

Biodiversity
Conservation
Society of the
Philippines



24th Annual
Philippine Biodiversity Symposium
University of Eastern Philippines
Catarman, Northern Samar
14-17 April 2015



Biodiversity
Conservation
Society of the
Philippines



*“Island Biodiversity Conservation:
Successes, Challenges and Future Direction”*

The 24th Philippine Biodiversity Symposium
organized by the Biodiversity Conservation Society of the Philippines (BCSP),
hosted by the University of Eastern Philippines in
Catarman, Northern Samar
14-17 April 2015



About the Cover

The design is simply 29 drawings that represent the endemic flora and fauna of the Philippines, all colorful and adorable, but the characters also all compressed and crowded in a small area or island much like the threat of the shrinking habitats of the endemics in the islands of the Philippines. This design also attempts to provide awareness and appreciation of the diverse fauna and flora found only in the Philippines, which in turn drive people to understand the importance of conserving these creatures. There are actually 30 creatures when viewing the design, the 30th being the viewer to show his involvement and responsibility in conservation.

Acknowledgment

Prime Premne earned his B.S. in Biology (Major in Zoology) from UP Los Baños, and later worked as a research assistant in Conservation International, focusing on dulong and small-scale fisheries. He intends to pursue graduate studies in Marine Zoology soon but is currently doing his other life passion as an illustrator in California.

<http://ppremne.carbonmade.com/>



In Memoriam: William Langley Richardson Oliver 1947-2014

A Tribute to William Oliver

William Oliver had spent the last 30 years working tirelessly championing threatened species and habitats in the Philippines and around the world. William launched his wildlife career in 1974 at the Jersey Wildlife Preservation Trust. In 1977, he undertook a pygmy hog field survey in Assam, India and from then onwards became a passionate conservationist and defender of the plight of wild pigs and other often overlooked animals in the Philippines, Asia and across the globe. He helped establish the original International Union for Conservation of Nature's Pigs and Peccaries Specialist Group in 1980 at the invitation of British conservationist, the late Sir Peter Scott.



From 1990 he was instrumental in the development of the Philippines Biodiversity Conservation Programme with initially as core components the conservation programmes for the Visayan Spotted Deer, the Calamian Deer and the Visayan Warty Pig, carried out under MOAs between the Department of Environment & Natural Resources, Philippines and other conservation partners. Over time the conservation activities expanded to other taxa, other areas and other partners, eventually resulting in the Philippines Biodiversity Conservation Foundation, committed to the long-term conservation of the Philippines' native and endemic wildlife and natural habitats. In recent years, William was the Director of Programme Development and Conservation Partnerships for the Foundation.

He worked closely with many conservation groups in the country including the Philippine Biodiversity Conservation Foundation, Inc.; Negros Forests and Ecological Foundation, Inc.; Mindoro Biodiversity Conservation Foundation, Inc.; Polillo Islands Biodiversity Conservation Foundation, Inc.; Cebu Biodiversity Conservation Foundation, Inc.; the Philippine Reef and Rainforest Conservation Foundation; the West Visayas State University, Silliman University and Biodiversity Management Bureau (formerly Protected Areas and Wildlife Bureau). William was also instrumental in developing and providing opportunities for Filipinos to pursue wildlife conservation careers - those he had supported are now holding key positions and taking the lead in conserving wildlife in the Philippines.



William was a remarkable character in conservation and a very talented wildlife illustrator. He leaves a lasting impression on all those who met him as he had an incredible grasp of the details of many conservation issues, and yet also had a huge vision. He could also have a fiery temper and had very little patience for bureaucratic obstruction.



Without him many Filipinos would not have learned of the importance of our own endemic and threatened wildlife. Without him we would have lost the Cebu Flowerpecker, the Philippine Spotted Deer, the Visayan Warty Pig, the Negros Bleeding Heart Pigeon, threatened Philippine hornbills, the Philippine cloud rats, the Calamian deer, the Philippine Bare-backed fruit bat, threatened endemics of Mindoro including the Philippine teak and many more.

Perhaps the best way to remember William is through the words of the colleagues who knew him best:

“We have not only lost a widely valued conservation activist who spent most of his life fighting for the survival of endangered species, but also a remarkable character in conservation,” said Rafael L Coscolluela, president of the Philippine Biodiversity Conservation Foundation and former Negros Occidental Governor.

“Without you, William, these species would never have been put on the conservation map. In particular, you kept the faith with the Pygmy Hog when most of us would have been tempted to give up, and your dedication to this species, and the threatened pigs of the Philippines is an example to us all.”

The best way to honor him is to keep carrying out species conservation with passion and determination.

Compiled and edited by:
Tammy Mildestein

Message

To highlight the rich biodiversity and ecological services obtained from islands, and the growing threats from invasive alien species, pollution, habitat degradation and climate change, among others, the Convention on Biological Diversity (CBD) dedicated the May 2014 World Biodiversity Day celebrations to island biodiversity. This also coincided with the designation of 2014 as the International Year of Small Island Developing States. This year the 24th Annual Philippine Biodiversity Symposium is adopting the same theme to recognize the importance and vulnerability of the country's islands in the light of persistent environmental threats.

Islands have unique and discrete ecosystems that harbor fauna and flora, which are considered to be distinct evolutionary treasures. These “repositories of genetic information” as the CBD would put it, are also a key to the survival, cultural identity and economies of around 600 million islanders in the world.

For many of us attending the 24th Annual Philippine Biodiversity Symposium, islands are our lifeline: a good majority of us live on islands, we study and conserve species on islands, and we enjoy every single benefit of living and working in an island ecosystem - the quick access to seafood included. Truly, islands are our home, our laboratory, and our playground.

It is with this regard that holding this symposium in an island, with a theme that focuses on islands, is timely. Samar Island is exemplary in its biodiversity, but one that is in the forefront of natural catastrophes and human-induced threats. The aftermath of Typhoon Yolanda (International name: Haiyan) in this region in 2013 will remind us of the vulnerability of our islands, and the communities that depend on these.

I would like to thank the University of Eastern Philippines for welcoming us in their campus and taking on the task of hosting this symposium. I congratulate all the facilitators and presenters for the new contribution to our knowledge on Philippine biodiversity, and I commend all the participants for being part of another year in our history books. May we use this as a venue to forge partnerships toward a common direction for the conservation of our country's islands.

Have a great stay in Samar, and welcome to the 24th Annual Philippine Biodiversity Symposium!

Cynthia Adeline A. Layusa-Oliveros, MSc, MPhil
President
Biodiversity Conservation Society of the Philippines



Republic of the Philippines
UNIVERSITY OF EASTERN PHILIPPINES
 University Town, Northern Samar
 Email: ueppres@gmail.com; Telefax-055-2518611

MESSAGE



Considering the present day threats to the protection and conservation of biodiversity, it becomes a rare privilege for the University of Eastern Philippines, the first state university in the Visayas, to host a very significant gathering of scholars converging for the 24th Annual Philippine Biodiversity Symposium organized by the Biodiversity Conservation Society of the Philippines.

As international and national scientists tackle issues and concerns bearing on the theme - Island Biodiversity Conservation: Successes, Challenges, and Future Direction - let it be said from this time and place that they tried their best to look into Samar's biodiversity and to present strategies to stem the flow of human activities that degrade the island's ecosystems.

For our part we have done and are doing our level best to address biodiversity conservation. The recognition of UEP as national finalist in the 2011 National Search for Sustainable and Eco-friendly School attests to this. But our efforts do not end here. For our goal is to make a difference, albeit modest, in saving our environment.

Atty MAR P. DE ASIS, PhD
 President

Message

I would like to congratulate the Biodiversity Conservation Society of the Philippines (BCSP) for organizing the 24th Annual Philippine Biodiversity Symposium at the University of Eastern Philippines, Catarman, Samar on 14 to 17 April, 2015. I would also like to commend the University of Eastern Philippines for hosting this most worthwhile event.

The theme of the 2015 symposium, "Island Biodiversity Conservation: Successes, Challenges and Future Directions", highlights the richness of island ecosystems especially in an archipelago like the Philippines, and at the same time, it underscores the vulnerability of these ecosystems—particularly to manmade threats.

The entire nation and the rest of the world have seen the indescribable havoc and devastation that Typhoon Yolanda (international name: Haiyan) has brought upon the people of Eastern Visayas and nearby regions, Samar Island being one of the worst hit areas. More than 6,000 people have perished and more than ten million people have been rendered homeless. We have seen before our television and computer screens entire towns and cities literally vanish from the face of the earth.

Yolanda, the strongest, deadliest and most destructive typhoon to hit the Philippines, is a grim reminder of the dangers of climate change. As long predicted by scientists, the frequency and intensity of weather-related natural calamities and unpredictable weather patterns will increase because of global warming. Global warming is not a natural phenomenon. It is the result of rising carbon dioxide emissions that have rapidly grown since the Industrial Revolution began roughly 250 years ago.

With island biodiversity, we have many occurrence of unique organisms and ecosystems that have evolved in isolation. And due to the limited range and area, these ecosystems are more fragile and even more susceptible to external impacts. We have over 7,000 islands in the country and with the threat of climate change from sea level rise and climatic variations, coupled with anthropogenic disturbances given our increasing population and our unabated exploitation of natural resources, our island ecosystems face the risk of collapse even before we could fully understand them.

The first requirement is science-based knowledge for indeed how can we value and more so, protect something that we do not understand. The Annual Philippine Biodiversity Symposium is one effective forum for the sharing of data, ideas and best practices on biodiversity conservation.

Challenges to biodiversity conservation are always accompanied by danger, risk, fear and insecurity. Hence, our future directions must evoke and unleash innovation, ingenuity, cooperation, foresightedness, resiliency, hope and freedom. In the language of green economics and social rethink, these are all assuredly renewable.

Secretary J.R. Nereus O. Acosta, Ph.D.
 Office of the Presidential Adviser for Environmental Protection

Message

Table of Contents

Note: Abstracts are alphabetically arranged by first author

Symposium Schedule	7
Poster Titles - Student	15
Poster Titles - Regular	18
Keynote Address: Lawrence R. Heaney, Ph.D.	22
Keynote Address: Angel C. Alcala, Ph.D.	23
Keynote Address: Ferry Slik, Ph.D.	24
Oral Presentations - High School	26
Oral Presentations - Undergraduate	28
Oral Presentations - Regular	36
Posters - High School	59
Posters - Undergraduate	61
Posters - Regular	78
Workshops	106
About the Annual Philippine Biodiversity Symposium	109
About the Biodiversity Conservation Society of the Philippines (BCSP)	110
Acknowledgements	110

24th Annual Philippine Biodiversity Symposium

organized by the Biodiversity Conservation Society of the Philippines (BCSP)

at the University of Eastern Philippines (UEP), Catarman, Northern Samar

14-17 April 2015

Program

Theme: Island Biodiversity Conservation: Successes, Challenges and Future Direction

Day 1: 14 April 2015

09:00-13:30	Registration/ Setting up of Exhibits
Gymnasium	Tour of the UEP Campus: UEP Eco-Park and White Beach
13:30-5:30	Opening Program
Gymnasium	<i>Emcee: Dr. Rogelio A. Banagbanag</i> Invocation, Msgr. Walter Cerbito, UEP Chaplain
	National Anthem, UEP Handumanan Choir
	Welcome to the Philippine Biodiversity Symposium, Cynthia Adeline A. Layusa, President, Biodiversity Conservation Society of the Philippines
	Welcome to the University of Eastern Philippines, Atty. Mar P. De Asis, Ph.D., President, University of Eastern Philippines
	Biodiversity Research in UEP, Myrna Ogor, Ph.D., Director, Center for Environmental Studies and Advocacy, University of Eastern Philippines
	Getting to Know Fellow Biodiversity Researchers and Conservationists, Mr. Apolinario B. Carino,
	Tribute to William L. R. Oliver, Juan Carlos T. Gonzalez, Ph.D., Director, Museum of Natural History, University of the Philippines-Los Banos and Don Geoff E. Tabaranza, Project Development and Resource Manager, Mindoro Biodiversity Conservation Foundation, Inc.
	Inspirational Message, Vincent V. Hilomen, Ph.D., Executive Director for Priority Programs, Biodiversity Management Bureau, Department of Environment and Natural Resources
15:30-16:00	Break
16:00-18:00	Opening of the Institutional Exhibits, Moonyeen Nida R. Alava, Executive Director, Coastal Conservation and Education Foundation
17:30-18:00	Briefing for All Presenters and Moderators, Mr. Carlo C. Custodio, Board Member, Biodiversity Conservation Society of the Philippines
18:00-21:00	Welcome Dinner, hosted by the Provincial Governor, Hon Jose L. Ong, Jr.
Gymnasium	

Day 2: 15 April 2015

08:00-08:15	Registration
Farmers' Training Center	Plenary Talks
	<i>Emcee: Nina R. Ingle, Ph.D. President, Wildlife Conservation Society of the Philippines & Board Member, Biodiversity Conservation Society of the Philippines</i>

08:15-08:30 Announcements and Raffle
 08:30-08:45 **The Biodiversity Conservation Society of the Philippines**, *Cynthia Adeline A. Layusa*, President, Biodiversity Conservation Society of the Philippines
 08:45-09:00 **Rare**, *Mr. Fel Ceasar Cadiz*, Director for Program Implementation
 09:00-10:00 **Keynote Address: Emerging Perspectives on the Long-Term Evolution and Biogeography of Mammalian Diversity in the Philippine Islands**, *Lawrence R. Heaney, Ph.D.*, Curator, Field Museum of Natural History, Chicago, IL, USA
 10:00-10:30 Break and Exhibit Viewing
 Gymnatorium

Concurrent Scientific Oral Presentations

	Session 1: Regular Oral Presentations Venue: CAC Hall Up Moderator: Tito M. Cabili, Ph.D.	Session 2: Undergrad Oral Presentations Venue: CAC Hall Down Moderator: Analiza M. Salazar, Ph.D.
10:30-10:45	Native Species of Small Non-flying Mammals Commonly Inhabit Disturbed Forest Fragments in Upland Agro-forest Ecosystems in Luzon Island, Aris A. Reginaldo , <i>Charmaine P. Batuy, Denise S. Garsain and Michelle E. de Juan</i>	Webspinners in the Philippines: Toward Greater Knowledge of the Lesser Known, Cristian C. Lucañas and <i>Ireneo L. Lit Jr.</i>
10:45-11:00	Species Diversity of Bats in Mt. Matutum Protected Landscape, Maria Luisa Non Cabrera , <i>Olga M. Nuñez, Roderick C. Makiputin, Maximo C. Aljibe and Edna P. Oconer</i>	Species Richness and Guild Structure of Spiders from the Bega Watershed, Agusan del Sur, Grapesy Pink M. Alsonado , <i>Olga M. Nuñez and Aimee Lyn Barrion-Dupo</i>
11:00-11:15	A Glimpse on the Bat Ectoparasite Fauna of the Philippine Islands, Ace Kevin S. Amarga , <i>Sheryl A. Yap, Kendra L. Phelps and Jessamyn R. Adorada</i>	The vertical distribution of limnetic copepods (<i>Arctodiaptomus dorsalis</i> and <i>Thermocyclops crassus</i>) and its relationship with thermocline depth in Lake Taal, Iris B. Alonso , <i>Camille M. Pastrana, Janine F. Pacia, Kenoses Legaspi, Dino T. Tordesillas and Rey Donne S. Papa</i>
11:15-11:30	Terrestrial Earthworms (Clitellata: Megascolecidae) Biodiversity from Select Municipalities of Samar Island Rodante Granfil Flores	A New Species of <i>Rubovietnamia</i> and Molecular Confirmation of the Philippine Endemic <i>Mycetia apoensis</i> (Rubiaceae), John Christopher C. Villanueva , <i>Remigio S. Callanta Jr., Jasmin Aei F. Neptuno, Maryneil A. Verin and Grecebio Jonathan D. Alejandro</i>
11:30-11:45	Taxonomy and Notes on the Cave-dwelling Nature of <i>Phlogiellus</i> sp. Barrion-Dupo et al. in Potillo Island, Quezon Province, Joseph B. Rasalan	DNA Barcoding of Endemic Philippine <i>Hedyotis</i> L. (Rubiaceae) and Discovery of Two New Species, Grecebio Jonathan D. Alejandro , Marjorie G. Davadilla , <i>Irissa Bianca B. De Jesus, Denzel Nicho T. Armendares, Rene Kevin C. Plan, Vincent Louie D. Cabelin and Ruby Raterta</i>
11:45-12:00	Practices of Entomophagy and Entomotherapy in Baranggay Alambijud, Argao and Baranggay Lusaran, Cebu City, Cebu Island, Jake Joshua C. Garces , <i>Zandra O. Jarito, Leslie Ann T. Barriga, Froilen C. Domecillo and Nimfa R. Pansit</i>	Fluid and Macroinvertebrate Composition of <i>Nepenthes samar</i> , Lief Erikson D. Gamalo , Maria Dawn F. Amante , <i>Ma. Floreda M. Anquilo, and Nikki Mae G. Go</i>

Program

12:00-13:30
 Gymnatorium

Lunch Break

Concurrent Scientific Oral Presentations

Session 3: Regular Oral Presentations
 Venue: CAC Hall Up
 Moderator: Gerry Camer, Ph.D.

Session 4: Undergrad Oral Presentations
 Venue: CAC Hall Down
 Moderator: Dr. Virginia G. Balanon, Ph.D.

13:30-13:45	Molecular Phylogenetics of the Philippine Rubiaceae: Studies of the Thomasian Angiosperm Phylogeny and Barcoding Group, Grecebio Jonathan D. Alejandro	Diversity of Anurans in the Newly-declared Lower Ilian-Ilian - Masaya 1 - Maharlika Protected Watershed Area in Barangay Dumarao, Roxas, Palawan, Vanessa Mae F. Abrina , <i>Lyca Sandra G. Castro and Sabine Schoppe</i>
13:45-14:00	Novelties in the Philippine <i>Coffeae</i> (Ixoroidae, Rubiaceae) Inferred from Multiple cpDNA and Morphology, Axel H. Arriola and Grecebio Jonathan D. Alejandro	Diversity, Abundance and Habitat Preferences of Forest Bats in Northern Negros Natural Park, Negros Occidental, Shalelie Mae P. Manupac , <i>Dennis A. Warguez, Lisa Marie J. Paguntalan and Philip Godfrey C. Jakosalem</i>
14:00-14:15	Phylogeny and DNA Barcoding of Philippine <i>Lasianthus</i> Jack (Lasiantheae: Rubiaceae) Including a New Endemic Species, Muhammad Jefte C. Arshed and Grecebio Jonathan D. Alejandro	Filipinos for Flying Foxes: Awareness and Knowledge Regarding Flying Foxes in the Northern Sierra Madre Mountains, Leonalyn C. Tumaliuan , <i>Chic Mabell T. Batarao, Myrna C. Cureg, Marites G. Balbas, Dorina R. Soler, Joni T. Acay, and Merlijn van Weerd</i>
14:15-14:30	Molecular Phylogeny and Barcoding of Philippine <i>Mycetia</i> Reinw. (Rubiaceae) Inferred from Multiple Sequence Data, Ulpiano P. de la Bajan Jr. and Grecebio Jonathan D. Alejandro	Abundance and Habitat Preference of Philippine Tube-nosed Fruit Bat <i>Nyctimene rabori</i> (Heaney & Peterson, 1984) in Northern Negros Natural Park (NNNP), Negros Occidental, Nathaniel C. Patdu , <i>Dennis A. Warguez, Lisa Marie J. Paguntalan and Philip Godfrey C. Jakosalem</i>
14:30-14:45	Novelties in the Tribe Guettardeae (Rubiaceae) Inferred from Molecular (nrDNA) and Morphological Data, Julius John DP. Salamanes , Grecebio Jonathan D. Alejandro , Axel H. Arriola and Jayson G. Chavez	Habitat Use and Site Fidelity of Irrawaddy Dolphins (<i>Orcaella brevirostris</i>) in Bago-Pulupandan Coastal Waters, Negros Occidental, Jenelle Alaiza D. Señoron , <i>Jennica Anix T. Carmona, John Dave P. Pido, Mae Novelle P. Espinosa and Ira Mikkaella D. Genobis</i>
14:45-15:00	Evaluation of DNA Barcodes for Molecular Identification of Selected Medicinal Plants in Batanes Group of Islands and Commercially Sold in Quiapo, Manila, Ruby Raterta and Grecebio Jonathan D. Alejandro	
15:00-18:00	Opening of the Scientific Poster Presentations & Pecha Kucha	
Gymnatorium	(Snacks will be served)	
17:00-18:00	Forum: Mentoring Program of the BCSP	

Day 3: 16 April 2015

08:00-08:15	Registration
	Plenary Talks
Farmers' Training Hall	<i>Emcee: Arvin C. Diesmos, Ph.D., Curator for Herpetology, National Museum of the Philippines</i>
08:20-08:30	Announcements and Raffle
08:30-08:45	Crocodylus Porosus Philippines, Inc. , <i>Rainier Manalo, Program Head, Crocodile Research and Conservation Programs</i>
08:45-09:00	The Asian Species Action Partnership (ASAP) , <i>Madhu Rao, IUCN/ WCS-Singapore</i> Keynote Address: Future of Philippine Biodiversity in the Face of Climate Change,
09:00-10:00	<i>Angel C. Alcala, Ph.D. National Scientist, and Director, Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM)</i>
10:00-10:30	Break and Exhibit Viewing
Gymnasium	

Concurrent Scientific Oral Presentations

	<p>Session 5: High School Oral Presentations Venue: CAC Hall Up Moderator: Jaime F. Sanico, Ph.D.</p>	<p>Session 6: Regular Oral Presentations Venue: CAC Hall Down Moderator: Ms. Moonyeen Alava</p>
10:30-10:45	Factors Affecting Frog and Toad Diversity in Two Mountain Streams in the Antipolo/Taytay: Habitat Degradation, Invasive Species, and Climate Change, Ackie Nathan P. Adeva, Ivan Lorenzo T. Alvarez, Christian Justin U. de los Angeles, Jae Hwan Lee, Terence Micheal M. Rasul, Miguel Carlos A. Salanga and Raphael Alfonso Javier D. Santos	Inventory and Ecological Assessment of Coastal Resources in San Isidro, Northern Samar, Dindo M. Setenta and Myrna Nicol Ogot
10:45-11:00	Initial Growth and Survival of Dipterocarp Species Under <i>Piper aduncum</i> Infested Site in Lamlahak, Lake Sebu, South Cotabato, Mariel G. Anuada, Lee Amherstia Q. Curias and Jeffry A. Ramonida	Coral Cover and Diversity Analysis of Carias and Quezon Islands of the Hundred Islands National Park, Levylee G. Bautista and Evelyn E. Oda
11:00-11:15	Physico-Chemical and Microbiological Assessment of Water from Carcar River, Cebu, Allyssa S. Albores, Rhea Mae S. Dañal and Dan Christopher I. Limbaroc	Genetic Diversity of the Big-fin Reef Squid, <i>Sepioteuthis lessoniana</i> Around Japan, Satoshi Tomano and Tetsuya Umino
11:15-11:30	Abundance of Teuthida in the Coasts of Looc, Argao, Cebu, Kristal A. Kilat, Jhonna Mae C. Navarro and Ma. Ave Virginia P. Sanchez	Morphological Characterization and Phenotypic Diversity Assessment of Stilt Mangroves (<i>Rhizophora</i> spp.) in Pagapas Bay Calatagan, Batangas, Leah E. Endonela, Maribel L. Dionisio-Sese, Nestor C. Altoveros and Teresita H. Borromeo

Program

11:30-11:45	Recreation Vs. Conservation: Resolving the Conflict Between Profit and Nature in Hotel and Resort Development Projects, Abigail C. Resuma, Andre Stephen J. Calderon, Girmund Carl G. Dumada-og, Trevor John S. Fronda, Esther L. Hwang, Jay Ransel P. Loyola and Angelico Miguel B. Protacio	Potential By Catch Problem and its Solution in Improvised Recycled Polyethylene Terephthalate (PET) Bottle Pot Based from Comparative Test of Entrance Design in Estuarine Water, Redentor L. Buetre
11:45-12:00	Lost and Found: Strengthening Ethnobotanical Knowledge in Antipolo/Taytay, Angelica Gabrielle R. Salvador, Raphael C. Cabiles, John Michael L. Galunan, Eun Gu Rhee, Joannah Marie G. Rivera, and Robert S. Yoingco	Enhancing Conservation Efforts of Dugongs (<i>Dugong dugon</i>) in Busuanga, Calamian Islands, Palawan by Communities, Reynante V. Ramilo, Patricia ZR Davis, Danica D. Lopez and Archie F. Espinosa
12:00-13:30	Lunch Break	
	Concurrent Scientific Oral Presentations	
	<p>Session 7: Regular Oral Presentations Venue: CAC Hall Up Moderator: Rolando A. Delorino, Ph.D.</p>	<p>Session 8: Undergrad Oral Presentations Venue: CAC Hall Down Moderator: Prof. Marliza Rubenecia</p>
13:30-13:45	The Management of Tabagwang (<i>Jagora asperata</i>) in the Bicol Region, Skorzeny C. De Jesus and Jethro Emmanuel P. Baltar	Composition and Species Richness of Mixed-Species Flock in Northern Negros Natural Park, Joy Grace A. Ruiz, Cathleene D. Unabia, Everly O. Vingno, Charmaine B. Leobrera, Jonelyn M. De Asis and Philip Godfrey C. Jakosalem
13:45-14:00	A Multiproxy Top-Basal Approach: A Preliminary Palaeolimnological Analyses of Lake Mohicap In The Island Of Luzon, Kenoses L. Legaspi, Susana F. Baldia, Rey Donne S. Papa and David Mark Taylor	Diversity and Habitat Preference of Restricted Range Bird Species of Northern Negros Natural Park (NNNP), Negros Occidental, Marco Luis E. Lumontod, Dennis A. Warguez, Lisa Marie J. Paguntalan and Philip Godfrey C. Jakosalem
14:00-14:15	Terrestrial Earthworms (Clitellata: Megascolecidae) Biodiversity from Select Municipalities of Samar Island, Rodante Granfil Flores	Diurnal Avifauna Diversity in Mt. San Ramon, Cagdianao, Dinagat Islands, Fe Annalie M. Dumaguait, Angela Grace Toledo-Bruno and Michael Arie P. Medina
14:15-14:30	Invertebrate Biodiversity in Genetically Modified and Non-GM Cornfields in Isabela, Miladis M. Afidchao, CJM Kees Musters and Geert R. de Snoo	Habitat Preference of Avifauna, Their Socio-economic Importance and Threats within and the Surrounding Environs of Philsaga Mining Corporation, Rosario, Agusan del Sur, Cherry Mar T. Tiempo, Junide James D. Cagampang and Sherryl L. Paz
14:30-14:45	Assessment of Low-cost Light Trapping Methods for Small Insect Sampling in Science City of Muñoz, Nueva Ecija, Hezron P. Gibe and Regielene S. Gonzales	
14:45-15:00	Break and Assembly for Workshops	

15:00-18:00	Concurrent Workshops
CAC Room	The Principles of 'PRIDE': The Science Behind the Mascots, <i>Chedilyn Aissa Dulguime and Fel Ceasar Cadiz</i>
CAC Room	Monitoring Forest Ecosystems in a Changing Environment: Multi-taxa Studies in Permanent Plots, <i>Carla C. Monoy, Sandra L. Yap, Aloy Duya, Victor Amoroso, Francis Magbanua and Ferry Slik</i>
Ecopark Room	From Classroom to Forest: Establishing the Need for a Revitalized Hands-On Environmental Science Curriculum for Elementary and High School Students, <i>Henry G. Calilung, Abigail C. Resuma and Maria Adrianna Isabella G. Claravall</i>
CS Accreditation Room	Analyzing and Interpreting Vegetation Data using R, <i>Bonifacio O. Pasion and Kyle W. Tomlinson</i>
Moot Court	Roundtable Discussion/Workshop with Expert Panel on Philippine Forest Definition and Treatment of Natural Residual Forests, <i>Lodel D. Magbanua</i>
CAC Room	Population Estimation Using Distance Sampling, <i>Carmela P. Española and Jasmin Meren</i>
CAC Room	Saving Critically Threatened Species in the Philippines: The Asian Species Action Partnership, <i>Madhu Rao and Merlijn van Weerd</i>
18:00-21:00	Fellowship Dinner

Day 4: 17 April 2015

08:00-08:15	Registration
Farmers' Training Hall	Plenary Talks <i>Emcee: Sandra L. Yap, Ph.D., Assistant Professor, Institute of Biology, University of the Philippines-Diliman</i>
08:00-08:15	Announcement and Raffle
08:30-08:45	Hot Spot, Cool Country: Biodiversity in the Philippines , <i>Almira Astudillo Gilles, Ph.D., Writer, and Research Associate, Field Museum of Natural History</i>
08:45-09:00	Loopholes in the Protected Area Governance and Environmental Impact System of the Philippines are a Threat to Biodiversity , <i>Merlijn van Weerd, Executive Director, Mabuwaya Foundation</i>
09:00-10:00	Keynote Address: How Many Tropical Tree Species Are There In The World? <i>Ferry Slik, Ph.D., Associate Professor and Herbarium Curator, Universiti Brunei Darussalam, Brunei</i>
10:00-10:30	Break and Exhibit Viewing
	Concurrent Scientific Oral Presentations
	Session 9: Regular Oral Presentations Venue: CAC Hall Up Moderator: Leah A. De Asis, Ph.D.
	Session 10: Regular Oral Presentations Venue: CAC Hall Up Moderator: Juan Carlos T. Gonzalez, Ph.D.
10:30-10:45	Establishing Ecobelt as Biodiversity Corridor in Mined-Out Nickel Areas, <i>Rowena P. Varela, Glenn Arthur A. Garcia and Norman P. Gonzales</i>
	Diversity, Status and Challenges in Conserving the Avifauna in Northern Negros Natural Park, <i>Andrew Ross T. Reintar, Philip Godfrey C. Jakosalem and Lisa Marie J. Paguntalan</i>

Program

10:45-11:00	Tree Species Composition, Richness and Diversity of the Mount Matutum Protected Landscape (MMPL), <i>Christine Dawn Galope Obemio, Marigold Cagumbay Tumamac, Leopoldo L. Remollo, Arthur Bañaga, Paolo M. Tagaloguin, Maximo C. Aljibe and Edna P. Oconer</i>	Habitat Associations of Four Endemic and Threatened Philippine Parrot Species Present in Bataan Natural Park, <i>Nikki Dyanne C. Realubit</i> , Leticia E. Afuang and Carmela E. Española
11:00-11:15	Assessment of Flora in the Vicinity of Lake Mainit Watershed, Caraga Region, Mindanao, <i>Meljan T. Demetillo, Romell A. Seronay and Richie P. Lador</i>	Hunting Escalates Extirpations of Frugivorous Birds in a Fragmented Tropical Forest Landscape, <i>Bonifacio O. Pasion</i>
11:15-11:30	Rapid Assessment of Macroflora and Macrofauna in the Island Towns of Northern Samar, <i>Divina M. Galenzoga, Abraham M. Heriales, Tito M. Cabili, Abel Alejandro U. Flores, Jr., Franklin E. Cortez, Cecille Manuela G. Vicencio, Blenah O. Perez and Romula A. Obleopas</i>	Preventing the Extinction of Philippine Eagles: New Distribution Records and Conservation Actions in Mt. Dingalan and Mts. Irid-Angelo IBA, <i>J Kahilil B. Panopio, Marivic G. Pajaro, Josiah David G. Quimpo, Anson M. Tagtag and Maria Lourdes G. Almeda</i>
11:30-11:45	Potential Framework Species in Mt. Musuan, Bukidnon, <i>Lowell G. Aribal and Adrian M. Tulod</i>	Bird Watching as a Recreation and Nature Activity in Baguio City and Nearby Municipalities of Benguet Province: A Conservation Effort, <i>Jocelyn A. Floresca</i>
11:45-12:00	A Review on the History, Systematics and Diversity of Cinnamon (<i>Cinnamomum</i> spp.) in the Philippines, <i>Jay P. Picardal, Maribel G. Agoo, Domingo A. Madulid, Inocencio E. Buot, Jr., Ma. Carmen A. Lagman, Arvin C. Diesmos, Edmund Leo B. Rico, Calixto E. Yao and Neil Aldrin D. Mallari</i>	D. S. Rabor's Bird Collection and Knowledge on Philippine Avifauna, <i>James D.V. Alvarez</i>
12:00-13:30	Lunch Break	
	Concurrent Scientific Oral Presentations	
	Session 11: Regular Oral Presentations Venue: CAC Hall Up Moderator: Leticia Afuang, Ph.D.	Session 12: Regular Oral Presentations Venue: CAC Hall Down Moderator: Mr. Carlo Custodio
13:30-13:45	Anuran Habitat Relations in Cavite's Forest Fragments, Luzon Island, <i>Rubie M. Causaren, Neil Aldrin D. Mallari and Arvin C. Diesmos</i>	An Introduction to the Australasian Network for Ecology and Transportation and Road Ecology in Island Environments, <i>David R. Francis</i>
13:45-14:00	Quezon Protected Landscape: An Important Limestone Karst Ecosystem on Luzon Island, <i>Louise Abigail A. de Layola, Mae Lowe L. Diesmos, Essex Vladimer Samaniego, Anton Lorenzo II, Jona Candace Vasquez, Rafe M. Brown and Arvin C. Diesmos</i>	Sibuyan Island: Through the Looking Glass, <i>Neil Aldrin D. Mallari, Ralph Sedricke C. Lapuz, Roven Tumaneng, Jose Don de Alban, April Faith Guinto, Mimie Ledesma, Jennica Paula Masigan, Angelica Monzon, CE Nuevo, Joanne Rae Pales, Margie Parinas, Laila Monera Pornel, Edmund Leo Rico, Christian Supsup, Dennis Tablazon, Karen Veridiano and Jackie Lou Wenceslao</i>
14:00-14:15	Diversity and Conservation Status of Reptiles in <i>Terminalia</i> and Sago Swamp Forests of Agusan Marsh, Bunawan, Agusan Del Sur, Mindanao, <i>Meconcepcion M. Ngilangil and Rainer Sularte</i>	Forest-associated Vertebrates as Key Indicators of Biodiversity in Mega Natural Parks of the Philippines, <i>Juan Carlos T. Gonzalez and Andres Tomas L. Dans</i>

14:15-14:30	Fishing Closure and Survival of the Philippine Crocodile <i>Crocodylus mindorensis</i> in Paghongawan Marsh, Siargao Island, Abner A. Bucol , Rainier I. Manalo , Angel C. Alcala , Vicente P. Mercado , William T. Belo and Salvador S. Chan	Overcoming the Design Flaws in Protected Area Management, Neil Aldrin Mallari and Tony Whitten
14:30-14:45	Populations of the Critically Endangered Palawan Forest Turtle <i>Siebenrockiella leytensis</i> Continue Decreasing - Results of Long Term Studies, Sabine Schoppe and Diverlie Acosta	Assessing the Effectiveness of Community-conserved Freshwater Protected Areas in the Northern Sierra Madre, Municipality of San Mariano, Isabela, Marites Gatan-Balbas , Merlijn Van Weerd , Jan Van Der Ploeg and Lien Vermeersch
14:45-15:00	Phylogeographic Analysis of Philippine Corrugated Forest Frogs: Molecular Tests of Species Boundaries, and Identification of Conservation Targets as a Response to the Outbreak of the Fungal Agent of <i>Chytridiomycosis</i> Throughout the Archipelago Marites B. Sanguila , Kerry A. Cobb and Rafe M. Brown	
15:00-15:15	Break	
15:00-18:00	General Assembly of the Wildlife Conservation Society of the Philippines and the Biodiversity Conservation Society of the Philippines	
18:30-21:00	Closing Program and Dinner <i>Emcee: Abel Alexandro U. Flores, Ph.D.</i> Inspirational Message , <i>Sec. Neric Acosta, Presidential Adviser for Environmental Protection</i> Awarding of Student Prizes , <i>Nina R. Ingle, Ph.D., Board Member, BCSP</i> Awarding of Certificates of Appreciation and Participation Message , <i>Cynthia Adeline A. Layusa, President, BCSP</i> Closing Remarks , <i>Atty. Mar P. De Asis, President, UEP</i>	

Day 5: 18 April 2015

06:00-16:00	Post-symposium field trip
	<ul style="list-style-type: none"> • Biri Island Rock Formation • Capul Island • Dalupiri Island

HIGH SCHOOL POSTER PRESENTATIONS

Distribution of the Asian Palm Civet (*Paradoxurus hermaphroditus*) in a Semi-Urban Landscape: A Mark-Recapture Study
Maria Adrianna Isabella G. Claravall, Anjelica B. Arellano, Graceabella C. Carranza, and Franco Miguel G. Maniago

The Diversity of Flying Foxes in Southeastern, Cebu and the Threats Present in their Habitat
Ruffa Mae J. Famat, Daryl M. Mondido, and **Fritz Laurence R. Villacorta**

Safe Guarding a Precious Heritage: Searching for Effective Water Quality Indicators for Small Freshwater Mountain Streams
Gail S. Hernandez, Cassandra H. Alleje, Jose W. Duavit, Arielle W. Valera, Mathew P. Din, and Miguel M. Arcega

Species Diversity of Spiders in Pinatilan Cornfields, Valencia City, Bukidnon
Jade G. Rosas, Josell L. Caipang, Neil Ray F. Morigo, **Sheila A. Peralta**, Myrna Ballentes, and Dave P. Buenavista

UNDERGRADUATE POSTER PRESENTATIONS

Microhabitat Preferences of Frogs in Northern Negros Natural Park (NNNP), Negros Occidental
April Angelee L. Acuzar, Dennis A. Warguez, Lisa Marie J. Paguntalan, Karyl Marie F. Dagoc, Gerrie Mae A. Flores, and Philip Godfrey C. Jakosalem

Food Habits of the Philippine Scops Owl (*Otus megalotis*) in an Urban Setting
Ma. Theresa D. Aguila, Jasmin C. Meren, and Carmela P. Española

Diversity and Habitat Preferences of Reptiles in Northern Negros Natural Park (NNNP), Negros Occidental
Dwight E. Alip, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Screening and Distribution Of Potential Nickel Hyperaccumulator Plant Species in Selected Mining Areas In Claver, Surigao Del Norte
Archie A. Along, Meljan T. Demetillo, and Kenneth L. Ciudad

Diversity and Abundance of Canopy Birds in Northern Negros Natural Park, Negros Occidental
Salih Mahathir A. Amer, Dennis A. Warguez, Lisa Marie J. Paguntalan, Karyl Marie F. Dagoc, and Philip Godfrey C. Jakosalem

Preliminary Survey of the Gelatinous Zooplankton Community in San Pedro Bay, Eastern Visayas
Verneal Alvin Ken C. Ana, Marc Alvin Delima, Rovie Ann Gerez, Reinzelle Joy Pore, and Facundo Rey Ladio

Molecular phylogeny and DNA barcoding of *Argostemma* Wallich (Rubiaceae) Including an Account of a New Species and Variety from Mt. Halcon, Oriental Mindoro
Denmarc R. Aranas, Limuel Joseph V. Bacani, Raineille Mae M. Natural, Eloise Kanna O. Ong, and Grecebio Jonathan D. Alejandro

POSTER TITLES

Herpetofaunal Diversity of Mt. Banahaw de Lucban

Russel R. Atienza, *Lemuel A. Pabico*, and Essex Vladimer G. Samaniego

Distribution, Diversity, and Abundance of Amphibians in Northern Negros Natural Park (NNNP), Negros Occidental

Dearly Mae Maricar M. Barrot, Dennis A. Warguez, Lisa Marie J. Paguntalan, Gerrie Mae A. Flores, and Philip Godfrey C. Jakosalem

Population Ecology of the Fiddler Crab *Uca* spp. in Brgy. Punta, Baybay City, Leyte

Kalvin Jay G. Boregon and Julissah C. Evangelio

Avifaunal Diversity of Bega Watershed, Prosperidad, Agusan Del Sur

Donna Mariel T. Calimpong and Olga M. Nuñez

Species Richness and Endemism of Anurans in Bega Watershed, Prosperidad, Agusan del Sur

Theresse Jel V. Calo and Olga M. Nuñez

Nest Site Characteristics and Population Density of the Philippine Pygmy Woodpecker (*Dendrocopos maculatus*) in the University of the Philippines-Diliman

Ma. Jean Theresa M. Cornelio and Carmela P. Española

Habitat Preference of Luzon Hawk Owl (*Ninox philippensis*) and Philippine Scops Owl (*Otus megalotis*) in Northern Negros Natural Park

Francis Bernardine G. Dadula, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Distribution and Abundance of Understory Birds in Different Habitat Types in Northern Negros Natural Park (NNNP), Negros Occidental

Chreshia Ann P. Debalucos, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Distribution of Invasive Anuran Species with Notes on Amphibian Malformation in Bukidnon, Mindanao

Roosevelt Y. Encabo Jr., Kristine Faith A. Dapanas, Carl Raymond M. Rafanan, Dave P. Buenavista, and Sheila A. Peralta

Abundance and Habitat Use of Nocturnal Birds at the University of the Philippines-Diliman

Kristine Daryl F. Fabellon and Carmela P. Española

A Baseline Study of Order Araneae within the Selected Areas of Calinan District

Michael Fernandez, Yuki Shizumi, and Geonyzl L. Alviola

Abundance and Habitat Preferences of Philippine Doves and Pigeons of Northern Negros Natural Park (NNNP), Negros Occidental

Sharde Mae G. Garcia, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Rediscovery of *Nepenthes samar*

Lief Erikson D. Gamalo

The Non-volant Mammals in Bega Falls, Prosperidad, Agusan del Sur

Shella Mae P. Jalique and Olga M. Nuneza

Odonatan Diversity in North Negros National Park (NNNP), Negros Occidental

Ephraim Gabriel A. Jerusalem, Reagan J. T. Villanueva, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Exploring the Mutualistic Network of Flowering Plants and their Insect Pollinators in the Grasslands of UP-Diliman

Jannica Charisse J. Jose, Regielene S. Gonzales, and Socrates D. Letana

Population and Distribution of *Acerodon jubatus* Eschscholtz in Negros Island

Paulene Anna Lee F. Ligutom, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Population and Distribution of *Pteropus* Flying Foxes on Negros Island

Kiezel F. Logronio, Dennis A. Warguez, Lisa Marie J. Paguntalan, and Philip Godfrey C. Jakosalem

Species Diversity of Pteropodids in Bega Watershed, Prosperidad, Agusan del Sur

Rachel Anne O. Monteclaro

Comparison of the Insect Communities Associated with Three Mangrove Species, *Avicennia marina*, *Excoecaria agallocha* and *Aegiceras corniculatum* in the Long Island of the Las Piñas-Parañaque Critical Habitat and Ecotourism Area (LPPCHEA)

Michelle Ruth A. Oracion, Regielene S. Gonzales, and Socrates D. Letana

Activity Budget of Gray's Spinner Dolphins (*Stenella longirostris longirostris*) in Tañon Strait, Central Visayas

Anna Katrina C. Perandos, Humberto R. Montes, Leszek Karczmarski, and Angelico Jose Tiongson

Anurans in the University of the Philippines-Diliman Campus : Their Relative Abundance and Habitat Association

John Gregor A. Roño and Carmela P. Española

Abundance and Habitat Preference of the White Vented Whistler (*Pachycephala homeyeri*) in Northern Negros Natural Park, Negros Occidental

Keannu B. Saguindang, Dennis A. Warguez, Philip Godfrey C. Jakosalem, and Lisa Marie J. Paguntalan

Bat Fauna in Small-scale Gold Mining Area and the Surrounding Environs in Bunawan, Agusan del Sur with Notes on Bat Temporal Activity Pattern, Socio-economic Importance and their Threats

Myra L. Solis and Sherryl L. Paz

First Records of Marine Macro-benthic Algae from Limasawa Island, Southern Leyte

Ivan Patrick B. Tualla, Kenneth O. Eco, Mary Jane L. Lamoste, Fretzeljane O. Olor, and Lawrence M. Liao

Diversity of Ichthyofauna in Selected Areas of Bega Watershed Prosperidad, Agusan del Sur

Lidermille Mortel Visto

POSTER TITLES

REGULAR POSTER PRESENTATIONS

Ferns of the Department of Environment and Natural Resources (DENR) Experimental Forest in Nabunturan
Cindy Grace S. Abas

What limits the distribution of the critically endangered Palawan Forest Turtle *Siebenrockiella leytensis*?
Diverlie Acosta, Edgar Jose, Lyca Sandra Castro, Ronelito Esuma, and Miguelito Cervancia

Bioindicator Insects for Chemically Disturbed Corn Agroecosystem
Miladis M. Afidchao

Catch Diversity of Crab Pot in Guimaras Strait
Leovigildo Rey S. Alaban and Ricardo P. Babaran

Micropropagation of *Lilium philippinense* Baker from Ilocos Sur, Northern Luzon
Karen A. Ballada

Species Composition and Conservation Status of Birds in a Coastal Barangay of Pilar, Capiz
lanthe Marie P. Benliro and *Lyca Sandra G. Castro*

Survey of Birds along Taliptip River and Bulacan Mangrove Ecopark, Wawang Capis, Taliptip, Bulakan, Bulacan
Christine Joy P. Borja, Pauline T. Regalario, and *Richard F. Clemente*

Worldviews on Biodiversity in Selected Villages around Ifugao Rice Terraces
Inocencio E. Buot, Jr. and *Harold M. Carag*

Conserving the Biodiversity of Ilin and Ambulong Islands: A Community-Based Forest Conservation Project
Rene C. Capoquian, Don Geoff E. Tabaranza and Kathy Lene S. Cielo

Preliminary List of Bryophytes in Tagbaobo, Kaputian, Island Garden City of Samal
Hazel G. Carreon, Normeliza E. Morales, Milton Norman D. Medina, Analyn A. Cabras, and Andrea G. Azuelo

Coastal Resource Utilization and Management in Bataan: Assessment and Public Awareness of its Environmental Impact
Alvin B. Cervania, Adrian DC. Perdio, Delia S. Llave, and Antonio B. Zapanta

Deciphering the Generic Concepts of Thorny Philippine Gardenieae: Perspectives from Morphological and Molecular Data
Jayson G. Chavez and Grecebio Jonathan D. Alejandro

Indigenous Ichthyofauna of Catubig River, Northern Samar
Ronelle C. Chato-Salvador
Biodiversity on Wheels (BOW) Program

Arlie Jo B. Endonila, *Czarina S. Constantino* and Raiza Joy R. Elumba

Species Richness, Assessment and Distribution of Odonata Across Vegetation Types in Mt. Sinaka, North Cotabato
Karen C. Dador, *Jennifer G. Opiso* and Guiller S. Opiso

Implications of Garganey (*Anas querquedula*) for the Long Distance Dispersal of Freshwater Plants and Mollusks and Diseases in Candaba Marsh, Pampanga
Jill B. Dalisay and *Elaine Anne Lim-Tandoc*

The Biology of *Holothuria scabra* in Albay Coast
Skorzeny C. de Jesus and *Arnel B. Gonzales*

The Biology of Tabagwang (*Jagora asperata*) in the Bicol Region
Skorzeny C. De Jesus and *Jethro Emmanuel P. Baltar*

Abundance and Diversity of Meiofauna as an Organic Indicator of Organic Enrichment in Palompan Bay City
Alieza O. Del Socorro and *Art Russel R. Flandez*

Using Bats in Conserving Threatened Limestone Forest of Southwestern Negros Key Biodiversity Area
Kim John S. Doble, Philip Godfrey C. Jakosalem, and Lisa Marie J. Paguntalan

DNA barcoding of *Kappaphycus* species (Gigartinales, Rhodophyta) from Surigao
Richard V. Dumilag, Ronelie C. Salvador, Anna Melissa M. Talavera, and Cynthia B. Mintu

A Tool for Mapping Migratory Bird Species in Protected Areas in the ASEAN Region
Christian B. Elloran and Jerome S. Alano

Improving Biodiversity Knowledge among High School Teachers in Protected Areas
Raiza Joy R. Elumba, Arlie Jo Endonila, and Czarina Constantino

Migration Effects to the Marine Ecosystem of Barangay Concepcion
Marjorie A. Española and Jayson B. Cated

Species Richness, Distribution, and Status of Gymnosperms in Mt. Sinaka, Arakan, North Cotabato
Jivonte Nicklaus R. Leyson, *Jennifer G. Opiso*, and Guiller S. Opiso

Stand Structure and Species Composition of Mangroves in Olango Island Wildlife Sanctuary, Cebu
Elena B. Lozano and Reginaldo G. Bueno

Spatial and Temporal Variation of Zooplankton Diversity in Selected Coastal Areas of Baybay City, Leyte
Joseph F. Luchavez and *Jayzon G. Bitacura*

Elliptic Fourier Analysis of Mandibular Shapes of the Rice Leaf Folder *Cnaphalocrocis medinalis* Guené
Christine Lovelle A. Mahinay and Cesar G. Demayo

POSTER TITLES

Economic Value of Mangroves in Glan, Sarangani Province

Carilyn Salanio Martin, Abelardo Corpuz, Zaluma G. Gampal, and Sanico B. Bulawan

Physicochemical and Bacteriological Water Quality Evaluation of the Four River Systems Surrounding MMPL

Tres Tinna B. Martin, Gerald G. Lobredo, Emmanuel P. Leaño, Maximo C. Aljibe, and Edna P. Oconer

Diversity and Quality of Odonates in Compostela Valley Province, Mindanao Island

Milton Norman D. Medina, *Analyn A. Cabras*, and Reagan Joseph T. Villanueva

Plecoptera Fauna of Compostela Valley, Mindanao Island

Milton Norman D. Medina, Ignac Sivec, and Reagan Joseph T. Villanueva

Cavity-Nesting Bird Population at Subic Watershed Forest Reserve and Adjacent Forests of Bataan National Park

Jasmin C. Meren and Carmela P. Española

Stock Assessment of Christian crabs (*Charybdis feriatus*, Linnaeus, 1758) in San Miguel Bay

Plutomeo M. Nieves, Nelson R. Olfindo, and *Aldrin Mel B. Macale*

The Fishery Macro-Invertebrate Gleaning: Status and Contribution to Food Security, Income and the Fisheries

Plutomeo M. Nieves, Skorzeny C. de Jesus, Aldrin Mel B. Macale, and Jasper R. Nieves

Macro Flora Diversity in Pilar Caves: Basis for Utilization

Philomel Innocent P. Obligar

Mapping to Inform Conservation: Multi-criteria Spatial Analysis of Key Biodiversity Areas in the Philippines

Ver Anthony Samson Odevilas

An Initial Survey of Ant Population in an Anthropogenic-Disturbed Area: Far Eastern University

Anthony Ian G. Pag-ong

Ecological Assessment of the Siganid Fishery of Baruyan River in Caluangan Lake and Baruyan Calapan City, Oriental Mindoro as Affected by Human and Environment Impacts

Marius L. Panahon and Bonifacio V. Labatos

Orchids in Mt. Sinaka, North Cotabato: Their Status

Cherry Lee T. Panal, Jennifer G. Opiso, and Guiller S. Opiso

Exploring Samar Island Natural Park (SINP): An Inventory and Ethnobotanical Study of its Medicinal Plants and a New Endemic Species Of *Nepenthes L.*

Neil Alejandro A. Pinarok, Gerard Q. de Guzman, and Grecebio Jonathan D. Alejandro

Diversity and Similarity of Migratory Species in Four Important Migratory Sites in the Philippines

Josiah David G. Quimpo, Ana Dominique A. Almazar, and Maria Belinda E. de la Paz

Notes on the Lepitodoptera and Odonata of Kabigan Falls and Paoay Lake, Ilocos Norte

Roanne Romeroso and Eric Zeus C. Rizo

Amphibians in Limestone Karst Forest of Quezon Protected Landscape

Essex Vladimer G. Samaniego and Arvin C. Diesmos

Conservation of the Palawan Forest Turtle *Siebenrockiella leytensis* - A Holistic Approach

Sabine Schoppe and Diverlie Acosta

Biota Assemblage of Lake Mainit

Astrid L. Sinco, Judy P. Sendaydiego, Leolinda L. Saab, and Geraldine R. Mojica

The Dynamics of Acarine Ectoparasitism on Philippine Lizards

Gerald Thomas A. Soliven, Mae Lowe L. Diesmos, Leonila A. Corpuz-Raros, and Arvin C. Diesmos

Species Distribution and Abundance of Amphibians in Two Vegetation Types of Agusan Marsh, Mindanao

Rainer P. Sularte, Lilia Z. Boyles, Nilo H. Calomot, Meljan T. Demetillo, Leila A. Ombat, Me Concepcion M. Ngilangil, and *Gee Marie S. Binag*

Microhabitat Preferences of Amphibians in Terminalia Forest and Sago Palm Vegetation of Agusan Marsh, Mindanao

Rainer P. Sularte, Lilia Z. Boyles, Jessie Passigna, and Gee Marie Binag

Bird Diversity and Structure in Different Land-use types in Lowland South Central Mindanao

Krizler C. Tanalgo, John Arislyn Pineda, Maricel Agrvante, and Amerol Zabide

Species Distribution of Indigenous Fruit Trees Found in the Municipality of Bunawan, Agusan Del Sur

Becillo E. Telocan, Genevieve B. Ramos, and *Gee Marie S. Binag*

Investigating Potentials of Community Knowledge in Relation to Non-Native Squirrels in Metro Manila

Daniel S. Torres, Anna S. Torres-Abblitt, and Lea Ivy O. Manzanero

Describing Body Shape Variation Between Sexes of an Endemic Eleotrid Fish *Hypseleotris agilis* (Herre, 1927), from Lake Mainit, Using Landmark-based Geometric Morphometrics

Katherine M. Unito-Ceniza, Mark Anthony J. Torres, and Cesar G. Demayo

Feeding Behaviour and Skull Ontogeny of Zoo-kept *Varanus olivaceus*

Enriquo Martin C. Velasquez, Leticia E. Afuang, Emmanuel F. Rafael, Ian Kendrick C. Fontanilla, Emerson Y. Sy, and Emmanuel Ryan C. Chavez

Molecular Phylogeny of Philippine *Gynochthodes blume* and *Morinda L. (Rubiaceae)* Including Four Novelities in the Tribe Morindeae

Russell Evan Lim Venturina and Grecebio Jonathan D. Alejandro

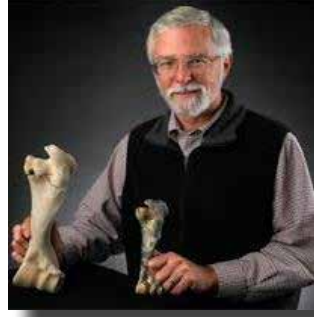
280+ Reasons to Protect the Northern Sierra Madre Natural Park from 28.0 km of Impending Disaster

Merlijn van Weerd, *Joni T. Acay*, Dominic Rodriguez, Edmund. D. Jose, Marites G. Balbas and Aurelia Feliciano

Emerging Perspectives on the Long-Term Evolution and Biogeography of Mammalian Diversity in the Philippine Islands

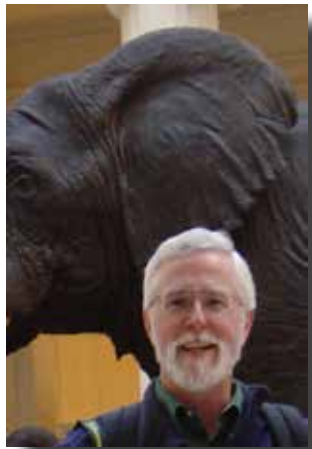
Lawrence R. Heaney, Ph. D. | Field Museum of Natural History, Chicago, IL 60605

It has long been recognized that the Philippines has an exceptionally high concentration of mammalian endemism and diversity, but recent research has resulted in the discovery of substantially more species than known previously. Moreover, DNA-based studies of evolutionary relationships are providing greater and more precise historical depth to our understanding of the fauna, so that we know not only the result of diversification, but also the history of the diversification.



Syntheses of existing geological data, and new geological models of the development of the Philippine archipelago, also now provide information about the origin, growth, and changes in the islands that make up the Philippines. Using Luzon as an example, I will show how the phylogenetic and geological data, taken together, provide new perspectives on the biogeographic processes that have produced mammalian diversity within the archipelago. These processes have depended on a small number of long-distance colonizations from mainland areas beginning about 14 million years ago, followed by high levels of speciation that have been constrained by island area and configuration over the course of time. Highland areas within Luzon that function as “sky islands” support especially high levels of species richness and endemism, with dynamics that mirror those of actual islands. These processes have produced the exceptionally rich endemic fauna that we see today, and provide essential information for understanding the current and projected future status of the mammal fauna.

LAWRENCE R. HEANEY, Ph. D.



Dr. Lawrence Heaney began his distinguished career as a volunteer at the Smithsonian Institution’s Museum of Natural History. He then worked at the Bell Museum of Natural History while completing his undergraduate studies at the University of Minnesota. He completed his Master’s (1978) and Doctorate (1979) degrees in Systematics and Ecology at the University of Kansas. He has been the Curator and Head of the Division of Mammals at the Field Museum of Natural History in Chicago since 1988, collaborating to produce some of the most used references such the synopsis of Philippine mammals.

Dr. Heaney’s love affair with Philippine mammals began with his first expedition to the country in 1981. He has been conducting fieldwork in different parts of the Philippines with foreign and Filipino researchers every year since then. He has mentored many of our best and brightest colleagues here and abroad, discovered numerous unique species, shared to the world countless scientific publications, and along the way enriched our knowledge of our own Philippine biodiversity. Dr. Heaney is one of the founders of the Wildlife Conservation Society of the Philippines in 1992.

Future of Philippine Biodiversity in the Face of Climate Change

Angel C. Alcala, Ph.D., National Scientist, and Director, Silliman University-Angelo King Center for Research and Environmental Management (SUAKCREM)



Predicting the future of biodiversity, terrestrial and marine, in the face of climate change is fraught with risks. This is because they have survived to present times despite episodes of global climate changes in the past. The fact that they have survived indicates that they are capable of adapting to geological and climatic disturbances. However, the difference between the past and the present is the important role of human beings as a dominant factor that could influence the survival of biodiversity.

I will use the case study approach to show trends in specific groups of terrestrial and marine biodiversity as impacted by human-induced factors and climate change. For the terrestrial biodiversity, I will use our 60-year research experience on amphibians and reptiles and for the marine biodiversity our research on marine protected areas for 50 years with particular reference to Apo Island. It is hoped that some future trends can become evident from the discussions.

ANGEL C. ALCALA, Ph.D.



Dr. Angel C. Alcala obtained his B.S. in Biology magna cum laude from Silliman University in 1951 and his M.A. and Ph.D. in Biological Sciences from Stanford University in 1960 and 1966, respectively. He rose from the ranks of Instructor in Biology at Silliman to various high ranking positions at the University, including Dean of the College of Arts and Sciences, Director of the Marine Laboratory, and President (1991-1992). He served as Secretary of the Department of Environment and Natural Resources from 1992 to 1995 and later as Chairman of the Commission on Higher Education from 1995 to 1999. Currently, Dr. Alcala is Chairman of the Board of Advisers at the Silliman University Angelo King Center for Research and Environmental Management in Dumaguete City. He is also Professor Emeritus at Silliman University and serves as member of National Academy of Science and Technology (NAST) Executive Council.

In 2014, Dr. Alcala was conferred the Rank and Title of National Scientist by President Benigno S. Aquino in recognition of his outstanding contributions to society, specifically his seminal and original research on the systematic, ecology, and diversity of Philippine amphibians and reptiles, and, marine biodiversity, reef fishes and conservation (marine-protected areas).

How Many Tropical Tree Species are There in the World?

Ferry Slik, Ph.D., Associate Professor and Herbarium Curator, Universiti Brunei Darussalam, Brunei

People are fascinated by the amazing diversity of tropical forests and will be surprised to learn that robust estimates of the number of tropical tree species were lacking. We show that there are as many as 53,000 tree species in the tropics, in contrast to only 124 across temperate Europe. Almost all tropical tree species are restricted to their respective continents. The Indo-Pacific turns out to be as species rich as tropical America, with both regions being almost five times as rich in tree species as African tropical forests.

Tropical trees support numerous other organisms, thus knowing how many tree species there are will help estimate the diversity of many other organisms. In this talk I will also go into biogeographic patterns for trees as found in the Sundaland region.



FERRY SLIK, Ph.D.



Dr. Johan Willem Frederik Slik is a taxonomist and phylo-geographer with an interest in spatial and temporal patterns in plant distribution and forest fragmentation through GIS, molecular techniques and modelling.

Dr. Ferry Slik earned his Masters degree in Ecology and Systematics from Leiden University in the Netherlands in 1994. He worked as a researcher at the Centre for Estuarine and Marine Ecology (Netherlands Institute for Ecology) before embarking on his PhD-study on tropical plants in Borneo with the National Herbarium of the Netherlands (Leiden University) from 1996 until 2001. He then earned post-doctoral positions, financed by the Dutch Science Foundation, at Leiden University, where he spent considerable amount of time studying the regeneration of logged and burned forests in Borneo. From 2008 to 2013 he worked for the Chinese Academy of Sciences in the remote but beautiful location of Xishuangbanna Tropical Botanical Garden in the south of Yunnan province, leading the research group of Plant Geography. At the end of 2013 he moved to University Brunei Darussalam to continue studying Bornean forests.

Samar is a fitting destination for Dr. Slik's first visit to the Philippines, having named a species - *Mallotus cordatifolius* - from this Island in 1998. You may follow his work at <http://www.phylodiversity.net>

Factors Affecting Frog and Toad Diversity in Two Mountain Streams in Antipolo/Taytay: Habitat Degradation, Invasive Species, and Climate Change

Ackie Nathan P. Adeva, Ivan Lorenzo T. Alvarez, Christian Justin U. de los Angeles,

Jae Hwan Lee, Terence Micheal M. Rasul, Miguel Carlos A. Salanga and Raphael Alfonso Javier D. Santos

Holistic Education and Development Center at The Little Farm House, 95 Beverly Hills Avenue, Beverly Hills Subdivision, Baranggay Dolores, Taytay, Rizal

Email: ackieadeva.hedcen@gmail.com, ivanztorres@gmail.com, chrisdlangeles@gmail.com, raja.santos18@gmail.com, mcsalanga@yahoo.com, terencerasul@gmail.com, leejaehwan123146@gmail.com

The Philippines is home to 104 species of frogs and toads most of which are endemic but threatened for which habitat degradation, invasive species, and climate change have all been implicated. We compared the anuran diversity of two rivers in Antipolo/Taytay- the highly protected Munting Dilao and the degraded Tungtong River, which is under pressure from some 300 informal settlers. The identification and morphometry of captured frogs were taken according to the protocols of Dr. Arvin Diesmos (1999). The abundance of *Limnonectes macrocephalus* (endemic) and *Polypedates leucomystax* (native) frog species in the highly protected Munting Dilao was higher by as much as 600% and the individuals captured were also notably larger in size. In addition, the invasive *Rhinella marina* had a 500% higher abundance in Tungtong River. This shows that habitat degradation and the presence of invasive species decreases the abundance and size of native/endemic frogs. We also tested frogs, in both river systems, for the presence of *Chytridiomycosis*, which is indicative of climate change impacts. Mucus and saliva swabs of captured frogs were cultured and examined under the microscope. Fortunately both rivers tested negative for the fungus. We hope our study may be useful in documenting the effects of habitat degradation and invasive species on anurans and so guide future development projects near small mountain streams.

Physico-Chemical and Microbiological Assessment of Water from Carcar River, Cebu

Allyssa S. Albores, Rhea Mae S. Dañal and Dan Christopher I. Limbaroc

Philippine Science High School - Central Visayas Campus, Talaytay, Argao, Cebu

Email: aalbores@ymail.com, dheramae@outlook.com, limbarocdanchristopher@outlook.com

This study assessed the physico-chemical and microbiological characteristics of Carcar River, Cebu. Parameters included are dissolved oxygen content, pH, flow rate, water temperature, heterotrophic plate count, coliform content and fecal coliform content. There were two sampling sites: midstream and downstream located at Sitio Luan-Luan, Barangay Poblacion I, Carcar City and Sitio Balingan, Barangay Poblacion III, Carcar City, respectively. For physico-chemical parameters, data were obtained on site every month from April 2014 to July 2014, which covers two months for dry season and another two months for wet season. Water samples for microbiological tests, including biological oxygen demand, were sent to the University of San Carlos Water Laboratory for analysis. In the data collected, it has been found that the physico-chemical figures of the river are greatly affected by temperature. The midstream section has increased dissolved oxygen caused by the decrease in temperature, and decreased pH due to household alkaline materials. The downstream section decreased in dissolved oxygen because of the decrease in flow rate. The microbiological parameters, fecal coliform content, total coliform content and total heterotrophic count in the midstream section showed a decreasing trend credited to the decreasing temperature, while the downstream section showed an increasing trend in fecal coliform and heterotrophic count attributed to the animal waste, sediment and nutrient deposition at the downstream section. It can also be concluded that the water quality of the river, as observed in the downstream section, depreciates due to the increase in microbiological content.

Initial Growth and Survival of Dipterocarp Species Under *Piper aduncum* Infested Site in Lamlahak, Lake Sebu, South Cotabato

Mariel G. Anuada, Lee Amherstia Q. Curias and Jeffry A. Ramonida
Philippine Science High School - Central Visayas Campus, Talaytay, Argao, Cebu
Email: marielanuada@gmail.com, laqc013@gmail.com, ramonidajeffry@gmail.com

During the late 1900's, indiscriminate logging and kaingin caused the decrease in the number of dipterocarps in the Philippine forests. Dipterocarps are trees used for lumber and timber and upon growing, these require nurse trees that provide shade in order to grow and develop. This study aimed to grow dipterocarp seedlings under the shade of *Piper aduncum*, an invasive alien species (IAS) that has infested vast land areas in Mindanao particularly in Lamlahak, Lake Sebu, South Cotabato. This study generally aimed to determine the initial growth and field survival percentage of dipterocarp seedlings when planted under the shade of *Piper aduncum* trees. The study only utilized 20 replicates for each of the three dipterocarp species namely: *Shorea contorta*, *Shorea negrosensis* and *Parashorea malaanonan*. The study used Random Complete Block Design for the design of the experimental plot due to the open-field conditions. The experimental plot, with an area of 360 square meters, was constructed in vicinity dominated by *Piper aduncum*. Collection of initial data was done after planting the seedlings. Data after six months showed that *Shorea contorta* and *Parashorea malaanonan* both have 100% field survival rate while *Shorea negrosensis* had only 95% due to one dead replicate. All replicates were observed healthy except for one *Shorea contorta* seedling. Paired-Sample t- test revealed that there is a significant difference between the data obtained before and after six months. Thus, dipterocarps can successfully grow under *Piper aduncum* shade and also, *Piper aduncum* can be an effective nurse tree for growing dipterocarps.

Abundance of Teuthida in the Coasts of Looc, Argao, Cebu

Kristal A. Kilat, Jhonna Mae C. Navarro and Ma. Ave Virginia P. Sanchez
Philippine Science High School - Central Visayas Campus, Talaytay, Argao, Cebu
Email: kris.01.k.19@yahoo.com, jhonna.navarro@yahoo.com, mavevi.sanchez@gmail.com

Squid is considered as one of the few resources capable of increasing production. It is among the important commercial mollusks that Philippines is rich of, representing about 4.1% or 37, 735 tons in the municipal marine fisheries sector. In Looc, Argao, Cebu, little is known about the abundance of the squids. The main objective of the study is to determine and compare the abundance of squid species in the area for the wet and dry seasons using two methods (beach seining and hook-and-line method). It also aims to identify the species present during the duration of the study, and its abundance in the aforementioned area. The study is only limited to a seasonal sampling; for the hook-and-line method, collection was performed nightly on a good weather condition every full moon of the month. Beach seining was done at daytime thrice a month for the span of the two seasons. No data was gathered during unfavorable weather. Catch-per-unit effort (CPUE) was then computed. The only species collected was *Loligo duvauceli*. The CPUE of beach seining for wet and dry seasons, which were both greater than that of the hook-and-line, were 1.413 and 2.250, respectively. The CPUE using hook-and-line, on another note, were 0.518 and 0.511 in the same order. The abundance of the squids is also greatly affected by the equipment used on the methods. Using the beach seining, more squids were caught in a short period of time by more fishermen in comparison with the hook-and-line.

Recreation vs. Conservation: Resolving the Conflict Between Profit and Nature in Hotel and Resort Development Projects

Abigail C. Resuma, Andre Stephen J. Calderon, Girmund Carl G. Dumada-og,
Trevor John S. Fronda, Esther L. Hwang, Jay Ransel P. Loyola and Angelico Miguel B. Protacio
Holistic Education and Development Center at The Little Farm House, 95 Beverly Hills Avenue, Beverly Hills
Subdivision, Baranggay Dolores, Taytay, Rizal
Email: abigail_resuma@yahoo.com, andre.calderon@rocketmail.com, carldumadaog@yahoo.com, tj_fronda@yahoo.com, est0708@yahoo.co.kr, ransel247@yahoo.com, pipay_angelico@yahoo.com

The municipality of Antipolo was declared a city last 2003. Since then, commercial and residential development projects have increased. Though there are no published studies available, a general deterioration of the local environment, manifested as loss of woodland cover, pollution of river systems and an increase in urban noise and light pollution levels, is evident. We present in this study an attempt to measure the impact of such changes to avifauna diversity. Transect bird counts were done from December 2014 to March 2015 in three sites: (1) Hapay na Mangga, an undeveloped woodland property foreclosed by Metropolitan Bank and Trust Company; (2) Cristina Villas Mountain Resort and Hotel, a venue in close proximity to residential areas; and (3) Boso Boso Highlands Resort and Convention Center, an establishment far removed from significant human settlements. All three sites have similar topographical features. Other habitat characters such as percent development, percent habitat types (e.g. woodland, grassland and wetland habitats), area, noise and light pollution levels and amount of road traffic were also measured. Bird diversity indices were correlated with habitat character using the Multi Variate Statistical Package. Results were used to formulate environment friendly guidelines for resort developers. The importance of buffer zones, corridors, and alternatives to traditional but environmentally destructive recreational activities are discussed.

Lost and Found: Strengthening Ethnobotanical Knowledge in Antipolo/Taytay

Angelica Gabrielle R. Salvador, Raphael C. Cabiles, John Michael L. Galunan, Eun Gu Rhee,
Joannah Marie G. Rivera and Robert S. Yoingco
Holistic Education and Development Center at The Little Farm House, 95 Beverly Hills Avenue, Beverly Hills
Subdivision, Baranggay Dolores, Taytay, Rizal
Email: angelicasalvador@ymail.com, raphaelcabiles@yahoo.com, jmgalunan@gmail.com, robbie_yoingco@yahoo.com

The study of ethnobotany has been steadily gaining popularity these recent years. Though we have been using plants for medicinal purposes since pre-historical times, a lot of work still needs to be done in order to scientifically document and archive the rich knowledge of tribal cultures worldwide. This is especially true in the Philippines. Here we present a pioneering study on the diversity of medicinal plants in the Tungtong River watershed conducted from December 2014 to March 2015. Our group mapped the medicinal plants including shrubs and non-tree species using the BIOMON protocols in the Tree Conservatory Areas of the Tungtong River Conservation Project. These sites were erected by TRCP as living museums for endangered Philippine native trees. We also conducted a belt transect survey for medicinal plants along the river headwaters. We also compiled a database on their proper identification in the field, their medical potencies and how they are prepared. We then printed a handbook entitled "Tungtong River Medicinal Plants" in two languages. We hope to publish this handbook and make it readily available especially to the 500 families of informal settlers living along the banks of the Tungtong River.

Diversity of Anurans in the Newly-declared Lower Ilian-Ilian - Masaya 1 - Maharlika Protected Watershed Area in Barangay Dumarao, Roxas, Palawan

Vanessa Mae F. Abrina¹, Lyca Sandra G. Castro¹ and Sabine Schoppe²

¹Western Philippines University-Puerto Princesa Campus, Sta. Monica, Puerto Princesa City, Palawan

²Katala Foundation Inc., Puerto Princesa City, Palawan

Email: vmabrina@gmail.com, lycasandra.castro@wpuppc.edu.ph, sabine_schoppe@web.de

This study aimed to identify the species of anurans in a small lowland forest stream, which is part of a newly-established protected watershed area in Barangay Dumarao, Roxas, Palawan. It further aimed to describe each species encountered in terms of size, weight and its microhabitats. Furthermore, the relative abundance of the species was computed and compared among sampling events. The stream habitat was assessed in terms of physico-chemical parameters, canopy cover, location of anuran sightings and anthropogenic activities. The samplings were conducted monthly for three consecutive nights, every last week of July to September 2014. A 1000-meter stretch of the stream, which is an important water source, was assessed and subdivided into three sampling stations. Two methods were employed in this study: visual encounter survey and pitfall traps. A total of eight species of anurans under four families, representing 33% of the anuran fauna of Palawan, were identified. *Limnonectes acanthi* under family Ranidae was the most abundant species present. The endangered *Megophrys ligayae* was only recorded in one station and the vulnerable *Barbourula busuangensis* was only present in waterfall area of the stream. They were the least abundant species observed which might be related to their concealed habits. Among the three key conservation species (*L. acanthi*, *M. ligayae*, *B. busuangensis*) encountered, *B. busuangensis* is inferred to be the most sensitive and best indicator species for health of stream ecosystem. Its abundance should be monitored since the watershed area is planned to be used for a Level II water supply system.

DNA Barcoding of Endemic Philippine *Hedyotis* L. (Rubiaceae) and Discovery of Two New Species

Grecebio Jonathan D. Alejandro^{1,2}, Marjorie G. Davadilla³, Irisse Bianca B. De Jesus³, Denzel Nicho T. Armendares³, Rene Kevin C. Plan³, Vincent Louie D. Cabelin² and Ruby Raterta^{1,4}

¹Research Center for the Natural and Applied Sciences, University of Santo Tomas, 1015 Manila

²Graduate School, University of Santo Tomas, 1015 Manila, Philippines

³College of Science, University of Santo Tomas, 1015 Manila

⁴Philippine Council for Industry, Energy and Emerging Technology Research and Development, Department of Science and Technology, Bicutan, Taguig City 1631
Email: marjorie_davadilla2007@yahoo.com

The genus *Hedyotis* L. is a tropical herbaceous lineage nested within the tribe Spermacoceae (Rubiaceae) with about 500-600 species worldwide. Previous studies have difficulties in resolving *Hedyotis* for its generic delimitation. Considered as a repository of uncertain tropical herbaceous lineage, *Hedyotis* constitute a highly heterogeneous assemblage in its broad circumscription. Recent phylogenetic analysis resolved the genus in three different monophyletic clades. Thus, a narrower circumscription of the genus as *Hedyotis* sensu stricto (s. str) was recommended. The resolved clade of *Hedyotis* s. str. only includes few species from Southeast Asia and the Pacific. However, some Philippine *Hedyotis* remained unsampled due to diversity and wide distribution. The total genomic DNA of the twenty-two collected endemic *Hedyotis* species were extracted and amplified using the plastid (rps16, and trnH-psbA,) and nuclear ribosomal (ITS) regions. All the markers yielded 100% sequencing success rate with ITS having the highest PCR success rate of 100%. Further, ITS gave the highest interspecific divergence of 19.3±16.6 and therefore the best barcode among the markers evaluated. The other two markers, trnH-psbA and rps16 yielded 16.6±12.0 and 6.2±7.6 in interspecific divergence, respectively. Bayesian and parsimony analyses using the combined plastid (rps16 and trnH-psbA) and nuclear (ITS) dataset showed that the sampled Philippine *Hedyotis* species were nested within the *Hedyotis* s. str., thus; confirming their identities. In addition, two novel endemic *Hedyotis* species (*Hedyotis culasinensis* and *Hedyotis davaoensis*) are proposed based on comparative morphology. The descriptions and botanical illustrations of the proposed new species are also provided.

The Vertical Distribution of Limnetic Copepods (*Arctodiaptomus dorsalis* and *Thermocyclops crassus*) and its Relationship with Thermocline Depth in Lake Taal

Iris B. Alonso¹, Camille M. Pastrana¹, Janine F. Pacia, Kenoses Legaspi²,

Dino T. Tordesillas¹ and Rey Donne S. Papa²

¹University of Santo Tomas, College of Science Espana, Manila

²Research Center for the Natural and Applied Sciences, University of Santo Tomas, Espana, Manila

Email: iris.alonso@aiesec.net, camillepastrana1@yahoo.com, janinepacia@gmail.com,

carlacamae@gmail.com, rspapa@mnl.ust.edu.ph, dinotordesillas@yahoo.com, kenoses_legaspi@yahoo.com

Zooplanktons play a vital role on the diet of fishes. The vertical distribution of the largest zooplankton species in a lake may be influenced by several factors such as predation and shifts in the thermocline depth. Understanding their behaviour can incite fishing regulations in their favor. We investigated the relationship of thermocline depth, zooplankton diel vertical migration and current weather conditions in Lake Taal - a deep, dual-basin, tropical caldera lake with a diverse zooplankton community exposed to a variety of natural and anthropogenic stressors. We sampled zooplankton from various depths while simultaneously profiling temperature using digital temperature probes suspended from a rope with a buoy. We focused our investigation on two species - the invasive *Arctodiaptomus dorsalis* and the cosmopolitan *Thermocyclops crassus* - as these two species are among the largest species found in the lake, and form a significant contribution to the prey of the endemic *Sardinella tawilis*, the abundance of which greatly affects local livelihood and sustenance. The two species exhibited diel vertical migration throughout the sampling period with pronounced differences during noon and midnight. Thermocline was observed at the 25 to 30 m depth for noon while two thermoclines were observed at midnight, specifically at 0.5m to 5m and 25 to 30m. Variations in the distributions of these two species within the water column may be attributed to the vertical profile of temperature which affected the distribution of phytoplankton, fish and other physico-chemical conditions in the water column. This was seen in the results wherein the depth of average individual (DAI) is highest monoyat 20 meters during noon sampling while highest at 5 meters depth for midnight sampling. Such migration pattern has not been fully investigated in Philippine lakes, nor has it been analyzed thoroughly in relation with thermocline depth making this study an important contribution to studies on zooplankton migration behaviours in tropical lakes, from which further studies on migration of fish and other species can be conducted.

Species Richness and Guild Structure of Spiders from the Bega Watershed, Agusan del Sur

Grapesy Pink M. Alsonado¹, Olga M. Nuñezza¹ and Aimee Lyn Barrion-Dupo²

¹Department of Biological Sciences, College of Science and Mathematics

Mindanao State University - Iligan Institute of Technology, Iligan City

Institute of Biological Sciences, College of Arts and Sciences & Museum of Natural History, University of the Philippines-Los Banos, College, Laguna

Email: grapesy_pink06@yahoo.com, olgamnuneza@yahoo.com, aranea95@yahoo.com

Spiders of the Bega Watershed, Agusan del Sur are documented for the first time. Active searching, beat-netting, pitfall trapping, and vial-tapping techniques were employed for seven field days from May 8-14, 2014 to determine species richness. Collected specimens were identified and voucher specimens deposited at the University of the Philippines-Los Banos Museum of Natural History. Biodiversity indices were calculated using Microsoft Excel 2010, and all statistical analyses were performed using the Paleontological Statistics Software Package (PAST). Meanwhile, data on species richness were used as tool in classifying Bega spiders into their respective prey-hunting guilds. Spiders collected from this study were found to belong to seven guilds: the orb-web builders; space-web builders; sheet-web builders; stalkers; ambushers; foliage runners; and ground runners. Results showed that all sites were dominated by orb-web builders. High species richness of 102 species from 19 families were documented. Araneidae and Salticidae were noted as the most species-rich families. *Tetragnathid* sp. 1 had the most number of individuals. Two species from the families Linyphiidae and Araneidae are new records in Mindanao. Six spider species are believed to be new to science but this observation needs verification. Results indicate that even if Bega watershed is a relatively small area, it is definitely a species-rich area and an important conservation site.

Diurnal Avifauna Diversity in Mt. San Ramon, Cagdianao, Dinagat Islands

Fe Annalie M. Dumaguit, Angela Grace Toledo-Bruno and Michael Arie P. Medina
Central Mindanao University, Musuan, Maramag, Bukidnon
Email: dumaguitannalie@yahoo.com

This study was conducted in Mt. San Ramon, Cagdianao, Dinagat Islands last December 26-31, 2014. The study was undertaken to determine diversity of avifauna using mist netting and supplemented by transect walk method. A total of 39 species and 42 individuals were captured and observed, in which 9 species are captured using mist netting method while 30 were observed during transect walk. Of the 39 species, two are considered as threatened: Mindanao Bleeding-heart Pigeon (*Gallucolumba crinigera*) and Blue-capped Kingfisher (*Actenoides hombroni*) categorized as vulnerable, while the Mindanao Pygmy Babbler (*Dasycrota plateni*) is categorized as nearly threatened based on the IUCN Red List. Shannon diversity index is 1.19, which is relative high, while the species richness is 1.39. The area faces huge threat to biodiversity conservation. Local people hunt species for local consumption, recreation and trading. However, the biggest threat is that Dinagat Island is declared as Mineral Reservation Area by virtue of Proclamation No. 391 dated March 19, 1939. Thus, there is a need to revisit this declaration in order to not compromise the conservation and protection of the threatened species.

Fluid and Macroinvertebrate Composition of *Nepenthes samar*

Lief Erikson D. Gamalo, Maria Dawn F. Amante, Ma. Floreda M. Anquilo, and Nikki Mae G. Go
Leyte Normal University, Tacloban, Philippines
Email: gamalolief@gmail.com, biomariadawn@gmail.com, mariafloredaanquilo@gmail.com, nikkimaegernago@gmail.com

The *Nepenthes samar*'s phytotelmata was assessed by determining the relatively unknown macroinvertebrates inhabiting the plant, and also determining the water characteristics which serves as the environment for minute organisms. 10 plants were used; there were no plants collected and only the collection of the macroinvertebrates were done. Two pitchers (1 mature and 1 young) for every plant were used as samples, for a total of 20 samples. Macroinvertebrate content and the fluid characteristics were compared between the mature and young pitchers. Paired sample T-test was used for comparing all the fluid characteristics between old and young pitchers. Compared pairs was assessed to be statistically significant if $p \leq 0.05$. The volume of the fluid and salinity show significant differences with mature pitchers have higher volume and higher salinity of fluid compared to young pitchers, while the pH and temperature did not show any significant differences. Macroinvertebrates found in the pitcher plants were all dipteran larvae: Chironomidae, Culicidae, Tipulidae, Psychodidae, Ceratopogonidae, Syrphidae and Simuliidae. Chironomidae is the most abundant, while Culicidae is the most frequent. Macroinvertebrates composition vary with 6 dipteran families observed from the mature pitchers and only four families from young pitchers. Also, as pitcher grows, some fluid characteristics change, and these changes of fluid characters may serve as factors to what macroinvertebrate inhabits the fluid. The phytotelmata of the plant can be used as models for ecological research. Using this as models, the plants should be propagated and be preserved for future use.

Webspinners in the Philippines: Toward Greater Knowledge of the Lesser Known

Cristian C. Lucañas and Ireneo L. Lit Jr.
Environmental Biology Division, Institute of Biological Sciences, University of the Philippines-Los Baños
Email: cclucanas@up.edu.ph, illitjr@uplb.edu.ph

The taxonomic diversity of webspinners (Insecta: Embioptera) in the UPLB Lower Campus was studied. Domiciles in five species of tree (three individuals per each) were measured, counted and destructively sampled to account for the webspinners present inside. Five species, from two genera (*Aposthonia* and *Oligotoma*), one of which is new to science while another is identified only up to genus level were collected. A dichotomous key was devised using illustrations and descriptions of each species. A total of 522 domiciles containing 498 individuals (+249 eggs) were examined. Species dominance was measured by the importance value of each species. Importance value was calculated based from the relative frequency and the relative area of the webspinner domicile and the relative number of individuals for each species. In terms of individual counts, *Oligotoma saundersii* (Westwood) is the most abundant, while *Aposthonia borneensis* (Hagen) is the least. In contrast, domiciles of *A. borneensis* are the most frequently observed while domiciles of *O. saundersii* are the second to the least frequently observed. Of the five species, *O. saundersii*, was the most dominant, being an introduced species, this may indicate a possible invasion potential of the species. The impressive results from the study, albeit limited in geographical scope and time, suggests that more species and bio-ecological information await discovery. Therefore, further studies on a wider and longer scale should be conducted.

Diversity and Habitat Preference of Restricted Range Bird Species of Northern Negros Natural Park (NPNP), Negros Occidental

Marco Luis E. Lumontod¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan² and Philip Godfrey C. Jakosalem²
¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City
²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City
Email: mackylumontod10@gmail.com

A study on the distribution and habitat preferences of restricted range bird species in NPNP, Negros Occidental was conducted from 15 to 29 May 2014. A total of fourteen 1-km transect lines was established and surveyed using Line Transect Method and 280 30x30 meter circular plots were selected for habitat assessment. Out of the 11 restricted-range species of birds in Negros, only nine were observed in the study area. Four species are Endangered (*Penelopides panini*, *Chrysocolaptes xanthocephalus*, *Dasycrota speciosa*, and *Rhinomyias albigularis*), while two species are Critically Endangered (*Gallucolumba keayi* and *Rhabdotorrhinus waldeni*) based on the Red List assessment of IUCN. Mature secondary forest at lower elevations was the habitat type with the highest species richness (S=9). General Linear Model and Canonical Correspondence Analysis showed that tree height (10-15m and 16-20m) and understory cover were significantly correlated to the abundance of restricted-range bird species in NPNP. Existing local threats observed were conversion of forest into agricultural land, charcoal production and hunting. Considering the on-going local threats to the birds in the area, implementation of existing policies must be strictly imposed to ensure the survival of birds and the protection of their habitat.

Diversity, Abundance and Habitat Preferences of Forest Bats in Northern Negros Natural Park (NNNP), Negros Occidental

Shalelie Mae P. Manupac¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan² and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: shaleliemanupac@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com, godo.jakosalem@gmail.com

A study on the diversity, abundance and habitat preferences of forest bats in three different habitat types of Northern Negros Natural Park (NNNP) was conducted from 17-30 May 2014. A total of 115 net nights and 39 trap nights were conducted using the standard mist netting and harp trapping methods respectively. A 10x10 meter plot on each net line was selected for habitat assessment. A total of 341 individuals of fruit bats under seven species, and 33 individuals of insectivorous bats under 10 species were captured. Out of the 17 species, five are Philippine endemic, one is threatened and four are new species record for Negros island. Shannon-Weiner Index showed that the mixed-species plantation habitat type has the highest bat diversity among the three habitat types ($H=1.92$). The most abundant species is the greater musky fruit bat, *Ptenochirus jagori*, with a relative abundance of 36.49%. Logistic Regression Analysis showed that canopy cover was significantly related (P value = 0.029) to the occurrence of *P. jagori*. Information generated will be used in updating the NNNP protected area management plan and in updating the Comprehensive Land Use Plan in Calatrava.

Abundance and Habitat Preference of Philippine Tube-nosed Fruit Bat *Nyctimene rabori* (Heaney & Peterson, 1984) in Northern Negros Natural Park (NNNP), Negros Occidental

Nathaniel C. Patdu¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan² and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: nathanielpatdu@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com, godo.jakosalem@gmail.com

A study on the abundance and habitat preference of *Nyctimene rabori* in Northern Negros National Park (NNNP) was conducted last May 16 - 30, 2014. The study areas had elevations ranging from 500 - 1200 masl. Using mist netting method, a total of 115 net nights was done and a 20 x 20 meter circular plot on each net line was selected for habitat assessment. Thirty-two (32) individuals of *N. rabori* were captured. Results showed 47% of the species were found in mixed species plantation, 41% in mature secondary forest (lower elevation) and 12% in mature secondary forest (higher elevation). Pearson Correlation Coefficient showed that the abundance of *N. rabori* had a direct relation to the number of flowering trees in the area and an inverse relation with elevation. Logistic Regression determined that the species was 1.258 times more likely to be found in areas with trees measuring 16 - 20 meters and at elevations of 500 - 700 masl. The Philippine tube-nosed fruit bat is locally threatened by the conversion of forested lands into agricultural areas. Thus, the gathered data will assist in formulating guidelines and policies to enhance the management of NNNP and its wildlife inhabitants. Also, due to limited studies on *N. rabori* this study can serve as a baseline data for future references.

Composition and Species Richness of Mixed-Species Flock in Northern Negros Natural Park

Joy Grace A. Ruiz, Cathleene D. Unabia, Everly O. Vingno, Charmaine B. Leobrera, Jonelyn M. De Asis and Philip Godfrey C. Jakosalem

University of St. La Salle, Bacolod City, Negros Occidental

Email: ruizjoygrace@yahoo.com, cathleeneunabia@yahoo.com, everlyvingno@yahoo.com, cha_leobrera@yahoo.com, jonelyn_deasis@yahoo.com

Mixed-species flock (MSF) are group of two or more individual of different species moving around actively in a cooperative foraging. This study investigated the composition of mixed species in North Negros Natural Park (NNNP) and emphasized the importance of biodiversity conservation specifically on forest bird species, as well as providing baseline data on MSF inhabiting the NNNP. Fieldwork was conducted from May 15-30, 2014. Species composition and species richness of mixed-species flock, their conservation status and habitat preference were collected. There were a total of 33 species and 372 individuals recorded participating in 56 MSF. Mature secondary forest (lower elevation) has the highest bird species diversity participating in MSF has a positive correlation between cover and species richness. While mature secondary forest (higher elevation) and shrub to early secondary forest showed a negative correlation between the aforementioned variables. Yellowish white-eye has the highest individual count. Blue-headed fantail and elegant tit are considered as nuclear species due to their conspicuous characteristics in leading the flocks. Generally, mixed-forest and shrub to early secondary forest can as well support a higher number of bird species joining in an MSF only if these habitat are not extremely disturbed and exploited by various human activities. This study showed that mature secondary forest (lower elevation) is critically important in conserving these birds species. LGUs along with the Bantay Bukid Brigade (BBB) are highly encouraged to strictly implement the laws and policies for forest's protection and the national Integrated Protected Areas System Act RA 7586.

Habitat Use and Site Fidelity of Irrawaddy Dolphins (*Orcaella brevirostris*) in Bago-Pulupandan Coastal Waters, Negros Occidental

Jenelle Alaiza D. Señoron, Jennica Anix T. Carmona, John Dave P. Pido, Mae Novelle P. Espinosa and Ira Mikkaella D. Genobis

University of St. La Salle-Bacolod, La Salle Avenue, Bacolod City, Negros Occidental

Email: jhia_ruby@yahoo.com, jennica_carmona@yahoo.com, immeasurable_101@yahoo.com, emaenovelle@yahoo.com, mikkaelladaanoy@yahoo.com

This study is part of continuous efforts to document and monitor a small population of Irrawaddy dolphins in the coastal waters of Bago and Pulupandan, Negros Occidental, and aimed at investigating the dolphins' habitat use and site fidelity. A total of 26 days from April until August 2014 were spent surveying the dolphins in an area of approximately 16 kilometers of coastline. The coastline was divided into sectors of approximately 1 kilometer each. Among the 16 sectors, dolphins showed a significantly higher preference (Coefficient of Area Use of 0.18) to a shallow area adjacent to the mouth of Bago River (Sector 10). Using DMRT, dolphin's preference to sectors 7, 8, 9, 10 and 12 were all found to be significantly different from the other sectors. Foraging was often observed more than any kind of behavior (Activity Index mean at 254.61), an indication that the area is an important feeding ground for the Irrawaddy dolphins. Socializing (AI = 111.29) was also observed, often between calves and adults, and also between two or more adults. Using Spearman Rank Correlation Coefficient (ρ_s) the correlation coefficient between Area Use and Site Fidelity was computed to be 0.681 and significant at the $\alpha=0.01$ level, indicating a significant correlation between the two variables. The results of this investigation have shown the importance of the area to Irrawaddy dolphins as a major feeding and nursing ground and recommends proper management of solid wastes, fisheries and boat traffic.

Habitat Preference of Avifauna, Their Socio-economic Importance and Threats within and the Surrounding Environs of Philsaga Mining Corporation, Rosario, Agusan del Sur

Cherry Mar T. Tiempo, Junide James D. Cagampang and Sherryl L. Paz

Department of Biology, College of Arts and Sciences, Caraga State University, Ampayon, Butuan City
Email: cherrymarbabaylan@gmail.com, junidejocynjoseph@gmail.com, sheter29@yahoo.com

The bird community was investigated in Philsaga Mining Corporation (PMC), Rosario, Agusan del Sur and its surrounding environs using eight-minute fixed radius point counts in two seasons. Habitat variables like vegetation structure, elevation, distance to disturbance and water systems were included. Bird community ordination using Canonical Correspondence analysis was used to determine the influence of the selected habitat variables on bird distribution. Random interview with the locals was conducted to determine the socio-economic importance of birds and their threats. A total of 100 species of birds were observed in the area ($H' = 1.54$) of which 37 were Philippine endemics (8 threatened) and 6 were Mindanao endemics (1 threatened). The species richness (61) and diversity ($H'=1.91$) of birds were found to be higher in the surrounding areas of Philsaga and such measures were also higher in wet season. Bird community ordination shows that forests with high canopy cover distant from anthropogenic activities are preferable for most of the endemic birds in the area. Majority of the locals in the area are unaware of the ecological role of birds and that most of them perceived birds as good for pet trade and food source. Mining, farming and vending are mostly the locals' source of income. The study suggests that such mining area requires conservation attention. Proper coordination among PMC personnel, farmers, LGU, researchers and other concerned stakeholders and Information Education Campaign are highly encouraged in order to regulate mining and other anthropogenic activities in the area to conserve the preferred habitats of endemics.

Filipinos for Flying Foxes: Awareness and Knowledge Regarding Flying Foxes in the Northern Sierra Madre Mountains

Leonalyn C. Tumaliuan¹, Chic Mabell T. Batarao¹, Myrna C. Cureg¹, Marites G. Balbas², Dorina R. Soler²,
Joni T. Acay², and Merlijn van Weerd²

¹Department of Development Communication and Arts and Sciences, Isabela State University, Garita, Cabagan, Isabela

²Mabuwaya Foundation, Garita, Cabagan, Isabela

Email: leonalyn_tumaliuan@yahoo.com, chicmabellbatarao@gmail.com,
myrna_cauilan_cureg@yahoo.com.ph, mikaela_tess@yahoo.com

Two giant fruit bat species are found in the Northern Sierra Madre Mountains in northeast Luzon: the endemic and endangered golden-crowned flying fox *Acerodon jubatus* and the non-endemic, near-threatened large flying fox *Pteropus vampyrus*. Giant fruit bats or flying foxes have become rare throughout the Philippines as a result of hunting, disturbance of their roost sites and disappearance of their forest habitat. Large roost sites remain in the municipalities of Baggao (Cagayan Province), Divilacan and Dinapigue (Isabela Province). Here too, hunting is a threat to the bats. We assessed the hunting of bats and the knowledge and awareness regarding flying foxes by interviewing 210 residents of villages near roost sites. In Dinapigue, rampant hunting for personal consumption and trade has led to the disturbance of the roost site and its abandonment. Hunting for personal consumption is also taking place, but much less, in Divilacan and Baggao. Paradoxically, the level of awareness regarding flying fox status and ecological roles was highest in Dinapigue. The collected knowledge and awareness survey information served as inputs for the design, production and distribution of an information poster about flying foxes. The majority of respondents support flying fox conservation, providing a good basis for a community-based flying fox conservation strategy in northeast Luzon.

A New Species of *Rubovietnamia* and Molecular Confirmation of the Philippine Endemic *Mycetia apoensis* (Rubiaceae)

John Christopher C. Villanueva, Remigio S. Callanta Jr., Jasmin Aei F. Neptuno, Maryneil A. Verin
and Grecebio Jonathan D. Alejandro

Department of Biological Sciences, College of Science, University of Santo Tomas, España Blvd., 1015 Manila, Philippines
Email: johncvillanueva94@gmail.com, remz.callanta@yahoo.com.ph, jasmin_aei@yahoo.com,
maryneil_verin270@yahoo.com, balejan@yahoo.com

Two interesting genera within the family Rubiaceae are *Mycetia* Reinw. and *Rubovietnamia* Tirveng. The Philippine endemic plant, *Mycetia apoensis* (Elmer) Govaerts, was previously under the genus *Adenosacme* and was once suspected as conspecific with *Mycetia cauliflora* Reinw. Its generic change was based only on herbarium specimens. On the other hand, *Rubovietnamia* is a relatively new genus with only two reported species from China and Vietnam. Recent plant collections conducted in Mt. Apo National Park and Little Boracay, Davao resulted in the collection of *Mycetia apoensis* and a divergent Rubiaceae species close to *Rubovietnamia*. Molecular analysis was conducted on the two species to verify with more certitude their generic affiliations. Bayesian analysis of the combined plastid (rps16 and trnL-F) dataset strongly supported (PP = 1.0) the inclusion of *Mycetia apoensis* in the genus *Mycetia* and resolved *Mycetia cauliflora* as its sister-taxon. Meanwhile, Bayesian analysis of the combined rps16 and trnL-F data of the DNA sequences of the suspected *Rubovietnamia* indicated with high support (PP = 1.0) that it is a member of the tribe Gardenieae. Since the available sequences of other *Rubovietnamia* species are limited only with the two markers utilized and not enough to resolve monophyly of the genus, a thorough morphological analysis was conducted which confirmed its generic affiliation. Thus, we propose to name this new species *Rubovietnamia microflora*. Both *Mycetia apoensis* and *Rubovietnamia microflora* are provided with comprehensive descriptions as well as their first botanical illustrations and conservation status following the standards of IUCN.

Potential Framework Species in Mt. Musuan, Bukidnon

Lowell G. Aribal and Adrian M. Tulod
Central Mindanao University - Musuan, Maramag, Bukidnon
Email: ariballowell@yahoo.com.ph, adrian2003ph@yahoo.com

The Philippines is among the severely deforested countries in the tropics and in Southeast Asia. Deforestation resulted not only to the massive loss of species, but also aggravated environmental-related disasters. Recent government program aimed to reforest degraded lands had been initiated through the “National Greening Program” thus the need to identify potential indigenous and endemic species to be used for forest restoration and/or reforestation was recognized. Using the “framework species approach” (FSA), this study was conducted to determine potential species to reforest degraded grasslands. Sampling method involved the rapid assessment thru a 1000 m transect walk and random establishment of six sampling plots measuring 10 x 10 m² within the successional forest and grassland community of Mt. Musuan. Potential species were assessed mainly via quantitative measures as this suggest the species’ ability to colonize, inhabit and survive on degraded areas. A total of twenty-one tree species growing naturally in the area with marginal soil chemical properties were identified. These potential framework species consisting of both pioneer and climax species include: *Wikstroemia lanceolata*, *Ficus ampeles*, *Wendlandia luzoniensis*, *Glochidion lutescens*, *Phyllanthus albus*, *Myrsine mindanaensis*, *Cratoxylum sumatranum*, *Cratoxylum formosum*, *Rhus taitensis*, *Neonuclea formicaria*, *Neonuclea media*, *Antidesma ghaesembilla*, *Antidesma bunius*, *Polyscias nodosa*, *Gmelina elliptica*, *Buchanania arborescens*, *Lepisanthes fruticosa*, *Ficus pseudopalma*, *Crypteronia paniculata*, *Vitex parviflora* and *Leucosyke capitellata*. Although the present study did not cover a wide range of degraded sites, the result can be used as benchmark to guide future species selection for forest restoration activities including useful comparison with other group of selected candidate framework species.

Invertebrate Diversity in Genetically Modified and Non-GM Cornfields in Isabela Province

Miladis M. Afidchao¹, CJM Kees Musters² and Geert de Snoo²

¹Department of Research for Development (DR4D) and Department of Natural Sciences (DNS), College of Development Communication and Arts & Sciences (CDCAS), Isabela State University (ISU), Cabagan, Isabela

²Conservation Biology Department, Leiden University, The Netherlands

Email: mm7_afidchao@yahoo.com, Musters@cml.leidenuniv.nl, snoo@cml.leidenuniv.nl

The use of genetically modified (GM) corn varieties has been shown to enhance grain quality and quantity, but the potential negative effects on non-target organisms by large-scale and long-term use in tropical wet environments like the Philippines are less well-known. This study examined how the invertebrate biodiversity in terms of abundance, species richness and guilds of non-target invertebrates were affected by the use of GM corn compared to the use of non-GM corn, in 30 fields located at three lowland sites in Isabela province. The transgenic corn varieties in this study, i.e., Bt (*Bacillus thuringiensis*) and BtHT (Bt Herbicide Tolerance), were introduced in the area in 2002 and 2005, respectively. Information on aerial, surface and soil-dwelling invertebrates was gathered using sticky-trap, pitfall-trap, and soil-core sampling technologies along 100-meter transect lines laid out in the middle of the fields. Among corn stages, the difference in abundance and species richness were highly significant, so that the study of effects of corn varieties was focused only on the mature stage of corn development. Among corn varieties, the abundance and species richness of invertebrates were significantly higher in non-Bt cornfields compared to Bt and BtHT fields. Abundance and species richness of aerial species were notably higher in non-Bt cornfields. These results were independent of the application of pesticides. There is a need for further studies as the mechanisms of the observaton are still unknown.

Molecular Phylogenetics of the Philippine Rubiaceae: Studies of the Thomasian Angiosperm Phylogeny and Barcoding Group

Grecebio Jonathan D. Alejandro
College of Science, Research Center for the Natural & Applied Sciences, and The Graduate School,
University of Santo Tomas - España, Manila
Email: balejan@yahoo.com

Morphological based taxonomic treatment of problematic plants is oftentimes inconclusive. DNA sequence information has provided an important source of characters and has led to the rapidly developing fields of molecular phylogenetics. The value of molecular data (nuclear rDNA and chloroplast DNA markers) will be presented based on recent studies done by the Thomasian Angiosperm Phylogeny and Barcoding Group (TAPBG). In the past 10 years, TAPBG has been active in resolving imperfectly known endemic genera such as *Antherosteles*, *Greeniopsis*, *Villaria* and several other endemic species of the Philippine Rubiaceae (coffee family). Current nomenclatural changes involving the Philippine Rubiaceae inferred from molecular data and morphology will be reported.

D. S. Rabor’s Bird Collection and Knowledge on Philippine Avifauna

James D.V. Alvarez
Museum of Natural History, University of the Philippines-Los Banos
Email: mnhuplb@gmail.com

Dr. Dioscoro “Joe” S. Rabor is considered as the father of Philippine Wildlife because of his incomparable contribution to studies on Philippine biodiversity, not only on birds, but also on fishes, mammals, amphibians and reptiles. During his more than 20 years (1935-1977) of involvement in field research, he has led as much as 50 biodiversity expeditions on the major islands in the Philippines. From these fieldwork, he collected approximately 60,000 specimens of birds, which were deposited at the Field Museum of Natural History (FMNH), Yale Peabody Museum (YPM), Delaware Museum of Natural History (DMNH), Smithsonian Institution (USNM), American Museum of Natural History, Silliman University Museum and Rabor Memorial Collection at UPLB Museum of Natural History (UPLB MNH). In the Philippines, a large portion consisting of a total of 9,965 specimens are deposited and catalogued at UPLB MNH. Throughout the years, these specimens remain to be significant references and materials for taxonomic and ecological studies. At UPLB, some specimens are used as teaching materials in Ornithology classes. Several researchers and students have utilized the specimens in identifying species limits using the criteria of Tobias et al. (2010). With the advent of technology in molecular biology, museum specimens are also becoming significant sources of materials for extraction of historical DNA for sequencing and phylogenetic analyses. This is extremely important on resolving taxonomic issues on threatened or rare species wherein collection of specimens is highly restricted by law.

A Glimpse on the Bat Ectoparasite Fauna of the Philippine Islands

Ace Kevin S. Amarga¹, Sheryl A. Yap¹, Kendra L. Phelps² and Jessamyn R. Adorada¹

¹Insect Taxonomy Laboratory, Crop Protection Cluster, College of Agriculture, University of the Philippines-Los Banos

²Department of Biological Sciences, Texas Tech University, USA

Email: ace_amarga061@yahoo.com, sayap@uplb.edu.ph, kendra.phelps@ttu.edu, jadorada07@gmail.com

Ectoparasite fauna on bats comprises of haematophagous arthropod species that exhibit remarkable morphological adaptations. Geographic distribution of such group reflects the spatial extent of their volant hosts, which demonstrates varying degrees of host specificity, despite the overlaps on the host's distribution. This paper presents the geographic distribution of bat ectoparasites on Philippine islands, along with new host and island records as well as possible new species from Luzon. Currently, there are 116 recorded ectoparasitic arthropods on bats belonging to 59 genera representing 15 families. Among the faunal regions, Greater Negros-Panay (74 species), Greater Mindanao (40 species) and Greater Luzon (54 species) have the most diverse ectoparasite fauna comprising mainly of acarine species. Bat ectoparasite fauna of the Philippines is mainly a blend of Indo-Malayan elements since their hosts are mainly of Indo-Malayan forms with Papuan admixtures. There are endemic ectoparasitic species and subspecies present in the country such as *Leptocyclopodia ferrarii mabuhai* (Diptera: Nycteribiidae), *Brachytarsina hoogstraali* (Diptera: Streblidae), *Ancystropus eonycteris* (Acarina: Spinturnicidae), *Xeniaria truncata* (Dermaptera: Arixeniidae) and *Chirobia jagori* (Acarina: Sarcoptidae).

Novelties in the Philippine *Coffeae* (Ixoroideae, Rubiaceae) Inferred from Multiple cpDNA and Morphology

Axel H. Arriola¹ and Grecebio Jonathan D. Alejandro^{2,3}

¹Department of Biological Sciences, College of Arts and Sciences, University of the East-Manila

²The Graduate School, College of Science, University of Santo Tomas - España, Manila

³Research Center for the Natural and Applied Sciences, University of Santo Tomas - España, Manila

Email: arriolaaxel@yahoo.com

Recent molecular phylogenetic studies in *Coffeae* resulted in its broader circumscription, reinstatement of *Empogona* and inclusion of *Psilanthus* within *Coffeae*. As a consequence, assessing the monophyly of other members of the tribe is needed to recognize robust phylogenies and establish major evolutionary trends in *Coffeae*. In this study, the monophyly of the Philippine genera of *Coffeae* (*Diplospora*, *Discospermum* and *Tricalysia*) were tested using multiple cpDNA (trnL-F, rpl16, accD-psa1 and petD) markers. A majority-rule consensus tree of the combined cpDNA datasets recovered a highly supported tribe *Coffeae*. *Diplospora* is not monophyletic due to the inclusion of the Philippine *Tricalysia negrosensis* and the placement of *Diplospora sessilis* and *D. sorsogonensis* within *Hypobathrum* of Octotropideae. Examination of the type specimens showed that *T. negrosensis* is allied to *Diplospora* while *D. sessilis* and *D. sorsogonensis* approaches the genus *Hypobathrum*. Meanwhile, *Discospermum* is likewise not monophyletic due to the position of *Xantonnea* within the clade (PP=1.00; BS=85%). As a result, we proposed several new combinations in the tribe *Coffeae* and *Octotropideae*. Moreover, further investigation is necessary to test the monophyly of *Discospermum*.

Phylogeny and DNA Barcoding of Philippine *Lasianthus* Jack (Lasiantheae: Rubiaceae) Including a New Endemic Species

Muhammad Jefte C. Arshed and Grecebio Jonathan D. Alejandro

The Graduate School, University of Santo Tomas - Manila

Email: jeftearshed@yahoo.com, balejan@yahoo.com

The pantropical *Lasianthus* Jack is the largest genus in the tribe *Lasiantheae* which has taxonomic difficulty due to limited morphological variations among species. Moreover, the monophyly of the morphology-based infrageneric sections of the genus, in line with molecular analysis remains doubtful. The taxonomy of Philippine *Lasianthus* was recently revised based only on herbarium specimens and no studies has been done based on phylogeny. Thus, taxonomic re-evaluation of Philippine *Lasianthus* directed by molecular phylogeny is needed. In this lecture, the phylogeny and the most efficient marker use in species-level discrimination of 15 Philippine *Lasianthus* using nrDNA ITS and four cpDNA markers, the rps16, trnT-F, matK and rbcL will be reported. A novel species and three new records of *Lasianthus* were identified. This study is a good contribution to the taxonomy, systematics and biodiversity of the Philippine flora.

Coral Cover and Diversity Analysis of Carias and Quezon Islands of the Hundred Islands National Park

Levylee G. Bautista¹ and Evelyn E. Oda²

¹Don Mariano Marcos Memorial State University- outh La Union Campus, Agoo, La Union

²Saint Louis University, Baguio City

Email: levyleegbautista@gmail.com

The present study aimed to determine the current coral cover and diversity of two reef stations, Carias and Quezon, of the Hundred Islands National Park in Alaminos, Pangasinan. Line Intercept Transect-based photography was used to determine the status of the reef stations. Photographic data were analyzed using the Coral Point Count with Excel Extensions (CPCe) version 4.1 software. A total of 26 and 51 coral species were recorded in Carias and Quezon, respectively, with *Acropora* and *Montipora* being the dominant genera. The Reef Condition Index (RCI) revealed a shift from the previous "excellent" condition (84% live coral cover [LCC]) of Quezon in 2008 to a "good" condition (66.54% LCC). Mortality Index (MI) value, however, has shown that both reef stations are in excellent status due to the small proportion of dead corals. Both reef stations exhibited high diversity as revealed by the Shannon and Simpson Index. However, Quezon reef station had the highest diversity and evenness. Difference in coral distribution and diversity was found to be correlated to variations in seawater temperature, salinity, pH, DO level, substrate dry bulk density, and substrate particle size which can affect the physiology, survival, reproduction, and settlement of the corals. Findings of the present study provided information on the distribution, diversity, and condition of the reef stations. Such data may be used to predict the effects of human activities to ecological processes and to make appropriate decisions on how to further improve the control, supervision, and management of the Park.

Fishing Closure and Survival of the Philippine Crocodile *Crocodylus mindorensis* in Paghongawan Marsh, Siargao Island

Abner A. Bucol¹, Rainier I. Manalo², Angel C. Alcalá¹, Vicente P. Mercado², William T. Belo² and Salvador S. Chan²

¹Silliman University-Angelo King Center for Research & Environmental Management (SUAKCREM)

²Crocodylus Porosus Philippines Inc. (CPPI)

Email: abnerbucol2013@gmail.com, philippinecrocodile@yahoo.com, rimalanoecology@yahoo.com, suakcrem@yahoo.com

Following the confirmed mortality of at least two introduced *Crocodylus mindorensis* due to fishing activities in Paghongawan Marsh, Pilar, Siargao Island, fishing activities (mainly gillnetting) were banned from August 2013 thru local ordinances by the local government units and a resolution by the Protected Area Management Board (PAMB). We compared catch-per-unit effort (CPUE) of gillnet and fish length data obtained two months before and a year after the start of fishing closure. We found a significant increase in mean CPUE from 1.53±0.77 kg (± SE) to 12.92±2.6 kg (± SE). In Sangay-Lilaw Marsh, San Mateo, Burgos where fishing remained uncontrolled, CPUE dropped from 2.29±1.46 kg (± SE) to 0.08±0.003 kg (± SE). In Paghongawan, total lengths (TL) of the targeted *Cichlid* species *Oreochromis niloticus* increased from 12.7±0.22 cm (± SE) to 18±0.28 cm (± SE). The increase in CPUE as a result of fishing closure means a potential increase in food for the crocodiles. However, this may not be appreciated well by the displaced local fishers. Alternative livelihood programs are now being initiated to minimize the local fishers' dependence on gillnet fishery to ensure the survival of *C. mindorensis* in Paghongawan Marsh.

Potential By-catch Problem and its Solutions in Improvised Recycled Polyethylene Terephthalate (PET) Bottle Pot Based on the Comparative Test of Entrance Design in Estuarine Water

Redentor L. Buetre

Partido State University- Sangay Campus, Sangay, Camarines Sur

Email: redentorbuetre@yahoo.com

Potential by-catch problem and its solutions in improvised recycled (pet) bottle pot based on the comparative test of entrance design carried out in estuarine water of Sangay, Camarines Sur from May to July 2014 was analyzed. The comparative test indicated that the rectangular ventral entrance design was effective in catching mud crab (*Scylla sp*) and butterfly fish (*Chaetodontidae*) in night time and day time respectively than in semi circular entrance design. The position and shape of rectangular ventral design possibly favor the morphology and directional feeding habit of its catches. However, if the rectangular ventral entrance design will be treated as ideal entrance design for PET bottle pot in catching mud crab and butterfly fish, potential by-catch problem will be perceived. Puffer fish, shrimp, cardinal fish and snails will be the potential by-catch if the PET bottle pot using rectangular ventral entrance design will be adopted in estuarine fish capture. Nevertheless, the problem of by-catch will be minimized if by-catch mitigating techniques and strategies will be applied.

Species Diversity of Bats in Mt. Matutum Protected Landscape

Maria Luisa Non Cabrera², Olga M. Nuñez¹, Roderick C. Makiputin¹, Maximo C. Aljibe³ and Edna P. Oconer²

¹Mindanao State University, Iligan Institute of Technology - Iligan City, Lanao del Norte

²Mindanao State University - General Santos City

³Commission on Higher Education, Region XII - Koronadal City, South Cotabato

Oral Presentations

Mt. Matutum, located in Southern Mindanao, is an important ecosystem that provides resources and services to the surrounding communities. Despite its declaration as protected landscape in 1995 to ensure resource conservation and protection, persistent anthropogenic pressures within the landscape, such as spreading agricultural activity and encroachment is evident in the supposed strict protection zone. In order to assess the impacts of disturbance to biodiversity, and its implication to biodiversity conservation, in Mt. Matutum Protected Landscape, bat species assemblage in sites of different disturbance grades, the well-traversed and less-traversed habitats at altitudinal gradients, was characterized using mist netting method. Results showed a low bat diversity recording 15 species belonging to four families representing 19% of the total Philippine bat species, of which 53% of the assemblage is endemic. One vulnerable species, *Megaerops wetmorei*, despite being rare, was found to be dominant on the well-traversed lowland forest. Meanwhile, the near-threatened species *Dyacopterus spadiceus* was found only in the less-traversed lowland forest. Bat assemblage in less-traversed area has higher species richness, abundance and diversity compared to the well-traversed area. However, these differences were found to be minimal. No significant difference was found in the bat assemblage between two sites with different disturbance grades. Results of the study suggest a need for aggressive conservation and protection strategies with strong involvement of local stakeholders focusing on appropriate habitat restoration and restriction of anthropogenic pressures within the protected landscape.

Anuran Habitat Relations in Cavite's Forest Fragments, Luzon Island

Rubie M. Causaren¹, Neil Aldrin D. Mallari² and Arvin C. Diesmos³

¹Biological Sciences Department, College of Science and Computer Studies, DLSU-D - Dasmariñas City, Cavite

²Fauna & Flora International Philippines

³Herpetology Section, Zoology Division, Philippine National Museum, Rizal Park

Email: rubiemcausaren@yahoo.com, Aldrin.Mallari@fauna-flora.org, arvin.diesmos@gmail.com

Studies on Philippine anurans have focused mostly on species diversity, systematics, taxonomy, and biogeography but very few cover ecological aspects such as population biology and community studies including anuran-habitat associations in forest fragments. The aim of the study was to model the potential impacts of forest fragmentation on the province's anuran diversity using habitat associations. Anuran surveys and detailed habitat recordings were done in 84 standardized 100 x 10 m strip transects (within 6 forest fragments) from February to September 2010 and Canonical Correspondence Analysis (CCA) was used to elucidate the relationship of anuran assemblage with their respective habitat characteristics. CCA of the 17 anuran species and 21 habitat covariates produced 2 axes: the 1st canonical axis was an axis of increasing forest quality as influenced by elevation while the 2nd canonical axis was an axis of increasing habitat quality towards forest interior. The niche widths and niche positions of the 17 anuran species along the axes confirmed preference for either forest habitats or riparian areas. The availability of data on anuran species-habitat associations is shown to be crucial in the management and conservation of these forest fragments including the diverse array of fauna and flora associated with these areas.

The Management of Tabagwang (*Jagora asperata*) in the Bicol Region

Skorzeny C. De Jesus and Jethro Emmanuel P. Baltar
Bicol University - Tabaco Campus, Tayhi, Tabaco City, 4511
Email: amiedejesus@yahoo.com, jethroemmanuel@gmail.com

Fawn melania is relatively unknown. No extensive studies have been conducted in the region. Since the population of this is at risk of collapsing due to the destruction of its natural habitat, this organism is now very rare to find. Therefore, the need to assess its population structure is very crucial for sustainable utilization of such resource. Collection of the species was done, from January 2013 until May 2014, in Catanduanes. 28,921 individuals were collected. Length distribution shows that majority of the catches are from 34 to 46 millimeters. Two cohorts were observed, in which the mean length of the first cohort is 32.77 millimeters, while the second was 43.81 millimeters. The estimated L_{∞} is 73.87 millimeters and K is 0.425 year⁻¹. The estimated total mortality (Z) rate is 1.92 year⁻¹, natural mortality (M) rate is 0.68 year⁻¹, and fishing mortality (F) is 1.24 year⁻¹. Exploitation rate yielded a value of 0.65, indicating light exploited condition. Virtual population (cohort) analysis was also performed. Maximum Sustainable Yield as a function of fishing mortality, $F(MSY)$, was estimated using yield per recruit model. The estimated MSY/R is 6.0238 grams per recruit and $F(MSY)$ is 1.5 per year. It is thus recommended to implement seasonal closure between the months of August and January, or collect individuals with a length of ≥ 45.57 millimeters, or the combination of both, to prevent population decline.

Molecular Phylogeny and Barcoding of Philippine *Mycetia* Reinw. (Rubiaceae) Inferred from Multiple Sequence Data

Ulpiano P. de la Bajan Jr.¹ and Grecebio Jonathan D. Alejandro²

¹The Graduate School, University of Santo Tomas, Manila

² Research Center for the Natural and Applied Sciences, University of Santo Tomas, Manila
Email: jundelabajan@gmail.com, balejan@yahoo.com

Mycetia Reinw. (Rubiaceae) is a well-defined monophyletic group of tribe *Argostemmateae*. Prior to the World Rubiaceae Checklist, the Philippines had two *Mycetia* species: *M. cauliflora* Reinw. and *M. javanica* (Blume) Reinw. ex Korth. A revisionary work transferred the two remaining *Adenosacme* species, *A. apoensis* and *A. mindanaensis*, to its synonym *Mycetia*, thus; resulting to new combinations: *M. apoensis* (Elmer) Govaerts and *M. mindanaensis* (Elmer) Govaerts, both endemic to Philippines. Currently, the taxonomy and phylogeny of Philippine *Mycetia* are imperfectly known. To address this issue several species of the genus were collected from Negros Oriental, Camarines Sur, Batanes, Agusan del Norte, Surigao, Camiguin and Davao. This study involves morphological and molecular assessment using DNA markers: rps16 intron, trnL-F and ITS. Bayesian analyses showed that *M. cauliflora* and *M. apoensis* are sister-taxa while *M. mindanaensis* is morphologically distinct from *M. javanica*. Interestingly, at least two species initially morphologically identified as *M. javanica* showed divergence with a high support. A new divergent species of Philippine *Mycetia* is further recognized in this study. Additional markers (rbcL, matK and trnH-psbA) were utilized for to recommend potential barcode(s) of the genus.

Quezon Protected Landscape, An Important Limestone Karst Ecosystem on Luzon Island

Louise Abigail A. de Layola¹, Mae Lowe L. Diesmos², Essex Vladimer Samaniego^{1,3}, Anton Lorenzo II¹, Jona Candace Vasquez⁴, Rafe M. Brown⁵ and Arvin C. Diesmos⁶

¹The Graduate School, University of Santo Tomas - Manila

²Department of Biological Sciences, Research Center for the Natural and Applied Sciences, University of Santo Tomas, Manila

³Department of Biological Sciences, Southern Luzon State University - Quezon

⁴College of Science, University of Santo Tomas - Manila

⁵Biodiversity Institute and Department of Ecology and Evolutionary Biology, University of Kansas - USA

⁶Herpetology Section, Zoology Division, Philippine National Museum - Manila

Email: abigail.delayola@gmail.com, maediesmos@gmail.com, masayang_langgam@yahoo.com, tonylorenzo08@yahoo.com, jonacandacevasquez@gmail.com, rafe@ku.edu, arvin.diesmos@gmail.com

Quezon Protected Landscape (QPL) is a limestone karst ecosystem and is recognized as an important key biodiversity area in the Philippines. This type of ecosystem is unique and is highly diverse because of its complex environment, physiognomy, and variable climatic conditions. Limestone karst has been demonstrated to be suitable for the evolution of unique assemblage of amphibians and reptiles. Herpetofaunal survey was done in QPL during the period of June to October 2013, using standard methods such as strip transect (10 x 100 m) sampling regimen and by opportunistic methods, both during the day and at night. A total of 34 new records of amphibians and reptiles were observed in this protected area. Our record consists of 13 species of lizards, five species of snakes, one species of turtle, and 15 species of frogs. Based on data gathered, QPL harbors moderate levels of richness but includes karst-obligate taxa and previously undescribed species. Our results suggest a complex association between environmental variables and species richness and distribution as shown by multivariate analyses (ordination techniques) of data. QPL requires a management plan that is specifically designed for limestone karst ecosystem.

Assessment of Flora in the Vicinity of Lake Mainit Watershed, Caraga Region, Mindanao

Meljan T. Demetillo¹, Romell A. Seronay¹ and Richie P. Lador²

¹Department of Biology, Caraga State University, Ampayon, Butuan City

²Office of the Vice President for Research & Extension, Caraga State University - Ampayon Butuan City

Email: meljan_demetillo@yahoo.com, romell.seronay@gmail.com

Lake Mainit is one of the Key Biodiversity Areas in the Philippines with unique biodiversity resources. It is also at risk due to forest degradation and conversion of forested land to agriculture, shifting cultivation, and small scale mining activities. Thus, it is the main concern of this research to identify and assess the endemic and endangered flora of Lake Mainit and its watershed. The survey revealed a total of 202 species of which 14 species are threatened, 52 are endemic and 57 are economically important. Among the threatened species were *Toona calantas*, *Dracontemelon Dao*, *Dipterocarpus validus*, *Shorea negrosensis*, *Shorea contorta*, *Shorea polysperma*, and *Agathis philippinensis*. Noteworthy is the *Raflesia mixta*, a new species of plant found in a secondary growth forest of Mainit, Surigao del Norte. This species is also considered site endemic, rare, and threatened. The result of this study would serve as basis for the formulation of policies for the protection and conservation of these species, and the formulation of the Lake Mainit Watershed Management plan.

Morphological Characterization and Phenotypic Diversity Assessment of Stilt Mangroves (*Rhizophora spp.*) in Pagapas Bay Calatagan, Batangas

Leah E. Endonela, Maribel L. Dionisio-Sese, Nestor C. Altoveros and Teresita H. Borromeo
University of the Philippines-Los Banos, Laguna
Email: e_endonela@yahoo.com

The phenotypic diversity of stilt mangroves (*Rhizophora spp.*) germplasm in Pagapas Bay, Calatagan, Batangas was assessed. Plant characterization descriptors for stilt mangroves were developed and were validated through a two-year field exploration. The descriptor states for each character covered the extent of morphological variations present in stipules, leaves, colleters, flowers and viviparous propagules. Diversity analysis using standardized Shannon-Weaver index (H'), an average H' value of 0.77 indicates high intraspecific phenotypic diversity among the *Rhizophora* species studied. Analysis of scores for 20 qualitative traits using UPGMA SANH simple matching coefficient revealed that *R. mucronata* and *R. stylosa* showed 100% similarity at coefficient 0.76. For the analysis of scores for 20 quantitative traits using UPGMA SANH Euclidean Distance coefficient, *R. mucronata* and *R. x lamarckii* showed 100% similarity at coefficient 7.12. Interestingly, *R. x lamarckii* resembles intermediate features between *R. mucronata* and *R. stylosa*. This exemplified that *R. mucronata*, *R. stylosa* and *R. x lamarckii* are closely related, whereas *R. apiculata* formed a separate distinct group. Hence, this study claimed that all the three species, *R. apiculata*, *R. mucronata* and *R. stylosa* can be a parent of sterile hybrid *R. x lamarckii*. Characterization descriptors, species inventory and phenotypic diversity reports are important tools for sustainable conservation and possible application of integrated community-based coastal zone management schemes in the country.

Terrestrial Earthworms (Clitellata: Megascolecidae) Biodiversity from Select Municipalities of Samar Island

Rodante Granfil Flores
Philippine State College of Aeronautics - Pasay City
Email: dantegransfilflores@gmail.com

A total of 17 native and an exotic species were identified from select municipalities within the island of Samar belonging to eight genera: *Amyntas*, *Archipheretima*, *Metaphire*, *Pheretima*, *Pithemira*, *Pleionogaster*, *Polypheretima*, and *Pontoscolex*. The first seven are native genera belonging to family Megascolecidae, while *Pontoscolex* is a widely distributed invasive belonging to family Glossoscolecidae. *Pleionogaster* has seven identifiable species-taxon, *Pheretima* has five representative species, while the rest have one presumed species each. Taxic determination was based primarily on the Asian Worm Description Form (AWDF) and taxonomic key developed by James (2001). The total number of genera and species for each genus reported in this paper are neither diagnostic nor representative for the entire island of Samar as they are based only on limited morphological information and select sampling areas but could fairly provide substantial baseline information on the earthworm faunal composition of the islands of Samar.

Bird Watching as a Recreation and Nature Activity in Baguio City and Nearby Municipalities of Benguet Province: A Conservation Effort

Jocelyn A. Floresca
University of the Philippines - Baguio
Email: jho4floresca@yahoo.com

The incredible number of bird species demonstrates amazing evolutionary adaptations, and through proper education on the characteristics and behavior of birds, communities can be made aware of the ecological importance of birds. Baguio City is known as the summer capital of the Philippines owing to its cold climate. Benguet is a province with thirteen municipalities. It is also known for its mountainous terrains and vegetable production. After a year of documenting birds in Baguio City and Benguet, there are eighty four bird species identified as of this date; twenty one of them are endemic. Initial bird conservation measures have also been undertaken. This include awareness raising through the dissemination of information on the presence of birds in Baguio and Benguet, and their importance to the community. First, bird awareness has been introduced as part of the Physical Education course in the University of the Philippines-Baguio. Second, a photo exhibit of the birds found in the area was presented twice for the community of Baguio and Benguet, in collaboration with the different environmental groups, institutions, academe, and private individuals. Third, through private individuals, different bird photographs taken in Baguio and Benguet were uploaded in social media. Constant, informal discussion and presentations with the local residents has been the key in these conservation efforts. Since then, hunting has been prohibited, and former bird hunters are employed as bird guides in the field.

An Introduction to the Australasian Network for Ecology and Transportation and Road Ecology in Island Environments

David R. Francis
Cardno - Australia
Email: david.francis@cardno.com.au

The impact of roads and other linear infrastructure on biodiversity is of growing interest amongst scientists and conservationists globally. The rise of 'road ecology' as a field of science is not surprising given there is now over 102 million kilometers of road crossing our planet. Organizations dedicated to the field have operated for several years including the International Conference of Ecology and Transportation (ICOET) in the USA and the Infra Eco Network Europe (IENE) for European nations. While many of the issues faced in the southern hemisphere are similar, there are numerous that are dissimilar requiring alternative and sometimes unique management solutions. In recognition of the need to address the issue and move the field forward in the Australasian region the Australasian Network for Ecology and Transportation (ANET) was formed in 2013. ANET is a not-for-profit organization that aims to promote best-practice in road ecology and the design of environmentally-sensitive linear infrastructure. The organization provides a centralized location for the latest evidence on the design, construction and evaluation of environmentally sensitive roads and linear infrastructure. In mid-2014 we held our inaugural conference in New South Wales Australia. In this paper I discuss the broad discipline of road ecology, the role of ANET in the region and discuss specific examples of road ecology in action in island environments. Barrier mitigation measures ranging from tunnels for penguins to overpasses for crabs have been employed with varying success in island environments.

Rapid Assessment of Macroflora and Macrofauna in the Island Towns of Northern Samar

Divina M. Galenzoga¹, Abraham M. Heriales¹, Tito M. Cabili², Abel Alejandro U. Flores, Jr. ¹, Franklin E. Cortez¹,
Cecille Manuela G. Vicencio¹, Blenah O. Perez¹ and Romula A. Obleopas¹

¹College of Science, University of Eastern Philippines - Catarman, Northern Samar

²College of Education, University of Eastern Philippines - Catarman, Northern Samar
Email: galenzoga@yahoo.com

The study was conducted to identify the terrestrial macroflora and macrofauna in the island towns of Northern Samar, and to determine their abundance and economic uses to the people of the islands. The study was conducted from between April-May from 2012-2014 in the five island towns: Biri, Capul, Laoang, San Antonio, and San Vicente. Line Intercept Transect at 100m, field plot method of 10m x 10m of four representative barangay per island, and interview guide, translated into Samaritan dialect, were used to gather data. The island town of Laoang has the most abundant and diverse plant and animal life; while the island of San Antonio has the least. The most abundant shrubs and trees in the islands were *Mangifera indica*, *Psidium guajava*, *Artocarpus altilis*, *Cocos nucifera*, and *Hibiscus tiliaceus*. The most abundant ornamental plants and vegetables were *Solanum melongena*, *Nonordica charantia*, *Manihot esculenta*, *Bougainvillea spectabilis*, and *Hibiscus rosa-sinensis*, while the most abundant macrofauna were *Gallus gallus*, *Sus scrofa*, *Egretta sacra*, *Equus caballus*, and *Bubalus bubalis*. The macroflora and macrofauna in the island were used by the islanders as sources of food, shelter and medicine. These are also made into kitchen utensils, furniture and boats, handicrafts, decorations. They also serve as pets, and for ethnobotanical/ethnozoological uses.

Practices of Entomophagy and Entomotherapy in Baranggay Alambijud, Argao and Baranggay Lusaran, Cebu City, Cebu Island

Jake Joshua C. Garces¹, Zandra O. Jarito², Leslie Ann T. Barriga³, Froilen C. Domicello⁴ and Nimfa R. Pansit⁵

¹University of San Jose Recoletos - Cebu City

²Cebu Institute of Medicine, Velez College - Cebu City

³Southwestern University - Cebu City

⁴Lapu-lapu City, Philippines

⁵Cebu Normal University - Cebu City

Email: jakejoshuagarces@yahoo.com, zanjie13@yahoo.com, leslieannbarriga@yahoo.com,
froilendomicello@yahoo.com, nrpansit@yahoo.com

The study was conducted in order to discover the medicinal and edible potentials of different insect species in Baranggay Alambijud, Argao and Baranggay Lusaran, Cebu City, Cebu. In order to identify these entomological practices, a survey was carried out by the researchers in these key sites. Fourteen key informants were obtained and these were identified with the aid of two sampling methods- snowball technique and purposive sampling. Open-ended questionnaires were employed in order to obtain authentic and significant information from the key informants. Results showed that in the practice of entomotherapy, two insects are used as medicines: the migratory locust (*Locusta migratoria manillensis*) and honey bee (*Apis dorsata*). Two insect by-products are being utilized: feces of cockroach (*Periplaneta americana*) and honey. White grub (*Cotinis nitida*) and bee eggs were also documented to manifest edible capability and were thus utilized in the entomophagic practices. After applying thematic analysis, it was determined that the causative factors of their entomological practices include their limited educational attainment, their inability to access urban societies, and the influence brought about by their family and community.

Assessing the Effectiveness of Community-conserved Freshwater Protected Areas in the Northern Sierra Madre, Municipality of San Mariano, Isabela

Marites Gatan-Balbas¹, Merlijn Van Weerd¹, Jan Van Der Ploeg² and Lien Vermeersch²

¹Mabuwaya Foundation, Inc., Isabela State University, Cabagan, Campus - Cabagan, Isabela

²Leiden University - The Netherlands

Email: mikaela_tess@yahoo.com, merlijnvanweerd@yahoo.com, vanderploegjan@hotmail.com,
lienvermeersch@hotmail.com

Freshwater fish is an important, and free, source of proteins for rural communities in the northern Sierra Madre on Luzon. Particularly the poor rely heavily on freshwater fish. However, fish stocks are declining as a result of overexploitation, the widespread use of destructive fishing methods (fishing with electricity, dynamite and pesticides), invasive species and rapid land use changes. Freshwater wetlands in the Philippines are severely threatened by these anthropogenic activities, but are poorly represented in the national protected area system. As a result, native freshwater fish in the Philippines are severely threatened. In a context of rural poverty and weak governance, community-conserved areas are possibly an option to protect freshwater biodiversity in the densely populated archipelago. But little is known how and under what conditions community-based freshwater protected areas contribute to local food security and biodiversity conservation. We conducted an in-depth evaluation of 17 community-conserved fish sanctuaries in the municipality of San Mariano, Isabela. The highly variable natural dynamics of tropical freshwater wetlands, and the heterogeneous and often ambiguous character of local institutional arrangements makes it virtually impossible to quantify conservation and livelihood outcomes. The question is therefore not if freshwater protected areas contribute to food security and biodiversity conservation, but if local fishers perceive that their protection efforts are beneficial. This is particularly important because community-based efforts to protect wetlands are often based on very different motivations.

Assessment of Low-cost Light Trapping Methods for Small Insect Sampling in Science City of Muñoz, Nueva Ecija

Hezron P. Gibe¹ and Regielene S. Gonzales²

¹Institute of Environmental Science and Meteorology, College of Science, University of the Philippines - Diliman, Quezon City

²Institute of Biology, College of Science, University of the Philippines - Diliman, Quezon City

Email: hezrongibe@yahoo.com, regielene@gmail.com

Two different setups for capturing insects using light were tested for effectiveness, with the goal of formulating a simple and inexpensive yet statistically effective method of sampling small insects. The two setups are: 1) a bottle trap that utilizes ethanol, and 2) a shallow sticky trap utilizing water-based gel containing ethanol. They are constructed from household materials and are easy to set up and use, as they are passive pitfall traps and do not need much supervision. With the exception of the costs for the light source and electrical cords, the cost of trapping is Php 97 and Php 135 for the bottle and sticky trap setups, respectively. Sampling took place over a period of four days in two weeks, over a ten-hour period from 7:30 p.m. to 5:30 a.m. The mean number insects caught per night of sampling were 146.25. The insects were later counted and identified. The bottle trap method was found to be more effective statistically, using the second order Jackknife species richness estimator, accounting for 81.64% of the estimated total insect orders in the study area, as compared to 78.25% using the sticky trap method.

Forest-associated Vertebrates as Key Indicators of Biodiversity in Mega Natural Parks of the Philippines

Juan Carlos T. Gonzalez¹ and Andres Tomas L. Dans²

¹Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines-Los Baños, Laguna

²Forest Biological Sciences, College of Forestry and Natural Resources, University of the Philippines-Los Baños, Laguna
Email: jtgonzalez@up.edu.ph, andrestomasdans@gmail.com

Natural parks are defined as large reserves with outstanding natural and scenic areas unaltered by man-made perturbation and protected for their significant scientific value. Some 24 natural parks have been established in the Philippines, but only five mega-parks have areas covering over 50,000 hectares, such as Mount Apo (MANP), Northern Negros (NNNP) and Mount Malindang (MMRNP). Understanding the extent of biological diversity as indicated by the richness of terrestrial vertebrate fauna is an invaluable tool for conservation and management. In this paper, we compared five mega-parks distributed amongst four largest islands, two of which have been proclaimed as ASEAN Heritage Parks. We also present results of a 2009-2010 survey around the Palanan Forest Dynamics Plot within Northern Sierra Madre Natural Park (NSMNP) on Luzon Island. On three sites, we recorded 89 bird species from lowland rainforests (68 in agroecosystems), 21 mammals, 21 reptiles, and 16 amphibians. One recognized as the largest protected area in the Philippines, NSMNP covers 359,486 hectares and harbours 294 species of birds, 21 mammals, 16 reptiles and 13 amphibians. With 344 species of land vertebrates, it definitely fairs well over the larger Samar Island Natural Park (SINP), which harbours 330 species. At 458,730 hectares, SINP contains 215 birds, 38 mammals, 51 reptiles, and 26 amphibians. Despite having areas less than 100,000 hectares, smaller mega-parks have comparable vertebrate faunal richness at 200 species for NNNP, 378 for MANP, and 257 for MMRNP. Indeed, unique insular vertebrate faunal composition is a significant indicator for biodiversity in these mega-parks.

A Multiproxy Top-Basal Approach: A Preliminary Palaeolimnological Analyses of Lake Mohicap in the Island of Luzon

Kenoses L. Legaspi¹, Susana F. Baldia², Rey Donne S. Papa², David Mark Taylor³

¹Graduate School, University of Santo Tomas - Manila

²Research Center for the Natural and Applied Sciences, University of Santo Tomas - Manila

³Department of Geography, National University of Singapore - Singapore

Email: kenoses_legaspi@yahoo.com, sfbaldia@yahoo.com, reypaps@yahoo.com, david.taylor@nus.edu.sg

Surface water examination has been widely used in limnology for many decades to examine water quality and aquatic health conditions. However sediments have now become a promising tool in determining ecological changes due to its particular sensitivity to anthropogenic activities, and its ability to integrate biological and geochemical information. In this study, we used multiproxy analyses to reconstruct the past environmental changes in Lake Mohicap, one of the seven crater lakes in San Pablo, Laguna, and one of the most threatened lakes in the world due to unregulated land use and fish farming. Our objective is to determine the changes that occur in the lake using the top-bottom scheme by using biological (diatom and pigment), physical (wet bulk density, LOI, and % carbonate content), geochemical proxies (stable isotopes) and dating proxies (radiocarbon dating). Our preliminary results show that the status of Lake Mohicap has shifted over the last c 300 years towards a much more eutrophic state. Basal samples indicate very low aquatic productivity, with terrestrial plants being the main source of organic matter accumulating in the lake. Results further suggest a greater contribution to organic material accumulating in the lake from aquatic sources, supported by algal data, and possibly indicating the frequent occurrence of (toxic) cyanobacteria blooms. The abundant diatom *Aulacoseira granulata* in the uppermost samples also point to recent eutrophication. Further research should be able to identify exactly when the lake started to become more eutrophic, and the most likely driver/s to this change. It could also reveal whether there have been periods of abrupt changes in water quality in the past, and how quickly lake chemistry and ecology can recover.

Sibuyan Island: Through the Looking Glass

Neil Aldrin D. Mallari, Ralph Sedicke C. Lapuz, Roven Tumaneng, Jose Don de Alban, April Faith Guinto, Mimie Ledesma, Jennica Paula Masigan, Angelica Monzon, CE Nuevo, Joanne Rae Pales, Margie Parinas, Laila Monera Pornei, Edmund Leo Rico, Christian Supsup, Dennis Tablazon, Karen Veridiano and Jackie Lou Wenceslao
Fauna & Flora International-Philippines, Tagaytay City, Cavite

Email: Aldrin.Mallari@fauna-flora.org, sedricke15@gmail.com, Roven.Tumaneng@fauna-flora.org,

We surveyed Mt. Guiting-Guiting National Park (MGGNP) and many other natural areas, including ancestral domains by the Sibuyan Mangyan Tagabukid (SMT) in April to June 2014 to determine its status to inform the management bodies and decision-makers on appropriate conservation interventions. We used a suite of robust survey methods and analytics including socio-economic survey, land cover analysis, and ecological assessment. Ecological and spatial data analyses were performed for species-habitat relationships, occupancy, species distribution modeling, and spatially explicit vegetation analyses. Few true forest species were recorded whilst many species tolerant to varying degrees of disturbance were observed. Land cover change detection analysis revealed moderate to severe degradation of old growth forests (at the rate 24% from 2007-2009), whilst there was expansion of early secondary growth forests (at 9.82% per annum). Socio-economic analyses of the drivers of land cover change revealed a defined incidence of individualistic forest subsistence gathering. Our results suggest that the boundaries of the MGGNP need to be repositioned to include identified High Conservation Value Areas (HCVAs), which are identified high congruence areas of key species requirements, and that these areas become strict protection zones. The core values of the SMT must also be strengthened to address individualism and cease the degradation of the island's remaining forests.

Overcoming the Design Flaws in Protected Area Management

Neil Aldrin Mallari¹ and Tony Whitten²

¹Fauna & Flora International, Philippines - Tagaytay City, Cavite

²Fauna & Flora International - UK

Email: Aldrin.Mallari@fauna-flora.org, Tony.Whitten@fauna-flora.org

We reviewed seven exemplar protected areas to identify challenges in delivering the twin objectives of protected areas (PAs). The results have validated the need to strengthen existing protected area management regime by providing inputs to its biodiversity conservation programme. The results have also showed that there is already a very strong legal framework, decentralised and collaborative institutional arrangements, and a multi-sector and participatory approach to protected area planning and management in many PAs. However, it is apparent there is an absence of a strong, scientifically defensible set of conservation planning tools for most, if not all, PAs in Philippines. This gap between management systems/infrastructure and science-based conservation planning clearly undermines the efficacy of PAs in the Philippines. The current management regime in most PAs (including management zoning) were found to be inadequate in securing these key lowland habitats and species since these key habitats have lower protection status (i.e. currently designated as buffer zones) than high-elevation forest (i.e. currently designated as core zone) and there seems to be an absence of a clear conservation programme and biodiversity monitoring protocol. At the onset, this review was designed to provide decision-making tools for PA management to set biodiversity conservation targets that will take into account people's legitimate livelihood interests inside or around its boundaries. It aims to provide scientific inputs to guide PA management through the planning process from site selection, site profiling and zoning to monitoring and evaluating impacts of the adopted management interventions.

Diversity and Conservation Status of Reptiles in *Terminalia* and Sago Swamp Forests of

Agusan Marsh, Bunawan, Agusan Del Sur, Mindanao

Meconcepcion M. Ngilangil and Rainer Sularte
St. Paul University-Surigao, Surigao City
Email : vancouver_samantha_khan@yahoo.com

The study was concerned about the abundance and biodiversity threats among reptiles which are becoming endangered. Agusan Marsh Wildlife Sanctuary is one of the most significant and unique wetlands in the Philippines. This study was the first systematic investigation of reptile species on the marsh. This study aimed to conduct a systematic study on reptiles in Sago swamp and *Terminalia* forest, Agusan Marsh. The methods used were a combination of quadrat method, pitfall trap and opportunistic during September to December 2013. The study found out that eleven (11) species belonging to seven (7) families, with a total of 237 individuals were documented in both sampling sites. Five species were recorded as Philippine endemic: *Hydrosaurus pustulatus*, *Naja philippinensis*, *Draco quadrasi*, *Tropidophorus davaoensis* and *Tropidophorus misaminius*. Among the five endemic species, *Tropidophorus davaoensis* and *Tropidophorus misaminius* were Mindanao endemic. Both sampling sites documented high diversity and more or less even distribution. Despite the exceedingly small land coverage, the sago swamp and *Terminalia* forest were confronting threats due to unprecedented human activities. Conservation action is essential to protect and preserve biodiversity in the entire Agusan Marsh.

Tree Species Composition, Richness and Diversity of the Mt. Matutum Protected Landscape

Christine Dawn Galope Obemio¹, Marigold Cagumbay Tumamac¹, Leopoldo L. Remollo², Arthur Bañaga², Paolo M. Tagaloguin¹, Maximo C. Aljibe³ and Edna P. Oconer¹
¹Mindanao State University - General Santos City
²Mindanao State University - Maguindanao
³Commission on Higher Education, Region XII - Koronadal City, South Cotabato
Email: deariadawn_pk@yahoo.com, aurumchan@gmail.com, paolo.tagaloguin@msugensan.edu.ph, ednapo@yahoo.com

Forest trees assemblage and distribution were assessed through plot method across disturbed and undisturbed habitat gradients (500-1712 masl) representing lowland, montane and mossy forests of Mount Matutum Protected Landscape (MMPL). Species diversity through composition, richness and distribution along with endemism and conservation status was also determined. 1349 stems (≥ 10 cm DBH) were recorded; resolved into 45 families, 82 groups and 129 species - primarily dominated by genus *Ficus* of the Moraceae family. Disturbed lowland forest is mostly represented by *Piper aborescens* Roxb., *Artocarpus blancoi* (Elmer) Merr and *Mimusops elengi* L.; whereas less traversed lowland forest is dominated by *Trema orientalis* (L.) Blume, *Dendrocnide orbicularis* (Wedd.) Chew and *Ficus ulmifolia* Lam., *Securinega flexuosa* (Muell. Arg) dominates both well and less traversed montane forest. Meanwhile, *Dacrycarpus imbricatus* (Blume) de Laub.var.patulus de Laub covers 80% of mossy forest well and less traversed areas. Disturbed and undisturbed montane forests (1323-1372 masl) demonstrate the most species rich area. Species diversity index is highest in disturbed montane forest (0.96) and lowest in less traversed lowland forest (0.85). 2013 IUCN Red List of Threatened species enlisted 2 critically endangered and 16 vulnerable species of which five are Philippine endemics indicating that an efficient biodiversity conservation measure must continuously be undertaken in MMPL.

Preventing the Extinction of Philippine Eagles: New Distribution Records and Conservation Actions in Mt. Dingalan and Mts. Irid-Angelo IBA

J Kahlil B. Panopio¹, Marivic G. Pajaro¹, Josiah David G. Quimpo¹, Anson M. Tagtag² and Maria Lourdes G. Almada²
¹Haribon Foundation for the Conservation of Natural Resources, Quezon City
²DENR-Biodiversity Management Bureau, Quezon City
Email: kahlilpanopio@gmail.com, marivic.pajaro@gmail.com,, dtheyveed@gmail.com, anson_tagtag@yahoo.com, airam203@yahoo.com

Oral Presentations

Historical distribution records of Philippine Eagles along the Sierra Madre Mountains are concentrated along the northern part of the mountain range whereas the central and southern units have fewer accounts. In partnership with the Philippine Raptors Conservation Program, Philippine Eagle sightings in central and southern Sierra Madre from 2013-2014 were re-examined. Results of purposive surveys in Mt. Dingalan (Mt. Mingan) Important Bird Area (IBA) and Mts. Irid-Angelo IBA show that Philippine Eagles are indeed present in the forests of Nueva Ecija Province and Quezon Province. Getting the buy-in of the local government, intensive communication, education, and public awareness campaigns to enhance the knowledge of local communities about the species, wildlife conservation, reforestation and habitat protection were conducted following the recent discoveries. Local capacities were also improved by training and deputizing Wildlife Enforcement Officers as well as training local stakeholders on raptor research, handling, rescue, and management techniques. The next stage to sustain the conservation of the Philippine Eagle is to find their nests and designate these areas as Critical Habitats. The proactive involvement of local communities in decision-making processes would be an invaluable asset towards the conservation of Philippine Eagles. Instilling their moral beliefs in conservation messages helps transform peoples' lives towards respecting wildlife, not only of the Philippine Eagle, but other equally important species. The concerted effort of the government, local communities, NGOs, and other stakeholders is deemed necessary in the successful conservation of our national bird.

Hunting Escalates Extirpations of Frugivorous Birds in a Fragmented Tropical Forest Landscape

Bonifacio O. Pasion
Community Ecology and Conservation Lab, Xishuangbanna Tropical Botanical Garden, China
Email: bonifacio.pasion@gmail.com

The expansion of production landscapes and the subsequent fragmentation of native habitats is a leading cause of biodiversity loss. However, forest fragmentation is also often accompanied by an increase in hunting intensity due to increased forest accessibility and focus of activities on a smaller forest area. Nevertheless, little is known of such effects on bird species extirpations. We conducted a temporal study of bird extirpation along forest fragments (0.8-14000 ha) of Menglun, Yunnan, China. In this study, we assess the response of birds to fragmentation and hunting by comparing two bird lists: one prepared in the late 1950s before fragmentation and the other prepared over the last four years after fragmentation in a Chinese tropical landscape affected by hunting. We investigated six ecological traits to determine which traits explained extirpation probability (EP) of birds in this landscape. In addition, we analyzed the effect of body size on the EP of forest frugivores and the effect of vertical niche use on the EP of forest insectivores. In the last 50 years, 39% of the bird fauna has been extirpated from the study landscape. Extirpation probability increased with body size and clutch size, decreased with habitat breadth, and differed across diet guilds. Among forest birds, large frugivores and bark gleaning insectivores had high EPs. Hunting pressure increased with fragment size.

A Review on the History, Systematics and Diversity of Cinnamon (*Cinnamomum spp.*) in the Philippines

Jay P. Picardal¹, Maribel G. Agoo¹, Domingo A. Madulid¹, Inocencio E. Buot, Jr.², Ma. Carmen A. Lagman¹, Arvin C. Diesmos³, Edmund Leo B. Rico⁴, Calixto E. Yao⁵ and Neil Aldrin D. Mallari⁴

¹Biology Department, De La Salle University-Manila

²Management and Development Studies, UP Open University-Los Banos, Laguna

³Herpetology Section, Zoology Division, Philippine National Museum, Rizal Park, Manila

⁴Fauna and Flora International-Philippines, Tagaytay City, Cavite

⁵Cebu Biodiversity Conservation Foundation, Inc., Cebu City

Email: jay_picardal@dlsu.edu.ph

The cinnamon tree is labeled as “the eternal tree of tropical medicine” due to its long list of potential pharmacological properties and was regarded an essential commodity in the earliest “spice trade” because of its culinary, religious and cultural value. To date, there are 21 recorded cinnamon species in the Philippines with 76% endemism. However, unsustainable resource utilization coupled with the inevitable impact of climate change threatened its species diversity in the recent decades, listing *C. cebuense*, *C. oroi* (= *C. sandkuhlii*), *C. mercadoi* and *C. iners* as threatened species by DENR in 2007. This status resulted to the formation of a multi-sectoral initiative to conserve the last remaining wild populations of cinnamons in the country, as well as to increase reforestation effort to answer socio-economic demands for rural livelihood and resource use. Mainstreaming cinnamon conservation program, however, requires a thorough understanding and valuation of this resource. This can only be achieved if participants in the conservation program know (1) the species being conserved, (2) the conservation agenda and (3) the socioeconomic benefit that comes with the conservation initiative. Therefore, knowing the historical background, systematics and diversity of Philippine cinnamon is the first essential step to achieve a successful conservation program. From Alcina’s *Historia de Bisayas* (1668) to the most recent scientific monograph on cinnamon by AJHG Kostermans (1986), this review attempted to present a synthesis of the available literature on cinnamon species found in the Philippines, with emphasis on cultivation history, systematics and species diversity.

Enhancing Conservation Efforts of Dugongs (*Dugong dugon*) in Busuanga, Calamian Islands, Palawan by Communities

Reynante V. Ramilo¹, Patricia ZR Davis², Danica D. Lopez¹ and Archie F. Espinosa¹

¹C3 Philippines, Busuanga, Palawan

²Community Centred Conservation (C3), London

Email: rey@c-3.org.uk, patricia@c-3.org.uk

Dugongs are globally recognized as vulnerable by the IUCN, but have recently been classed as critically endangered in the Philippines. Dugongs have been hunted in the past using nets, prong, hook, spear, harpoon, and dynamite and the meat sold openly in public markets. Nowadays, bycatch in fishing nets is the most significant threat to the species’ survival. However, dugongs can also be incidentally captured in fish corrals and seaweed farms, as well as directly targeted through blast fishing. The dugong is reliant on shallow coastal seagrasses; thus shares almost its entire habitat with local coastal inhabitants. Busuanga Island is recognized as one of the strongholds for dugongs in the Philippines, and our research aims to involve local communities to identify specific key sites for dugong conservation action. Since 2010, our team of researchers has developed strong relationships with local communities and established a community reporting network for dugong sightings. In addition, we conducted interviews regarding traditional ecological knowledge of local fishers in identifying key areas for the species around the island. We are currently focusing on these key areas, and use boat surveys to estimate population size and enhance the understanding of their ecology. Using these data, we will work to build community consensus and support with the Local Government Units (LGUs) to establish locally-managed dugong sanctuaries where activities that threaten the species’ survival (e.g. motor boat activity, net fishing) are regulated. We hope that locally-managed dugong sanctuaries will be beneficial to the majority of the stakeholders.

Taxonomy and Notes on the Cave-dwelling Nature of *Phlogiellus sp.* Barrion-Dupo et al. in Polillo Island, Quezon Province

Joseph B. Rasalan

Environmental Biology Division, Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines-Los Baños, Laguna and

Caves, Wetlands and Other Ecosystems Division, Biodiversity Management Bureau, Ninoy Aquino Parks and Wildlife Center, Diliman, Quezon City

The taxonomy and ecology of a new cave-dwelling species, described and named in this study as *Phlogiellus sp.* was studied. Spiders inside and outside Puting Bato Cave 3-4, Polillo Island, Quezon Province were surveyed and identified to determine if the newly-described mygalomorph spider, *Phlogiellus sp.* is a cave resident. *In situ* nesting and foraging behavior as well as *ex situ* notes on spiderling development were documented. In relation to other species of spiders present, *Phlogiellus sp.* was found to be the dominant spider in Cave 3-4, and was distributed throughout most of the cave. *Phlogiellus sp.* was observed to take advantage of the cave environment as a nursery. *Phlogiellus sp.* constructed multiple-entrance nests to serve as protection against predators. The cave environment also served as a hunting ground for food. Identified possible prey items were cave crickets of the family Rhabdophoridae, a frog *Platymantis dorsalis* Duméril, 1853 and a cave dwelling cockroach *Pycnoscelus striatus* Kirby, 1903. It was found that sex is strongly associated with zonal distribution of *Phlogiellus sp.* in the cave. More female spiders were in the dark zone while male spiders were in the entrance and twilight zones. Females were observed to prefer the dark zone primarily for protection of eggs against predators while males occupy entrance and twilight zones, possibly in search of mates. Meanwhile, maturity is moderately associated with the cave zone; most adults are in twilight and dark zones while sub-adults are mostly found in the twilight zone.

Evaluation of DNA Barcodes for Molecular Identification of Selected Medicinal Plants in Batanes Group of Islands and Commercially Sold in Quiapo, Manila

Ruby Raterta¹ and Grecebio Jonathan D. Alejandro²

¹Philippine Council for Industry, Energy and Emerging Technology Research and Development, Department of Science and Technology - Bicutan, Taguig City

²The Graduate School, College of Science and Research Center for the Natural and Applied Sciences, University of Santo Tomas - Espana, Manila

Email: bhieya02@yahoo.com, balejan@yahoo.com

The incorrect plant identification and unsustainable extraction of medicinal plants from their natural habitat may result in adulteration and substitution of herbal medicines in the market. This study evaluated the most effective marker using DNA barcodes of three chloroplast regions (matK, rbcL, trnH-psbA and ITS) and one nuclear region (ITS) with single primer pair locus for authentication and identification of 68 selected Philippine medicinal plants. It specifically sought to: 1) generate nucleotide sequences of the four barcode loci (matK, rbcL, trnH-psbA, ITS) of medicinal plant; 2) assess and identify the performance of the four potential barcodes based on universality of the markers used and discriminatory power using pairwise sequence divergence analysis; and 3) determine the species resolution. A total of 68 medicinal plants collected in Batan and Sabtang islands, Batanes Province, and purchased in Quiapo, Manila constitute 35 families and 57 genera dominated by Rubiaceae, Rutaceae, Fabaceae, Compositae, and Moraceae. The genomic DNA of the medicinal plants was extracted, amplified, sequenced and analyzed using bioinformatics tools. In this study, matK and trnH-psbA showed the highest PCR and sequencing success rate, exhibited the best species discrimination and may serve as effective barcode marker by resolving 80% with 53 confirmed taxa of medicinal plants composed of 10 from Quiapo and 43 from Batanes group of islands including the 11 identified Philippine alkaloid-containing plants. The present study is the first information on DNA barcoding of medicinal species of Batanes flora, a fact that renders this study a worthwhile contribution to the Philippine flora.

Habitat Associations of Four Endemic and Threatened Philippine Parrot Species Present in Bataan Natural Park

Nikki Dyanne C. Realubit¹, Leticia E. Afuang² and Carmela E. Española³

¹Graduate School, University of the Philippines-Los Baños, College, Laguna

²Institute of Biological Sciences, University of the Philippines-Los Baños, College, Laguna

³Institute of Biology, University of the Philippines-Diliman, Quezon City

Email: dyannerealubit@gmail.com

Species interaction with different environmental factors in their habitat is an important factor to consider in determining strategies for conservation. This is even becomes more significant if endemic and threatened species-habitat interactions are used. One group of species that are both endemic and threatened is Philippine parrots. This study determined the associated habitat factors to parrot abundance in different sites in Bataan Natural Park. Distance line transect method (340 km) was used to survey parrots in Bataan Natural Park. Parrot population density estimates (individuals/km²) were calculated using DISTANCE for five species: *Bolbopsittacus lunulatus* (31.06-38.307), *Loriculus philippensis* (4.3032-21.542), *Prioniturus lucionensis* (0.20083-5.4895) and *Tanygnathus lucionensis* (1.8214). To determine parrot habitat associations, transects were divided into 400-m transect segments where 22 habitat and environmental factors were measured. The result of Canonical Correspondence Analysis (CCA) for five species of parrots and 22 habitat covariates produced two main canonical axes: canonical axis 1 (with an eigenvalue of 0.14 and accounted variation of 73.27%) and axis 2 (with an eigenvalue of 0.05 and accounted variation of 26.33%). The key findings of species-habitat association suggest that parrot species are primarily influenced by canopy cover, tree structure, and slope. Presence and absence of fruit trees as possible food sources, dipterocarps, epiphytes and pioneering plant as indicators of habitat disturbance are also associated with parrot species abundance. Integrating these factors in managing the two protected areas are essential to park management to identify areas with high conservation value and to help ensure protection of habitat integrity.

Native Species of Small Non-flying Mammals Commonly Inhabit Disturbed Forest Fragments in Upland Agro-forest Ecosystems in Luzon Island

Aris A. Reginaldo, Charmaine P. Batuy, Denise S. Garsain and Michelle E. de Juan

University of the Philippines-Baguio

Email: arisreginaldo@yahoo.com

Several studies in Luzon show that native small non-flying mammals are generally more common in natural and intact forests. There are species that are restricted in healthier habitats and some that can tolerate certain levels of habitat disturbance. In addition, it became more apparent that those that can tolerate disturbances vary in their responses. However, more studies in other habitats are needed to fully understand these. We conducted a survey of a complex agro-forest habitat in Mt. Kabuyao, Luzon by employing standard methodology of trapping small mammals. We used measure of abundance and occurrence to determine how native species are distributed in the fragment of forests, agricultural and residential areas. The six native species (*Apomys abrae*, *Bullimus luzonicus*, *Rattus everetti*, *Chrotomys whiteheadi* and *Archboldomys maximus*), comprising of 46 individuals were mostly recorded in the forests. Two species, *A. abrae* and *R. everetti* were common in the fragments of forest that are surrounded by much wider vegetable gardens. Some individuals even move to the agricultural areas. Interestingly, other individuals were also frequently captured from the small stand of *Alnus* beside the residential area. The other species were uncommon and mainly recorded in the forests. These results support previous studies that certain species can adapt to disturbances including the conditions of disturbed forests. However, in areas where human activities are evident, our results indicate that forests are important to support the existence of native species. The results also imply that restoration of previously degraded habitats may allow re-establishment of local mammal communities.

Diversity, Status and Challenges in Conserving the Avifauna in Northern Negros Natural Park

Andrew Ross T. Reintar, Philip Godfrey C. Jakosalem and Lisa Marie J. Paguntalan

Philippines Biodiversity Conservation Foundation, Inc., Bacolod City

Email: andrew.reintar@gmail.com, godo.jakosalem@gmail.com, lisamariep10@gmail.com

A survey was conducted last 15-20 March and 15-29 May 2014 on two sites in NNNP: Calatrava - Salvador Benedicto and Victorias City - EB Magalona - Cadiz area. Point transect method coupled with opportunistic observations were used to record bird species. A total of 103 species were recorded of which 57 are endemic, 12 are restricted range and 10 threatened species including validating the presence of two IUCN Critically Endangered species: Rufous-headed Hornbill *Rhabdotorrhinus waldeni* and Negros Bleeding-heart Pigeon *Gallucolumba keyai*. Other species of interest includes the Endangered Visayan Tarctic Hornbill *Penelopides panini*, Flame-templed Babbler *Dasycrotapha speciosa*, White-throated Jungle Flycatcher *Rhinomyias albigularis*, the Vulnerable Ashy-breasted Flycatcher *Muscicapa randi*, the Malayan Night Heron *Gorsachius melanolophus*, which was suspected to be extinct in Negros, and the recently elevated new species of brown dove Grey-breasted Brown Dove *Phapitreron maculipectus* endemic to Negros and Panay. The active involvement and grounded efforts of local governments in the last 20 years have largely contributed to the conservation and protection of NNNP. The presence of these globally important species in localized distribution highlights the importance of addressing the need to protect the lowland forests sections of NNNP. *Kaingin*, land conversion for agriculture, timber poaching, indiscriminate trapping and hunting were observed during the survey and still remains as a challenge in some remote sections of the park.

Novelties in the Tribe *Guettardeae* (Rubiaceae) Inferred from Molecular (nrDNA) and Morphological Data

Julius John DP. Salamanes¹, Grecebio Jonathan D. Alejandro², Axel H. Arriola³ and Jayson G. Chavez⁴

¹University of Santo Tomas - Manila and Centro Escolar University, Manila

²University of Santo Tomas, Manila

³University of the East, Manila

⁴Far Eastern University, Manila

Email: juliusgks_05@yahoo.com, balejan@yahoo.com, arriolaaxel@yahoo.com, jayson.chavez@gmail.com

The pantropical tribe *Guettardeae* is comprised of ~500 species distributed in ca. 20 genera. This monophyletic tribe is represented in the Philippines by three genera namely: *Antirhea* Juss, *Guettarda* L. and *Timonius* DC. As part of the ongoing assessment of the Philippine Rubiaceae, floristic surveys in the unexplored areas of Mt. Pocdol in Sorsogon, Mt. Redondo and Bucas Grande Islands in Surigao del Norte were conducted and five interesting *Guettardeae* species were encountered. Morphological-based identification suggests that the species belong to *Guettardeae* by possessing the essential characters of the tribe. Hence, this study evaluated the phylogenetic positions of these aberrant *Guettardeae* species using multiple cladistic frameworks based from the Internal Transcribed Spacer (ITS) of the nuclear ribosomal DNA cistron to determine their generic affinities. Interestingly, the species nestled on the Paleotropical dioecious clade sensu Achille et al. (2006) with supports of PP=1.00; BS=69%. Specifically, four species were recovered within the moderately supported *Timonius* subclade (PP=0.91; BS=85%) while the other one revealed to be sister to *Antirhea foveolata* with strong supports (PP=1.00; BS=100%) and subsequently closely related to *Antirhea chinensis* within *Antirhea-Guettarda* complex subclade. Detailed morphological examinations to facilitate species identification using traditional α -taxonomic modalities (e.g.; type specimens, expert determination etc.) were futile. Hence, four new species of *Timonius* and lone *Antirhea* are hereby proposed accompanied with comprehensive morphological descriptions, botanical illustrations, distribution maps, as well as their conservation status. This study is a substantial contribution to the ongoing inventory of Philippine Rubiaceae and yields additional information to the country's biodiversity.

Phylogeographic Analysis of Philippine Corrugated Forest Frogs: Molecular Tests of Species Boundaries, and Identification of Conservation Targets as a Response to the Outbreak of the Fungal Agent of *Chytridiomycosis* Throughout the Archipelago

Marites B. Sanguila¹, Kerry A. Cobb² and Rafe M. Brown³
¹Father Saturnino Urios University, Butuan City, Agusan del Norte
²Biodiversity Institute, University of Kansas, USA
Email: mbsanguila@urios.edu.ph

Philippine cross frogs of the genus *Oreophryne* are a small group of a few species, most likely derived from a single invasion via a Melanesian or Papuan biogeographic origin. Members of the genus are widespread throughout Mindanao, Samar and Leyte islands. Critically important, however, is the fact that only two geographically restricted populations have certain taxonomic status: *O. anulata* (“Vulnerable”) is known from the peak of Mt. Apo and *O. nana* (“Data Deficient”) is known only from Camiguin Sur. All remaining lowland and montane populations from Zamboanga to Northern Samar, have been indiscriminately assigned to either of these two species, without accompanying data of any kind. With the recent discovery of alarmingly high chytrid fungus prevalences (verging on “outbreak” infection intensities), urgent attention to the taxonomy of Philippine *Oreophryne* is needed for conservation targets. We take a molecular approach to elucidating divergent lineages and identifying the focal units for combating this emerging conservation crisis. Our results suggest that two divergent clades may correspond to evolutionary lineages at the “species” level. However, these lineages do not correspond to the currently recognized taxa. This work has the potential to identify populations of greatest urgency for further study and conservation efforts, and provides the empirical foundation to guide additional morphological and acoustic studies to bolster species recognition. Our findings indicate that evidences from multiple data sources are preferred for identifying conservation targets, and that data from proper field surveys should be prioritized in conservation assessments, especially in island archipelagos like the Philippines.

Populations of the Critically Endangered Palawan Forest Turtle *Siebenrockiella leytensis* Continue Decreasing - Results of Long Term Studies

Sabine Schoppe and Diverlie Acosta
Philippine Freshwater Turtle Conservation Program,
Katala Foundation Incorporated, Puerto Princesa City, Palawan
Email: sabine_schoppe@web.de, diverlieacosta@yahoo.com

The present study assessed the conservation status and trends in population sizes of the critically endangered Palawan Forest Turtle *Siebenrockiella leytensis*. Long-term mark-recapture studies were conducted from 2008 to 2012 in three selected streams in Palawan (Puerto Princesa City, Roxas and Taytay). Study sites ranged in stream length from 400-890m. Turtles were captured with baited traps. Habitat conditions and threats were assessed for each site. Population sizes were estimated with different methods (Petersen Method, Schumacher & Eschmeyer Method, Jolly-Seber Method). The Jolly-Seber Method provided the most reliable estimates. In combination with survey results from another 18 different sites, we estimated the total population size of the species at some 3,000 individuals. Population densities were calculated as 2.12 individuals/100m² at the site in Puerto Princesa City, 0.23 and 0.19 individuals/100m² in the sites in Roxas and Taytay, respectively. As per estimates, population trends were fairly stable in the site in Puerto Princesa City, but steeply decreasing in Roxas and only seemingly stable in Taytay. To sum up, results indicate a general decrease in the population size of *S. leytensis* as a consequence of habitat destruction and over-exploitation. *Siebenrockiella leytensis* is and remains critically endangered in line with IUCN criteria and habitat conservation and restoration in combination with strict law enforcement are urgently needed to avoid local extinction.

Inventory and Ecological Assessment of Coastal Resources in San Isidro, Northern Samar

Dindo M. Setenta¹ and Myrna N. Ogo²

¹College of Agriculture, Fisheries, and Natural Resources, University of Eastern Philippines, Northern Samar
²Center for Environmental Studies and Advocacy, University of Eastern Philippines, Northern Samar
Email: reyden07@yahoo.com, myrna_uep@yahoo.com

Oral Presentations

This study was conducted to make an inventory and ecological assessment of coastal and marine resources and establish a database of information in the municipality of San Isidro, Northern Samar. This study made use of descriptive research method and performed series of inventory and ecological field assessments through participatory approach. Results of the study revealed that mangrove areas were disturbed, with sparse vegetation dominated by *Rhizophoraceae* species. Coral conditions varied from “good” to “fair”, with none of the sites exhibiting “excellent and “poor” condition. *Acropora* branching, tabulate, and foliaceous corals were present in the area. Status of seagrass and seaweeds habitat was disturbed and dominated by *Thalassia hemprichii* and *Sargassum sp.*, respectively. Reef associated fish population was dominated by “non-target species” which is least preferred by fishermen due to their small sizes and low economic value. Damsel fish and butterflyfish of the family Pomacentridae and Chaetodontidae, respectively, were common in the area. There were 14 species of mollusks collected for food. Crustaceans with high economic value like mud crabs, and shrimps were found but non-food species (*Geograpsus*) is the most abundant. Coastal resources are coming under increasing stress as more people move to the area, which ultimately threatens coastal and marine biodiversity and productivity. Based on the findings, the following recommendations were: revival of the existing marine protected zone in the municipality where fishing activities are regulated to give the existing marine resources to reproduce more up to its optimum capacity; and strict implementation of fishery, and other environment-related laws.

Genetic Diversity of the Big-fin Reef Squid *Sepioteuthis lessoniana* Around Japan

Satoshi Tomano and Tetsuya Umino
Graduate School of Biosphere Science, Hiroshima University, Japan
Email: satoshi.tomano@gmail.com, umino@hiroshima-u.ac.jp

The big-fin reef squid, *Sepioteuthis lessoniana* (Lesson 1930), a member of the Loliginidae family, is one of the most economically important neritic fisheries species, distributed over a broad geographical range throughout the Indo-Pacific region. Although an accurate evaluation of genetic variation and level of diversity is a critical step for the conservation of this species, it is still poorly understood. In this study, the mitochondrial DNA cytochrome oxidase I gene from Japan populations was sequenced to clarify the pattern of genetic variation. Additionally, sequences of this species from the Indo-Pacific area, including China, Vietnam, the Philippines, Indonesia and India, were obtained from GenBank and included in the analysis. The results showed all populations exhibiting high levels of genetic diversity. Japanese samples showed 2 common haplotypes with nucleotide gaps between them. One haplotype was also found in samples from Vietnam, the Philippines and Indonesia. Although demographic history analysis from mitochondrial haplotypes suggested that there has been a recent population expansion in Japan, ancestral haplotypes still remained in Japanese populations. Phylogeographic studies are needed to clarify the pattern of genetic variation within this widely distributed species.

Establishing Ecobelt as Biodiversity Corridor in Mined-Out Nickel Areas

Rowena P. Varela, Glenn Arthur A. Garcia and Norman P. Gonzales

College of Agricultural Sciences and Natural Resources, Caraga State University, Butuan City
Email: rpvarela@carsu.edu.ph, rowenavarela@yahoo.com, gartgarcia@yahoo.com

Nickel mining adopts surface mining technology that consequently removes the topsoil and associated vegetation leading to soil erosion. Vegetation acts as a natural filter for contamination and as soil erosion barrier, thus with forest strips acting as buffer, soil particles and chemical elements reaching agricultural systems, human settlements and water bodies can be prevented. In Caraga Region, Philippines, ecobelts are established along the contour of nickel mined-out areas as a progressive rehabilitation strategy to reduce soil erosion and siltation of water bodies and to provide refuge for biodiversity. Ecobelt is a narrow vegetation strip designed to provide a corridor for biodiversity to repopulate and assist natural rejuvenation of degraded areas. Contour planting of fast-growing nurse trees with integration of fruit trees, native species and flowering plants to attract pollinators is conducted employing the concepts of agroforestry. Soil erosion pins are strategically located at different slopes to measure erosion rate. Data such as soil characteristics, soil and litter arthropod diversity, vegetation establishment and seedling recruitment among others are currently gathered to monitor ecological succession in the area. Initial results show over 90% survival of plant species introduced in the ecobelts. Plant recruitment has been observed in areas shaded by trees in the ecobelts and at least 7 soil and litter-inhabiting insects are collected from the site. Meanwhile, soil erosion rate is still high after 1 year of ecobelt establishment. Nonetheless, even if the ecobelts have just been established, indications of ecological succession can already be observed.

Distribution of the Asian Palm Civet (*Paradoxurus hermaphroditus*) in a Semi-Urban Landscape: A Mark-Recapture Study

Maria Adrianna Isabella G. Claravall, Anjelica B. Arellano, Graceabella C. Carranza,
and Franco Miguel G. Maniago

Holistic Education and Development Center, Taytay, Rizal
Email: lyka.arellano@gmail.com, lupcarranza@yahoo.com, louistinana@yahoo.com

In the beginning of the 1900s, the Philippine archipelago had a forest cover of 70%. Today, less than 6% remains. One of the factors that led to such a staggering loss of habitat is the ever-increasing need for residential and commercial spaces. The city of Antipolo is a microcosm of such a trend. There are no extant primary forests and the remaining secondary woodland is increasingly becoming fragmented. A mark-recapture study of the Asian Palm Civet (*Paradoxurus hermaphroditus*) and other forest mammals was conducted within a 7.5 km² area characterized by patches of woodland separated by road and residential development. Modified mammal cage traps were used to capture individuals which were then sedated and marked on their right hind leg using yellow non-toxic spray paint prior to the collection of morphometric data with the help of a practicing veterinarian. Captured individuals were subsequently released. To date, two civet cats and three Luzon bullimus were captured and marked. Numerous anecdotal reports were collected, including frequent sightings of civet cat feces throughout the sampling area. However, there has not been any recaptures, and trapping sessions are still being conducted. The recapture of marked individuals on both sides of a road or residential development may be indicative of the ability of the species to cross such areas. Results from this study may be used in the formulation of environment-friendly guidelines for the construction of roads and the development of commercial and residential spaces.

The Diversity of Flying Foxes in Southeastern, Cebu and the Threats Present in Their Habitat

Ruffa Mae J. Famat, Daryl M. Mondido, Fritz Laurence R. Villacorta
Philippine Science High School-Central Visayas Campus, Talaytay, Argao, Cebu
Email: ruffamaefamat@gmail.com, darylmondido@gmail.com

This study aimed to identify the diversity of flying foxes located in the southeastern region of Cebu, Philippines. It specifically aims to determine the species of the flying foxes present in Southeastern Cebu, its corresponding population and the threats present. A survey was conducted to determine the possible municipalities with flying foxes present. Afterwards, the species were identified and their population was counted with the help of spotting scopes and binoculars. The diversity was determined using the Shannon-Weiner formula. The whole habitat was observed for possible threats. Informal interviews were conducted. Overall, four species were identified: *Pteropus vampyrus*, *Pteropus hypomelanus*, *Pteropus pumilus* and *Acerodon jubatus*. It was observed that Dalaguete, Cebu has the highest diversity count with $H=11, 908$ for its average in breeding season and with $H= 5, 1497$ for its average in non-breeding season. Dalaguete, Cebu has more diverse species because the municipality implemented regulations against hunting and poaching which is the primary cause of the deteriorating population of the mammals while in Boljoon, Cebu, there is no any action in conserving these species.

Loopholes in the Protected Area Governance and Environmental Impact System of the Philippines are a Threat to Biodiversity

Merlijn van Weerd

Mabuwaya Foundation, CCVPED Building, ISU Garita, Cabagan, Isabela
Email: merlijnvanweerd@yahoo.com

The Northern Sierra Madre Natural Park in northeast Luzon is one of the largest and most diverse protected areas in the Philippines. It has been identified as a globally Important Bird Area, a Conservation Priority Area, an Alliance for Zero Extinction site and a Key Biodiversity Area. The park has been nominated for World Heritage status. Under the National Integrated Protected Areas System (NIPAS) Act, Philippine protected areas are governed by a protected area management board (PAMB). This devolved governance system takes into account the views and wishes of the local inhabitants of the park and its surroundings, incorporating contemporary ideas about co-management of natural resources. But there is also a risk that a PAMB becomes an instrument of local politicians to drive an agenda that focusses more on development rather than on biodiversity conservation. Any large infrastructure development project in a protected area must pass an environmental safeguard: the Environmental Impact Assessment (EIA) system. An extensive review system is set up to ensure that EIAs are conducted properly. In this paper we demonstrate that there are loopholes in both the PA governance system and the EIA system of the Philippines where biodiversity is concerned, illustrated with a case study of the NSMNP where the PAMB has reclassified the strict protection zone of the park to make road development possible, while the review process of the EIA for this road failed to notice severe shortcomings. There is an urgent need to review Philippine biodiversity conservation policies.

Safe Guarding a Precious Heritage: Searching for Effective Water Quality Indicators for Small Freshwater Mountain Streams

Gail S. Hernandez, Cassandra H. Alleje, Jose W. Duavit, Arielle W. Valera, Mathew P. Din and Miguel M. Arcega
Holistic Education and Development Center, Taytay, Rizal
Email: helizabethgail@yahoo.com, cbvalleje@gmail.com, jayjayduavit@yahoo.com, arielle.valera@yahoo.com, dinmathew@gmail.com, migoarcega@yahoo.com

Based on published maps by the National Mapping and Resource Information Authority of the Philippines (NAMRIA) to date, there are eight named river systems in Antipolo and Taytay. The rich biodiversity associated with river systems and their accompanying riparian and wetland environments in the Philippines have been well-documented in scientific literature since the pioneering study of Lake Lanao by Lewis Jr. in the 1970s. However, most efforts have focused only on major lakes and rivers. Published studies on small mountain streams are still very much lacking. Our group conducted biotic and abiotic characterization of three freshwater mountain streams in Antipolo-Taytay area: (1) Munting Dilao, a perennial, oligotrophic tributary enjoying rigorous protection by the Fairmount Hills Subdivision Homeowners; (2) Tungtong, a perennial, mesotrophic river straddled by three residential areas at its source; and (3) Dalig, a eutrophic river degraded by years of agricultural, residential and recreational abuse. The rivers are significantly used domestically (laundry, bath, etc.) by some 800 informal settlers surrounding them. For potable water, pipes are used to get water from the source and then boiled in order to be used. People occasionally fish for catfish whenever it is flood season. We surveyed benthic communities using standard protocols by Wetzel and Likens (1991) and measured physico-chemical parameters (dissolved oxygen, salinity, conductivity and total dissolved solids) using YSI meters. We used the EPT and EPT/C indices to determine the health of the rivers. Munting Dilao has an EPT of 5, Tungtong: 7 and Dalig: 1 and an EPT/C of 0.03.

Species Diversity of Spiders in Pinatilan Cornfields, Valencia City, Bukidnon

Jade G. Rosas¹, Josell L. Caipang¹, Neil Ray F. Morigo¹, Sheila A. Peralta¹, Myrna Ballentes² and Dave P. Buenavista²

¹Valencia National High School, Valencia City, Bukidnon

²Central Mindanao University, University Town, Musuan, Bukidnon

Email: sheilanshyshy@gmail.com, davista.cmu@gmail.com

Field study was conducted to determine the species diversity of spiders in the select cornfields of Barangay Pinatilan, Valencia City, Bukidnon. Sampling plots measuring 20m X 20m were established in three selected study stations. Collection of the spiders was done through direct-capture, visual search, use of an insect net and beat method. Collected spiders were classified based on morphological examinations of the specimens such as eye arrangement, color patterns of legs and abdomen and shape of body. A total of seven (7) species belonging to four (4) families and seven (7) genera were identified to be present in Pinatilan cornfields, Valencia City, Bukidnon. These were *Tetragnatha*, *Neuscona*, *Araneus*, *Salticiade*, *Oxyopres*, *Gea* and *Agriopes*. Highest species richness was observed in Station 1 and 3; highest value for species abundance (131) was in Station 1, and highest Shannon-Weiner diversity index value (0.494) was also observed in Station 1. Dendrogram of similarity index of spider species in three study stations in Pinatilan cornfields showed two distinct clusters wherein Station 1 and Station 2 are considered similar in spider species composition. *Neuscona* was the most widely distributed on all three study stations. There were 3 spider species which was considered common and the other 4 was considered as rare. Species diversity of spiders in Pinatilan cornfields is relatively low.

Microhabitat Preferences of Frogs in Northern Negros Natural Park (NNNP), Negros Occidental

April Angelee L. Acuzar¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan², Karyl Marie F. Dagoc¹, Gerrie Mae A. Flores¹ and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University - Iligan Institute of Technology

²Philippine Biodiversity Conservation Foundation (PBCFI)

Email: aprilacuzar@gmail.com, denwarguez@gmail.com, godo.jakosalem@gmail.com, gumamela.angie@msuit.edu.ph, lisa.paguntalan@gmail.com

The microhabitat preferences of frogs were studied on May 16-29, 2014 in Northern Negros Natural Park (NNNP), Negros Occidental. Visual Encounter Survey was conducted on the following habitat types: mixed plantation, shrub to early secondary forest and mature secondary forest of lower and higher elevations. For microhabitat assessment, a 10x10 meter plot was selected. Canonical Correspondence Analysis (CCA) and Logistic Regression Analysis were used to correlate the abundance of frogs to the habitat variables and to determine the habitat variables that are significant to the occurrence of species respectively. A total of 212 individuals belonging to 11 species was recorded. Most of the frogs (52%) were observed to inhabit aquatic microhabitat. Microhabitat variables such as distance to body of water and temperature were found to be significantly related to the frog's abundance. The data gathered would serve as basis in the formulation of guidelines and policies in the protection and conservation of areas found to be of importance to frogs in NNNP and would help minimize amphibian population decline in the area.

Food Habits of the Philippine Scops Owl (*Otus megalotis*) in an Urban Setting

Ma. Theresa D. Aguila, Jasmin C. Meren and Carmela P. Española

Institute of Biology, College of Science, University of the Philippines-Diliman, Quezon City 1101

Email: cpespanola@up.edu.ph

The Philippine Scops Owl is an endemic species confined to the islands of Luzon, Marinduque and Catanduanes, and characterized by a decreasing population in the country. Although the feeding habit of this species has been observed in captivity, no research has focused on their diet in the wild. The current study aims to provide preliminary information about the feeding habit of the Philippine Scops Owl through pellet analysis and actual observation of the owl's foraging activities. The study focuses on determining the owl's prey species (to the lowest taxonomic classification possible) and its biomass contribution in the diet of the owl so that vital components in the owl's diet may be known and considered in constructing effective management and conservation measures for the owl. Nineteen pellets collected so far were from known roosting sites of the Philippine Scops Owl within the University of the Philippines-Diliman campus from November 2014 to February 2015. Several pellets were collected in 2013 at the same site. Preliminary data from pellet analysis show that the Philippine scops owl feed mainly on birds, insects, small non-volant mammals and occasionally on bats, skinks and snakes. Meanwhile, observations of the owl's feeding habits have shown that they forage in forested areas of low to high levels of disturbance. An adult owl was also observed to feed its juvenile with deboned and broken down prey hence the reduced number of pellets found when the owls were still young.

Diversity and Habitat Preferences of Reptiles in Northern Negros Natural Park (NNNP), Negros Occidental

Dwight E. Alip, Dennis A. Warguez¹, Philip Godfrey C. Jakosalem² and Lisa Marie J. Paguntalan²

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University - Iligan Institute of Technology

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI)

Email: dwyt.alip@gmail.com, denwarguez@gmail.com, godo.jakosalem@gmail.com,
gumamela.angie@msuiit.edu.ph, lisa.paguntalan@gmail.com

An assessment on the diversity and habitat preferences of reptiles was conducted last May 16 - 29, 2014 at Northern Negros Natural Park, Negros Occidental. Different habitats were surveyed: scrubland, mixed plantation, secondary forest at lower and higher elevation (700, 900 and 1100 masl). A total of five 2-km transects were established. Opportunistic catching, visual encounter survey and the use of pitfall traps were employed. One hundred 10x10 meter circular plots were selected for habitat assessment. Fourteen species consisting of 61 individuals were recorded in which 71% are Philippine endemic. *Pseudorabdion mcnamarae*, *Oligodon modestum*, and *Tropidonophis negrosensis* are listed as Vulnerable species, while *Sphenomorphus arborens* and *Gonocephalus sophiae* are currently listed as Data Deficient. Based on Shannon-Weiner's Diversity Index, the habitat type having the highest diversity is the secondary forest at lower elevation (H=1.6716). *Sphenomorphus arborens* was the most abundant species. In terms of microhabitat preferences, 64% of the reptiles were found in leaf litter microhabitat. Linear Regression Analysis and Pearson Correlation Analysis showed that temperature, percentage of rock cover, presence of water and geomorphological enclosure were the significant variables in the occurrence and abundance of reptiles in NNNP. The data gathered in this study can fill the gaps in knowledge about reptilian diversity and can be used as basis for formulating policies to help contribute to the conservation and management of NNNP and its wildlife.

Screening and Distribution of Potential Nickel Hyperaccumulator Plant Species in Selected Mining Areas In Claver, Surigao Del Norte

Archie A. Along, Meljan T. Demetillo and Kenneth L. Ciudad

Department of Biology, College of Arts and Sciences, Caraga State University, Ampayon, Butuan City 8600
Agusan del Norte, Philippines
Email: killerbee.along@gmail.com

Hyperaccumulators are plant species that can accumulate extraordinarily high foliar concentrations (>1000 µg/g dry weight) of certain metals and metalloids. The study aimed to screen potential nickel hyperaccumulator plant species in Urbiztondo, Claver, Surigao del Norte. Opportunistic and systematic sampling methods were applied in collecting data such as abundance and distribution of potential nickel hyperaccumulator plant species in the mining area. Plant samples were screened for nickel hyperaccumulation by reacting leaf extracts with filter paper impregnated with 1% dimethylglyoxime (1g in 70% ethanol) and further analyzed by atomic absorption spectrometer. Among the 114 plant species recorded in the area, 108 species were identified belonging to 61 families and 88 genera. Moreover, only 11 species, mostly rare and with limited distribution throughout the area were potential nickel hyperaccumulators. *Phyllanthus sp.* and *Begonia bolsteri* were noted as species with the most intense rose-pink color reaction with dimethylglyoxime. However, six of the potential hyperaccumulator plants that were quantitatively analyzed, including *B. bolsteri* (18 ppm), did not qualify for nickel hyperaccumulation. Based on IUCN, *B. bolsteri* and *Xanthostemon verdugonianus* were considered as rare, endemic and threatened species. This study serves as preliminary assessment for the potential nickel hyperaccumulator plant species in the area.

Diversity and Abundance of Canopy Birds in Northern Negros Natural Park (NNNP), Negros Occidental

Salih Mahathir A. Amer¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan², Karyl Marie F. Dagoc¹
and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: salihamer1234@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com,
karylmariefab@gmail.com, godo.jakosalem@gmail.com

An assessment on the diversity and abundance of canopy birds was conducted in Northern Negros Natural Park (NNNP), Negros Occidental from 15 to 30 May 2014. Point Count Method was used to survey the birds in five habitat types: mixed plantation, scrubland and early secondary forest in the municipality of Calatrava and mature secondary forest of higher and lower elevation in Gawahon, Victorias City. A total of fourteen 1-km transects was surveyed and 62 30x30 meter circular plots were selected for habitat assessment. Thirty-eight species of canopy birds were recorded of which 18 (47%) species are Philippine endemic. The mature secondary forest (H=2.05) showed the highest diversity with 23 recorded species including the endangered *Rhinomyias albigularis* and the vulnerable *Coracina ostenta*. *Ixos philippinus* was the most abundant species with 110 individuals recorded. Logistic Regression Analysis showed that tree height (10-15 m and 16-20m) are significantly related to the occurrence of canopy birds in the area. Hunting and conversion of the forest area into agricultural land were the threats existing in the area. NNNP, as a protected area, must be strictly monitored and existing policies must be strictly implemented to ensure the protection of birds and their habitat.

Preliminary Survey of the Gelatinous Zooplankton Community in San Pedro Bay, Eastern Visayas

Verneal Alvin Ken C. Ana, Marc Alvin Delima, Rovie Ann Gerez, Reinzelle Joy Pore
and Facundo Rey Ladio

Leyte Normal University, Tacloban City
Email: rey_ladio@hotmail.com

The gelatinous zooplankton is less known in the animal kingdom but have some potentially important as well as noxious species. They play mostly as part of the marine food web. In this study, the gelatinous zooplankton in San Pedro Bay were determined. Sampling sites were established near Marabut and Basey towns of Western Samar, Tacloban City and Dulag, Leyte. Vertical and horizontal plankton sampling were used to catch the specimens. A total of six gelatinous zooplankton species collected namely: *Pagea confoederata*, *Clytia gregaria*, *Forsteria purpurea*, *Tiaropsis multicirrata*, *Hormiphora cucumis* and unidentified species from the Family Athorybiidae. *P. confoederata*, known as salps, dominated the gelatinous zooplankton community in San Pedro Bay. The site with most species caught was Dulag, Leyte, and the less diverse was in Tacloban City. The knowledge of gelatinous zooplankton in this bay will be important input to all stakeholders especially that several species of big jellyfishes are harvested for food.

Molecular Phylogeny and DNA Barcoding of *Argostemma* Wallich (Rubiaceae) Including an Account of a New Species and Variety from Mt. Halcon, Oriental Mindoro

Denmarc R. Aranas, Limuel Joseph V. Bacani, Raineille Mae M. Natural, Eloise Kanna O. Ong and Grecebio Jonathan D. Alejandro
University of Santo Tomas, Sampaloc, Manila
Email: denmarc22@yahoo.com, limueljosephbacani@gmail.com, raineille_natural@yahoo.com, balejan@yahoo.com

Argostemma Wall. is the largest paleotropical genus of Argostemmatae (220 species). In the Philippines, its members are commonly misidentified and systematically undertreated. For taxon differentiation and phylogenetic analysis, the internal transcribed spacer (ITS) region of nuclear DNA, rps16 intron and trnL-F region of chloroplast DNA were used to answer the following objectives: determine the phylogeny of *Argostemma* species and evaluate the best DNA barcode for the genus. Collected specimens were subjected to various genetic analyses. DNA sequence assessments were accomplished using MEGA 6 program. Accordingly, the three markers are recommended as potential DNA barcodes for molecular authentication of *Argostemma* species. Remarkable performances of ITS as DNA barcode was proven with high values. For the molecular phylogeny of Philippine *Argostemma* species, the generated majority rule consensus tree proved its endemic status and showed to be closely related with psychotrichoides group proposed by Bremer. A proposed novel species, *Argostemma scindum* sp. nov. was collected from Mt. Halcon, Oriental Mindoro has the following characters: red recurved apex of corolla, extent of exertion of linear stigma and an unfused anther lobes that deviated from *Argostemma bryophilum* Merrill, its closest species inferred from combined tree. Another isolate found to be closely related with *Argostemma solaniflorum* Elmer, however, minor differences were seen as it possess a blue anther cone. Thus, a variety was also proposed *Argostemma solaniflorum* var. *hyacintho* var nov. With the knowledge of suitable barcode for Philippine *Argostemma* species and its endemicity ascertained, economic and medicinal benefits of the taxa can be best explored.

Herpetofaunal Diversity of Mt. Banahaw De Lucban

Russel R. Atienza, Lemuel A. Pabico and Essex Vladimer G. Samaniego
Southern Luzon State University, Lucban, Quezon
Email: masayang_langgam@yahoo.com, eseks27@gmail.com

Herpetofauna refers to the amphibians and reptiles inhabiting an area. Determining the diversity of herpetofauna in Mt. Banahaw de Lucban, part of the Mount Banahaw-San Cristobal Protected Landscape and one of the last remaining forest in South Luzon, was the main purpose of this study. Moreover it tackles the identification, classification and determination of the conservation status of the herpetofauna. The study focused on three habitat types namely; secondary lowland forest, montane forest and mossy forest. Methods used in herpetological search are drift fences with pitfall and funnel traps, time strained searches in strip transect and photo- identification. Samplings were done between August and October, in a day and night basis. A total of 21 species (11 species belonging to five families for amphibians, 10 species belonging to seven families for reptiles) were collected. Secondary lowland forest has the highest diversity while mossy forest has the least. Conservation status was assessed according to the IUCN (2014), 10 species are considered Least Concern, five species were classified as Vulnerable, one species is Near Threatened, and five species were not assessed due to lack of data and needs further study and classification. These results will add to the growing understanding of the diversity and distribution patterns of herpetofauna in Luzon which are still poorly known and in need of further study.

Distribution, Diversity, and Abundance of Amphibians in Northern Negros Natural Park (NNNP), Negros Occidental

Dearly Mae Maricar M. Barrot¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan², Gerrie Mae A. Flores¹ and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: dmmbarrot@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com, karylmariefab@gmail.com, gerriemaeflores@gmail.com, godo.jakosalem@gmail.com

A study on the distribution, diversity and abundance of amphibians in Northern Negros Natural Park (Calatrava and Victorias City) was conducted on May 17-29, 2014. A total of five 2-km transects was surveyed using Line Transect Method. The amphibian species were observed within the elevations of 573 to 1126 meters above sea level. Shannon-Weiner Index showed that the mixed forest (H'=1.8) habitat type has the highest diversity of amphibians. Twelve species of amphibians were recorded, and eight (66.67%) of these species are Philippine endemic. There are four threatened species recorded in the area: *Limnonectes visayanus*, *Platymantis pygmaeus*, *P. naomii* and *P. hazelae*. *Occidizyga laevis* was the most abundant species. Existing local threats to the frogs are the conversion of forest land into agricultural land and charcoal-making. The gathered data will serve as basis for formulating guidelines and policies in managing NNNP and its wildlife inhabitants.

Population Ecology of the Fiddler Crab *Uca* spp. in Brgy. Punta, Baybay City, Leyte

Kalvin Jay G. Boregon and Julissah C. Evangelio
Visayas State University, Visca, Baybay City, Leyte

Email: kalvinjayboregon@gmail.com, julissahevangeliog@gmail.com

A study on the population of the fiddler crabs, *Uca* spp. was conducted to determine their abundance, density, sex ratio, frequency and distribution pattern in the mangrove area of Brgy. Punta, Baybay City, Leyte. A total of 126 individual fiddler crabs that belonged to three different species were collected from September to December, 2013. These were *Uca perplexa*, *U. triangularis* and *U. crassipes*. *Uca perplexa* obtained the highest density in the open landward zone while *U. triangularis* had high densities in all three vegetated zones (seaward, middleward and landward). The sex ratio of *U. perplexa* population did not deviate from the typical 1:1 ratio (χ^2 test, P-value ≥ 0.05), while *U. triangularis* did (χ^2 test, P-value ≤ 0.05). Both *U. perplexa* and *U. triangularis* populations had non-normal overall size frequency distributions (K-S test, P-value ≤ 0.05). The two species were aggregately distributed. However, distribution of *U. perplexa* population appeared to be influenced by sandy sediment (P-value ≤ 0.05) and substrate types while *U. triangularis* was not affected by these parameters but are observed to prefer shaded areas. Results from this study further showed that fiddler crabs play a very important role in shaping mangrove communities. Hence, understanding their population structure and ecological value is necessary for the local people because this will be useful in formulating conservation program for these species and the mangroves that sustain them.

Avifaunal Diversity of Bega Watershed, Prosperidad, Agusan Del Sur

Donna Mariel T. Calimpong and Olga M. Nuñez

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City
Email: dmcalimpong@gmail.com, olgamnuneza@yahoo.com

This avifaunal study was conducted in Bega Watershed, Prosperidad, Agusan del Sur to document species diversity, richness, and endemism of birds as there is still no available avifaunal record in the area. Methods used were a combination of mist netting for a total of 100 net days and a 2-km transect walk, for a total of 48 hours. Three study sites were selected, namely: Site 1 (Bega Falls), Site 2 (Enchanted Falls), and Site 3 (Tiger Falls), which all have secondary type of vegetation. Eighty-three bird species comprising 35 (42.17%) endemic species, 44 (53.01%) resident species, and 4 (4.82%) migrant species, were recorded. Five globally threatened species (four vulnerable, one endangered) were documented. A high species diversity ($H' = 3.781$) with a more or less even distribution was recorded. Results showed that Site 3, the least disturbed area with more or less intact vegetation, had the highest species richness with 71 species present. Sites 2 and 3 had the highest similarity percentage (46.40%) as shown by the Bray-Curtis cluster analysis. Individual rarefaction analysis showed that a more rigorous sampling in Site 1 is likely to yield additional species. Conversion of forested areas for agricultural use was observed as one of the major threats to the endemic and threatened avifaunal species in Bega Watershed. Results imply the need to conserve the avifauna of Bega Watershed and environs through the conservation of habitats.

Species Richness and Endemism of Anurans in Bega Watershed, Prosperidad, Agusan del Sur

Theresse Jel V. Calo and Olga M. Nuñez

¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University-Iligan
Institute of Technology, Tibanga, Iligan City
Email: tjcalo2013@gmail.com, olgamnuneza@yahoo.com

A pioneering study on the anuran species in Bega Watershed, Barangay Mabuhay, Prosperidad, Agusan del Sur was conducted using the cruising method on May 8-14, 2014. This study was conducted to determine the species richness and endemism of the anurans in the area. Thirteen species belonging to six families and 12 genera were recorded. Seven species are endemic which includes a Mindanao Faunal Region endemic, *Leptobrachium lumadum*, and a Mindanao Island endemic, *Megophrys stejnegeri*. Among the recorded endemic species, three are of vulnerable status. Highest species richness ($R = 13$) and species diversity ($H' = 2.147$) were recorded in site 1, riparian area of Bega falls. Principal correspondence analysis showed that all sampling sites shared majority of the species but some species are unique to site 1 where type I (arboreal), type II (ground), and type III (aquatic) microhabitats were most abundant. Canopy epiphytes, leaf litter, exposed rocks, and streams with slow moving current were also found to be common in site 1. Bray-Curtis cluster analysis revealed that type II (ground) and type III (aquatic) microhabitats are the most similar with regards to their species composition ($BC = 0.33$). The presence of endemic and vulnerable anuran species in Bega Watershed indicates the need for conservation and protection of this watershed.

Nest Site Characteristics and Population Density of the Philippine Pygmy Woodpecker (*Dendrocopos maculatus*) in the University of the Philippines-Diliman

Ma. Jean Theresa M. Cornelio and Carmela P. Española

University of the Philippines-Diliman, Quezon City
Email: cpespanola@up.edu.ph

Regarded as a keystone species, woodpeckers are primary cavity-nesting birds that excavate their own nest cavity and provide habitat to both birds and mammals. The Philippines has 8 endemic out of 10 species of woodpeckers, one of which is the Philippine Pygmy Woodpecker (*Dendrocopos maculatus*), the only woodpecker species found in the University of the Philippines (UP) Diliman campus. Little is known about this species' nesting characteristics and actual population density. In response to this, an ongoing study about the Philippine Pygmy Woodpecker's nest-site characteristics and population density is being conducted at the UP Diliman campus, one of the few green spaces in Metro Manila. The point count distance sampling method with call playback was employed to estimate the Philippine Pygmy Woodpecker population density. Preliminary results show that the Philippine Pygmy Woodpecker's nest is commonly found in the first or second main branch of living *Albizia saman* trees with a mean DBH of 122 cm and elevated at about 12-15m. Species population density is at 171 individuals km². Characterization of cavity nest locations will go towards conservation of suitable nest sites not only within the UP Diliman campus but elsewhere in the Philippines. The study hopes to contribute to knowledge in nesting ecology of Philippine Pygmy Woodpeckers in an anthropogenic landscape.

Habitat Preference of Luzon Hawk Owl (*Ninox philippensis*) and Philippine Scops Owl (*Otus megalotis*) in Northern Negros Natural Park

Francis Bernardine G. Dadula¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan²
and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University - Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City
Email: francisdadula520@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com,
godo.jakosalem@gmail.com

A study on the habitat preference of Luzon Hawk Owl (*Ninox philippensis*) and Philippine Scops Owl (*Otus megalotis*) across different habitat types was conducted in the secondary forest of Northern Negros Natural Park, Negros Occidental from 15-29 May 2014. Habitat types that were surveyed include the mixed species plantation, scrubland, early secondary forest, mature secondary forest (lower elevation), and mature secondary forest (higher elevation). Nocturnal point transects method with playback of pre-recorded owl call in every point to detect presence was used. A total of 57 point transects was surveyed while a 30 x 30 meter circular plot was selected for assessment of habitat variables. Kruskal-Wallis test showed sufficient evidence of significant differences in habitat variables. *N. philippensis* and *O. megalotis* were detected in various habitat types with no obvious preference. Pearson correlation coefficient test showed that *N. philippensis* are more attracted to trees of 16-20 m with regards to its abundance. Logistic regression shows that the presence of trees of 10-14m affects the presence of *O. megalotis*. This study provides site specific conservation for the protection of these owls. The gathered data will serve as basis for strengthening the policies on protecting the birds of NNNP.

Distribution and Abundance of Understory Birds in Different Habitat Types in Northern Negros Natural Park (NNNP), Negros Occidental

Chreshia Ann P. Debalucos¹, Dennis A. Warguez², Lisa Marie J. Paguntalan³ and Philip Godfrey C. Jakosalem³

¹Mindanao Science University-Iligan Institute of Technology

²Department of Biological Sciences, College of Science and Mathematics, Mindanao State University - Iligan Institute of Technology, Tibanga, Iligan City

³Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City
Email: chreshiadebalucos@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com, godo.jakosalem@gmail.com

A study on the distribution and abundance of understory birds in four different types of habitat in Northern Negros Natural Park (NNNP) was conducted from May 19-30, 2014. A combination of mist netting (20 net days) and line transect methods (13 1000-meter transects) was used to survey for birds. A total of 260 30 x 30 meter circular plots was selected for habitat assessment. Seventeen (17) understory bird species were recorded of which eight species (47%) are Philippine endemic. Results showed that mixed plantation is the most diverse ($H' = 2.27$) habitat type. Thirteen species ($n=46$) were found in mixed-species plantation, four species ($n=13$) in scrubland, 13 species ($n=79$) in mature secondary forest (lower elevation) and 10 species ($n=72$) in mature secondary forest (higher elevation). Among the 17 species found, one species is Critically Endangered, two species are Endangered and the rest have Least Concern status. Pearson Correlation Analysis showed that a significant relationship between *Chalcophaps indica* and tree height (10 meters up) and *Cyornis rufigastra* and tree height (10-15 m) existed. Statistical result showed that *Chalcophaps indica* preferred the mixed-species plantation than in any other habitat types. Canonical Correspondence Analysis revealed that the abundance of *Copsychus luzoniensis* and *Rhipidura cyaniceps* were directly proportional to understory height, while *Brachypteryx montana*, *Actenoides lindsayi*, *Cyornis rufigastra* and *Dasyctrota speciosa* were directly proportional to tree density. The gathered data will serve as future ornithological reference and basis for formulating conservation measures on understory birds of NNNP.

Distribution of Invasive Anuran Species with Notes on Amphibian Malformation in Bukidnon, Mindanao

Roosevelt Y. Encabo¹, Kristine Faith A. Dapanas¹, Carl Raymond M. Rafanan¹, Dave P. Buenavista¹ and Sheila A. Peralta²

¹Central Mindanao University, Musuan, Bukidnon

²Valencia National High School, Valencia City

Email: roosevelt_e@yahoo.com, sheilanshyshy@gmail.com, davista.cmu@gmail.com

Alien invasive species had been blamed for major population decline and even extinctions of native species in many different ecosystems. In Mindanao however, invasive anuran species remains to be poorly known and understudied despite of their potential threats in the ecosystem. Field survey was conducted to determine the occurrence and distribution of invasive anurans species in agro-ecosystem, watershed areas, stream and rivers, and forest patches in eight (8) municipalities of Northern and Southern Bukidnon from July 2013 to August 2014. Diurnal and nocturnal sampling was performed using a combination of belt transect, opportunistic, and capture-mark and release techniques. The collected anurans were identified and classified based on the morphological examinations. A total of 166 individuals belonging to 5 families, 8 genera and 10 species of amphibians were recorded in the province. The highest species richness was observed in Maramag and Valencia City. Majority of the amphibians were observed in the ground microhabitat especially in the crevices and leaf litters while some species were collected near the bodies of water such as rivers and streams. Out of 166 individuals, two invasive amphibians were recorded viz. *Rhinella marina* with 97 individuals (58.43%) and *Kaloula pulchra* with 17 individuals (10.24%). The two invasive species had the highest population density and is also widely distributed all throughout the province. Malformations ranging from missing toes, twisted hindlimbs and micromelia were documented in some *Rhinella marina* found in Malaybalay City. The result of the showed the richness of anurans in Bukidnon as well as potential threat posed by increasing population of invasive amphibians species which co-exist and competes with native amphibian population. Long-term investigations should be carried out and the cause of malformations should be further explored.

Abundance and Habitat Use of Nocturnal Birds at the University of the Philippines-Diliman

Kristine Daryl F. Fabellon and Carmela P. Española

University of the Philippines-Diliman, Quezon City

Email: cpepanola@up.edu.ph

Although the geographical distribution of nocturnal birds in the Philippines have been studied in the past, much of their ecology remains unknown, including their habitat use and preference. UP Diliman, considered one of Metro Manila's last green spaces, harbors habitats that sustain biodiverse communities of wildlife including endemic and threatened species in spite of widespread urbanization. Infrastructure development within the campus over the years has caused declines in certain bird species due to habitat alteration and destruction. In the present study, I report on the results of a baseline survey of 6 nocturnal bird species, their population density and distribution across the campus. Factors influencing habitat selection will also be examined once the bird survey is finished. Point distance sampling in combination with playback sampling is used to survey nocturnal bird species within crepuscular hours and under clear weather conditions. Species population densities will be estimated using the DISTANCE 6.0 software. Canonical Correspondence Analysis and logistic regression modeling will be used to identify drivers of species presence or absence and/or density in the campus. Preliminary results established the presence of 2 nocturnal bird species in the campus, *Otus megalotis* and *Caprimulgus manillensis*, both of which are present only in small numbers. These results and those to follow allow us to predict changes in species populations of nocturnal birds in the face of habitat alteration and destruction and to design optimal conservation management strategies.

A Baseline Study of Order Araneae within the Selected Areas of Calinan District

Michael Fernandez, Yuki Shizumi and Geonyzl L. Alviola

Davao Doctors College, Gen. Malvar St., Davao City

Email: Mtfern1818@gmail.com, geonyzlaiviola27@gmail.com

Spiders of Order Araneae are widely distributed in various habitats. Their behavior and forms were designed according to their niche. The study primarily determined to describe the groups of Araneae found within the forest fragment and in agricultural area of Calinan district. Several methods were used in sampling depending to a group of Araneae. The collected samples were desiccated, preserved, placed in an insect box and stored in the laboratory. Internet-based comparison were used to identify and for confirmation of the specimens to their families and species level. Ten species were described, with three hunting species and four orb weaving species collected from the forest fragment and three orb weavers collected from the agricultural area. The collected spiders belong to the families of Sparassidae, Nephilidae, Araneidae and Pisauridae. The hunting spiders like the *Dolomedes tenebrosus* and *Dolomedes frimbriatus* were described for having a wider and flatter stance for maximum ground contact, while the orb weavers had bended limbs along the joints suited for hanging on upper canopies such as the *Nephilia* and the Araneidae family. This concluded that spiders differ in size and shape based on its environment.

Abundance and Habitat Preferences of Philippine Doves and Pigeons of Northern Negros Natural Park (NNNP), Negros Occidental

Sharde Mae G. Garcia¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan² and Philip Godfrey C. Jakosalem²

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: kitkat_dimple910@yahoo.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com,
godo.jakosalem@gmail.com

A study on the abundance and habitat preferences of doves and pigeons in Northern Negros National Park (NNNP) was conducted last 16-30 May 2014. Line transect method was used to survey 14 1000-meter transects in four different habitat types. There were 280 30 x 30 meter circular plots selected for habitat assessment. Among the 10 species of doves and pigeons identified in the area, five species (50%) are Philippine endemic, while *Gallicolumba keayi* and *Ducula poliocephala* are Critically Endangered and Near Threatened species, respectively. In mixed forest, shrub to early secondary forest and mature secondary forest at lower elevation, *Phapitreron leucotis* was the most abundant species. Using Canonical Correspondence Analysis, *Chalcophaps indica* and *P. leucotis* largely occur in areas with high understory layer. *Ptilinopus occipitalis* and *C. indica* prefer mixed forest habitat. Pearson Correlation Coefficient showed that tree height (greater than 21 meters) is the significant habitat variable to the occurrence of doves and pigeons in the area. Private ownership inside NNNP, conversion of forest area into agricultural land and hunting were the existing threats identified in the surveyed areas. It is recommended that strict implementation of policies must be imposed within the protected area. Gathered data will provide further basis for the assessment of Philippine doves and pigeons as well as baseline for developing conservation strategies and monitoring in NNNP.

Rediscovery of *Nepenthes samar*

Lief Erikson D. Gamalo

Leyte Normal University, Tacloban, Philippines

Email: gamalolief@gmail.com

Nepenthes is the largest genus of pitcher plants. Sixteen out of 17 species of *Nepenthes* found in the Philippines are endemic. Because of extensive habitat destruction, many *Nepenthes* species are threatened; *N. samar* being critically endangered and was reported alive in the wild in 1996 and was suggested that this species may be already extinct. In this paper, *N. samar* is reported from two new sites, both of which has threats to the plants. Both areas were elevated (approximately 50 and above masl) but differ in terms of vegetation. This paper proved that *N. samar* still exists in the wild and is not extinct. At the first site, most of the pitcher plants were observed dead because of a recent forest fire. Approximately 20 plants were seen growing in the second site. For the first time, information is presented on the current *in situ* status of the species including the threats it faces. Several important characteristics of the plant, such as lower pitchers and inflorescences that were unknown when the species was first described two years ago, are described. The locals call the plant "pitchel-pitchel". Although not extinct, the plants should be protected from habitat destruction and from the people who dig rare plants for collection.

The Non-volant Mammals in Bega Falls, Prosperidad, Agusan del Sur

Shella Mae P. Jalique and Olga M. Nuñez

Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

Email: smpjalique@gmail.com

While the information on Philippine non-volant mammals is increasing, the non-volant mammals in Mindanao remain relatively under-studied. For instance, the lowland areas in Bega Watershed, located in Barangay Mabuhay, Prosperidad, Agusan del Sur, and potential habitat of endemic non-volant mammalian species, have not yet been assessed. Sampling was done through combination of live traps and indigenous traps for a total of 500 trap nights from May 8-17, 2014 in five sampling sites. Non-volant mammals were captured, measured and then released. The Philippine endemic species *Rattus everetti* and *Bullimus bagobus* were the only rodents documented from the sampling effort. An additional seven mammals were documented through interviews with key informants. Five of these seven species are endemic in the country, including the Mindanao endemic *Cynocephalus volans*. The presence of these species proposes immediate concern for conservation.

Odonatan Diversity in North Negros National Park (NNNP), Negros Occidental

Ephraim Gabriel A. Jerusalem¹, Reagan J. T. Villanueva², Dennis A. Warguez¹, Lisa Marie J. Paguntalan³
and Philip Godfrey C. Jakosalem³

¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University-Iligan Institute of Technology, Tibanga, Iligan City

²Southern Philippines Medical Center, J.P. Laurel Avenue, Bajada

³Philippine Biodiversity Conservation Foundation, Inc. (PBCFI), Bacolod City

Email: niahm_eg@yahoo.com, reaganjoseph@gmail.com, denwarguez@gmail.com,
lisa.paguntalan@gmail.com, godo.jakosalem@gmail.com

A study to determine the diversity and habitat preferences of odonates in different habitat types in Northern Negros National Park (NNNP) was conducted on May 15-31, 2014. Using Visual Encounter Survey, sampling was done using sweep nets, hand catching and photo documentation. A total of 13 species was recorded consisting of 272 individuals. Moderate species diversity was observed in mixed species plantation (H=2.471969, D=0.913874) and scrubland (H=2.359559, D=0.916669). *Risioenemis rolandmuelleri* was the most abundant species. Canonical Correspondence Analysis showed that damselflies (n=7) preferred shaded, riparian or aquatic microhabitats whereas dragonflies (n=6) preferred areas with high canopy openness. Moderate diversity of odonates in the sampling areas indicated healthy habitat. Strict implementation of policies in NNNP is highly important in order to preserve the odonates in the area and maintain a healthy ecosystem.

Exploring the Mutualistic Network of Flowering Plants and their Insect Pollinators in the Grasslands of UP Diliman

Jannica Charisse J. Jose, Regielene S. Gonzales and Socrates D. Letana
Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City
Email: jannica_04@yahoo.com, regielene@gmail.com, socletana@gmail.com

Plant-pollinator mutualistic interactions form networks comprising of many kinds of interacting species. In a well-defined structure of mutualistic network, it is necessary to have nested organization of species, involving interaction of specialist species with a subset from a core of generalist species. A community having a nested mutualistic network reduces species competition, prevents species extinction, and maintains and promotes biodiversity. This study aims to assess the degree of nestedness in the plant-pollinator interactions occurring in the grasslands of University of the Philippines, Diliman campus. This was done by observing pollinator visits in the currently flowering plants present in grasslands over a six month period from August to October, and December to February. To determine the nestedness of the network structure, Nestedness software version 2.0 was used employing the fixed row-fixed column null model (sequential swap) for randomization. The Brualdi-Sanderson parameter was utilized to measure the degree of nestedness. The Z-score value calculated from the said parameter was -0.39 indicating that the network was nested. Furthermore, the network matrix temperature generated was 17.35° inferring a nested network. Results showed a nested mutualistic network of plant and insect pollinator interaction in the grasslands of UP-Diliman which may help in co-existence among the flowering plants and insect pollinators in order to maintain biodiversity. As this confers stability and robustness of the community against species extinction, ranking of species importance is recommended to determine the keystone species triggering the largest extinction cascade. This is helpful in designing efficient and feasible conservation strategies.

Population and Distribution of *Acerodon jubatus* Eschscholtz in Negros Island

Paulene Anna Lee F. Ligutom¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan²
and Philip Godfrey C. Jakosalem²
¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University - Iligan Institute of Technology
²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI)
Email: pauleneanna17@gmail.com

A study on the population and distribution of *Acerodon jubatus* in Negros Island was conducted on May 17-22 and November 6-21, 2014. Population count was determined through ocular observation using Quick Total Count and Single Species Count methods. A total of 309 individuals of *A. jubatus* was recorded in Negros Island. Most individuals (n=305) were observed in the dipterocarp forest of Mambukal Resort in Murcia, Negros Occidental and only four individuals were seen in a lowland, secondary forest of Brgy. Canlusong in EB. Magalona, Negros Occidental. No *A. jubatus* was observed in flying fox colonies in Apo Island, Negros Oriental and in Brgy. Bulanon and Suyac Island in Sagay, Negros Occidental. *A. jubatus* were observed roosting on the following trees: *Dracontomelon dao*, *Dendrocalamus merrillianus*, *Aglaia cumingiana* and *Shorea sp.* Pearson-Moment Correlation shows that there is no significant relationship between *A. jubatus* abundance and selected habitat variables (DBH, tree height, tree density, elevation and distance to clearing). Human interferences and hunting are persistent disturbances to the roosting colonies. In response to the previously implemented program Bat Count Philippines, other conservation programs like Filipinos for Flying Foxes, Bat Encounter and Bat Conservation Education were formed to address the existing local threats. Implementation of laws and policies regarding wildlife protection should be strictly imposed. Results of this study will provide additional information on the regional distribution and population status of the *A. jubatus* in Negros Island and will serve as additional basis for the formulation of policies and strategies on flying fox conservation in Negros and the Philippines.

Population and Distribution of *Pteropus* Flying Foxes on Negros Island

Kiezel F. Logronio¹, Dennis A. Warguez¹, Lisa Marie J. Paguntalan² and Philip Godfrey C. Jakosalem²
¹Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University - Iligan Institute of Technology, Tibanga, Iligan City
²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI). Bacolod City
Email: kiezellogronio@gmail.com, denwarguez@gmail.com, lisa.paguntalan@gmail.com,
godo.jakosalem@gmail.com

A survey on the population and distribution of *Pteropus* flying foxes was conducted on May 17-22 and November 6-21 2014 in five known flying fox colonies on Negros Island. Population was determined through ocular observation using Quick Total Count and Single Species Count methods. Habitat variables were assessed using a 20 x 20 meter plot. Two species, *Pteropus hypomelanus* and *Pteropus vampyrus* were recorded with a population of 6,381 and 4,628, respectively. Both species were recorded in one locality of Negros Oriental (Apo Island) and in four localities of Negros Occidental (Mambukal Resort in Murcia, Suyac Island and Brgy. Bulanon in Sagay and E.B. Magalona). Majority of these species were inhabiting the dipterocarp forest of Mambukal. Forty percent of *P. hypomelanus* roosted on pagatpat tree *Sonneratia alba* while 36% of *P. vampyrus* roosted on mahogany tree *Swietenia macrophylla*. Kruskal-Wallis test showed that there is a significant difference among the different sites in terms of habitat variables. Pearson-Moment Correlation test revealed that DBH, tree height, elevation and distance to clearing are significantly related to the abundance of *P. vampyrus* while DBH, tree height and tree density are significant related to the abundance of *P. hypomelanus*. The acquired data can be used to formulate guidelines in protecting the flying foxes of Negros Island.

Species Diversity of Pteropodids in Bega Watershed, Prosperidad, Agusan del Sur

Rachel Anne O. Monteclaro
Department of Biological Sciences, College of Science and Mathematics,
Mindanao State University - Iligan Institute of Technology
Email: rachelannemonteclaro@gmail.com

This study was conducted to determine species diversity of Pteropodid bats in three sampling sites in Bega Watershed, Barangay Mabuhay, Prosperidad, Agusan del Sur. Mist netting method was conducted from May 8-14, 2014 for a total of 115 net nights. 118 individuals comprising eight bat species were documented. Four species are endemic to the country of which one species, *Ptenochirus minor*, is restricted to the Mindanao Faunal Region. The Vulnerable *Megaerops wetmorei* was present in all sampling sites. Seriation analysis using Paleontological Statistics Software showed that there is an increasing trend of species richness from sampling sites 1 to 3. Moderate diversity was observed for the whole area ($H' = 2.004$) and site 3 was the most diverse among all sites. Cluster analysis showed that sites 2 and 3 have more similar species composition. The presence of endemic and vulnerable species suggests that Bega watershed is an area of conservation importance. It is recommended that further surveys must be done on other parts of the watershed to determine if there are additional bat species occurring in the area.

Comparison of the Insect Communities Associated with Three Mangrove Species, *Avicennia marina*, *Excoecaria agallocha* and *Aegiceras corniculatum* in the Long Island of the Las Piñas-Parañaque Critical Habitat and Ecotourism Area (LPPCHEA)

Michelle Ruth A. Oracion, Regielene S. Gonzales and Socrates D. Letana
Institute of Biology, College of Science, University of the Philippines-Diliman, Quezon City
Email: michelleoracion@rocketmail.com, regielene@gmail.com, socletana@gmail.com

The mangrove ecosystem is composed of a distinct group of plant species which, despite its great importance, is continuously being threatened. This study is part of an ongoing research that aims to understand the processes that govern the dynamics of a protected mangrove forest in the Long Island of LPPCHEA by looking at the insect communities associated with three of the most abundant mangrove species there (*Avicennia marina*, *Excoecaria agallocha* and *Aegiceras corniculatum*). Three types of traps (sticky traps, modified yellow bucket traps and trunk traps) were set up on individuals of the tree species for the months of August and September to cover for the wet season and January to February for the dry season. Initial results show a total of 25 insect families associated with all three mangrove species, with *Excoecaria agallocha* harboring the highest diversity of insects (Ave. Species Richness = 12, Ave. Shannon's Diversity Index = 1.93). However, the differences in terms of species richness and diversity index obtained using Kruskal-Wallis Test, Raw p values and Mann-Whitney U test among the insect communities in the three mangrove species were not significant. The collection effectiveness also did not differ significantly among the three trap types, but the bucket and sticky traps were the most similar in terms of insect families. Three common families/superfamily (Psychodidae, Chalcidoidea and Formicidae) were found to be associated with all experimental trees in contrast to other Southeast Asian mangrove forests which commonly have Culicidae, Ceratopogonidae and Dolichopodidae. Several insect families were uniquely collected only from one of the tree species, indicating that each mangrove species contributes to the overall diversity of the insect community. Information gathered may help provide an ecological index for monitoring the restoration efforts in the area.

Activity Budget of Gray's Spinner Dolphins (*Stenella longirostris longirostris*) in Tañon Strait, Central Visayas

Anna Katrina C. Perandos¹, Humberto R. Montes¹, Leszek Karczmarski² and Angelico Jose Tiongson²
¹Department of Biological Sciences, Visayas State University
²Cetacean Ecology Lab, The Swire Institute of Marine Science, The University of Hong Kong
Email: akperandos@vsu.edu.ph

Animal behavior is an important characteristic to understand the population biology and ecology of organisms. One way of understanding on how a population of animals utilized an area is by determining their activity budget. The study was conducted on the diurnal activity budget of Gray's spinner dolphins *Stenella longirostris longirostris* (Gray, 1828) in Tañon Strait, Central Visayas, Philippines. Observations were made from a research vessel during April to July 2014 following a non-systematized route. Group-follow and continuous sampling methods were employed by examining variation in activity as a function of time, group size, composition, and habitat preferences of the dolphin groups. The main daytime activity observed in each dolphin groups was traveling, followed by milling and resting. These activities were mostly observed in the morning (0600-0959 h) to noon (1000-1259 h). The percentage of group sizes encountered was 30% in small, 27% in medium and 43% in large. Resting and traveling behaviors varied significantly with group size. Both activities comprised the largest proportion of large groups (≥ 60 individuals) recorded. Group size tended to be larger in the morning than in the noon and least observed in the afternoon. Groups with offspring contained a larger number of individuals compared to groups without offspring. Spinner dolphins were frequently found in open sea and less observed near shore. The activity budget generated by this study provides information concerning the spatial use of Tañon Strait by the population of Spinner dolphins and contributes key factors in formulating management strategies for the conservation of the species.

Anurans in the University of the Philippines-Diliman Campus : Their Relative Abundance and Habitat Association

John Gregor A. Roño and Carmela P. Española
Institute of Biology, University of the Philippines-Diliman, Quezon City
Email: jaronon@up.edu.ph

The UP Diliman campus is one of the few green spaces left in Metro Manila that supports many species of wild fauna. However, the campus is currently a site of active infrastructure development that can lead to habitat fragmentation and habitat loss. A wildlife inventory in 1997 documented six species of anurans which includes a Luzon-endemic species. These are *Rhinella marina*, *Polypedates leucomystax*, *Hylarana erythraea*, *Occidozygia laevis*, *Hoplobatrachus chinensis*, and the endemic and near-threatened *Limnonectes macrocephalus*. The current study aims to update the species of anurans occurring in the campus and make an assessment on the anuran populations based on their relative abundance and habitat preference. This study made use of 25 x 2-meter-belt transects in sampling different habitat types across the campus. *L. macrocephalus*, which prefer undisturbed habitats, has not been encountered so far. An alien species, *Kaloula pulchra*, is a new record in the campus, and together with *R. marina*, they have been frequently spotted in many areas of the campus. *P. leucomystax* and *H. erythraea* were usually found in boggy areas with emergent vegetation. *O. laevis* were found to prefer muddy waterways. *H. chinensis* is rare, with only one individual observed so far. This study is important for monitoring anurans. By knowing the habitats and factors each species can tolerate, it can provide additional knowledge for protecting near-threatened species and help control invasive ones.

Abundance and Habitat Preference of the White Vented Whistler (*Pachycephala homeyeri*) in Northern Negros Natural Park, Negros Occidental

Keannu B. Saguindang¹, Dennis A. Warguez¹, Philip Godfrey C. Jakosalem² and Lisa Marie J. Paguntalan²
¹Department of Biological Sciences, College of Science and Mathematics, Mindanao State University - Iligan Institute of Technology
²Philippine Biodiversity Conservation Foundation, Inc. (PBCFI)
Email: keannusaguindang@yahoo.com, denwarguez@gmail.com, godo.jakosalem@gmail.com, lisa.paguntalan@gmail.com

The abundance and habitat preferences of *Pachycephala homeyeri* were studied in the Northern Negros Natural Park, Negros Occidental from May 15 - 30, 2014. Using Line Transect Method, a total of 13 transect lines was established to survey for the presence of *P. homeyeri* across different forest types. A 30 x 30 meter circular plot was used to assess the habitat preference of the species. Pearson - Moment Correlation was the statistical tool used in establishing a significant relationship between the species abundance and the habitat variables and an analysis of variance was also employed using the Kruskal-Wallis test to determine whether or not the habitat types were significantly different. A total of 41 individuals of *P. homeyeri* was recorded. *P. homeyeri* was most abundant in the secondary forest with an elevation of 840 masl. Pearson Correlation test showed that tree density, with a value of 0.576, is significantly related with the abundance of *P. homeyeri*. Kruskal-Wallis test result showed that all the habitat types were significantly different in terms of tree height. The gathered data would not only add to the existing knowledge about the species but would also provide data to help formulate conservation measures for the species and its habitat.

Bat Fauna in Small-scale Gold Mining Area and the Surrounding Environs in Bunawan, Agusan del Sur with Notes on Bat Temporal Activity Pattern, Socio-economic Importance and their Threats

Myra L. Solis and Sherryl L. Paz

Department of Biology, College of Arts and Sciences, Caraga State University, Ampayon, Butuan City
Email: sheter29@yahoo.com

Bat surveys were conducted within the small-scale gold mines in San Andres and the surrounding areas (Tagbayangbang), Bunawan, Agusan del Sur from April - May, 2014. Mist netting was employed to determine richness, diversity, trophic guild, conservation status and distribution of bats. Temporal activity pattern of bats was assessed at different time intervals. Random interview with the locals was done to determine the socio-economic importance of bats and their threats. Thirteen species (9 Megachiropterans and 4 Microchiropters) were captured with $H' = 0.95$ diversity. Agro-forest has the highest richness while cultivated areas harbored the highest abundance. Seventy-eight percent of bats were frugivores, 20% nectarivores and 2% insectivores. Among the five most trapped bats, *Cynopterus brachyotis* and *Rousettus amplexicaudatus* were captured at all time ranges and the latter was the only species whose capture rate significantly varied from 6-10 pm. Insectivores and nectarivores were only captured from 6-8 pm while frugivores were found to be active until 10pm. Endemic species captured were *Haplonycteris fischeri*, *Ptenochirus jagori*, *Ptenochirus minor* and *Eonycteris robusta* (near threatened) implying the conservation value of Bunawan. Most of the locals (68%) considered bats as pests and they hunt them for food. Aside from mining, farming, driving and logging were the major source of income for the locals. Educating the locals on bat conservation and strengthening coordination among mining operators, farmers, LGUs and other stakeholders to regulate the anthropogenic activities that destroy the roosting sites of bats are highly recommended. Long-term ecological research on bats is encouraged to determine more specific conservation requirements.

First Records of Marine Macrobenthic Algae from Limasawa Island, Southern Leyte

Ivan Patrick B. Tualla¹, Kenneth O. Eco¹, Mary Jane L. Lamoste¹, Fretzeljane O. Olor¹
and Lawrence M. Liao²

¹Department of Biological Sciences, College of Arts and Sciences, Visayas State University, Visca, Baybay City

²Graduate School of Biosphere Science, Hiroshima University, Japan

Email: ivantualla03@gmail.com, kennetheco59@yahoo.com, lamoste1995@yahoo.com.ph, fretzeljanejoylan@rocketmail.com, algaeliao@gmail.com

Limasawa is a small coralline island on the eastern section of Bohol Sea with a land area of about 7 km² and surrounded by relatively pristine waters. A survey of the marine macroalgae in four shallow-water sampling sites was conducted for the first time using snorkelling in November 2014 representing the wet season or NE monsoon flora. All forty-eight species accounted for represent new records for Limasawa Island and can be classified into 18 species of Rhodophyta, 14 species of Phaeophyceae, 13 species of Chlorophyta and two species of Cyanobacteria. Among the collections, *Gracilaria vanbosseae* (Abbott) Abbott, a seemingly rare species originally described from Indonesia, represents a new Philippine record. Potentially economically important taxa such as the phycocolloid-yielding species *Hydropuntia edulis* (Gmelin) Gurgel & Fredericq, *Acanthophora spicifera* (Vahl) Børgesen and *Sargassum* spp. have been recorded and present prospects for economic utilization in support of livelihood and poverty alleviation on the island. The number of Rhodophyta and Chlorophyta as compared to the Phaeophyceae encountered in the present study is underrepresented compared to collections from similar tropical localities. This could be partially explained by seasonality and sampling bias. Station 3 (Triana) on the SW shore of Limasawa registered the highest number of species (34, or 75.5% of the total) likely due to its wide intertidal area that is better protected against the NE monsoon winds. It is recommended that another sampling be done to determine the composition of the dry season or SW monsoon flora and to include subtidal species as well.

Diversity of Ichthyofauna in Selected Areas of Bega Watershed Prosperidad, Agusan del Sur, Philippines

Lidermille Mortel Visto

Mindanao State University - Iligan Institute of Technology, Tibanga, Iligan City
Email: vistolid@gmail.com

Fishes are one of the most important staple items in the diet of many organisms and considered valuable in the economy of many countries. This study aimed to determine the diversity of fish species in Bega watershed Mabuhay, Prosperidad, Agusan del Sur, Philippines on May 8-14, 2014. Sampling was carried out using fish net, hand nets, spear, and the hook-and-line method. Six species were recorded under five families and five genera. Three are found to be endemic, one native and two are introduced species. A low species diversity was recorded for Bega watershed where the highest value was only $H' = 1.29$ in Site 1. The highest abundance was found in Site 2, Enchanted Falls. The most dominant species are clinging goby (*Sicyopterus micrurus*) followed by *Barbodes* sp. Seration showed that almost all species were found in all sampling sites except *Oreochromis niloticus*. The Canonical Correspondence Analysis results produced eigenvalues on Axis 1 which was 0.161 (89.01%) and 0.0198 (10.97%) in axis 2, suggesting variance in the species is moderately explained by the environmental data.

Ferns of the Department of Environment and Natural Resources (DENR) Experimental Forest in Nabunturan

Cindy Grace S. Abas

Davao Doctors College, Davao City
Email: cindygrace_abas@yahoo.com

The study generally aims to assess the ferns in DENR-ERDS Experimental Forest, Nabunturan, Compostela Valley Province. Specifically, it aims to identify the species of ferns present in the 15-hectare sampling site; to provide morphological keys leading to the identification of species; and to identify and discuss the different biotic and abiotic factors affecting fern sori germination. Results showed that there were ten identified fern species namely: *Asplenium nidus*, *Davallia hymenophylloides*, *Dricanopteris curanii*, *Diplaziopsis javanica*, *Drynaria quercifolia*, *Lygodium japonicum*, *Nephrolepis biserrata*; *Nephrolepis cordifolia*, *Pteris c.f. glaucovirens*, and *Selliguea triloba*. A confirmatory test for fern species identification validity was conducted through the expertise the Botany Laboratory, Central Mindanao University. There were three species of ferns which were consistently bearing undersurface and marginal sori during the three sampling periods. These are *A. nidus*, *D. javanica*, and *N. cordifolia*. Most of these fern species that undergone sori germination were found to grow in ecologically strategic areas. The said habitats were receiving sufficient sunlight; constant moisture content of both soil and air. rhizomes rooted in loam and a bit shale soil; and more or less stable temperature based on the data gathered by co-researchers. On the other hand, fern species which were found to have no sori on their fronds were *D. hymenophylloides*, *D. curanii*, *D. quercifolia*, *L. japonicum*, *N. biserrata*, *Pteris c.f. glaucovirens*, and *S. triloba*. Generally, these fern species were situated in the areas which were ecologically opposite with those ferns that had undergone sori germination.

What limits the distribution of the critically endangered Palawan Forest Turtle *Siebenrockiella leytensis*?

Diverlie Acosta¹, Edgar Jose², Lyca Sandra Castro³, Ronelito Esuma⁴ and Miguelito Cervancia⁵

¹Philippine Freshwater Turtle Conservation Program, Katala Foundation Inc., Puerto Princesa City, Palawan

²Center for Sustainability, Barangay Santa Lucia, Puerto Princesa City, Palawan

³Western Philippines University, Puerto Princesa City Palawan

⁴Patrol 117, Emergency Call Center, Puerto Princesa City, Palawan

⁵Office of the City Agriculture, Puerto Princesa City, Palawan

Email: diverlieacosta@yahoo.com, ejreptamp@gmail.com, lycasandra_castro@yahoo.com, esumaronelito@gmail.com, mikecervancia@gmail.com

The critically endangered Palawan forest turtle *Siebenrockiella leytensis* is endemic to northern Palawan. The reason for its limited distribution is unknown. Earlier studies indicate that the species prefer shaded, shallow to deep, cool, slow-flowing forest streams with soft bottoms and banks. In hope, that ecological studies could explain the limited distribution, the study had the following objectives: 1) To determine the stream habitat characteristics of selected streams in northern and southern Palawan; 2) To assess ecological interaction between *S. leytensis* and sympatric species. Accordingly, this study assessed vegetation, food organisms, stream banks, water pH, water and air temperature, land use and human interventions at or near the stream along in 18 streams in nine municipalities covering northern and southern Palawan. Sampling was conducted once in 2011 and once in 2012. Turtle trapping was done in all sites to confirm the presence of the species and species composition. A total of 267 turtles comprising four species of freshwater turtles were caught throughout the sampling period. The Palawan forest turtle was only found in the northern part (north of N10°) where it shared its habitat with the Southeast Asian box turtle *Cuora amboinensis* and Asian left turtles *Cyclemys dentata*. The Malayan softshell *Dogania subplana* on the other hand was only encountered in the southern part (south of N N10°). The analysis of stream habitat characteristics did not show any significant differences between sites with and sites without *S. leytensis*, hence this could not explain the limited distribution.

Bioindicator Insects for Chemically Disturbed Corn Agroecosystem

Miladis M. Afidchao

Research for Development Department, Isabela State University, Cabagan, Isabela
Email: mm7_afidchao@yahoo.com

Posters

The use of genetically modified (GM) corn varieties has been shown to enhance grain quality and quantity, but the potential negative effects on non-target organisms by large-scale and long-term use in tropical wet environments like Philippines are less well known. This study examined how the invertebrate biodiversity in terms of abundance, species richness and guilds of non-target invertebrates were affected by the use of GM corn compared to the use of non-GM corn, in 30 fields located at three lowland sites in Isabela province. The transgenic corn varieties in this study, i.e., Bt (*Bacillus thuringiensis*) and BtHT (Bt Herbicide Tolerance), were introduced in the area in 2002 and 2005, respectively. Information on aerial, surface and soil-dwelling invertebrates was gathered using sticky-trap, pitfall-trap, and soil-core sampling technologies along 100-meter transect lines laid out in the middle of fields. Among corn stages, the difference in abundance and species richness were highly significant, so that the study of effects of corn varieties was focused only on the mature stage of corn development. Among corn varieties, the abundance and species richness of invertebrates were significantly higher in non-Bt cornfields, compared to Bt and BtHT fields. Abundance and species richness of aerial species were notably higher in non-Bt cornfields. These results were independent of the application of pesticides. The mechanisms are still unknown and therefore urge further study.

Catch Diversity of Crab Pot in Guimaras Strait

Leovigildo Rey S. Alaban¹ and Ricardo P. Babaran²

¹Northern Iloilo Polytechnic State College, Estancia, Iloilo

²University of the Philippines-Visayas, Miag-ao, Iloilo

Email: lr_alaban@yahoo.com, rpbabaran@yahoo.com

Bycatch and discards are dominant themes in multispecies fisheries such as in the Philippines. Thus, this study was conducted to assess the catch diversity of crab pot, a passive gear commonly used in Guimaras Island. Commercial crab pot comprising of 180 conical pots (base diameter = 40.97+2.69 cm, top diameter = 26.21+1.85, opening diameter 9.39+1.06, height = 10.85+1.40, retention panel height 6.30+0.78) were used. The crab pots were connected in series, five meters apart, baited with trash fish and operated using usual practice in the area (soaking time 3.99+0.14 Hr). Further, the netting of the crab pot has an almost equal primary and secondary hanging ratio (E1 = E2) at the base and an increasing primary hanging ratio (E1 close to 1) as the mesh nears the top. This indicates that the mesh at the bottom forms a square configuration. Thirty two fishing trips were conducted. A total of 382 organisms were caught comprising 22 species. Of these, eight are target (crab) species while 14 are bycatch species. The bycatch species comprise 11 finfishes, two cephalopods and one shrimp. The target species comprise 93.72% (54.915 Kg) of the catch biomass with *Charybdis feriata* and *Portunus pelagicus* as the most dominant catch. For the bycatch, *Lagocephalus inermis* was the most dominant catch in terms of biomass (0.59 Kg) but *Apogon kiensis* was caught the most in terms of abundance and occurrence (fishing trips where the species was caught). Results of the study indicate that crab pot is a selective gear.

Micropropagation of *Lilium philippinense* Baker from Ilocos Sur, Northern Luzon,

Karen A. Ballada

University of the Philippines-Baguio

Email: ka_ballada@yahoo.com

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

Species Composition and Conservation Status of Birds in a Coastal Barangay of Pilar, Capiz

Ianthe Marie P. Benliro and Lyca Sandra G. Castro

Western Philippines University, Puerto Princesa Campus, Puerto Princesa City, Palawan

Email: ibenliro@yahoo.com, lycasandrea_castro@yahoo.com, lycasandrea.castro@wpuppc.edu.ph

Birds have very important functions in our ecosystems which include plant pollination, seed dispersal and biological pest control, hence, serves as an indicator of environmental health. However, they are also at risk due to land conversion, habitat loss and degradation along with poaching for pet trade. Therefore, this study is relevant and timely because it provides a baseline data on the avifauna of a coastal barangay of the municipality of Pilar. The study aims to identify the species of birds in Natividad, Pilar; determine the IUCN status of the bird species; and describe their habitats. Opportunistic sampling survey was done through photo documentation of bird species in barangay Natividad, municipality of Pilar in Capiz province using Canon SX50. A total of 40 species of birds under 23 families were recorded. Ardeidae had the most number of species (6), followed by Columbidae (5), and Muscicapidae (3). The other families were represented by only one or two species. Most of the species were listed as Least Concern in the IUCN Redlist status. Only *Anas luzonica*, a Philippine-endemic species with decreasing population, was listed as Vulnerable. Majority of the bird species were observed in native plants such as fruit bearing trees while water birds were on the freshwater and brackishwater ponds near the sea. It is recommended to conduct a more comprehensive study on species inventory and abundance of birds in different areas within the municipality. It is also recommended to create IEC materials to increase local awareness and participation in wildlife conservation.

Survey of Birds Along Taliptip River and Bulacan Mangrove Ecopark, Wawang Capis, Taliptip, Bulakan, Bulacan

Christine Joy P. Borja¹, Pauline T. Regalario¹ and Richard F. Clemente^{1,2}

¹Science Department, College of Science, Bulacan State University

²Graduate School, Bulacan State University

Email: christinejoyborja92@yahoo.com, pau_regalario@yahoo.com.ph, richardfclemente@gmail.com

Posters

The study collected data, identified, classified and described the bird species present in four (4) stations along Taliptip River and Bulacan Mangrove Ecopark Wawang Capis, Taliptip, Bulacan, Bulacan. Different methodologies employed were general observation, following a transect line with the use of binoculars and digital camera, line transect, travelled a predetermined route and interviewed the local people. Based on the results, thirteen (13) resident birds, eighteen (18) migratory birds, and two (2) resident/ migrant bird species were documented. The avifauna along Taliptip River and Bulacan Mangrove Ecopark comprises of thirty-three (33) species, thirty (30) genera and eighteen (18) families. Each species was described based on their common and local name, conservation status and feeding guild. The area supports a good number of black-headed gull, whiskered tern, black-crowned night heron, egret and other species of wetland birds. It was also documented that *Sterna caspia* (Caspian tern) and *Limnodromus semipalmatus* (Asian Dowitcher) were two of the rare bird species found in the area.

Worldviews on Biodiversity in Selected Villages around Ifugao Rice Terraces

Dr. Inocencio E. Buot^{1,2}, Jr. and Harold M. Carag²

¹Institute of Biological Sciences, College of Arts and Sciences, UPLB

²Faculty of Management and Development Studies, UPOU

Email: inocencio.buot@upou.edu.ph, caragharold@gmail.com

This paper presents the results and the discernments of locals from selected villages around Ifugao Rice Terraces, Philippines. A total of 18 respondents from Banaue, Hungduan and Mayoyao participated in the survey. The web tool was adopted from <http://biodiversity.wvviews.org/> (2012) but with some modifications. The results show a great concern over the loss of biodiversity (83% of the respondents) and is clearly reflected in their support of protective measures at the expense of economic constraints. Even though only 56% of the respondents are familiar about biodiversity, 39 and 28% of the respondents responded that most people in the world and in their hometowns are affected by biodiversity loss, respectively. Sixty seven percent (67%) of the respondents said that both industrialized and developing countries should be obliged to pay for biodiversity protection and when needed, 78% of them think that a global fee should be paid for their utilization. Significantly, there is a general support for expanding international biodiversity regulation and therefore the extent to which burdens and benefits are shared. The local scenario of Ifugao was briefly analyzed and an action plan on biodiversity awareness campaign was suggested. The voices of the locals summoned a very clear message in saving our biodiversity and hopefully, their insights maybe taken into consideration in the formulation of biodiversity policies in the future.

Conserving the Biodiversity of Ilin and Ambulong Islands: A Community-based Forest Conservation Project

Rene C. Capoquian, Don Geoff E. Tabaranza and Kathy Lene S. Cielo

Mindoro Biodiversity Conservation Foundation, Inc, Muntinlupa City

Email: ilin_ambulong_project@mbcfi.org.ph, geoff_e_tabaranza@mbcfi.org.ph, kathy_s_cielo@mbcfi.org.ph

Presented here are initial results of the biodiversity survey and updates from the forest conservation project. The Ilin and Ambulong Islands with a combined land area of 10,026.36 ha, in San Jose, Occidental Mindoro is one of Mindoro Biodiversity Conservation Foundation Inc. (MBCFI)'s conservation priority areas. The occurrence of the critically endangered endemic Philippine Teak (*Tectona philippinensis*) and historic record of the Ilin Cloud Rat (*Crateromys paulus*) make this island candidate Key Biodiversity Area. Intensive logging during the previous decades, expansion of agriculture and unsustainable resource use practices almost completely deforested the islands. The islands are now predominantly covered by wooded grasslands (42.18%) and agricultural lands (37.61%). A Philippine Teak conservation project was implemented by MBCFI in 2006-2007 supported by the Fauna and Flora International Flagship Species Fund and the Malampaya Joint Venture Partners. To revitalize conservation efforts on the islands MBCFI conducted a biodiversity assessment in 2013 followed by a forest conservation project supported by the Philippine Tropical Forest Conservation Foundation, Inc. The current project involves: i) socio-economic and community perception surveys regarding the use of their natural resources; ii) formation and strengthening of forest conservation groups; iii) establishment of woodlot areas; iv) incorporation of conservation initiatives in barangay development plans and v) declaration as a critical habitat through local and national issuances. Through these efforts, MBCFI and its local community partners aim to arrest and eventually reverse the deterioration of natural habitats on Ilin and Ambulong Islands ensuring a safe haven for biodiversity and human communities.

Preliminary List of Bryophytes in Tagbaobo, Kaputian, Island Garden City of Samal

Hazel G. Carreon¹, Normeliza E. Morales¹, Milton Norman D. Medina¹, Analyn A. Cabras¹ and Andrea Azuelo²

¹Math and Science Department, CASE, University of Mindanao, Matina, Davao City

²Central Mindanao University, Musuan Bukidnon

Email: hcgc_1025@yahoo.com, normelizamorales@yahoo.com, milton_sept19@yahoo.com, ann.cabras24@yahoo.com

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

Coastal Resource Utilization and Management in Bataan: Assessment and Public Awareness of its Environmental Impact

Alvin B. Cervania, Adrian DC. Pedro, Delia S. Llave and Antonio B. Zapanta

Bataan Peninsula State University, City of Balanga, Bataan

Email: cervaniaalvin@gmail.com

This study aimed to assess the nature and extent of coastal resource utilization and public awareness on coastal resources and the life support system in the province of Bataan. Data were collected from concerned agencies, focused group discussions and surveys. Water samples were collected at selected sites that were analyzed for pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Oil and Grease. Water samples taken from Abucay have the highest BOD at 3380 mg/L. For DO, all sample sites fell below the criterion level at 5-7 mg/L except for Orani and Morong. Water samples taken from Mariveles and Limay recorded the highest pH level. Bagac and Morong samples exceeded the criterion level of 2mg/L. Correlational analysis indicated that the situational characteristics of coastal folks, coasts' present condition and level of membership in civic organization were found to influence awareness on coastal resource utilization with membership in civic organization influencing interest on coastal utilization matters. Further, coastal folks' views on preventive actions, possible solutions and institutions most trusted by the respondents were found to be significantly related to the job and educational attainment while the willingness to support coastal activities and views about organizations were significantly correlated with awareness on coastal resource utilization and management issues.

Deciphering the Generic Concepts of Thorny Philippine Gardenieae: Perspectives from Morphological and Molecular Data

Jayson G. Chavez¹ and Grecebio Jonathan D. Alejandro²

¹Institute of Arts and Sciences, Far Eastern University, Manila

²The Graduate School and Research Center for the Natural and Applied Sciences, University of Santo Tomas, Manila

Email: jayson.chavez@gmail.com

The Rubiaceae (coffee family) is one of the species-rich angiosperm groups in the Philippines. It encounters a number of enigmatic taxa restricted in this archipelagic region, some of which are representatives of the monophyletic tribe of Gardenieae namely: *Fagerlindia* Tirveng. and *Oxyceros* Lour. These genera which are promising for horticulture and agricultural sciences are generally characterized by the presence of curved or straight thorns but differ from each other due to the branching patterns. In the recently proposed systematics of the thorny Gardenieae, *Fagerlindia* has been recognized as a nomenclatural synonym of *Benkara* Adans., which is the sister-group of *Oxyceros* based from few and contentious morphological characters. In the present study we aim to complement the morphological work by examining in greater detail the lineage formed by these thorny Gardenieae within the tribe by establishing Bayesian cladistic models with five plastidial genetic markers (atpB-rbcL intergenic spacer, ndhF gene, rbcL gene, rps16 intron, trnT-F intergenic spacers) and a significantly expanded taxon sample. Deep morphological observations were also initiated for the Philippine species of *Fagerlindia* [*F. emanuelssoniana* Rids. and *F. microcarpa* (Bartl. ex D.C.) Rids.] and *Oxyceros* [*O. bispinosa* (Griff.) Tirveng.]. We were unable to support the morphological hypothesis that *Fagerlindia* is a synonym of *Benkara*. Superficially, the shoot architectural structures and few reproductive characters fit the predicted relationships within the thorny Gardenieae, but do not serve as features that will delimit its genera. In addition, our molecular data suggested an alternative classification; thus, calling for a re-evaluation of the systematics of these genera and to explore previously unconsidered possibilities that will resolve such complexities.

Indigenous Ichthyofauna of Catubig River, Northern Samar

Ronelle C. Chato-Salvador

Fisheries Department, College of Agriculture, Fisheries and Natural Resources, University of Eastern Philippines,
Cataraman, Northern Samar
Email: ronellesalvador@yahoo.com

Indigenous ichthyofauna are ecologically and economically important resources of riverine ecosystems. Compared to their marine counterparts, riverine fishes are least studied despite of their accessibility and economic value as food and source of livelihood among communities in the riparian zones. Information on ichthyofaunal components of Catubig River, a major river system traversing three municipalities in Northern Samar, was gathered to understand the river ecology. A total of 58 species were collected, identified and characterized. Of these 35 species are foodfishes and have potentials in small-scale aquaculture and ornamental fish trade. These findings are important in devising resource utilization and management strategies for Catubig River.

Biodiversity on Wheels (BOW) Program

Arlie Jo B. Endonila, Czarina S. Constantino and Raiza Joy R. Elumba
Haribon Foundation, Cubao, Quezon City

Email: bow@haribon.org.ph, learn@haribon.org.ph, training@haribon.org.ph

Educating the youth is a key strategy in biodiversity conservation as they represent future catalysts of environmental change. Coupled with technology, students' imagination and interest on environmental topics broaden. Haribon Foundation together with its corporate partners¹ created the HARI Ecovan, a built-in multimedia and library that visits schools and communities to teach Biodiversity on Wheels (BOW). Unlike traditional classroom discussion, BOW provides innovative learning conditions where students get access to updated Philippine-centric learning resources in the mini library, watch audio visuals of Philippine endemic flora and fauna species, and participate in interactive learning exercises and discussions on habitat conservation and related topics on solid waste management, wildlife trade and pollution which are not readily available in schools especially in remote communities. Through this program, the team realized the effectiveness of a student-participatory approach (i.e. storytelling with movements, origami workshop, and interactive discussions) in making environmental topics interesting and relevant to urban people who are more familiar with concrete buildings over natural environments. These were reflected in the students' active participation, involvement, and expressed commitment during the sessions, which also served as the program's evaluation tools of how the concepts and information were internalized and likely to be practiced in future environment-friendly behavior. Catering to a large audience, the program also promoted volunteerism among its partners on spreading the message on conservation. Currently, the HARI Ecovan Biodiversity on Wheels (BOW) has visited 40 schools and 8 communities teaching biodiversity to more than 13,000 students in different parts of the country since its launch last 2012. The program aims to expand its operations to reach more people in Visayas and Mindanao and follow through on the students' commitments. Feedbacks from teachers, partners, and volunteers will also be gathered for further improvement of the program.

Species Richness, Assessment and Distribution of Odonata across Vegetation Types in Mt. Sinaka, North Cotabato

Karen C. Dador¹, Jennifer G. Opiso¹ and Guiller S. Opiso²

¹Central Mindanao University, Musuan, Bukidnon

²Philippine Eagle Foundation, Inc., Davao City

Email: mcgalvz@gmail.com, opisogui@gmail.com

This study generally aimed to determine the species richness, assess the local and conservation status and record the distribution of Odonata species across vegetation types in Mt. Sinaka, North Cotabato. Field work was conducted on agro-ecosystem, dipterocarp forest and montane forest using opportunistic sampling and visual searching techniques. Insect sweep nets were used for the collection of the species. Twenty six (26) species were recorded under 17 genera and 7 families. Among these species, 14 are Zygoptera and 12 are Anisoptera. Species richness was highest in agro-ecosystem (S=21) and lowest in montane forest (S=3). Species abundance was highest in agro-ecosystem with 126 individuals followed by dipterocarp and montane forest, both with 4 individuals. Species richness and species abundance were considerably high in areas with open canopy and water bodies. The presence of oriental species suggests that the area is disturbed. Local and conservation status of Odonata recorded eleven (11) species were endemic (4 Philippine endemic and 7 Mindanao endemic) in which 9 are Zygoptera and 2 are Anisoptera. The presence of endemic species suggests that Mt. Sinaka is of conservation importance. Most of the observed species were found in specific vegetation and only *Teinobasis annamaijiae* and *Risioconemis tendipes* are shared by agro-ecosystem and dipterocarp, and dipterocarp and montane, respectively. Further studies with longer sampling periods, sampling coverage and quality test on water must be conducted.

Implications of Garganey (*Anas querquedula*) for the Long Distance Dispersal of Freshwater Plants and Mollusks and Diseases in Candaba Marsh, Pampanga

Jill B. Dalisay and Elaine Anne Lim-Tandoc

College of Arts and Sciences, Lyceum of the Philippines University, Manila

Email: jill_10242000@yahoo.com, elaineanne_tandoc@yahoo.com.ph

It is a general knowledge that waterbirds such as dabbling ducks are agents of dispersal. This paper reviews the potentials of Garganey (*Anas querquedula*) as agent of long distance dispersal focusing on aquatic plants, mollusks and diseases. With the aim to determine the species that Garganey can introduce to Candaba as a stop over site, results of Nature Walk 2012 was included. Literature review and Nature Walk 2012 show little implications on the potentials of Garganey to introduce non native plants and mollusks in Candaba wetland. Despite of the abundance of *Anas querquedula*, this review showed limited researches utilizing the species on diseases transmission. This paper also recommends not to rule out the possibility of Garganey of being a vector of diseases. More fieldwork and analysis are needed to understand fully the role of migratory birds such as Garganey as agent of dispersal and the mechanisms of long distance dispersal can be fully understood.

The Biology of *Holothuria scabra* in Albay Coast

Skorzeny C. de Jesus and Arnel B. Gonzales
Bicol University-Tabaco Campus, Tabaco City
Email: amiedejesus@yahoo.com, nhelgonzales21@yahoo.com

The study was conducted on November 2010 to September 2014 at Albay Coast in the Bicol Region. The general objective of this program is to remedy the decline of the natural stock of *Holothuria scabra* in the coastal area of Albay by developing and applying technologies on stock enhancement, aquaculture, artificial spawning appropriate in the provincial settings, and acceptable to various stock holders. Seventy-two individuals of sandfishes were collected in the different areas of Bicol region. The average weight ranges from 22.5 to 112.7 grams. Gonado-somatic index indicates that this species reach its sexual maturity and spawns during the months of November and April. It shows also that male and females have a synchronized gonads development. Sex ratio of the population is 1:1 ($X^2=1.051$), that is, one male to every female sandfishes. The observed length-at-first maturity is 11.3 cm for females whereas 10 cm for males. Water management for aquaculture was done, as well as water treatment. These processes are essential for maintaining the survivability of the sandfishes. Indoor and outdoor cultures of natural foods for this species were also implemented. Thermal induction was done to induce the spawning of both males and females sandfishes to extract gametes. Fifteen breeders, 8 males and 7 females, were subjected to this process. Larval rearing then followed, wherein the fertilized eggs were placed in two 1-tons plywood tanks. The process yielded two juvenile sandfishes.

The Biology of Tabagwang (*Jagora asperata*) in the Bicol Region

Skorzeny C. de Jesus and Jethro Emmanuel P. Baltar
Bicol University-Tabaco Campus, Tabaco City
Email: amiedejesus@yahoo.com, jethroemmanuel@gmail.com

Tabagwang is a freshwater species which is edible and known to Bicolanos for a long time. It is mixed with vegetables to add flavor in it, and considered as a cheap source of protein. But the population is threatened due to unregulated catch. Some of the rivers in the Region known to harbor this species previously do not have anymore the presence of the species. Therefore, the need to assess its biology is important to make a doable management strategy. Collection was done from January 2013 until May 2014 in Catanduanes. Thirty pieces were dissected for reproductive biology, and GSI was established, as an index of gonadal activity, and as an index for spawning preparedness. 28,921 individuals were collected. Length distribution shows that majority of the catches are from 34 to 46 millimeters. Mean length and mean weight was found to range from 36.77 ± 8.17 to 43.45 ± 7.09 millimeters and 3.68 ± 2.31 to 5.76 ± 2.62 grams, respectively. Chi-square goodness-of-fit test was employed, and showed that the distribution of the sexes is 1:1; 208 of which are males and 241 are females. Male gonads exhibits pale yellow to dark yellow coloration, whereas females were characterized by pale to creamy white coloration. The estimated length-at-first maturity was 32.04 millimeters for females and 33.64 millimeters for males. It is noted that there is an increase of gonad weight in the months of October up to December which signifies gonadal maturity and spawning season. As to the mode of development, the species is ovoviviparous.

Abundance and Diversity of Meiofauna as an Organic Indicator of Organic Enrichment in Palompan Bay City

Alieza O. Del Socorro and Art Russel R. Flandez
Department of Biological Sciences, Visayas State University, Baybay City, Leyte
Email: Art.Flandez@vsu.edu.ph

An ecological study to determine meiofauna abundance and diversity was conducted in Palompon Bay, Leyte to determine which taxa could be potential indicators of organic enrichment in the bay. Three stations were established based on the proximity to the sources of pollution or nutrient enrichment. Station 1 was near commercial, residential, and fish farming areas. Station 2 was located in Tabuk Islet (~300 m from the town proper). Station 3 was located at the western side of Tabuk Islet (area farthest from pollution source). Three core samples were obtained from each station. Samples were fixed, stained and decanted for sorting and identification of meiofauna. Lowest numerical abundance of meiofauna (5.96 ± 0.50 N cm⁻²) was also recorded in Station 1. This could be attributed to high organic matter and low dissolved oxygen levels in the area. Highest meiofauna diversity (H') was in Station 3 while lowest was in Station 1. Pollution tolerant taxa such as Nematoda, Tintinnida, Ostracoda and Annelida were found to have high importance value in Station 1 while pollution sensitive groups had the lowest density at this station. Absence of Amphipoda, Kinorhyncha in Station 1 could indicate their sensitivity to pollution and hence could be possible bioindicators. A non-metric multi-dimensional scaling (nMDS) based on Bray-Curtis coefficient on log-transformed data showed distinct meiofauna species composition, with Station 1 samples plotted farther apart from the other stations. Monitoring these different pollution-sensitive and pollution-tolerant meiofauna taxa allows a simple, yet cost-effective way to assess marine ecosystem health.

Using Bats in Conserving Threatened Limestone Forest of Southwestern Negros Key Biodiversity Area

Kim John S. Doble, Godfrey Jakosalem and Lisa Marie J. Paguntalan
Philippines Biodiversity Conservation Foundation, Inc., Bacolod City
Email: kim_doble@yahoo.com, godo.jakosalem@gmail.com, lisamariet10@gmail.com

Study on diversity, abundance and status of bats in Southwestern Negros Key Biodiversity Area (SWN KBA) was conducted in the limestone forests of Sipalay City and Cauayan Municipality in Negros Occidental from October-November 2012 and April 2013. Mist netting and harp trapping methods were used. A total of 709 individuals were captured, of which 623 were frugivores. The most abundant fruit bats identified were Lesser Short-nosed Fruit Bat *Cynopterus brachyotis* and Geoffroy's Rousette *Rousettus amplexicaudatus*. A total of 86 individuals of insect bats were captured including Dusky Leaf-nosed Bat *Hipposideros ater*, Small Rufous Horseshoe Bat *Rhinolophus subrufus* and Philippine Pygmy Leaf-nosed Bat *Hipposideros pygmaeus*. There were five threatened species recorded including Little Golden-mantled Flying Fox *Pteropus pumilus*, Large Flying Fox *Pteropus vampyrus* and Philippine Tube-nosed Fruit Bat *Nyctimene rabori*. Despite intensive netting, we failed to capture the Philippine Bare-backed fruit bat *Dobsonia chapmani*. The high diversity of bat species highlights the conservation importance of the remaining forests fragments on limestone as well as the many different caves in the area. Hunting activities and charcoal production using native species of trees remains the most important threat to the species and the conservation of the forests. Over the last 10 years, conservation initiatives have been provided by the Local Governments of Sipalay and Cauayan with assistance from the Provincial Government of Negros Occidental and DENR as well as from non-government organizations. The remaining forest fragments had been identified and proposed as Southwestern Negros Key Biodiversity Area with the local governments forming an alliance network to support this initiative.

DNA barcoding of *Kappaphycus* species (Gigartinales, Rhodophyta) from Surigao, Philippines

Richard V. Dumilag^{1,2}, Ronelie C. Salvador³, Anna Melissa M. Talavera⁴ and Cynthia B. Mintu²

¹Marine Genomics and Molecular Genetics Laboratory, Marine Science Institute, College of Science, University of the Philippines-Diliman, Quezon City

²Department of Biological Sciences, Institute of Arts and Sciences, Far Eastern University, Nicanor Reyes Sr. St., Sampaloc, Manila

³Fisheries Department, College of Agriculture, Fisheries and Natural Resources, University of Eastern Philippines, Catarman, Northern Samar

⁴Regional Fish Health Laboratory, Bureau of Fisheries and Aquatic Resources, BFAR-Caraga, Butuan City
Email: ronieliasalvador@yahoo.com

Progress in genetic diversity assessment of *Kappaphycus* species using DNA barcodes and molecular phylogenetics ushered a novel phase in understanding the biodiversity and distribution of this taxon, which when used for taxonomic studies, have often led to reliable identification, discovery of cryptic species, and novel haplotypes. Barcoding of the Philippine *Kappaphycus* species have been conducted, but genotyping of samples from farming areas and sites in Surigao (Southwestern Philippines) where wild populations of *Kappaphycus* abound was not undertaken. We determined the genetic relatedness and diversity among economically important species of *Kappaphycus* in Surigao del Norte and Surigao del Sur based on mitochondrial COI-5P gene and cox2-3 intergenetic spacer. Two species were identified: *K. alvarezii* and *K. striatus*. Several wild and farmed varieties of *Kappaphycus* (referred to in various local names) represented distinct haplotypes that have never been identified before. The new haplotypes detected may be used as source of materials for *Kappaphycus* strain improvement.

A Tool for Mapping Migratory Bird Species in Protected Areas in the ASEAN Region

Christian B. Elloran and Jerome S. Alano

ASEAN Centre for Biodiversity, 3F ERDB Building Forestry Campus, College, Laguna, Philippines 4031

Email: cbelloran@aseanbiodiversity.org, jsalano@aseanbiodiversity.org

The ASEAN Centre for Biodiversity is an intergovernmental regional organization that facilitates cooperation and coordination among the ten ASEAN Member States (AMS) on the conservation and sustainable use of Southeast Asia's rich biological diversity. Through its Biodiversity Information Management (BIM) unit, ACB develops and utilizes readily available tools to promote the use of biodiversity data and create knowledge products as decision support systems for conservation and protection activities and programmes in the region. One of these tools is the "Species in Protected Areas" web service that allows overlays of species occurrence and distribution data from IUCN on to the habitats map and existing ASEAN Protected Areas from the World Database of Protected Area (WDPA) data and Birdlife international (Important Bird Areas and Endemic Bird Areas). The species in PA web service is an online tool that enhances the creation of maps to track the progress of conservation activities in PAs as indicated by the presence or absence of threatened and/or endemic species in these areas through time. This tool can be viewed at http://chm.aseanbiodiversity.org/index.php?option=com_content&view=article&id=257

Improving Biodiversity Knowledge among High School Teachers in Protected Areas

Raiza Joy R. Elumba, Arlie Jo Endonila and Czarina Constantino

Haribon Foundation, Cubao, Quezon City

Email: learn@haribon.org.ph

Posters

Teachers are vital in perpetuating knowledge and in molding minds of the next generation. The level of biodiversity awareness of teachers could suggest the responsiveness and reception towards conservation activities. However, one of the challenges in this approach is to translate added knowledge into conservation actions. Two training workshops were conducted under the Biodiversity and Watersheds Improved for the Stronger Economy and Ecosystem Resilience (B+WISER) Program for the teachers in the adjoining municipalities of Naujan Lake National Park (NLNP) and Northern Sierra Madre Natural Park (NSMNP). The training included lecture, learning exercises, exposure trips and demonstration of the lesson plans on ecology, biodiversity, watershed and climate change that they have crafted during the workshop. The knowledge gained from each topic was measured through the pre-test and posttest method. The main results were: 1.) 57 teachers attended the training 2.) significant increase of teachers' knowledge on biodiversity in both sites (p value is less than 0.0001), and 3.) 107 activities or events were spearheaded post-training that were either related to biodiversity and watersheds conservation were made possible through the making of action plans and support from the Department of Education in each region. It is highly recommended that a post training monitoring and evaluation should be done to concretely correlate the impacts of the training in the long run and the multiplier effect of added knowledge in this approach of biodiversity conservation. Trainings should also have follow-up activities where participants could make use of their learnings to engage them fully in biodiversity awareness campaigns.

Migration Effects to the Marine Ecosystem of Barangay Concepcion

Marjorie A. Española and Jayson B. Cated

Palawan State University, Cuyo, Palawan

Email: marjorieastorias@gmail.com, mae_868@yahoo.com

Concepcion is one of the small island barangay in the municipality of Agutaya. It was established on December 8, 1935 in honor of Patron Immaculate Concepcion. It has a total landmass of 132.297 hectares. Concepcion is also found in the Quinluban group of Islands. This place has variety of natural resources like seaweeds, turtles, fish and other seafood. The prominent product in this island is "Agar-Agar". This study determined the effects of migration to the marine ecosystem of the Barangay. Survey method was used in this study. Interview schedule was used during the data gathering. Results show that most migrants came from Region VII and farming seaweeds or Agar-agar. Poverty motivated them to migrate and the abundance of marine resources in the area. Their place of origin was Region VII which is 49%, composing Cebu and Bohol. They experienced poverty and economic crisis in their previous place, that's why they explored and migrated to support their basic needs. Migrants in the place enjoyed and got enough sources of income for their family. Some send their children to school to earn college degree. Several business establishments are found in the place. One of the major effects of migration was rapid increase of population. The sustainability of the marine resources is at stake. The place became congested, overcrowded and problem for sanitation occurred. The area utilized for planting Agar-agar became smaller. Result of the study served as input in the barangay development plan.

Joseph F. Luchavez and Jayzon G. Bitacura

Department of Biological Sciences, Visayas State University - Baybay City, Leyte

Email: luchavezjosef89@yahoo.com, jayzonbitacura@gmail.com

Posters

Sewage and industrial effluents are considered to be some of the factors that caused the degradation of inland and coastal areas of the Philippines. The use of species diversity to determine the health of an environment is an important aspect for biological monitoring. Thus, this study was conducted to determine and compare the taxa composition, diversity, abundance, and dominance of zooplankton in selected coastal areas of Baybay City; Brgys. Hilapnitan and Caridad (industrialized), and Brgy. Punta (Protected) during dry and wet seasons to explore the potential of zooplankton as indicator organisms in assessing the health of Baybay City's water bodies. Zooplankton were sampled from the established three stations for each of three sites. It was done for four months (2 months per season). Zooplankton were identified up to the lowest possible taxon, counted, and the diversity indices were computed and analyzed using Shannon-Weiner Diversity Index. Some physico-chemical parameters were also monitored and were correlated to the computed diversity indices. A total of 19 zooplankton taxa were encountered and identified. Thirteen of which were holoplankton (Appendicularia, Calanoida, Cladocera, Cyclopoida, Copepod nauplii, Foraminifera, Harpacticoida, Nematoda, Ostracoda, Pteropoda, Radiolaria, Rotifera, and Tintinnida) while the other six were meroplankton (Asteroidea larvae, Bivalve veliger, Cypris larvae, Mysid larvae, Gastropod larvae, and Polychaete larvae). Abundance of zooplankton was highest during dry season. It was highest in Brgy. Caridad (0.596 cell/cm³) and lowest in Brgy. Hilapnitan (0.293 cells/cm³). Copepod nauplii being known to occur abundantly in most aquatic ecosystems was the most abundant and dominant group in all sites and in both seasons. However, Cyclopoida and Calanoida, being known to withstand environmental stress were most abundant in Brgys. Caridad and Hilapnitan. Zooplankton community was most diverse in Brgy. Caridad ($H^{\prime}=1.963$) during dry season and in Brgy. Hilapnitan ($H^{\prime}=1.922$) during wet season. Most of the physico-chemical parameters were of normal ranges, while only light intensity, being a key factor that triggers vertical migration of zooplankton, significantly affected the abundance of zooplankton community. The abundance of zooplankton groups that can withstand environmental stress and the high diversity of zooplankton communities imply environmental disturbances and contaminations in the industrialized coastal waters of Brgys. Caridad and Hilapnitan. Zooplankton diversity could therefore be used as potential indicator to assess the health of different water body categories.

Elliptic Fourier Analysis of Mandibular Shapes of the Rice Leaf Folder *Cnaphalocrocis medinalis* Guené

Christine Lovelle A. Mahinay¹ and Cesar G. Demayo²

¹Ateneo de Cagayan, Xavier University, Cagayan de Oro

²Mindanao State University-Iligan Institute of Technology, Iligan City

Email: lovelle2200@gmail.com, cgdemayo@gmail.com

A strong mandible of the leaf folder *Cnaphalocrocis medinalis* larva is used in scraping leaf tissues of rice during feeding. Breeding rice resistant to leaf folders have resulted to the identification of some varieties resistant to the insect pest. However, the deployment of varieties with specific genes for resistance was soon found to succumb to pest attacks. Resistance breakdown was attributed to the insect's capability to overcome the resistance factors. It is believed that certain genotypes of the insect pest were able to feed on these resistant plants. This study was conducted to find out whether the mandible shape of the rice leaf folder *C. medinalis* would likely differ with respect to their utilization of the different rice varieties. Elliptic Fourier analysis (EFA) was employed to describe the shapes of the mandibles of *C. medinalis* infesting rice varieties with different genes for resistance. Results of the study showed significant differences in the mandible shapes among populations of *C. medinalis* feeding on different rice varieties. The different rice varieties having different sets of resistance genes used in the study served as selection regimes to the pest, allowing those possessing stronger mandibles with larger and more define teeth to successfully feed on its plant host. Variations in the mandible shapes could possibly be due to selection and/or co-speciation of the insect pest with the host plant. These pests evolved more rapidly than genes governing other aspects of organismal function that makes them difficult to eliminate. Further studies on the host plants using DNA analysis should be employed to evaluate the host specificity of the pest in the molecular level.

Species Richness, Distribution, and Status of Gymnosperms in Mt. Sinaka, Arakan, North Cotabato

Jivonte Nicklaus R. Leyson¹, Jennifer G. Opiso¹, Guiller S. Opiso² and Sawmill Compound¹

¹Central Mindanao University, Musuan, Maramag, Bukidnon

²Philippine Eagle Foundation, Inc., Davao City

Email: j1v3_pain@yahoo.com, mcgalvz@gmail.com, opisogui@gmail.com

Gymnosperms are dominant seed plant in the past which gradually have been displaced by angiosperms. Its distribution can be related to increasing ecological threats such as habitat loss and degradation. Good records of the distribution of these species can be used for conservation purposes and habitat monitoring. This study generally aimed to determine the species richness, assess the conservation status and record their distribution. Transect walk from the base to the peak on both trails located in two barangays was done. Gymnosperms were identified, assessed and geotagged to generate distribution maps along elevation gradient and vegetation types. A total of only 77 individuals under 7 species belonging to 5 genera and 2 families were recorded. The seven species were found distributed at different elevations (1102-1488 masl) showing increasing altitude trend in the pattern of species abundance and elevation but showed a clear drop after 1301 masl. Species richness and abundance were considerably high in montane forest. This suggests that montane forest of Mt. Sinaka is still intact. This study also recorded one endangered species, one vulnerable, one near threatened and the rest were classified as least Concern. The presence of these threatened species suggest that Mt. Sinaka is of conservation importance. It can be concluded that the species richness of gymnosperms in Mt. Sinaka is low, and that it needs to be conserved and monitored closely to help prevent decreases in its population. Further studies using other trails is recommended.

Stand Structure and Species Composition of Mangroves in Olango Island Wildlife Sanctuary, Cebu

Elena B. Lozano¹ and Reginaldo G. Bueno²

¹Science Department, Cebu Normal University - Cebu City

²Olango Island Wildlife Sanctuary (OIWS), DENR 7 - Banilad, Mandaue City

Email: elen8_lozano@yahoo.com

The stand structure and species composition of the mangroves in Olango Island wildlife sanctuary were assessed using the following parameters: relative frequency, relative dominance, relative density, importance value, crown cover, abundance of trees/hectare, regeneration/m² and constancy. The study recorded the presence of 17 species, 11 of which were considered rare in occurrence. There was a total of 10,309 trees surveyed and *O. octodonta* registered the highest with 3,739 trees. *R. stylosa* 2,827 and *A. marina* 1,268. The area had a very low crown cover 23.06%. Regenerants were also very few with 1.3 wildling /sq.m². Also, the mangroves in OIWS showed a small basal area of 1.27 m²/ hectare indicating there was overharvesting/overcutting of the trees. Suggestions for improvement were given.

Posters

Economic Value of Mangroves in Glan, Sarangani Province

Carilyn S. Martin, Abelardo Corpuz, Zaluma G. Gampal and Sanico B. Bulawan
Environmental Conservation and Protection Center, Alabel, Sarangani Province
Email: carilyndianco@yahoo.com

Mangroves in Glan, Sarangani Province are one of the critical resource ecosystems in Sarangani Bay Protected Seascape. It needs legislations in order to protect and conserve the remaining mangrove community in the bay. Thus, this study was conducted to determine the economic value of mangroves. Economic Value is measured by someone's willingness to pay in order to obtain a good or services. WTP can be determined thru CVM. 16 coastal barangays with 1,488 respondents were surveyed on their WTP for the conservation and protection of mangroves profiling the socio-economic data, awareness level, WTP and the factors affecting the WTP. In predicting the WTP model, logistic regression was used to model the willingness to pay of the respondents in Glan, Sarangani Province. Results indicate that people living in the coasts are 73% more likely willing to pay for the conservation of mangroves than those who are living far from coastline, for every single point increase in the awareness level on mangrove uses and benefits, there is likely 0.8% increase in WTP and for every additional year spent in school, there is 5% more likely increase WTP. While being male is 8% more WTP than females. On the average, the amount the respondents are willing to pay is PhP18. Economic value was computed and resulted to annual EV of mangrove to PhP 2,154,178. While the net benefit of mangrove per hectare and per tree is PhP18,830 and PhP 432, respectively.

Physicochemical and Bacteriological Water Quality Evaluation of the Four River Systems Surrounding MMPL

Tres Tinna B. Martin¹, Gerald G. Lobredo¹, Emmanuel P. Leano², Maximo C. Aljibe³ and Edna P. Oconer¹
¹Mindanao State University, General Santos City
²Central Mindanao University, Maramag, Bukidnon
³Commission on Higher Education-Region XII, Koronadal City, South Cotabato
Email: tres1203@yahoo.com, globredo@yahoo.com

Four rivers surrounding Mt Matutum Protected Landscape (MMPL) were selected (Glandang, Linan, Kawit and Amlok) for evaluation on their physicochemical and microbial characteristics between wet and dry season. The pH and TDS of the river waters ranged from 6.75-8.68 and 55.96-221.89ppm, respectively, with a pronounced pH fluctuation and total dissolved solids (TDS) increase in Glandang and Linan rivers from upstream to downstream stations. All rivers showed varying dissolved oxygen (DO) levels upstream but becoming relatively stable downstream. All DO values however, are below the set standard limit for freshwater quality guideline. In terms of microbial load, total coliform ranged from 51-275 cfu/ml while *E. coli* showed as low as 0 cfu/ml to 77 cfu/ml. Higher total coliform counts were observed on Kawit and Amlok rivers which are situated at areas that are relatively more forested than the other two rivers. On the other hand, these two rivers showed the lowest *E. coli* counts compared with the other sites. Although all four rivers considered in this study showed high total coliform counts, it is of greater importance to consider the elevated *E. coli* counts in Glandang and Linan rivers that are indicative of contamination of the surface waters consequently restricting the water utilization in the area. Temporal variations indicate increased pH, TDS and microbial load during the wet season, while DO is significantly higher during dry season.

Plecoptera Fauna of Compostela Valley, Mindanao Island

Milton Norman Medina¹, Ignac Sivec² and Reagan Joseph T. Villanueva³
¹University of Mindanao, Davao City
²Slovenian Museum of Natural History, Slovenia
³Davao Mental Hospital, Davao City
Email: milton_sept19@yahoo.com, rjtvillanueva@gmail.com

Preliminary survey of Plecoptera fauna in the province of Compostela Valley Philippines was conducted between January and November 2012. Opportunistic sampling using hand netting during the day and standard light trapping during the night were used. Out of 167 individuals collected, four species were identified belonging to genus *Phanoperla*: *Phanoperla flaveola* (Klapalek, 1910), *Phanoperla bakeri* (Banks, 1920), *Neoperla: Neoperla oculata* (Banks, 1920), and *Neoperla oblique* (Banks, 1913). Three species await further examination and are possible new to science.

Diversity and Quality of Odonates in Compostela Valley Province, Mindanao Island

Milton Norman Medina¹, Analyn A. Cabras¹ and Reagan Joseph T. Villanueva¹
¹Univeristy of Mindanao, Davao City
²Davao Mental Hospital, Davao City
Email: milton_sept19@yahoo.com, ann.cabras24@gmail.com, rjtvillanueva@gmail.com

Odonates are excellent indicators of water quality and measures of conservation efforts. In this paper, analysis of their diversity and quality from 11 municipalities of Compostela Valley Province (ComVal) is presented. Opportunistic and segmented line transects sampling using hand netting and photodocumentation were conducted to selected fluvial systems of each municipality between March and September 2014. All specimens were preserved using pure acetone, air dried, and stored in the Math and Science Department of the University of Mindanao. A total of 2,883 individuals belonging to 12 families, 24 genera, and 32 species were recorded. Fifty three percent (53%) are Anisopterans (dragonfly) while 47% are Zygopterans. Fluvial systems in the municipalities of New Bataan, Compostela, and Mabini still contains semi-pristine to pristine fluvial systems despite of numerous environmental threats hosting most high quality endemic species collected. Shannon-Weiner Diversity Index revealed that municipalities of Nabunturan, Monkayo, and Laak revealed the highest level of species diversity ($H' = 2.6$) characterized by diverse vegetation for both secondary forest to agricultural and open lands while New Bataan and Pantukan have the lowest species diversity. Furthermore, most of the municipalities' showed 85% positive correlation between the quality of species and the level of endemcity. This means there is a relatively high endemcity in these areas contributing to a high number of quality species. Except in the municipalities of Montevista and Pantukan where there is no endemic species documented perhaps due to severe habitat disturbance and poor water quality. It is recommended that conservation efforts is needed to areas that host high quality endemic and diverse wildlife.

Cavity-Nesting Bird Population at Subic Watershed Forest Reserve and Adjacent Forests of Bataan National Park

Jasmin C. Meren and Carmela P. Española
University of the Philippines-Diliman, Quezon City
Email: jasminmeren@gmail.com, cpespanola@up.edu.ph

This study is part of a larger research with the main objective of assessing populations and habitat and nesting requirements of cavity-nesting birds including several threatened endemic parrots at Subic Watershed Forest Reserve (SWFR) and adjacent forests of Bataan National Park (BNP). In this paper we estimate the population density of 5 primary and 21 secondary cavity-nesting birds at the two reserves and draw recommendations for their conservation. Line transect distance sampling was used to map the distribution and estimate cavity-nesting bird density along 34.8 and 41.2 kilometres of transect at SWFR and BNP respectively. The threatened near endemic *Tanygnathus lucionensis* was not encountered at BNP but had a density of 5.6 individuals km⁻² at SWFR. Similarly, the endangered Luzon-endemic *Prioniturus luconensis* had a lower population of density of 0.42 individuals km⁻² at BNP compared to 11.27 individuals km⁻² at SWFR. All the primary cavity-nesters showed a similar pattern of abundance at SWFR compared to BNP. Results point to the conservation importance of SWFR to cavity-nesting birds including several threatened species and to the role of sound wildlife and habitat protection at reserves in maintaining viable populations.

Stock Assessment of Christian Crabs (*Charybdis feriatus*, Linnaeus, 1758) in San Miguel Bay

Plutomeo M. Nieves¹, Nelson R. Olfindo² and Aldrin Mel B. Macale¹
¹Bicol University-Tabaco Campus, Tabaco City
²Camarines Norte State College, Marcedes, Camarines Norte
Email: plutz1122@yahoo.com, ns_olfindo@yahoo.com.ph, ambmacale@gmail.com

Assessment of the status of swimming crab fisheries in San Miguel Bay with focus on *Charybdis feriatus*, was undertaken from November 2011 to January 2013. The analytical length-based fish stock assessment was employed using the FISAT (version 1.2.2). A total of 7,679 length frequencies (3,612 *C. feriatus* and 4,067 *P. pelagicus*) were used in the analysis. About 15 and 14 percent gravid females harvested monthly for both species which may contribute recruitment overfishing. Population parameters showed exploitation rate (E) for *P. pelagicus* and *C. feriatus* exceeded the optimum exploitation (E0.5) implying excessive fishing effort and heavily exploited stocks. Maturity size of *C. feriatus* and *P. pelagicus* in San Miguel bay is 8.3 cm and 8.5 cm, respectively. Doable options for resources conservation and management strategies are proposed and it was supported by LGUs including the Integrated Fisheries and Aquatic Resource Management Council.

The Fishery Macro-invertebrate Gleaning: Status and Contribution to Food Security, Income and the Fisheries

Plutomeo M. Nieves, Skorzeny C. de Jesus, Aldrin Mel B. Macale and Jasper R. Nieves
Bicol University-Tabaco Campus, Tabaco City
Email: plutz1122@yahoo.com, skordejesus2000@yahoo.com, ambmacale@gmail.com, njasper87@yahoo.com

An assessment of the fishery for macro-invertebrates gleaning in Lagonoy Gulf was undertaken to determine the status and contribution to food security, income and the fisheries. Rapid Resource Assessment (RRA) was used and supplemented by key informant's interview and actual gleaning data. Finding reveals gleaning as traditional practice of women with their siblings. It is a subsistence fishing activity in shallow reef flats, mud flats, sand and rocky areas, sea grass including mangrove areas. Species caught include shellfishes, crustaceans and other invertebrates. Gleaning employs fishing methods that require use of senses and skilful utilization of fisheries knowledge and simply tools. It directly and indirectly contributes to the total fisheries. At least 296 tons of macro-invertebrates valued PhP 5,920,128.00 at a selling price of PhP 20.00/kg is contributed by gleaning to the total fishery. At the household level, they are either in the form of additional income estimated roughly at PhP 20,556/gleaner annually or the same amount as savings when used for food. Ecologically, since invertebrates are lower down the food chain, the practice may result "ecosystem over fishing". In-depth studies along biodiversity conservation, management, and health and safety hazards are recommended.

Macro Flora Diversity in Pilar Caves: Basis for Utilization

Philomel Innocent P. Obligar
Capiz State University, Pilar, Capiz
Email: philomelinnocentobligar@yahoo.com.ph

This study aimed to identify and measure the macrofauna present in caves found in Natividad, Pilar Capiz. The study was conducted from January 11-18, 2014 in Balisong and Puting Bato Caves using the cruising transect-walk technique and quadrat methods. A complete enumeration technique was used in identifying the macroflora species found in each quadrat. Species richness, density, frequency, relative frequency, abundance and relative abundance were determined as per Curtis and McIntosh (1950) formula, and the diversity was determined using Simpsons Diversity Index. Twenty-five (25) macroflora species are found in Balisong and Puting Bato Caves. In Balisong Cave, the quadrat within the entrance of the cave has a higher species richness, with *baho-baho* and *palagtige* as the most abundant species. In Puting Bato Cave, the uppermost part and the entrance of the cave have similar species richness, with *kugon*, *pako-pako* and *lunok* as the most abundant species. The species that disperse frequently in both caves were *anano*, *lunok* and *pako-pako*. All macroflora species found in the caves of Pilar have medicinal and economic value.

Mapping to Inform Conservation: Multi-criteria Spatial Analysis of Key Biodiversity Areas in the Philippines

Ver Anthony S. Odevilas
Haribon Foundation, Cubao, Quezon City
Email: geomatics@haribon.org.ph

The biggest threat to biodiversity is habitat loss, therefore the best approach for biodiversity conservation is habitat protection. To determine and show to conservation scientists and practitioners which biodiversity hotspots in the country should be prioritized for immediate and effective conservation, this study used Geographic Information System (GIS) technologies to analyze the Key Biodiversity Areas (KBAs) based on different criteria. The criteria used for prioritization were Quantity, Quality and Urgency. Quantity is based on the total number of threatened species, which is recommended for protection for the most number of species. Quality is based on the total number of threatened species per unit area which is recommended for cost effectiveness given that monitoring and protection costs are proportional to land area. Urgency is based on the number of critically endangered species which is recommended if the priority is to save the species with the smallest population and highest danger of extinction. Using GIS Software ArcGIS, QGIS and Google Earth, spatial datasets that contain boundaries of the KBAs were augmented with data on location of threatened species and to produce proportion symbol maps. Resulting maps showing analysis of 128 sites reveal that based on quantity, Samar Island Natural Park should be prioritized because it has a total number of 180 threatened species. On the other hand, Ursula Island with 3 threatened species in just 3 hectares of area is priority based on quality, whereas based on urgency, Lake Lanao should be prioritized because it has 14 critically endangered species.

An Initial Survey of Ant Population in an Anthropogenic-Disturbed Area: Far Eastern University

Anthony Ian G. Pag-ong
Far Eastern University, Manila
Email: apag-ong@feu.edu.ph

It is often said that ecology and conservation biology suffer from a vertebrate bias. In our attempt to include entomology, or at least myrmecology, within the more immediately recognizable taxonomic groups, we conducted an initial survey of the ant population in the Far Eastern University-Manila campus. The study aims to know if there are native ant species surviving with human presence in FEU. Particularly, the objectives of this study were to (i) identify species of ants in the area; (ii) classify ants as to native or non-native, tramp or invasive; and (iii) enumerate physiological adaptive mechanisms of these ants for survival. General hand collection & baiting methods were used for collection. Three ant species were identified and verified: *Nylanderia* sp. subfamily Formicinae; *Oecophylla smaragdina*, subfamily Formicinae; and *Solenopsis geminata*, subfamily Myrmicinae. All species were considered as “tramp” species; the latter species is an invasive species, while the former two are native. Alarm pheromones, which have no direct benefit to the recipient but serve to alert colony members, are physiological adaptation that aid the ants’ behavioral responses. Native ants can dwell in disturbed areas and survive human presence because of their physiology, and their behavior within their community. These attributes give ants a niche that we need to further understand and study.

Ecological Assessment of the Siganid Fishery of Baruyan River in Caluagan Lake and Baruyan Calapan City, Oriental Mindoro as Affected by Human and Environment Impacts

Marius L. Panahon and Bonifacio V. Labatos
City Government of Calapan, Calapan City, Oriental Mindoro
Email: mlpanahon@yahoo.com

Two siganid species were identified in the study area: the mottled spinefoot, *Siganus fuscescens* (Houttuyn, 1782) and orange spotted spinefoot, *Siganus guttatus* (Bloch, 1787). The study showed that these species are not in any way currently exploited. Dissolved oxygen was found to fall within the permissible standards, both during the wet and dry season sampling, that gives suitable habitat for the two species of siganid to thrive in. Exceedance was observed in sodium, chlorine, sulphate as well as the total dissolved solid (TDS), which registered values way above the permissible standard. Socio-economic conditions were also determined to see the level of exploitation from the surrounding community. The availability of other sources of livelihood prevents the exploitation of siganid and other fishery resources in the study area. This study proposed for consideration the adoption of Ecosystem-based Fisheries Management to policy makers and implementers on siganid fishery in order to attain the sustainable development of this important resource.

Orchids in Mt. Sinaka, North Cotabato: Their Status

Cherry Lee T. Panal¹, Jennifer G. Opiso² and Guiller S. Opiso³
¹Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur
²Central Mindanao University, Musuan, Bukidnon
³Philippine Eagle Foundation Inc., Davao City
Email: lengkay22@gmail.com, mcgalvz@gmail.com, opisogui@gmail.com

Orchids are group of flowering plants that are indicator species which help tell the health of an ecosystem. Floristic records of these species can be used for conservation purposes. This study aims to determine the orchid species composition and assess their conservation status. Sampling plots were established across vegetation types and an alpha taxonomy was done from base to peak of the mountain. Identification was based on the book Philippine Native Orchid Species by Jim Cootes (2011) and other published scientific articles. Identification of orchids was further verified by Jim Cootes and assessment of the conservation status was based on the IUCN Red List of Threatened Plants 2013.2 and National List of Threatened Philippine Plants of Fernando et al. (2008). A total of 95 species belonging to 37 genera were recorded. Among 37 genera, *Dendrochilum* is well represented with 10 species followed by the *Bulbophyllum* (9), *Appendicula* (6) and *Dendrobium* (6) while 23 genera were represented with a sole species. Among observed species, 11 are widespread, 21 endemic, 1 critically endangered, 1 endangered, 23 no published record in the region, 18 no published record in Mindanao, 5 no published record in the Philippines and 6 undescribed species. The presence of the endemic, endangered and probably new species calls a desperate need to strengthen the existing conservation management of Mt. Sinaka. Further field studies should be conducted in different seasons of the year to capture the various flowering seasons of individual species.

Exploring Samar Island Natural Park (SINP): An Inventory and Ethnobotanical Study of Its Medicinal Plants and a New Endemic Species of *Nepenthes* L.

Neil Alejandro A. Pinarok¹, Gerard Q. de Guzman¹ and Grecebio Jonathan D. Alejandro²

¹The Graduate School, University of Santo Tomas, Manila

²The Graduate School, Research Center for the Natural and Applied Sciences and College of Science, University of Santo Tomas, Manila

Email: napinarok@yahoo.com, balejan@yahoo.com

Designated as a protected area by the Department of Environment and Natural Resources, the Samar Island Natural Park (SINP) which includes Mt. Minaligwan, Mt. Kambalawa and Mt. Pangí was investigated in terms of plant species' richness and diversity with emphasis on the anecdotal uses of medicinal plants. Plants were collected at random and the uses of the medicinal plants were identified by the locals. Identification of the new species of *Nepenthes* was done with extensive morphological analysis. A total of 62 plants were collected mostly represented by the families Rubiaceae, Zingiberaceae and Asteraceae. The collection included 7 endemic species and 2 endangered species. Diversity is highest in the forest of Mt. Pangí. *Centella asiatica* L. has given the highest informant consensus factor and fidelity level as it has been indicated for 5 disease categories, while *Cassia alata* L. has been given the highest use values regardless of the disease treated, the most common dosage form that has been used is decoction of either the leaves or roots. A new endemic epiphytic species of *Nepenthes* L. (*Nepenthesaceae*), *Nepenthes borongensi* Pinarok and Alejandro is discovered having distinct 3-flowered partial peduncles, presence of ridges and white hairs on its wingless pitchers compared to other *Nepenthes* species belonging to the same *alata* group. The study provided baseline data on the plant biodiversity of SINP, it is an excellent foretelling of other plant or even animal species that remain unexplored in the area that may possibly be endemic, endangered or potentially useful for various applications.

Diversity and Similarity of Migratory Species in Four Important Migratory Sites in the Philippines

Josiah David G. Quimpo, Ana Dominique A. Almazar and Maria Belinda E. de la Paz

Haribon Foundation, Quezon City

Email: iba@haribon.org.ph/ dtheyveed@gmail.com, act@haribon.org.ph, coo@haribon.org.ph

Flyways are migratory bird's highways, considered as their home and essential for survival. Millions of migratory birds use the East Asia Australasia Flyway (EAAF) annually. It's a long journey, though they need stop overs to feed and rest before they reach their destination. The Philippines has a number of these stop overs like Candaba swamp, LPPCHEA, Naujan Lake and Olango Island. About 80 species of birds were recorded in these sites including the rare Black-faced Spoonbill in Candaba and Olango in 2013. Regular monitoring activities were conducted by Haribon Foundation to examine the diversity of bird species in these sites. Using Sorenson's similarity index, bird species from different sites were compared and to see possibilities that individuals may use all sites before moving southward to Visayas and Mindanao and vice versa. Initial results showed that about 14 percent of the species use all four sites during their migration. Migratory sites are often threatened by human activities, such as overexploitation and conversion of ecosystems for development. Because of this, about 64 species of migratory birds in EAAF are now globally threatened. Critically endangered Chinese Crested Tern and Spoon-billed Sandpiper were recorded in the Philippines before, but now can hardly be found anywhere else in the world. With that, awareness raising activities were conducted by Haribon Foundation and Birdlife-Asia every year for people to be aware of the importance and significance of migratory birds. Local governments were also involved in action planning for the conservation of these migratory sites.

Notes on the Lepidoptera and Odonata of Kabigan Falls and Paoay Lake, Ilocos Norte

Roanne B. Romeroso^{1,2} and Eric Zeus C. Rizo¹

¹Department of Biological Sciences and Research Center for the Natural Sciences, University of Santo Tomas, Manila 1015, the Philippines

²College of Science, University of Eastern Philippines, Northern Samar
Email: ericrizo_99@yahoo.com, romerosoroanne@yahoo.com

This paper presents a study on the Lepidoptera (butterflies) and Odonata (dragonflies) that are found along Kabigan Falls and terrestrial part of the Paoay Lake, Ilocos Norte. Descriptive research method describes characteristics of a population or phenomenon being studied. It does not answer questions about how/when/why the characteristics occurred. Rather, it addresses the "what" question (what are the characteristics of the population). Aerial net was used to catch the butterflies and the dragonflies. The collected samples were put in zip locks and then in a freezer for several days to allow for the wings and body to dry in this position. Samples were brought to the laboratory for further analysis. After identification of the specimen, the butterflies and dragonflies were put in the frame with moth balls to prevent mold from growing on the specimen's bodies. There were 2 sampling sites visited in this study: (1) Kabigan Falls can be found in the town of Pagudpud Ilocos Norte; and (2) Paoay Lake, the landlocked lake located in Suba, Paoay. Results revealed (9) species collected under the Order Lepidoptera and (5) species under Order Odonata.

Amphibians in Limestone Karst Forest of Quezon Protected Landscape

Essex Vladimer G. Samaniego¹ and Arvin Diesmos²

¹University of Santo Tomas, Manila, and Southern Luzon State University, Quezon

²Herpetology Division, Zoology Department, National Museum of the Philippines, Manila
Email: eseks27@gmail.com

The study shows the amphibians of Quezon Protected Landscape (QPL), a limestone karst type of forest which consists mainly of calcium carbonate formed millions of years ago and was tectonically lifted above sea level and is a unique type of forest which covers only 10% of the total land area of the Philippines and often exhibits high endemism of species and provides diverse range of habitats for organisms. Amphibian collection was done by Stratified Sampling Technique from June to August 2013. Five habitat types were classified namely Agricultural Area, Limestone Forest, Riverine Area, Open Grassland/Built-up Area and the Secondary Lowland Dipterocarp to represent the whole area. A total of 14 species of frogs were found in the area. Eight out of the 14 species observed where Philippine endemics, with two species of genus *Platymantis* are possibly new to science. Conservation status was assessed according to the IUCN (2013), showing that eight are categorized as "Least Concern", three species as "Near Threatened" and one as "Vulnerable". Two species were not assessed because of the probability that they are new species. Species richness through non-parametric estimators showed that there is a probability of other species yet to be observed in all habitat types as shown in the estimated mean species richness and proportion detected per habitat type. The impressive level of amphibian species for such a small area emphasizes that diversity and distribution patterns of amphibians from limestone karsts forest and Luzon are still poorly known and in need of further study.

Conservation of the Palawan Forest Turtle *Siebenrockiella leytensis* - A Holistic Approach

Sabine Schoppe and Diverlie Acosta

Philippine Forest Turtle Conservation Program, Katala Foundation Inc., Puerto Princesa City, Palawan

Email: sabine_schoppe@web.de, diverlieacosta@yahoo.com

The Palawan Forest Turtle *Siebenrockiella leytensis* is critically endangered, endemic to the Philippines and restricted to parts in the Province of Palawan. At the same time it is one of the world's least known species. To fill knowledge gaps needed for its conservation, KFI adopted the species as focal species of its Philippine Freshwater Turtle Conservation Program (PFTCP). The present paper reports on key findings of the program since 2006 such as the species composition of freshwater turtles in Palawan and the reason for the limited geographic distribution of *S. leytensis*. It reports on the results of telemetry studies that brought evidence for high site fidelity and territoriality of *S. leytensis*. It presents research on the diet of *S. leytensis* that revealed the important role of the species in the environment as e.g. seed disperser and pest reducer. It highlights the importance and effectiveness of environmental education, the insufficient knowledge of communities about environmental laws and the deficiencies in law enforcement. It elaborates on habitat requirements of *S. leytensis* and provides evidence for habitat degradation being the 2nd most severe threat to the survival of the species. It shows solutions for habitat protection and restoration. Finally, it reports on the progress in captive husbandry at the assurance colony in Narra and the difficulties in captive breeding *S. leytensis*.

Biota Assemblage of Lake Mainit

Astrid L. Sinco, Judy P. Sendaydiego, Leolinda L. Saab and Geraldine R. Mojica

Biology Dept, Xavier University, Cagayan de Oro City

Email: jsendaydiego@xu.edu.ph

The phytoplankton, macroinvertebrates and fishes of Lake Mainit was assessed in the month October 2014. The assessment serves as a recent inventory for possible monitoring of the biota assemblage in the lake for conservation efforts. The presence and abundance of these target groups may provide information on the health of the lake ecosystem. Phytoplankton was collected using horizontal towing of the plankton net. Macroinvertebrates used the modified D-frame net while fishes were collected using cast nets. Metrics used were relative abundance, diversity and family biotic index.

The lake phytoplankton had abundant *Microspora* (67.52%) that mostly thrives in acidic waters, and *Oscillatoria* (16.28%) which is an indicator of poor water quality. The fishes in the lake were dominated by *Glossogobius giuris* (78.95%) of the Family Gobiidae. The fish species diversity was low ($H=0.79$, $H_{max}=1.79$) which could be attributed to environmental modifications and fishing pressure in the area. The lake macroinvertebrates had low diversity index ($D=0.13$) with abundant arthropod of Family Atyidae (93.44%) on the eastern part. Assessment of the aquatic ecosystem using the macroinvertebrate Family Biotic Index (FBI=6.02) indicated fairly poor water quality with likely substantial organic pollution.

The Dynamics of Acarine Ectoparasitism on Philippine Lizards

Gerald Thomas A. Soliven¹, Mae Lowe L. Diesmos¹, Leonila A. Corpuz-Raros² and Arvin C. Diesmos³

¹University of Santo Tomas, Manila

²University of the Philippines-Los Baños, Los Baños, Laguna

³National Museum of the Philippines, Manila

Email: ge.soliven@gmail.com, maediesmos@gmail.com, lacraros@yahoo.com, arvin.diesmos@gmail.com

Ectoparasitism is one of the most interesting interactions between organisms with almost all experiencing this kind of relationship. Studies about ectoparasitism on lizards are done in different countries. For the Philippines, the last study made on lizard parasitism dates 35 years ago. This study can help fill the gap in the scientific information about ectoparasitism on lizards. It can also provide baseline data for future studies on lizard ectoparasitism in the Philippines. Collection was done day and night; lizards were hand grabbed and placed in individual plastic bags. Sampling sites were various locations in Luzon namely, Atimonan, Quezon, Ilocos Norte, Bani, Pangasinan, Manila, Mataas na Kahoy, Batangas, Majayjay and San Pablo, Laguna. Particular sites of the lizard's anatomy (e.g toes, patagium) were observed especially those that favor infestation in terms of morphology. Ectoparasites found were then extracted using tweezers. Parasites were stored in 70% EtOH then cleared with 70% Lactophenol before mounting on slides using Hoyer's Medium. While lizards were preserved and deposited in the National Museum of the Philippines. A total of 143 lizards were collected representing three families (Gekkonidae, Agamidae, and Scincidae) under 9 genera and 12 species. Lizards were found to be infested most of the time (61%). Ectoparasite presence was not significantly dependent on variables such as host sex, tail condition, gravidity and locality based on Chi Square test results. We were able to record what ectoparasites were present on specific species of lizards. Also we were able to identify eight species of ectoparasites under five genera to the lowest possible taxonomic level. Two being classified as chiggers, three belongs to the genus *Geckobia*, two being possible new species and one possibly a new genus. This study updates the current knowledge about ectoparasitism on Philippine lizards and can help in the conservation of species for both lizards and ectoparasites.

Species Distribution and Abundance of Amphibians in Two Vegetation Types of Agusan Marsh, Mindanao

Rainer P. Sularte¹, Lilia Z. Boyles¹, Nilo H. Calomot², Meljan T. Demetillo¹, Leila A. Ombat¹, Me Concepcion M. Ngilangil¹ and Gee Marie S. Binag²

¹Graduate School, Caraga State University, Ampayon, Butuan City

²Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur

Email: rainersularte2011@gmail.com, geemariebinag@gmail.com

Agusan Marsh is the 1009th RAMSAR site, a wildlife sanctuary which harbor unique and pristine faunal species. It is considered one of the most ecologically significant wetland ecosystems in the Philippines. The study assessed species distribution and abundance of amphibians in between sago palm and *Terminalia* forest in Agusan Marsh using Geographic Information System (GIS) map. A total of 322 individuals, belonging to 11 species and 6 families were documented. Of the 11 species of amphibians, 6 were Philippine endemics, and 3 were invasive species. The highest number of amphibians were documented in the *Terminalia* forest. Sago palm and *Terminalia* forest have almost the same type of vegetation, where amphibian species thrive most. This shows that Agusan Marsh, particularly the sago palm and *Terminalia* forest, still harbour unique features of endemic amphibian species despite of the on-going anthropogenic activities in the said areas. Ecological and environmental threats (conversion of *Terminalia* forest to agricultural land, run-off of environmental and chemical pollutants, and *kaingin* or slash-and-burn farming) in the two habitat types should be given urgent attention.

Microhabitat Preferences of Amphibians in the *Terminalia* Forest and Sago Palm Vegetation of Agusan Marsh, Mindanao

Rainer P. Sularte¹, Lilia Z. Boyles¹, Jessie Pasiona¹ and Gee Marie Binag²

¹Graduate School, Caraga State University, Ampayon, Butuan City

²Agusan del Sur State College of Agriculture and Technology, Bunawan, Agusan del Sur

Email: rainersularte2011@gmail.com, boyleslz86@gmail.com, jessie_pasiona@yahoo.com

Assessment of amphibians and their microhabitat preference in *Terminalia* forest and sago palm areas of Agusan Marsh, Mindanao was deemed a necessary basis for conservation purposes. The study was conducted last September to December 2013 in the two vegetation types of Agusan Marsh. Visual encounter survey, pit fall traps, opportunistic approach and microhabitat assessment within the *Terminalia* forest and sago palm were employed to capture and record amphibian species. The abundance of amphibians between two habitat types recorded 110 number of individuals in the sago palm, while 212 amphibian species were recorded in the *Terminalia* forest. Five amphibian species recorded were observed to inhabit under microhabitat 1 (inhabiting non-forest). Three species were under microhabitat 3 (inhabiting forest streams or ponds and tree holes). *Oreophryne annulata* and *Philautus surdus* inhabit under microhabitat 5 (arboreal forest). *Platyantis dorsalis*, meanwhile, was classified as ground-dweller or under leaf litter amphibians. Despite the on-going anthropogenic activities in the area, findings of the study suggest that the area is still suitable for amphibians because of the presence of herbaceous swampy forest, watery bed floor, and closed forest canopy. Urgent protection and conservation of the remaining habitat by local people and the Local Government Unit is needed to lessen the decline of endemic amphibians.

Bird Diversity and Structure in Different Land-use types in Lowland South Central Mindanao

Krizler C. Tanalgo¹, John Arislyn Pineda², Maricel Agrvante² and Amerol Zabide²

¹Department of Biological Sciences, College of Arts and Sciences, University of Southern Mindanao, Kabacan, North Cotabato

²Department of Secondary Education, College of Education, University of Southern Mindanao, Kabacan, North Cotabato
Email: tkrizler@gmail.com

Birds are crucial in maintaining ecosystem balance by providing various ecological services. The diversity and the feeding guild of birds in different land-use types were investigated in south central Mindanao to elucidate the effect of disturbance and habitat modification to bird community. Point count method was employed to identify birds in three habitat types: i) agroforest, ii) ricefields, and iii) roads and heavily disturbed area. A total of 1114 bird sightings were recorded belonging to 33 species and 24 families. Of these, three were Philippine endemic and five were migrant species. Among all habitat types, highest species diversity was determined from agroforest (1/D= 16.148) and the least was recorded from road and heavily disturbed habitat. Greater species composition similarity was found between agroforest and ricefields than to areas with high disturbance level such as roads. The characteristic of vegetation and availability of food resource may play a vital factor to the diversity of birds in every habitat as evidenced by high species richness of frugivores and insectivores in agroforest and rice fields respectively, where food source are largely available in both habitat. *Streptopelia tranquebarica*, was noted as new island record in Mindanao, and sighted particularly in ricefields. Consequently, this study indicates that habitat modification may alter avian diversity and structure, and the maintenance of vegetation as of food resources and habitat in land-use system are essential strategies to conserve native and important bird species in lowland south Central Mindanao.

Species Distribution of Indigenous Fruit Trees found in the Municipality of Bunawan, Agusan del Sur

Becillo E. Telocan, Genevieve B. Ramos and Gee Marie S. Binag

Email: geemariebinag@asscat.edu.ph

Posters

This study was conducted to identify the edible indigenous fruit trees that abound in the different barangay of Bunawan, Agusan del Sur. A descriptive type of research was used to obtain the baseline information in assessing the edible indigenous fruit trees. A certain study showed that there were 200 indigenous fruit trees found in the Philippines. There were 22 indigenous fruit trees found in the Municipality of Bunawan, Agusan del Sur: *Dillenia indica* Blanco, *Syzygium cumini* L. Skells, *Aglai everetti* L., *Spondias pinnata* (Linn. f.) Kurz, *Garcinia* sp., *Syzygium elliptilimum* (Merr.) Merr. & Perry, *Ficus pseudopalma* Blanco, *Dracontomelon dao* (L.) Blume, *Mangifera caesia* Jack, *Ficus minahassae* (Teijsm. & de Vr.) Miq., *Averrhoa bilimbi* L., *Pangium edule* Reinw, *Macaranga cumingii* (Baill.) Muell.-Arg., *Flacourtia rukam* Zoll. & Mor., *Artocarpus cumingianus* L., *Nephelium lappaceum* Linn., *Desmodium* sp., *Garcinia binucao*, *Canarium asperum* Benth., *Syzygium polycephaloides* (C.B. Rob.) Mer, *Diplodiscus paniculatos* Turcz., and *Pyortria* sp. The different edible indigenous fruit trees were identified according to their distinctive characteristics in leaves, barks, stems, and color. Based on the description of the identified species, most of them have sour taste. The study revealed that out of the 10 barangays in the municipality of Bunawan, Agusan del Sur, Consuelo had the most abundant species of indigenous fruit trees. Barangays San Teodoro and Libertad have the least number of indigenous fruit trees.

Investigating Potentials of Community Knowledge in Relation to Non-native Squirrels in Metro Manila

Daniel S. Torres, Anna S. Torres-Abblitt and Lea Ivy O. Manzanero

Email: dantuors@gmail.com, msanna_oz@yahoo.com.au, leaivymanzanero@yahoo.com

This paper examines the value of community knowledge in addressing a non-Philippine squirrel that is now seen in some areas within Quezon City, Philippines. The squirrels' presence in an urban park, the Ninoy Aquino Parks and Wildlife Center, and some surrounding areas provides an opportunity for urban-based ecologists to examine the role of the local community as a major source of information about the squirrels. Through interviews and reviewing Internet-shared material, we documented a wide variety of relations between squirrels and various human groups such as science students, academicians, park-related workers, ambulant vendors, picnic-goers and even passers-by. We maintain that by valuing experiences of community members with non-native squirrels we can achieve twin goals: deriving ecological knowledge and promoting local empowerment. Both goals are vital for functional systems that can sustain long-term work on managing non-native animals as well as collating knowledge derived from such work. A Philippine government agency, the Bureau of Fisheries and Aquatic Resources, now enforces steps to control certain aquatic, non-native species that now proliferate in Laguna Lake, a Philippine freshwater body. Another agency, the Biodiversity Management Bureau is progressing toward similar government-led efforts to address the non-native squirrels. We look ahead to the rise of a community knowledge-based code of ethics that tempers the release of non-native animal pets into the Philippine environment thus curtailing any attendant negative ecological effects.

Describing Body Shape Variation Between Sexes of an Endemic Eleotrid Fish *Hypseleotris agilis* (Herre, 1927) from Lake Mainit Using Landmark-based Geometric Morphometrics

Katherine M. Unito-Ceniza¹, Mark Anthony J. Torres² and Cesar G. Demayo²

¹Xavier University, Cagayan de Oro City

²MSU-IIT, Iligan City

Email: kceniza@xu.edu.ph, torres.markanthony@gmail.com, cgdemayo@gmail.com

Lake Mainit in Surigao del Norte, holds the endemic eleotrid, *Hypseleotris agilis* (Herre, 1927). *H. agilis* are small in size (7.1-13.5 cm), making them uninteresting to researchers. Their biology and taxonomy are poorly known and even conservation of this species is out of hand. Thus, this study was conducted to describe their body shape and tested whether differences in body shape between sexes was possible. Using advanced methods in computer science, landmark-based geometric morphometry, was employed. A total of 129 images of the fish (77 females, 62 males) were examined. Nineteen landmark points were assigned on each of the specimen. The resulting partial warp scores were used in Discriminant Function Analysis (DFA) for maximal discrimination. DFA suggests sexual dimorphism of the species. Thin plate spline plot visualizes the deformed grids (Female; d2 = 0.03704; Male; d2 = 0.04808) illustrating differences of shape between sexes of *H. agilis* morphology. The mouth of the male is bigger wherein its premaxilla levels to the anterior edge of the eye but not extending past through it. The interneural gap of dorsal fins in females is shorter than in males and the form of the caudal peduncle of the males is broader relative to female. The broader caudal peduncle of the males could suggest the efficient fanning and guarding of eggs laid by the females to protect from predators. Studying the biology of this species could provide information on how to protect and preserve it. And without such information it is difficult to suggest appropriate management practices towards fish species of the lake.

Feeding Behaviour and Skull Ontogeny of Zoo-kept *Varanus olivaceus* (Varanidae: Philippiosaurus)

Enriquo Martin C. Velasquez¹, Leticia E. Afuang¹, Emmanuel F. Rafael², Ian Kendrick C. Fontanilla³, Emerson Y. Sy⁴ and Emmanuel Ryan C. Chavez¹

¹Animal Biology Division, Institute of Biological Sciences, University of the Philippines-Los Baños, Los Baños, Laguna

²Avilon Wildlife Conservation Foundation, Pasig City

³Institute of Biology, University of the Philippines-Diliman, Quezon City

⁴Philippine Center for Terrestrial and Aquatic Research, Tondo, Manila

Email: enriquo.velasquez@gmail.com, tisyaa2004@yahoo.com, efranael.avilon@gmail.com,

ianfontanilla@hotmail.com, emerson.sy@gmail.com, radixquad@yahoo.com

Varanus olivaceus, an endemic frugivorous varanid, is classified as a vulnerable species due to habitat destruction and over hunting. Search for alternative food remains a challenge for its successful captive breeding. This research aimed to document the feeding behavior and skull development of zoo-kept *V. olivaceus*. Six adult *V. olivaceus* (wild-caught-5, captive bred-1) were offered five food items (*Canarium ovatum*, *Caryota rumphiana*, *Ptycosperma macarthurii*, chicken heads, snails). Feeding behavior sequence and food preference were determined, while preserved lizard heads were examined using x-ray (3) and computed tomography (CT)(3). Feeding sequence revealed that the longest time was for food recognition (21.6 min), while shortest was during recession (1.86 min). The longest feeding time was during chicken head feeding (68.3 min), while shortest was during *C. ovatum* consumption (4.33 min). *C. ovatum*, *C. rumphiana*, *P. macarthurii*, chicken heads and snails were all eaten successfully (100%). This suggested that captive lizards have potential of changing food preference to accommodate food not found in its habitat. X-ray and CT scans showed gradual change in the lizard's dentition. In juveniles, teeth were all pointed and serrated. Among sub-adult, tooth blunting was observed along inner posterior region while middle and anterior teeth remained pointed. In adults, all teeth were blunted. Reduced posterior-lateral cranial bones among juveniles become enlarged in adults. This study demonstrated the feeding behavior, potential preference for alternative food, and skull ontogeny in zoo-kept *V. olivaceus*, which can contribute to the *ex situ* conservation of this threatened species.

Molecular Phylogeny of Philippine Gynochthodes Blume and Morinda L. (Rubiaceae) Including Four Novelty in the Tribe Morindeae

Russell Evan L. Venturina and Grecebio Jonathan D. Alejandro

University of Santo Tomas

Email: russellventurina2000@yahoo.com, balejan@yahoo.com

Posters

The tribe Morindeae of the family Rubiaceae contains five genera (*Morinda* L., *Gynochthodes* Blume, *Appunia* Hook.f., *Coelospermum* Blume and *Siphonandrium* K.Schum.). The Philippines presently has a total of 14 species of *Gynochthodes* while *Morinda* and *Coelospermum* are monotypic. The recent taxonomic amendment of Razafimandimbison and Bremer's adopted a narrow circumscription of *Morinda* and a broad circumscription of *Gynochthodes*, which resulted to several nomenclatural changes in the tribe. The proposed transfer of the lianescent Philippine endemic *Morinda* species to its allied genus *Gynochthodes* raised the question whether this taxonomic treatment is supported by molecular dataset. To address this, 13 plant samples from the University of Santo Tomas Herbarium collection specifically *M. citrifolia* var. *citrifolia*, *M. citrifolia* var. *bracteata*, *Morinda elliptifolia*, and four Morindeae species were sequenced and analyzed. A total of 65 sequences of combined trnT-F (cpDNA) and ITS (nrDNA) were utilized for phylogenetic analysis. Bayesian inference (BI) of combined DNA markers support the generic transfer of *Morinda elliptifolia* to *Gynochthodes* with strong support (PP=1.00). Other Morindeae species from USTH Morindeae collections (3 *Gynochthodes* cf. and 1 *Morinda* cf.) were confirmed of their generic affiliation within the tribe. Comparisons between the Malesian *Gynochthodes* and *Morinda* have shed light to the proposal of four new endemic Philippines *Gynochthodes* and *Morinda* species.

280+ Reasons to Protect the Northern Sierra Madre Natural Park from 28.0 km of Impending Disaster

Merlijn van Weerd¹, Joni T. Acay¹, Dominic Rodriguez¹, Edmund D. Jose¹, Marites G. Balbas¹ and Aurelia Feliciano²

¹Mabuwaya Foundation, Inc, CCVPED Bldg, Isabela State University Cabagan Campus, Garita Heights, Cabagan, Isabela

²Isabela State University - Echangué Campus

Email: merlijnvanweerd@yahoo.com, acay.joni@gmail.com, rodriguez.dominic@gmail.com, edmundjose@gmail.com, mikaela_tess@yahoo.com, aujacintolopez@yahoo.com

Over 270 species of flora and fauna was recorded in Northern Sierra Madre Natural Park during a biodiversity survey conducted from February - May 2014. The transects were located along the 82.0-km Ilagan-Divilacan Road Rehabilitation and Improvement project proposed by the provincial government of Isabela, wherein a stretch of 28.0 km will traverse the protected area. The survey was conducted under the USAID-funded B+WISER Program in partnership with DENR. More than one third of the species are endemic and one of five is threatened. This includes the Northern Philippine Hawk-Eagle (*Nisaetus philippensis*), Green Racquettail (*Prioniturus luconensis*), Kalinga narrowmouth toad (*Kaloula kalingensis*) and Mcnamara's Burrowing Snake (*Pseudorhabdion cf. mcnamerae*). New records for the park include the Black-bibbed Cuckoo-shrike (*Coracina mindanensis*), the migratory Pale Thrush (*Turdus pallidus*), the Crab-eating Frog (*Fejervarya cancrivora*) and the Emerald Flying Frog (*Rhacophorus pardalis*). This may also be the first photographic documentation of the Mottle-winged Flying Fox (*Pteropus leucopterus*) in the wild and of the Stork-billed Kingfisher (*Pelargopsis capensis*) found in the park. The apparent high concentration of species, with some endemic and threatened as well, along the proposed road is a cause for concern. This new development can potentially affect the biodiversity of NSMNP and must be closely monitored to prevent an impending disaster.

Posters

Monitoring Forest Ecosystems in a Changing Environment: Multi-taxa Studies in Permanent Plots

Carla C. Monoy¹, Sandra L. Yap², Victor Amoroso³, Aloy Duya², Nikki Yvette Mendoza², Jay Fidelin², Alyssa Fontanilla², Francis Magbanua² and Ferry Slik⁴

¹Xishuangbanna Tropical Botanical Garden, Chinese Academy of Sciences, Menglun, Mengla, Yunnan, 666303 China

²Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City, 1101 Philippines

³Center for Biodiversity Research and Extension in Mindanao, Central Mindanao University, Bukidnon

⁴Universiti Brunei Darussalam, Brunei

Email: carla.monoy@gmail.com

Type: Mini-symposium and round-table discussion

Requirements for Participants: Doing research in community ecology, working with plants and/or wildlife and are interested in collaborative studies in long-term research plots

The special symposium aims to bring together a diverse group of researchers who are currently working on or are interested in collaborative studies in long-term research plots in the Philippines. With the recognition of the need to study the impact of natural and anthropogenic events on forest ecosystems, several research plots have been established over the past years in different locations in the country for large-scale and long-term monitoring studies. In keeping with this year's theme on successes, challenges, and future directions, this special symposium will feature researchers from the institutions that have existing plots to present an overview of the plot networks, the results of past and ongoing studies, and the long-term research goals. Our objective is to foster collaboration between researchers from different institutions across the country who are working on different taxa and fields of study to design and undertake research that will contribute to our understanding of how forest taxa and ecological processes are affected by and are responding to the changing environment.

Talks:

Establishing a tropical forest fragmentation observatory, *Ferry Slik*

Mindanao Long Term Ecological Research Sites: Accomplishments, Status and Collaborations, *Victor Amoroso*

Trees of Palanan in space and time, *Sandra Yap*

Macroinvertebrate assemblage in selected streams in the Philippines, *Nikki Yvette Mendoza*

Variations in fruit bat assemblage in the forests of Luzon, *Jay Fidelino/Alyssa Fontanilla*

Population Estimation Using Distance Sampling

Carmela P. Española & Jasmin Meren

Institute of Biology, College of Science, University of the Philippines, Diliman, Quezon City

Email: cpepanola@up.edu.ph, jasminmeren@gmail.com

Type: Hands-on demonstration

Requirements for Participants: Laptop and binoculars

Distance sampling is a method of population assessment that takes into account changing detection probability as a function of distance from the transect, a source of bias in some commonly used methods e.g. encounter rates. Resulting population estimates from distance sampling are more precise and requires less effort and time to obtain than direct counts or methods that require repeated surveys e.g. occupancy modeling. It therefore lends itself to surveys covering large areas on a limited budget. Moreover, absolute estimates of population in distance sampling are readily obtained from multiplying density estimates (individuals per given area) with range/habitat size. This allows for a more direct and prompt IUCN threat assessment and threat category assignment. The workshop would benefit conservation workers, ecologists and wildlife biologists searching for a cost-effective and rapid method of population sampling.

The Principles of Pride: The Science Behind the Mascots

Chedilyn Aissa Dulguime & Fel Ceasar T. Cadiz

RARE, Asia Pacific Region, Penthouse, Oftana Bldg., Don Mariano Cui cor Jasmin Streets,

Capitol Site, 6000 Cebu City, Philippines

Email: cdulguime@rare.org

Type: Mini-Symposium and round-table discussion.

Description: This mini-symposium aims to impart the guiding principles of Rare's Pride program and the scientific foundations upon which they are based. Rare's social marketing approach, its underlying theory, and the key principles is based on over 25 years of lessons learned from more than 250 Pride campaigns in 57 countries across the globe.

From Classroom to Forest: Establishing the Need for a Revitalized Hands-on Environmental Science Curriculum for Elementary and High School Students

Henry G. Calilung, Abigail C. Resuma & Maria Adrianna Isabella G. Claravall

Type: Series of talks and outdoor hands-on demonstration

Requirements for Participants: Notebook and pen

The workshop seeks to empower elementary and high school teachers to better facilitate their environmental science classes whether taught as a separate subject or integrated with others. Such a drive is deemed necessary to address the dearth of local environmentalists. Environmental Science as a course in college and as a career option is still very much a last resort for most Filipino students being exposed traditionally only to lucrative careers in business, medicine, engineering and the like. For most schools in the Philippines, the only time students are taught Environmental Science (if at all) is in 4th yr HS (G10 in the new scheme). This is too late since most college applications occur at the onset of the year.

The workshop will begin with a talk on the need to revitalize our country's environmental science curriculum for elementary and high school (~1 hour). This is followed by a series of hands-on demos featuring outdoor-based lessons teachers can adopt in their own classes.

Analyzing and Interpreting Vegetation Data using R

Bonifacio O. Pasion, Ferry Slik² and Kyle W. Tomlinson¹

¹Community Ecology and Conservation Group, Xishuangbanna Tropical Botanical Garden, University of Chinese Academy of Sciences, China

²Universiti Brunei Darussalam, Brunei

Email: bonifacio.pasion@gmail.com, kylewtomlinson@gmail.com

Type: Hands-on demonstration

Requirements for Participants: laptop

Description: A great deal of biodiversity research is being conducted in the Philippines, however, researchers in the Philippines often face difficulties dealing with data exploration and analysis. In this workshop, we want to demonstrate some basic data exploration and analysis in R, including univariate and multivariate methods. R is an exceptional statistical software as it includes a broad range of analyses with add-on "packages" available for specific statistical problems and research fields. In the end, we expect our participants to be able to understand the type of data they have and what type of statistical analysis might be appropriate, be able to run basic analyses in R, and be able to search for online information on data manipulation and analysis in the R environment.

Roundtable Discussion/Workshop with Expert Panel on Philippine Forest Definition and Treatment of Natural Residual Forests

Lodel D. Magbanua

The Haribon Foundation, 2/F Santos & Sons Bldg., 973 Aurora Blvd., Cubao, Quezon City, 1109 Philippines
Email: campaigns@haribon.org.ph

Type: Round-table discussion and workshop

Requirements for Participants: information packet & workshop kits

Haribon and the Forest Resources Bill Network proposes to hold a roundtable discussion or workshop to move the discourse on definition of the forest and treatment of secondary forests with a panel of experts coming from hard sciences, governance experts and legal/policy experts. The objectives of the the roundtable discussion/ workshop are: 1. Began a process of producing a working definition of the for further consultation with other stakeholders and inclusion in the Forest Resources Bill and other related policies; 2. Expanded the FRB Campaign Network to include stakeholders from other small island and tropical countries; and 3. Developed an action plan to inform the general public on the state of the Philippine Forests and advocate for the conservation, protection and restoration.

The Roundtable Discussion/Workshop intends to tackle the top two questions in several workshops after general and specific inputs are provided. This half-day workshop aims to generate a draft position paper to the current debate on forest policies and laws. Preliminary activities such information packets shall be sent in advance to pre-identified experts. This includes a survey material for participants to answer. This will help the organizers identify emerging trends in forest definition and treatments. A working draft shall be sent prior to the RTD/Workshop for ease of documentation and references in the main discussions.

Saving Critically Threatened Species in the Philippines: The Asian Species Action Partnership

Madhu Rao¹ and Merlijn van Weerd²

¹Asian Species Action Partnership/IUCN-SSC, 352 Tanglin Road 01 08 Tanglin International Centre, Singapore 247671

²Mabuwaya Foundation, EIC Building, ISU Garita, Cabagan, 3328 Isabela, the Philippines
Email: madhu.rao@iucn.org, merlijnvanweerd@yahoo.com

Series of talks and round-table discussion

Requirements for Participants: Individuals and organisations working on a particular set of critically endangered species (non-marine vertebrates) in the Philippines

The Asian Species Action Partnership (ASAP), an IUCN SSC initiative is an interagency coalition to address the extinction risk among the most threatened non-marine vertebrates of Southeast Asia. Organizations within the international conservation community are joining forces to minimize impending extinctions in this area of the world, where habitat loss, trade and hunting have contributed to a dramatic loss of its rich biodiversity. ASAP's key role will be in catalysing action to meet the conservation needs of a critical list of species. The Philippines has a large number of critically threatened species and ranks highest among all ASEAN countries with IUCN CR species. The workshop aims to bring together relevant individuals and organisations implementing conservation activities related to Critically Threatened species in the Philippines to (a) generate an understanding on the status of ongoing conservation efforts on IUCN CR species (vertebrates) in the Philippines and (b) collaboratively identify gaps and potential actions needed to catalyse conservation efforts for ASAP species in the Philippines.

Where We Have Been

Since 1992, Filipino and international wildlife biologists and practitioners working on research and conservation of Philippine biodiversity have been meeting each April at different venues around the Philippines for the annual Philippine Biodiversity Symposium.

Symposium Venues:

2015: Catarman, Northern Samar
2014: Talamban, Cebu City, Cebu
2013: Musuan, Bukidnon
2012: Manila & Dasmariñas City, Cavite
2011: Dumaguete City, Negros Oriental
2010: Legazpi City, Albay
2009: Baguio City, Benguet
2008: Baybay, Leyte
2007: Davao City
2006: Puerto Princesa, Palawan
2005: Tuguegarao, Cagayan
2004: Antipolo City, Rizal
2003: Murcia, Negros Occidental
2002: Cebu City, Cebu
2001: Dumaguete City, Negros Oriental
2000: Tagaytay City, Cavite
1999: Puerto Princesa, Palawan
1998: Davao City
1997: Los Banos, Laguna
1996: Dumaguete City, Negros Oriental
1995: Quezon City
1994: Initao, Misamis Oriental
1993: Los Banos, Laguna
1992: Dumaguete City, Negros Oriental

The Annual Philippine Biodiversity Symposium

About the Symposium

The Philippine Biodiversity Symposium is an annual gathering of Filipino and international researchers and practitioners working in the fields of wildlife studies and biodiversity conservation in the Philippines.

Symposium activities include an institutional exhibit of organizations involved in biodiversity research and conservation, keynote presentations from distinguished wildlife scientists and conservation practitioners, concurrent workshops, and contributed oral and poster presentations.

The symposium draws around 250 participants from the academic and research institutions, government agencies, non-governmental organizations, independent researchers, and high school, undergraduate and graduate students.



The Annual Philippine Biodiversity Symposium
<http://philippinebiodiversitysymposium.wordpress.com>
Email: philbiodiversitysymposium@gmail.com
Facebook: Annual Philippine Biodiversity Symposium

Acknowledgment:



Abstract Reviewers

Joni T. Acay
James D.V. Alvarez
Apolinario B. Carino
Carlo C. Custodio
Gregorio E. dela Rosa, Jr.
Juan Carlos T. Gonzalez
Nina R. Ingle
Renee P. Lorica
Rainier I. Manalo
Ruth C. Martinez
Carla C. Monoy
Nikki Dyanne C. Realubit
Aris A. Reginaldo
Cameron D. Siler
Don Geoff E. Tabaranza
Willem van de Ven

Proof Readers and Editors

Carlo C. Custodio
Divina M. Galenzoga
Cynthia Adeline A. Layusa
Romula A. Obleopas
Marisol DG Pedregosa
Ma. Nina Regina M. Quibod
Emerson Y. Sy
Don Geoff E. Tabaranza
Frances Mae Tenorio
Brenda R. Villacanas-Petersen

Program and Program Book

Nina R. Ingle
Cynthia Adeline A. Layusa
Eva Marie B. Maboloc
Cameron D. Siler

Media and Public Relations

Juan Carlos T. Gonzalez
Gabrielle Elga D. Reyes

Moderation

Carlo C. Custodio

Volunteer Management & Silent Auction

Joni T. Acay



The Biodiversity Conservation Society of the Philippines

BCSP is a professional organization of wildlife researchers, managers, scientists and conservationists. It has the aim to advance biodiversity research and conservation in the Philippines by facilitating communication and contributing to improved research and conservation capabilities of those working on Philippine biodiversity particularly members of the association, and to increase public awareness, appreciation, and understanding of Philippine biodiversity.

Board Members and Officers (2014-2015)

President: Cynthia Adeline A. Layusa
Vice President: Apolinario B. Cariño
Secretary: Ruth C. Martinez
Treasurer: Aris A. Reginaldo
Members:
Joni T. Acay
Moonyeen Nida R. Alava
Fel Ceasar T. Cadiz
Tanya N. Conlu
Carlo C. Custodio
Juan Carlos T. Gonzalez
Angela Nina R. Ingle
Cameron D. Siler
Don Geoff E. Tabaranza

Exhibits

Rainier I. Manalo
Marites G. Balbas
Moonyeen Nida R. Alava

Venue and Logistics

Aris A. Reginaldo

Finance

Aris A. Reginaldo
Fel Ceasar T. Cadiz

Registration

Ruth C. Martinez
Tanya N. Conlu

Food & Socials

Apolinario B. Cariño

Awards

Nina R. Ingle

Venue and Documentation

Don Geoff E. Tabaranza

Tribute to William Oliver

Juan Carlos T. Gonzalez
Don Geoff E. Tabaranza
Tammy Mildenstein
Lisa Marie J. Paguntalan

Symposium Coordination and Communication

Cynthia Adeline A. Layusa
Eva Marie B. Maboloc

BCSP Committees and Chair:

Membership: Tanya N. Conlu

Policy: Fel Ceasar T. Cadiz

Website: Cameron D. Siler, Cynthia Adeline A. Layusa

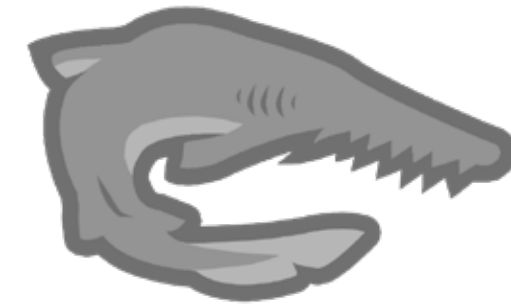
Threatened Species Committee: Carlo C. Custodio, Lawrence R. Heaney

Birds Subcommittee: Juan Carlos T. Gonzalez, Don Geoff E. Tabaranza

Reptiles and Amphibians: Arvin C. Diesmos, Leticia E. Afuang, Rafe M. Brown

Mammals: Lawrence R. Heaney, Mariano Roy M. Duya

Insects and Other Arthropods: Ireneo L. Lit, Jr., Perry C. Buenavente





Acknowledgment:

EXECUTIVE COMMITTEE

Atty. Mar P. de Asis, PhD
 Dr. Myrna N. Ogoc
 Dr. Felisa L. Sanico
 Dr. Julie G. Castillo
 Dr. Rolando A. Delorino
 Dr. Baltazar G. Martires
 Dr. Karina Milgros R. Cui
 Dr. Merle N. Tonog
 Dr. Benjamin D. Varela
 Dr. Ronaldo A. Amit
 Dr. Ronato S. Ballado
 Prof. Ma. Rowena Punsalan
 Dr. Rogelio A. Banagbanag
 Dr. Aurora A. Calades
 Dr. Tito M. Cabili
 Engr. Romeo D. Atencio
 Prof. Ma. Linda S. Agus
 Dr. Gerry A. Camer
 Att. Marlonfritz B. Broto

Dr. Virginia G. Balanon
 Dr. Rico D. de Asis
 Dr. Luisito Muncada
 Dr. Jaime F. Sanico
 Dr. Pio P. Tuan
 Prof. Abel Alejandro U. Flores
 Mr. Abe A. Villarino
 Mr. Bryan V. Navarosa
 Mr. Ferdinand Reyes
 Dr. Gina A. Galvez
 Dr. Bernarda B. Rebadulla
 Dr. Marliza E. Rubenecia
 Dr. Elizabeth L. Dubongco
 Dr. Edwin R. Celestino
 Dr. Cherry I. Ultra
 Engr. Lidanny F. Cornillez
 Dr. Norma C. Cruz
 Engr. Jose Arieal A. Geriane
 Prof. Othelo O. Ortego

Dr. Mila C. Cadampog
 Engr. Noriel L. Getalado
 Dr. Myrna N. Ogoc
 Dr. Charito Mollejon
 Ms. Marylynn O. Espiña
 Mr. Roque A. Irader
 Ms. Fe G. Baoy
 Ms. Romula A. Obleopas
 Dr. Rem N. Laodenio
 Mr. Eduardo A. Ocaña
 Col. Lt. Jose B. Giray
 Dr. Alla A. Ultra
 Engr. Francisco D. Rodelas
 Ms. Ma. Leyda C. Barlaan
 Ms. Luz D. Rivera
 Ms. Melissa Celeste C. Bonsol
 Mr. Arnold P. Rapsing
 Engr. Danilo D. Enrico

PROGRAM AND INVITATION

Chair: Dr. Ronato S. Ballado
 Co-chair: Prof. Mary Lynn E. Verano
 Members: Dr. Veronica A. Piczon
 Dr. Lydia E. Dela Rosa
 Ms. Melissa Celeste C. Bonsol
 Mr. Cyrene B. Corsino
 Ms. Ena Rose J. Barojabo
 For. Dindo Rey Setenta
 Ms. Blenh O. Perez

WELCOME

Chair: Dr. Judy M. Somoray
 Co-chair: Dr. Blenah O. Perez
 Members: Atty. Daisy Lily O. Moscare
 Ms. Cristy T. Entico
 Ms. Mary Jane Calpa
 Ms. Roanne B. Romeroso
 Ms. Riva A. Gatongay
 Ms. Regina O. Belga
 Selected CS students
 Selected MSES/MSBio students
 Selected HRM students

WELCOME NIGHT - CULTURAL PRESENTATION

Chair: Prof. Marylyn E. Verano
 Co-chair: Dr. Allan R. Orejudos
 Members: Dr. Ronato S. Ballado
 Selected UPAO members
 Handumanan Choir
 Selected CSPAO members

BUSINESS PROMOTION/SPONSOR/LGU SUPPORT

Chair: Dr. Cherry I. Ultra
 Co-chair: Dr. Julie G. Castillo
 Members: Dr. Merle N. Tonog
 Dr. Rony Villaflores
 Dr. Divina M. Galenzoga
 Prof. Susan C. Marites
 Dr. Baltazar G. Martires

REGISTRATION/SECRETARIAT

Chair: Prof. Leovilla D. Santos
 Co-chair: Dr. Blenah O. Perez
 Members: Dr. Ma. Lourdes C. Alvarez
 Dr. Julita A. Gatongay
 Prof. Lorna N. Johnson
 Ms. Anelita M. Obrar
 Ms. Perth Kenessa P. Ambida
 Ms. Jenny Resuello
 Prof. Olga G. Unay
 Engr. Ida E. Esquierdo
 Ms. Rhea V. Cerbito
 Engr. Jose Ariel A. Geriane and staff of CCS

AGRICULTURE AND TRADE FAIR

Chair: Dr. Baltazar G. Martires
 Co-chair: Prof. Abel Alejandro U. Flores, Jr.

PHYSICAL ARRANGEMENT AND EQUIPMENT

Chair: Mr. Franklin E. Cortez
 Co-chair: Mr. Jose P. Ching
 Members: Mr. Roque A. Irader
 Mr. Danilo B. Masloc
 Mr. Harris C. Tarrayo
 Mr. Florencio P. Mahinay
 Mr. Maximo S. Resuello

POWER/TRANSPORTATION AND WATER SUPPLY

Chair: Engr. Francisco D. Rodelas
 Co-chair: Dr. Abraham M. Heriales
 Members: Dr. Arturo M. Yakit
 Prof. Danilo C. Basista
 For. Dindo Rey Setenta
 Mr. Rogelio Benesisto
 Mr. Danny Gem T. Entico
 All University Drivers

Chair: Dr. Nestor P. Galarosa
 Co-chair: Engr. Noriel L. Getalado
 Members: Mr. Pio G. Broniola
 David L. Quiñones

ACCOMMODATIONS

Chair: Prof. Carmelita L. Balberde
 Co-chair: Prof. Olga G. Unay
 Members: Prof. Melinda C. Getalado
 Ms. Luningning T. Acedera
 Ms. Nancy N. Bangco
 Ms. Marivic L. Doncillo
 Ms. Lydia P. Mahinay
 Ms. Mocco Tenedero
 Adviser, CS CSC

FOOD AND CATERING/KAPIHAN

Chair: Dr. Siony Ubane
 Co-chair: Dr. Charito V. Mollejon
 Members: Prof. Olga G. Unay
 Prof. Oda G. De Asis
 Prof. Lina R. Heriales
 Engr. Melinda C. Getalado
 Dr. Allan A. Sales
 Prof. Vanessa Selena B. Pinca
 Mr. Leysam Esquierdo

PUBLICITY AND PHOTODOCUMENTATION

Chair: Prof. Romula A. Obleopas
 Co-chair: Mr. Brenfred N. Romero
 Members: Dr. Rogelio A. Banagbanag
 Ms. Ma. Michelle Margot S. Tejero
 Mr. Arvin Setenta
 For. Dindo Rey Setenta
 Ms. Karen Gajutos
 Mr. Wenefredo Jarito

MODERATOR

Chair: Prof. Abel Alejandro U. Flores, Jr.
 Co-chair: Dr. Tito M. Cabili
 Members: Dr. Rogelio A. Banagbanag
 Dr. Virginia G. Balanon
 Dr. Gerry A. Camer
 Dr. Analiza M. Salazar
 Dr. Jaime F. Sanico
 Dr. Leah A. De Asis
 Dr. Rolando A. Delorino
 Dr. Marliza E. Rubenecia
 MSES/MSBio students

STAGE VENUE/HALL PREPARATION, RESTORATION AND CLEANLINESS/ WASTE MANAGEMENT

Chair: Dr. Allan R. Orejudos
 Co-chair: Dr. Nestor P. Galarosa
 Members: Mr. Deony S. Mariano
 Prof. Rony L. Villaflores
 Prof. Antonieto L. Adora
 Mr. Fel Muncada
 Engr. Meletano Centino
 Mr. Aljon Victor Nibalvos
 Mr. Noel Perebras
 Mr. Joey Argenio
 CSSC Officers

COMMITTEE ON EXHIBIT

Chair: Dr. Myrna N. Ogoc
 And the CESA staff

MEDICAL SUPPORT AND NEEDS

Chair: Dr. Elizabeth L. Dubongco
 and the Medical Dental Clinic staff

LIGHT AND SOUND

Chair: Engr. Danilo D. Entico
 Co-chair: Mr. Jonathan R. Camacho
 Member: Mr. Jumar R. Camacho

TRAFFIC AND SECURITY/IM

Chair: Lt. Col Jose B. Giray
 Co-chair: Mr. Ricardo G. Martires
 Member: Prof. Jose E. Gabon

FIELD TRIPS/TOUR

Chair: Dr. Divina M. Galenzoga
 Co-chair: For. Dindo Rey Setenta/Mr. Franklin E. Cortez
 Members: Dr. Lyndon A. Ogoc
 Dr. Geraldine A. Quiñones
 Selected CS students
 Security force
 Lt. Col. Jose B. Giray
 Provincial and National Tourism office
 LGUs