiently when incubated either in parafilm - sealed and unsealed condition. Also, lighted condition favored the colonization of the mycelia irrespective of the strain.

A Review on the Impacts of Waste Disposal Sites in the Philippines to Environment and Public Health

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ABSTRACT

The Republic Act (RA) 9003-Ecological Solid Waste Management (ESWM) Act of 2000 of the Philippines provides the mandate and framework for solid waste management in the country. The implementation however on the local government units reflects the lack of institutional arrangements for waste management. This has been reflected through the utilization of unregulated dumpsites and landfills exhaustively although other alternatives can be considered. Primary reasons were drawn from inadequate technical and financial resources, lack of political will, unwillingness of stakeholders, and minimal local awareness. Consequently, there is absence of comprehensive monitoring scheme of dumpsites and landfills operation in the country. Present studies reviewed in this paper evidenced the threat that disposal sites may pose to the environment from potential leaching of hazardous chemicals due to dumped wastes. The contamination of the adjacent water resources, soil, and plants is likely common. This review further highlights the opportunities presented to the adjacent community through employment: i) scavenging, ii) middle me/itinerant working, and iii) micro-financing. While these disposal sites may attract locals or informal settlers due to perceived opportunities, they are similarly exposed to health threats. Overall, this review also summarizes key points to propose a mechanism to improve the solid waste disposal system to meet the policies of RA 9003.

Keywords: landfill, dumpsite, Republic Act 9003, Ecological Solid Waste Management Act 2000

Gonadosomatic and Condition Indices of *Polymesoda erosa* (Bivalvia: Corbiculidae) population in Santiago River, Dagupan City, Northern Philippines

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ABSTRACT

Gonadosomatic (GSI) and condition indices (CI) of *Polymesoda erosa* population in Santiago River were determined on a monthly basis for 14 months (November 2013 to December 2014). GSI was used to elucidate the time of spawning of these clams while CI was utilized to describe the bivalves' nutritive condition. Results suggest that spawning is year-round peaking in the months of January to March. Female to male ratio was 1:1.22. The CI implied that the soft tissues of the clams were heavy which indicates the abundance of food in the river. CI is fairly correlated with sediment OM content ($r=0.55$) which suggests that resuspended detrital material from the sediment is important to *P. erosa* diet.

Keywords: GSI, CI, Santiago River, *Polymesoda erosa*

Fingerprint Patterns in Marinduque and Manila, Philippines

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ABSTRACT

This study was conducted to determine the fingerprint patterns of 61 families living in Marinduque, Philippines. Specifically, the study aimed to compare the collected data from Marinduque with the data previously collected from Metro Manila in terms of the Total Ridge Counts (TRC), frequency of patterns and sexual dimorphism. Direct counting on each individual's fingerprints was used as the sampling method for the study population consisting of 116 individuals with 63 males and 53 females. Particularly in the Marinduque population, the TRCs ranged from 38-328 (male) and 56-219 (female). Using Mann-Whitney U test, it was found out that there is a significant difference between the values of parental TRC of the Marinduque and Metro Manila populations indicating sexual dimorphism. For the two study populations, Pearson correlation coefficients of the fingerprints were found to be significant for mother-child and midparent-child ($\alpha = 0.01$) while only the Marinduque population showed no significant relationship for parent-parent relationship. The most observed frequent pattern for the two study populations was the loop, followed by the whorl, and arch being the least. Specifically for the Marinduque population, it was recommended that further studies on fingerprints of individuals with congenital diseases be conducted to determine fingerprint patterns, mode of inheritance and other important characteristics. Moreover, it was recommended that a greater sampling size be obtained and more accurate methods of sampling be done in order to ensure the accuracy of the values obtained.

Keywords: fingerprint pattern, sexual dimorphism, direct counting, loop, whorl, arch

Antimicrobial Activity of Endophytic Fungal Isolates from Dragon Fruit (*Hylocereus* spp. Haw. Britton and Rose)

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ABSTRACT

This study was specifically carried out to identify endophytic fungi from a unique source like Dragon Fruit with antimicrobial property against bacterial and fungal pathogens. Sixty isolates were collected from the 90 cut segments made from the modified stems and adventitious roots of *Hylocereus undatus* and *Hylocereus costaricensis*. These isolates were identified to belong to the genera *Aspergillus*, *Acremonium*, *Curvularia*, *Fusarium*, *Geotrichum*, *Gliocladium* and *Penicillium*. Six, however, remained unidentified due to inability to produce spores. These identified and unidentified endophytes were assayed for antimicrobial activity. Results showed that no endophytes have antagonistic activity against *Escherichia coli*, *Enterobacter cloacae*, *Serratia marcescens*, *Ralstonia solanacearum* and *Klebsiella pneumoniae* while *Curvularia lunata*, *Aspergillus niger*, *Acremonium strictum*, *Fusarium solani* and Unknown 2 displayed a promising antibacterial property against *B.subtilis*. In addition, *Acremonium strictum* showed weak resistance over *A.fumigatus* and *F.oxyporum*. *A. fumigatus* was inhibited by *C.lunata*, *Acremonium sp. 1*, *F.solani* and *Unknown 2*. This study may provide an insight for future explorations on endophytes and consider these endophytes from *Hylocereus spp.* as great source of novel bioactive compounds.

Keywords: endophytes, zone of inhibition, antimicrobial activity, pathogens

Students' Perceptions on Poster-Making as a Means to Appreciate and Communicate Topics in a Natural Science Course

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ABSTRACT

Educational institutions have an important role in environmental protection as they are counted upon to help students become well-informed stewards of nature. However, fewer students appreciate scientific information that would equip them to tackle current environmental problems. New approaches to teaching and learning must be done to engage more students to gain interest in scientific topics and communicate it to

others. One such approach is poster-making, an exercise enabling students to creatively use and develop different types of skills. This study sets out to determine the perceptions of students about poster-making as a way to appreciate and share to others the scientific knowledge that they learned from the course MS 1 (Oceans and Us). Students were asked to write a short reflection about their experience in poster-making: from choosing the topic to designing the posters. They also described how their posters could help in educating others about oceans, marine life and conservation. Through qualitative content analysis, the author identified common themes in the students' narratives. Results of the study provided insights on how poster-making and other similar creative exercises can inspire students to learn science.

Keywords: Poster-making, natural science, content analysis

Effect of Super Typhoon Yolanda (Haiyan) on the Flying Fox Population of Tabuk Islet, Palompon, Leyte, Philippines

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ABSTRACT

Like many other wildlife species, flying foxes populations in the Philippines are declining due to anthropogenic pressures, such as hunting and disappearing habitats. However, it was not the case at Tabuk Islet in Palompon, Leyte where flying foxes were increasing in numbers. But these animals are not exempt from the ill effects of environmental perturbations such as typhoons, droughts, and El Niño/La Niña and climate change phenomena as well. In late 2013, the Visayas Islands were badly hit by Super Typhoon Yolanda that affected both humans as well as other life forms like the flying foxes roosting at Tabuk Islet. This roost site has been monitored prior to the ST Yolanda having an estimated population of 5,000 individuals in 2008 and 7,000 in 2011. Using the same technique in estimating the population 15 months after the typhoon, the population is estimated to be at 1,200 or 83% lower than pre-ST Yolanda population. Such decline could be due to direct mortality from the typhoon, subsequent die-offs due to food scarcity/starvation, unavailability of roosting trees uprooted during the typhoon, emigration, and increased hunting pressure from humans who also have scarce food supplies.

Preliminary report on the pteridophytes of Adams, Northern Luzon, Philippines

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ABSTRACT

Adams is a one-barangay municipality of Ilocos Norte in Northern Luzon, Philippines. It is located at the northern tip of the Cordillera Mountain Range, which is one of the remaining floristic sites within Luzon. Adams has a diverse flora, and this study focuses on the preliminary survey of the pteridophytes found within the forests close to the Poblacion of Adams. The survey was conducted in May 2013 and October 2014. Taxonomic identification was performed using published keys and species descriptions, following Smith's classification. A total of 18 families of pteridophytes were recorded, comprising of 30 genera and 39 species. Most of these pteridophytes were found growing in undifferentiated mountain soils. Included in the 39 species is *Platyserium coronarium*, which is listed in the IUCN as critically endangered. Some of the identified pteridophytes in the area are being used by the local people as vegetables and decorations. Findings from this report provide an understanding of the present status of the remaining forests and mountains of northern Luzon, Philippines.

Keywords: pteridophytes, ferns, Adams

Multiple Antibiotic Resistance of Enteric Bacteria from Tilapia Aand Lapu-Lapu

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ABSTRACT

The study aimed to identify the microbial load and antibiotic resistance of bacteria from Tilapia (*Oreochromis nilotica*) and Lapu-lapu (*Epinephelus coioides*) from fish cages and those sold in the market. Fries, juveniles, and water samples were taken from the fish cages while adults were used to represent the fish sold in wet markets. Enteric bacteria were isolated and tested for antibiotic resistance using 11 antibiotics. Market sold Tilapia exhibited the highest microbial count while juvenile Lapu-lapu registered the highest coliform count. Four enteric bacteria namely- *Escherichia coli* (10), *Enterobacter aerogenes* (7), *Klebsiella pneumoniae* (19) and *Salmonella enterica* (8) were identified from the fish samples (N=44). Majority of the isolates were resistant to ampicillin

(95.45%) while 22.73% were susceptible to tetracycline. Multiple Antibiotic Resistance (MAR) Index showed very high resistance among the four identified enteric bacteria. MAR index in *Klebsiella pneumoniae* was 0.09 -1.00; in *Escherichia coli*, 0.45 – 0.82; *Enterobacter aerogenes*, 0.18 – 0.91; and *Salmonella enterica*, 0.45 – 1.00. Majority of the isolates exhibited resistance to eight antibiotics (20.45%). Results of this study may be used in better management of fish cages.

Keywords: enteric bacteria, antimicrobial resistance, MAR index

Assessment of the Hydrological Capacity of the Quiaoit River Watershed (QRW) Under Changing Climate and Land-Use

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ABSTRACT

Water balance and hydrological processes under changing climate, land-use and land cover at various scales (temporal and spatial) were investigated at the Quiaoit River Watershed in Ilocos Norte, Philippines. Dependable groundwater and surface water supply vis-a-vis water demand for agricultural, domestic, environmental and commercial purposes were assessed and examined. Data were gathered using field based monitoring at the point, reach and catchment scale. Results of the study showed that water demand for all uses within the QRW is around 138,865 m³/day. This compares to an estimated Total Resource Capacity of 336,100.8 m³/day. This implies that supply is presently adequate to meet existing demand for agriculture (172,065.1 m³/day) and domestic (10,370.4 m³/day). Nonetheless, supply is coming under pressure from changing land-use and urban development. Land cover has changed drastically in the QRW which is imposing a negative impact on its water resources. The area of other land, built-up area has almost doubled (391.24 to 743.69 ha) in a span of 7 years. Moreover, there is a glaring decrease in the area of inland water from 257.95 ha to 33.50 ha. which was mainly attributed to the increasing extraction of water for agricultural use. Water resources management is becoming more important at the QRW as the demand for water increases. Recommended sustainability criteria are presented in this study to facilitate the targeting and development of plans and activities to improve and maintain a reliable and adequate water supply for the future.

“Dapogan”: An Online Database of Food Recipes with Indigenous Ingredients

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ABSTRACT

This paper presents the development of an online database of food recipes with indigenous ingredients. The system is called “dapogan” which is aimed to allow food developers to share and promote foods made from indigenous ingredients using the Internet. It is a content management system integrated with social networking facilities and multimedia capabilities. A rapid application development was used during the development. Development tools include Windows 7, WAMP Server 2.0, PHP, Notepad++ and Adobe Photoshop CS5. The newly developed system was evaluated by 24 student-users it yields a 9.7 weighted mean which is described as ‘compliant’. The result entails that dapogan is highly acceptable in terms of its usability among the users.

Health-Care Waste Segregation and Yield Measurement in the Clinical Chemistry Laboratory Classes in Southwestern University, Cebu City

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ABSTRACT

Health-care wastes (HCW) are an ever increasing problem impacting the environment as these are increasingly produced by medical institutions, schools, and even households. Hence, a pioneering segregatory study involving the tracking of HCW generated with the use of a sort of algorithm in all Special Clinical Chemistry classes in Southwestern University was conducted in the second semester of academic year 2015-2016. The HCW were classed primarily into six (6) types namely: general, sharps, rubbers, biohazards, inorganic chemical, and organic chemical. Each of the different classes of HCW was provided with appropriate containers. The semestral yield of each HCW class shall be monitored and weighed and shall be reported in kilogram per month. The data that will be obtained from the study shall provide preliminary data of the impact of the

HCW generated to be utilized by the school administration to come up with appropriate reductive efforts in the future. Moreover, the problems encountered during the conduct of the HCW segregation involving students as well as the recommendations about the post-collection strategies in the improved management of HCW shall be presented.

Keywords: Health-care waste, Health-care waste management, Waste segregation, Wastes in laboratory, and Classes of health-care wastes

Abundance of *Enhalus acoroides* in Cancabato and Anibong Bays, Tacloban City: An Inquiry After Yolanda (Haiyan)

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ABSTRACT

Seagrasses have high ecological services as promoter of biological productivity and biodiversity. When Yolanda (Haiyan) devastated Tacloban City including marine protected areas; two years after, there is a need to assess the condition of the seagrasses as they start to emerge despite of the hostile condition. Using a transect-quadrat method, results show that only *Enhalus acoroides* thrive in the inter-tidal shallow waters on both sampling areas. Cancabato Bay had higher percentage cover compared to Anibong Bay. This is also true to leaf length, shoot density and epiphyte biomass. There is also a need for assessment of associated seagrass macrofaunal invertebrates as they were observed to proliferate along sampling sites.

Population Density, Size Structure, Growth Pattern and Nest Characteristics of Scorpion Mud Lobsters (*Thalassina Anomala*, Herbst 1804) in Cato River, Infanta, Pangasinan

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ABSTRACT

The population of scorpion mud lobsters *Thalassina anomala* (Herbst 1804) in Cato River, Infanta, Pangasinan was investigated. A total of 340 individuals were taken of which 233 males and 107 females were identified. Mounds were scattered in the area and highest density was recorded in Station 1 ($0.56/\text{m}^2$). Highest average carapace width, total length and weight were recorded also in Station 1 with 2.3 ± 0.5 cm, 12.1 ± 1.9 cm, and 26.9 ± 16.5 g, respectively. In terms of growth pattern, all individuals taken from sampling sites were growing in a negative allometric way implying that length increment

of the organism is faster than its weight increment. However, carapace width and weight and total length and weight both revealed significant relationship ($p < 0.01$). Highest average mound height (16.4 ± 6.6 cm), base diameter (25.6 ± 8.2 cm), and diameter of the hole (4.2 ± 0.9 cm) were noted in Station 1. Statistical analysis disclosed a significant correlation between the carapace width and average diameter of the hole (0.581 ; $p < 0.05$).

Key words: Mud Lobster, density, size structure, growth pattern

Anti-Diarrheal Property of *Muntingia calabura* L. (Aratiles) Leaf Extract In Mice

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ABSTRACT

The ethanol leaf extract of *Muntingia calabura* L. (Aratiles) was studied for its anti-diarrheal activity against castor oil-induced diarrhea in male albino mice within 3 hours after oral administration of the different treatments. Doses of 100, 150, 200, 250, 300 mg/kg body weight extract exhibited comparable effects when judged against the anti-diarrhea standard drug Imodium for 1st hour, 2nd hour, 3rd hour, and within the whole period of 3 hours in terms of fecal count and weight. The anti-diarrheal activity can be accounted to the presence of carbohydrates, reducing sugars, terpenes, triterpenes, phytosterols, phenolics, tannins, flavonoids, and proteins in the leaves which can be found on other plant species with anti-diarrheal properties. The study therefore shows that Aratiles leaves can be a good source of compounds that may inhibit diarrhea.

Keywords: Muntigia calabura, antidiarrheal, ethanol extract, castor oil

A Mycological Survey of Bat Hibernacula in Pisan and Bangilan, North Cotabato

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ABSTRACT

A study surveying molds composition of a tourist spot (Lupe Cave, Pisan) and a nontourist spot (unnamed Cave, Bangilan) bat hibernacula in Kabacan, North Cotabato in a hope to find potential surrogate taxa as bioindicators for bat cave vulnerability. The study was undergone in two caves sampling eight surfaces representing the floors, walls

and roosting sites. Caves as bat hibernacula are validated by capturing and identifying bats. A total of eight species of bats are identified. They are the *Cynopterus brachyotis*, *Hipposideros diadema*, *Ptenochirus jagori*, *Ptenochirus minor*, *Rhinolopus arcuatus*, *Macroglossus minimus*, *Emballonura alecto* and *Hipposideros diadema*. There are forty pure cultures of molds isolated. These are grouped into twenty-two morphospecies belonging to two genera – *Aspergillus* and *Penicillium*. Presence/Absence and frequency of occurrence is calculated. Three (3) morphospecies are found exclusively in Lupe Cave while eight (8) morphospecies are found exclusively in Bangilan Cave. It is possible that the identified fungi can be candidates as surrogate taxa.

Keywords: Molds, Mycology, Conservation, Caves

Erosion Simulation Modeling along the Coastlines of Leyte Hit by Typhoon Yolanda

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ABSTRACT

This paper attempts to develop a simulation model that would predict the amount of coastal erosion along the Leyte shorelines hit by Typhoon Yolanda based on the given number of assumptions and random data. The study used an experimental design using simulation modeling. Assumptions were formulated to measure different variables. Findings revealed height of the wave has something to do with the intensity of the storm. The stronger the intensity the higher the waves produced. It can also be gleaned that the frequency of the storms has an effect to the erosion rate as well as the kind of substrates found along the coastlines of Leyte. The harder the substrates the lesser is the erosion rate compared to the substrates along the coastline. This is due to the assumption that the frequency of the storm, storm intensity, and height of waves has bearing on the amount of coastal erosion along the shorelines in Leyte based on the type of substrates found on it.

Keywords: simulation model, coastal erosion, super typhoons, tropical storms, intensity, wave height

Mathematical Modelling of Signalling Network for Stomatal Closure in Plants

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ABSTRACT

Opening and closing of stomata is due to a variety of stimuli such as light, atmospheric carbon dioxide concentration, humidity and plant hormones. Absciscic (ABA) acid is a plant hormone that induces closure of stomata in response to drought. Moreover, ethylene (ET) is involved in the regulation of plant processes such as seed germination, root-hair growth, fruit ripening and responses to stresses. Studies revealed that these two phytohormones cause stomatal closure in plants. This study provides a mathematical model of guard cell transduction network for stomatal closure using continuous logical modelling framework. Results showed the functioning of the different components of the network. Furthermore, the model confirmed the role of antioxidants in the closure mechanism, and the diminished closure level of stomata with combined ABA-ET stimulus.

Keywords: Ethylene, Absciscic acid, Stomatal closure, Continuous logical model

Spatial Distribution and Dominance of Invasive Species Spiked Pepper *Piper aduncum* L In K'laja Karst Park, Philippines: Environmental Correlates and Relationships with Indigenous Floral Species Diversity

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ABSTRACT

Invasive alien species are threats to the floral community that can exclude indigenous species altering the natural system of an area. Spiked pepper (*Piper aduncum* L.), is an invasive alien plant that is flourishing at K'laja Karst Park, Conel, General Santos City. Geographic Information Systems (GIS) was utilized to map the extent of distribution of spiked pepper while biodiversity assessment was utilized to determine the impact of its presence to the native flora in the area. Analysis was done using 10 ecological parameters composed of diversity indices and selected physico-chemical parameters through Principal Component Analysis (PCA). Simple regression analysis was employed to determine the relationship between the importance of spiked pepper and floral diversity. GIS maps showed that old stand spiked pepper are distributed nearby the forest while young stand spiked pepper are distributed towards the locality. PCA revealed species diversity, evenness and richness is limited by % of spiked pepper, and the proliferation of spiked pepper toward areas that are disturbed. Regression analysis revealed that % *P. aduncum* L. and Shannon's Diversity Index exhibited curvilinear relationship significant at 77.2% indicating that presence of *P. aduncum* L. negatively affect vegetation composition once % *P. aduncum* L. exceeds 38%.

Keywords: Bioinvasive species, *P. anduncum*, Principal Component Analysis, native flora, GIS map.

Green Papaya (*Carica papaya* Linn) Extract AS Baceterial Inhibitor

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ABSTRACT

The effect of *Carica papaya* pulp extract as an organic inhibitor on the bacterial growth was studied at ambient temperature. Pour plate method and measurement technique were used for the experiment work. The extract was obtained from the green papaya fruit using a juicer. The results obtained showed effective zone of inhibition measurement of the extract on the diameter of punched filter paper soaked in the extract with 2.0mm increase in the culture media used. The extract exhibited effective reactions on the reduction of *Bacillus* species bacterium from spoiled fresh milk.

Keywords: green papaya, pour plate, bacillus species bacterium

The Floral Composition of Ibossi-Talakaigan Watershed, Aborlan, Palawan

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ABSTRACT

A floral survey was carried out in the forest ecosystem of Ibossi-Talakaigan watershed, Aborlan, Palawan to determine the vascular plant composition and environmental variables that influenced the vegetation pattern therein. Of the 324 vascular plant species in 192 genera and 89 families recorded, 59.9% were rare (represented by 3 individuals or less); 20% were endemic, 9 of which can only be found in Palawan; 6 were suspected as new to science and 14.5% were threatened. Cluster analysis divided the forest into four associations with environmental variables significantly influencing the spatial distribution of tree species. The Ibossi-Talakaigan watershed can be considered as one of the most important sites in Palawan corridor for conservation and the best and strictest measures should be done to prevent any degradation of such a rich genetic resource.

Keywords: Ibossi-Talakaigan watershed, Floral Composition, Conservation

Seagrass Meadows Assessment in Islas De Gigantes, Carles, Iloilo

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ABSTRACT

Seagrass ecosystem is considered as the most productive ecosystem that occurs in tropical and subtropical shallow marine waters where it supports diverse flora and fauna. Seagrasses of Islas de Gigantes, Carles, Iloilo were assessed to determine the species diversity, percentage cover and its present status. Braun – Blanquet technique was used where 3 transects were laid in each station taking into account its species in three barangays of Islas de Gigantes: Barangays Asluman, Granada and Gabi. Results show that there were 7 species of seagrasses found in the three barangays, namely *Thalassia hemprichii*, *Cymodocea rotundata*, *Cymodocea serrulata*, *Halodule pinifolia*, *Halodule uninervis*, *Enhalus acoroides* and *Syringodium isoetifolium*. Using the Shannon Diversity Index, the seagrass beds at Barangay Asluman site had a diversity value of 1.6, at Barangay Granada had 1.5, while Barangay Gabi site had a diversity value of 2.8, which signify that all sites have a very low diversity of seagrasses. Further analyses using Simpson’s index of dominance (C) was computed for species dominance and Sorenson’s coefficient (CC) for the similarity of seagrass communities. The percentage cover of all seagrasses (total seagrass) varied across the sampling sites. The total seagrass cover for the 3 sites was 62.50%.

Keywords: Seagrass, Islas de Gigantes, Braun-Blanquet, percent cover and diversity index

Coastal Resource Assessment of Islas de Gigantes, Northern Iloilo, Philippines

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ABSTRACT

Islas de Gigantes, a group of islands in northern Iloilo, is dependent on coastal resources as fishing and tourism are dominant contributors to the local economy. However, there is limited information on the condition of these resources. Thus, an assessment was made to determine the status of ecologically important coastal resources in the area. Mangrove Community Structure Analysis was done using transect plot method, seagrass was assessed using Braun-Blanquet method and coral cover was determined using line intercept method. There are 10 mangrove species with *Rhizophora stylosa* having the highest importance value (154.94) while *Sonneratia alba* dominated the fringing vegetation. Further, in the three sites surveyed for seagrass, seven species were recorded with a mean cover of 62.50%. Overall, low diversity (H') was noted for both mangroves (0.305) and seagrasses (1.5 – 2.8). For coral cover, only one out of four sites assessed showed coral cover in good condition (51%) while the rest have fair coral cover (29 – 45%). The coastal resources in the area are subjected to unregulated human activities such as destructive fishing, overlapping uses and extractive activities. There is a need to regulate human activities and rehabilitate the resources if these are to sustainably support fishing and tourism.

Keywords: Coral cover, Islas de Gigantes, Mangroves, Seagrass

Hypoglycemic and Anti-Inflammatory Effects of *Callistemon viminalis* Methanolic Leaf Extract

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ABSTRACT

Diabetes mellitus and inflammatory diseases are considered emerging health problems nowadays and mining natural products from plants may provide us remedies that are safe and effective. This study aimed to determine if the methanolic leaf extract of *Callistemon viminalis* at different concentrations has hypoglycemic effect in alloxan-induced diabetic mice and anti-inflammatory effect in carrageenan-induced paw edema in mice. Hypoglycemic activity results showed a significant reduction of blood glucose level in male and female mice by up to 38.9% and 32.10%, respectively, and anti-

inflammatory effect by up to 30% inhibition in male mice and up to 25% inhibition in female mice. The observed hypoglycemic and anti-inflammatory effect of the leaf extract can be attributed to the presence of saponins and phenolic compounds like phenols, flavonoids, and tannins. Flavonoids have the ability to improve, stabilize, regenerate beta-pancreatic cells, and together with saponins, they could increase insulin release. Flavonoids also can have direct or indirect mechanisms in reducing inflammation by inhibiting enzymatic formation and release of inflammation mediators. The observed hypoglycemic and anti-inflammatory activity of *C. viminalis* methanolic leaf extract tends to increase with increasing dosage. Moreover, the degree of effectiveness is not significantly different on either sex of mice.

Keywords: alloxan-induced diabetes, carrageenan-induced paw edema, saponins, phenolic compounds

Profiling the Expression of Liver CYP450 Proteins in Response to Environmental Pollutants

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ABSTRACT

Cytochrome P450s (CYPs) constitute a superfamily of membrane-bound proteins that participate in metabolism of environmental contaminants and drugs. Advances in mass spectrometry (MS)-based proteomics and Next-Generation Sequencing (NGS) have provided a potential for the identification of CYPs. Several approaches are done in this study to identify a variety of CYPs, and to characterize their protein expression levels. AROD activity levels positively correlated with CYP protein expression levels assessed by Western blot analysis. Nine CYP enzymes were identified in the phenobarbital-induced mouse liver microsomes by combination of 2DE and MALDI-TOF/TOF mass spectrometry. Multiple spots of CYP2C29 in the 2D gels were analyzed as acetylated isoforms, strongly suggesting post-translational modification. Transcriptome analysis in the liver of dioxin-affected Baikal seals revealed 215 CYP unigene sequences, some of which may be novel isoforms. The combination of several approaches is very useful for protein identification and characterization and to comprehensively unveil the isoform-specific expression profile of CYPs and other proteins that are associated with hepatic toxicity induced by chemical or pollutant exposure.

Keywords: liver, cytochrome P450, pollutants, proteomics, transcriptomics

Dynamic Changes in the Mineral Composition Within the Fruiting Body of *Volvariella volvacea* Bull ex Fr. Singer

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ABSTRACT

Naturally growing fruiting bodies of *Volvariella volvacea* were the subject of our investigation. Our research team attempted to describe the dynamic changes in the mineral composition within the fruiting bodies which were collected from a dumping pit of household wastes. Samples of fruiting bodies were air dried and subjected to elemental analysis using Thermo EDX System (Noran System 6, Ultra Dry, 10mm² SDD crystal, 129eV resolution, NORVAR window, LN₂-Free Type Detector) installed in Hitachi SU1510 Scanning Electron Microscope. Results of our investigation showed that *V. volvacea* contains the following minerals: aluminum, calcium, chlorine, iron, potassium, magnesium, manganese, sodium, potassium, sulphur, silicon. Among the minerals, potassium was the most abundant and distributed in the different parts within the partially open pileus of *V. volvacea*. There was no marked trend in the distribution of the different minerals within the fruiting body which implies that dynamic changes usually within the fruiting body of *V. volvacea*.

Classroom Waste Disposal Practices of Cebu City College Students

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ABSTRACT

The study determined the classroom waste disposal and waste sorting practices of some Cebu City college students. Separating the different elements found in collected wastes is important to facilitate retrieval of usable materials. Despite the availability of the separate biodegradable and non-biodegradable trash bins at 94%, and the presence of hazardous bins at 48.5%, only 33.3% of the respondents highly practice proper waste sorting inside their classrooms. Of these respondents, 63.7% of them seldom practice waste segregation. All of the respondents show concern for the environment but

expressed the common reasons why they do not practice proper waste sorting inside the classrooms. The location of the trash bins from their desks, at 48.5%, prompts them to simply keep their wastes inside their bags, pockets and under their tables and chairs. The plan of throwing their trash in the proper waste bins at a later time and forgetting to do the same follows the above reason at 27.3%. Once they throw their trash, 24.2% of the respondents manifest no interest in throwing them in the proper trash bins. The reason, as the respondents said, is that these wastes will still be segregated by the utility workers prior to garbage collection.

Keywords: Waste Segregation, Waste Sorting, Environment, Solid waste management

Characteristics of Epididymal Sperm from Philippine Native Goat (*Capra hircus*)

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ABSTRACT

One of the major challenges in the preservation of biodiversity today is the unexpected death of genetically diverse and/or animals of high genetic value and the difficulty of semen collection from wild species. As a result, utilization of post mortem epididymal sperm to preserve genetic materials has gained recent attention. In this study, the sperm quality of post mortem epididymal sperm in terms of volume, sperm motility, sperm concentration, percentage live and dead sperms and percentage abnormal and normal sperms were measured against the quality of fresh ejaculated sperm from a matured Anglo Nubian goat. Immediately after castration, sperm from the cauda epididymis were collected in a Tris-citrate buffered solution. Ejaculated sperm on the other hand were collected from a matured Anglo-Nubian buck using an artificial vagina. Subsequently, both sperm samples were processed and evaluated for sperm sperm quality. A mean volume of 1.04 ml and 1.24 ml with mean percentage motility of 76±2.4% and 72±2.0% for ejaculated and epididymal sperm were obtained, respectively. The sperm concentration of ejaculated ($2.92 \times 10^9 \pm 0.37$ sperm/ml) and epididymal sperm ($2.98 \times 10^9 \pm 0.37$ sperm/ml) had no difference. The observed percentage livability was higher in ejaculated sperm (97.4 ± 0.89) than epididymal sperm (92 ± 1.22). Also, the mean percentage abnormalities in sperm cells observed in ejaculated (4.06 ± 0.73) and epididymal sperm (4.24 ± 0.56) had no difference. Overall, the results suggest the possibility of using the epididymal sperm from post-mortem goats for use in

assisted reproductive techniques like cryopreservation, artificial insemination and in vitro fertilization.

Keywords: epididymal sperm motility, viability, abnormality

Creation of Rainfall Profiles for the Municipality of Moalboal, Cebu

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ABSTRACT

This study was made to establish a rainfall profile in the Municipality of Moalboal, Cebu. Rainfall data was gathered for a period of six (6) months from April ~ September, 2015. Improvised rain gauge were placed at approximately four hundred meters from the Automatic Rain Gauge with Pressure Station (Station ID: 1474) of Philippine Real-Time Environment Data Acquisition and Interpretation for Climate-Related Tragedy Prevention and Mitigation (PREDICT). Rainfall data was collected daily at 8:00 AM and the data of rainfall was measured in millimeter. Data gathered in this study is being compared to that of the data from Philippine Real-Time Environment Data Acquisition and Interpretation for Climate-Related Tragedy Prevention and Mitigation (PREDICT) of the Department of Science and Technology (DOST) to determine its accuracy and reliability. Results revealed that the rainfall profile of Moalboal Station and that of PREDICT were generally on the same in data trend. Pearson correlation show strong positive correlation except for few days in the month of July where there are inconsistencies observed due to equipment malfunction.

Keywords: rainfall, Moalboal, PREDICT, improvised rain gauge

Mapping of Blue Carbon Ecosystem in Cuyo Group of Islands, Palawan Using Landsat 8 Oli Images

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ABSTRACT

Coastal ecosystems provide essential functions and services that are vital to human well-being and biodiversity. Seagrasses and mangroves sequester and store significant amount of carbon within their biomass and within soils, known as coastal blue carbon. In measuring blue carbon, remote sensing techniques could be used to determine the

areal extent and vegetation structure of coastal ecosystem, particularly those remote islands. Cuyo Group of Islands belongs to Coral Triangle, the center of marine biological species diversity due to biologically diverse intertidal ecosystem. Mapping of blue carbon ecosystem is an important task in monitoring their spatial and temporal distribution. This study was carried out to map the current extent of mangroves and seagrasses by employing remote sensing techniques. Landsat 8 OLI images were downloaded and subjected to radiometric calibration and atmospheric correction using Fast Line-of-Sight Atmospheric Analysis of Hypercubes (FLAASH) method. Images were classified using Maximum Likelihood classification method. Result shows that blue carbon habitats in the area consist of 485.00 hectares of mangroves and 5,085.81 hectares of seagrass meadows. Landsat 8 images have been found to be efficient and could be an alternative in conducting benthic mapping since it is free and the additional coastal true-blue band help to facilitate measurement in coastal waters.

Keywords: Blue carbon, Remote Sensing, LANDSAT 8, Maximum Likelihood

Cebu City Tourist Sites' Environmental Practices

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ABSTRACT

This study was intended to investigate the environmental practices of the fifteen identified major tourist site in the city of Cebu basing with the four environmental concerns: waste management, water usage, energy consumption and purchasing policy. The study aims to assess the sustainability of the operation practices and the overall management of the various establish tourist sites and develop a concept of ecologically sound tourist attraction amidst the rapid growth of the city. The data were collected from the representative sample of fifteen tourist sites around Cebu City. The percentage method was used in profiling and the weighted mean and the average weighted mean was used in determining the degree of environmental practices of the sites. The result presented that majority of the sites has an average environmental practices on proper waste management, water usage, energy consumption and purchasing policy. The result shows that the tourist sites generally lack provision of policy or environmental guidelines for their staff and for the tourist to follow with strict compliance and monitoring. The staffs need to become environmentally consciousness in terms of the result of their operating procedures to the environment. The tourist sites have deficiency in the initiation of developing programs that advocates sustainable tourism site operation and management and there is insufficient participation to environmental organization. It is concluded that tourist sites has to develop concrete environmental

practices, management plans, programs and policies for sustainable tourist site operation practices.

Keywords: Tourist Sites, Tourist Attractions, Tourism, Environmental Practices, Sustainable tourism, Environment, Eco-friendly

Resiliency and Sustainability

Ensuring Safety and Resiliency: Disaster Risk Reduction in School and Community Through Localized Science Literacy

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ABSTRACT

This mixed-method study focused on exploring the local knowledge of the community regarding the practices on disaster preparedness before, during, and after disasters, assessing the needs to be addressed to improve disaster preparedness in a coastal community, designing a community-based learning material to enhance disaster preparedness in a local community, and determining if the developed community-based learning materials contributed to the learners and community's knowledge regarding disaster and resiliency. Using the ethnographic tools such as key informant interviews, observations, and focus group discussions, the researcher explored and utilized community local knowledge and science concepts as bases and context in the development of a community-based learning material. Findings of the study revealed that: the coastal community possess a wealth of knowledge regarding DRR on typhoons; there are certain needs of the community to be addressed. The study also generated a model on how to create a community-based learning material utilizing local knowledge and science concepts focusing on the following major activities, namely: drawing funds of knowledge from the community; developing a learning material; identifying culturally relevant science concepts in disaster risk reduction; and teaching culturally relevant disaster risk reduction concepts in school and community.

Protecting Urban Forest Park as Climate Change Mitigation Strategy: Arroceros Forest Park, Manila, Philippines

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ABSTRACT

The study illustrates that urban forests are significant climate change mitigation defenses in congested areas like Manila, Philippines. However, not all urban forests are well managed to function as such. Some urban forest are threatened by infrastructure development, land use change, or political priorities of the present governing local

government unit. The Arroceros Forest Park (AFP) located at the heart of Manila is considered as the “last lung” of the city of Manila (Rivera, 2015), though not accessible to the public. The objective of the study is to present how the local government, non-government organizations (NGO) and advocacy groups environmentally manages the forest park located in highly urbanized area. The study used qualitative methods such as key informant interview; field transect; and field observation to determine the environmental condition of the urban forest in the 5th district of Manila. Results show that the AFP is sitting on a city government land, but manage and maintain by a non-government organization in collaboration with the city government of Manila. Moreover, there are other institutions, government agencies and private group supporting the forest park but the forest park appears to be neglected, poorly maintained and viewed as unsafe for public use. In conclusion, there is a need to strengthen cooperation among people who are at stake because the forest park is a valuable tool in regulating urban heat or controlling floods. The result of the study could be used as an input in enhancing awareness on the role of urban parks in climate change mitigation programs.

Mangrove Rehabilitation By Community Based Forest Management Agreement (Cbfma) Holders In Western Pangasinan, Philippines

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ABSTRACT

Mangroves perform production to protection functions. The Philippine lost about 30% of mangrove forest towards the 21st century. The reductions were due to overexploitation by coastal dwellers, and conversion to settlements, aquaculture, salt beds and industry. In early 2000, the Community Based Forest Management Agreement through mangrove rehabilitation was introduced in western Pangasinan. To evaluate the sustainability of mangrove rehabilitation, the following were sought: a) to determine the characteristics of the community of mangroves in the mangrove rehabilitation sites (MRS) in Anda and Bolinao in terms of species diversity indices; b) to identify the level of participation of CBFMA Holders on mangrove rehabilitation activities; and c) to determine the significant relationship between level of participation of members in mangrove rehabilitation and species diversity. Two CBFMA per municipality from fifteen CBMAs in Anda and Bolinao were purposively chosen. Quantitative and descriptive research technique through field surveys and survey questionnaire were used. The highest species diversity and richness indices were observed in Awile, Anda. Species dominance was observed in Pilar, Bolinao. The CBFMA officers and members of the Awile, Anda exhibited high participation. The following activities contributed positive

effect on the diversity of mangroves: a) selection of nursery site, b) nursery site planning and building, c) the selection of mangrove species, d) the selection of workers in the nursery site, e) potting, f) propagule collection, storage and soaking, g) cleaning, h) holing or marking, i) planting, and j) monitoring determined the species diversity of mangroves. There is still a need to rehabilitate the MRS by planting different endemic mangrove species toward the shores. An intensive IEC and training needs assessment for CBFMA holders should be conducted out by the concerned agencies to ensure maintenance and sustainability of mangrove rehabilitation.

Keywords: community based forest management agreement (CBFMA), species diversity, sustainability

Determination of Optimal Sizes of Marine Protected Areas: A Biological-Social Welfare Optimization

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ABSTRACT

Two optimizations models are explored: one that maximizes a social welfare – function subject to biological diversity and management constraints, another which maximizes biodiversity subject to management resource constraints and social welfare considerations are proposed to determine the optimal sizes of Marine Protected Areas (MPA). The models are applied to the marine protected areas in Visayas, Philippines using available records in the Directory of Marine Protected Areas in the Visayas by fitting the species-area relation (SAR) curve, the management resource–area curve (MRA), and the welfare–area (WA) curve from each of the marine protected areas listed. Comparison of the optimal MPA sizes computed from the model and the prevailing MPA sizes in Visayas area revealed that non-functional MPAs have sizes which do not support either the management resource, biodiversity requirement or social–welfare considerations.

Keywords: Marine protected area, sizes, species – area trade – off, social welfare economics

Adaptation Strategies and Knowledge System of Indigenous Peoples in Coping with Changing Climate

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ABSTRACT

The paper aims to describe the adaptation strategies of selected indigenous communities to cope with climate change. It also tackles the knowledge system of indigenous peoples in protecting their households and resources before, during and after the occurrence of a climate-related event. A total of 60 families were selected from Florida blanca Indigenous Cultural Community in Pampanga to serve as respondents. The particular cultural communities covered were the *Aytas*. Household survey and focus group discussions were conducted to obtain information on the indigenous peoples experiences with climate change and their adaptation strategies. Data on how indigenous peoples make use of their local knowledge in addressing the effects of changing climate were examined. Results show that most of the losses and damages experienced by the *Aytason* their land, water and forest resources were brought about by typhoons, drought and excessive rain which posed a big threat to their food security. They draw largely from their local knowledge and personal experiences to identify warnings from the environment and use these as signals to help them recognize and prepare for a forthcoming weather disturbance. Strategies to protect their households and resources before, during and after the occurrence of a climate-related event were discussed.

Keywords: adaptation strategies, climate change, climate-related event, indigenous knowledge, indigenous community

Barangay Tambo at the Crossroad of an Emerging Edge City: A Case Study

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ABSTRACT

This paper aims to illustrate the physical transformation of Tambo, a coastal barangay in the city of Paranaque, amidst reclamation. It determines the sustainability of Tambo in the midst of the infrastructure development including opportunities and threats. Anchored on the concept of liveable city, the study argues that coastal communities

located at the intersection of coastal corridors and reclaimed area are vulnerable to traffic, flooding and sprawling. Methods used are key informant interviews, field observation and review of related literature aided by transcripts, field notes and guide questions. Initial results show that Barangay Tambo, as part of an emerging edge city in Parañaque, is undergoing rapid urbanization as the hub of casino hotels, transportation and entertainment. Roads are expanding, skyways are extending and more buildings are being constructed. As the barangay is progressing, traffic is worsening and some areas are now experiencing flooding. In conclusion, Tambo as an emerging reclaimed barangay along the coastal corridor of Manila Bay has improved its disaster risk reduction and management program, waste and traffic management to ensure that the barangay is capable of being livable for employment, residential and tourism amidst flooding, storm surges and climate change.

Employment In Aquaculture: The Case of Cebu, Central Philippines

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ABSTRACT

Nine aquaculture sites in Cebu were studied based on the municipality's active involvement in the Integrated Coastal Resource Management Program (ICRMP) projects. Employment profile, status, satisfaction and prospects were studied employing a descriptive survey method complemented with focus group discussion and key informant interviews. Results revealed that majority of the employed workers were male caretakers or helpers on contractual or on-call basis. Only a quarter of regularly employed individuals received benefits such as GSIS, SSS, Philhealth and Pag-ibig and earned income below the poverty threshold. Recruitment was through relatives and friends. Compensation package was satisfactory for those employed with tenure. Significant factors of employment were gender, family influence and proximity to aquaculture sites.

Keywords: aquaculture, employment, on-call, benefits, poverty threshold

Green Economy, Technology, and Policy

Bamboo (*Bambusa Sp.*) Nodal Cuttings as Influenced by Different Indigenous Rooting Hormone

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ABSTRACT

Technology using indigenous materials that are readily available in the area will greatly contribute in the formulation of development initiatives which are ecological-friendly. The study aimed to evaluate the growth and survival of bamboo nodal cuttings as influenced by different indigenous rooting hormones such as fish wash and coconut water. Specifically, the study determines the different effects of such indigenous rooting hormone for bamboo nodal cuttings and its suitability for bamboo propagation on both single and double nodes. The research was conducted at Sultan Kudarat State University, EJC Montilla, Tacurong City, from October 2014 – January 2015. This was done in a 2x3 factorial experiment in a Completely Randomized Design (CRD) replicated three (3) times. Results showed that the 2 nodes bamboo cuttings are suitable planting materials for the propagation of bamboo. It was also known that the application of indigenous rooting hormone highly influenced the growth of bamboo nodal cuttings. However, the study had shown that the presence of synthetic rooting hormone Alpha Naphthalene Acetic Acid (ANAA) significantly enhances the growth of bamboo cuttings in terms of height of lateral shoot, number of leaves, length of leaves, width of leaves, root index, percentage of survival and plant vigor. On the other hand, there is no interaction effect among bamboo nodal cuttings and the indigenous rooting hormone.

Keywords: Bamboo cuttings, Cultivars, Nodal, Coconut Water, Fish Wash Alpha Naphthalene Acetic Acid (ANAA), Completely Randomized Design (CRD)

Bamboo (*Bambusa spp.*) Cultivars Grown In Different Levels Of Vermicompostas Potting Media

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ABSTRACT

The study aimed to determine the bamboo cultivars grown in different levels of vermicompost as potting media. Specifically, the study aimed to: determine the performance of bamboo cultivars grown in different levels of vermicompost as potting media; determine the levels of vermicompost suitable for the survival of bamboo cultivars and identify suitable cultivars grown in different levels of vermicompost. The study was conducted in a 2x4 factorial experiment in a Completely Randomized Design (CRD) replicated three (3) times. The growth performance of bamboo cultivars grown in different levels of vermicompost as potting media was evaluated. The bamboo cultivars composed Factor A, with A1- Bayog Var. and A2- Kawayan (tinik) while Factor B, consisted of four (4) levels of vermicompost as potting media namely: B1- 100% Ordinary Garden Soil(Control) ,B2 – 75% Ordinary Garden Soil + 25 Vermicompost, B3 – 50% Ordinary Garden Soil + 50 Vermicompost and B4 – 25% Ordinary Garden Soil + 75%Vermicompost. Bayog cultivars exhibited early number of days to bud break, obtained the tallest plant height, gained more number of leaves, had longer and wider leaves, had more number of roots, grew longer roots, had the highest percentage of survival and were more vigorous plants. It is hereby concluded that Bayog variety surpasses the KawayanTinik cultivars in terms of growth performance and survival rate when grown in potting media composed of equal proportion of ordinary garden soil and vermicompost.

Keywords: Bamboo, Cultivars, Cuttings, Potting Media,Vermicompost, cultivar

Initiatives for Integrating the Informal Sector to the Waste Management System: Cases from the Philippines and other Countries

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ABSTRACT

The impact of the recent policies in waste management to the informal waste sector, such as the mandatory closure of all dumpsites, is inevitable. Though it may be environmentally sound, it has caused negative impacts on the livelihood of the informal waste sector. This condition, if not properly addressed, may leads to another series of social problems such as increased poverty, crime rates and other illegal operations as these people affected by these changes have to fight for their survival. Through the use of case studies, this paper presents the initiatives from some countries like those in the Philippines, India, Latin America and South Africa, among others on how this sector can

be integrated into the waste management system. This paper also reveals that although the government plays a significant role in providing policy support to integrate the informal sector in the waste management system, the participation of other stakeholders such as the private sector and NGOs are necessary. The strong partnerships of these various stakeholders are deemed important on how to secure and improve the living and working condition of the informal waste sector while at the same time protecting the environment and the health of the community.

Keywords: Informal waste sector, waste management system and policies

Morphological and Molecular Characterization of Endophytic Fungi with Antibacterial Activity Isolated from Aglibut Sweet Tamarind (*Tamarindus Indica* L.) Leaves And Barks

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ABSTRACT

The use of microorganisms to promote plant growth and protect the plant host from pest and diseases are one of the new prospective areas on agriculture and forestry. One group of organisms is endophytic fungi. Endophytes are important sources for the discovery of bioactive compounds. The potential role of endophytic fungi and its secondary metabolite extracts in its relationship with its host has been investigated. Endophytic fungi were isolated from the leaves and barks of ten individual mature trees of Aglibut Sweet Tamarind (*Tamarindus indica* L.) collected from Pampanga State Agricultural University, Magalang, Pampanga. A total of 6 isolates of endophytic fungi were identified by means of morphological and molecular methods. They were successfully identified as *Aspergillus aculeatus*, *Neofusicoccum kwambonambianse*, *Phomopsis phyllanticola*, *Trichoderma harzianum*, *fusarium* sp. and *Rhizopus* sp. The secondary metabolite extracts were assessed for antibacterial activity against two human pathogenic bacterial strains *Staphylococcus aureus* and *Escherichia coli*. All the secondary metabolite extracts from the 6 isolated endophytic fungi showed inhibition of bacterial growth, however, *Phomopsis phyllanticola* showed the highest zones of inhibition against the two human pathogens. The results indicate that endophytic fungi isolated from Aglibut Sweet Tamarind (*Tamarindus indica* L.) can be a potential source of bioactive compounds, which may have pharmacological, biological and toxicological activities.

Keywords: Endophytic fungi, Aglibut sweet tamarind, antibacterial, morphological/molecular characterization

**Modified Atmosphere Packaging Extends Storage Life of Dragon Fruit
[*Hylocereus polyrhizus* (Weber) Britton & Rose]**

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ABSTRACT

The extension of storage life of red-fleshed dragon fruit was determined through modified atmosphere packaging (MAP). Dragon fruit was cured overnight at ambient (27-29°C) condition, packed in MAP and stored at 12-14°C. Gas concentrations maintained inside MAP were: O₂ level at 11-18%; CO₂ at 0.24-1.2%; and ethylene at 0.07-0.68 ppm. Fruit packed in MAP significantly maintained high visual quality rating, reduced weight loss thus delaying peel shrivelling. MAP also delayed fruit softening and discoloration of the bracts. Fruit packed in 0.05mm thick polyethylene bag (PEB) with two (2) puncher size perforations (PPF) or the PE2-packed fruit had extended storage life for 23 and three (3) days shelf life (poststorage at 20°C) due to delayed peel shriveling and change in bract color. Moreover, PE2-packed fruits had significantly higher antioxidant scavenging activity than the non-MAP fruit.

Keywords: MAP, PEB, red-fleshed, shrivelling, antioxidant

Survivability of Frozen Epididymal Sperm from Non-Descript Goats After Liquid Nitrogen Vapor Cooling

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ABSTRACT

Epididymal sperm recovered within 1-2 hrs post mortem from testes of goats at room temperature was reported to display sperm motility scores of 60–75%. In this study, epididymal sperm from paired testicles (n=10) were recovered after 2 (Tr-1) and 3 (Tr-2) hours post mortem to determine the effect on sperm quality. Both conditions displayed an initial sperm motility score of ≥60% and were subjected for processing. Morphological assessment for live sperms after eosin nigrosin staining revealed 77.8±2.22% and 63±1.75% livability for Tr-1 and Tr-2, respectively (p<0.05, T-test). The

proportion of sperm abnormalities was lower in Tr-1 (27.2%) than Tr-2 (47.4%). Tr-1 showed a pre-freeze motility score of $62 \pm 1.22\%$ while Tr-2 displayed $61 \pm 1.0\%$ after 2 hrs of equilibration at 5°C . The epididymal sperm processed in semen straws were frozen using a styropore box with liquid nitrogen at 4 cm above LN_2 vapor for 7 min prior to LN_2 plunge. The frozen epididymal sperm were thawed at 38°C for 2 min and evaluated for post thaw motility. SYBR:PI fluorescence microscopy was used to detect live sperms while eosin nigrosin staining was used to determine sperm abnormalities. Tr-1 showed a mean motility rate of $23 \pm 3.0\%$, whereas Tr-2 had $18 \pm 3.0\%$. Nonetheless, the percentage survivability of live sperms was higher in Tr-1 ($51.4 \pm 8.51\%$) than in Tr-2 ($35.5 \pm 2.12\%$; $P < 0.05$). A higher proportion of sperm abnormalities was found in Tr-2 (66.6%) than in Tr-1 (45.6%). Therefore, epididymal sperm rescued for at least 2 hrs after death have a better survivability after freezing.

Keywords: Post mortem recovery, epididymal sperm, survivability

Fruit Retention of Mangosteen (*Garcinia Mangostana L.*) as Influenced by Different Types and Rates Of Liquified Fertilizers

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ABSTRACT

The study was conducted at St. Alexius College Demo Farm, Barangay GPS, City of Koronadal, South Cotabato. The research aimed to determine the fruit retention of mangosteen (*Garcinia mangostana L.*) as influenced by different types and rates of liquified fertilizers. Specifically, the study aimed to evaluate the effects of different types and rates of liquified fertilizers in terms of the number of fruit set, average fresh weight (g) of individual fruits, number of fruit and leaf drop, number of retained fruits per tree, percent fruit retention, yield (kg) of fruits per tree, disease occurrence and to determine the quality of mangosteen fruits using the evaluation ratings on the external and internal qualities. The study was conducted in 4×3 factorial experiments in a Randomized Complete Block Design (RCBD) and replicated three (3) times. Each mangosteen tree represents an experimental unit and divided into three (3) parts representing the replications. Each experimental unit or tree was sprayed with one kind and rate of liquified fertilizer to avoid contamination (Guzman and Protacio, 2001). The

fruit retention of mangosteen tree was evaluated using the different types of liquified fertilizers which served as factor A, while the different rates of liquified fertilizers served as factor B. The fruit retention of mangosteen was enhanced by Kaiser at 70-80ml/16L of water inducing higher intensity of fruit set, fruit retention, yield and producing good quality of mangosteen fruits. It can also reduce disease incidence, specifically, anthracnose, sooty molds and leaf blight diseases in mangosteen leaves. Finally, this study indicates that the different types and rates of liquified fertilizers greatly enhance the fruit retention and other fruiting characteristics of mangosteen trees, and, effectively influence the external and internal qualities of mangosteen fruits, as well as, the disease occurrence in mangosteen leaves. The yield potential of mangosteen trees may have not been achieved fully, hence, a fine subject for further investigation.

Keywords: mangosteen, fruit retention ,liquefied fertilizers, leaf drop, and fruit set

Determining the Best Transportation Policy in Laguna Using Fuzzy Linguistic Preference Relation

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ABSTRACT

The transport sector is one of the key factors that contribute to climate change because of its negative impacts such as air pollution. In order to reduce these adverse impacts on the environment, different transport policies are being proposed. In this study, Fuzzy Linguistic Preference Relation was used to determine the best policy that would help in the reduction of harmful effects of transportation on the environment. The four criteria considered in the study are adaptation of fuel with carbon content, improvement in the ecological efficiency of the vehicles, preferred investment activities in the transport sector, and better mobility management. Survey forms were used to solicit opinions of the experts and the randomly selected residents of Laguna. The results showed that vehicle testing and inspection, and promotion of the use of hybrid cars policies must be prioritized and implemented by the local government to reduce the negative effects of the transport sector in the environment.

Keywords: Fuzzy analytic hierarchy process, policy-making

Development of Oil Palm Waste Materials into Endocarp Jewelry Display Stand

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ABSTRACT

Endocarp or nut shells of African oil palm are waste by products in oil palm processing plants. These waste materials are untapped unlike the leaves, fronds, fruits and flowers. These are dumped and rotten on several dumpsites in the KENRAM Philippines which are developed into useful jewelry stand. This study focused of the utilization of the cracked nutshells of oil palm called endocarp into life size hand-like, bust and face in 3D objects where jewelries can be hanged on. The combination of paper Mache' and shell mosaic processes were employed and evaluated by the user – type- panel of jurors. Descriptive research design was used to determine the innovation in terms of its physical appearance. The different jewelry owners, sales ladies and novelty item lovers have conveniently rated the developed display stand and have unanimously rated the product as excellent in terms of attractiveness, handiness, authenticity and usefulness. The said waste by – product is potential for commercialization promising a Return of investment of 200% when creativity and hard work are exerted. This can be a unique and authentic product of the province wherein oil Palm plantations are primarily growing.

Effect of Local Mangrove Cutting Ordinance to Riverine Mangroves at Uli, Dasol, Pangasinan, Philippines

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ABSTRACT

The local government units of Dasol, Pangasinan passed an ordinance to stop cutting of mangroves in support to the multi-partnership mangrove rehabilitation of Dasol Bay project with Tanggol Kalikasan and the Washington State University in early 2010. Barangay Uli, a riverine barangay that experienced mangrove cuttings for charcoal, fuelwood and others, responded to this ordinance despite not being covered by the mangrove rehabilitation project. The study was conducted in the riverbanks of Kayanga River, Barangay Uli, Dasol, Pangasinan to identify the mangroves, and assess the condition of mangroves in terms of percent crown cover, average height and regeneration per m². Baseline information on mangrove condition as a result of this

study will be useful to the local community for effective mangrove management and sustainability. A combination of quantitative and descriptive research technique were employed in gathering the needed data. Three (3) species belong to Rhizophoraceae family namely *Rhizophora apiculata*, *Rhizophora mucronata*, and *Ceriops decandra*. One (1) species each for family Avicenniaceae (*Avicennia officinalis*), Sonneratiaceae (*Sonneratia alba*), Sterculiaceae (*Heritiera littoralis*), Euphorbiaceae (*Excoercia agallocha*) and Palmae (*Nypa fruticans*). Using the criteria of mangrove habitat condition in 2004 Participatory Coastal Resource Assessment Training Guide, the condition of mangroves in riverbank A was categorized as poor (0.184608333- percent crown cover, 2.371- average. height, and 3.127 – regeneration per m²). Riverbank B was categorized as good (0.666585- percent crown cover, 2.3158 – average. height, and 2.990 – regeneration per m²). Over all condition of the mangroves was categorized as fair (0.42559666 – percent crown cover, 2.343 – average. height, and 2.62 – regeneration per m²). High priority for protection and management including regular monitoring of mangrove resources be given attention by the concerned entities.

Keywords: riverine mangrove, percent crown cover, regeneration

An Innovation of Recyclable Waste Parts for Skills Workshop Training in Engine Servicing

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ABSTRACT

The Automotive industry has expanded in terms of scope and coverage brought by industrialization ; it further established the improvement and safety of the industrial community where workers and the educational institution are the stake holders. In retrospect , valve spring compressors is a high –end equipment and already have been used largely in the market today the researchers main objective is to provide a non-commercialized tool , which would serve as an option in removing valve spring by using recyclable materials. The study is to develop an Innovated Valve Spring Compressor, an innovative tool utilising waste parts for skills workshop training in engine servicing. The findings of the study are the following: In the development of the device, a technical plan was made and agreed upon by the researcher. The level of acceptability of Innovated Valve Spring Compressor as rated by the expert is Highly Acceptable with the average weighted mean 4.67. The students’ performance before using the device is Satisfactory with the mean score of 12.55. While the performance of the students after using the Innovated Valve Spring Compressor is Very Satisfactory with the mean score of 16.05. This means that the performance of the student improved after using the device.

The test of significant mean difference between the performance of the students before and after using the device, the computed z-value supports that "There is significant mean difference between the students' performance before and after using the Innovated Valve Spring Compressor". Based on findings, it is concluded that Innovated Valve Spring Compressor using recyclable waste parts is highly acceptable in the automotive shops and significantly improve the performance of the student. Hence the adaptation of the device is highly recommended for implementation of waste materials recycling.

Keyword: Spring Compressor, Special tools,

Influence of Different Methods of Raising Seedlings on The growth and Yield of Lettuce (*Lactuca Sativa* L.) Grown Under Tunnel Type Structure And open Field

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ABSTRACT

In temperate areas, lettuce is one of the leading commercial vegetables, whereas in the tropics, it is a secondary vegetable of small but increasing commercial importance. Its production however needs a closer attention. This study was conducted to evaluate the performance and profitability of lettuce grown under tunnel type structure and open field condition using different methods of raising seedlings. The experiment was laid out in split-plot design arranged in RCBD with 3 replications. The type of cultivation as open field and protected cultivation using tunnel structure covered with net served as the main plot and methods of raising seedlings as the sub-plot. The types of cultivation did not significantly affected lettuce performance. However, protected cultivation produced plants with numerically better performance as well as net return. In terms of the methods of raising seedlings, lettuce plants produced from seedlings grown in seedling tray through direct sowing into cell showed consistent superiority in all parameters than other methods, hence, generated the highest profit in both cultivation systems.

Keywords: Lettuce, Tunnel net structure, Open field, Seedling tray, Seed box

Endocarp Jewelries from Oil Palm Wastes Materials

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ABSTRACT

Cultural tourism advocacies are one of the economic strategies of every country. Tokens, souvenir items and travelers' keepsakes are usually abundant in the form of bracelets, rings, necklaces, anklets and hair clips. These are made of stone, wood, glass, coconut shells and other local materials to depict one's place of heritage. One of the high valued crops in the province of Sultan Kudarat is oil palm. In the ecological preservation, industrial designing is one component that maximizes the natural resources thus jewelry items from dumps of oil palm nut cracks are developed. This aims to produce souvenir items which can be originally available in the locality. Descriptive evaluative research design was used wherein mean is used in describing the jurors' rating on the physical appearance of the developed product. The F-test was employed to determine the significant difference on the ratings of the artists, jewelry sales ladies and users. The jewelries from endocarps are unanimously excellently rated in terms of design, authenticity, handiness and color. Wastes nuts are potential raw materials in making handicrafts like jewelries as simple token, yet could give higher Return of Investment when jewelry wires and endocarps are shaped and formed into small collectible items.

Influence of Vermi Tea as Organic Substrate on the Growth and Yield of Lettuce (*Lactuca Sativa* L.) Grown Hydroponically

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ABSTRACT

Lettuce is a good source of vitamin A, K, C, potassium, carbohydrates, calcium, iron, and minerals. However, despite its beneficial properties, contaminated lettuce is often source of bacterial, viral and parasitic outbreaks in humans especially those grown in contaminated soil media. This study was conducted to determine the effect of using vermi tea as organic substrate on the growth and yield of hydroponically grown lettuce and find out which organic substrates gave the best result on income over plant and substrates costs. The experiment was laid out in CRD replicated three times. The results of the study revealed that all data on plant growth and yield except weight of roots were highly and significantly affected by the different organic substrates using vermi tea. For

plant height, stem girth, number of leaves, width of leaves, length of leaves, biomass and weight of marketable plant parts applied with nutrient solution gave the best result. Plants grown in unbrewed vermi tea gave the highest income over plant and substrate costs.

Keywords: Lettuce, Organic Substrate, Vermi Tea, Nutrient Solution, Hydroponic

Sensory Qualities and Composition of Carrot-Enriched Tunahash

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ABSTRACT

Tuna hash is a value added food product from frigate mackerel or any tuna-like species flakes mixed with diced potatoes, and seasonings. This product had light pale brown in color which can be enhanced with a diced carrots. This study determined the sensory qualities and proximate composition of carrot-enriched tuna hash. This utilized the experimental method of research based on sensory evaluation using descriptive and preference testing and proximate composition laboratory analyses. Based on the Analysis of Variance and Duncan Multiple Range Test at 5% level of significance, the carrots enriched tuna hash had like extremely in color, odor and texture and like very much in flavour. The most preferred tuna has enhanced with carrots had a yellow-orange brown in color, extremely pleasant in odor, very firm in texture and slight sour in flavour. The product composed of 57.1% moisture, 20.8% protein, 11.5% fat, 1.58% ash and 9.02% carbohydrates. This value added product is made out of frigate mackerel flakes, carrots, potatoes, oil and seasonings.

Keywords: carrots, tuna hash, fish processing

Green Technology Practices of Small Scale Garments Business in Metro Cebu

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ABSTRACT

The study aimed to assess the green technology 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. The study utilized descriptive method to determine the existing practices of the garment. Evaluation sheet was researcher made questionnaire that focuses on the areas of profile of the garment industry, and the green practices of waste, water, energy, and purchasing policy. The profile of the garment industry was made to distinguish the capital, production of clothes, years of operation and number of workers. Data were analyzed to formulate interpretations and conclusions. The findings of the study showed that 90% of the needed capital ranges from 50—250,000 only. It also produces garments for both men and women, with 5—15 years of operation. Areas of green practices that is currently practiced 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 green practices is a must in the garment industries in Cebu.

Keywords: Green, technology, garment industries, descriptive method

Freezability and Fertilizing Capability of Epididymal Sperm Extracted from Post Mortem Goat Testicles

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ABSTRACT

Slaughterhouse-derived goat testicles and ovaries are good sources of gametes for basic research in the field of cryopreservation and in vitro fertilization (IVF). In this study, post mortem epididymal sperm with initial sperm motility scores of $\geq 65\%$ were frozen at cryogenic temperature after dilution with freezing solution: Tris-citrate buffered semen extender with 20% (v/v) egg yolk, 7% (v/v) glycerol at a final sperm concentration of 100×10^6 sperm/mL. Freezing was performed in an ultralow freezer followed by direct plunging in liquid nitrogen and LN₂ tank storage at negative 196°C until further use. Meanwhile, ovarian follicles from post mortem goat ovaries were aspirated to obtain egg cells/oocytes based on cumulus cells surrounding the evenly granulated dark

ooplasm. Oocytes were cultured in 50 μ L droplets of Synthetic Oviductal Fluid Maturation Media (SOF-IVM) for 27-30 hr in a humidified incubator at $38 \pm 1^\circ\text{C}$ with 5% CO_2 in atmospheric air. After the maturation period, the oocytes were transferred in 50 μ L droplets of SOF-IVF medium. Processed epididymal sperms were serially washed in SOF-IVF medium by centrifugation to remove the cryoprotectant solution. Dilution of the sperm pellet with SOF-IVF+10mM caffeine was done to capacitate the sperm in preparation for fertilization yielding a sperm concentration of 10×10^6 sperm/mL. IVF was performed by adding an aliquot of the capacitated sperm to co-incubate with the matured oocytes. After 22-24 hr, the aceto-orcein stained presumptive zygotes were examined for the presence of male and female pronuclei as the indicator for sperm penetration in the ooplasm. Our results reveal that post mortem epididymal sperm can survive cryogenic temperature and can fertilize an egg cell in vitro.

Keywords: post mortem testicles, frozen epididymal sperm, goat oocytes IVF

Application of Bamboo for RiverBank Rehabilitation in Rodriguez, Rizal

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ABSTRACT

MOA signing was conducted between the Ecosystems Research and Development Bureau (ERDB) and the Local Government Units (LGUs) in Rodriguez, Rizal regarding the establishment of two-hectare bamboo plantation for riverbank rehabilitation. ERDB provided technical assistance, training, and guidance while the LGUs provided space for the nursery and plantation and personnel to propagate and manage bamboo propagules, out planting, protection, and maintenance. The participation of the LGUs increased after the MOA signing. The Barangay Chairman organized a neighborhood association and formulated local policy in relation to the project. Two (2) layout designs were used to rehabilitate the riverbanks namely single line and double line/zigzag planting. The municipality celebrated Arbor Day by planting bamboo in other riverbanks which is not part of the project site. The activity was supported by the provincial environment program called Ynares Eco-System to Green Program. A total of 228 bamboo propagules were outplanted. The activity is an indication that the municipality promotes and supports the bamboo technology project of the ERDB. As part of the maintenance and protection, monthly clean-up activity was being done. The barangay officials were surprised during the replanting of bamboo and river clean-up activity because the number of volunteers increased which implies strong support to the project. This can be attributed to the awareness of the communities on the importance of rehabilitating the riverbanks by planting bamboo.

Keywords: riverbank, rehabilitation, bamboo, technology

Familiarity of Carwash Stations in Cebu City on Waste Water Recovery Technology

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ABSTRACT

Scarcity in potable water is becoming a serious problem due to its massive demands as the result of the enormous increase in population, businesses and industries. Adding to these is the problem of water pollution that also strains water supply. Thus, application or use of water recovery or recycling technology as a way of conservation is so important. This study was conducted to determine the following: profile and number of carwash stations operating in Cebu City; the sources of water utilized by carwash stations; the number of barrels of water used in car washing per day; the number of vehicles washed in a day by each carwash station; and whether or not carwash stations have waste water recovery facility. Results of the study revealed that 95.83% of the carwash stations have no water recovery system and that used water from car washing is directly throw out to canals. The results also pointed out that 87.5% of the respondents were not familiar about waste water recovery technology. Likewise it underscores the need for educating car washers about waste water recovery technology and how it would help alleviate the problem on water scarcity.

Keywords: car washing, potable water, water scarcity, waste water recovery

Enhancing Nursery Management Using Nodal Cuttings of Different Coffee (*Coffea* spp.) Cultivars

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ABSTRACT

Coffee has also helped change the lives of locals becoming a major source of income even among indigenous groups. The study aimed to enhance the nursery management using nodal cuttings of different coffee cultivars, and determine significant difference.

The study was carried out on a 2X3 factorial in Completely Randomized Design (CRD). Treatments consisted of the following: Factor A-Nodal Cuttings (A1- 1Node, A2- 2 Nodes); and Factor B- Coffee Cultivars (B1- Native Variety, B2- Robusta Variety, B3- Arabica Variety). It was conducted at the Sultan Kudarat State University, EJC Montilla, Tacurong City, Sultan Kudarat, from September 22, 2014 to December 22, 2014. One nodal coffee cuttings propagated in the nursery has significantly influenced the number of days to lateral shoot emergence, number of leaves developed, root index and percentage survival. Furthermore, native and robusta cultivars outperformed arabica, on the number of days to lateral shoot emergence, average number of shoots developed, percentage survival, and plant vigor with green vigorous seedlings. Likewise, native coffee cultivar exhibited the highest lateral shoot developed, more number of leaves developed and highest root index with proper nursery management practices.

Keywords: Arabica, Cultivars, Nodal, Robusta, Stem cuttings

Growth of Pechay (*Brassica rapa*) in Aquaponics with Different Pond Sediments

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ABSTRACT

In bottom substrate in fish ponds serves as sinks for organic materials coming from aquaculture activities. Pond sediments are nutrient-rich soils that have potential for planting crops. An experiment was conducted to determine the effect of different pond sediments obtained from various aquaculture technologies (Tilapia, Tilapia and Catfish, Tilapia and Gourami) in the growth of Pechay. The length (LL) and width (LW) of leaves were measured to quantify the growth rate of the plant. Results showed that sediments coming from pure Tilapia culture had yielded the highest growth rate (LL = 1.58 mmday⁻¹ and LW = 2.65 mm day⁻¹) among other types of pond substrate (p<0.05). Nutrient analysis showed that sediments from Tilapia pond had highest nitrogen content which is primary requirement for the vegetative growth of Pechay.

Keyword: Pond sediments, aquaponics, Pechay

Biogas Yield Pattern of Animal Manure Treatments

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ABSTRACT

The mixture of animal wastes were investigated to determine the significant biogas yield. Volumetric ratio of carabao manure and chicken dung were the substrates used in the study. Biogas yield of the different treatments follow through the pattern the stages of fermentation; hydrolysis, acidification and methanization stages. The first two weeks of fermentation of the different treatments yielded lower biogas. High biogas production obtained during the third week up to 6th week of fermentation where it acidification and methanization stages happened. The result shows that biogas yield is influenced by the Carbon/Nitrogen ratio and pH level. The volume ratio of 25% chicken dung and 75% manure yield the highest biogas production during the 4th, 5th and 6th week of fermentation having value of 6,390 ml, 8,817.50ml and 10,815ml, respectively. The biogas yield at any stage of decomposition can be calculated using the empirical formula drawn in each treatment. The equation of treatment 1 is $Y = 278.18x + 397.80$, treatment is $Y = 551.18x + 397.18$, treatment 3 is $Y = 1801x + 1371.80$, Treatment 4 is $Y = 2111.3x + 1936.2$ and treatment 5 is $Y = 1659.1x + 1750.0$. The higher the a-constant value indicates the higher biogas production.

Keywords: Anaerobic fermentation ;Biogas production; Empirical formula; Methane; Slurry mixture;

Origin and Characteristics of Embryogenic Callus to Improve Somatic Embryo Formation in Kopyor Coconut (*Cocos Nucifera* L.)

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ABSTRACT

Developing of kopyor coconut to get the seedling that can produce 100% kopyor fruit and true to type has been done through somatic embryogenesis. However, the technique still needs to be improved because most of embryogenic callus developed into roots and abnormal embryo. Microscopic observation showed that the formation of somatic embryos closely related to the origin of embryogenic callus cells. Explants derived from embryos of kopyor coconuts were isolated and cut into three parts: root,

shoot meristem, and region between meristem and haustorium. Plumula eksplant was taken from the shoot of germinated embryo. All explants were planted to the induction callus media supplemented by 2,4-D (2.5, 5.0, 10, 15 mg.l⁻¹) plus 5 mg.l⁻¹ BAP. After 1-2 months of cultured, cells from all the parts of embryo tissues could be induced to form embryogenic calluses. Plumula cells were able to form embryogenic callus but required a longer time than the cells of embryo explant. The most responsive cells derived from region between meristem and haustorium. Embryogenic callus characterized by yellow-white color, clump, nodular or spherical-shaped oval. There was a lack simultaneous callus development in the same explants in the same media. Embryogenic callus was able to form somatic embryos and converted into planlet.

Keywords: callus, embryogenic, Cocos nucifera, somatic embryo

Process Optimization of Dehydrated Mango Slices

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ABSTRACT

The main objective of this work is to determine the optimum levels of sucrose concentration, pluming time, and loading density in the dehydration process of Mango slices conducted at Cebu Technological University using Box-Benhken Design for Response Surface Methodology. Firm, rare-ripe mango was subjected to different 15 treatments. Treatments were subjected to sensory evaluation using 9-point hedonic scale and descriptive analysis. Drying time, percentage yield, moisture content (%db) and sensory evaluation data were subjected to Response Surface Regression Analysis (RSReg). The different levels of variables tested do not significantly affect the sensory attributes. However, RSRegrevealed that the general acceptability significantly affect ($P \leq 0.01$) the linear and quadratic relationships as well as its interactions among the different levels of sucrose concentration and loading density The predicted optimum combinations were 30% sucrose concentration, 12 hours pluming time, and 4 kg.m² loading density which was found at the center run of the Response Surface Plot. Verification studies revealed that the predicted optimum region is relatively acceptable to the customer panelistand highly significant difference between the samples prepared from within and outside the predicted optimum region.

Keywords: Process Optimization, Response Surface Methodology, Box-Behnken Design, Sensory Evaluation, Dehydration

Efficiency Of “Queen” Pineapple Farmers In Major Pineapple-Producing Municipalities Of Camarines Norte, Philippines

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ABSTRACT

The study was conducted to evaluate the technical, allocative and economic efficiency of “Queen” pineapple production, and the factors affecting the efficiency. Pineapple farmers from the municipalities of Basud, Labo and San Vicente in Camarines Norte were purposively selected for this study. Descriptive statistics were used to describe the socio-economic characteristics of the respondents, while cost and return analysis was used to determine the profitability of the pineapple production. Among the respondents, 50 and 30 were classified as small and large farmers, respectively, based on the median size of the cultivated farms. Results of the t-test analysis revealed that the two groups are significantly different in the output and the level of inputs used. Moreover, results of stochastic frontier analysis showed that the use of complete fertilizer, ammonium phosphate and flower inducer (ethrel) had positive significance in the production of pineapples among the small farmers. For large farmers, complete fertilizer, ammonium phosphate, urea and powder herbicide had negative significant contribution in the pineapple production. Small “Queen” pineapple farmers, with a mean score of 55.17%, were technically more efficient than large farmers with a mean score of 27.27%. Farmers’ age and farm size were the factors affecting the technical efficiency of the small and large farmers. In terms of allocative efficiency, results showed that the small farmers underutilized all of the farm inputs while over utilized by the large farmers group.

Keywords: “Queen” pineapple, economic efficiency, Camarines Norte

Sensory Qualities of Buko Candy

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ABSTRACT

Harvests of coconut for virgin coconut oil usually mixed with young coconut that could be utilized to other food item like candy. This study aimed to determine the sensory qualities of coconut candy based on sensory evaluation using descriptive and preference

testing. Based on the Analysis of Variance and Duncan Multiple Range Test at 5% level of significance, the most preferred formulated candy contained blended young coconut, milk and water, obtained **"like very much"** preference rating in all attributes. The candy had light yellow color, buko flavor and odor and very fine gritty texture.

Keywords: young coconut, candy, sensory qualities

Poster Presentation

Mini Forest in Lingayen Pangasinan: An Adaptive Response to Climate Change Adaptation and Risk Reduction

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ABSTRACT

The main objective of this exploratory study is to identify barangays that could host and develop the proposed miniforest in Lingayen, Pangasinan according to the various factors: climatope, hygrotape, toptope, and physiogeographic setting of the said barangay. Corollary to this, the study also seeks to layout the plan for the development and sustainability of the mini forest as a climate change mitigation strategy. In line with this, a survey was conducted involving the different stakeholders to determine their favorability/acceptance of the proposed mini forest. In this study, the proposed mini forest was classified into agro forest, beach forest and bakawan/swamp forest as dictated by the geographical characteristics and physiographic profile of the surveyed barangays. The study also determined the adaptability/sustainability of trees and shrubs in relation to this proposed project. Also included in the survey are the prioritized strategies, adequacy/availability of physical, human and financial resources needed in the establishment of a mini forest. In addition, barangay captains are asked of their opinions why or why they are not interested in the project. The establishment of agro forest, beach forest and bakawan/swamp forest is perceived to be favorable in terms of climatope, hydrotape, soil features and physiographic factors. Barangay Balangobong and Domalandan West are the two barangays which have high favorability/acceptability of putting up the three types of mini forest due to their nearness to the river system and the shoreline of Lingayen Gulf. Six trees such as mango, ipilipil, santol, mahogany, caimito and tamarind were identified to have high potential for adaptability and sustainability to be planted and for the shrubs bayabas, guyabano, calamansi, and papaya while tupang bakod, anonas, kadios and oranges have low potentiality. The needed strategies for the establishment and management of the mini forest such as research, community organization and development were identified to be of "average priority" while to mobilized active participation of the community have the "high priority". All the physical, human and financial resources are available in all of the barangays involved in the study. The benefits perceived to be by the respondents derived to preserve coastal margin of Lingayen Gulf which came out also as the number one reason. Other reasons cited were; trees are important in CO₂ sequestration, to provide shoreline protection and for biodiversity conservation, which was also cited by barangay chairmen interested in putting up all the three types of mini forest. It is highly recommended that the establishment of a mini forest in the form of agro forest, beach forest and bakawan/swamp forest is a strategy to mitigate climate change and at

the same time to rehabilitate the coastal and river ecosystems. Also the forest will be a means of risk reduction in time of storm surge, tsunamis and other calamities. This can be achieved thru the assistance of Local Government Unit (LGU) by providing financial assistance and support; and the Department of Environment and Natural Resources (DENR) for supplies of trees and shrubs. The *Forest Management Action Plan* is hereby proposed by the researchers of the Natural Science Department of Lingayen Campus, Pangasinan State University.

Keywords: Agro forest, beach forest, swamp forest, Forest Management Action Plan

Species Diversity of Insects in Sohoton Natural Bridge National Park, Samar, Philippines

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ABSTRACT

Insects belong to the phylum *Arthropoda*, known to be the largest phyla in the animal kingdom and constitute about 90% of all known animals in world. They are invertebrate and cold blooded-animals and are known as the earth's most diverse organism. Scientists in the different parts of the world discover numbers of insects that contributes to the wider knowledge of the society. This study aimed to investigate the diversity and abundance of insects in Sohoton Natural Bridge National Park. The study used descriptive method. Collections were carried out using different insect sampling methods. These include the light trap, which is a portable device used at night to collect nocturnal insects that are inherently attracted to the light. The specimens were collected through a funnel in a jar, below the light and were preserved in a 10% formaldehyde. In this study, there were eighty-nine (89) species of insects that were identified belonging to the four insect orders-Coleoptera, Diptera, Hymenoptera, and Lepidoptera. Using Shannon-Weiner index of diversity, the researchers observed that among the four orders, Order Lepidoptera was considered the most diverse, with a value of 1.975, followed by Order Coleoptera having a value of 1.962, Order Diptera with 1.321, and Order Hymenoptera with a value of 1.097. Insects in Order Hymenoptera were the most abundant insect order in Sohoton Natural Bridge National Park, having a percentile rate of 79.3 %. The Shannon-Weiner index of diversity was used again to compute on the land cover where these insects are diverse. Open Forest as the land cover has the most diverse insects among the three sites, having a value of 1.376. With regards to the most abundant land cover, results show that it is the Long Bushy Grassland exhibited the highest percentile rate, which is 69.8 %, followed by the Cultivated-Perennial Crops with 18.2 %, lastly, by the Open forest with 12%.

Keywords: Species diversity, Shannon-Weiner index, insects, land cover, species abundance

Physiological Responses of Three Mangrove Bivalves to Shell Size and Increasing Turbidity Concentrations

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ABSTRACT

Erratic weather disturbances due to climate change may cause extreme environmental conditions such as increased water turbidity in a mangrove ecosystem. Immobile organisms such as bivalves are well-exposed to this setting, hence, may affect their dynamics in their natural habitat. Their capability to adapt to such conditions will determine its survival. Three experiments were conducted to quantify the effect of shell size and increasing turbidity concentrations on the filtration activity and pseudofaeces production of the mangrove bivalves, *Perna viridis*, *Polymesoda erosa*, and *Gafrarium pectinatum*. Shell size did not significantly affect the physiology of *P. erosa* and *G. pectinatum* ($p > 0.05$) but influences the filtration and pseudofaeces production of *P. viridis* ($p < 0.05$). The filtration rate and pseudofaeces production increased with increasing turbidity up to the turbidity threshold (*P. viridis* = 800 mg L⁻¹; *P. erosa* = 750 mg L⁻¹; *G. pectinatum* = 1200 mg L⁻¹) of the bivalves. Results suggest that these mangrove bivalves have the ability to adapt and survive to highly turbid waters.

Keywords: Clams, Mussel, Filtration, Pseudofaeces

Reproductive Potential of Big Eyed Scad (*Selar crumenophthalmus*) and Hard Tail Mackerel (*Megalaspis cordyla*) at Davao Gulf, Philippines

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ABSTRACT

Selar crumenophthalmus (Big Eyed Scad) and *Megalaspis cordyla* (Hard Tail Mackerel) are one of the most commercially important fishes in the Philippines. Both of these fishes are threatened of over-fishing due to high in demand in the market. Measurement of the reproductive potential of these species by getting its fecundity and gonadosomatic indices is important in knowing its spawning season to prevent from

catching mature female fishes bearing gonads. Fifteen fish samples of each species were selected from Wet Markets A, B, and C of Davao City. The measurements were conducted and data were gathered, and observed from November 2015 to January 2016. Results of the study showed a fluctuating reproductive potential and revealed no significant difference between *S. crumenophthalmus* and *M. cordyla* during the three-month sampling period from the three selected wet markets which suggest that the fishes caught by the fishermen have already spawned or the beginning of spawning. Furthermore, the study revealed no significant difference on the Gonadosomatic index and fecundity between *S. crumenophthalmus* and *M. cordyla* was due to low fecundity rate of both fishes.

Keywords: Marine Zoology, Reproductive potential, Gonadosomatic index (GSI), Fecundity, Descriptive Comparative, Davao Gulf

Trimming Losses in Chinese Cabbage

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ABSTRACT

Trimming removes wrapper leaves and other parts that detract from a good appearance of Chinese cabbage heads thus improving marketability. Trimming losses at 43.9% and 28.5% were accounted after trimming of heads at the wholesale level in Bankerohan, Davao City and Bulua, Cagayan de Oro City wholesale markets, respectively. Produce brought to these markets is grown in Kapatagan, Davao del Sur and Bukidnon. Retailers purchase these in polyethylene bags. Holding heads procured from Bankerohan market in ambient ($27.0 \pm 0.6^{\circ}\text{C}$, $69.6 \pm 6.1\%$ RH) and cool room ($21.1 \pm 1.3^{\circ}\text{C}$, $49.8 \pm 9.8\%$ RH) conditions for 2 days showed 11.1% more trimming loss in the latter indicating greater losses in drier conditions. Trimming losses in heads from different polypropylene sack sections (top, middle and bottom) were similar. Relative to the control, treating with alum and wrapping in paper towel in polyethylene bags for 2 days followed by holding unpacked in ambient for two more days reduced trimming losses by 17%. Trimming loss reached more than 80% in heads held for 8 days under ambient conditions. Visual quality and soft rot decay progression were photographed and converted into visual guides for Chinese cabbage.

Keywords: Chinese cabbage, visual quality, postharvest losses, wholesale market

Benthic Cover on the Coral Reef of Barangay Napsan, Puerto Princesa City, Palawan, Philippines

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ABSTRACT

Coral Reef of Barangay Napsan was assessed using line intercept transect (LIT) method. Two fifty transect were laid at a depth of approximately five to seven meters. Coral reef cover was classified into two major categories namely, live benthic cover (LBC) and non-living component. Reef condition was evaluated using the total coral cover (hard coral + soft coral) and the recommended category of the Department of Environment and Natural Resources (DENR). Highest benthic cover was determined in LutangnaBato which was compose of all hard corals followed by the Bucana site. Lutangnabato site was dominated by the coral foliose with the occurrence of tabled corals. Puntod site have a lot of dead corals with algae and was dominated by sagrassum. Its hard coral cover was only 21.10%. On the other hand, Bucana site was dominated with encrusting corals and it was the only site where soft coral had been sighted. The three coral reef sites of Napsan had an excellent (LutangnaBato), fair (Puntod), and very good (Bucana) reef condition. To preserve the status of the coral reefs of Barangay Napsan, the local LGU should have the proper zoning of their coastal ecosystem.

Keywords: reef benthic cover, line intercept transect, total coral cover, coral foliose, encrusting corals.

Coral Enhancement in Malampaya Sound, Taytay, Palawan

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ABSTRACT

Corals play an important role in sustaining productivity of the coastal environment. However, it suffers from different anthropogenic and natural threats. Coral reefs of

Malampaya Sound in Taytay, Palawan is one of those threatened naturally and anthropogenically. Coral reefs of Malampaya Sound were assessed in July 2014 to determine its status. As a result of the survey, areas with low cover around Banbanan and San Jose were identified and recommended for coral rehabilitation, thus this activity. Coral enhancement was done in August 2015. Five coral reef areas in Malampaya Sound were enhanced with the support from the LGU of Banbanan and the Science students of Pancol National High School Banbanan Annex. Fifty coral frames made of steel bars were installed and planted with forty coral fragments for each coral frame. Growths of planted corals were monitored monthly for three months.

Keywords: coral enhancement, coral frames, Malampaya Sound, coral fragments, coral growth

Coral Reef Protection and Management in Malampaya Sound, Taytay, Palawan

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ABSTRACT

Coral reef protection and management are essential in sustaining life support mechanisms of the coastal resources. This can be implemented through several strategies. In Malampaya Sound, Taytay, Palawan, survey and mapping of the coral reef areas were conducted. Dive sites and snorkeling areas were identified. Also, based on the gathered data, coral rehabilitation areas were mapped out. For the awareness of the community that coral protection has been in place in Malampaya Sound, six fabricated buoy markers with signage had been installed in the rehabilitated coral reef areas. For the implementers to be more effective in protecting and managing the coral reefs of Malampaya Sound in Taytay, Palawan, intensification of information and education campaign (IEC) in all barangays surrounding Malampaya Sound should be considered through collaborative efforts using different forms or strategies.

Keywords: coral reef protection, coral reef management, dive sites, snorkeling areas, coral rehabilitation, Malampaya Sound

Structural Alterations in the Polytene Chromosomes and Fecundity of *Drosophila melanogaster* Irradiated with UV Radiation

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ABSTRACT

Ultraviolet radiation is a part of the electromagnetic spectrum that is traditionally divided into three wavelength ranges that are either deleteriously harmful to organisms or less hazardous. *Drosophila melanogaster* was the test organism used in this study due to the fact that it contains large chromosomes which are very helpful to the scientist. This study aimed to identify the structural alterations and the fecundity performance of the *D. melanogaster* irradiated with UV radiation. Irradiation and fecundity assay were conducted in order to identify and examine the above mentioned objectives of this study. Adult female flies were irradiated with 254 nm with 4.89 eV (Set-up I) and 365 nm with 3.4 eV (Set-up II), each set-up were subdivided into three treatments with 2 minutes, 4 minutes, and 6 minutes intervals. Result showed that irradiation dose of 254 nm has exhibited more structural alterations compared to 365 nm. Also, the dose of 254 nm resulted to lower amount of eggs produced compared to 365 nm. However, exposure to varied wavelengths has no effect on the egg production of the flies while the different duration of exposure has an effect on the fecundity of flies. Moreover, exposure to 254 nm resulted to more deletions, duplications and translocations compared to the flies that are not exposed, same as to flies that are exposed to 365 nm of ultraviolet rays. Thus, exposure to 254 nm is more destructible compared to 365 nm due to its shorter wavelength which can decrease the level of fecundity of the flies and can also result to alterations on its chromosomal structure.

Keywords: UV Radiation, Structural Alterations, Fecundity, *Drosophila melanogaster*, Polytene Chromosomes

Species Composition and Community Structure of Mangroves in Napsan, Puerto Princesa, Palawan, Philippines

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ABSTRACT

Coastal resource management involves not only the protection of coral reefs but in consideration with its adjacent ecosystems. Prior to it, baseline data are necessary for sustainable utilization and management of the coastal resources. Hence, this study was conducted on August 7 to 9, 2015 to determine the species composition and community structure of mangroves, and document some threats to the mangroves in Napsan, Puerto Princesa City, Palawan, Philippines. Transect-plot assessment method was used. There are nine mangrove species including one palm (*Nypafruticans*) found. The trees are overwhelmingly dominated by *Bruguieragymnorhiza*, followed far behind by *Rhizophoraapiculata* and *Aegicerasfloridum*. Land conversion threatens the survival of the mangroves. Thus, there is an immediate need to arrest expansion of agriculture towards the mangrove area and educate the locals of the greater ecological services it can provide in the long run.

Keywords: Mangroves, land conversion, mangrove ecological services, mangrove species composition, mangrove community structure

Adaptability and Productivity of different Pigmented Rice Accession (*Oryza sativa* L.) Grown Under Lowland Rainfed Conditions

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ABSTRACT

The study was conducted at the experimental area of Capiz State University, Pontevedra, Capiz from August 14, 2015 to November 25, 2015 to evaluate the adaptability and productivity of different pigmented rice (*Oryza sativa* L.) accessions grown under agro-local conditions. A total area of 544 square meters was used in the study. The experiment was laid out in a Randomized Complete Block Design (RCBD) with 15 treatments replicated three (3) times. The treatments used were: Treatment 1 – accession # 1 (53050 -Pilit Hinaruan), Treatment 2 – accession # 5 (47152 – Bugnay), Treatment 3 – accession # 6 (64202 - Tres Marias), Treatment 4 – accession # 9 (75917 – Binasuran), Treatment 5 – accession # 10 (78974 – Kapugot), Treatment 6 – accession # 15 (47324 – Salamantico), Treatment 7 – accession # 16 (81756 - Sabirara Malagkat), Treatment 8 – accession # 18 (75918 - Negro), Treatment 9 – accession # 22 (96124 - Malagkit Itim), Treatment 10 – accession # 25 (83847 – Perurutong), Treatment 11 - accession # 26 (97838 – Pulot), Treatment 12 - accession # 27 (97843 – Tapul), Treatment 13 – accession # 29 (47344 - Tapul Red), Treatment 14 – accession # 31 (80367 – Maliwara), and Treatment 15 – accession # 34 (97835 - Pilit Itan). The analysis of variance was used to test the significant differences among the treatment means.

Findings of the study revealed that the growth parameters of pigmented rice accessions differed significantly in terms of height at 30 and 45 DAT and at final height measurement but not at 15 and 60 DAT; and number of tillers at 30 DAT but not at 45 and 60 DAT. Likewise, the yield parameters of the test crop differed significantly in terms of the number of productive tillers; length and number of panicles/hill; number of filled and unfilled grains/hill; weight of 1000 grains; and grain yield (t/ha). On the basis of the results, it is concluded that pigmented rice accessions tested are adapted and productive under lowland rainfed conditions as manifested by favorable growth and better yield potentials.

GRADUATES IN BACHELOR OF SCIENCE IN HOSPITALITY MANAGEMENT AY 2014-2015; EMPLOYMENT TRACER STUDY

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ABSTRACT

This survey is intended to trace the graduates from the University to the place of employment or otherwise. The graduates are the Bachelor of Science in Hospitality Management of Cebu Technological University-Main Campus for the Academic Year 2014-2015. To obtain the information, the researcher had the questionnaire patterned from the CHED Standard Survey Instrument for Tracer Study. The respondents were the 77 BSHM graduates whose names were drawn randomly from master list of 266 graduates. The researcher took the list of names with contact numbers and email addresses from the Office of the Registrar (OR) and the Public Employment Service Office (PESO) of the University. During the sessions, the questionnaires are distributed via Facebook and text messaging. After the said activities, the accomplished questionnaires were retrieved and the data gathered was organized and interpreted through application of statistical tool. Findings of the study revealed out of 77 total respondents there were 42 respondents or 54.5% employed as regular; 29 respondents or 37.66% were contractual while 1 each respondent or 1.30% was an on-call basis and self employed respectively and lastly there were 4 respondents or 5.19% were unemployed. The recommendations to make NC II Skills competency as compulsory to all students so to provide more job opportunity. Even though there were no respondents representing the international employment it does not mean the University is not globally competent. It is further suggested that an international job employment survey be conducted to find out its job opportunities abroad so to benchmark the curriculum improvement of the program in the global arena.

Keywords: Hospitality Management, Graduate Tracer Study of AY 2014-2015, Hospitality Education

Collection and Evaluation of Different *Artocarpus* species against *Phytophthora palmivora* Butler Causing Jackfruit Decline

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ABSTRACT

Jackfruit (*Artocarpus heterophyllus*) Lam. is a banner commodity in Eastern Visayas. AES 1 or “EVIARC SWEET” variety is mass produced at DA stations in Leyte and Samar through cleft grafting using another jackfruit variety as rootstock for distribution to farmers in the region. High rate of seedling dieback due to *Phytophthora palmivora* is a problem in the nursery and contaminated seedlings was suspected to disseminate the pathogen to healthy seedlings and uncontaminated farms. The utilization of another *Artocarpus* species (jackfruit relative) that can be compatible with jackfruit as rootstock and which possess resistance to *P. palmivora* has been conceived as a possible solution to this problem. The different relatives of jackfruit though needs to be collected and evaluated for their reaction to the pathogen. A study has been undertaken that involved collection of different *Artocarpus* species in the region and evaluated for their reaction to *P. palmivora* in pot experiment in the greenhouse. Initial evaluation of 6 species namely: *Artocarpus odoratissimus*, *Artocarpus camansi*, *A. blancoi*, *A. elasticus*, *A. lacootcha* and *A. heterophyllus* showed that *A. odoratissimus* (Marang) is resistant to *P. palmivora* while *A. integer* (Champedak) is highly susceptible, even more susceptible than jackfruit. More accessions of *A. elasticus*, *A. blancoi*, *A. odoratissimus* and *A. camansi* were collected and evaluated against *P. palmivora*. Their reaction of the accessions varied with the place where they were collected. This data is a good benchmark information which will later be used for a rootstock-scion compatibility test with “EVIARC Sweet” variety.

Keywords: *Artocarpus*, *Phytophthora palmivora*, root stock, resistance

Survey of the Coastal-Wetlands Avifauna of Panay, Capiz, Western Philippines

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ABSTRACT

The threat to the coastal areas and wetland ecosystem biodiversity loss prompted the research team to a census of the species of birds found in the coastal wetland areas of the municipality of Pan-ay, Capiz , Western Philippines . The aim of this study is to observe record and identify the different birds species found in the coastal barangays of Pawa, Buntod, Lat-asan, Jamul-awon, Navitas, Bantigue and Butacal. Avian counts methods used in this study followed the Water Bird Count field method in Howes and Blackwell Shorebirds Studies Manual (1989) , and the AWB-BMS Manual Supplement Method for Counting Waterbirds in DENR-NORDECO technical paper. Fields observations were made using strip plotting and circular plot methods for boat surveys. Encounter rates were calculated from crude lists and data tables gathered during field visits. Results revealed that Pan-ay posses 42 species of birds across different wetland habitats. Navitas has the highest bird diversity with 39 species. The presence of the IUCN Red List vulnerable species: *Anasluzonica* –Philippine duck was detected. Resident and migratory birds were also seen.

Keywords: bird studies, avifauna census, biodiversity, coastal and wetland ecosystem, ecology

Growth Response and Mycoremediation Potential of *Pleurotus Florida* and *Pleurotus Ostreatus* Mycelia in Heavy Metal Contaminated Liquid Media

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ABSTRACT

Pleurotus spp. are white rot basidiomycetes that commonly cultivated in the Philippines due to its strong lingo-cellulosic degrading ability. This study was conducted to investigate the growth response and mycoremediation ability of *P. florida* and *P. ostreatus* in coconut water contaminated with heavy metals. Four heavy metals were used in this study namely cadmium, chromium, lead and copper. 100ppm concentration

of each heavy metal salt was prepared in coconut water as the basal medium. Growth response was evaluated based on the weight of mycelia and volume loss of the spent. Mycoremediation potential was based on the ability to accumulate heavy metal; thus, the amount of heavy metal in mycelia and the retained concentration of heavy metal in the spent were analyzed using spectrophotometer. Results revealed that the maximum mycelial weight of *P. florida* was significantly achieved in heavy metal free coconut water media having a mean of 8.5 g. Among heavy metal treated, cadmium (19.28 ml) and chromium (19.44 ml). The heavy metal that accumulated in high amount was copper with 8.1 ppm. Lead was accumulated in very low amount with 3.0, followed by cadmium with 3.9 ppm. Moreover, mycelial growth of *P. ostreatus* except lead (1.74 g), which the mycelia weights (4.75 – 5.70 g) were found higher than the mycelial weight of heavy metal free (2.71 g). The highest volume loss was significantly registered in cadmium with 18.11 ml. and the maximum accumulated metal was found chromium with 8.9 ppm. The lowest accumulation was recorded in cadmium with 2.1 ppm. This present data suggest that *P. ostreatus* and *P. florida* exhibit a great potential as mycoremediation agents.

Keywords: *Pleurotus* spp., heavy metals, mycoremediation, mycelia

Chemical Screening, Antioxidant and Antifungal Activity of *Lentinussajor-caju* found in Ifugao Province

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ABSTRACT

Lentinussajor-caju (Fr.) is a commercially important and edible mushroom. It is the second most cultivated edible mushroom worldwide due to its medicinal and nutritional value coupled with its ability to grow on agricultural wastes and other varieties of substrates. Thus, this study aimed to determine the chemical composition, antioxidant activity as well as the antifungal activity of *L. sajour-caju*. Chemical screening of *L. sajour-caju* revealed the presence of varying quantities of terpenoids, cardiac glycosides, alkaloids and saponins. The presence of these bioactive compounds makes this mushroom useful for therapeutic uses. Radical scavenging activity and total phenolic content were used as parameters for antioxidant activity. *L. sajour-caju* showed low radical scavenging activity (31.03%) compared to the standard oxidant, Catechin (97.41%). However, *L. sajour-caju* possessed high amount of phenolic content which is 237 mg/3.148 g. Antifungal activity of *L. sajour-caju* hot water extract against two fungal

pathogens, *Candida albicans* and *Aspergillus fumigatus*, did not show any antifungal activity, in comparison with the control Nystatin. Nevertheless, the results obtained in the study indicates that *L. sajor-caju* have potential to act as a source of useful drug because of the presence of various bioactive compounds and high phenolic content.

Keywords: *Lentinussajor-caju*, chemical screening, antioxidant, bioactive compounds.

Species Listing and In-vitro Cultivation of Wild Macrofungi Found in the Ifugao Community of Ifugao Province

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ABSTRACT

The Philippine has diverse biological resources, studies have been conducted on the taxonomic identification and listing of wild macrofungi in the entire country. However, data about the diversity of macrofungi are not enough especially on the mountainous areas in the Philippines. Therefore, this study was conducted to document the different macrofungi species found in Banaue, Ifugao, to come up with a species list as well as the optimization of culture conditions for mycelial growth of selected wild edible mushroom. There were eighty-two macrofungi collected in the areas. The samples were identified morphologically and molecularly. Seven identified species of macrofungi were utilized as food as declared by the community and one of these was *Lentinussajor-caju*. To establish a successful production technology, the rescue and evaluation of the optimum growth conditions of *L. sajor-caju* was initiated. The study revealed that among the three indigenous culture media tested, its secondary mycelia grew best on coconut water gelatin. The secondary mycelia were able to grow at pH of 5, incubated either sealed or unsealed, under both light and room temperature conditions. This present study is the first report on the macrofungal composition and in-vitro cultivation in the area inhabited by the Ifugao community.

Keywords: Edible mushroom, Species Listing, In-vitro cultivation, Macrofungi, Ifugao community

Determining the Best Transportation Policy in Laguna Using Fuzzy Linguistic Preference Relation

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ABSTRACT

The transport sector is one of the key factors that contribute to climate change because of its negative impacts such as air pollution. In order to reduce these adverse impacts on the environment, different transport policies are being proposed. In this study, Fuzzy Linguistic Preference Relation was used to determine the best policy that would help in the reduction of harmful effects of transportation on the environment. The four criteria considered in the study are adaptation of fuel with carbon content, improvement in the ecological efficiency of the vehicles, preferred investment activities in the transport sector, and better mobility management. Survey forms were used to solicit opinions of the experts and the randomly selected residents of Laguna. The results showed that vehicle testing and inspection, and promotion of the use of hybrid cars policies must be prioritized and implemented by the local government to reduce the negative effects of the transport sector in the environment.

Keywords: Fuzzy analytic hierarchy process, policy-making

Positive Attitude Indicator Theory

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ABSTRACT

According to John Holt *“The true test of character is not how much we know how to do, but how we behave when we don’t know what to do.”* This proverbial thoughts unquestionably illustrates Man’s natural behavior in an unforeseen situation that would call for his natural instinct and reaction. This remarkable primordial ethics as seen from a poets stand point, lead a gapping opportunity for the researcher to search a link that correlates inherent uninfluenced behavior observed through natural ,instinctive response of mans’ call on social responsibility and moral obligation. The study made correlation in accident occurrences from a work place as revealed through the passengers innate behavioral manner determined through The Philippines National

form of transportation , the Public Utility Jeepney(from where the Author believes their first interaction with the public starts).A series of experimental observation within the confinement of the Jeepney revealed that preferences in the routine handing over their fare could foretell their likelihood of behavioral attitude in the workplace. Thus, that passengers who paid approximately at the time they got-in and half way from destination point had few accident incidents in their work place compared to Passengers who fared at the destination point who had higher incidents' report of accidents in the work place .

Reproductive Potential of Big Eyed Scad (*Selar crumenophthalmus*) and Hard Tail Mackerel (*Megalaspis cordyla*) at Davao Gulf, Philippines

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ABSTRACT

Selar crumenophthalmus (Big Eyed Scad) and *Megalaspis cordyla* (Hard Tail Mackerel) are one of the most commercially important fishes in the Philippines. Both of these fishes are threatened of over-fishing due to high in demand in the market. Measurement of the reproductive potential of these species by getting its fecundity and gonadosomatic indices is important in knowing its spawning season to prevent from catching mature female fishes bearing gonads. Fifteen fish samples of each species were selected from Wet Markets A, B, and C of Davao City. The measurements were conducted and data were gathered, and observed from November 2015 to January 2016. Results of the study showed a fluctuating reproductive potential and revealed no significant difference between *S. crumenophthalmus* and *M. cordyla* during the three-month sampling period from the three selected wet markets which suggest that the fishes caught by the fishermen have already spawned or the beginning of spawning. Furthermore, the study revealed no significant difference on the Gonadosomatic index and fecundity between *S. crumenophthalmus* and *M. cordyla* was due to low fecundity rate of both fishes.

Keywords: Marine Zoology, Reproductive potential, Gonadosomatic index (GSI), Fecundity, Descriptive Comparative, Davao Gulf

Modular Instruction for Computer System Servicing NC II

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ABSTRACT

The purposed of the study was to assist the teacher's instruction for Computer System Servicing NC II (CSS) training. It assists also the students to be prepared on the CSS NC II assessment examination. Specifically, the study assessed the competencies of the teacher in terms of Computer Hardware Servicing; Systems Software Installation; Networking and Client-Server configuration were rated "very expert" it implies that teachers were ready to adopt modular instruction. It assessed the readiness of the students to take the NC II assessment test were evaluated "not ready" and it implies modular instruction should be adopted for them to be ready of the CSS NC II assessment examination. It was also assessed the level of technology used in terms of facilities and equipment needed and were ranked level 4. The descriptive method of research was utilized. Researcher-made questionnaires were developed and administered. The findings of this study basis of adopting the modular instruction for Computer System Servicing NC II, hence the study results modular instruction must be adopted.

Keywords: Computer system servicing, modular instruction.

The Qualities Of Effective University Instructor: Perception Of Wpu-Quezon Students

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ABSTRACT

This study was conducted to determine the qualities of effective university instructor as perceived by WPU-Quezon students. Specifically it aimed to describe these qualities in terms of: background knowledge, professional skills and personal qualities. The study considered 300 WPU-Quezon students enrolled in the second semester of SY 2014-2015 as respondents of the study. Slovin's Formula was used in determining the population size. Descriptive statistics was used in the data analysis. The results revealed that in

background knowledge, the students identified the instructor's experience in the subject area and the ability to relate it as the most popular quality of effective university instructor. On the other hand, in terms of professional skills the most popular is class management skills. The students selected respect for individuals as the most prevalent personal quality that an effective university instructor must have. This study recommends that the administration must provide trainings that will enhance these qualities among its faculty to help them become effective in the classroom.

Keywords: background knowledge, professional skills, personal qualities, perception

Food Preparation and Sanitary Practices of Food Service Establishments in Siargao Island Tourist's Destination Areas

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ABSTRACT

This research study focused on the food preparation and sanitary practices of the food service establishments in Siargao Island tourist's destination areas. Specifically, this sought to determine the profile of respondents in terms of age; sex, and highest educational attainment. It also endeavored to assess the food preparation and sanitary practices of food service establishments in Siargao Island tourist's destination areas as categorized into: servers' personal hygiene, environmental sanitation and pest control, waste disposal and toilet, and food preparation and utensils. The hypotheses were tested at 0.05 level of significance. One hundred (100) respondents of the study and were obtained through a purposive random sampling. As to recommendations the food service establishments should always keep their surroundings clean, free from dust and the door and windows should be screened in order to prevent the entrance of flies and insects and the City Health Office or Tourism Office should conduct regular inspection and give warnings and penalty to those establishments who do not follow and maintain sanitary rules and regulations.

Keywords: Food preparation, Sanitary practices, Siargao Island, Tourist destination areas

A Window into the IT Revolution in South of South: Perception of IT Students Toward Jobs and Society

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ABSTRACT

The surge of IT innovations and development in the North created IT job opportunities in the South. These vary with respect to the competency or lack of skills of the graduates. With the rising demand for local IT experts and technicians and the surge of enrolments in IT related courses, we argue that the IT students perception of the influences of IT becomes a driving force for each individual and societal aspirations. We particularly zoom in a society in the developing south of south which has barely adapted in the global IT revolution. Through semi-structured interviews with Information Technology students from SOCKSARGEN, Philippines we ask, How do IT students perceived the influences of IT in their future employment, jobs and society? It was revealed in this study that there is a disconnect between the students' understanding of IT and its role in their bigger immediate society. This has thus put them in a vulnerable position as captives of the capitalist market that underscores merits on skills.

Keywords: Information Technology, Aspirations, Philippines, Jobs, IT Revolution, Society

Ethnomycological Survey of Macrofungi Utilized by Ifugao Indigenous Community in Banaue Ifugao, Philippines

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ABSTRACT

The study determined the different macrofungi species utilized by the Ifugao community in Banaue, using questionnaires and interview. The indigenous knowledge and beliefs of Ifugaos in collection and utilization of macrofungi was documented. Seventeen macrofungi species were utilized as food, medicine and house decoration. Eleven macrofungi was collected and eight were identified and verified namely: *Auricularia auricula*, *Coprinellus disseminatus*, *Mycena* sp., *Lenzites elegans*, *Trametes* sp., *Schizophyllum commune*, *Phellinus* sp., and *Lentinus sajor caju*. Their medicinal practices were also documented: *Trametes* sp. is used in treating stomachache and headache and can help in eliminate solid waste from the body. The Ifugaos believe that mushrooms with a ring or annulus on the stipe are poisonous while when insects or flies surround

the mushrooms it means that it is edible. In collecting the mushroom, they remember the date and place where the mushroom exactly appeared because this will also be the date and place where the mushroom will appear in the succeeding year. They also believed that mushrooms are surrounded by the spirits so they must ask permission first before collecting mushroom. Additionally, they have a unique belief that mushrooms hide to people and would only show to certain people of their choice.

Key words: Ifugao Communities – Mushroom - Indigenous Beliefs - “Bulong” - “Uong”

Documentation on the Induced Spawning of African Catfish (*Clarias gariepinus*) at Balococ, Lingayen, Pangasinan

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ABSTRACT

African catfish (*Clarias gariepinus*) is one of the widely cultured freshwater species. Its production of fry in tanks will give rise to availability of fry ready for stocking in ponds at Lingayen, Pangasinan and nearby towns. Thus, induced spawning of African catfish was done. Human Chorionic Gonadotropin (HCG) was used to induced conditioned female breeders. Three females receives 2 IU/kg of HCG. Then, eggs were stripped and fertilized by the milt extracted from the male breeders. Forty thousand fry was produced.

Keywords: Induced spawning, African catfish, HCG

Efficacy of Botanical Extracts on the Broad Mite (*Polyphagotarsonemus latus* Banks) of Sweet Pepper Grown Under Protected and Open Field Cultivation

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ABSTRACT

Broad mite (*Polyphagotarsonemus latus* Banks) is a serious pest of sweet pepper which infest from early vegetative stage up to fruiting stage or as long as the plant still produces new shoots. The use of pesticides as control might cause ecological disruptions in the natural biological processes. This study was conducted to evaluate the effects of

the different botanical extracts against the broad mite of sweet pepper grown under protected and open field cultivation. Following the recommended rates (RR) of application, for the neem leaf extract, 1 L leaf extract was added with 5 L of water and 150 ml soap solution (1 pinch soap powder in 150 ml water). For each of the garlic, onion, and garlic + chili pepper extracts, 300 ml was diluted with 16 L of water. Abamectin was applied at 1 tsp/16 L water and were applied twice weekly. Results showed all botanical extracts used resulted in lower damage ratings than those in the control although were not statistically significant except in the 4th to 5th week rating schedule under structure. Abamectin and tap water consistently resulted to the lowest and highest damage ratings, respectively, in both types of cultivation. Marketable yields were comparable among treatments in both types of cropping systems.

Keywords: protective structure, sweet pepper, *Polyphagotarsonemus latus*, neem, onion, garlic

Growth and Yield of Bottle Gourd (*Lagenaria siceraria* Mol. Standl) Grown Under Protective Structure as Influenced by Organic and Inorganic Fertilizers and Their Combination

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ABSTRACT

Bottle gourd (*Lagenaria siceraria* Mol. Standl) which belongs to the family Cucurbitaceae, is an annual, climbing vine with large leaves and a lush appearance and is grown for its young fruits with medicinal and nutritional values. In the Philippines, cultivation and utilization of bottle gourd is still a small-scale undertaking for home consumption and local markets. Hence, there's a need to improve and increase production. This study was conducted to evaluate the performance and profitability of bottle gourd grown under protective structure using organic and inorganic fertilizers and their combination. The experiment was laid out in a single factor arranged in Randomized Complete Block Design (RCBD) with six (6) treatments replicated three (3) times. In general, plants fertilized either singly with organic and inorganic fertilizers and their combination performed better relative to the control. The most number and heaviest fruits were obtained from bottle gourd plants fertilized with the recommended rate of 90-60-60 kg/ha N, P₂O₅ and K₂O. This however, did not differ significantly from those applied with the combination of chicken dung and inorganic, vermicast and inorganic fertilizer and chicken dung alone. Thus, the use of organic fertilizer like chicken dung and vermicast and their combination with inorganic fertilizer in vegetable production showed a great promise.

Keywords: Protective structure, Bottle gourd, Vermicast, Chicken dung, and Inorganic fertilizers

Species composition and community structure of Seagrass in Sitio Cabuyao, Barangay Napsan, Puerto Princesa City, Palawan, Philippines

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ABSTRACT

Seagrasses are one of the major components of our coastal ecosystem. Its role to the environment is countless, thus protecting, conserving and preserving the remaining seagrass species are vital. However, before this can be taken, its status should be considered, thus survey. The survey of seagrass in Sitio Cabuyao, Barangay Napsan, Puerto Princesa City was conducted in August 2015 using line transect-quadrat method. Percent cover was determined and shoots of each species were counted. A total of six species under two families were identified in the area. About 58.25% of the seagrass bed were covered by seagrasses. It was dominantly covered by *Thalassia hemprichii* with 28.24% followed by *Cymodocea rotundata* (27.19%). *T. hemprichii* had 668 shoots per m^2 followed by *C. rotundata* with average shoots of 546.58 per m^2 .

Keywords: seagrass species, seagrass community structure, seagrass of Puerto Princesa City, percent of seagrass cover

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ABSTRACT

Seagrasses are one of the major components of our coastal ecosystem. Its role to the environment is countless, thus protecting, conserving and preserving the remaining seagrass species are vital. However, before this can be taken, its status should be considered, thus survey. The survey of seagrass in Sitio Cabuyao, Barangay Napsan, Puerto Princesa City was conducted in August 2015 using line transect-quadrat method. Percent cover was determined and shoots of each species were counted. A total of six species under two families were identified in the area. About 58.25% of the seagrass bed were covered by seagrasses. It was dominantly covered by *Thalassia hemprichii* with 28.24% followed by *Cymodocea rotundata* (27.19%). *T. hemprichii* had 668 shoots per m² followed by *C. rotundata* with average shoots of 546.58 per m².

Keywords: seagrass species, seagrass community structure, seagrass of Puerto Princesa City, percent of seagrass cover

Reptilian Diversity in Clarin River, Misamis Occidental, Philippines

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ABSTRACT

Reptiles are considered one of the most ecologically important bioindicators. Reptilian diversity and abundance was examined in the riparian region around Clarin River, which is one of the most important river systems in the province of Misamis Occidental. Three sampling sites, representing the upstream, midstream and downstream portion of the river were assessed, using visual encounter and cruising method. A total of 12 species were recorded, with 6 of them considered endemic. The results indicate a high level of endemism, and conservation measures are critical to preserve the biodiversity in Clarin River, especially along the downstream, where the anthropogenic influence is the highest. Environmental strategies and plans should be implemented to ensure the conservation of the reptile species in the area.

Keywords: reptile, species diversity, Clarin River, bioindicator, conservation

The Organizational Culture of Real Estate Industry and Its Societal Contributions

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ABSTRACT

The study focused on the profile of the respondents, the existing organizational culture of the real estate industry, problems encountered, policy implications and its societal contributions. Findings revealed that most of the respondents were male with an average age of 31-40 years old, married and with a college degree. Most of the practitioners were licensed brokers with 1-5 years of experience in the industry. The results of the study indicated that the dominant organizational culture of the industry was innovation; workplace spirituality was weak. Colorum/unlicensed real estate practitioners were the top problems encountered while unreasonable demand for property prices was the least problem encountered by the industry. Policy implications such as hidden charges upon turn-over, sub-standard construction, real estate scam, areas prone to calamity and disasters, fraud documents and land conversion were observed and encountered in the industry. Economic contributions of real estate in economy are shown in the services and industry sector of the GDP. The contributions in services sector were reflected in the real estate, renting and business activities and as for the industry, contributions came from constructions. Real estate industry also produced a multiplier effect on GDP. Its social contributions were perceived through the NHA specifically during the assistance after calamities. In addition, jobs created during rehabilitation and construction were also one of its major social contributions. The taxes imposed by the government in the capital gains tax and real property tax shared for the Internal Revenue Allotment and Special Education Fund comprised the political contributions of real estate industry.

Keywords: Real Estate, Organizational Culture, Policy implications, societal contributions

Bacterial Profile of Slipper-Shaped Oyster *Crassostrea iredalei* Cultured in the Coastal Waters in Alaminos City, Pangasinan and Sto. Tomas, La Union

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ABSTRACT

The study was conducted to determine the bacterial profile of oysters and culture waters in terms of Aerobic Plate Count, Coliform Count and presence of important bacterial pathogens such as *Escherichia coli*, *Salmonella spp.*, *Vibrio spp.* and other species of bacteria which comprises the natural microflora of oysters and their culture waters. Aerobic plate Counts of the oysters conformed with standards set by Bureau of

Fisheries and Aquatic Resources (BFAR). Culture waters conformed with standards for shellfish growing waters in terms of Total and Fecal Coliform Most Probable Number. *E.coli* MPN of oysters was also minimal and conformed with maximum acceptable limit set by the Bureau of Fisheries and Aquatic Resources. *Salmonella spp.* were not isolated in both oysters and culture water samples. However, *Vibrio spp.* and other bacteria such as *Pseudomonas*, *Enterobacter* and *Aeromonas*, among others, comprises the natural microflora of oysters and culture waters. Physico-chemical parameters generally conformed with the standard set by the Bureau of Fisheries and Aquatic Resources and the Department of Environmental and Natural Resources, with exception of salinity and total suspended solids of three sampling stations in Barangays Baleyardaan, Mona and Pangapisan in Alaminos City and salinity in Barangays Raois and Ubagan in Sto. Tomas, La Union respectively.

Keywords: Oysters, Aerobic Plant Count, total and Fecal Coliform count, *E.coli*

Drinking Water Quality in Mindanao University of Science and Technology, Cagayan de Oro City, Philippines

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ABSTRACT

The study evaluated the quality of drinking water sources in Mindanao University of Science and Technology (MUST). The main objective was to determine if the water sources were fit for students and faculties' drinking water consumption. Six sampling stations were identified which included faucets and water fountains in the different departments of the university, namely Engineering, Science Center, Education and Information Technology. Physicochemical analyses included, pH, temperature, dissolved oxygen (DO), total dissolved solids (TDS), alkalinity, and heavy metals (lead (Pb) and cadmium (Cd)). Sampling periods commenced on July to September 2014. Overall the university's drinking water sources were within allowable limits set by the Philippine National Standard for Drinking Water (PNSDW). However, Pb and Cd concentrations were beyond the permissible limits. The results of the study is preliminary by nature and further monitoring be implemented. Present evaluation of water sources is considered to secure public health.

Key words: Drinking water quality, Heavy metals, physico-chemical

Job Satisfaction and Employability of Education Graduates of Western Philippines University- Quezon Campus

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ABSTRACT

The study aimed to evaluate and assess the job satisfaction and employability of Education of graduates of Western Philippines University – Quezon Campus. It also aimed to determine the level of education graduates of Western Philippines University Quezon Campus. This study used descriptive statistics such as frequency counts, percentages, means were used to analyze the data that was gathered through the use of modified CHED Tracer Study survey questionnaire that was personally administered to 92 education graduates served as population in this study. Results revealed that majority of graduates were employed. The level of employability of education graduates of Western Philippine University- Quezon Campus were described as high. Respondents are satisfied that their job is challenging and inspires them to do their best and have a chance to grow professionally in their present job were described as Very High. Despite of the high employability level of the teacher education graduates of WPU- Quezon, the College of Education must still conduct a thorough graduate assessment program.

Keywords: job satisfaction, employability, employed, teacher education, employment status

Subtidal Red Macroalgae (Rhodophyta) Composition at Guiuan, Eastern Samar, Philippines After Typhoon Yolanda

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ABSTRACT

The effects of climate change, typhoons, like Super Typhoon Yolanda, and fishing and recreational activities of humans make Guiuan a biodiversity hot spot. Several economically non-important groups of organisms, including Red algae, have not been extensively studied in Guiuan recently. Hence the present study assessed the diversity of red algae in the surrounding waters and correlated them with pH temperature and salinity. Transects divided into ten quadrats were laid at Pearl Island, Sulangan and

Campoyong. Specimens from each quadrat were collected through snorkelling and wading. Herbarium specimens were prepared; and some were pickled for further identification and verification. Physico-chemical parameters such as temperature, pH, and salinity of water were recorded. A total of 12 species were identified from all three sites. Based on the Shannon diversity Index, Sulangan is most diverse followed by Pearl Island. Campoyong, nearest to Guiuan town proper, is least diverse despite being more species rich. When the species diversity is correlated with the three physico-chemical parameters measured, the trend shows that red algae have higher diversity on more pristine waters of Sulangan rather than the low pH and low salinity of the more polluted waters of Campoyong from the town's runoffs. This shows the negative impact of human activities and ocean acidification to the red algae communities.

Computer-Based Classroom Monitoring System for ICT students at the Cebu Technology University, Main Campus

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ABSTRACT

This study entitled “Computer-Based Classroom Monitoring System” for ICT students at the Cebu Technology University, Main Campus. This program application's main objective is to automate the classroom attendance and monitoring system. This program was conducted in the ICT Computer Laboratory Classroom using an Object Oriented Programming Software compiler and a Database software Application being locally connected to the server's computer system which is the instructors computer system. The means of monitoring the students attendance is by login into the system where the student will enter their Identification Number only and it will store to the Database application and can be display on the servers computer system the time of the students login in and it will monitor the number of time the student absent and tardiness using the real time clock of the computer system. This system will also monitor the laboratory activities of the students performance. The purpose was to develop a system that will cater the classroom monitoring system of ICT students using Network connection. The respondents of the study were those ICT students and faculty of the Cebu Technological University Main Campus. The following findings revealed that all respondents that which are the faculty and students where having a verbal description of “ACCEPTABLE” Hence, the system is hereby recommended.

Keywords: Classroom Monitoring system, Local Area Networking

Fuzzy Analytic Hierarchy Process - Group for Land Use Planning

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ABSTRACT

Land use planning involves making decisions with multiple stakeholders that have conflicting and competing objectives. Stakeholders of Tumauni, Isabela, Philippines were interviewed for comparison of objectives and criteria in land use planning. Their responses were evaluated using fuzzy analytic hierarchy process - group. Results showed that Tumauni stakeholders prioritize agricultural production followed by protection of the environment and natural resources.

Effectiveness of 13-In-1 Multi-Featured Drawing Instrument

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ABSTRACT

The study aimed to measure the effectiveness of the 13-in-1 Multi-Featured Drawing Instrument with features, namely; T-square, triangles, L-square, protractor, ruler, lettering guides, compass, geometrical templates, scale, magnifier, directional compass, calculator and a pen case. Ergonomics and safety were also a concern in terms of operation and storage of the developed drawing instrument. The expert respondents of the study were drafting/drawing professors and selected drafting/drawing students in the College of Technology, Education and Engineering of the Cebu Technological University Main Campus. Findings revealed that respondents find it **Very Effective (4.76 average weighted mean)** in terms of features and **Highly Acceptable (4.74 average weighted mean)** in terms of acceptability, the same as to the perceptions of the student respondents in line with the different functionalities and dimensions of quality. The findings further revealed that conservation of resources such as recycling is also adopted in developing this innovation. It is recommended that the utilization of the instrument be implemented in drawing and drafting laboratories for instructional purposes of Cebu Technological University Main Campus and other universities.

Keywords: *13-in-1 Multi-Featured Drawing Instrument, Lettering Guides, Multiple Templates.*

Species Richness and Endemism of Amphibian along the Riparian System of Clarin River, Misamis Occidental

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ABSTRACT

Philippines is both a megadiverse nation and global conservation hotspot. The combination of high biodiversity, together with high rates of forest loss and elevated human population places the country at the top global list for conservation. Amphibian communities are known to be sensitive to environmental changes and are one of the top priorities for vertebrate conservation in the Philippines. Given that amphibians are very good indicators of ecosystem health, study on the anuran species in Clarin River, Misamis Occidental was conducted using the cruising method to determine the species richness and endemism of the anurans present in the area. Twelve species under 10 genera and five families were recorded. Seven species (58.33%) are endemic which include a Mindanao Faunal Region endemic, *Hylarana grandocula* and two Mindanao Island endemic, *Ansonia muelleri* and *Ansonia mcgregori*. Among the recorded endemic species, three are of vulnerable status and one is in Near Threatened status. Highest species richness (N=8) and species diversity ($H' = 1.829$) were recorded in sampling site 2 (midstream). The presence of vulnerable and near threatened species indicates the need to protect the riparian system of the river.

Keywords: anurans, conservation, endemic, indicators, land vertebrate

Social and Economic Needs Assessment of Purok 6, Green Island, Barangay Tumarbong, Roxas, Palawan

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ABSTRACT

The study was conducted to determine the socio-economic profile of the residents and the community issues and training needs of the household in Green Island, Bgy. Tumarbong Roxas, Palawan. This was done in February 2015. Stratified random sampling was used to get the 70 household respondents. Frequency, percentage and arithmetic mean are the tools used to analyze data gathered. Results revealed that most of the residents were in-migrants for more than 15 years. Most of them are Cebuano male, married, Roman Catholic, elementary level with an average age of 41 years old

and a monthly income of PhP 5, 000.00. The majority of housing still seemed poor with limited appliances owing to limited access of electric supply. Wood or coal was mostly used for cooking. Drinking water was bought. As to the needs or problems of the community, the residents agree that there are problems related to health, housing, education, income and livelihood. The social welfare training identified as very much needed was on parenting, program and rights of women and children. Other training needed was first aid. Other issues that need attention were: Out of School Youth, health, cleanliness of the surrounding, senior citizen, knowledge and skills about livelihood.

Keywords: assessment, social, economic, needs

Cave Mapping as Tool in Cave Conservation Management: The Southern Mindanao Experience

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The last 10 years showed an upsurge of exploration and assessment activities for caves in Southern Mindanao area mostly commissioned by LGUs and conducted by caving groups (NGO) and government agencies. Cave eco-tourism is cited as the main driver for the exploration and assessment in the area, to exclude expeditions solely conducted for the scientific understanding of biological and hydro-geologic features of Karst system. With the consistent increase in the number of applications for cave classification and approval of cave management plan to DENR-12 primarily for cave eco-tourism purpose, cave mapping and cave resources inventory become indispensable tools to properly guide stakeholders in the spatial planning. Cave map incorporating the information from biological and geological inventories including lay-over on topographic map provides idea for site-specific appropriate activities within and above caves. This report highlights the importance of cave mapping for conservation and management of the subterranean ecosystem and their associated wildlife as well as the contributions made by Philippine Speleological Society Inc. and other stakeholders in Southern Mindanao caving areas.

Keywords: cave, cave assessment, Southern Mindanao, speleology

Reef Fishes of Barangay Napsan, Puerto Princesa City, Palawan, Philippines

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ABSTRACT

Reef fishes of Barangay Napsan were assessed in August 7-8, 2015 using fish visual census (FVC) in three established stations. The survey employed a 100-meter transect line per station. All fishes encountered within 2.5 meters on both sides of the transect line and 5m above the transect line were identified up to species level. Fish abundance was determined by actual counts meanwhile the total length of the fish was estimated and was later used to determine the individual fish biomass. A total of 75 fish species belonging to 21 families were recorded. The average biomass for the three sites was 8.46 mt/km². Among the sites, the highest diversity and density was recorded at Lutang na bato area, with 45 species/500 m² and 270 individuals/1,000 m². The lowest fish species diversity, density and biomass was observed in Isla Puntod with only 23 species belonging to 13 families, 182 individuals/1,000m², and 4.48 mt/km², respectively. Based on the result of this survey, the reef fishes of Napsan can be classified as having medium biomass, abundance, density, and low diversity as it needs protection and management.

Keywords: reef fishes, fish density fish diversity, fish biomass, fish species

Influence of Cultured Scion on Graftake of Cacao (*Theobroma cacao* L) Seedlings

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ABSTRACT

Cacao (*Theobroma cacao* L.) is raised from seeds but several studies have shown advantages of vegetative propagation particularly grafting. This experiment was conducted to determine the effect of scion pre conditioning on the graftake of cacao seedlings and to identify which pre conditioning period can enhance high percentage graftake. Percent graftake were compared among uncultured scion and those cultured for 2 and 4 days. Results show that scion conditioning specifically those that has been cultured for 4 days gave the highest percentage of graft take and at the same time had reduced number of days of scion and rootstock to completely unite. Grafted seedling whose scion was cultured for 2 days had comparable performance with the control which had the lowest percentage of graftake.

Keywords: cacao, scion preconditioning, percent graft-take, scion, rootstock

Innovated Drawing Instrument

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ABSTRACT

The study was conducted at Cebu Technological University, Cebu City, in order to develop an innovated instrument and determine its acceptability and effectiveness during the school year 2015-2016. An innovated instrument was evaluated on the acceptability of its instructional function, efficiency, and durability. The descriptive method particularly survey research was employed on this study. Questionnaires were given to ten (10) drawing teachers and fifty (50) students for evaluation. Gathered data were treated using total weighed points, weighted mean, and z-test. Findings revealed that the majority of the respondents perceived the innovated instrument as highly acceptable. The ratings were focus on the following items; a) working drawing as to the top, front, and side views; isometric drawing; and exploded view. b) The bill of materials and estimates stipulating therein the itemized lists of materials and supplies with the total cost of the project; c) the fabrication and assembling as to its procedures; and d) the extent of the acceptability of the innovated instrument in terms of instructional function, efficiency, and durability. Based on the findings, conclusions and recommendations were drawn, and proposals were formulated.

Teratogenic Activity of *Lentinus sajor-caju*

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ABSTRACT

Lentinus sajor-caju is a fungus of the tropical rainforests and can frequently be seen in troops along fallen logs and dead trees. The aim of this study is to evaluate the proficiency of *L. sajor-caju* toxic compounds with various bioactivities. This paper put emphasis on the teratogenic effects of *L. sajor-caju* hot water extracts in zebrafish as an animal model. Embryos subjected in 1% and 3% concentration of *L. sajor-caju* extract significantly recorded 8.33% mortality after 12 hours exposure and increased at 16.66% mortality in 3% concentration after 24 hours. Similarly, 8.33% mortality rate was observed at 0.05% and 0.5% concentrations after 36 hours and increased into 100% mortality after 48 hours exposure. Whereas, 100% mortality rate was observed at 1%

and 3% concentration after 36 hours to the last observation period. *L. sajor-caju* extract significantly reduced the hatchability of zebrafish eggs and heartbeat at 0.1% or higher concentrations. High percentage of delayed growth and tail malformation was observed in embryos exposed to 0.5% or higher concentration. The most manifested toxic effect was coagulation and tail malformations. These effects of the *L. sajor-caju* mushroom extract in *zebrafish* embryos is an indication that it could possibly be harnessed as anti-cancer drug.

Key words: *Lentinus sajor-caju*, teratogen, anticancer, zebrafish.

Acceptability of Common Carp (*Cyprinus Carpio*) into Fish Siomai

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ABSTRACT

This study was conducted to determine the acceptability of carp (*Cyprinus Carpio*) into fish siomai. The finished product was evaluated by sensory evaluation test in terms of appearance, taste, texture, odor and mouth feel. With respect to the appearance of carp siomai, there were about more than three fourth eighteen (18 or 90%) percent of the respondents agreed that the finished product have a resemblance to fish siomai sold in the market. There were seventeen (17 or 85%) of the respondents concealed that the finished product has a similar taste with the siomai that is bought in the market. Almost all the respondents with nineteen (19 or 95%) percent noted that the carp siomai have a juicy texture. On the other hand nineteen (19 or 95%) percent of the respondents agreed that the finished product was found out to have a good characteristic odor like the fish siomai bought in the market. Finally there were nineteen (19 or 95%) percent of the respondents rated the finished product with a chewy mouth feel. With respect to the different parameters used on this study with regards to the acceptability of common carp prepared into siomai, it was concluded that common carp could compete with fish siomai sold in the market.

Keywords: Acceptability, Common Carp (*Cyprinus Carpio*)

Phytochemical Screening of two *Amorphophallus* species (Elephant yam) as utilized by the Indigenous People in Palawan, Philippines

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ABSTRACT

The study dealt on the phytochemical analysis of *Amorphophallus campanulatus* and *Amorphophallus palawanensis* as utilized by the indigenous people 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 in selected municipalities of Palawan. Air-dried plant parts were used to test for inorganic phytochemicals like iron and calcium. Alcohol extract of leaves, stalks and corm of two plant species were used to test its organic phytochemicals. Phytochemical screening procedures such as Culvenor-Fitzgerald test, Liebermann-Burchard reaction, Wilstatter "Cyanidin" test, froth test, Ferric Chloride test, and Keller and Killian test were used to determine the presence of phytochemicals in different plant parts such as leaves, stalk and corm. Results of the phytochemical screening revealed that *Amorphophallus palawanensis* has more phytochemicals particularly saponin than *Amorphophallus campanulatus*. But both *Amorphophallus* species contain inorganic substances such as iron and calcium; and organic phytochemicals like alkaloids, steroids, flavonoids and tannins. The two *Amorphophallus* species in Palawan is still utilized by the indigenous people as famine food and feed extender to hogs. It also used as extender to some delicacies.

Keywords: *Amorphophallus campanulatus*, *Amorphophallus palawanensis*, phytochemicals

Shelf Life of Two Sweet Pepper (*Capsicum annuum* L.) Cultivars Stored at Ambient and Evaporative Cooling Conditions

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ABSTRACT

The effect of evaporative cooling ($23.91 \pm 3.85^\circ\text{C}$, $93.84 \pm 9.33\%$ RH) on the shelf life and physico-chemical characteristics of two sweet pepper cultivars ('Smooth Cayenne' and 'Sultan') was evaluated and compared with those stored under ambient conditions ($28.74 \pm 0.94^\circ\text{C}$, $65.68 \pm 7.43\%$ RH) in February 2016. Cultivars and storage conditions had significant ($P \leq 0.05$) effects on the shelf life of the sweet peppers. Storage of sweet pepper in the evaporative cooler (EC) resulted in reduced weight loss, slower decline in moisture content, longer retention of acceptable firmness and higher marketability for both cultivars. There were rapid changes in total soluble solids and titratable acidity in both cultivars stored at ambient condition. The limit of marketability was reached by

‘Smooth Cayenne’ at 9 and 18 days when stored in ambient and EC conditions, respectively, while this was at 6 and 15 days for ‘Sultan’.

Keywords: sweet pepper, ‘Smooth Cayenne’, ‘Sultan’, evaporative cooler, postharvest quality

Typhoon Yolanda Teachers- Survivor Grammatical Form of Aptitude in a Remote Island of Samar, Philippines

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ABSTRACT

Grammar as a complete set of rules needed to produce all the regular patterns in a given language. Form is just one of the basic rules in language which doesn’t have much a benchmark on. The National UAE (Wilson, 2009) mentioned that the quality of teachers and their grasp of English is falling; simply said, the teachers’ background in English is insufficient. Hence, a study on grammatical form competence for English Instructors (EIs) and Pre-service Teachers (PSTs) is made with 12 EI and 168 PST research participants. It has been found out that both EIs and PSTs are competent in forms with doesn’t have meaning but are used in showing relationships among words in a sentence but lack competence in forms with concrete meaning. The lack of grammar form competence may lead to wrong structuring of words in a sentence and further may lead to misanalysis and misinterpretation. Therefore, precise structuring is needed for an effective communication.

Keywords: Aptitude Grammatical Form , Remote Island Teachers- Survivor ,Typhoon Yolanda

San Jorge Watershed Characterization

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ABSTRACT

The paper was undertaken to determine the geophysical and socio-demographic characteristics of San Jorge Watershed, San Jorge Samar. Primary and secondary data

were gathered through actual survey of the watershed, interviews and maps from various offices. Results revealed that the watershed received maximum solar radiation but with great flood risk and a flashier one. The high stream flow is attributed to the wide breadth of the river due to river bank soil erosion and the water pH is within the normal range of the river water pH. Soil characteristics revealed its potential to agricultural activities but productivity is not fully maximize due to the prevalence of flood. Soil erosion, waste disposal of waste on the river and flooding were common problems identified. It was concluded that the watershed is vulnerable to flood but suitable for agricultural production. Conservation and protection is highly recommended to the farmers in the utilization of the watershed for sustainable and more productive agricultural endeavours.

Keywords: geomorphological, physical, edaphic, landuse, streamflow

Optimal Conditions for Mycelial Growth of Two Strains of *Pleurotus eryngii* (De Candolle ex Fries) Quelet sensu lato.

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ABSTRACT

Pleurotus eryngii, commonly known as King oyster mushroom, is an edible basidiomycete and saprophytic mushroom. It is one of the most popular mushrooms nowadays due to its taste, consistency of cap and stem, culinary qualities and long shelf life. The mycelial growth performance of two strains of *Pleurotus eryngii* (China and Japan strains) on four locally available indigenous culture media (rice bran decoction gulaman, corn grit decoction gulaman, coconut water gulaman), different physical conditions (pH, aeration, illumination and temperature) and locally available granular spawning material (unmilled rice, sorghum and cracked corn) for mass spawn production was evaluated in this study. *P. eryngii* China strain grew best on rice bran decoction gulaman with pH of 5.5 incubated in dark and sealed conditions in an air condition temperature. On the other hand *P. eryngii* Japan strain favors rice bran decoction gulaman with pH of 6.0 incubated on either dark or lighted and unsealed condition in an air condition temperature. Moreover, among the different grains evaluated, sorghum seeds were found to be the most suitable mother grain spawning material for both strains.

Keywords: *Pleurotus eryngii*, King mushroom, culture media, physical conditions

Molecular Identification and Phytochemical Profiling of Kamiling (Wild Toxic Plant)

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ABSTRACT

The current demand for authentication of the plant is increasing and is vital to have a single database containing information about authentic plant materials and their potential adulterants for further researches. Hence, the study focused primarily on the molecular approach and phytochemical profiling of "Kamiling", a wild toxic plant collected in Imugan, Nueva Vizcaya. The genomic DNA of the plant was extracted, and was amplified using matK and rbcL gene markers. The sequences were queried on GenBank and the Basic Local Alignment Search Tool and revealed that the sample sequences was identified and classified as *Semecarpus cuneiformis* based and further confirming its identity as supported by its morphology. Furthermore, the leaves of Kamiling was subjected through Thin Layer Chromatography and revealed the presence of some important plant metabolites such as alkaloids, coumarins, anthraquinones, anthrones, tannins, flavonoids, higher alcohols, phenols, steroids and essential oils. Since, there is a growing awareness in correlating the phytochemical constituents of plants with their pharmacological activity, wild toxic plant can be one of the preferences for medicinal uses.

Keywords: matK, rbcL, Kamiling, phytochemical profiling, Pharmacological

Phytochemical Profiling of Lal lat tan (Wild Toxic Plant) and its identity using molecular approach

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ABSTRACT

Lal lat tan is a wild plant from Imugan, Nueva Vizcaya, it was known for having stinger leaf that lead to severe itchiness and swelling of eyes and face when touched. Thin layer chromatography was conducted to determine the bioactive compounds present in plant. Using methanol+water extract and chloroform+methanol as solvent system, the result revealed the presence of saponins, phenols, tannins, flavonoids, anthrones,

anthraquinones, terpenes and steroids which are considered as active medicinal phytochemical constituents. The phytochemical analysis of the plants are important and have commercial interest in both research and pharmaceutical endeavours. Molecular phylogeny was conducted to identify the wild toxic plant (Lal-lat-tan) collected from Imugan, Sta. Fe, Nueva Ecija. The genomic DNA was extracted from the leaves using Plant DNA kit and amplified using the ITS, *matK*, and *rbcl* markers. The PCR amplified product were sequenced and subjected for search query using BLAST. The plant was identified as *Dendrocnide meyeniana* and clearly occupying a distinct position in the Phylogeny tree resolution compared to other gene markers used in this study.

Keywords: wild plant, *rbcl*, *matk*, ITS, phytochemical analysis

**Species Richness, Endemism and Distribution of Amphibians and Reptiles across
Different
Ecosystems in Kapatagan Watershed, Lanao del Norte**

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ABSTRACT

Kapatagan watershed is inhabited by diverse amphibians and reptilian species. Due to increasing threats, the condition is at a critical state. Hence, a study of the species richness and distribution of amphibians and reptiles was conducted. Herpetofaunal species in the different ecosystems (forest, cave, riverine, mixed agricultural area, rice field and mangrove) were assessed using visual encounter and cruising methods. The 30 herpetofauna species recorded in the area are composed of 11 frogs, 10 lizards and skinks, and nine snakes. Of the species recorded, 33% are endemic. There were five threatened species documented. Effective conservation strategies must be followed to preserve and conserve the high species richness in the area.

Keywords: assessment, cruising method, frogs, herpetofauna, lizards

Travel Skills Acquisition of Travel Management Students

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ABSTRACT

This study was made to assess the skills acquired by the Third year Travel Management students of Cebu Technological University-Main Campus academic year 2013-2014 as well as the factors that may affect its acquisition with the following factors: facilities, classroom environment, Industry and travel exposures and the availability books, modules and handouts. The data were collected from the fifty (50) third year student respondents coming from the different shifts offered, the day and the evening program. They have taken all of the major skill subjects and are the best to respond to the study. The percentage method was used in profiling the respondents and the weighted mean and the average weighted mean was utilized in determining the extent of the skills acquired and the extent of the need of the factors that affects learning. The findings states that the students had fully acquired the essential travel skills in the industry and the several factors are irrelevant to the acquisition of these skills. It is shown in the study that factors needed do not alter the student's ability to acquire the skills in their field. Self-determination, encouragement and the professors' resourcefulness to conduct the instruction of learning created a surmountable impact on the acquisition. There are skills assimilated by the students that infer that the program travel management responds to the need of the travel industry and the university replicates what the industry do.

Keywords: Travel Management, Skills acquisition, travel skills learning factors, tourism education

Condition of Toilets in Tourist Attractions in Cebu City

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ABSTRACT

This study intended to examine the conditions of the toilets in various tourist sites in Cebu City. The respondents in this study were tourists utilizing public toilets. This study generated from primary data that is collected through interviews and providing researcher made questionnaires. The percentage method was used in computing the profile of the respondents. The weighted mean and average weighted mean was used in

computing the conditions of the toilet with the following parameters: cleanliness, facilities and amenities. This research provides information about the perception of the tourist towards the tourist site toilets through: cleanliness, facilities and its amenities. The result implies that most toilets are generally clean, does not have foul odor and trash bins are provided in each cubicle. There is an appropriate separation of toilet facilities for Male and Female and have enough supply of water and have maintenance personnel to regularly check the conditions of the toilets. The research also shows that there are still areas in the toilet which are not properly clean, maintained and monitor rigorously after usage. The hand drying equipment and toilet bowl flush is not functional in some toilet facilities. The toilet amenities are limited such as paper towel, hand soap and tissues. An annual evaluation entailing improvement of toilets in various tourists sites, provision of suggestion box and sanitation programs and campaigns are recommended to accomplish the goal of making cleaner toilets for better tourism.

Keywords: Tourism, Toilet Conditions, Public Toilets, Tourist Sites

Mobile Photovoltaic Power Station

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ABSTRACT

During the second half of the 20th century and early part of the 21st century, climate scientists have data indicating a dramatic increase of global average surface temperature and sea level. NASA scientist warned that the rise of sea level would devastate agricultural and forested areas and cause famine and destruction of properties. It is ironic that the Philippines is highly vulnerable to climate change than developed countries. Researchers said, there is evidence that occurrence of super-typhoon Yolanda will become more frequent. Furthermore, climate change scientist's advised the Philippine government to focus on resiliency and adaptation. In response to the call of resiliency and adaptation the researcher concluded the adaption of high powered Mobile Photovoltaic Power Station at all strategic areas ready for deployment to nearest disaster affected areas. This Mobile Photovoltaic Power Station is designed to power up various equipment use for lightings, communications, public address system, and any electrical devices. The research study was proposed at the College of Industrial Technology-Electrical Technology Area of Cebu Technological University, Main Campus. The Mobile Photovoltaic Power Station was specifically evaluated on the acceptability and effectiveness.

Digital Quiz Bowl System

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ABSTRACT

The study was conducted at the College of Arts and Sciences of Cebu Technological University, Main Campus. It evaluated the acceptability and effectiveness of the constructed Digital Quiz Bowl System. The Digital Quiz Bowl System was specifically evaluated on the acceptability on its physical design, working circuit design, materials and equipment, and sequence of operations; and the effectiveness of the performance of each function. It was found out that the Digital Quiz Bowl System is Highly Acceptable in terms of physical design, working circuit design, materials and equipment, and sequence of operations; the Digital Quiz Bowl System's performance is Highly Effective in terms of functionality, reliability, usability, serviceability, and aesthetics. Summarily, the development of a Digital Quiz Bowl System met the technical requirements and has a capacity as perceived by the quizzers and judges. It is suggested that the Digital Quiz Bowl System be mass produced in support for the benefits of the quiz bowl competitions in the academic development of the students, and in line also with the efforts of the department to improve the educational facilities in the university.

Economic Valuation of the Household Use of Biotermiticides in Eastern Visayas

Frank Britz V. Cadavis

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Graduate Student, MSES Program, UP Cebu, Cebu City

ABSTRACT

Termites eat cellulose-based materials such as wood, paper, etc. and become pests when they attack anthropogenic structures. It is imperative, therefore, to look for economical, natural and environment friendly yet effective termiticide without the environmental and human hazards of synthetic termiticides. With the use of contingent ranking, the economic value on the household use of biotermiticides in Eastern Visayas to offset the negative impacts of chemical-based termiticides was determined. Aside from contingent ranking, the willingness to pay amount was elicited to determine the household owner's real and hypothetical willingness to pay for using biotermiticides over chemical-based termiticides. The real willingness to pay was calculated based on the house size and the respondent's current termite control use. A hypothetical willingness to pay question was asked to rank the four alternative biotermiticides options. The length of household ownership, living space, attitude about whether or not

respondents consider biotermiticides over chemical-based termiticides to answer the termite infestations, and income were attributed to the differences on the real and hypothetical values.

Keywords: *Biotermiticides, contingent ranking, economic valuation, termites, willingness to pay*

Preliminary Analysis of the Termiticidal Activity of *Allamanda cathartica* L. Leaf Extracts (Apocynaceae)

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Graduate Student, MSES Program, UP Cebu, Cebu City

ABSTRACT

Termites eat cellulose-based materials and become pests when they attack anthropogenic structures. It is imperative, therefore, to look for economical and environment friendly yet effective termiticide without the ecological and human hazards of synthetic termiticides. *Allamanda cathartica* Linn. has allamandin, a toxic iridoid, and other poisonous compounds that makes it a possible termite control. *A. cathartica* leaf decoction, crude leaf extract, and 40 percent and 80 percent leaf extract solution were sprayed on ten individuals of soldiers and workers of *Nasutitermes luzonicus* and *Macrotermes gilvus* termite species. The 80 percent leaf extract solution was the most effective treatment that showed 90 percent killing rate across all test organisms followed by the 40 percent leaf extract solution and leaf decoction. The least effective is the crude leaf extract that killed only 40 percent of the termites tested. It is the 80 percent leaf extract solution, therefore, that showed most effective in killing the soldiers and workers of the two termite species. This experiment may be tested on other castes of *M. gilvus* and *N. luzonicus*, as well as other species of both drywood and ground termites to test whether the treatment will have similar effects to those found in this study.

Keywords: Termiticides, *Allamanda cathartica* L., allamandin, *Nasutitermes luzonicus*, *Macrotermes gilvus*.

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NATURE (ISSNAT)

SURABAYA, INDONESIA

UPN "Veteran" Jawa Timur, Jl. Raya Rungkut
Madya, Surabaya, East Java, Indonesia

CONGRATULATIONS!

FOR THE INTERNATIONAL CONFERENCE of PHILIPPINE SOCIETY FOR
THE STUDY OF NATURE , INC. (PSSN)

25-28 May, 2016 Dumaguete City, Philippines



Republic of the Philippines
Pampanga State Agricultural University
Magalang, Pampanga

PSAU is the first state college in the Philippines to be granted a State University status based on merits per CHED En Banc Resolution No. 006-2015 dated January 13, 2015.

PSAU's programs in **AGRICULTURE, BIOLOGY, VETERINARY MEDICINE** were designated as **CENTERS OF DEVELOPMENT** per CHED Memorandum Order 38, series of 2015.

CURRICULAR PROGRAMS

Graduate Level

Doctor of Philosophy in Agricultural Sciences
Doctor of Philosophy in Management
Doctor of Education
Master of Science in Agriculture
Master of Arts in Education
Master of Science in Biology

Two-Year Courses

Diploma in Computer Programming
Diploma in Computer Secretarial

Undergraduate Level

Doctor of Veterinary Medicine
Bachelor of Science in Agriculture
(major in *Animal Science, Crop Science, Horticulture, Agronomy*)
Bachelor of Science in Fisheries
Bachelor of Science in Agricultural Economics
Bachelor of Science in Agricultural Business
Bachelor of Science in Entrepreneurship
Bachelor of Science in Development Communication
Bachelor of Science in Forestry
Bachelor of Science in Agroforestry
Bachelor of Elementary Education
(major in *Pre-School Education, Generalist, and TLE*)
Bachelor of Secondary Education
(major in *English, Mathematics, General Science, and TLE*)
Bachelor of Physical Education
Bachelor of Science in Agricultural Engineering
Bachelor of Science in Geodetic Engineering
Bachelor of Science in Information Technology
Bachelor of Science in Hotel and Restaurant Management
Bachelor of Science in Food Technology
Bachelor of Arts in English
Bachelor of Science in Mathematics
Bachelor of Science in Biology



PAMPANGA STATE AGRICULTURAL UNIVERSITY

