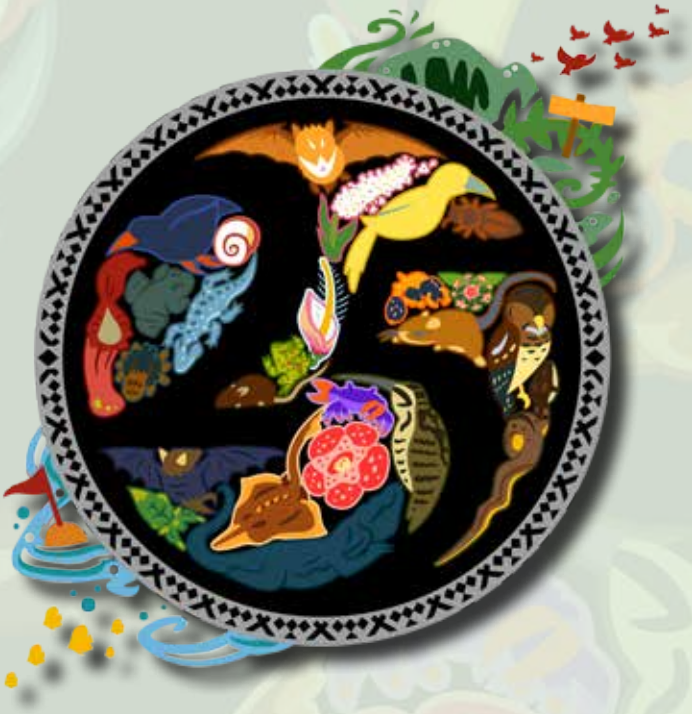
Biodiversity Conservation Society of the Philippines

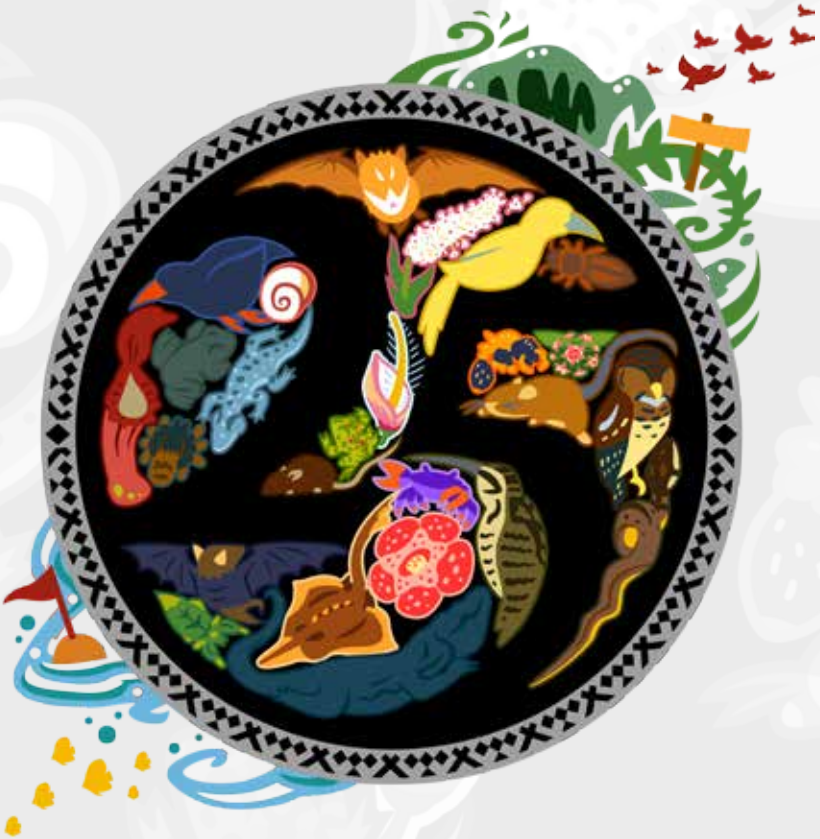
MBCFI
Mindoro Biodiversity Conservation Foundation, Inc.

The 25th Philippine Biodiversity Symposium

25 Years of Collaborative Biodiversity Conservation in the Philippines: Global Relevance, Local Realities



05 - 09 April 2016 | Filipiniana Hotel, Calapan City, Oriental Mindoro



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25 Years of Collaborative Biodiversity Conservation in the Philippines: Global Relevance, Local Realities

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Lungsod ng Calapan 1998 Silangang Mindoro

MBCFI
Mindoro Biodiversity Conservation Foundation, Inc.

05 – 09 April 2016
The Filipiniana Hotel, Calapan City, Oriental Mindoro

Message

Much has been accomplished in the Philippines over the past 25 years for biodiversity research, management and conservation. More than 270 new species of fauna and flora were discovered; national policies on wildlife management and conservation such as the Wildlife Act and the NIPAS Act were enacted into law; and a growing number of researchers and conservationists are working in this field — demonstrating local action and relevance to global conservation.

The Biodiversity Conservation Society of the Philippines (BCSP) is one of the significant milestones in biodiversity research and conservation in the Philippines. From a small group of passionate wildlife biologists in 1992, the Society has been instrumental in bringing together different sectors and institutions through the Annual Philippine Biodiversity Symposium. In the last 25 years, we have seen junior researchers turn into mentors, students into conservation practitioners, and colleagues into global models for conservation, all of whom have used the Annual Philippine Biodiversity Symposium as a platform to network, to share new experience and studies, and to contribute to policy development and effect conservation management. I would like to salute the men and women who have been instrumental to the growth and continuity of the Society and biodiversity research and conservation in general.

As we commemorate a momentous occasion for BCSP, it is a thrill to be on Mindoro Island (a first!) especially given the importance of Mindoro's biodiversity: Mindoro has a number of notable endemic species such as the iconic Tamaraw, the Mindoro Bleeding-heart, and the Mindoro Striped-faced Fruit Bat; it was once a habitat of the Critically Endangered Philippine Crocodile; and ten sites within the island were identified as a conservation priority area, a key biodiversity area, and an important bird area.

The organizers of this year's symposium have been working tirelessly to bring together a special symposium to celebrate our 25th year. I would like to recognize the commitment that the team behind the 25th Philippine Biodiversity Symposium has shown — a true example that collaboration between and among organizations and individuals can make a big difference for conservation in the Philippines and in the region. I thank the City Government of Calapan and to the Mindoro Biodiversity Conservation Foundation, Inc. (MBCFI) for graciously hosting the 25th Philippine Biodiversity Symposium. I am also grateful to our partners and sponsors for supporting this endeavor.

I hope that through this symposium, we leave the halls of our venue more inspired to pursue biodiversity research and conservation through the knowledge that we will gain, and the partnerships and network that we will build this week.

With that, I wish everyone a fruitful time in Calapan City, and a wonderful 25th Philippine Biodiversity Symposium to all!

Cynthia Adeline A. Layusa-Oliveros
President
Biodiversity Conservation Society of the Phiilppines

Message

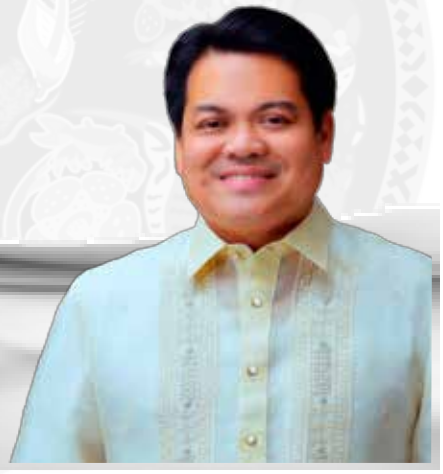
As our country experiences rapid growth and urbanization, various species are now facing threats in an accelerated and dangerous rate, all because of non-natural environmental changes caused by human activities. Habitat loss, over exploitation, climate change and pollution are some of the threats we have created that continuously strains on the diversity of species on earth.

While many people will continue to challenge our protection and conservation efforts, social evolution has always been neglected relative to nature conservation. And as the need for an effective, efficient and comprehensive conservation solutions arise, I encourage everyone to look at a social concept we call stewardship — a concept to which we provide and benefit from the various life on earth by understanding the relationships between all life forms.

We all play important parts in the protection of these species and our efforts must be holistic and must also involve a continuous process of educating people, especially our youth, on how they can care and protect their environment. And like what Pope Francis stated in his encyclical "Laudato Si," let us not plunder our earth's resources because of short-sighted approaches to the economy, commerce and production, for the loss of these resources entails the loss of species which may constitute extremely important resources in the future.

This year, Calapan City, as host of the **25th Annual Philippine Biodiversity Symposium**, expresses its deep support to the Biodiversity Conservation Society of the Philippines and all of its partner organizations, as we move forward beyond the 25 years of collaborative biodiversity conservation in the Philippines in our search for global relevance and local realities. Let us use this event as our avenue to educate people and advocate for our biodiversity's conservation and protection.

I urge you to think and act of conserving biodiversity as our social responsibility and when we move as ONE, we can make that change happen!



ARNAN C. PANALIGAN
City Mayor

Message

MBCFI
Mindoro Biodiversity Conservation Foundation, Inc.

Greetings to all guests and participants, welcome to Mindoro. Congratulations to those who worked hard for the success of this conference, it is indeed a great task and accomplishment. And we thank all the supporters, the local government, the partner agencies and the fund providers; you have made the plan come true.

I remember in 1991, some young scientists convened and guided by Dr. Lawrence Heaney in Silliman University, Dumaguete City, Negros Oriental envisioned an organization that will take the lead for the protection and conservation of this country's wildlife resources. It was then called and established as the Wildlife Conservation Society of the Philippines Inc. (WCSP). Today we celebrate the 25th Annual Philippine Biodiversity Symposium and General Assembly of the WCSP which is now the Biodiversity Conservation Society of the Philippines (BCSP). We are glad that WCSP-BSCP came into being as we now celebrate its successful 25 years of active leadership in significant decisions for the country's biodiversity conservation.

Then in 1997 Dr. William Oliver supported some of us here to stay nights in Paluan, Occidental Mindoro for our first extensive field work to discover the richness of the unique Mindoro Island. From that research, series of additional field studies were conducted, mostly headed by Dr. Juan Carlos T. Gonzalez; concurrently, I did the series of Environmental Education with the Department of Education, Region IV, with support from the Governors of both Occidental and Oriental Mindoro. Further onward, William partnered with the Shell Philippines Expedition (SPEX) and Pilipinas Shell Foundation Inc. (PSFI), and Malampaya Joint Ventures Partners (MJVP) to establish the Mindoro Biodiversity Conservation Foundation Inc. (MBCFI). It took us ten years to have the MBCFI registered but it was fast in its conservation programs because of the consistent support of SPEX, PSFI and MJVP. MBCFI has actively connected with the important sections of Mindoro and has current programs in Research, Mission, SEED and IEC (CARE) areas.

Today, this celebration is a beautiful unification of those who were concerned with Philippine biodiversity conservation with special focus on Mindoro with our theme "25 Years of Collaborative Biodiversity Conservation in the Philippines: Global Relevance, Local Realities". We do hope everyone of you will find each day of 5-9 April 2016 here in Calapan City, Oriental Mindoro to be very productive and significant, especially in line with your own research endeavours.

Leticia E. Afuang PhD
President
Mindoro Biodiversity Conservation Foundation, Inc.

Program

5 April 2016, Tuesday

09:00	Registration opens Ingress of poster exhibits	Filipiniana Hotel Lobby
10:00	Press conference	Conference Hall
13:30 – 14:45	Opening Program *Master of Ceremonies: Juan Carlos T. Gonzalez, Director, Museum of Natural History, University of the Philippines-Los Baños* Invocation, National Anthem and Calapan City Hymn *City College of Calapan Choir* Welcome Remarks *Hon. Arnan C. Panaligan, Mayor, Calapan City, Oriental Mindoro* Opening Remarks *Cynthia Adeline A. Layusa-Oliveros, President, Biodiversity Conservation Society of the Philippines* Message *Facundo Roco, Chairman of the Board of Trustees, Mindoro Biodiversity Conservation Foundation, Inc.* Message *Mary Jane Maypa, Provincial Environment and Natural Resources Officer, DENR–Oriental Mindoro* Cultural Presentation *Teatrong Panlungsod* Inspirational Message: 25 Years of the Society *Blas R. Tabaranza, Jr., Board Emeritus* *Biodiversity Conservation Society of the Philippines* Symposium Artwork by Prime Premne: Commemorating 25 Years of Philippine Biodiversity *Don Geoff E. Tabaranza, Program Manager, Mindoro Biodiversity Conservation Foundation, Inc.* Getting to Know You *Apolinario B. Cariño, Vice President, Biodiversity Conservation Society of the Philippines*	Conference Hall
14:45 – 15:00	Group photo	Filipiniana Hotel
15:00 – 15:30	Break	
15:30 – 16:00	Opening day parade	
16:00	Opening of Institutional Exhibit *Aris A. Reginaldo, Assistant Professor, University of the Philippines – Baguio*	Xentro Mall
18:00 – 18:30	Travel to the new City Hall	
18:30	Welcome dinner and cultural presentation hosted by the City Government of Calapan *Message* *Hon. Arnan C. Panaligan, City Mayor*	New City Hall

Program

6 April 2016, Wednesday

Time	Activity	Venue
08:00	Plenary presentations on Biodiversity and conservation of Mindoro Island: global relevance, local realities	Conference Hall
08:00 – 08:05	Announcements and raffle	
08:05 – 08:15	The Biodiversity Conservation Society of the Philippines *Cynthia Adeline A. Layusa-Oliveros*	
08:15 – 08:30	Overview of Mindoro's biodiversity and introduction to the plenary session *Moderator: Leticia E. Afuang, President, Mindoro Biodiversity Conservation Foundation, Inc.*	
08:30 – 08:50	Borderless marine ecosystems: strengthening co-management of marine protected areas in Occidental Mindoro *Elmer Vela Cruz, Office of the Provincial Agriculturist, Province of Occidental Mindoro*	
08:50 – 09:10	The small mammals of Mindoro Island: an initial assessment of diversity *Lawrence R. Heaney, Field Museum of Natural History, Chicago, IL, USA*	
09:10 – 09:30	Current situation of the critically endangered tamaraw and its conservation issues in the inner Mindoro Island *Emmanuel Schutz, Noe Conservation / D'ABOVILLE Foundation*	
09:30 – 09:50	An indigenous forest rehabilitation project for biodiversity conservation and promotion of sustainable income for the rural communities in San Vicente, Roxas, Oriental Mindoro *Hendrik Freitag, Ateneo de Manila University*	
09:50-10:10	Open Forum	
10:10 – 10:40	Coffee Break	
10:40 – 11:00	Overview: Updating the National Threatened Species List of Wild Fauna	
11:00 – 12:00	Break-out session: Updating of the National Threatened Species List of wild fauna	Break-out rooms
12:00 –13:30	Lunch	

Program

6 April 2016, Wednesday

Time	*Activity*	*Venue*
13:30	Plenary presentations and scientific poster session: partners and sponsors presentations *Moderators: Ruth C. Martinez, Senior Adviser, ForCLIM Project, GIZ, and Rainier I. Manalo, Program Manager, Crocodylus Porosus Philippines, Inc.*	Conference Hall
13:30 – 13:45	Exploring the underworld: lessons learned in the assessment of underwater caves *Representative, GIZ PAME Project, Biodiversity Management Bureau*	
13:45 – 14:00	Removing barriers to invasive alien species in production and protection forests in Southeast Asia (FORIS) Project *Annamalai Siva, Deputy Director, CAB International-Southeast Asia*	
14:00 – 14:15	Tackling the illegal wildlife trade in Southeast Asia *Serene Chng, Program Officer–Pets and Fashion, TRAFFIC Southeast Asia*	
14:15 – 14:30	Mechanics of the Pecha Kucha for Poster Presenters	
14:30 – 15:30	Poster Session: Pecha Kucha	
15:30	Poster Session: Poster viewing and coffee break	Filipiniana Hotel Grounds
17:15	Travel to Playa Ignacio	
17:30	Cocktails and dinner hosted by the Mindoro Biodiversity Conservation Foundation, Inc. *Master of Ceremonies: Ms. Grace Diamante, Member of the Board of Trustees, Mindoro Biodiversity Conservation Foundation, Inc.* Message *Neil Aldrin Mallari, Executive Director, MBCFI*	Playa Ignacio
	Book Presentations Biodiversity Conservation in the Philippines: Hot Spot, Cool Country *Almira Astudillo Gilles* The Mammals of Luzon Island: Biogeography and Natural History of a Philippine Fauna *Lawrence Heaney and Danilo Balete, Field Museum of Natural History* State of the Coasts of Oriental Mindoro *Hon. Alfonso V. Umali, Jr., Provincial Government of Oriental Mindoro*	

Program

7 April 2016, Thursday

08:00	Plenary presentations on Biodiversity threats, management and governance: global and local potentials to conservation *Moderator: Nina R. Ingle, Board Member, Biodiversity Conservation Society of the Philippines*		Conference Hall
08:00 – 08:05	Announcements and raffle		
08:05 – 08:15	Center for Conservation Innovations – Philippines *Edmund Leo Rico, Executive Director*		
08:15 – 08:30	The Phoenix Zoo Conservation and Science Grants: an opportunity for species research and monitoring *Jan Schipper, Arizona State University and The Phoenix Zoo*		
08:30 – 08:50	Saving the Verde Island Passage one marine protected area at a time: a film documentary of Pulang Buli MPA in Tingloy, Batangas *Robert Suntay, Chairman, Science Education Advocacy (SEA) Institute for the Verde Island Passage*		
08:50 – 09:10	Collaborative shark biodiversity conservation in the Philippines: global relevance, local realities *Moonyeen Nida R. Alava, Executive Director, Coastal Conservation and Education Foundation*		
09:10 – 09:30	Present status, impacts and management of Philippine invasive alien species and its global relevance *Ravindra Chandra Joshi, Visiting Professor, Pampanga State Agricultural University, Magalang, Philippines*		
09:30 – 10:00	Open forum		
10:00 –10:30	Break		
10:30 –12:00	Concurrent scientific oral presentations *Over-all moderator: Carlo C. Custodio, Board Member, Biodiversity Conservation Society of the Philippines*		Break-out rooms
	Session 1: Wildlife biology and ecology *Moderator: Emilia A. Lastica-Ternura*	Session 2: Biodiversity and conservation threats and issues – invasive alien species *Moderator: Cynthia Adeline A. Layusa-Oliveros*	
10:30 – 10:45	Foraging behavior association between Irrawaddy dolphins (*Orcaella brevirostris*) and tidal net fisheries in the coastal waters of Pulupandan, Negros Occidental, Philippines *Kimberly P. Casipe*	Prevalence of *Schistosoma japonicum* infection among field rats (*Rattus rattus norvegicus*) in *Schistosoma* Infested Areas of Northern Samar *Dionesio A. Estopa*	
10:45 – 11:00	Comparative study of mangrove structure in Brgy. To-oy and Brgy. Suay, Himamaylan City, Negros Occidental *Daniel B. Lamason*	Invasive alien plant species in Malagos Watershed Calinan, Davao City *Erlyn Jessie D. Dy*	

Program

7 April 2016, Thursday

11:00 – 11:15	Survival of re-introduced populations of *Awaous melanocephalus* (largesnout goby) *Enrique Javier R. Salvador*	Assessment of the possible effects of biological control agents of *Lantana camara* and *Chromolaena odorata* in Davao City, Mindanao, Philippines *Cristine P. Canlas*
11:15 –11: 30	Habitat use and home range of leopard cats in Aborlan, Palawan, Philippines *Desamarie Antonette P. Fernandez*	Invasive alien plant species in four protected areas in the Philippines *Edwin R. Tadiosa*
11:30 – 11:45	*Ficus*-frugivore relationship in the forest reserves of Central Mindanao University: its importance to forest restoration *Lowell G. Aribal*	Survey of the invasive frogs of the buffer zones and adjacent areas of Mount Banahaw de Lucban *Essex Vladimer G. Samaniego*
11:45 – 12:00	First notes on the nest and behavior of a Philippine eagle pair and their juvenile in Luzon, Philippines *Tatiana Rose Abaño*	Comparative ecology of alien frogs in the Philippines *Arvin C. Diesmos*
12:00 – 13:30	Lunch	
	Plenary presentations	Conference Hall
13:30 – 13:45	Philippine Tropical Forest Conservation Foundation, Inc.	
13:45 – 15:00	Updating of the National Threatened Species List of Wild Fauna	
15:00 – 15:30	Break	
15:30 – 17:30	BCSP General Assembly	
17:30 – 18:00	Travel to Riceland Inn 2 Garden	
18:00	Fellowship dinner hosted by USAID's Philippines Biodiversity and Watersheds Improved for Stronger Economy and Ecosystem Resilience (B+WISER) Program Message *Jeremy Gustafson, Office Director,* *Office of the Environment, Energy and Climate Change, USAID*	Riceland Inn 2 Garden
	MOA signing: Conservation and Protection of Naujan Lake National Park through the Formation, Support and Training of Community Environmental Law Enforcers	
	Fellowship dinner	

Program

8 April 2016, Friday

08:00	Announcements and Raffle		Conference Hall
08:15 – 08:30	Introduction to the Sessions		Conference Hall A and B
08:30 – 10:00	Concurrent scientific oral presentations *Over-all moderator: Carlo C. Custodio, Board Member, Biodiversity Conservation Society of the Philippines*		Break-out Rooms
	Session 3: Biodiversity and conservation threats and issues *Moderator: Mae Lowe L. Diesmos*	Session 4: Diversity and distribution *Moderator: Emmanuel Ryan C. de Chavez*	
08:30 – 08:45	Small scale mariculture: a potentially significant threat to Dugongs (*Dugong dugon*) through incidental entanglement *Reynante Ramilo*	Altitudinal distribution and habitat requirements of stream frogs in Mt. Kanlaon Natural Park (MKNP), Negros Island *Rafael Ryno G. Sanchez*	
08:45 – 09:00	Vulnerability assessment in Turtle Islands Wildlife Sanctuary *Dir. Theresa Mundita S. Lim*	Distribution, abundance and habitat requirements of endangered babblers in Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines *Shaira Grace B. Pios*	
09:00 –09:15	Impact of domestic cats on the endangered Calayan rail (Gallirallus calayanensis): an ethnobiological survey *Emilia A. Lastica-Ternura*	Habitat preferences of birds in a multi-use farmland in Pililia, Rizal *Sefali Moira M. Francisco*	
09:15 – 09:30	Birds of the Philippines: trapped, traded, threatened *Willem van de Ven*	Population estimates and threats of flying foxes in Southeastern Cebu, Philippines in 2014 *Fritz Laurence Villacorta*	
09:30 - 09:45	Detection, identification and prevalence of endoparasites in four captive endemic threatened species in Negros Island *Franz Anthony L. Alejano*	Biodiversity assessment and conservation status of pteridophytes in northeastern portion of Quezon Protected Landscape, Quezon province *Jennifer M. Conda*	
09:45 – 10:00	Isolation and identification of *Alcaligenes faecalis* and *Pseudomonas* sp. from frogs for anti-*Batrachochytrium dendrobatidis* activity *Adria Rae Abigail R. Eda*	Diversity and conservation status of chiropteran fauna on Mt. Kapayas, Tabunan and Nug-as Forest in Cebu, Philippines *Hemres M. Alburo*	

Program

8 April 2016, Friday

10:00 – 10:30	Break	
10:30 – 12:00	Concurrent scientific oral presentations *Over-all moderator: Carlo C. Custodio, Board Member, Biodiversity Conservation Society of the Philippines*	Break-out rooms
	Session 5: Taxonomy and systematics *Moderator: Juan Carlos T. Gonzalez*	Session 6: Biodiversity conservation, management, and governance *Moderator: Tanya N. Conlu*
10:30 – 10:45	Abundance and morphological identification of Parva (Post-larval shrimp) in the estuarine area of Tarangnan, Samar *Vaniza Lory R. Busa*	Local-scale drivers of tree survival in forest restoration sites in the Philippines *Thaddeus Martinez*
10:45 – 11:00	Morphological variation between intra-island populations of *Varanus dalubhasa* and *Varanus nuchalis* *Bobet Jan M. Bonagua*	Assessment of the community-based program of tenured communities in Kaliwa Watershed Forest Reserve *Dr. Mary Jean Caleda*
11:00 – 11:15	DNA barcoding reveals non-authentic *Vitex negundo* L. (Lagundi) herbal products sold in the Philippines *Jose Francisco M. Atienza*	Million mountain sanctuaries in Mindanao Gliceto *O. Dagondon*
11:15 – 11:30	Conchometric analysis of helicostyline land snails in Mount Makiling, Philippines *Emmanuel Ryan C. de Chavez*	Value of the Haring Ibon *Pithecophaga jefferyi* based on gender, age and education in Mt. Dingalan Important Bird and Biodiversity Area (IBA) *J Kahlil Bohol Panopio*
11:30 – 11:45	Advertisement call characteristics of Mindanao Island river toads, genus *Ansonia* (Amphibia: Anura: Bufonidae) species complex *Nelieta B. Arnejo Bedoya*	Community-based conservation as an entry point to rural development: the case of the Indigenous *Obu Manuvu* community in Carmen, Davao City *Joshua L. Donato*
11:45 – 12:00	Ecotypes and hypericin content of *Hypericum pulogense* Merrill *Lourdes B. Cardenas*	IEC and technology transfer for biodiversity conservation and utilization in Central Luzon *Roann P. Alberto*
12:00 – 12:15	Novelties in the tribe Guettardeae (Rubiaceae) inferred from molecular (nrDNA) and morphological data *Julius John DP. Salamanes*	The community-managed marine protected areas of Calapan City, Oriental Mindoro *Bryan Lamont Burton*
12:15 – 13:30	Lunch	

Program

8 April 2016, Friday

13:30 – 15:00	Concurrent scientific oral presentations *Over-all moderator: Carlo C. Custodio, Board Member, Biodiversity Conservation Society of the Philippines*	Break-out rooms
	Session 7: Biodiversity conservation, management and governance *Moderator: Moonyeen Nida R. Alava*	Session 8: Diversity and distribution *Moderator: Willem van de Ven*
13:30 – 13:45	Development and validation of lessons on selected ecological and environmental concepts in biological science *Janette N. Navarra-Ariola*	Mixed-species flock assemblage in Mt. Kanlaon Natural Park (MKNP), Negros Island *Sittie Azleyah S. Magayo-ong*
13:45 – 14:00	Shaving or saving Mt. Talinis? A proactive conservation action through social media in Negros Oriental *Apolinario B. Cariño*	Forest bat diversity, abundance and habitat selection in Mt. Kanlaon Natural Park, Negros Island *Janette A. Deligero*
14:00 – 14:15	A call for action: Naujan Lake National Park, eco-ranger contribution for its protection and conservation *Rain Rhymes F. Abanador*	Phytoplankton abundance and diversity in Lake Sampaloc, San Pablo, Laguna, Philippines *Katherine Lipski*
14:15 – 14:30	Offsetting of carbon emission through mangrove and upland enrichment planting in Quezon, Philippines *Eraldwin A. Dimailig*	Aquatic macroinvertebrates diversity and riparian channel and environmental inventory in Gibong River, Philippines *Vivian C. Peligro*
14:30 – 14:45	Philippine Sea Turtle MPA Network in the Sulu-Sulawesi Marine Ecoregion *Marlynn Mendoza*	Species abundance, evenness and diversity of non-migratory water birds in two selected sites in northern Negros Occidental *Donna Bele R. Apoyon*
14:45 – 15:00	A timeline of crocodilian conservation: milestones of the critically endangered Philippine Crocodile (*Crocodylus mindorensis*, Schmidt 1935) *Rainier I. Manalo*	Diversity and distribution of herpetofauna of Balesin Island, Polillo, Quezon, Philippines *Paul Henric P. Gojo Cruz*
15:00 – 15:15	Developing a framework and strategy to safeguard High Conservation Value Areas (HCVA) for landscapes and species at risk in Southern Negros within the context of responsible development *Myrissa Lepiten-Tabao*	
15:15 – 15:30	Break and assembly for concurrent workshops	

Program

8 April 2016, Friday

15:30 – 18:30	Concurrent workshop sessions **LAWIN Forest Protection System — science, technology and innovation in partnership with communities, private sector and government** | *Biodiversity and Watersheds Improved for Stronger Economy and Ecosystem Resilience (B+WISER Program)* **Making effective biodiversity conservation advocacies through social media campaigns** | *Apolinario B. Cariño; Romualdo L. Señeris; Trelly A. Marigza, Aidalyn C. Arabe* **Mini-workshop on the enhancement of the draft underwater cave assessment forms** | T*anya Conlu, Alex Santos, and Biodiversity Management Bureau* **Pinoy cinnamons: their state of knowledge and conservation** | *Edmund Leo B. Rico, Aedryon Ross Javier, Neil Aldrin D. Mallari, Nian Beceril, Lionel Uytico, Florena Samiano, Jay Picardal* **Scientific writing: improving an abstract** | *Nina R. Ingle and members of the Mentoring and Publications Committees, Biodiversity Conservation Society of the Philippines* **Special meeting of the Ad Hoc committee on bird watching and bird photography protocols** | *Don Geoff E. Tabaranza, Willem van de Ven, and Biodiversity Management Bureau* **Working towards a critical mass: the role of early education on the future of Philippine biodiversity** | *Henry G. Calilung, Sefali Moira M. Francisco, Enrique Javier R. Salvador*	Break-out rooms
18:30 – 18:45	Travel to Bulwagan, Provincial Capitol	
18:45	Closing dinner and awarding ceremonies hosted by the Provincial Government of Oriental Mindoro Message *Hon. Alfonso V. Umali, Governor*	Bulwagan, Provincial Capitol
	Awarding of tokens and prizes	
	Closing remarks	

9 April 2016, Saturday

06:00	Optional field trip Options: Naujan Lake National Park Silonay Mangrove Conservation Area and Harka Piloto Marine Sanctuary Other points of interest (e.g. Puerto Galera)	

Plenary Presentations

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Borderless marine ecosystems: strengthening co-management of marine protected areas in Occidental Mindoro

Elmer Vela Cruz[1], Margarita Victoria C. Caballa[2], and Augustus Rex F. Montebon, PhD[2]

[1]Office of the Provincial Agriculturist, Province of Occidental Mindoro
[2]Conservation International Philippines Foundation, Inc.

Considered as having the highest number of marine species per area, the Verde Island Passage Marine Biodiversity Corridor (VIPMBC) holds the distinction of being the "center of the center" of marine shorefish biodiversity in the world. It boasts of lush coral reefs that are home to unique species of marine life. Communities surrounding the VIPMBC depend on it for livelihood and food security, thus its continued ability to provide ecosystem services is crucial.

Occidental Mindoro, Oriental Mindoro, Batangas, Marinduque, and Romblon comprise the five provinces of the VIPMBC. The Verde Framework was formulated to guide the management of the VIPMBC and calls for the five provinces to cooperate in marine protection, enforcement of laws, and integration of activities toward the common goal. A key strategy to attain this is through the formation of a VIP Network that will harmonize the individual efforts of the provinces.

In November 2015, the five provinces signed a Pledge of Commitment to work towards the establishment a VIP-wide MPA and LE Network. At the provincial level, the governments have started building their respective networks and recently, the province of Occidental Mindoro and its four municipalities in the VIPMBC signed a Memorandum of Agreement for the establishment of their MPA and LE Network. Institutionalizing a Network is an important step to strengthen the existing initiatives of the involved municipalities. The networking of marine ecosystems here has reinforced the sustainable conservation of marine life, which now needs to be integrated with the rest of the VIPMBC.

Plenary Presentation

The small mammals of Mindoro Island: an initial assessment of diversity

Lawrence R. Heaney[1], Danilo S. Balete[1], Mariano Roy M. Duya[2], Chris Kyriazis[1], and Eric A. Rickart[3]

[1]*Field Museum of Natural History, Chicago, IL, USA*
[2]*Institute of Biology, University of the Philippines, Diliman, Quezon City*
[3]*Natural History Museum of Utah, Salt Lake City, UT, USA*

The mammals of Mindoro have not been the subject of intensive study in the past; most existing specimens were obtained only in the vicinity of Mt. Halcon. We began an intensive survey in 2013 that has substantially changed past assessments of species richness. Prior to our survey, 11 species of native, non-flying mammals had been documented in published literature. Of these 11, three are large mammals (*Bubalus mindorensis*, *Sus oliveri*, and *Cervus mariannus*), and two are shrews (*Crocidura grayi* and *C. mindorus*). Six murid rodents made up the rest of the known fauna: *Apomys gracilirostris*, *A. musculus*, *Anonymomys mindorensis*, *Chrotomys mindorensis*, *Rattus everetti*, and *R. mindorensis*. Additionally, *Crateromys paulus* is known from Ilin Island, and which was connected as part of Mindoro during several Pleistocene periods of low sea level. Our studies have documented the presence of four additional species of *Apomys* and an undescribed *Maxomys*, and indicate that the subspecies *Rattus everetti gala* should be recognized as a distinct species. Additionally, the animals previously referred to *Apomys musculus* may be an endemic species. Of the 18 native non-volant species we think are present (including *C. paulus*), probably 15 (83%) are endemic to Mindoro. Our data show that the wet, eastern side of the island and the drier, western side have different faunas, and areas at high elevation usually have richer faunas than those at low elevation. Some species appear to have small areas of distribution and may be threatened by habitat degradation.

Current situation of the critically endangered tamaraw and its conservation issues in the inner Mindoro Island

Emmanuel Schutz

Noe Conservation / D'ABOVILLE Foundation

The tamaraw, or Mindoro dwarf buffalo (*Bubalus mindorensis*) is the emblematic species of Mindoro island as it is found nowhere else in the world. Besides, it is the only wild cattle species living in the Philippine archipelago. Numbering possibly 10,000 animals in 1900, the species has suffered a drastic decline in the last century, losing nearly 96% of its population. Despite its current protected status at national and international scale, the species seems to be more and more confined within few isolated mountainous areas and remains under IUCN category as critically endangered (CR).

Since 2012, the Filipino non-profit organization D'ABOVILLE Foundation in partnership with the French non-profit organization Noé Conservation is developing a challenging socio-environmental program on the island of Mindoro, in order to address the tamaraw conservation issue. The program focuses its attention on Mts Iglit-Baco National Park and its residing Mangyan Indigenous people territories. The goal is, first to assess the current ecological situation of the species in the region, then to identify the current factual threats affecting the species and its habitat and finally to develop consistent solutions in collaboration with local stakeholders, to extend and expand the tamaraw population.

The present work shows the results of these two initial components, thus highlighting to the public the actual status of the species in the inner Mindoro Island, assessing evolution of its range and population and causes for its decline. This is followed by recommendations and priority actions that must be undertaken.

Plenary Presentation

An indigenous forest rehabilitation project for biodiversity conservation and promotion of sustainable income for the rural communities in San Vicente, Roxas, Oriental Mindoro

Hendrik Freitag[1], Clister V.Pangantihon[1], Princess Spica M. Cagande[1], Jhoana M. Garces[1], Marianne Allison G. Lee[1], and Rodel S. Sescar[2]

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The island of Mindoro is characterized by an overwhelming proportion of endemic biodiversity. Nevertheless, most original habitats have been altered. One Key Biodiversity Area (KBA) on the island is found at the Mt. Hinunduang and the upper Baroc River Catchment. It was classified as being of very high biological importance and extremely high critical conservation priority ("EHc") due to high socio-economic pressure.

This conservation project focuses on that area by the following strategies: (1) education of local communities, students, and policy-makers in regard to small scale forest conservation and sustainable management; (2) introducing "Rainforestation Farming" as a suitable strategy for sustainable land-use aimed to enable both, the upgrading of the livelihood status of local communities and the conservation of indigenous biodiversity at all ecosystem levels; (3) establishing community-organized nurseries for native hard-wood and fruit trees; (4) rehabilitation of the forest cover in selected areas by use of indigenous tree species that are best adapted and biodiversity-supportive.

This endeavor is realized by a team from the Department of Biology of the Ateneo de Manila University, San Vicente Barangay officials, Buhid indigenous people representatives, student members of the Ateneo Biological Organization—eXplore. eXperience. eXcel (BOx) and by the support of a "Rainforestation" expert from the Visayas State University (VSU).

The activities included workshops, meetings, an educational tour to well-established "rainforestation" sites, a botanical survey to identify potential mother-trees, collection of seeds and rearing of seedlings, and planting of native pioneer trees, hard-woods and fruit trees in pilot sites.

The Phoenix Zoo Conservation and Science Grants: an opportunity for species research and monitoring

Jan Schipper
Arizona State University
The Phoenix Zoo

In 2008, the Phoenix Zoo initiated a small grants program to fund conservation efforts globally. Through both the small grants program and targeted funding, the Zoo has supported projects focused on three key priorities: projects that 1) support species and/or habitat sustainability, 2) build capacity in-country, and 3) that include community stewardship/local stakeholder involvement (information sharing, etc). The Zoo has awarded nearly $500,000 in grants and contributions since 2008, including research on McGregor's pit viper, freshwater turtles and many other Philippine and SE Asian species. Currently the Phoenix Zoo is evaluating opportunities to become more engaged with on-the-ground efforts that focus on survival of imperiled species—particularly for species whose conservation status is unknown or whose risk of extinction is dangerously high. In addition, the Zoo is interested in working with local agencies to explore opportunities for developing tools for improving species survival—head starting, ex-situ rescue and assurance populations, sustainable economic development opportunities, conservation education and awareness-raising and long-term population monitoring. Herein we present the evolution of a means to fund conservation outside of the walls of a North American Zoo, and how the resulting program will guide funding priorities and inspire new strategic partnerships with local individuals and organizations for the future.

Plenary Presentation

Saving the Verde Island Passage one MPA at a time: a film documentary of Pulang Buli MPA in Tingloy, Batangas

Robert Suntay

Science Education Advocacy (SEA) Institute for the Verde Island Passage

Marine conservation is a need that has not reached its tipping point in the Philippines. Listed as #4 in The World Factbook as having the longest combined coastline length, after Canada, Indonesia, and Russia; the Philippines is indeed surrounded by the deep blue with 7,500 islands in its archipelago to be exact. Yet the compelling question is why we are not more concerned about this finite resource that cradles our landmass, and provides not only sustenance, but clean air, a new frontier in medical research for cures to diseases, and not to mention, a major player in reducing carbon monoxide, thus effectively reducing the impact of climate change.

This is why organizations such as the SEA Institute (Science Education Advocacy) have a vital role to play in the unfolding drama of raising the awareness of one of our most vital natural resources—the sea and all that lives within it. The SEA, along with its warriors comprised of private citizens, renowned scientists from the California Academy of Sciences (CAS), to name a few, has made it its mission to focus on the Verde Island Passage—the center of the center of global marine biodiversity, according to some like Ken Carpenter. This focus will entail the use of scientific output to positively impact the communities and lives of the people living along the coastal areas by giving them solid data that supports a shift to preserving as opposed to thinking that the sea is unharmed by garbage, unsafe fishing practices, even land-based activities that result in siltation.

Saving our seas is imperative. It is something that needs to be done now. Pulang Buli as it is fondly called or the Batalang Bato (Fish) Sanctuary in Tingloy, a town bordered by the Balayan Bay in Batangas was closed in 2002. Managed by the Batalang Bato Management Council (BBMC), this is a clear example of a concerted effort by the townspeople, the local government, and the dive resorts to revive an area not only by legislation, but by raising awareness, and over time, its residents witnessing firsthand, a resurgence in fish. And already in its initial stages of recovery, another marine protected area (MPA) in Lobo, was filmed last November in 2015. The turnaround of MPA's in the Verde Island Passage (VIP) is phenomenal as evidenced by Pulang Buli, and now Lobo.

Plenary Presentation

Collaborative shark* biodiversity conservation in the Philippines: global relevance, local realities

Ms. Moonyeen Nida R. Alava

Sharks* is used here to refer to all fishes belonging to the group Chondrichthyes, characterized by a cartilaginous skeleton, and which includes the true sharks skates and rays (or the winged sharks) and the chimaeras (or silver sharks). Sharks are targeted and taken as by-catch in many fisheries. Sharks have complex life history traits that make them highly vulnerable to overexploitation: a K-selected life history trait such as slow growth, late sexual maturity, low fecundity, long life, a low stock-to-recruitment relationship and long stock recovery times.

Historically sharks have been considered as having low economic value to large-scale commercial fisheries. Thus, they were often neglected by fishery management agencies. In recent years, shark and shark products have gained commercial importance, with increasing demands leading to a considerable number of species threatened with extinction, particularly when combined with other factors such as degradation of important habitats (i.e., nursery and breeding grounds) from development and pollution.

International agreements covering shark conservation include the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS), Convention on Biological Diversity (CBD), and the Western and Central Pacific Commission (WCPFC). At CITES CoP 9, members of the UN-FAO and the UN General Assembly calling for increased monitoring, and research of shark catches, management and trade. In 1999, the UN-FAO adopted an International Plan of Action (IPOA) for the Conservation and Management of Sharks within the context of the Code of Conduct for Responsible Fisheries. The IPOA-Sharks called upon all States to produce a Shark Assessment Report (SAR) and to develop and implement National Plans of Action (NPOA) by early 2001. The regional fisheries management organizations (RFMOs) are also called upon to develop its own Regional Plan of Action (RPOA) for sharks.

The Philippines made news by being a co-proponent for the listing of whale sharks, one of the first three sharks listed under CITES Appendix II in 2002. But, it was only able to produce its first SAR and NPOA-Shark in 2009—a virtual 8-year delay. Participation in national planning process also resulted to the identification of shark Priority Conservation Areas as well as key biodiversity areas for threatened sharks. Three other national laws relevant to shark management include: Philippine Fisheries Code of 1998 (RA 8550), the Wildlife Resources Conservation and Protection Act of 2001 (RA 9147) and the Amendment to RA 8550 to Prevent, Deter And Eliminate Illegal, Unreported and Unregulated Fishing (RA 1065). At the regional scene, shark conservation and management factors in SSME Comprehensive Plan of Action and in the CTI-Regional and National POAs.

There is a need to assess the implementation and enforcement of the various international agreements as well as that of the regional and national action plans, if they actually effected the protection of the species and/or its habitats. A dedicated stock assessment of shark fisheries in the country is recommended as well as training and capacity-development of personnel involved in research and management and sustained funding for marine scientific research (MSRs): sharks (e.g., taxonomy, ecology, biology, fisheries).

Present status, impacts and management of Philippine invasive alien species and its global relevance

Ravindra Chandra Joshi

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Affiliate Researcher, Cordillera Studies Center, University of the Philippines-Baguio, Philippines
Adjunct Professor of Agriculture, University of South Pacific, Fiji

This presentation will give an overview of Invasive Alien Species (IAS) that are of importance to the Philippine agriculture sector—including forestry and fisheries. It will cover the species' characteristics, its main cause/s of introduction and its spread to the areas outside of their native ranges. The global, regional, and national (local) impacts on environment, economic, biodiversity, and ecosystem services, etc., from the selected IAS that have become a nuisance in the Philippines will be highlighted. In addition, the steps to manage or control them will be discussed in detailed as well as the insights learned.

To address the need of local studies on IAS, the author initiated a three (3) unit course entitled "Selected Topics in Biology (Invasive Species)" in the University of the Philippines-Baguio's Bachelor of Science in Biology curriculum. Group discussions, experiences and recommendations on biological invasions from this class will be shared. Taking into account the recent understanding on climate change, the future impacts of IAS to the Philippine biological diversity and species conservation will also be tackled.

Lastly, the author would like to open discussions on designing future policies and programs centered on an integrated and collective approach to effectively manage IAS in the Philippines. This discussion will also include proposals on international partnerships, and global information e-databases access and development.

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A timeline of crocodilian conservation: milestones of the Critically Endangered Philippine Crocodile (*Crocodylus mindorensis*, Schmidt 1935)

Rainier I. Manalo[1,2], **Erickson A. Tabayag**[1], Philip C. Baltazar[1,3], Angel C. Alcala[1,4], William T. Belo[1,2], Vicente P. Mercado[1,5], and Salvador S. Chan[1,3]

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Conservation efforts to save the second rarest crocodilian species in the world, the Philippine Crocodile (*Crocodylus mindorensis*) were exerted through the years from 1929 to 2015. This study aims to provide insight for the species conservation management and document the milestones that would form part of future conservation programs. Literature reviews of historical accounts and published scientific articles were used to determine species milestones in a timeline format. Results showed that as early as 1929, the Philippine Crocodile became known to science based on specimens collected from the island of Mindoro (FMNH 11135) and was originally described by Karl Schmidt as *Crocodylus mindorensis* in 1935. Subsequently, it has long been considered as a subspecies of the New Guinea Crocodile (*C. novaeguineae mindorensis*) until P.M. Hall provided new evidence for its distinct morphological characters in 1989. With the indiscriminate hunting for skin trade and human persecution in the early 1940's to 1980's, the wild populations become remnant. Upon the conclusion of the distribution studies to locate and estimate its extant wild populations from 1980's to early 1990's, the IUCN considered the species as Critically Endangered in 1996. Ex-situ conservation breeding programs is the only hope for the species in late 1990's to early 2000's. Successful initiation and continuous development of the collaborative breeding programs have resulted to a restocking of its nucleus populations in natural habitat from 2009 to present. Over the course of 86 years, new wild populations were unearthed and species were finally released in protected sanctuaries.

Advertisement call characteristics of Mindanao Island river toads, genus *Ansonia* (Amphibia: Anura: Bufonidae) species complex

Nelieta B. Arnejo Bedoya

College of Forestry and Environmental Studies, Mindanao State University

In the Philippines, the genus *Ansonia* of the family Bufonidae, order Anura of amphibians is found only in Mindanao Island. Current classification bares only two species, *A. mcgregori* and *A. muelleri*, with morphological differences that represent only individual rather than species variations. sAdvertisement call is now widely considered an important character for species recognition and discrimination, more distinctive than morphological characters, hence, this study. It was found out that variations exist among the advertisement calls of the species recorded from eight rivers in Mindanao, particularly on call duration (sec), call interval (sec), calling rate (number of calls/sec) and number of calls per minute. Only the mean number of calls per minute exhibited statistically significant difference (p=0.00014), particularly between group means of those recorded in the rivers of Inobulan and Moradji (p=0.019), Inobulan and Murias (p=0.00071), and Kirundong and Murias (p=0.0064).

Oral presentations

Aquatic macroinvertebrates diversity and riparian channel and environmental inventory in Gibong River, Philippines

Vivian C. Peligro[1,2] and Joycelyn C. Jumawan[3]
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This study aimed to assess the diversity of aquatic macroinvertebrates and its implications towards the water quality of Gibong River, Philippines. Riparian, Channel Environmental (RCE) inventory was undertaken to describe the integrity of the riparian vegetation. Selected physico-chemical parameters were determined to support the presence of bioindicator macroinvertebrates species. A total of 18 macroinvertebrate species were collected, mostly arthropods (87%) and molluscs (13%). Upstream stations have the highest number of species because of its intact vegetation while midstream stations had the least, probably due to environmental stress. The RCE scores for the three locations—upstream, midstream and downstream garnered "fair" to "very good" ratings. All the physicochemical properties of Gibong River were within desirable limits except for the dissolved oxygen (DO) of midstream and downstream stations which were lower than the acceptable limits. Improvement of the riparian vegetation is highly recommended to enrich the diversity of macroinvertebrates in this river.

Assessment of the community-based program of tenured communities in Kaliwa Watershed Forest Reserve

Dr. Mary Jean A. Caleda[1], Larisa Togonon-De Castro[2], Mark Roeland de Castro[2], Maritess Agayatin[3], and Marlynn Mendoza[3]
[1]Ateneo de Manila University – School of Government, [2]EnPraxis Inc., [3]Biodiversity Management Bureau

In 1992, the NIPAS Act was passed to "protect outstandingly remarkable areas and biologically important public lands that are habitats of rare and endangered species of plants and animals representative of biogeographic zones and related ecosystems." It set the system for establishing, managing and administering protected areas (PAs) and recognized the indigenous peoples and the tenured migrant communities living within PAs.

As a strategy to formally recognize migrant communities inside PAs, the Community-Based Program (CBP) was developed in 2000 and Protected Areas Community Resource Management Agreements (PACBRMAs) were issued to qualify migrant communities and interested indigenous people.

This paper discussed CBP implementation in two PACBRMA communities (Samahang Damayan Magsasaka ng Kayabu, Inc. and Barangay Sto. Niño Multi-Purpose Cooperative) in Kaliwa Watershed Forest Reserve to: 1) identify issues and concerns on CBP implementation, including barriers to and enablers of CBP implementation; 2) identify successes and failures, good practices and experiences; 3) enrich the knowledge base on PA communities; and, d) inform, substantiate and recommend measures to improve CBP implementation.

Assessment of key informant interviews, focus group discussions and secondary data show that: 1) local and foreign-assisted projects jumpstart CBPs through financial and technical support, but are rarely sustained after project completion; 2) there is little support to PA community planning, management and monitoring; 3) community participation, empowerment and leadership are critical, and can be sustained through continuous needs assessment and capacity building; 4) database and knowledge management need to be prioritized; and, 5) clearer indicators to monitor CBP implementation are necessary.

Oral presentations

Biodiversity assessment and conservation status of Pteridophytes in northeastern portion of Quezon Protected Landscape, Quezon Province

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This research was conducted to determine the pteridophytic composition of Quezon Protected Landscape, assess fern diversity and richness and evaluate the conservation status of ferns. Field survey resulted to identification of 51 species belonging to 25 genera and 16 families. The most represented families are Aspleniaceae, Pteridaceae, Selaginellaceae, and Tectariaceae. On the other hand, *Asplenium*, *Pteris*, *Selaginella*, and *Tectaria* are the most represented genera. Among the 8 sites "Pinagbanderahan" has the highest number of fern species while lowest number was observed in "Pinaglabanan." Using Shannon and Simpson's index highest richness and dominance value of 2.27 and 0.85, respectively was observed in "8 falls." However, based on Margalef's and Berger-Parker index 'Pinaglabanan" has the highest richness and dominance value of 3.62 and 0.55, respectively. Sorensen's coefficient revealed that "8 falls" and "Matanda" shared most common species thus gained a similarity value of 0.71. Following the criteria set by this study revealed that 81% (43 species) falls under Critically Endangered, 5 are categorized as Endangered, 1 as Vulnerable, and 2 species are Least Concern. Collection, land conversion and water impoundment from falls are threats for biodiversity loss in QPL.

Birds of the Philippines: trapped, traded, threatened

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As an archipelago which has been separated from mainland Asia for most of its existence, the Philippines has an extremely diverse and highly unique flora and fauna. The country boasts 683 species of birds, 239 of which are endemic. However, a large number are also threatened. Hunting for the pet trade, food or sport is practiced throughout the country and in some cases probably a driving factor for species extinction.

We've collected photographic evidence of bird species being hunted, in cages, shot or for sale, from all major islands of the Philippines, by asking ornithologists, birdwatchers, conservationists and others, as well as looking at social media and marketplace websites.

A total of more than 90 species have been found to be hunted, of which a surprising number belong to a few groups. Pigeons and doves are often hunted, probably because they are relatively large birds that provide a lot of meat. There are 36 species of pigeons and doves in the Philippines, or around 5.3%. However we found 16 of these to be hunted, of the 90 species total, so they constitute almost 18% of the hunted birds found. Also parrots, mostly for the pet trade, are over represented, with 7 out of 16 species hunted. And almost every species of hornbill was found somewhere in captivity or shot. Raptors are often hunted for falconry, or for pets, or because they are considered pests.

This grisly collection of photos will be made into a book, to show that it is widespread and persistent, to serve as a reminder to people that hunting for sport is not, as many claim, harmless as there are many birds anyway, and also as a field guide to law enforcement officers to be able to recognize the most often traded species.

Oral presentations

Community-based conservation as an entry point to rural development: the case of the indigenous *Obu Manuvu* community in Carmen, Davao City

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The country's upland indigenous peoples is regarded one of the most economically and socio-politically marginalized sectors of the Philippine society. However, by virtue of the inextricable ties between indigenous culture and the state of the country's natural forests, there is very strong potential for indigenous forest stewardship as an entry point for sustainable rural development. We discuss the history, foundations and results of a community-based conservation program that aims to protect the IUCN "critically endangered" Philippine eagle *Pithecophaga jefferyi* and its rainforest habitat with the Indigenous *Obu Manuvu* of Carmen, Davao City and the pathways it provided for delivering clear outcomes for biodiversity conservation, rural development and cultural rejuvenation. In the context of developing practical frameworks for an indigenous-driven development, a review of the *Obu Manuvu* case highlights what factors may contribute to, or prevent, achieving sustainable livelihoods among remote Indigenous villages in the uplands.

Comparative ecology of alien frogs in the Philippines

Arvin C. Diesmos
National Museum of the Philippines
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Oral presentations

Conchometric analysis of helicostyline land snails in Mount Makiling, Philippines

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Helicostyline land snails (Bradybaenidae: Helicostylinae) are the most diverse terrestrial mollusks in the Philippines. Although taxonomic data about these land snails are very well known, there is dire information concerning their morphoanatomy. In this study, helicostyline land snails were collected in Mt. Makiling, Luzon Island. A total of 94 helicostylids (live and empty shells) were collected and identified as *Helicostyla rufogaster*, *Helicostyla mirabilis*, and *Calocochlia chrysocheila*. Their shell characters were measured and analyzed using principal component analysis (PCA). Shell height has the character loading value and explained 92% of the variability among helicostylids collected. This difference is attributed to the adaptation of the helicostylids in their microhabitat. The shell morphology of *H. rufogaster* as indicated by its shell height is characterized by large, high-spired shell that is well adapted for locomotion in vertical surfaces of the tree trunks. *H. mirabilis* and *C. chrysocheila* have almost the same morphology in terms of shell shape and size. Their globose to discoidal shell adapts well in horizontal and narrow surface of the leaves. This study showed that the adaptations of the land snail species collected are well suited on arboreal type of habitat and indicate ecological divergence among helicostylids.

Developing a framework and strategy to safeguard High Conservation Value Areas (HCVA) for landscapes and species at risk in Southern Negros within the context of responsible development

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A recent biodiversity and socio-economic study conducted in August to September 2015 by the Fauna and Flora International – Philippines programme identified that the majority of the forests remaining in Southern Negros are focused on the Balinsasayao-Twin Lakes and Mount Talinis region in the Municipalities of Sibulan, Valencia, Siaton, Dauin, and Sta. Catalina. Various threatened and endemic species were encountered including the critically endangered Negros Bleeding-Heart (*Gallicolumba keayi*), Bagtikan (*Parashorea malaanonan*), White Lauan (*Shorea contorta*), Red Lauan (*Shorea negrosensis*), and Almon (*Shorea almon*). Species diversity indices showed that secondary forests, i.e., ecotones, possess the majority of the tree and bird species which prefer these habitats.

Results indicate two areas were a good aggregate of High Value Conservation Areas remained: within the Balinsasayao-Twin Lakes in the Municipality of Sibulan, and the development block of the 33-year old Southern Negros Geothermal Project of the Energy Development Corporation in the Municipality of Valencia.

The results of the land cover assessment show slight forest degradation in these two locations but which are lower than the degradation outside these proposed HCVA's. However, the 2007 to 2015 satellite-based land cover analysis revealed increasing forests in and around these HCVA's, save for the forests within the Municipality of Sta. Catalina. Forest cover also increased within the EDC development block. These may be attributed to the governments' various reforestation programs and to EDC's BINHI program to restore forest habitats and to protect and maintain the existing biodiversity in all its project sites.

Proactively, using these results, EDC proposes to use the HCVA tool to mitigate its footprint and strengthen its efforts to conserve local biodiversity. This tool will identify and guide the mitigation responses on what actions to avoid, minimize or offset and to identify appropriate conservation actions to enhance planning, management, monitoring and evaluating local biodiversity. These measures are what will provide the link between responsible business and biodiversity conservation. We further propose this framework to be an alternative strategy for protecting high biodiversity areas within the development context outside currently existing protected area models.

Oral presentations

Development and validation of lessons on selected ecological and environmental concepts in biological science

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In the event of climate change and biodiversity crisis, the crucial role of education to reconnect students to nature through lessons that provide connection of ecological concepts to real-life situations and to current environmental issues/problems, and integration of values is deemed necessary. The development of six lessons contextualized in the Philippine setting focused on the ecosystem and biodiversity to enhance students' conceptual understanding, problem-solving skills; and awareness, appreciation and commitment to conservation of the environment and biodiversity. In the first phase of the study, the lessons are validated by experts using a set of rubric, and rated "Very Good" as to the lessons' consistency of objectives, activities and evaluation, innovativeness of teaching strategies/approaches, and understandability. The second phase is the lesson tryout by the researcher to biological science class using different innovative teaching strategies/approaches with values integration. Using descriptive statistics, the pre-test and post-test results showed a significant mean gain which means an improvement in the students' learning. The students' journals were employed in every lesson to further substantiate the statistical interpretation of the lessons' effectiveness specifically on the third dependent variable which was rated "Excellent" using a rubric and simple frequency count. The six lessons for biological science are effective and can be adopted as guide for teachers and/or integrated in the course syllabus in science-related subjects or other fields.

Diversity and conservation status of chiropteran fauna on Mt. Kapayas, Tabunan and Nug-as forest in Cebu, Philippines

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A field survey was conducted in Mt. Kapayas, Tabunan and Nug-as forest from June to November 2015 to determine the diversity and conservation status of chiropteran fauna. Mist nets were used to capture bats. Total sampling effort was 497 net nights with 140 in Mt. Kapayas, 166 in Tabunan and 191 in the Nug-as Forest. Species were identified base from Ingle and Heaney's field guide to bats of the Philippines. Species richness, Shannon, Evenness and Similarity indices were used to describe chiropteran diversity. Conservation status was based on IUCN red list. Results show a total of 14 species with 10 fruit bats and 4 insect bats. Tabunan recorded the highest species richness with 12 followed by Nug-as with 10 and Mt. Kapayas with 8. Shannon and Evenness Index were highest in Nug-as with both 0.7189 and lowest in Mt. Kapayas with 0.4882 and 0.5406, respectively. Tabunan and Mt. Kapayas appeared to be most similar with Similarity Index of 80% while Nug-as and Mt. Kapayas had the lowest SI with 66.67. *Nyctemene rabori* and *Pteropus pumilus* were the only threatened species recorded. Local Government Units particularly Cebu City, Carmen and Catmon should take active role in conserving the remaining forest fragments in Tabunan forest and Mt. Kapayas.

Oral presentations

Diversity and distribution of herpetofauna of Balesin Island, Polillo, Quezon, Philippines

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A survey of the ecosystems and herpetofauna of Balesin Island was conducted from July 19 to 22, 2015 as a follow up on the study conducted in the island in 2011. The survey is part of a biodiversity study of the whole island for the conservation management program planning for Balesin Island Resort.

Opportunistic sampling, transect walks, acoustic surveys, pitfall trapping and road surveys were done to assess the island's herpetofauna. GIS-based mapping was done to identify the boundaries of the islands' habitat types and the herpetofaunal distribution.

Vegetation survey showed seven (7) major habitat types, namely: beach forest, forest, grassland, monoculture/mixed plantation, mixed vegetation, mangrove and freshwater swamp. A total of 16 species of herpetofauna were observed namely two amphibians, one agamid, three gekkonids, six skinks, two snakes and one *Varanus* sp. *Python reticulatus* reported present in the island was not observed. With the exception of *L. laticauda* all the herpetofauna observed in Balesin Island are noted present in the other islands of Polillo.

Ecotypes and hypericin content of ***Hypericum pulogense*** Merrill

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Hypericum pulogense Merr. was first described by Merrill and Merritt in 1910. A number of the over 400 species of *Hypericum* have long been known as medicinal worldwide; hence, the interest in this indigenous species. In the tropics, the genus thrives in higher elevation of low temperature. Mount Pulag where it grows presents distinct vegetation zones. In the mossy forest and grassland zones, three ecotypes were encountered within a 3-km trail of 300-meter gradation in elevation. As expected, there was pronounced variation in both plant size and habit among these ecotypes. Anatomical observation showed the presence of translucent ducts in their leaves. However, the red colored hypericin was absent in these ducts. This was confirmed by thin layer chromatography of the plant extracts. Hypericin is considered the plant constituent responsible for the antidepressant activity of the commercially valued St. John's wort, *Hypericum perforatum* L. Other constituents of *H. perforatum* with reported biological activities are phloroglucinol derivatives and essential oil components. The observed *H. pulogense* emitted the characteristic odor that may be due to these constituents. This study presents the first report on the potential medicinal property of the local representative of the genus *Hypericum*.

Oral presentations

Ficus-frugivore relationship in the forest reserves of Central Mindanao University: its importance to forest restoration

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Central Mindanao University

Ficus is one of the most important plant groups in the tropical rainforest ecosystems chiefly considered as a major food source for frugivores. *Ficus* is the fifth most speciose genus in the Philippines comprising 104 species. In this paper, we emphasized the trophic relationship of the *Ficus* spp. and frugivores including the observed association with other plant species. The study was conducted in the three forest reserves of Central Mindanao University in Musuan, Bukidnon, Philippines. *Ficus* spp. were surveyed along the established grids. On every *Ficus* spp., a 10-meter circular plot was delineated. All plants within the plot were identified. Mist nets were established on *Ficus* spp. bearing ripe synconia to sample the frugivores. Results revealed twelve (12) species of *Ficus* within the forest reserves. *Ficus balete* was found to be the most abundant and widely distributed while *F. crassiramea* was the most visited by frugivores. Avian species under the family Sturnidae and Pynonotidae were frequently observed feeding on synconia. For volant mammals, only the species under Family Pteropodidae were recorded. The plant species found constantly associated to all surveyed *Ficus* spp. were *Baccaurea tetrandra*, *Senna spectabilis*, *Melanolepis multiglandulosa,* and *Myristica glomerata* suggesting trophic preference by frugivores, hence their association and dispersal. In general, the number of frugivore species and *Ficus* spp. diversity is seemingly correlated as observed from the number of caught frugivores and the number of *Ficus* spp. recorded.

First notes on the nest and behavior of a Philippine eagle pair and their juvenile in Luzon, Philippines

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Philippine Eagle Foundation

The first-ever active nest of Philippine eagles discovered in the island of Luzon, Philippines was found in the Northern Cordillera range in Calanasan, Apayao on 21 April 2015. The nest bowl was built in the canopy of a *Hopea* sp. tree within a lowland dipterocarp forest at 464 m. It was bordered by Pandan *Freycinetia* sp. epiphytes, and was concealed by the foliage of adjacent tree *Rauvolfia* sp. Based on the physical characteristics of the nestling at the time it was discovered, the female adult may have laid the egg towards the end of January 2015 and the egg probably hatched by the end of March 2015. Such delayed breeding and the concealed structure of the nest were probably adaptations to the frequency of typhoons in the area. Further nest studies are needed to substantiate this hypothesis. Most of the activities of the eaglet were for general maintenance. Its other activities involved feeding, vocalizing, object plays and flapping exercises. Our records of the Northern Luzon giant cloud rats *Phloeomys pallidus* among the top prey items delivered by the adult eagles into the nest present the first-ever collective evidence that Philippine eagles do prey on cloud rats in Luzon. Other prey items including rat snakes, monitor lizards and civet cats were also noted. Overall, the nest attendance and efforts of the female adult were greater than those of the male. The female did more prey deliveries, sprig deliveries, nest building and nest cleaning than did the male.

Habitat use and home range of leopard cats in Aborlan, Palawan, Philippines

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The spatial ecology of leopard cats was studied using live-trapping, radio-telemetry and small mammal trapping from May 2013 to July 2014 in Aborlan, Palawan, Philippines. One (1) adult female and three (3) adult male leopard cats were captured. Radio-collars were attached to one (1) adult male and one (1) adult female individual then released in their respective capture sites. Radio-telemetry was conducted for a total of 64 days. Non-volant small mammals were captured and released using box traps to determine prey species availability. Results showed that the habitat types utilized by the two (2) leopard cats were forest (71.09%), mixed brushlands (25.78%), coconut plantations (2.60%), and built-up areas (0.52%). The mean 95% minimum convex polygon (MCP) home range of the male (6.2917 km^2) was larger than that of the female (3.9236 km^2). An increase in mean home range size from dry season (3.5658 km^2) to wet season (4.0611 km^2) for both individuals combined could be related to the decrease in small mammal abundance during wet season. Five (5) small mammal species captured in the area included *Rattus exulans*, *Rattus tanezumi*, *Sundasciurus steerii*, *Maxomys panglima*, and *Tupaia palawanensis*. When prey availability decreases, Palawan leopard cats may be driven to occupy larger ranges in search of prey.

IEC and technology transfer for biodiversity conservation and utilization in Central Luzon

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This study was conducted to enhance public awareness on the importance of biodiversity for better appreciation and participation in conservation programs and organize the local communities for meaningful participation in program activities. Training on biodiversity and nature conservation and promotion of green technology were also conducted as well as technology transfer to farmers, SDU multi-sectoral networks, LGUs, students and interested individuals/ organizations for possible adoption.

Pamphlets, brochures, and handbooks on biodiversity and nature conservation and environmental problems/ issues affecting biodiversity were prepared, developed, produced and printed for public education and awareness. In addition, video on the biodiversity of Central Luzon entitled "Video on Flora in Central Luzon" and "Video on Fauna in Central Luzon" were also prepared, developed and produced for environmental information and awareness. Furthermore, seminar-workshops on biodiversity conservation and utilization in Central Luzon were conducted in Carranglan, Nueva Ecija; Baler, Aurora and Balanga, Bataan. Moreover, media linkages thru print and broadcast media were undertaken for wider information dissemination. Promotional activities through different social media were also utilized including Facebook, Twitter and Instagram.

Green technology promotion and transfer was also carried out in the 3 study sites wherein brochures, posters, videos and jingles on botanical pesticides and phytoremediation were promoted. Field demonstrations were also conducted to farmers, SDU multi-sectoral networks, LGUs, students and interested individuals/organizations as part of the promotion and transfer of technology.

Oral presentations

Impact of domestic cats on the endangered Calayan rail (*Gallirallus calayanensis*): an ethnobiological survey

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Domestic cats have been shown to be among the biggest threat to wildlife, affecting species such as the sooty tern *Sterna fuscata*. They have been implicated in species decline on islands and on continents, and affect mammals, birds, reptiles and amphibians. A preliminary assessment of the threats to the Calayan Rail was gathered from information on hunting practices and from observations on the extent of forest cover removed for slash-and-burn farming. Of these, three challenges to the conservation of the Calayan rail were identified to be habitat destruction, hunting and introduced species. No particular actions have been done to examine the threats brought about by introduced species such as dogs, cats and rodents. However, domestic cats were identified as one of the more important threats to the rail based on conditions on other islands similar to Calayan. This study was conducted to determine human perceptions on the possible impact of domestic cats on the endangered Calayan rail (*Gallirallus calayanensis*) in order to provide a basis for future management modalities. Results of the study show that cats were not perceived to be threats to wildlife by the respondents, however, they also claimed that the cats often roam around the area during the day and sometimes at night. All respondents were not able to monitor their cats' activities during the day. It may not be concluded that cats directly impact the Calayan Rail, but they may possibly cause some disturbance in its habitat.

Invasive alien plant species in four protected areas in the Philippines

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Invasive alien plant species are introduced and exotic plants which compete with and replace native species. These plants have special characteristics that enable them to spread rapidly and aggressively, and they compete with Philippine native plants to form a dense population that interferes with the natural development of plant communities. Biodiversity assessments through quadrat sampling method in disturbed and undisturbed forests are being conducted in selected Protected Areas in the Philippines to generate baseline information on the invasive and potentially invasive terrestrial flora within these PAs and their buffer zone: Bataan Natural Park, Mts. Banahaw-San Cristobal Protected Landscape, Agusan Marsh and Wildlife Sanctuary and Sibalom Natural Park, Samar Island Natural Park. The study revealed 15 invasive alien plant species, five of which are common in at least three of these PAs. Of particular interest is the *Piper aduncum* an invasive shrubby tree intentionally released in Zamboanga in the '60s, but has been documented through this survey in Sibalom Natural Park and in Samar Island. The major pathways of invasion differ per PA (e.g. road construction, mountaineering, and reforestation efforts) and per species (e.g. introduced as an ornamental plant or for paper production). The findings are also consistent with studies from other taxonomic groups, which show that intact forest cover is one of the delimiting factors of invasion. If left uncontrolled and unmanaged, and exacerbated by habitat degradation, these invasive and alien plants could potentially disrupt the services of PAs and the protection they afford to native species.

Oral presentations

Invasive alien plant species in Malagos Watershed Calinan, Davao City

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Davao Doctors College

Invasive plant and animal species are considered as one of the major threats to biodiversity which rank second to human intervention (Hossain, 2009). In certain ecosystems like watersheds, invasive plant species cause problems like water quality depletion and loss of endemic species. Certain invasive plant species identified in Malagos Watershed, Calinan, Davao City are *Pteridium aquilinum*, *Elephantopus escaber*, *Colocasia esculenta*, *Piper aduncum*, *Gmelina arborea*, *Asystasia gangetica*, and *Chromolaena odorata*. Whittaker plots were used in sampling. Result showed that the computed biodiversity index (Hmax) obtained using Shannon-Weiner diversity index is 1.098612 with an evenness of −0.63071. These findings imply that Malagos watershed is rich in invasive plant species but their distribution is not so even because of the lower value of evenness. Mitigating measures like introduction of biocontrol must be planned, since number one reason for water quality depletion and for the outnumbered endemic species in the area is the diversity of these invasive plant species.

Isolation and identification of ***Alcaligenes faecalis*** and ***Pseudomonas*** sp. from frogs for anti-***Batrachochytrium dendrobatidis*** activity

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Batrachochytrium dendrobatidis, a chytrid fungus, is the causative agent of chytridiomycosis that has been associated with mass mortality and amphibian extinctions worldwide. Mitigating strategies are, thus, among the major concerns in the conservation of amphibian population and biodiversity. In this study, cutaneous bacteria from frogs were isolated and examined for anti-*B. dendrobatidis* activity. Frog species were collected at Mt. Palay-palay Mataas na Gulod National Park in Cavite—a site positive for the presence of chytrid fungus. Bacteria were isolated from the skin of frogs by swabbing surfaces of the body and inoculated in R2A agar incubated at 23±3ºC for 24 hours. Bacteria were challenged against *B. dendrobatidis* in vitro through zoospore inhibition assay. Results showed that cutaneous bacteria from frogs significantly inhibited the growth of *B. dendrobatidis* zoospore in vitro. Using 16S rRNA universal primers for bacteria, the isolates were identified to be *Alcaligenes faecalis* from *Platymantis dorsalis* frog and *Pseudomonas* sp. from *Polypedates leucomystax* frog. As a conclusion, *A. faecalis* and *Pseudomonas* sp. inhibited the growth of *B. dendrobatidis* in vitro and may contribute to the defense and immunity of the frogs against the lethal chytridiomycosis.

Oral presentations

Local-scale drivers of tree survival in forest restoration sites in the Philippines

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Haribon Foundation

The use of 84 indigenous species such as Narra (*Pterocarpus indicus*), among others, in forest restoration sites in the Philippines is being advocated by Haribon Foundation as part of its Rainforestation Organizations and Advocates "ROAD" to 2020 movement, which aims to restore one million hectares of rainforests to bring back wildlife habitat, biodiversity and ecosystem functions. This study examines the different factors that can explain patterns of tree survival in five forest restoration sites within a two-year monitoring period. Generalized linear mixed models was used to analyze the relative importance of biotic (Shannon diversity index and canopy cover), abiotic (elevation and soil characteristics) and social factors (time, maintenance type and presence of community partner) on tree survival, with location and species treated as random effects, integrating species and site specific conditions in the model. Results of the analysis show that the best fit model is where biotic (diversity index and canopy cover), abiotic (elevation and soil characteristics) and social factors (time and presence of community partner) are all included, rather than only including one or two sets of factors. Higher Shannon diversity Index, shaded canopy cover, higher elevation, sandy loam soil and timely maintenance are the factors that are positively correlated while having no community partner is negatively correlated with tree survival. This study demonstrates the relative importance of the local scale drivers affecting patterns in tree survival which may provide inputs in forest restoration and management.

Million Mountain Sanctuaries in Mindanao

Gliceto O. Dagondon
GREEN Mindanao

Higaonon tribal community in Impadiding and Kalahaan in Barangay Minalwang, province of Misamis Oriental, Mindanao. Philippines had most novel undertaking in their history. In 2000, late Datu Mansipadano, aka Julio Pinalandang, was worried of diminishing Philippine brown deer, *Cervus mariannus*. About the same period, they secured recognition of their ancestral domain and on the process of seeking ancestral land rights title to over 20 thousand hectares of forest. The seek assistance from concern government and non-government agencies such as GREEN Mindanao Association Inc. (GMAI). An opportunity in 2004 through European Union-United Nations Development Program-Promoting Tropical Forestry (EU-UNDP-PTF) which funded Minalwang Higaonon Tribal Council (MIHITRICO) project including establishment of deer sanctuary. This was successfully undertaken in Impadiding and Kalahaan; and expanded into the villages of Mintapod in Bukidnon province and Lakbangan in Agusan province. Between 10 to 15 thousand hectares were designated deer sanctuaries chosen by tribal elders, hunters, trappers, barrio officials and Higaonon community. Local tribal resolutions with supporting barangay ordinances promulgating simple rules, regulations and agreements enforced by tribal guards, elders and barangay officials. An evaluation resulted to success of deer sanctuary, increase wild pigs trapped outside and demand for more sanctuaries were expressed by neighboring tribal communities in adjacent provinces. These formed the core strategy of million forest people campaign across the island's mountain region and tribal communities which pledged nearly 700 thousand hectares.

Novelties in the tribe Guettardeae (Rubiaceae) inferred from molecular (nrDNA) and morphological data

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The pantropical Rubiaceous tribe Guettardeae is comprised of ~500 species distributed in ca. 20 genera which exhibit diverse morphological heterogeneity making the circumscription of its taxa problematic. 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, a floral survey in the unexplored areas of Mt. Pocdol in Sorsogon, Mt. Redondo and Bucas Grande Islands in Surigao del Norte was conducted and six interesting Rubiaceae species were encountered. Preliminary morphological identification suggested 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 Internal Transcribed Spacer (ITS) of the nuclear ribosomal DNA cistron to determine their generic affinities. Interestingly, Bayesian and Parsimony analysis showed that the species nested on the Paleotopical Dioecious Clade sensu Achille et al. 2006 with strong supports (PP=1.00; BS=100%). Specifically, four species were recovered within the *Timonius* subclade with strong supports (PP=0.93; BS=94%) while two others revealed to be sister to *Antirhea chinensis* (PP=1.00; BS=100%) 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, new species of *Timonius* and *Antirhea* are hereby proposed accompanied with comprehensive morphological descriptions, botanical illustrations and 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.

Offsetting of carbon emission through mangrove and upland enrichment planting in Quezon, Philippines

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Carbon stock in 2007 from established mangrove amelioration project in Padre Burgos, Quezon and rehabilitation of grassland and secondary growth forest at Pagbilao, Quezon was assessed after nearly a decade. The general aim was to monitor carbon sequestration for the development of a strategy for sustainable and resilient upland and mangrove ecosystems in the area. It also determined succession of plant diversity along landscape, measured plant growth to estimate tree biomass in above and belowground, and estimate carbon sequestration. The study involved biodiversity assessment of re-established plots, tree growth measurement, litter and soil sampling, and focus group discussion. The estimated biomass was generally 50% higher in secondary growth forest than grassland and mangrove forests where carbon density values were 927.21, 451.78, and 400.53 tons/ha, respectively. Succession of plant composition in the secondary growth forest of Pagbilao had rich taxa (58 species and 234 individuals) with high diversity (H'=3.7189) and evenness (e=0.9011) values. Nearly similar diversity values were also found in grassland area with 51 species and 200 individuals (H'=3.3595; e=0.8775). Three new species identified from originally established *Rhizophora mucronata* and *R. apiculata* in mangrove ecosystem. Succession in mangrove forest was late than uplands requiring enrichment of native species and more protection from anthropogenic sources. The organized communities surrounding these ecosystems played a key role in their protection and maintenance. Sustaining these ecosystems along landscape and regular monitoring of carbon are vital in resiliency communities against climate change. Incentivizing the people as partners and continued R&D are recommended.

Oral presentations

Philippine sea turtle MPA network in the Sulu-Sulawesi Marine Ecoregion

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Locally managed marine protected areas (MPAs) and networks formed for the conservation of coastal ecosystems and fishery management are common in the Philippines. Some networks are established on the basis of ecological connectivity among MPAs, while others are social networks for learning and complementation of coastal resources management activities. Under the cooperation of the Governments of Indonesia, Malaysia and the Philippines in the Sulu-Sulawesi Marine Ecoregion (SSME), a transboundary MPA network is designed based on ecological connectivity of critical habitats that support different life stages of green sea turtles from the same population. In the Philippines, three are under the National Integrated Protected Area System of the Philippines, i.e. the Turtle Islands Wildlife Sanctuary, the Tubbataha Reef Natural Park and the El Nido-Taytay Managed Resource Protected Area. The DENR and its partners are discussing how to operationalize the Philippine part of the SSME transboundary MPA network for sea turtles. The process involves developing institutional systems for the operationalization of the network, including improving management effectiveness in each site and strengthening enforcement through better communication and coordination among the MPAs. It also engages other sectors and institutions for advancing sea turtle research and building capacities to address the conservation needs for effective management of sea turtle habitats and promote sustainable fisheries management in the selected sites. This initiative contributes to the Philippine international commitments that include the Convention on Migratory Species and the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security.

Prevalence of *Schistosoma japonicum* infection among field rats (*Rattus rattus norvegicus*) in *Schistosoma* infested areas of Northern Samar

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Forty-nine field rats collected from six municipalities through the use of rat traps were necropsied, examined for schistosome infection, assessed for macroscopic lesion characteristics, and evaluated for parasite burden. Evaluation showed that out of the 49 field rats clinically examined, a prevalence rate of 42.86% was obtained. From this infection rate, 24.49% were males and 18.57% were females parasitized. Rats collected from Catarman had the highest prevalence rate (14.28%) to schistosoma infection.

Schistosome burden was low with one adult schistosome on the average per infected field rat. All schistosomes recovered were retrieved from the mesenteric veins. Majority (42.86%) of the schistosome infected field rats demonstrated granulomatous liver surfaces with edematous intestines. About 23.81% infected rats showed multiple lesions with fibrosis and nodular mass (granulomas) of the liver and edematous intestine as prominent lesions.

These findings attest to the fact that about 43% of the field rat population in Northern Samar is infected with *S. japonicum*. It can therefore be concluded that field rats in the province may play as one of the multiplier hosts of schistosomiasis among humans and animals.

Shaving or saving Mt. Talinis? A proactive conservation action through social media in Negros Oriental

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The Mt. Talinis or Cuernos de Negros mountain range is considered to be the last natural forest and the most fragile forest ecosystem in the Province of Negros Oriental, Negros Island, Philippines. It is one of the 117 key biodiversity areas that host numerous species of wildlife that are globally threatened and is a physically challenged important biodiversity area. The "Save Mt. Talinis Our Home Our Life Movement" created through Facebook was officially launched last 23 July 2014. This advocacy campaign ensures the protection of the natural forest and the prevention of more energy production from expanding geothermal operations including road constructions and other anthropogenic activities in the core forested areas of Cuernos de Negros. This modern mode of social media and political advocacy campaigns helped in addressing issues and were able to generate outcomes over a year of its campaign. Amongst these include: DENR requiring developers a multistakeholders' (Non-Government Organizations, Civil Society Organizations, Academe, Private sectors) representation and participation in any community consultation and the issuance of Executive Order Number 186, s. 2015 by the President of the Philippines, transferring the jurisdiction, control, administration and management of the watershed areas of geothermal reservations vested in the Philippine National Oil Company pursuant to Executive Order Number 223 (s. 1987) and Proclamation Number 853 (s. 1992). These outcomes provided conservation opportunities toward declaring locally the area as a critical watershed and habitat for wildlife.

Small scale mariculture: a potentially significant threat to Dugongs (*Dugong dugon*) through incidental entanglement

Christopher N. S. Poonian, Danica D. Lopez, and **Reynante Ramilo**
Community Centred Conservation (C3)

Dugongs (*Dugong dugon*) are threatened by incidental capture in small-scale fisheries, but other static underwater structures could present a similar entanglement risk. In December 2013, an adult male dugong was entangled in the ropes of a seaweed farm in Busuanga, Palawan, Philippines, and drowned. Anecdotal reports of similar incidents suggest that this was not an isolated occurrence.

Given that dugong populations are slow to reproduce and cannot sustain even low levels of mortality, effective marine spatial planning is essential to minimize overlap between dugong habitat and mariculture operations.

Oral presentations

Survey of the invasive frogs of the buffer zones and adjacent areas of Mount Banahaw de Lucban

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Southern Luzon State University

Mount Banahaw de Lucban, part of the Mount Banahaw San Cristobal Protected Landscape is home of diverse wildlife, especially Banahao forest frog *Platymantis banahao* and other endemic *Platymantis* frog species in the Philippines and Luzon such as *Platymantis montanus*, *Platymantis naomii*, *Platymantis luzonensis*, *Platymantis pseudodorsalis*, *Platymantis montanus*, and *Platymantis indeprensa*. This study surveyed the occurrence of the five invasive species of frogs such as *Rhinela marina* Linnaeus, *Rana catesbeiana* Shaw, *Hoplobatrachus chinensis* Osbeck, *Rana erythraea* Schlegel, and *Kaloula pulchra* Gray. Using quadrat methods and direct counts of population in the five baranggays located at the buffer zone on the foot of Mount Banahaw de Lucban, total of 473 frogs were counted. *Rhinella marina* has the highest occurrence (210 individuals) followed by *K. pulchra* (118), *H. chinensis* (23) and *R. erythraea* (22). *R. catesbeiana* (Shaw) was not observed. Interview with farmers and locals highlighted the sudden increase of *K. pulchra* in the recent years and some have seen *R. catesbeiana* in the area. Also the species occurring nearest to the protected area was *R. erythraea*, to which may in turn invade the forest of the protected area and may pose a threat not only to the endemic native frog species in the area but to the ecosystem as a whole.

The community-managed marine protected areas of Calapan City, Oriental Mindoro

Bryan Lamont Burton
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The presentation will be about the Marine Protected Areas (MPAs) created by the local government and community in Calapan City, and the projects and activities carried out over the past year. The Silonay Mangrove Conservation and Ecopark, situated in the eastern side of Calapan City, is home to approximately 15 species of mangroves according to a provincial assessment performed in by 2014, but it is dominated by two species, *Avicennia alba* and *Sonneratia alba*. Meanwhile, another site is being proposed as a new MPA for the City. The Seagrass Marine Protected Area is in the beginning stages with a joint-barangay resolution being crafted between Barangays Salong and Calero that will hopefully lead to a municipal ordinance. The area also contains around eight hectares of coral reefs on its outer edges. To prepare the barangays for the teamwork and leadership needed to establish this MPA, a theater-based workshop was led by students from the University of the Philippines-Diliman. Both areas were venues for a field trip for high school students that focused on the three coastal ecosystems and the environmental issues of Calapan City. For this year, coral and seagrass rehabilitation efforts are planned for the seagrass MPA, as well as the continuation of the field trip.

Value of the Haring Ibon *Pithecophaga jefferyi* based on gender, age and education in Mt. Dingalan Important Bird and Biodiversity Area (IBA)

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Knowledge on the value of the Haring Ibon for local stakeholders is an important basis for projecting the behavior of individuals towards management and conservation of this species. This paper discusses the preliminary analysis of the perception survey conducted in Mt. Dingalan Important Bird Area (also known as Mingan Mountains). Specifically, it examines the similarities and differences in responses among three demographic characteristics: gender, age group and education in relation to the Haring Ibon. Data were gathered from key informant interviews following a perception survey questionnaire (n=207, 169 males and 38 females). The questions explore the knowledge of local stakeholders on basic information about the Haring Ibon. The respondents were asked the question, "*Does the Haring Ibon have any significance to your life*?" Male (84) and female (18) responses were mostly yes, most of the respondents from all age groups (180) also answered yes with the exception of adolescents (2), while respondents from all levels of educational attainment (120) mostly responded yes. Respondents further qualified their answers and majority said, "*The Haring Ibon is significant to me because it is our national treasure.*" Additional results will be forthcoming. The results of this paper will be used to develop a communication plan that presents various messages on protection and conservation of the species needed to increase the awareness of specific audiences. The plans will also be used to develop policies related to Haring Ibon conservation such as establishing Critical Habitats for the species in Mt. Dingalan IBA.

Vulnerability assessment in Turtle Islands Wildlife Sanctuary

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The Turtle Islands in Tawi-Tawi, Philippines is a critical nesting area of turtles in a marine corridor encompassing the Philippines, Malaysia and Indonesia found in the Coral Triangle. The connectivity of marine turtles as well as other marine organisms is vital to the Coral Triangle which has the world's highest marine biodiversity. However, both anthropogenic and natural disturbances including climate change threaten its ecological and economic significance. This paper presents three tools that were used to assess vulnerability of Turtle Islands. The Coastal Integrity Vulnerability Assessment Tool (CIVAT), the Tool for Understanding Resilience of Fisheries (TURF), and the Integrated Coastal Integrity, Sensitivity, Exposure, Adaptation to Climate Change (ICSEACC) were used to evaluate the vulnerability of Turtle Island's physical coast, coastal habitats, fisheries, and communities to sea-level rise. Determination of the vulnerability indices was carried out using the largely participatory and interview type of scoring in the 3 tools.

Oral presentations

Abundance and morphological identification of parva (post-larval shrimp) in the estuarine area of Tarangnan, Samar

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A study on abundance and morphological identification of *parva* (post-larval shrimp) in estuarine areas of Tarangnan, Samar was conducted in a four-month period from July to October 2015. Three different stations were monitored and larval abundance in the estuarine waters was correlated to the physico-chemical parameters such as salinity, temperature, turbidity, and water depth. Average monthly catch during the collection period showed that *parva* is abundant in Station 3 (50 kg) and during the month of October. Meanwhile, the morphological examinations conducted have identified the species as *Penaeus merguensis*, which was a clarifying finding against the misconception of the residents who argued that the species were "hipon" (*Acetes*). This misconception is a culprit to over-exploitation due to mistaken belief that these species will not grow anymore. Moreover, comparative analysis of the differences and similarities of the *Parva* and *Acetes* showed that these two species vary in length measurements. Hence, the species believed to be *Acetes* in the area is actually *Penaeus merguensis*, which should still be given a chance to propagate.

UNDERGRADUATE

Altitudinal distribution and habitat requirements of stream frogs in Mt. Kanlaon Natural Park (MKNP), Negros Island

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The altitudinal distribution and habitat requirements of stream frogs were studied in Mount Kanlaon Natural Park (MKNP) from May 18 to June 2, 2015. Using Line Transect Method, a total of 36 100-meter transects were established from 500 to 1,500 masl. For the habitat assessment, 243 5x5 meter plots were selected. A total of 193 individuals belonging to 10 species were recorded, of which four are Philippine endemic: *Platymantis dorsalis*, *Platymantis corrugatus*, *Platymantis hazelae* (Endangered), and *Limnonectes visayanus* (Vulnerable). Results show that different stream characteristics indicated different frog distribution. Frog diversity was highest (H'=1.415) at 600 masl. Endemics were highest at 1,000 masl (S=4). *Fejervarya cancrivora* was found at 600 masl, which is a new record for the species. *P. dorsalis* was the most abundant species (RA=57%). GLMs show that the occurrence and abundance of *P. dorsalis* required canopy cover. The presence of permanent streams attracted the occurrence of *Occidozyga laevis* but increase in water acidity decreased its occurrence. The abundance of *L. visayanus* is directly proportional to water acidity. Canonical Correspondence Analysis shows that the abundance of *L. visayanus* is directly proportional to rock percentage while *P. hazelae* is directly proportional to elevation. Direct threats to stream frogs include disruption of water continuum because of dam construction and stream pollution. The presence of endemic frog species in all elevations and of threatened species at specific elevations proves that there is a need to protect the streams in MKNP.

Oral Presentations

Assessment of the possible effects of biological control agents of *Lantana camara* and *Chromolaena odorata* in Davao City, Mindanao, Philippines

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Invasive plants have an impact on global biodiversity and ecosystem function, and their management is a complex and formidable task. Two of these invasive plant species, *Lantana camara* and *Chromolaena odorata*, are found in the Philippines. *Lantana camara* has the ability to suppress the growth of and outcompete neighboring plants. *Chromolaena odorata* causes serious agricultural and economical damage and causes fire hazards during dry season. In addition, both species have been reported to poison livestock. One of the known global management strategies to control invasive plants is the introduction of biological control agents. These natural enemies of the invasive plants reduce population density and impacts of the invasive plants,resulting in the balance of the nature in their invasion. Through secondary data sources, interviews, and field validation (e.g. microhabitat searches, sweep netting, photo-documentation), we investigated whether the biocontrol agents previously released by the Philippine Coconut Authority (PCA) in their Davao Research Center to control these invasive plants are still present and are affecting their respective host weeds. We confirm the presence of the biocontrol agent of *L. camara*, *Uroplata girardi*, which was introduced in 1985, and *Cecidochares connexa*, a biocontrol agent of *C. odorata* released in 2003. Four other biocontrol agents were found to affect *L. camara*. Signs of damage (e.g. stem galls in *C. odorata*) signify that these biocontrol agents have successfully established outside of their release sites in Davao. Further investigating the extent of the spread of these biocontrol agents in the Philippines and their damage to the two weeds will contribute to the management of invasive plant species in the country

Distribution, abundance and habitat requirements of endangered babblers in Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on the distribution, abundance and habitat requirements of the endangered babblers—Flame-templed Babbler *Dasycrotapha speciosa* and Negros Striped Babbler *Stachyris nigrorum* in Mt. Kanlaon Natural Park (MKNP) was conducted from May 18 to June 2, 2015. A total of 44.5 km transects were surveyed using a combination of Line Transect and Point Count Methods. For the habitat assessment, 567 30 x 30 meter circular plots were selected. *D. speciosa* was recorded in secondary lowland forest, mixed forest and plantation within 604–1,078 masl while *S. nigrorum* was found to inhabit primary forest and secondary montane forest within 1,105–1,927 masl. The presence of *D. speciosa* in plantation denotes that this forest also serves as temporary habitat for this species. *D. speciosa* was abundant in secondary lowland forest (n=16) while *S. nigrorum* was abundant in secondary montane forest (n=8). These results are the first in-depth study of the habitat requirements of *D. speciosa* and *S. nigrorum* in MKNP. Logistic Regression Analysis and Poisson Distributions' results showed that increased percentage of climbing bamboo and trees with 16–20 m height as well as decreased elevation showed increased likelihood for the occurrence and abundance of *D. speciosa*. Subsequently, decreased tree density indicated increased occurrence and abundance of *S. nigrorum*. Bird hunting, illegal tree cutting for timber, firewood and charcoal production were observed as existing local threats in the area. This study recommends regular forest monitoring and the strengthening of forest protection and enforcement in MKNP.

Oral presentations

DNA barcoding reveals non-authentic *Vitex negundo* L. (Lagundi) herbal products sold in the Philippines

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Vitex negundo L. (lagundi) is recognized as one of the top ten medicinal plants in the Philippines and due to this, different products claiming to contain pure extracts of the plant are readily accessible in the market today. However, there is no industrial-scale authentication tool to guarantee consumer safety. DNA barcoding offers a rapid and robust approach to species identification, but its application to plant derivatives has been less successful due to (1) poor DNA yield in powderized plant material and (2) lack of a universal DNA barcode in plants. In this study, we report the successful application of DNA barcoding in the preliminary authentication of lagundi-based products sold in the Philippines. The first Standard Reference Material (SRM) Herbal barcode library for the recognition of authentic *V. negundo* samples was established using forty-two (42) accessions of five (5) *Vitex* spp. using three DNA barcoding loci ITS, *psb*A-*trn*H, and *mat*K. Authentication of five (5) blindly-selected lagundi-based products then followed using BLASTn and Maximum-Likelihood (ML) Tree Reconstruction criteria. Results revealed that only one out of five (1 out of 5) samples satisfied both the BLASTn criterion (98% identity as *V. negundo*) and ML tree reconstruction criterion (forming a monophyletic clade of *V. negundo* with BS>70%). Findings of this study emphasize the need for the application of DNA barcoding in assessing the authenticity of processed medicinal parts in order to ensure consumer health.

UNDERGRADUATE

Foraging behavior association between Irrawaddy dolphins (*Orcaella brevirostris*) and tidal net fisheries in the coastal waters of Pulupandan, Negros Occidental, Philippines

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Coastal cetaceans are more likely to be affected by human activities as compared to their oceanic relatives. In Pulupandan, Negros Occidental, a small population of endangered Irrawaddy dolphins interacts with coastal artisanal fisheries at a daily basis. The area has been known to be a core feeding area for the dolphins, which have been observed foraging within close proximity to permanent tidal nets used by locals to catch krill (Euphausiacea). Foraging behavior and interactions with tidal nets were observed during a series of boat-based surveys from April to September 2015. Foraging behavior was classified based on proximity to the tidal nets: net (0<50m) and open water (>50 m) foraging. To determine if dolphins have a specific preference on any of the tidal nets, the time spent foraging was measured using Coefficient for Area Use. CPUE was also obtained to determine the productivity of each tidal net. The total time spent foraging in open water did not prove to be significantly different from the time spent foraging in tidal nets (α=0.05), suggesting minimal differences between these areas. There was no significant difference in the CPUE in all six tidal nets. However, dolphins appeared to have preference for one specific tidal net, having significantly (α=0.05) spent more time engaging in net foraging here than other nets. Pearson Correlation Coefficient showed significant relationship between net foraging and CPUE. Further investigation on bathymetric and hydrological factors should be done as they may play a role in the dolphins' preference of tidal nets.

Forest bat diversity, abundance and habitat selection in Mt. Kanlaon Natural Park, Negros Island

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Bat diversity, abundance and habitat selection were determined on Mt. Kanlaon Natural Park (MKNP) from May 19 to June 2, 2015. Elevational transect survey was employed in four habitat types covering an elevation range of 529–1588 masl. Using standard mist netting and harp trapping methods, a total of 72 net nights and 68 trap nights were accomplished. Furthermore, 65 20x20 meter circular plots were selected for habitat assessment. A total of 23 species of bats (n=608 individuals) were recorded of which eight species are endemic. Twelve bat species were added to the list of bats previously recorded in MKNP: *Pteropus pumilus*, *Hipposideros ater*, *Hipposideros diadema*, *Kerivoula* cf. *hardwickii*, *Kerivoula pellucida*, *Kerivoula* sp., *Murina cyclotis*, *Myotis* cf. *rufopictus*, *Pipistrellus* sp., *Rhinolophus inops*, *Rhinolophus* sp., and *Rhinolophus subrufus*. This can be attributed to the difference in methods employed. This study utilized harp trapping equipment while the previous study used only mist nets. Results reveal that secondary montane forest had the highest bat diversity (H'=1.88). Logistic Regression Analysis and Poisson Distribution show several variables (number of trees of specific height, canopy and subcanopy cover, elevation, number of dead trees, number of fruiting trees, distance from water, mean DBH) having significant influence on bat occurrence and abundance. Data comparison between MKNP and Northern Negros Natural Park shows that MKNP supports a higher number of bat species. It is important that forest quality be maintained and conservation actions be prioritized in MKNP to sustain its bat inhabitants which are threatened by hunting and habitat modification.

Mixed-species flock assemblage in Mt. Kanlaon Natural Park (MKNP), Negros Island

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A study on mixed-species flocks was conducted on Mt. Kanlaon Natural Park (MKNP) from May 19 to June 2, 2015. Mixed-Species Flocks (MSF) are groups of birds that join together in order to increase foraging efficiency and to reduce predation. The species composition, size, abundance, frequency, richness and diversity of each MSF within different habitat types were described. Composition and size across different elevations were also compared. Using Line Transect Method, a total of 48 kilometer transects were surveyed. Thirty-four species of birds (n=643 individuals) participated in the 61 MSFs. Endangered species such as the Negros Striped Babbler (*Stachyris nigrorum*) and the Flame-templed Babbler (*Dasycrotapha speciosa*) were observed. Mountain White-eye (*Zosterops montanus*) was the most abundant (36.39%) and most frequent (f=41) species that participated in MSF. Primary montane forest had the most number of species (25) and MSF (30) but secondary montane forest had the most diverse bird species (H'=2.357) compared to other habitat types. Mid-elevation also had the most number of bird species and MSFs because of its temperature and habitat which is much preferred by the bird species. The richness and number of MSFs are directly affected by disturbance, elevation and availability of food sources in the habitat. Richness, size, composition and stability of MSFs can change due to habitat fragmentation. This study is useful to enhance policies and regulations regarding the protection of the habitat types and elevation where MSFs can be usually found and to promote conservation awareness in MKNP.

Oral presentations

Morphological variation between intra-island populations of *Varanus dalubhasa* and *Varanus nuchalis*

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Varanus dalubhasa is a recently described varanid endemic to the Bicol faunal sub-region known for its ability to swim oceanic waters transiting from island to island. We investigate whether there is gene interaction between mainland and island populations by exploring morphological variability between Sorsogon and Catanduanes Island populations. Our results revealed that insular individuals are generally smaller compared to mainland individuals. Such body size variation can be explained by the fact that insular populations are subject to chronic food shortages leading to island dwarfism. Principal Component Analysis of morphometric characters did not identify group structure between the samples, indicating the problem of using these characters in population variation studies as well as in distinguishing species in water monitors. Meristic characters on the other hand showed that the Catanduanes population is less varied than the mainland population. Also, based on meristic data, the island population seems to show some divergence from the mainland population indicating the possibility of contemporary gene flow between intra-island populations of *V. dalubhasa*. Due to its geographical proximity, *V. nuchalis* was also included in the analyses. UPGMA cluster analysis formed five clades, one of which is composed of *V. nuchalis* only. Another clade is composed of *V. nuchalis* and *V. dalubhasa*, supporting the monophyletic origin of the two lineages and suggesting possible interaction between the two lineages. Furthermore, only mainland individuals were under this clade. The other three clades were a mixture of mainland and island individuals.

UNDERGRADUATE

Phytoplankton abundance and diversity in Lake Sampaloc, San Pablo, Laguna, Philippines

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Phytoplankton are considered as a good indicator to assess the health of aquatic ecosystems. Thus, lnowledge on its abundance and composition may indicate changes in the trophic status of freshwater bodies. This study was conducted to determine the abundance and diversity of phytoplankton in Lake Sampaloc, which was considered as the Most Threatened Lake of 2014. Samples were collected from July to December 2015 and correlated with water nutrients (NO_3^-, PO_4^{3-} and Chlorophyll-a) using Canonical Correspondence Analyses (CCA). Results show that division cyanophyta (blue-green algae or cyanobacteria) dominated the lake for the entire collection months except for December with total relative abundance of 68%. *Merismopedia* sp. is the most abundant species in the study unlike past literatures that reported the abundance of *Microcystis* sp. *Merismopedia* sp. and other blue-green algae have competitive capacity of producing toxins that can eliminate other algal species. Abundance of cyanobacteria may be due to the uncontrollable eutrophication of the lake. Shannon H' index noted extremely low diversity of phytoplankton in the months of August to November. CCA results indicated that most water quality parameters and nutrients have direct correlation to the abundance of cyanobacteria in the lake. These results highlight the dominance of blue-green algae which may provide adverse effects to other organisms in the water or enhance toxin levels which pose potential health risks in the community. Better management protocols are necessary to improve water quality of Lake Sampaloc and eliminate possible health problems which may arise from the abundance of cyanobacteria.

Oral presentations

A call for action: Naujan Lake National Park, eco-ranger contribution for its protection and conservation

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Natural resources provide goods and services needed for economic growth, human development and welfare. They provide food, water, energy sources, income from nature-based tourism, raw materials for shelter and medicines, cleaner air and flood control. Watersheds are one of the country's key sources of natural capital. Naujan Lake National Park, the 5th largest lake in the Philippines and a RAMSAR site, is a Medium Watershed. It has six natural habitat types supporting a diverse collection of flora and fauna. It is endowed both with natural beauty and rich biodiversity.

Unfortunately, Naujan Lake is under threat. Further residential development, garbage, timber cutting, slash and burn farming, charcoal making and over fishing are issues that endanger the park. These threats are slowly deteriorating the lake's ability to support life, from birds and fish to the people that live on and around the lake.

Luckily, Naujan Lake National Park (NLNP) is one of seven priority protected areas/watersheds of USAID-B+WISER program. Training Eco-Rangers is a project to reach out to the youth, so they can contribute to conservation and protection of biodiversity around NLNP.

The 'NGP inventory of mother trees as sources of indigenous seedlings' community project of Bangkal Pocket Forest along watershed areas, building of nurseries for indigenous seedlings at the school campus, being an ambassador for International Day for Biological Diversity during the Kaliwa-Upper Marikina Watershed's youth camp, and a contributor to the Manila Times are among the accomplished activities of the Eco-Rangers.

Comparative study of mangrove community structure in Brgy. To-oy and Brgy. Suay, Himamaylan City, Negros Occidental

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Mangroves provide valuable ecosystem services such as regulating flood, storm and erosion, preventing salt water intrusion, and providing habitat for breeding and spawning of commercial fishes. Of the 18 million hectares of mangroves worldwide, 38% are found in Asia and at least half a million hectares are located in the Philippines. One coastal area in the country is that of Himamaylan City, 82 kilometers south of Bacolod City. One of the least studied natural resources in the city is the mangrove community. The primary aim of the study is to describe the mangrove community structure of Brgy. To-oy and Brgy. Suay, Himamaylan City in terms of basal area, stand basal area, relative density, relative dominance, relative frequency, importance index value and Shannon's index of diversity and as well as to determine selected physical and chemical factors such as water salinity, pH and ambient air temperature. The mangrove community structure was assessed following transect line plots method. One transect line for each site was established. Five 5m x 5m plots were established in each sampling site. Each mangrove tree in the plot was identified and the DBH was measured. Saplings and seedling were identified and the number of individuals per species was counted. Water salinity was measured using a refractometer and water pH was measured using colorimetric method. Ambient air temperature was measured using a thermometer.

There were a total of five true mangrove species belonging to three families identified both in Brgy. To-oy and Brgy. Suay, namely *Avicennia apiculata*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Ceriops decandra* and *Sonneratia alba*. Ecological parameters were higher in Brgy. To-oy. *R. apiculata* has the highest IVI which is 197.04% followed by *S. alba* and also, *S. alba* has the highest H'. In Brgy. Suay, the species with the highest IVI is also *R. apiculata* with an IVI of 160.37% and the one with the highest Shannon index of diversity is *S. alba*.

It is highly recommended that the mangrove forest in these areas be protected and preserved because of its role in protecting coastal erosion. Since the number of saplings and seedlings are relatively low, immediate intervention and mangrove reforestation is necessary.

Oral presentations

Detection, identification and prevalence of endoparasites in four captive endemic threatened species on Negros Island

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Parasitic disease is a major problem causing complications and even death in captive wild animals. The detection and identification of endoparasites is essential for proper intervention. This study aimed to detect and identify the endoparasites present in four captive endemic threatened species on Negros Island.

Fecal samples were collected from the Visayan Warty Pig (*Sus cebifrons negrinus*), Visayan Spotted Deer (*Rusa alfredi*), Visayan Tarictic Hornbill (Pen*elopides panini panini*) and Negros Bleeding Heart Pigeon (*Gallicolumba keayi*). The samples were subjected to direct fecal smear, simple flotation technique and sedimentation technique for mammals and direct fecal smear for birds, on July 23 and August 14, 2015.

Results showed that only *S. cebifrons negrinus* was infected with endoparasites. Generally, the three other species were free from endoparasites. Moreover, Direct Smear Method revealed that endoparasites such as *Ascaris* spp., *Giardia* spp., and *Balantidium* spp. were identified in the fecal samples. These endoparasites are prevalent in *S. cebifrons negrinus* (15.97%) as compared to the three other tested endemic species. The degree of infection brought about by these endoparasites is (+) or below 500 based on the number of eggs per gram of fecal sample.

Therefore, administration of antihelminthics to *S. cebifrons negrinus* should be done periodically coupled with better sanitary measures so that parasitic infection in the enclosures will be reduced.

Habitat preferences of birds in a multi-use farmland in Pililia, Rizal

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HIGH SCHOOL

With the growing population of the Philippines, more and more wild spaces are converted to agricultural and/or residential use. It is unfortunate that these developments negatively affect bird and tree diversity. Moreover, many non-endemic trees are being introduced. In order to propose ways in which such negative impacts can be mitigated, we conducted a study to assess the effect of various land-uses to bird diversity in a farmland in Pililia, Rizal. The 80 hectare farm was bought in 2011 in a degraded state—that is, most of the tree cover has been cut down and saw grass has become the dominant vegetation. Six 50-meter circular plots were established in six habitat types—(1) open grassland cum pineapple plantation; (2) shrubland cum cow pastureland; (3) ipil-ipil and tipolo tree plantation; (4) mango and narra tree plantation; (5) bamboo riparian system along a seasonal river bed; and (6) old growth secondary forest. This last plot was, according to the oldest of the tenants, left undisturbed since it was initially harvested for valuable timber species when the farm was first founded—unfortunately, no definite time period was provided. Vegetation variables such as percent shrub and herb cover, canopy cover, tree density, height to inversion, and others were correlated with bird diversity obtained from point-count surveys. We hope to formulate environment-friendly guidelines for the utilization of this and other similar farmland areas. Data will also be used to guide on-going reforestation efforts as well as help plan future eco-tourism projects in the area.

Population estimates and threats of flying foxes in southeastern Cebu, Philippines in 2014

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Flying foxes, also known as fruit bats, are considered endangered species in the Philippines. This study was conducted to estimate the population of individual species of flying foxes in the southeastern area of Cebu, Philippines and determine its current threats. A survey was done to confirm the possible municipalities with presence of flying foxes. Identification of the flying foxes, counting of each flying fox and identification of threats were done in August and October 2014. This study was done with the use of counter-clickers, spotting scopes and binoculars. Overall, two roosting sites were confirmed and four species were identified: *Pteropus vampyrus*, *Pteropus hypomelanus*, *Pteropus pumilus* and *Acerodon jubatus* in Dalaguete, Cebu (Site 1) and *Pteropus vampyrus* and *Pteropus hypomelanus* in Boljoon, Cebu (Site 2). The estimated population of each species was observed to be declining from the first count to the last. Threats of the flying fox species in Dalaguete, Cebu were mainly cutting of trees, hunting for food, burning of fire which produces smokes and fumes that suffocate the flying foxes, visiting the roosting sites without proper orientation and gunning. Dalaguete municipality implemented regulations against hunting and other activities that may disturb the species. While in Boljoon, Cebu, the threats determined were hunting with slingshots and guns near their roosting sites, and cutting of trees. The municipality of Boljoon implemented some laws in conserving these species however it was not followed which is the primary cause of the decline of the population of the mammals.

Species abundance, evenness and diversity of migratory water birds in two selected sites in northern Negros Occidental

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[1]Negros Occidental High School; [2]Philippine Biodiversity Conservation Foundation, Inc.

The coastal area stretching from Bago City to Ilog in southern Negros Occidental was declared as Wetland of International Importance by the Department of Environment and Natural Resources (DENR) in February 2015 due to the congregation of water birds in those areas. However, there are limited studies as to the abundance and diversity of water birds in the northern area of the province. Thus, the researchers were motivated to determine and compare the abundance, evenness and diversity of non-migratory birds in two selected wetland sites, namely Brgy. Balaring in Silay City and Brgy. Latasan in E.B. Magalona in Northern Negros Occidental.

The sites were visited on the 3rd week of July and August, 2015. Field surveys were conducted through quick total count, single species count and technique block counting.

Results showed that a total of 129 water birds were observed in both sites. Using the Simpson's abundance index, Brgy. Balaring has higher diversity with 5.025 as compared to 3.846 of Brgy Latasan. Moreover, using Shannon Weiner Index, Brgy Balaring as high evenness of water birds with H'=1.88; E=0.8 as compared to H'=1.41; E=0.8 of Latasan.

This study also provides information that even though most of the water birds found in northern part of Negros Occidental have a "Least Concern" IUCN status, conservation of these species is still important because they help maintain the ecosystem in balance by consuming large population of fishes in the ocean and lakes.

Oral presentations

Survival of re-introduced populations of *Awaous melanocephalus* (Largesnout Goby) in a mountain stream in Antipolo, Rizal

Enrique Javier R. Salvador, Kyle Auguste R. Reyes, David John C. Cabrera, Francis Xavier B. Asuncion, and Anton Louie N. Escario
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Urbanization in our country occurs at a rapid pace, often at the expense of watersheds which are converted to either agricultural or residential use. This leaves us with massive degradation of freshwater ecosystems. Due to this, extinction rates of freshwater fish remain very high. Since there have been many non-native fish introductions in the Philippines, we sought to reverse the trend by re-introducing populations of *Awaous melanocephalus* (Largesnout Goby), a Laguna de Bay watershed native, to two basins in the headwaters of the Tungtong River—a perennial freshwater mountain stream situated along the Antipolo and Taytay boundary. The prior existence and local extinction of the Largesnout Goby in the Tungtong River was confirmed in a study done by Salvador et al. (2015). The fish were caught with the use of bubo traps from the nearby Munting Dilao, also a freshwater mountain stream. Monthly diel monitoring (every 3 hours) of water quality parameters (dissolved oxygen, pH, total dissolved solids, conductivity, salinity and air and water temperature) in the two streams were conducted from January to March, 2016. Bubo trapping of the re-introduced gobies was also done monthly to monitor their survival.

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Diversity and ecological assessment of anurans in riparian and freshwater ecosystem in selected areas of Valencia City, Bukidnon | **Jerica Mae Q. Pagente**, Krisha Loraine D. Balaba, Dave P. Buenavista, Sheila A. Peralta, and Rechell A. Sabado 99

Assessment of the diversity of animals in the forest ecosystems of Pantabangan-Carranglan watershed

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Institute for Climate Change and Environmental Management, Central Luzon State University

The diversity of animals in the forested area of Pantabangan-Carranglan Watershed were assessed. The four major groups of animals such as birds, mammals, reptiles and amphibians were observed, described, identified and classified. Birds and volant mammals were observed through standard mist netting and either sight or sounds. Non-volant mammals were observed or caught by traps and searching along their possible habitat. Amphibians were caught by hand and the reptiles were observed through sightings.

A total of 53 animal species under 30 families were observed in the area. Families Columbidae, Pteropodidae, Muridae, Colubridae, Ceratobatrachidae and Dicroglossidae are the most represented families. Of the observed animals, 40 species were identified up to species level and 13 species were identified through sightings and sounds. A bird species "Sawsaw-it" (*Cinnyris jugularis*) got the highest importance value index of 19.32% and biodiversity indicator value of 17.5%. It is also the most common and the most dominant animal species surveyed in the forest ecosystem.

Pantabangan-Carranglan Watershed exhibited low to very low diversity. Six (6) species were listed as vulnerable and 3 species as near threatened. There were 40 native species recorded. Furthermore, there were no introduced species recorded in Pantabangan-Carranglan Watershed.

Human activities such as timber poaching, forest fires, soil erosion, kaingin farming, mining and wildlife hunting posed small to moderate impacts on the area.

Avifauna of Bicol University Main Campus, Legazpi City, Philippines

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Bicol University, Legazpi City

Bicol University main campus is a semiurban area occupying a large terrestrial ecosystem that is surrounded by trees, buildings, a river and residential homes. The study aimed to assess and identify the birds around the Bicol University Main Campus and determine the community structure and biodiversity index of the area. Point count method was chosen for sampling birds, wherein the researcher stayed at a point and counted and identified the birds individually within a period of time. No birds were captured. The study recorded and identified a total of 28 species of birds namely: *Aplonis panayensis*, *Gallirallus torquatus*, *Ptilinopus leclancheri*, *Oriolus chinensis*, *Monticola solitarius*, *Lanius cristatus*, *Lonchura malacca*, *Halcyon chloris*, *Chalcophaps indica*, *Alcedo atthis*, *Passer montanus*, *Muscicapa griseisticta*, *Montacilla cinerea*, *Alcedo cyanopecta*, *Egretta intermedia*, *Egretta garzetta*, *Zosterops meyeni*, *Cinnyris jugularis*, *Centropus viridis*, *Rhipidura javanica*, *Lalage nigra*, *Dicaeum australe*, *Rhabdornis mystacalis*, *Amaurornis phoenicurus*, *Ixobrynchus sinensis*, *Pycnonotus goiavier*, *Geopelia striata*, and 1 unidentified bird belonging to Family Apopidae. Brown shrike (*Lanius cristatus*), Yellow-vented Bulbul (*Pycnonotus goiavier*) and Chestnut Munia (*Lonchura malacca*) were the most common in the whole sampling area while the Yellow-vented Bulbul appeared to have the highest occurrence and importance value. Simpson's Diversity Index recorded values ranging from 0.8 to nearly 0.9. The study has implications to development priorities along infrastructure and land use.

Poster presentations

Bioclimatic niches of selected endemic *Ixora* species on the Philippines: predicting habitat suitability due to climate change

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The pantropical genus *Ixora* is highly diverse, with several species endemic to the Philippines. Owing to their endemic nature, many of these species are endangered and little is known about their basic biology. This study aimed to establish baseline information on the bioclimatic niches of Philippine endemic *Ixora* species, determine suitable areas and potential range shifts under future climate conditions, and identify priority areas for conservation and future research. Endemic *Ixora* species from the Philippines were analyzed, with a particular focus on the four most abundant species *I. auriculata*, *I. bartlingii*, *I. cumingiana*, *I. macrophylla*, and one island endemic species, *I. palawanensis*. Bioclimatic variables from the WorldClim database at 2.50 resolution were used, with a focus on annual means and seasonality of temperature and precipitation as well as precipitation of the warmest quarter. Analysis of the relationships of the species locations with the bioclimatic variables showed that the bioclimatic niches of the five focal *Ixora* species generally had narrow temperature and wider precipitation niches. Species distribution modeling with the model Maxent suggested that *I. auriculata* and *I. bartlingii* will likely shift their geographic distributions southwards under predicted levels of climate change, while *I. cumingiana* and *I. macrophylla* were found to likely expand their ranges. *Ixora palawanensis*, in contrast, was predicted to decrease its potential distribution with future climate change. The generated potential habitat suitability maps can assist policy makers in designing conservation strategies for the species and in identifying areas with potential to withstand climate change until at least 2080.

Distribution and abundance of malaria vectors in Philippines, with particular attention to dominant and secondary vectors

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Research Institute for Tropical Medicine

Anopheline mosquito diversity and distribution had not been re-evaluated for more than two decades. Mosquito collections from 2007 to 2015 through the carabao-baited traps (CBT) focused on the five recognized malaria vectors, namely: *Anopheles flavirostris*, *An. balabacensis*, *An. litoralis*, *An. maculatus*, and *An. mangyanus*. Generated current vector map utilized geo-referenced data that took mosquito abundance into consideration. This deviates from previous maps that merely took presence of the vector into account. While still incomplete, updated vector maps showed definite inconsistencies in the distribution of malaria vectors between historical data and recent field collections. At least one vector species is found to have a more limited distribution as previously believed. Observed variations in current malaria vector diversity and distribution in the Philippine islands impacts assessment of malaria risk and elimination efforts in the country. Knowledge of changes in vector distribution raises questions with regard to effects of climate change, effects of ballooning populations, variations in land use and may even require re-evaluation of vectorial capacity and efficiency for disease transmission of secondary vectors that may have implications on the success of currently implemented programs for malaria elimination.

Distribution of invasive species of rodents in Bataan National Park (BNP), Bataan province, Luzon: implications for habitat management

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A total of seven species of rodents comprising 34 individuals were collected from Bataan National Park (BNP). Of the seven species documented, 5 are native species and two species are non-native and commensal. Snap traps were set in each of the three sampling sites. Forty traps were set in the first site and thirty traps each for the other two sites, yielding a total of 560 trap nights for the duration of the survey. Trap sites were established in three areas: 1) within the buffer zone of BNP where agricultural crops and kaingin occur; 2) within the advanced regenerating forest, an area far from the main hiking trail but is frequented by local hunters; and 3) within the old logging road-regenerating forest of BNP where a large patch of "cogon' and "talahib" grassland is present. The two non-native rodent species (*Rattus tanezumi* and *Rattus exulans*) were mostly confined to the agricultural area within the buffer zone while *Rattus exulans* was also captured at the old logging road-regenerating forest at the base of Mt. Natib, an area frequented by hikers. No commensal rodent species was collected from the trap site far from the main hiking trail of Mt. Natib. Determining the habitat preference of the invasive and native rodent species would give insights to the management of the PA and the protection of native species population. Proper management and strict implementation of management zones to ensure habitat integrity within BNP is recommended to prevent the displacement of the native species and resulting spread of commensal rodents.

Diversity and assessment of avifauna in two long-term ecological research (LTER) sites in Mindanao, Philippines

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Birds play a crucial role in the environment for they serve as natural bio-indicators. The Philippines, especially the island of Mindanao, is home to varying avifauna. However, this diversity is at risk due to the different threats which is well exampled by anthropogenic activities. Thus, this study was conducted to determine the species richness, diversity, and assess the avian fauna in two Long-Term Ecological Research Sites in Mindanao namely: Mt. Hamiguitan (900–1000 masl) and Mt. Musuan (400–485 masl). Mist-netting for a total of 460 net days per site, transect-walks, and point counts were carried out for 2 years in the established permanent plots at every site. A total of 1120 individuals from 85 bird species in 39 families were documented in the two sites during two years of observation. Fifty two (52) species were listed on Mt. Hamiguitan while 45 species were noted on Mt. Musuan. Diversity values were relatively high in both mountain ecosystems with a diversity index (H') of 1.213 in Mt. Hamiguitan and 1.239 in Mt. Musuan. Endemicity was high in Mt. Hamiguitan (53%) while low in Mt. Musuan (31%). Low endemicity is associated with the verity that endemism is low in lowland forest as compared to high elevation mountain ecosystems. Three threatened bird species (*Gallicolumba criniger*, *Phapitreron cinereiceps*, and *Eurylaimus steerii*) were observed in Mt Hamiguitan while the migrant bird *Gorsachius goisagi* was the only threatened (endangered) species observed in Mt. Musuan, where it was only seen once in the area. Results imply that the two mountain ecosystems are habitats to various bird species and need to be conserved and protected.

Poster presentations

Dragon's tale: damselflies and dragonflies of Albay

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Damselflies (Zygoptera) and dragonflies (Anisoptera) are members of the palaeopterous group considered to be bioindicators taxa. The Philippines is home to more than 280 species of odonates but despite continuous efforts on its documentation, some areas, such as the Bicol Peninsula, still remain unexplored. This paper represents the first faunal report of Odonata in Albay Province. A total of 26 species belonging to 21 genera (*Risiocnemis*, *Diplacina*, *Orthetrum*, *Neurobasis*, *Rhinocypha*, *Cyrano*, *Brachydiplax*, *Drepanosticta*, *Amphicnemis*, *Teinobasis*, *Pseudagrion*, *Crocothemis*, *Euphaea*, *Vestalis*, *Pantala*, *Diplacodes*, *Agriocnemis*, *Ischnura*, *Potamarcha*, *Trithemis*, and *Acisoma*) representing 7 families (Platycnemididae, Coenagrionidae, Chlorocyphidae, Calopterygidae, Euphaeidae, Platystictidae, and Libellulidae) was preliminarily documented in Albay. This also reports the new locality record for *Drepanosticta acuta* and *Risiocnemis odobeni*.

Evaluation of five DNA loci (*rbc*L, *rps*16, *trn*T-L, *trn*L-F, and ITS) for molecular authentication and phylogeny reconstruction of Philippine *Argostemma* species (Rubiaceae)

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University of Santo Tomas

Argostemma Wall. is the largest genus within the tribe Argostemmateae, comprising 75% of the tribe's population. The Philippines currently recognize 9 species and misidentification of its members have been apparent due to morphological similarities among its members. To address this issue, several *Argostemma* species were collected from 10 localities and were subjected to taxon differentiation and phylogenetic analysis. Five molecular data sets (*trn*L-F, *trn*T-F, *rps*16, *rbc*L, and ITS) were used to answer the following objectives: to test the phylogeny of the Philippine *Argostemma* species; to evaluate the best DNA barcode for the genus, and to provide a comprehensive morphological description of the cryptic *Argostemma* species. The 17 *Argostemma* samples collected were subjected to genomic DNA extraction, amplification, purification, sequencing, and genetic analyses. The assessment for the best DNA barcoding loci among 5 markers were done based on their universality, discriminatory power, and resolution. The results revealed that ITS is the most effective single-locus barcode for *Argostemma* by yielding the best discriminatory and authentication power among the barcodes evaluated. For molecular phylogeny of Philippine *Argostemma* species, the generated phylogenetic tree proved its monophyly and endemic status (BS=100) and showed to be closely related with Psychotrichoides group. A novel species and variety from Mt. Halcon, Oriental Mindoro, *Argostemma scindum* and *Argostemma solaniflorum* var *hyacintho* is here proposed. With a suitable barcode for the Philippine *Argostemma* species and its endemicity ascertained, economic and medicinal benefits of the taxa can now be explored.

Flora diversity assessment in Mount Busa, Kiamba, Sarangani province

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Mt. Busa is a critical watershed for the municipality of Kiamba, Sarangani province; as such, it sustains the hydrological-ecological flow of freshwater bodies, which in turn recharge downstream rivers and aquifers. However, forest cover of Mt. Busa is slowly being degraded by human encroachment, where local people raze down forest areas to engage in kaingin farming of corn, peanuts, and upland rice. Once kaingin farming becomes unproductive, the area is abandoned and is eventually colonized by highly invasive buyo-buyo (*Piper adduncum*), an emerging ecological threat in the upland areas of Region XII. In the recent assessment, a total of 187 species of plants were collected from the lower elevation of Mt. Busa, dominated by trees with 82 species, followed by ferns and fern allies with 28 species, and vines/lianas with 22 species, 5 aroids, 7 grasses, 9 herbs, 5 palms, 1 orchid, 20 shrubs, 4 zingibers. Out of 187 species of plants documented in the lower elevation of Mt. Busa, 5 species are categorized as Critically Endangered and 8 species as Vulnerable based on the IUCN Redlist (2015) criteria. However, the colonization by the highly invasive buyo-buyo (*Piper adduncum*) is an emerging ecological threat, and the colonization has extended beyond the upper montane areas of Mt. Busa, especially where the canopy is broken, allowing the airborne seeds of buyo-buyo to settle and propagate. Nevertheless, the number of species identified in the area signifies the high floristic diversity of the Mount Busa.

Floral diversity in a 2-hectare biodiversity monitoring lot in the Quiaoit River watershed, City of Batac, Ilocos Norte

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Assessment of floral diversity was conducted in a 2-ha biodiversity monitoring plot in the Quiaoit River Watershed, City of Batac, Ilocos Norte. Results show that the plot was composed of 1,259 trees with dbh of ≥10 cm representing 109 species in 88 genera of 40 families; 2,268 individuals of saplings representing 96 species in 71 genera of 36 families; and 4,360 individuals of regenerations, herbs and other forms of vegetation representing 40 species in 35 genera of 26 families. Among families, Fabaceae, Meliaceae and Rubiaceae were represented by the highest number of species. Among species, *Swietenia macrophylla* (Meliaceae) was the most abundant and highest in frequency, density and importance value while *Canarium asperum* (Burseraceae) was the most dominant. Species diversity was high (H=3.84, E=0.75).

Poster presentations

Impacts of climate change in wetland characteristics and its correlation to waterbird diversity in Negros Oriental

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The study seeks to determine the correlation between waterbird diversity with wetlands characteristics and impacts of climate change and land conversion in Negros Oriental wetlands from Tanjay, Amlan, Sibulan, and Banilad. Study includes determination of water physico-chemical parameters, possible impacts of climate change, and correlation of each characteristic to waterbird diversity from various rice fields, fishponds, and natural wetlands. Point-count method in early morning and late afternoon and transect walks during the day were conducted to survey bird species. Hazard maps were also used to assess susceptibility of current habitats to climate change and government's plan in the area. The data from Shannon-weiner index and Simpson index of diversity showed that species of birds in fishponds and natural wetlands are more rich and abundant than rice fields in both seasons.

Results from Spearman-rank correlation between bird species diversity and habitat characteristics indicate that habitat disturbance, water salinity and depth are significantly correlated ($p > 0.05$) to bird abundance. Regarding impacts of climate change and land conversion, all study sites were geographically located on areas susceptible to flooding and sea level rise based on hazard maps. Impacts of climate change could cause decreased size of wetlands for birds as sea rise and anthropogenic structures may squeeze the remaining wetlands used by birds. Possibility of salinity and depth increase could also be factors that reduce water birds diversity should climate change will continue to alter ecosystems. Based from government's land use plan, there are no further land conversion planned in wetlands.

Indigenous knowledge of the people of Camotes Islands, Cebu, Philippines on the mangrove clam (*Anodontia edentula* Linn. 1758) as a resource, food and livelihood

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Imbaw or mangrove clam (*Anodontia edentula*), an abundant resource in the mangrove areas of Camotes Islands, Cebu, Philippines, was studied particularly its perceived abundance, food processing and livelihood of the inhabitants. A questionnaire was made to serve as an interview guide to the gleaners, vendors and selected inhabitants of Camotes Islands. Results show that imbaw are usually found in muddy areas with less pneumatophores and are usually caught 2 feet below the surface. They are gathered throughout the year as long as there is low tide. Phases of the moon have nothing to do with its abundance. Gathering was done by visual techniques and direct touching of the bottom. Perceived distance between clams is 3 meters. Imbaw is prepared as boiled (tinola), broiled, and salad (kinilaw). Broiled imbaw mixed with a bit of margarine is excellently served during special occasions. Gleaning is usually concentrated in mangrove areas of Teguis, Poro, Cebu, being the largest mangrove area in Camotes Islands. Marketing is done through middlemen with an average of 5 pieces large clams and 15 pieces smaller clams in an hour of gleaning. Prices for bigger clams range from Php2.00 to Php3.00 per piece and for smaller clams is Php0.50 to Php1.00 each. Results further show that 10% to 50% of their catch was left for the gleaners' kitchen and 40% to 50% for the market in the four municipalities. Proceeds of clam gleaning are usually good for food purposes only. Perceived problems are so many gleaners; areas are severely disturbed and lesser catch where smaller clams are gathered due to its scarcity because of the unfit habitat. Reforestation and size limits were the suggested measures to solve scarcity

Invasive aquatic fauna at four protected areas in the Philippines

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Four protected areas (PAs) in the Philippines were surveyed to assess the presence of invasive alien species (IAS). These are Bataan National Park, Mts. Banahaw-San Cristobal Protected Landscape, Agusan Marsh Wildlife Sanctuary and Sibalom Natural Park. Marsh, streams, rivers, creeks, ponds and lakes inside and within the immediate boundaries of these parks were searched for occurrence of invasive fishes, mollusks and crustaceans. Voucher specimens were collected using traditional and non- destructive fishing methods utilized by the locals in each area.

A total of twelve invasive aquatic species were recorded in the four protected areas surveyed represented by nine species of fishes, two species of mollusks and one species of crustacean. Agusan Marsh had the highest number of invasive aquatic species with nine species, followed by Bataan National Park with five species. No invasive alien species was observed in Mts. Banahaw-San Cristobal Protected Landscape. The Nile tilapia *Oreochromis niloticus* and the golden apple snail *Pomacea canaliculata* were the most common IAS which occurred in three PAs. One species of crustacean, the giant river prawn *Macrobrachium rosenbergii*, which is considered to be potentially invasive was collected only in Bataan National Park.

Inventory of "Hagik-ik" (Heliconiaceae) in Lucban, Quezon: distribution, population size, and ecology

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In Lucban, Quezon, "Hagik-ik" was used as food wrappers and growth of rice saplings from time immemorial and even before the creation and passage of RA 9003. However, anecdotal information showed that after the eruption of Mt. Pinatubo in 1991, most of it died and become rare in Quezon province due to ash fall. However, no study yet has been conducted about the biological aspects like its distribution, population size, ecology, and importance. This study focuses on inventory of the current population, distribution and ecology. Purposive sampling technique was undertaken using the quadrat sampling method with 20x75 m^2 in Mt. Banahaw de Lucban and 22 rural barangays. Data on ecology and distribution was based on observation and semi-structured interviews during field studies conducted from May 2013 to March 2014. Its scientific name is not yet established due to lack of floral parts. A total of 3,001 individual plants of "Hagik-ik" were distributed in low lands at elevation ranges from 334–449 masl in 18 barangays in Lucban, Quezon. This plant grows on a temperature range of 20–28 °C, wet/humid condition, soil type of sandy clay loam, soil pH of 4.3–8.8. It grows in open or shaded areas with canopy coverage ranging from 0–85% along with terrestrial vegetations. Interviews with selected farmers and old folks revealed that "Hagik-ik" play a key role in their lives, in their daily food items and agriculture. Twenty three years later, its population has not yet recovered.

Poster presentations

Inventory of the freshwater fauna of NW Panay

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A preliminary inventory of freshwater fishes and crustaceans in selected areas of Alegre, Bugang, Buruanga, Idio, Laserna Malindog and Perfecta Rivers revealed several species of fishes, shrimps and crabs which are considered rare or hardly known, as well as several species new to science. Among the most interesting fish species observed is a large population of the gobiid *Lentipes mindanaoensis*. This Philippine endemic was described in 2004 by CHEN based on just one male from Mindanao. We now can add data on size and coloration of different age stages of males and females, as well as habitat data.

We also discovered *Rhyacichthys aspro*, one of the three known members of the family Rhyacichthyidae, sister group to all other Gobioidei, to be quite common in some areas. Even though this species has a rather wide distribution, it is known to be an enigmatic species, which is rarely encountered.

The most interesting shrimp record was the discovery of the bamboo shrimp *Australatya obscura* in Buruanga River, which so far is the only record for this recently described atyid shrimp outside of Taiwan.

Among the potamid crabs observed in the visited areas are at least two undescribed species of *Ovitamon*, as well as an undescribed *Mindoron* species, a genus, which previously was not known to occur outside of Mindoro. Besides, little known species such as the sesarmid crabs *Sesarmops impressum* and *Labuanium trapezoideum* were discovered in some of the investigated areas, and habitat data recorded.

Knowledge, attitudes and perceptions of visitors of Mount Makiling Forest Reserve towards its conservation and management

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Assessing and understanding people's attitudes and perceptions is vital for a long term management of natural resources. Visitors' attitudes and environmental beliefs differ considerably but the quality of the natural environment plays a key role in attracting visitors to tourist destinations. This is the case of Mt. Makiling which has been considered as one of the favorite recreational sites for visitors both local and foreign. A survey was done to describe and assess the baseline knowledge, attitudes and perceptions of visitors towards conservation and management of Mount Makiling Forest Reserve. Results indicated that 92% (n=78) of the visitors were aware about the protected status of the area. There is more support for restricting access to certain parts of the park for the purposes of wildlife and natural resource conservation (91%) yet there is little support to participate in conservation related activities (43%). The visitors' responses toward the items used to measure attitude to environmental resources indicate that their attitude point more to positive than negative. Despite of the positive attitude, respondents' willingness to pay for a higher entrance fee in order to support conservation and management in Makiling was rather low (No=65%, Yes=35%). The current assessment of visitors' attitude, knowledge and perceptions and their willingness to pay to support conservation and management provides information that could be useful to improve forest reserve-community relationships in Mt. Makiling.

LAWIN forest protection system — science, technology and innovation in partnership with communities, private sector and government

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Biodiversity and Watersheds Improved for Stronger Economy and Ecosystem Resilience (B+WISER) Program

The LAWIN forest protection system (LAWIN) is an ecosystem threat detection and deterrence system that combines user-friendly technologies and landscape/ecosystem-based approaches to empower local communities and authorities to avoid deforestation and further degradation of natural forests and conserve biodiversity in these areas. Developed by the USAID/DENR B+WISER Program, the system is designed for forests providing critical habitats for key species or areas considered as having high conservation value.

Managing forests involves identifying and reducing threats that negatively affect the viability of that ecosystem, as well as monitoring the condition of the forest as management interventions take effect. LAWIN uses a tablet-based app for electronic encoding of field data and software for conducting geospatial analysis of collected data in forest ecosystems. Access to this data improves management effectiveness and the timeliness of responses.

LAWIN provides the following innovations: 1] introduces a science-based process for identifying hotspots and formulating measurable conservation objectives based on a landscape approach; 2] eliminates the manual process of recording threat observation data by using open source software; 3] enables monitoring of resource needs for the patrol effort; 4] provides the geo-referenced distribution of observations and patrol efforts; and 5] enhances coordination between the community's biodiversity and threats monitoring efforts and environmental law enforcement by providing timely information to resource managers and environmental law enforcers.

Implemented on a regular and frequent level, in partnership with local communities, the private sector and the government, LAWIN offers an innovative means for the protection of forests and their related ecosystem services.

Melastomes of Mt. Sinaka, North Cotabato, Philippines

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Melastomataceae is the seventh largest family of flowering plants and is abundantly distributed throughout tropical and subtropical regions. In Mt. Sinaka, inventory and assessment of this group remains, to a large degree, understudied. This study was conducted to inventory and assess Melastomataceae species found in Mt. Sinaka, North Cotabato. Specifically, it aimed to: (a) determine the species richness; and (b) assess the local and conservation status of each Melastomataceae species. Field data collection was done by means of transect walks along established trails from the base to the peak. Every species encountered was recorded excluding tree wildings with a diameter less than a centimeter. Species richness was determined by counting the number of species recorded, and local assessment was done using the category: rare if 1–3; common if 4–9; and abundant if ≥10 individuals per vegetation type. Data revealed that there are 29 species of melastomes under 7 genera: 5 *Astronia* Blume, 2 *Beccarianthus* Cogn, 1 *Creochiton* Blume, 1 *Dissochaeta* Bl., 17 *Medinilla* Gaudich, 2 *Melastoma* L., and 1 *Heterotis* Benth species. Locally, out of the 29 species of Melastomataceae, 18 (62%) are rare, 7 (24%) are common, and 4 (14%) are abundant. Assessment of the conservation status revealed 11 (39%) endemics and among these, 3 are endangered. Furthermore, the documentation of *Astronia* sp. and *B. octodontus* (Merr.) Maxw in Mt. Sinaka are possibly new records or have new site distribution. In conclusion, Mt. Sinaka is undeniably a shelter for a great number of endemic melastomes yet mostly locally rare.

Poster presentations

Merging art with science: the importance of scientific illustration and photo documentation in conducting biodiversity research

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Zoology Division, National Museum of the Philippines

Art has always been known as something to be aesthetically pleasing, but there is more to it than meets the eye. In the field of science and research, art can also act as a bridge to the public by means of scientific illustration and photo documentation, making it more relatable.

Primary objective of "Merging Art with Science" is to impart ways where art can go together with scientific research and how it can be used as a medium to convey important information to the public. It will also be the artist's personal account working for a research institution and how communication, collaboration, reference materials, accuracy and opening up to new experiences can affect the overall outcome — all for the sake of science and art.

Molecular phylogeny of the Philippine *Neonauclea* Merr. (Rubiaceae–Naucleeae) inferred from cpDNA and nrDNA markers including a novel species from Carmen, Cebu

Jorge Anton Dy Ordas and Grecebio Jonathan Duran Alejandro
University of Santo Tomas Graduate School

The Philippines is regarded as one of the world's most important biodiversity hotspots, yet its unmatched flora remains largely untreated. Recent molecular evidence of tropical genus *Neonauclea* Merr. reveals its paraphyly with satellite genera *Myrmeconauclea* Merr. and *Ludekia* Ridsdale, with no Philippine representatives included despite its species richness. Using three genetic markers ITS, *rbc*L, and *trn*T-F, the phylogeny of *Neonauclea* will be reconstructed with the addition of representatives from the archipelago to resolve the paraphyly of the genus. In addition, morphological and molecular evidence support the description of a new species of *Neonauclea* from the Hagnaya Forest in Carmen, Cebu.

Morpho-taxonomy and DNA barcoding of Philippine *Cinnamomum* Schaeffer (Lauraceae)

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Philippine *Cinnamomum* are becoming rare in the country due to overexploitation and lack of conservation of the species. It has several economic and medicinal uses, concerns on its morphology and DNA barcoding are limited. Thus this study was conducted to survey and identify the species using its morphology and DNA sequences (*rbc*L). Collections were done in some mountains and places in the country. Twenty (20) species were collected out of 45 sample collections. Morphology resulted to 4 clusters based from PC-ord software formatted in 30 morphological characters and 110 character states. Cluster 1 has trinerved almost up to apex consist of 12 species. Cluster 2 has palmately trinerved it consist of 7 species. Cluster 3 has trinerved up to leaf apex consist of 7 species. Cluster 4 consist of 1 species which is pinnately nerved. DNA results using bioedit and mega 6 software showed 4 clusters. Cluster 1 consist of 19 species with blast name of *Cinnamomum* sp. FU 2979. Cluster 2 has 1 species with blast name of *Cinnamomum micranthum*, Cluster 3 has 1 species with same blast name of *C. camphora*. Cluster 4 consist of 5 species with blast results of "no significant similarity found". Philippine *Cinnamomum* morphology and DNA barcoding using *rbc*L both resulted to four clusters. More collections and use of another primers are highly recommended.

Occurrence of known and potentially invasive species of mealybugs and armored scale insects in three protected areas in the Philippines

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A survey of economically important and potentially invasive species of scale insects (Sternorrhyncha: Coccoidea) was conducted in Bataan Natural Park (BNP), Sibalom Natural Park (SNP), and Agusan Marsh Wildlife Sanctuary (AMWS). In BNP, the invasive armored scale insect *Unaspis mabilis* Lit & Ba. (Diaspididae) was found on various parts of lanzones trees (*Lansium domesticum* Corr.), its only known host plant, cultivated outside of the protected area (PA). In SNP, three species each of mealybugs (Pseudococcidae) and armored scale insects, herein tentatively assigned to morphospecies, were found. One of the mealybugs, collected from *Psidium guajava* L., is likely an invasive species pending thorough examination of its morphology, but it also occurs outside of the PA. *Odonaspis secreta* Cocker., another invasive diaspidid species, was found on *Schizostachyum* sp. near the peak of Mt. Porras within SNP. Limited sampling on these PAs could not confirm the occurrence of the coconut scale insect *Aspidiotus* spp. Given that scale insects are an economically important insect group, extensive sampling should reveal the occurrence of more invasive species of scale insects in built-up areas near or within the aforementioned and other PAs in the country.

Poster presentations

Occurrence of non-indigenous bird species (NIBs) in the survey areas of the two DENR-BMB FORIS project sites in Luzon

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Our study used two established two-kilometer transects in each protected area (PA) that we visited: Bataan Natural Park (BNP) and Mts. Banahaw–San Cristobal Protected Landscape (MBSCPL). These transects were positioned towards and away from the boundary of each PA to study the presence and/or entry of non-indigenous bird (NIB) species that may possibly occur in the area. A total of two NIB species were recorded in the two PAs. We also took observations and noted the transect line habitats, terrain, vegetations and current land use. We present a map of the survey areas (highlighting the transect lines). Profiles of the two NIB species will be presented including the current species occurrence as well as historical record (as available) at each PA. We observed that *Passer montanus* has established resident populations in built-up areas outside or near the PA boundaries which we predict may occasionally wander around or inside the PA (as in the case of BNP). While our current record for *Acridotheres cristatellus* includes only of an occasional sighting of a pair in both PAs. *A. cristatellus* (being a larger and stronger flier) may wander far and wide into the borders and boundaries of the PAs. Similarly, intensified and/or seasonal agricultural and other man-made activities within the borders of the two PAs also provide opportunities for the NIB species to increase colonization closer (as for the case of MBSCPL) or deeper (in the case of BNP) into the PA boundaries.

Phenology of the Palanan Forest Dynamics Plot

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Phenology studies of tropical forests in the Philippines are rarely conducted, leaving gaps in information on the biology of various plant species that could be valuable for their conservation. Moreover, flowering and fruiting significantly influence the maintenance of a dynamic forest frequented by natural disturbances. This study monitored phenological events in a hundred 10x10m subquadrats within the 16-ha Palanan Forest Dynamics Plot, established in the lowland dipterocarp forests of the Northern Sierra Madre Natural Park and currently managed by UP Institute of Biology. A total of 5,727 trees were observed twice a month for 14 months; of these, only 492 or 8.59% were recorded as reproductive, comprised of 131 species in 42 families. Meliaceae, Euphorbiaceae, and Moraceae were found to have the highest numbers of reproductive species; the genus *Leea* had the highest number of flowering individuals while *Chisocheton pentandrus* was found to have the highest number of fruiting individuals. Phenological data was also collected for dipterocarps such as *Shorea polysperma*, as the study period apparently coincided with a masting event. Peaks for flowering and fruiting were concurrent in the second quarter (June to August), rather than subsequent as predicted; these community-level seasonal rhythms were observed even for seed output and seedling recruitment. Results reveal only a fragment of the total phenological diversity, emphasizing the importance of long-term studies. Recommendations for seed and seedling collection, however, can now be based on flowering and fruiting schedules of the native species from this study, leading to more organized and effective conservation and restoration efforts.

Plant diversity in the forest ecosystem of Carranglan Watershed, Nueva Ecija, Philippines

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The diversity of plants at the forested areas of Carranglan Watershed was assessed to determine the exploitation and conservation status of the forest ecosystem in Carranglan, Nueva Ecija, Philippines. Plants were collected, preserved, described, identified, and classified. The number and distribution of each species of plants were noted for diversity assessment. Data were gathered using quadrat sampling method at the ten pre-selected stations in Barangay Gen. Luna and the other five were located at Barangay Burgos.

There were a total of 292 plant species in the area, under 91 families where family Moraceae, Myrtaceae, Araceae and Rubiaceae are the most represented families. Trees, shrubs and vines are the most common, with some ferns, mosses, herbs, grasses, sedges and epiphytes. Shannon's Diversity Index showed that the study areas exhibited very high diversity.

There were twenty-five plants which are listed in the IUCN Red List of 2013. Four species belonging to the genus *Shorea* were listed as critically endangered, two of which are endemic to the Philippines. There are also near threatened, endangered, threatened, vulnerable and plants of least concern recorded. Twenty four endemic, 15 introduced and 4 invasive plant species were recorded.

Three species, *Oncosperma horridum* (Griff.) Scheff., *Dinochloa luconiae* (Munro) Merr. and *Radermachera gigantea* (Blume) Miq. could serve as potential biodiversity indicator species in both the study areas due to their high number of individuals, frequency and abundance.

Threats to the ecosystems include fires, timber poaching, kaingin practices, soil erosion, and the post effect of small-scale mining.

Population assessment and morpho-anatomy of Arayat pitogo (*Cycas riuminiana*) at the northwestern slope of Mt. Arayat

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The study on Arayat pitogo (*Cycas riuminiana*), an endemic plant of Mt. Arayat, was conducted to determine the occurrence and distribution as well as its morphological and anatomical features.

Findings revealed that there are thirty-six (36) Arayat pitogo (*Cycas riuminiana*) under the Family Cycadaceae at the upper and mid elevation of the northwestern slope of Mt. Arayat (400 to 830 meters above sea level, in a relatively acidic soil, with substantial amount of organic matter). Based on population analysis, a 100% occurrence was obtained using a purposive sampling method. *C. riuminiana* is less distributed based on density with only 0.008 to 1 individual for every 125m^2.

The morphological and anatomical study of the leaves showed variations among the male and female *C. riuminiana*. Morphological features studied were the leaflets length, lamina width and distance of leaflets while the anatomical features were studied under Scanning Electron Microscope (SEM), showing sophisticated images.

Since *C. riuminiana* is an endemic species of Mt. Arayat, the result of the study can contribute to the understanding of its physiology, reproduction and life cycle, leading to its proper conservation and preservation.

Rapid assessment of sea turtles nesting activity in the Calamianes Group of Islands, Palawan

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All of the world's seven species of sea turtle are on the IUCN Red List and are threatened by a multitude of the anthropogenic threats across all stages of their life history. The Calamianes Group of Islands provides important foraging and nesting grounds for four species of sea turtle. This work aimed to assess marine turtle nesting sites and assess local threats using a combination of key informant / focus group interviews and beach surveys to provide conservation recommendations. The region hosts nesting beaches for both endangered green turtles (*Chelonia mydas*) and critically endangered hawksbill turtle (*Eretmochelys imbricata*). The most important nesting sites were located on the islands off the west of Busuanga and Culion, particularly Pamalican and Galoc and along the north coast particularly Buenavista. Opportunistic hunting and egg collection, particularly by indigenous communities, is the most significant threat to sea turtles in the Calamianes Group of Islands. Sites particularly vulnerable to hunting were found to the west, Nalaut Island, Galoc Island and Pamalican Island and to a lesser extent, Dikabinton and Panlaitan. Raising awareness, community engagement, and understanding of socio-cultural divers of sea turtles exploitation, particularly among indigenous communities are essential to gain support for any effective conservation program. More effective enforcement of laws related to the trade in sea turtle products is required to close the commercial and export markets. Zoning of conservation areas for sea turtles should also take dugong into consideration, since dugong and green turtles (*Chelonia mydas*) share similar foraging habitat.

Revisiting avifaunal diversity of Buguey Wetlands (IBA) in Cagayan Valley, Philippines

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The Buguey Wetlands is one of the Important Bird and Biodiversity Areas (IBA) and a Key Biodiversity Area (KBA) in the Philippines. It is considered as an important staging and wintering area for migratory waterbirds along the East Asia-Australasian Flyway (EAAF). However, Buguey Wetlands is not officially protected and is threatened by conversion of mangroves into fishponds, black-sand mining and hunting. A 1989 Haribon study showed that about 3,000 to 5,000 Philippine Ducks and 3,000 other waterfowl were counted in Buguey. Van Weerd and van der Ploeg (2004) showed that fewer waterbirds and no ducks were observed. Very few studies and little and no management are implemented in this IBA. As part of Arcadia/Birdlife Partnership Fund to monitor threatened migratory species, Haribon together with the Community Environment and Natural Resources Office (CENRO)–Aparri restarted monitoring in Aparri and Buguey in 2015. Out of the 67 species of birds observed during the preliminary monitoring, 41 were migrants. Notable species observed included threatened species such as the Far Eastern Curlew *Nemunius madagascariensis*, Chinese Egret *Egretta eulophotes* and three other species. Several individuals of the endemic Philippine Duck *Anas luzonica* were also observed. At the local level, these data will be essential in establishing a monitoring protocol for the Asian Waterbird Count and as a future Ramsar Site. Further, it will also contribute to the monitoring of threatened migratory species within the EAAF. With enough data, the site may be eligible as a Ramsar site which will ensure its protection and conservation.

Seabird fauna of the Babuyan Channel and adjacent waters, northern Luzon, Philippines

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We present the first comprehensive report of seabirds in the Babuyan Channel, northern Luzon, Philippines. We documented photographic evidence of opportunistic seabird observations during cetacean surveys in this region from 2000 to 2015. A total of 18 species were recorded, of which two species (Arctic Skua *Stercorarius parasiticus*, Long-tailed Skua *Stercorarius longicaudus*) are new country records and a further five species (White-tailed Tropicbird *Phaethon lepturus*, Masked Booby *Sula dactylatra*, Grey Phalarope *Phalaropus fulicarius*, Slaty-backed Gull *Larus schistisagus*, Great Crested Tern *Thalasseus bergii*) are new area records. Four species (Tahiti Petrel *Pseudobulweria rostrata*, Bulwer's petrel *Bulweria bulwerii*, Herring Gull *Larus argentatus*, and Red-tailed Tropicbird *Phaethon rubricauda*) were already documented in earlier papers, bringing the total of documented seabirds in the region to 22. Our results provide novel knowledge on the distribution of some of these species and highlight the importance of the Babuyan Channel to the East Asia-Australasian Flyway. Furthermore, the presence of threatened and near-threatened species such as the Tahiti Petrel, and the documentation of a supposedly locally extinct species (Masked Booby) support the designation of the Babuyan Marine Corridor as a high priority area for conservation and an Important Bird Area in the Philippines particularly since opportunistic hunting of migratory birds have been observed in the community. Extensive surveys in the Babuyan Marine Corridor dedicated to seabirds are recommended to identify more species and to contribute to the knowledge of seabird distribution and migration patterns.

Species composition and status of bats across vegetation types in Mt. Pinamantawan, Sto. Domingo, Lumintao, Quezon, Bukidnon, Philippines

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Information on bats appears unrecorded for Mt. Pinamantawan. Hence, this study was conducted specifically to determine the species composition, and determine distribution of bats across vegetation types of bats. Mist netting was used in sampling. Bats captured were identified based on their morphometry using published keys to the bats species of the Philippine Islands.

Eight (8) species of bats were captured. All belong to family Pteropodidae. No insectivorous species of bats were recorded. Five (5) species were from agroecosystem, dipterocarp, and montane vegetation types. These sites have the same species richness but their species composition varied. Six (6) species were from mossy forest. *Eonycteris robusta*, *Haplonycteris fischeri*, and *Pteropus pumilus* were sampled rare and *Alionycteris paucidentata*, *Cynopterus brachyotis*, *Harpyionycteris whiteheadi*, *Macroglossus minimus*, and *Ptenochirus minor* were common. Furthermore, *E. robusta*, *H. fischeri*, and *H. whiteheadi* are Philippine endemics while *A. paucidentata* and *P. minor* are Mindanao endemics. *C. brachyotis*, *M. minimus* and *P. pumilus* are non-endemic species.

Poster presentations

Species diversity of molluscs inside and outside marine sanctuary of Cebu Technological University, San Francisco, Cebu, Philippines

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Species of molluscs found inside and outside the marine sanctuary of CTU, San Francisco were studied in order to find out the effects of the MPA on its surrounding non-protected areas. There were three areas surveyed: the CTU Marine Sanctuary and two outside areas which are Sitio Pamatasan and SitioTalisay, all found in Northern Poblacion, San Francisco, Cebu. This is made in order to determine the species diversity and their abundance.

Results show that there were 12 species of molluscs found inside the marine sanctuary: 7 species are found in Sitio Talisay and 10 species are found in Sitio Pamatasan. Common species are *Strombus urceus*, *Meretrix meretrix*, and *Anadara antiquata*. All these belong to 15 families which are Strombidae: *Strombus urceus*, *S. (canarium) urceus urceus*, *S. (canarium) labiatuslabiatus*, *S. mutabilis*, Arcidae: *Anadara antiquata*, Veneridae: *Meretrix meretrix*, *Circe scripta*; Mytilidae: *Modiolus philippinarium* Hanley, Cardiidae: *Vepricardium multispinosum*, Pinnidae: *Atrina (servatrina) pectinata*, Nassariidae: *Nassarius (Zeuxis) olivaceus*, Malleidae: *Malleus malleus*, Asaphidae: *Venus (Paphia) euglypta*, Cerithiidae: c.f. *Cerithium (certhium) fusiforme*, Muricidae: *Morula granulate* Conidae: *Conus furvus*, Pteriidae: *Pteria (Pteria) penguin*, Glycymeriididae: *Glycymeris (Veletuceta) reevei* and Costellariidae: *Vexillum plicarium*.

Results further show that there are 5 species of gastropods found inside the marine sanctuary and 7 species of pelecypods. There are 4 species of gastropods and 3 species of pelecypods in Sitio Talisay and there are 5 species of gastropods and 5 species pelecypods in the Sitio Pamatasan.

Results finally show that the most abundant inside the marine sanctuary is *Cerithium cerithium fusiforme* then *Strombus urceus urceus* followed by *Atrina pectinata*. For Sitio Talisay the most abundant is *Strombus urceus urceus* followed by *Strombus labiatus labiatus*. For Sitio Pamatasan the most abundant is *Modiolus phillipinarum* followed by *Strombus mutabilis* and *Anadara antiquata*.

Systematics of Philippine *Uncaria* Schreb. (Naucleeae–Rubiaceae)

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The genus *Uncaria* Schreb. is a member of the tribe Naucleeae (Rubiaceae) recognized for its characteristic lianescent growth habit with paired fang hooks at the nodes. Members of the genus are widely utilized in medicine particularly to perform neuroprotective, antimutagenic, antiherpetic, antineoplastic and immunostimulatory activities. Despite its wide usage, the most recent taxonomic treatment is 40 years old. This study presents a preliminary work on Philippine *Uncaria* species by providing complete taxonomic descriptions and illustrations of the ten recognized Philippine species. The ten species were recollected in the wild to provide clear-cut species delineation and a more natural classification system. Results of this study will provide aid to succeeding researches aimed at exploiting the various medicinal applications of *Uncaria*.

Temporal population analysis of lepidopterans (butterflies species) in the northwestern slope of Mt. Arayat

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The study was conducted to find out if there are fluctuations in the number and kind of butterflies through time as affected by different environmental factors. Specifically it aimed to determine the significant differences of the diversity indices of the identified species of butterflies from 2001 to 2013.

Among the diversity indices, the numbers of individual, density, dominance, and relative frequency have shown significant differences through time. There were more species and individuals of butterflies collected from 2001 than from 2010, 2011 and 2013. *Leptosia nina* was the densest per unit area and the most dominant in 2001 while *Nacaduba subperusa* was the densest and *Hypolimnas bolina bolina* was the most dominant in 2010, 2011. The species having the highest relative frequency were *Papilio rumanzovia* (2001), *Gandaca harina* (2010) and *Melanitis leda leda* (2011). *Leptosia nina* was proven to have the most and highest percentage on diversity indices in 2013. The distribution/occurrence of the butterflies can be highly associated with altitude, humidity, temperature and human-induced activities in time and space.

The malacofauna in monsoonal subzone river in Catubig, Northern Samar

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This study evaluated the macro-mollusk fauna in the main channel of the moonsonally influenced Catubig River spanning from the edge of the rainforest to the mouth of the river. There is a dearth of information on the fauna in the river and this study aimed to provide data that could be useful for management. During the survey period we collected mollusks by hand picking from the study area. Fishermen were also commissioned to collect the macro-fauna. The samples were brought to the laboratory for analysis and identification. A total of fifteen macro-mollusk species belonging to classes Bivalvia and Gastropoda were recorded in the littoral and sublittoral zones. The family Thiaridae had the highest number of species (6 species) followed by family Neritidae with five species. Four species of bivalves were collected belonging to three families. Six species are culturally important in the provision of nutrition to families of part-time fishers. The river is depauperate of malacofauna species which is a typical characteristic of insular streams. However the bivalve species *batissa* locally called "bebe" is commercially important to the rural economy and in the provision of the nutrition of the community. A policy on this fishery must be implemented. Further study on the fauna of the different larger tributaries as well as upriver on a landscape level is necessary to reveal the entire fauna for developing climate proof conservation measures.

Poster presentations

Threatened and endemic plants of Mt. Malarayat, Brgy. Malitlit, Lipa City, Batangas

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Mountain ecosystem assessments are usually based on species or taxonomic groups, structural characters of forest ecosystems and/or biodiversity indicators derived from taxonomic variables. Amidst advanced science tools for species diversity studies, there is really an essential significance of studying forest biodiversity in the light of ecology and taxonomy for promoting the conservation and enhancing biodiversity management especially in urban and urbanizing areas like Lipa City, Batangas. From the study area, all plant species within the 10-meter width (5 meters from each side of the trail) along the more than 2-km BMS transect (approximately 2.3 kilometers) were identified. Height and diameter of trees with diameter of not less than 10 centimeters (>10 cm) were measured. Additional transect surveys as well as opportunistic approach were conducted on other forested areas to account for other species outside the BMS. A total of 264 morpho-species, belonging to the seed plants (Angiosperms and Gymnosperms), ferns and their allies were recorded from the area. The study also revealed that Mt. Malarayat is still home to a significant number of threatened, endemic, and indigenous forest tree species that could contribute to overall health and balance of the city environment. The City's effort through environmental ordinances strengthen conservation and management of these precious resources is the key to biodiversity resilience in a city environment. The quality of the environment depends on how these floral resources be manage and protected against loss and extinction.

Two new tiger beetles of the genus *Thopeutica* Chaudoir, 1861 (Coleoptera: Carabidae: Cicindelinae) from the Philippines

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Tiger beetles (Cicindelinae) are charismatic insects with spectacular appearance, a fascinating biology, and they are important for biodiversity assessment and conservation aspects. This is especially true for the Philippine fauna, with around 140 species, of which more than 90% is endemic. Intense study of material in several European collections revealed several undescribed taxa from the Philippines, including two new species of the riparian genus *Thopeutica* Chaudoir, 1861. One new species is described from eastern Mindanao and most clearly recognized by its adeagal and pronotal characteristics. *Thopeutica* (s.str.) *boettcheri* Cassola & Ward, 2004 is recognized to consist of two distinct subspecies from Mindoro, and from Luzon, respectively, that clearly differ by morphometric characteristics.

Utilizing molecular techniques (phylogenetic reconstruction and DNA barcoding) to resolve complexities of *Hedyotis-Oldenlandia* group (Spermacoce: Rubiaceae) in the Philippines

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The *Hedyotis-Oldenlandia* complex is one of the most enigmatic groups in the family Rubiaceae because of the wide range of morphological diversity and conflicting generic limitations. Recent molecular phylogenetic study identified 13 well-supported monophyletic groups across the *Hedyotis-Oldenlandia* complex but with no Philippine representatives included. The present study focused in collecting Philippine taxa from this complex and resolved their taxonomic placement. Twenty-six plant samples belonging to 21 taxa were collected from Surigao, Samar, Leyte, Antique, Ilocos Norte, Quezon, and Mindoro. Bayesian and Maximum Likelihood analyses of the combined ITS, *pet*D, and *rps*16 datasets were used to reconstruct the phylogeny within the tribe. Morphological and molecular analyses support the taxonomic placement of the endemic *H. atropurpurea*, *H. longipendiculata*, *H. microphylla*, *H. papafranciscoi*, *H. pilossisima* in the *Hedyotis* s. str. clade along with *Hedyotis exilis* comb. nov. and the reinstatement of the nomenclatural names: *Hedyotis buruensis*, *Hedyotis yoderi*, and *Hedyotis apoensis*. The potential application of plastid (*trn*H-psbA, *rps*16, and *pet*D) and nuclear (ITS) barcodes were also investigated for 12 Philippine taxa within the *Hedyotis* s.str. clade. PCR and sequencing success for the four regions for 19 plant samples was highest in *rps*16 (94.73%) followed by ITS and *trn*H-*psb*A (89.47%). Wilcoxon two-sample test shows that there are significant differences between the interspecific and intraspecific divergences of all the markers utilized. Wilcoxon signed rank test supports the efficiency of ITS for discrimination since it gave the highest inter-specific divergence among the markers. This study provides the first comprehensive investigation on the Philippine *Hedyotis-Oldenlandia* complex.

Weed inventory in three selected Polytechnic University of the Philippines (PUP) campuses in National Capital Region (NCR)

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Weeds can be defined as undesirable plants that can damage the natural environment and degrade ecosystems. Sufficient knowledge is necessary in controlling weeds to further prevent the introduction of new invasive weeds. Thus, this study was conducted to represent a weed inventory from the three selected PUP campuses in NCR. Hence, it aimed to identify, describe and classify the weeds in the study site. In this study, collected weed specimens were dried and preserved, the seed specimens were also gathered to describe its morphological character. The collected plant specimens were documented in terms of their habit, morphology of the vegetative parts, morphological characteristics of its seeds and its seed type. The occurrence of weeds was also plotted from the obtained map of the study site. The study showed that there were 58 weed species collected in PUP Sta. Mesa that belong to 23 families with 42 genera. In PUP Commonwealth, there were 41 species with 38 genera belonging to 22 families, whereas in PUP Taguig, 30 species with 27 genera belonging to 17 families were collected. Results showed that families Poaceae, Cyperaceae and Asteraceae dominated the sampling areas, and 28 native species and 35 non-native species were recorded.

Why is the Forest Management Unit essential to the MinSCAT forest reservation?

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Mindoro State College of Agriculture and Technology (MinSCAT) – Main Campus

Field surveys were undertaken at the Mindoro State College of Agriculture and Technology (MinSCAT) – main campus' forest reservation and the National Greening Program (NGP) site, on June 2014 as part of the Forest Management Unit Planning Course facilitated by USAID B+Wiser and the Department of Environment and Natural Resources (DENR). This paper reports only the results of the field inventory at the forest reservation site which is considered to be one of the flora and fauna havens of Mindoro Island.

The MinSCAT forest reservation area is covered with dense secondary forest which is a mix of dipterocarp and molave forest. The forest is characterized by trees of the co-dominant layer with only few trees in the dominant stratum with observed non-timber forest products growing in the area. The area serves as habitat for wildlife. Endangered species recorded include Jade vine and several frog species. Other wildlife observed in the area include the Tarictic Hornbill, Yellow-vented Bulbul, orioles, Philippine Macaque, monitor lizards, wild pigs, Mindoro Forest Mouse (*Apomys* sp.), *Gecko gecko*, bangkalang (*Mabuya indeprensa*), frogs including common forest tree frog, bayuko and jungle fowl.

The forest also serves as a major water source for MinSCAT, has eco-tourism potential, serves as an educational-recreational zone, a natural barrier against typhoons coming from the east, and is considered a seed bank for producing indigenous tree seedling material for the College.

These data are essential for the conduct of further relevant researches among teachers and students and could provide avenues for conservation efforts, management strategies and environmental advocacies.

A preliminary assessment on the herpetofaunal diversity of the Taal Volcano Protected Landscape (TVPL), Batangas, Philippines

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The Taal Volcano Protected Landscape (TVPL) encompasses a prehistoric volcano caldera that caters to many documented endemic species. Although regarded as a unique area with the potential to house a diverse ecological community, biodiversity research in TVPL is still found wanting. A testament to this is the scarce information on the biodiversity of many floral and faunal representatives, with only limited research focused on aquatic faunal species. The present paper aims to provide baseline information and increase research interests on the herpetofaunal diversity of TVPL, in light of its many undocumented terrestrial faunal species. We provide detailed accounts of amphibians and reptiles encountered in nine study sites within the municipalities of Tanauan, Mataasnakahoy, and Balete during survey trips from May to November 2015. A combination of transect and opportunistic sampling techniques were utilized, wherein a total of 19 species were detected. We documented a total of 10 frog species (from families Bufonidae, Ceratobatrachidae, Microhylidae, Dicroglossidae, Ranidae and Rhacophoridae) and 9 reptile species (from families Acrochordidae, Colubridae, Agamidae, Gekkonidae, Scincidae, and Varanidae) and recorded morphometric data and sexual maturity. Of the 9 reptiles recorded, 3 are endemic species and widespread throughout the Philippines: *Gekko mindorensis*, *Hydrosaurus pustulatus*, and *Varanus marmoratus*. We also recorded Philippine endemic frogs *Kaloula picta* and *Limnonectes woodworthi* along with the Luzon endemic *Platymantis mimulus*.

Abundance and distribution of imbao (*Anodontia edentula*) in the mangrove forest of Barangay Dapdap, Tarangnan, Samar

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This study aimed to determine the abundance and distribution of mud clam, locally named Imbao (*Anodontia edentula*) in the mangrove mud flats of Barangay Dapdap Tarangnan, Samar. The researchers gleaned the mud clams for every 10 meters of the 100-meter transect line that served as stations. There were three stations established with 50 meters distance in a total area of one hectare. The mud clam's population was counted and the variance was determined using analysis of variance (ANOVA), and found that there is significant difference among the means of the three stations. Likewise, biostatistics calculated the diversity of species using Shannon-Weiner (H=1.88) indicated that there is high diversity with 13 recorded species and Simpson's Diversity Index (D=0.56) showed that there is infinite diversity from station one to three and relative abundance of 85 (or 37.28% of the total species) from the collected quadrat samples. Informal interviews among fishers were also conducted. Overall, the findings of the study will shed light to the fishers to properly manage their resources.

Poster presentations

Abundance and habitat selection of cavity-nesting birds in different habitat types of Mt. Kanlaon Natural Park, Negros Island, Philippines

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Abundance and habitat selection of cavity-nesting birds were determined for different habitat types in Mt. Kanlaon Natural Park (MKNP) from May 18 to June 2, 2015. The abundance of four primary and six secondary cavity-nesting birds were estimated in 22.5 transect lines using a combination of Line Transect and Point Count Method. Assessment of habitat and potential nest cavities were done in 438 30x30 meter plots. Seven of the ten species identified in the area were endemic. Primary montane forest housed the most number of individuals which accounts for 35% of the total. In general, the most abundant tree-nesting species in MKNP is Coleto *Sarcops calvus*. The most abundant species in primary and secondary montane forest is *S. calvus*, in secondary lowland forest and plantation habitat is Coppersmith Barbet *Psilopogon haemacephala* and in mixed forest habitat is Mangrove-blue Flycatcher *Cyornis rufigastra*. Secondary lowland forest housed the most number of endemics. The endangered species *Penelopides panini* and Yellow-faced Flameback *Chrysocolaptes xanthocephalus* were recorded in primary montane and secondary montane and lowland forest habitat. Statistical analyses showed that elevation, tree DBH, woody vine percentage, canopy cover percentage, tree height, standing dead tree, lying dead wood, understory layer height and disturbance were significant to the occurrence and abundance of the species. Major threats surveyed in the area were hunting, illegal tree cutting and charcoal production. Generated data from this study will be used as basis to strengthen the conservation management and programs of MKNP.

UNDERGRADUATE

Age determination and body length relationship of Two-spot red snapper (*Lutjanus bohar*) F. Lutjanidae

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Two-spot red snapper (*Lutjanus bohar*) is one of the most commonly fished coral reef fishes in the Philippines. Despite the existing fishing pressure to its population, *L. bohar* remains unevaluated by the International Union for Conservation of Nature (IUCN). The age and body-length relationships of *L. bohar* individuals were determined using linear regression and the age-at-length data was fitted to von Bertalanffy Growth Function (VBGF). Length-weight relationships showed that *L. bohar* follows isometric growth (b=3.0015). The somatic and otolith morphometrics showed significant correlations where otolith length obtained the highest R2 value (R2=0.9382). This means that changes in otolith size are related to somatic growth. Twenty-one otoliths were successfully aged ranging from three to seven years old. The age-at-length data fitted to VBGF showed that the first three to four years marks rapid growth. Moreover, *L. bohar* mature approximately at six years old, which is younger compared to *L. bohar* studies in temperate regions. The decline in age-at-maturity may be attributed to warmer water temperature as fishes grow faster in warmer conditions. However, the age truncation is accompanied by decrease in size and this is most likely a compensatory response of the *L. bohar* population in Davao Gulf due to overexploitation.

An inventory of Philippine Rubiaceae in Balangkayan, Eastern Samar

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Rubiaceae family contains the largest number of indigenous species of flowering plants in the Philippines. Since the inventory of the Philippine Rubiaceae and the country's flora as a whole is still incomplete, a floristic inventory of the country's forests is of vital importance. This study provides an inventory of the Rubiaceae present in Mt. Abaca, Brgy. Magsaysay and Minasangay Conservation Island in Balangkayan, Eastern Samar. A total of 32 plant species representing 17 genera including the two Philippine endemic Rubiaceae genera, *Antherostele* and *Greeniopsis* were identified. Seven endemic species were recorded to be present in the two sites studied in Balangkayan namely *Greeniopsis discolor*, *Neonauclea jagorii*, *Ixora bartlingii*, *Wendlandia luzoniensis*, *Timonius philippinensis*, *Antherostele grandistipula*, and *Tarenna luzoniensis*. Of these seven endemic species, only *Greeniopsis discolor* and *Antherostele grandistipula* are included in the list of the Department of Environment and National Resources considered as Other Wildlife Species (OWS) and Vulnerable (VU) species, respectively.

Anuran microhabitat preferences in five selected habitat types in Mt. Kanla-on Natural Park, Negros Island, Philippines

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Study on the microhabitat of anurans was conducted in Mt. Kanla-on Natural Park (MKNP). Line transect and visual encounter surveys were conducted in five different habitat types: primary forest, secondary forest, plantation, mixed forest, and riparian. A 5x5 meter plot was established wherever anurans were seen in each habitat types for microhabitat assessment. While Shannon-Wiener Index showed that the riparian habitat has the highest diversity of anurans (H=1.27), their diversity along the five habitat types were not significantly different using One-way ANOVA. A total of 1,060 individuals belonging to six families and ten species were recorded. *Platymantis dorsalis* was the most abundant species in all habitat types. Three threatened species were recorded in the area, namely, *Platymantis hazelae* which is endangered in status, *Philautus* sp. and *Limnonectes visayanus* which are considered vulnerable. Seven out of ten species of anurans were observed to inhabit Type IV: Ground dwelling microhabitat and this is also the most abundant microhabitat in MKNP. Of the ten microhabitat variables, only tree density, leaf litter cover, rocks, ferns, relative humidity, and water pH have a significant correlation with anuran species. Existing local threats to the anurans are the geothermal power plants, trashes which mostly seen in streams, overexploitation, and deforestation. This study shows anuran status and will contribute to the greater understanding of their conservation as well as knowledge of anuran diversity in MKNP. The gathered data will also serve as basis for formulating guidelines and policies in managing MKNP and wildlife inhabitants.

Application of multiple molecular data in the phylogeny and barcoding of the Philippine Vanguerieae (Rubiaceae) including two new species and a combination

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The availability of molecular data for plants has provided more robust phylogenies, better resolution of major lineages, and an ideal barcode for species identification within a particular group. Recent molecular studies of Vanguerieae (Rubiaceae) revealed the polyphyly of the genus *Canthium* Lam. Subsequently, the genus was restricted to include species possessing spines causing the transfer of several species to other genera such as *Afrocanthium* (Bridson) Lantz & Bremer, *Keetia* Philipps, *Psydrax* Gaertn. and *Pyrostria* Comm. ex Juss. In the Philippines, five of the 20 Philippine *Canthium* species were transferred already to either *Psydrax* or *Pyrostria*.

For a continuing study in Philippine *Canthium*, we collected more species to resolve taxonomic questions, molecular phylogeny, authentication and preliminary phytochemical screening of an endemic species. As a whole, we proposed two new species (*Pyrostria cuspidata* and *P. luzonensis*) and a new combination in *Pyrostria*. The barcoding analysis of 16 Philippine Vanguerieae taxa showed that the Internal Transcribed Spacer is a good barcode for the Philippine Vanguerieae with *trnH-psbA* as a supplemental barcode. Lastly, the Philippine endemic *Psydrax puberula* is a promising source of bioactive compounds due to its inhibitory and bactericidal activities against microbial organisms.

UNDERGRADUATE

Behavioral patterns of tree-climbing mangrove sesarmid crabs in Barangay 69-Anibong, Tacloban City, Philippines

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Sesarmid crabs play a significant role in the ecological balance of the mangal forest. In the Philippines, they have not been investigated extensively despite studies conducted in other countries. Evidently after super typhoon Yolanda, the diversity of these organisms had declined together with the perturbation caused by the typhoon. Identifying the recent status and describing their behavioral patterns would serve as baseline data for profiling the existing tree-climbing sesarmid crabs in Brgy. 69-Anibong, Tacloban City.

Three weeks of surveillance from 6:00–9:00am and 6:00–9:00pm showed six different species of tree-climbing sesarmid crabs. Behavioral patterns such as feeding preferences, hiding mechanism, and climbing behaviors in relation to tidal patterns were revealed.

Biodiversity analysis, species composition and soil correlation of seagrass along the intertidal zone of Maasim, Sarangani Province, Philippines

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This study was carried out as an intensive sampling survey in the intertidal zone of Maasim, Sarangani Province, Philippines. The study aims to determine the species diversity, composition and correlation with soil. Fifty quadrats in the 100m^2 area were laid perpendicular to the shore with a dimension of 1m x 1m at 20 meter distances. The biodiversity indices were defined using species richness, abundance, dominance, Shannon's diversity and evenness, and were given values through PAST software. The statistics on soil particle size and Shannon's diversity were correlated to figure out biotic and abiotic relationships. Soil samples were collected at 2 kilograms for each sampling plot and underwent granulation analysis for soil grain characteristics. The study reveals the diversity attributes for the species and identified seven seagrass species diversified in the site. There were numerically 5,860 found species composition among the plots where; 4 species identified: *Cymodocea rotundata*, *Halodule pinifolia*, *Halodule uninervis*, and *Syringodium isoetifolium* in the family of Potamogetonaceae while in the family of Hydrocharitaceae were also 4 species: *Enhalus acoroides* (the most abundant species), *Halophila minor*, *Halophila ovalis*, and *Thalassia hemprichii*. Very coarse sand has the most abundant soil particle type in the site. The observed seagrass species in relation to soil particle size was also known. Using Pearson's correlation coefficient (r) the correlation of soil types to Shannon diversity revealed values where there was positive and negative correlation to each soil type and sampling site.

Correlation of soil and mangrove diversity in selected sites of Alabel and Maasim, Sarangani Province, Philippines

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The diversity attributes of each sampling plots in Sarangani Province indicates the mangrove's ecosystem condition. This study aims to determine the soil particle size and correlate it with the biodiversity attributes in two sampling sites of Sarangani Province, Philippines. Sampling plots (10 m x 10 m) were established into coastal, middleward, and landward. Different mangrove species were identified, counted and the data were used to compute the biodiversity attributes. Mangrove's biodiversity indices were determined using species richness, abundance, dominance, evenness, and Shannon's diversity. Soil samples were collected at each sampling site and the particle size analyzed. The data on soil particle size and Shannon's diversity were correlated to establish biotic and abiotic relationships. The results show that twelve mangrove species were identified having *Sonneratia alba* as the most abundant species. The sampling site in Alabel has higher diversity attributes compared to Maasim. Gravel has the most abundant soil particle type in the two sites. The observed mangrove species in relation to soil particle size was also known. Using Pearson's correlation coefficient (r) the correlation of soil types to Shannon diversity was analyzed. The results show that there is a positive and negative correlation to each soil type and sampling sites.

Determination of mercury (Hg) and cyanide contamination in IR 64 Rice (*Oryza sativa*), selected aquatic plants, soil and water in small scale gold mining tributaries in Barangay Sta Cruz, Rosario, Agusan Del Sur: a threat to environment

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Mining is one of the livelihoods of the marginal sector in Agusan del Sur, specifically in the mountainous areas like the municipality of Rosario which is located in the middle part of the said province. This study was conducted to determine the mercury (Hg) and cyanide contamination in IR 64 Rice (*Oryza sativa*), selected aquatic plants, soil and water samples at 12 sampling sites of the small-scale gold mining tributaries in Barangay Sta Cruz, Rosario, Agusan del Sur. The collected samples underwent testing using Cold-Vapor Atomic Absorption Spectrophotometer to determine the mercury and cyanide content.

Results showed that the mercury content in soil sample from D1-Upstream has the highest mercury content with 22.50 ug/g followed by mercury content in IR 64 Rice (*Oryza sativa*) which is 14.79 ug/g and 0.02 ug/g in water (B3-Downstream) respectively. The highest level of cyanide-free is detected at sampling site D1-upstream, which is 0.425 ug/g near the processing plant, higher than the standard background concentration set by US Environmental Protection Agency (EPA), which is 0.2 mg/g. The highest cyanide-free in IR 64 Rice (*Oryza sativa*) is 0.045 ug/g while aquatic plants is 0.045 ug/g (swamp cabbage) at A3-Downstream.

The mercury content in the soil samples manifest that mercury contamination in twelve sampling sites in barangay Santa Cruz, Rosario, Agusan del Sur is above the standard background concentration (0.15 ug/g) and threshold concentration level of 0.5 ug/g and considered as polluted soil. The aquatic plants and rice samples of mercury content is above the US Food and Drug Administration (US FDA) standards which is 0.1 ug/g, considered contaminated plants and needs further analysis for food consumption by humans. The water sample of mercury is within the US Food and Drug Agency (US FDA) which is 2 ug/g. The researchers recommend conducting further studies on mercury and cyanide monitoring for a long period of time and space and to compare these results from different time periods.

UNDERGRADUATE

Distribution and habitat preferences of restricted-range bird species in Mount Kanlaon Natural Park (MKNP), Negros Island

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A study on the distribution and habitat preferences of restricted-range bird species in Mount Kanlaon Natural Park (MKNP), Negros Island was conducted from May 18 to June 2, 2015. A total of 48 1-km transect lines were established and surveyed using a combination of Line Transect Method and Point Count Method. For the habitat assessment, a total of 567 30x30 meter circular plots were selected. Eight species of restricted-range birds were encountered in MKNP. Four species, *Penelopides panini* (Visayan Tarictic Hornbill), *Dasycrotapha speciosa* (Flame-templed Babbler), *Stachyris nigrorum* (Negros Striped-babbler) and *Chrysocolaptes xanthocephalus* (Yellow-faced Flameback), are all classified as Endangered by IUCN. Seven species of the restricted-range bird species were recorded in secondary lowland forest, six species in the secondary montane forest, six species in mixed forest, five in plantation and four in primary forest habitat. Restricted-range bird species were mostly found in lower elevation (500–800 m above sea level). There are seven habitat variables which are significant to the occurrence of the restricted-range bird species in the area. Canonical Correspondence Analysis shows that habitat variables such as woody vine percentage, elevation and understory layer height affect the abundance of the restricted-range birds in MKNP. Moreover, there are several threats that affect the avian community in MKNP: hunting, timber poaching and charcoal making. Increasing forest patrolling, strengthening the conservation program on restricted-range birds particularly the endangered species and strictly implementing the policies in the protected area can help protect the restricted-range birds of MKNP.

Distribution, abundance and diversity of reptiles in Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on the distribution, abundance and diversity of reptiles in Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines was conducted last May 18 to June 2, 2015.The study area consisted of six habitat types in which all but the secondary mossy forest was recorded to be inhabited with reptiles. A total of 107 individuals belonging to 23 species were recorded. Fifteen species (62.5%) are endemic. The two species, *Hydrosaurus pustulatus* and *Tropidonophis negrosensis*, are classified as Vulnerable by IUCN. Results show that most of the species were found in secondary lowland forest (31%) and plantation (30%). *Parvoscincus steerei* and *Calamaria* cf. *bitorques* showed the widest altitudinal distribution. The number of species is greatest in habitat types with low elevation. Reptilian diversity decreases with increase in elevation. Overall relative abundance showed that *P. steerei* is the most abundant species. It was also the most distributed species across habitat types. The secondary lowland forest showed the highest reptilian diversity (H'=2.228). Comparison on species richness shows that MKNP has more species than Northern Negros Natural Park. *P. steerei* and *T. negrosensis* were recorded in both protected areas. Despite having the status of a protected area, threats such as charcoal production, illegal hunting and illegal logging are still observed in MKNP. Data from this study can be utilized in the formulation of measures to address the threats that endanger the reptilian community in the area and to update the existing list for reptiles.

Distribution, abundance and habitat preference of doves and pigeons in Mt. Kanlaon Natural Park, Negros Island

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Distribution, abundance and habitat preference of doves and pigeons were studied in Mt. Kanlaon Natural Park (MKNP) from May 19 to June 2, 2015. A total of 22.5 km transects were surveyed using Line Transect and Point Count Methods. For habitat assessment, a total of 488 30x30 meters circular plots were selected. Results show that eight species of doves and pigeons were present in MKNP of which four species are Philippine endemic. The Pink-bellied Imperial Pigeon (*Ducula poliocephala*)—a Near Threatened species, Green Imperial Pigeon (*Ducula aena*) and Emerald Dove (*Chalcophaps indica*) are known to have a decreasing population. Doves and pigeons were mostly distributed in all habitat types and elevations. Doves and pigeons were most abundant (39%) in the primary montane forest. Forest areas situated between 1200–1800 masl held the most number of species. The Buff–eared Brown Dove (*Phapitreron nigrorum*) was the most abundant species of doves in MKNP. The Yellow-breasted Fruit Dove (*Ptilinopus occipitalis*) was the most abundant in primary and secondary forest at higher elevation. Multiple Logistic Regression shows that primary and secondary type of forest were significant for the presence of most doves and pigeons. Furthermore, trees are found out to have large effect to the occurrence of *P. nigrorum* especially those trees with heights >21 meters. Illegal hunting, charcoal manufacturing and illegal logging were observed in the protected area. Strict monitoring of the area with further implementation of rules and regulations for the conservation of birds in MKNP must be done and observed.

Poster presentations

Distribution, abundance and habitat requirements of Luzon Hawk-owl (*Ninox philippensis*) and Visayan Scops-owl (*Otus nigrorum*) of Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on distribution, abundance and habitat requirements of Luzon Hawk-owl (*Ninox philippensis*) and Visayan Scops-owl (*Otus nigrorum*) was conducted in different forest types of Mount Kanlaon Natural Park (MKNP) of Negros Island from May 19 to June 2, 2015. Seventy-five nocturnal transect points were made with the use of playback method and 75 30x30 meter circular plots were used for habitat assessment, with 250 meters gap between points. A total of 99 *N. philippensis* and 11 *O. nigrorum* individuals were recorded. Primary montane forest had the most number of recorded *N. philippensis* (28 individuals), while secondary montane forest had the highest number of *O. nigrorum* (five individuals). In plantations, 20 individuals of *N. philippensis* and two individuals of *O. nigrorum* were detected, which means that the plantation area provides a temporary habitat for these Vulnerable species. *N. philippensis* was recorded between 524 masl and 2,035 masl while *O. nigrorum* was observed from 571 masl to 1,326 masl. Logistic Regression Analysis showed that elevation and trees with DBH 15–50cm were significant to the occurrence of *N. philippensis* and only elevation for *O. nigrorum*. As elevation increases, the number of detected individuals for both owl species decreases. Information gathered from this study provides important ecological information for species habitat protection and for the development of the management plan of MKNP.

UNDERGRADUATE

Diversity and abundance of canopy birds along a habitat gradient in Mount Kanlaon Natural Park (MKNP), Negros Island

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A study on the diversity and abundance of canopy birds was conducted along a habitat gradient at Mount Kanlaon Natural Park (MKNP) on Negros Island from May 19 to June 2, 2015. Line Transect and Point Count Methods were used to survey the birds in five different habitat types: primary montane forest and secondary lowland in Bago City; plantation, secondary lowland and mixed forest in municipality of Murcia; and secondary montane forest in La Carlota City. Twenty-two (22) 1-km transects were established along a habitat gradient in MKNP. A total of 1,714 individuals were recorded which comprise 44 species of canopy birds. Twenty-nine (29) species are Philippine endemic. Three species were listed as Endangered which include the Visayan Tarictic Hornbill (*Penelopides panini*), the Yellow-faced Flame-back (*Chrysocolaptes xanthocephalus*) and the Negros Striped Babbler (*Stachyris nigrorum*). Three Vulnerable species were recorded namely the Philippine Hawk Eagle (*Spizaetus philippensis*), White-winged Cuckoo-shrike (*Coracina ostenta*) and Visayan Flowerpecker (*Dicaeum haemastictum*). The Pink-bellied Imperial Pigeon (*Ducula poliocephala*), which is a Near Threatened species, was also recorded. Primary montane forest had the highest species richness with 31 species recorded. Secondary lowland forest had the highest diversity with a Shannon-Weiner's diversity index value of 2.84 and Simpson's diversity index value of 0.9184. The Mountain White-eye (*Zosterops montanus*) was the most abundant species with 369 (22%) individuals. Hunting and deforestation were the major threats to the canopy birds of MKNP. Regular monitoring in MKNP is highly recommended to preserve, protect, promote awareness and to ensure survival of these birds.

Diversity and abundance of frogs in different habitat types in Mount Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on the diversity and abundance of frogs was conducted in different habitat types in Mount Kanlaon Natural Park (MKNP) in Negros Island from May 19 to June 2, 2015. The surveyed habitat types include the primary forest, secondary forest at higher elevation, secondary forest at lower elevation, mixed forest and plantation. Using the Line Transect Method, five 1.2-km transects were surveyed. Results show that the secondary forest at higher elevation was the most diverse (H'=1.373) among the five habitat types. A total of 14 species of anurans were recorded in MKNP. The endangered *Platymantis hazelae* and vulnerable *Limnonectes visayanus* were recorded in the area. Ten species were found in the primary forest (n=266), nine species in the secondary forest at lower elevation (n=386), seven species in the mixed forest (n=138) and six species in the plantation (n=208). Eight species of anurans are Philippine endemic. The primary forest habitat type had the highest number of endemic species with seven species present. *Platymantis dorsalis* was the most abundant species with a total number of 794 individuals. Major threats to the frogs in the area were deforestation, improper waste disposal and agricultural land conversion. Regular monitoring in MKNP to reduce occurrence of illegal activities is highly recommended. The data gathered will serve as basis for the formulation and strengthening of conservation measures in MKNP.

Diversity and abundance of understory birds along a habitat gradient in Mount Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on the diversity and abundance of understory birds in five different habitat types in Mount Kanlaon Natural Park (MKNP) was conducted from May 19 to June 2, 2015. Line transect method (22 1-kilometer transects) was used to survey the understory birds of MKNP. For habitat assessment, a total of 450 points were measured for habitat variables using 30x30 meter circular plots. Twenty-four understory bird species were recorded (n=505 individuals) of which, seven species are endemic to the Philippines. Results show that the mixed forest was the most diverse (H'=2.331) among the five habitat types. Fourteen species (n=196) were found in primary montane forest, sixteen species (n=65) in mature secondary lowland forest, 16 species (n=126) in mature secondary montane forest, 14 species (n=71) in mixed forest, and 13 species (n=47) in plantation. The *Rhipidura cyaniceps* was the most abundant with a total of 99 individuals observed. Among the recorded 24 species, one is classified as Endangered, the *Dasycrotapha speciosa*. Illegal logging, charcoal production and bird hunting done in the area were observed as threats to the understory birds. Regular monitoring against illegal activities is recommended. The data gathered will serve as basis for the formulation of conservation measures on understory birds as well as for the development of the management plan of MKNP.

Poster presentations

Diversity in the slow lane: preliminary report on the terrestrial gastropod fauna of Albay

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Diversity of terrestrial gastropods in the Bicol Peninsula especially in Albay Province was poorly studied as compared to their marine counterpart. To fill this gap, it is our aim to document the diversity of terrestrial gastropods in Albay Province. This study constitutes the first faunal report on the terrestrial gastropods of forested areas in Albay. A total 14 species of terrestrial gastropods belonging to the genera *Helicostyla*, *Calocochlia*, *Ryssota*, *Hemitrichiella*, *Achatina*, *Cyclophorus*, *Leptopoma*, *Obba*, *Moulinsia*, and an unidentified *Ariophantid* genus representing the families Bradybaenidae, Helicarionidae, Achatinidae, Cyclophoridae, Camaenidae, Pupinidae, and Ariophantidae were documented. This report also represents the new island record for *Moulinsia aurantia* (Grateloup 1840) and a probable new species of *Ariophantid* semi-slug. It is recommended to conduct further assessment of terrestrial gastropods especially in forested areas of Albay to properly document these interesting taxa and implement conservation efforts.

UNDERGRADUATE

Diversity, abundance and habitat selection of frugivorous birds in Mt. Kanlaon Natural Park, Negros Island, Philippines

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Diversity, abundance and habitat selection of frugivorous birds were studied in five habitat types in Mt. Kanlaon Natural Park (MKNP) using a combination of Point Count Method and Line Transect Method. A total of 22 1-km transects were surveyed from May 19 to June 02, 2015. A total of 438 30x30 meter plots were selected for habitat assessment. Results show that a total of 20 frugivorous bird species were present in MKNP of which 12 species are Philippine endemic. Two species are Vulnerable (*Dicaeum haematosticum* and *Coracina ostenta*) and one species is Endangered (*Penelopides panini*). The habitat with the highest frugivorous bird diversity was secondary montane forest (H'=2.194; D=0.8507). The most abundant species was *Ixos philippinus*. Six genus of fruiting trees were identified to be the possible food source of frugivorous birds with *Ficus* sp. as the most common. Logistic Regression Analysis shows that tree density, diameter at breast height (DBH) and canopy cover were significant to the occurrence of *Dicaeum bicolor* while DBH was significant to *Prioniturus discurus*. Also, *Phapitreron nigrorum* was most likely to be attracted to lower elevation. *Sarcops calvus* was influenced by trees with height >10m, flowering trees and increased number of fruiting trees and tree height. Lastly, elevation and canopy were correlated to the occurrence of *Ramphiculus occipitalis*. Logging, charcoal production and bird hunting were identified to be threats to the birds in the protected area. Increased forest patrolling in order to protect all the birds in the area is highly recommended.

Diversity, abundance and habitat selection of leaf litter herpetofauna in Mt. Kanlaon Natural Park, Negros Island, Philippines

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A study on the diversity, abundance and habitat selection of leaf litter herpetofauna in six different habitat types of Mt. Kanlaon Natural Park was conducted on May 19 to June 2, 2014. Using the line transect method and pitfall trapping, a total transect length of 16.4 km and 11 pitfall traps were established. For the habitat assessment, 164 10 x 10 meter circular plots were selected. A total of 727 individuals belonging to 18 species of forest floor dwelling herpetofauna were recorded. Twelve species are Philippine endemic (66.67%). The most abundant species which dominated the five habitat types is the *Platymantis dorsalis* (72.5%) which indicates that this is a generalist and a highly adaptive species. New altitudinal limits were recorded for the species *Calamaria* cf. *bitorques* (618–1,482 masl) and *Sphenomorphus* cf. *jagori* (1,139–1,209 masl). Lowland plantation had the highest herpetofaunal diversity (H'=1.078) while the primary forest had the lowest herpetofaunal diversity (H'=0.519). Logistic Regression Analysis shows that elevation was highly significant to the occurrence of *Eutrophis indeprensa* and *P. dorsalis* ($p = 0.000$) and the buttress roots percentage for the occurrence of *Platymantis corrugatus* ($p = 0.015$). Existing local threats observed were forest land conversion into agricultural area and charcoal production. Mt. Kanlaon Natural Park is home to endemic and threatened leaf litter herpetofaunal species and as such, data from this study should be utilized to promote biological conservation and proper management of the natural park for the effective protection of the leaf litter herpetofaunal species.

Entomofauna of Bicol Kalikasan Park, Legazpi City, Albay

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Presence of insects has long been recognized as a factor that characterizes the dynamic state of ecosystem health. As bioindicators taxa, their highly sensitive nature gives us insight and warning on ecosystem health fluctuation. This paper aimed to provide the baseline data on the insect fauna and ecological status of Bicol Kalikasan Park. Collection was done using sweep netting, opportunistic collection via hand picking, and pitfall trapping. A total of 94 families belonging to 14 insect orders were documented from December 11, 2015 to January 10, 2016. This high number of documented insect taxa can be attributed to multi-cropping system by the inhabitance in the area, which combined with agroecosystem creating an entomofaunal admixture. Due to increasing human settlement, the ecological status of Bicol Kalikasan Park can be inferred as disturbed. This claim can also be supported by observed increase on the population of anthropogenic taxa such as *Periplaneta* sp., *Phormia* sp., *Calliphora* sp., *Musca* sp., *Aedes* sp., *Solenopsis* sp.

Poster presentations

First phylogeny of Philippine *Ophiorrhiza* L. (Opphiorhizeae–Rubiaceae) inferred from multiple sequence data with accounts of two new species

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Ophiorrhiza L. is a complex genus in the family Rubiaceae with a high endemicity in the Philippines (29 out of 31 species recorded) recognized for having helicoid cymes and dry rhomboidal fruits. No worldwide treatment of the genus was ever attempted despite its wide use in medicine, particularly in cancer treatment. This is due to (1) its taxonomically complex nature owing to its high morphological variability and homogeneity and (2) the great number of its members. In this preliminary systematic work of Philippine *Ophiorrhiza*, the molecular phylogeny within the genus was inferred through Bayesian inference and Maximum Parsimony (MP) of combined ITS, rbcL and rps16 datasets. Results of this study support the monophyly of the genus *Ophiorrhiza* (PP=1.00, BS=90) and revealed two subclades. Subclade A (PP=0.99, BS=88) are comprised of species having axillary inflorescence position, caducous stipules and glabrous stems while subclade B (PP=0.95, BS=98) are comprised of species having terminal inflorescence position, persistent stipules and with pubescent stems. Two new species are here proposed as *Ophiorrhiza malinaoensis* sp. nov., recognized by its cupuliform corolla lobe shape, linear lanceolate leaves and brownish red when dry, and *Ophiorrhiza amplistipula* sp. nov., characterized by its long stipules and entirely pubescent organs.

UNDERGRADUATE

Habitat association of reptiles in Mt. Kanlaon Natural Park (MKNP), Negros Island, Philippines

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A study on the habitat association of reptiles in Mt. Kanlaon Natural Park (MKNP) was conducted from May 18 to June 2, 2015 in different habitat types: primary forest, secondary montane forest, secondary mossy forest, secondary lowland mixed forest and plantation. Using Line Transect Method, a total of 84 100-meter transect lines were established. Pitfall trapping was also employed. For the habitat assessment, 223 20x20 meter plots were selected. A total of 24 species of reptiles were recorded in MKNP. *Parvoscincus steerei*, the most abundant with 36 individuals, was recorded in five habitat types. No reptile was recorded in the secondary mossy forest. Statistical analyses showed that elevation, air and soil temperatures are significant factors for the occurrence and abundance of reptiles. Percentage of herbs and shrubs showed significance for the endemic *Cyrtodactylus philippinicus* and *Gonocephalus sophiae*. *Hydrosaurus pustulatus* was found to exceed its known altitudinal limit. Conversion of forested areas into agricultural land and charcoal production were observed as threats to the reptiles in the area. Regular patrolling and strengthening guidelines for habitat and wildlife conservation in MKNP are therefore highly recommended.

Inventory of herpetofauna in the municipality of Kalayaan-Paete, province of Laguna, Philippines

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A comprehensive herpetofaunal (amphibians and reptiles) survey using transect method was completed in Tibanglan, a private farm in the municipality of Kalayaan-Paete in the southernmost end of the Sierra Madre Mountain Range, from June 18 to July 16, 2014. This study reports a total of 59 species of herpetofauna with 17 amphibians (frogs) and 42 reptiles (19 lizards, 21 snakes and two turtles). The amphibians and reptiles have percent endemism at 63% and 40%, respectively. Aside from the 18 herpetofauna species recorded in the geosphere survey by Dans et al. and studies from both UP Land Grants, 41 new species records were established. These include amphibian endemics like *Platymantis corrugatus*, *Fejervarya vittigera* and *Kaloula picta*, and reptile endemics like *Gonocephalus sophiae*, *Parvoscincus steerei*, *Oligodon ancorus*, *Cyclocorus lineatus*, *Oxyrhabdium leporinum* and *Parias flavomaculatus*. New records were also established for the native frog *Fejervarya moodiei* and introduced species like *Rhinella marina* and *Hoplobatrachus rugulosus*. Records for the turtle *Cuora amboinensis*, along with the snakes *Boiga dendrophila* and *Psammodynastes pulverulentus* were also established. Data collected from the study is significant since it contributes to the sparse herpetofaunal species records in the southernmost end of the Sierra Madre Mountain Range. However, the herpetofauna is still understudied.

Macroalgae (Rhodophyta) composition at Guiuan, Eastern Samar, Philippines after typhoon Yolanda

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The effects of climate change, including being situated in the typhoon belt area and having been hit by super typhoon Yolanda that had produced a sizeable storm surge, make Guiuan, Eastern Samar a hotspot for biodiversity. Several economically non-important groups of organisms, including the red algae, have not yet been extensively studied in Guiuan. Hence the present study assessed the diversity of red algae in the surrounding waters and correlated it with pH and sality. Ten quadrats spaced four meters from the other formed transects that were laid at Pearl Island, eastern coast of Sulangan and off the coast of Campoyong. Specimens from each quadrat were collected through snorkeling and wading. Herbarium specimens were pressed and microscope slides were prepared; and some were pickled for further identification and verification. Physico-chemical parameters such as temperature, pH, and salinity of water were recorded. A total of 12 species were identified from all three sites. Among the three, the east coast of Sulangan has the most species, followed by Pearl Island. Campoyong, nearest to Guiuan town proper, has the least number of species. When the species composition is correlated with the three physico-chemical parameters measured, the trend shows that red algae prefer the more pristine waters of Sulangan rather than the low pH and low salinity of the eutrophic waters of Campoyong from the town's runoffs. This shows the negative impact of human activities and ocean acidification to the red algae communities.

Mammalian and herpetofauna of Rapu-rapu group of islands: a preliminary report

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Rapu-Rapu group of islands is composed of Rapu-Rapu Island, Batan Island, and Guinanayan Island located 13º11'15"N, 124º7'36"E of Albay. This group of islands is still unexplored in terms of its wildlife profile. This paper reports the first documentation of terrestrial wildlife vertebrate fauna of Rapu-Rapu group of islands. A total of thirteen species of mammals belonging to nine genera (*Rousettus*, *Eonycteris*, *Hipposideros*, *Emballanura*, *Megaderma*, *Miniopterus*, *Ptenochirus*, *Paradoxurus*, and *Rattus*) and twelve species of reptile and amphibians from eleven genera (*Hemidactylus*, *Cosymbutus*, *Gehyra*, *Limnonectes*, *Platymantis*, *Occidozyga*, *Hylarana*, *Gekko*, *Draco*, *Sphenomorphus*, and *Lampropeltis*) were documented in the area. Sightings of flying foxes (Pteropodidae) were observed in the area and further fieldwork is highly recommended for the identification of the species and tracing of its roosting site. Moreover, the islands were still in good ecological condition as shown by the high number of native mammals and herpetofauna in the area as well as the lush vegetation which covers majority of the limestone area. It is also recommended to further explore the forest and hypogaean ecosystems of the islands for proper documentation of the flora and fauna and to implement conservation measures in the area.

UNDERGRADUATE

Mapping of the spatial distribution of anuran species in the University of the Philippines Diliman Academic Oval, Quezon City, Philippines

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Amphibians have a biphasic life cycle; they depend on both terrestrial and aquatic environments. This, and their short generation time, makes them potential indicators of ecosystem health. The Philippines has a high amphibian diversity and endemism, with 80% of its amphibian species being endemic. However, nearly half of Philippine amphibians are threatened with extinction due to threats such as habitat destruction, pollution, overharvesting and disease, among others. Thus, there is a need to conduct more research on Philippine amphibians, especially in urban landscapes. This study aimed to map the distribution of the anuran species encountered in the UP Academic Oval, as well as to record the habitat type where each species was found. Visual Encounter Surveys were conducted for two consecutive nights (November 6 and 7, 2015) to search for anurans. For each anuran individual encountered, the GPS coordinates and habitat type were recorded and plotted on a map. Four species were encountered: *Kaloula pulchra*, *Rhinella marina*, *Polypedates leucomystax*, and *Hylarana erythraea*, with the first two species being the most abundant. *R. marina* individuals were mostly found near the stream and in grassy areas, while both *K. pulchra* and *P. leucomystax* were encountered near trees and in grassy areas. *H. erythraea* was found near water bodies (stream and lagoon). The results of this study may provide valuable information needed in the monitoring of the anuran species in the UP Diliman campus, which may aid campus authorities in sound conservation and management decision-making.

Molecular confirmation on the synonymy of *Phaeanthus ebracteolatus* including the elucidation of its phytochemical constituents

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The genus *Phaeanthus* Hook.f & Thomson of the family Annonaceae is a medicinal plant essentially characterized by outer petals and sepals that are alike, inner petals that are longer than outer petals, numerous carpels and stamens, and monocarpous fruits. Previous studies recognized *Phaeanthus ebracteolatus* as a synonym of *P. ophthalmicus* based on morphology. This study confirms that these two *Phaeanthus species* are conspecific using combined *trn*L-F, *mat*K, and *psb*A-*trn*H dataset with high support. It is also supported by overlapping morphological characters such as axillary inflorescence, valvate inner and outer petals, truncate stamens, club-shaped carpels, and globose monocarps. Furthermore, the air-dried leaf sample was subjected to phytochemical screening revealing a high content of phenolic compounds. The crude leaf extract was examined through different bioassay such as anti-tyrosinase, anti-glucosidase, and anti-staphylococcus; thus, determining its possible medicinal importance.

Mycoremediation of lead-contaminated soil using *Ganoderma lucidum* Linn (reishi mushroom)

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Lead is one of a limited class of elements that can be described as purely toxic. Of all the toxic chemicals known to humanity, lead is probably the most thoroughly studied. Improper lead disposal induced carcinogenic and mutation to human. Most of the available remediation of this heavy metal is expensive and not ideal to use with the aid of physico-chemical technique which made the soil resistance. Mycoremediation is one type of bioremediation using fungi in degradation of contaminant naturally. Also, it was less costly compared to the other remediation available in the market, a bioremediation with the aid of fungi such as mushroom. *Ganoderma lucidum* linn. was a type of mushroom under the Kingdom Fungi and Phylum Basidiomycota. These were characterized as lignicolous, leathery and either with or without a stem that lives on trunks of living or dead trees. It signifies fan-like or hoof-like reddish brown fruiting bodies. This has double-walled truncate spores with yellow to brown ornamented inner layers. To test the efficacy of *Ganoderma lucidum* linn. as a medium in mycoremediation. The researchers have 1 positive control compared to 9 soil samples collected in Tullahan River Marulas, Valenzuela City. Each soil samples have different time duration. These experimental results underwent to Nested Factorial Method under Analysis of Variance (ANOVA) with the level of significant of 0.05. Based on the result findings interpreted that *Ganoderma lucidum* linn. was considered as a one of the alternative medium in bioremediation was effective in decreasing lead contaminants in the soil.

Poster presentations

Notes on the population of the Visayan leopard cat *Prionailurus bengalensis rabori* (Groves, 1997) in two different habitats of Siaton, Negros Oriental

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Forest carnivores are threatened globally by logging and forest fragmentation yet we know relatively little about how such change affects predator populations (Gerber et al 2012). The Visayan leopard cat, locally called the "maral" (*Prionailurus bengalensis rabori*) is one of the world's smallest, most attractively marked and threatened of all wild felines (Lorica & Oliver, 2007). Three (3) Visayan leopard cats P*rionailurus begnalensis rabori* were captured using 10 trap cages, 5 per sampling site (habitats open-woodland and sugarcane field) for 3080 continuous trapping days in Brgy. Casalaan Siaton, Negros Oriental. The date of captures suggests an existing pattern between the presence of *P. b. rabori*, rodent abundance (Sugarcane Technical Committee 2001) and the maturation of *Saccharum*. Visayan leopard cats are primarily found in open-woodland but migrate to sugarcane field for prey availability and vegetation cover. It was also proven that *P. b. rabori* mothers choose dens located near water sources like creeks in the sugarcane farms. Estimates of relative abundance of *P. b. rabori* were not calculated due to small sampling size. From the data gathered, it is safe to assume the factors influencing existence of Visayan leopard cat are vegetation cover, prey availability, riparian forests for water source and tall trees for escaping danger.

UNDERGRADUATE

Odonata communities and habitat characteristics in Mount Kanlaon Natural Park, Negros Island, Philippines

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A study on the diversity, abundance and habitat preference of odonates in different habitat types and altitudinal gradients in Mount Kanlaon Natural Park (MKNP) was conducted from May 18 to June 2, 2015. Line transect method and visual searching techniques aided by sweep nets, hand catching, and photodocumentation were applied in collecting and recording adult odonates. For habitat assessment, a total of 72 plots with a size of 10x10 meters each were established in the study area. Eleven species were recorded in MKNP of which eight are Philippine endemics. Highest diversity (H'=2.049) and endemicity of the species (70%) were recorded in secondary lowland forest. Areas with low elevation had the highest species richness (S=10). Furthermore, all species found in high elevation were endemics. The Philippine endemic *Cyrano unicolor* was the most abundant species. Canonical Correspondence Analysis showed that the height of understory level seems to influence the abundance of *Drepanosticta psitor* while the canopy cover and elevation are associated with the abundance of *Heteronaias heterodoxa*. Stream depth affects the abundance of *Neurobasis subpicta*. Multiple Regression Analysis identified water pH as an important factor in influencing the occurrence of *Cyrano unicolor* while the occurrence of *Risiocnemis rolandmuelleri* is dependent on tree density. Regular forest monitoring is recommended to ensure protection of MKNP and of the species that inhabit the area.

Phylogenetic placement of selected Philippine Gardenieae J. Ellis (Rubiaceae) using morphology and molecular datasets

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The family Rubiaceae is comprised of several complex groupings. A group that sparks the interest of Rubiaceae systematists is the thorny Rubiaceae that includes the complex of *Fagerlindia*, *Oxyceros* and *Benkara*. It is problematic due to the overlapping morphological features like: organization of orthotropic shoots, development of hooks and thorns on plagiotropic branches from the orthotropic axis, and stipule shape. In this study, an attempt to resolve this complexity was done using selected Philippine representatives and combined *rps*16, *trn*L-F, *rbc*L, and *ndh*F dataset. Four samples representing 4 taxa were collected from Ilocos Norte and Palawan. Samples were subjected to DNA extraction, amplification, purification, and sequencing. Results revealed that morphological delineations are inconsistent with molecular evidence as there is no single monophyletic generic group identified within the complex. *Fagerlindia* is paraphyletic with respect to *Oxyceros* and *Benkara*, suggesting a broader treatment of *Oxyceros* to include *Fagerlindia* and *Benkara*.

Population dynamics of *Arctodiaptomus dorsalis* in Lake Sampaloc of San Pablo, Laguna, Philippines

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Arctodiaptomus dorsalis is a neotropical freshwater calanoid species that is known for its well adaptive ability to aquatic ecosystems that have higher trophic status. The paper hypothesized that understanding of population dynamics of this calanoid species may aid in determinations of factors that enhances lake eutrophication of the Most Threatened Lake of 2014. The abundance and trend in the population of *A. dorsalis* (adults, nauplii and copepodites) in Lake Sampaloc, San Pablo, Laguna were analyzed. Samples were collected from July to December 2015 and correlated with water nutrients (NO_3^-, PO_4^{3-} and Chlorophyll-a) using Canonical Correspondence Analyses (CCA). Examination of relative density and abundance show that juveniles (nauplii and copepodites) of *A. dorsalis* were abundant all throughout the study especially during the months of September (56.60%) and December (68.69%). CCA results noted that temperature, conductivity and PO_4^{3-} concentrations were the factors that evidently heighten the populations of this species for all the months sampled. Uncontrollable eutrophication of Lake Sampaloc may have contributed to the dominance of this calanoid species. These results pose a threat of other native calanoid copepod species in the Philippines which may have been displaced due to the invasive ability of this zooplankton species. Its adaptive capacity to survive and dominate environments with extreme conditions made this species a good biological indicator of the health of the water. Further analyses on *A. dorsalis* dynamics together with water quality in other crater lakes in San Pablo may suggest enhanced eutrophication and zooplankton diversity loss.

Poster presentations

Preliminary analysis on appendicular bone morphology of *Rattus everetti* and *Rattus tanezumi*

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Family Muridae forms a large proportion of the small mammal fauna of the Philippines. Among the genera under this group, *Rattus* is considered as the most complex and least understood in terms of their morphology and habit. Among the species of *Rattus* in the Philippines, *R. tanezumi* and *R. everetti* closely resemble each other however, the latter is part of one of the endemic clades of Muridae in the Philippines. Individuals of *R. everetti* are relatively larger and are distinguished from *R. tanezumi* by the white coloration of the lower half of their tails. These species are also known to be adapted to different habitat condition. To determine if this difference in adaptation is reflected in their morphology, we analyzed the structure of the long bones of these animals. Bone indices were derived from measurements of the long bones of ten adult individuals of each species. To determine which of the indices we used T-Test and Principal Component Analysis. We report that only two indices, gluteal index (GI) and epicondyle index (EI) significantly vary in the two species. These results suggest that *Rattus everetti* is more of a digger while *R. tanezumi* as cursorial. We conclude that the difference in the adaptation of these species are reflected in a variation in the morphology of their long bones. Similar analysis may be done to study variations in the adaptations of the many other endemic species of murids in the Philippines.

UNDERGRADUATE

Preliminary data on the genetic diversity of *Ixora philippinensis* on the basis of two chloroplast markers

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Ixora philippinensis Merr. is found in the southeastern parts of Asia, including the Philippines. A recent study on the phylogeny of Philippine *Ixora* revealed that widespread *I. philippinensis* did not form natural lineages. Moreover, preliminary studies on herbarium specimens of *I. philippinensis* collected in different provinces in the Philippines showed morphological variations. A total of 18 specimens of *I. philippinensis* representing populations from localities in the Philippines particularly in the provinces of Batanes, Ilocos Norte, Palawan, Cebu, Surigao del Norte and Davao del Sur were included for molecular analyses. Pairwise distances were calculated using nucleotide Kimura 2- parameter including transition and transversion substitutions, number of haplotypes, haplotype diversity, and genetic diversity among the populations were determined. The resulting phylogenetic tree of the Bayesian analysis of the combined *trn*LF and *rps*16 sequence data showed that widespread *I. philippinensis* is not monophyletic. Among the *I. philippinensis* populations included, only those from Cebu formed a separate subclade, which is strongly supported in the model-based analysis with a posterior probability of 0.93. A total of 12 distinct haplotypes were identified, six each for *rps*16 and *trn*LF. Genetic differentiation among *I. philippinensis* populations based from the *rps*16 and *trn*LF sequence data can be attributed to only six haplotypes with little nucleotide divergence. Furthermore, the presence of a widespread haplotype (from *rps*16) in almost all populations and a haplotype present in at least two different populations may suggest that there is gene flow among populations of *I. philippinensis* in the areas studied.

Preliminary inventory on reptilian taxa in the vicinity of Bulusan Lake, Sorsogon, Philippines

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We present a preliminary inventory of reptiles along the vicinity of Bulusan lake area, Bulusan Volcano Natural Park. The survey resulted in the documentation of fifteen species of reptiles belonging to fifteen genera representing seven families. This survey represents the first documentation of blunthead slug snake (*Aplopeltura boa*) in the Greater Luzon Faunal Region and Luzon temple pitviper (*Tropidolaemus subannulatus*) with a white iris in the Bicol Peninsula which could be a geographic variant of the said species. Due to limited time and the small area where the survey was conducted, we are expecting that this list will be greatly increased as more herpetological surveys are conducted in the natural park.

Preliminary survey of frog species in Baguio-Benguet area and detection of fungal symbionts using standard PCR assay

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University of the Philippines Baguio

Our study focused on the preliminary survey of frog species in the localities of Baguio, Tuba, and La Trinidad in the province of Benguet. We have opportunistically collected five possible species of frogs from our fieldworks namely *Kaloula rigida*, *Kaloula picta* (F. Microhylidae), *Sanguirana luzonensis* (F. Ranidae), *Limnonectes macrocephalus* (F. Dicroglossidae) and an invasive species, *Rhinella marina* (F. Bufonidae) to be confirmed by a taxonomist. We based their identification on morphological diagnostic features and calls. These same species, most of which are endemic, have been reported in other parts of northern Luzon (Brown, et al. 2012, 2013). From these frogs, we have isolated seven species of sporulating ascomycetes in which molecular identification is on-going. To date, this is the first report on frog biodiversity in Baguio-Benguet area, contributing to the establishment of species assessments and conservation efforts.

Survey of herpetofauna in the watershed area of Malarayat Mountain Range (Barangay Talisay, Lipa, Batangas, Philippines)

Jose Alan R. Bacalando, Emmanuel P. Soniega, Charisse Y. Hulog, Ma. Niña Regina M. Quibod
Adamson University

Malarayat Mountain Range (MMR) is a forest reserve and a watershed which serves as home for various flora and fauna, and significantly supplies water to its surrounding communities. Due to occasional water shortage in Lipa, Batangas in the previous years, Barangay Talisay constructed a small storage dam in MMR to store water in case of drought. This dam sustains water to more than 700 households. To determine the health of MMR, especially of the environment near the storage dam, the herpetofaunal diversity was surveyed in this study. Herpetofauna are well-known bioindicators, proven by innumerable studies; however, the herpetofauna of MMR is poorly documented. Except for the survey conducted by Diesmos et al. previously which focused on the Malipunyo part of MMR, no other documentation on the herpetofauna is known. Standard herpetofauna sampling methods were used (i.e. strip transect, pit fall traps, opportunistic sampling) in four transect lines within two different habitat types to determine the species richness and relative abundance. Seventeen species were documented, which includes six amphibians and 11 reptiles; four of which are new records for MMR. Moreover, of the 17 species recorded, 11 are Philippine endemics, while six are native. The presence of two Near Threatened species based on the IUCN Red List and the absence of an introduced and/or invasive herpetofauna species could infer that the area is still pristine. However, tourism activities (i.e. mountain climbing) and kaingin farming in MMR could cause detriment, not just to the herpetofauna, but also to other wildlife species.

Diversity and ecological assessment of anurans in riparian and freshwater ecosystem in selected areas of Valencia City, Bukidnon

Jerica Mae Q. Pagente[1], Krisha Loraine D. Balaba[1], Dave P. Buenavista[2], Sheila A. Peralta[1], and Rechell A. Sabado[1]

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Fieldwork studies were conducted to determine the species diversity and assess the ecological status of anurans in selected areas of Valencia City, Bukidnon. Specifically, the study aimed to: (1) determine species composition, species abundance, local status, conservation status, and endemicity; (2) classify and describe the species of anurans present in each sampling area; (3) assess the ecological status of anurans present in each sampling area; and (4) produce Information Education and Communication Material (IECM) for information dissemination and awareness of the people in the community. A combination of 200 m x 10 m belt transects and opportunistic sampling was used in the study, which was conducted for 1 month.

Results showed a total of 44 individuals belonging to four families: Rhacophoridae, Microhylidae, Dicroglossidae, and Bufonidae in five species. Descriptions and morphometrics were used to classify the species documented. In the family Rhacophoridae there is one species namely, *Polypedates leucomystax*. The family Microhylidae has one species namely, *Kaloula pulchra*. The family Dicroglossidae has two species namely, *Limnonectes magnus* and *Hoplobatrachus rugulosus*. Family Bufonidae has one species namely, *Rhinella marina*. In terms of abundance, *Limnonectes magnus* was found in all stations. The assessment of *P. leucomystax* was rare in Station 1, *K. pulchra* was very rare in all stations, *L. magnus* was very rare in Stations 1 and 2 while rare in Station 3, *H. rugulosus* was very rare in Station 1, *R. marina* was very rare in Station 1 while rare in Station 2. In the IUCN (2014) *P. leucomystax*, *K. pulchra*, *H. rugulosus*, and *R. marina* are listed as least concern while *L. magnus* is near threatened. Among the collected species, *P. leucomystax* and *L. magnus* are considered as endemic while *K. pulchra*, *H. rugulosus*, and *R. marina* are considered as introduced species. *Hoplobatrachus rugulosus* known as Chinese tiger frog, a potentially harmful invasive species previously known in two provinces of Mindanao specifically Tacurong, Sultan Kudarat and Calinan, Davao City; and *Kaloula pulchra* an Asiatic painted frog introduced very recently in the Philippines. Local status varied from rare to very rare. The study concluded that there is a low diversity of anurans in selected swampy areas of Valencia City, Bukidnon since according to Shannon Diversity Index all values were below 1.00.

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LAWIN Forest Protection System – Science, Technology and Innovation in Partnership with Communities, Private Sector and Government

Felix Gaschick, Leo Rex C. Cayaban, Josephine N. Rodelas, Rodolfo B. Santos Jr., Karl Abelard Edberto L. Villegas (*Biodiversity and Watersheds Improved for Stronger Economy and Ecosystem Resilience (B+WISER Program)*)

The LAWIN Forest Protection System (LAWIN) is an ecosystem threat detection and deterrence system that combines user-friendly technologies and landscape/ecosystem-based approaches to empower local communities and authorities to avoid deforestation and further degradation of natural forests and conserve biodiversity in these areas. Developed by the USAID/DENR B+WISER Program, the system is designed for forests providing critical habitats for key species or areas considered as having high conservation value.

Managing forests involves identifying and reducing threats that negatively affect the viability of that ecosystem, as well as monitoring the condition of the forest as management interventions take effect. LAWIN uses a tablet-based app for electronic encoding of field data and software for conducting geospatial analysis of collected data in forest ecosystems. Access to this data improves management effectiveness and the timeliness of responses.

LAWIN provides the following innovations: 1) introduces a science-based process for identifying hotspots and formulating measurable conservation objectives based on a landscape approach; 2) eliminates the manual process of recording threat observation data by using open source software; 3) enables monitoring of resource needs for the patrol effort; 4) provides the geo-referenced distribution of observations and patrol efforts; and 5) enhances coordination between the community's biodiversity and threats monitoring efforts and environmental law enforcement by providing timely information to resource managers and environmental law enforcers.

Implemented on a regular and frequent level, in partnership with local communities, the private sector and the government, LAWIN offers an innovative means for the protection of forests and their related ecosystem services.

The interactive workshop allows participants to use the LAWIN Forest Protection System, focusing on planning, observation recording and data management. Participants will learn about the system in general, will have a hands-on practice with recording observations using CyberTracker and, and will get an overview of the functionality of the software that is used for data management and analysis (SMART).

The workshop has 3 parts:

1. Introductory lecture
2. Hands-on data recording
3. Data management demonstration, reporting and discussion of results including open forum.

Workshop

Making effective biodiversity conservation advocacies through social media campaigns

Apolinario B. Cariño (*PENAGMANNAKI*),
Romualdo L. Señeris (*Visayan Forum*),
Trelly A. Marigza, Aidalyn C. Arabe (*350 Pilipinas*)

This is an experiential learning and workshop of creating a social media advocacy campaign showcasing two successful experiences of the "Tanjay Anti-black Sand Mining Movement" and the "Save Mt. Talinis Our Home Our Life Movement" of Negros Oriental, Philippines. The workshop will provide participants the basic steps and strategies in formulating an effective biodiversity conservation advocacy campaign plan based from the learning experiences of these two social media campaigns. All these techniques shall be actually applied during the workshop and each participant must create their own individual social media campaign following their own respective biodiversity conservation advocacy plans either for any target species or ecosystem.

Mini-workshop on the enhancement of the draft underwater cave assessment forms

Tanya Conlu *(Biodiversity Conservation Society of the Philippines, Gaia Exploration Club),*
Alex Santos *(Philtec, Filipino Cave Divers), and*
Biodiversity Management Bureau

Caves are fragile ecosystems harboring unique and diverse forms of flora and fauna and providing significant ecosystem services that are sustained through protection and maintenance of the cave's ecological integrity. Through the National Caves and Cave Resources Management and Protection Act of 2001 (RA 9072), the DENR is mandated to formulate, develop and implement programs on cave protection and conservation. One of the critical steps towards the sustainable management of the cave systems is through cave classification which entails the identification, surveying, mapping and assessment (bio-physical, socio-economic and cultural aspects) of the cave systems. However, the discovery, and hence, ensuring safeguards from the development activities for underwater caves, is a new undertaking that had just recently gained attention from the conservation community.

To this effect, BMB, through the DENR-GIZ Protected Area Community Management Project, has embarked on a Capacity Development and Assessment of Biological Diversity in Selected Aquatic Cave Systems. Among the outputs of this Project are assessment forms which would be prescribed as part of the protocols for evaluating underwater caves. These assessment forms, which are based on field experiences of the Filipino Cave Divers and the University of San Carlos, are intended for current and future underwater cave surveys. Since this undertaking is quite new, it is expected that these forms could still be modified and updated as expertise in cave studies increase and through inputs from would-be users. The forms will be used to identify cave resources and measure parameters that might affect their distribution. This information will then be the basis of any conservation and management efforts for the subject cave at the local and regional levels.

The Workshop would contribute to the enhancement of the existing Philippine Cave Handbook through a supplemental on matters related to underwater caves, including these forms. These draft assessment forms will be presented to a wider range of stakeholders, particularly to the biologists, researchers and other conservationists attending in the Symposium, in order to capture different points of view from potential users and partners.

Objectives and Rationale:

- To promote utility of the underwater cave assessment forms by gathering best practices and lessons learned from field researches of different scientific expertise;
- To develop awareness on the importance of underwater caves and advocate for their protection and appropriate management based on sound assessment of resources;
- To contribute to the conservation of the country's cave biodiversity by fostering networking among the different stakeholders.

Workshop

Pinoy cinnamons: their state of knowledge and conservation

Edmund Leo B. Rico, Aedryon Ross Javier, Neil Aldrin D. Mallari (*Center for Conservation Innovations*)
Nian Beceril, Lionel Uytico (*Cebu Biodiversity Conservation Foundation*)
Florena Samiano (*Forest Products Research and Development Institute - DOST*)
Jay Picardal (*Cebu Normal University*)

This three-hour workshop aims to present the current knowledge on the Philippines' cinnamons as a preliminary step to the species red listing. With nearly 20 species found only in the Philippines out of at least 25 species recorded through out the country, the workshop will discuss species habitats and distribution, ecology, taxonomy, awareness, utilization, threats and conservation initiatives. Through plenary discussions at the end of the presentations the workshop likewise intends to draw from workshop participants' additional information and interests on cinnamon research and conservation.

Scientific writing: improving an abstract

Nina R. Ingle and members of the Mentoring and Publications Committees
(*Biodiversity Conservation Society of the Philippines*)

An abstract presents the key aspects of the study or effort, including its objectives, the question(s) or problem(s) addressed, the general approach or methods, the main results or findings, the conclusion(s), and the significance of the study or project in a highly condensed form. The abstract is the primary means by which the Philippine Biodiversity Symposium Screening Committee evaluates submissions for oral or poster presentation. More generally, abstracts are often the basis by which potential readers gather the main points of a paper or presentation and decide whether to read or listen to the entire treatment.

This workshop is intended to help abstract writers and their colleagues improve abstracts. During the workshop, participants will review fictitious abstracts, identifying strengths and weaknesses, and proposing ways in which they can be improved. These activities are designed to help them discover important considerations in writing and improving an abstract. The success of the workshop will depend in large part on the active involvement of participants

Special meeting of the Ad Hoc committee on bird watching and bird photography protocols

Don Geoff E. Tabaranza (*Biodiversity Conservation Society of the Philippines; Chair, Ad Hoc Committee*)
Willem van de Ven (*Biodiversity Conservation Society of the Philippines; Vice-chair, Ad Hoc Committee*),
and *Biodiversity Management Bureau*

Bird watching and bird photography as a hobby and a tourism activity have shown an increase in the past few years: bird watching is being promoted as an eco-friendly activity, with potential for contributing to local tourism and livelihood, while the now-accessible high-powered digital cameras and social media have stimulated this interest. Bird clubs and bird tour operators cater to the interest of foreign and local photographers and bird watchers alike. While there are no protocols set to guide operators, field guides and hobbyists, there appears to be a need to control, manage or discontinue some bird watching and bird photography practices to protect native wildlife and local communities.

In May 2015, an Ad Hoc committee was formed by the Biodiversity Management Bureau to provide technical advice to the proposed bird watching and bird photography protocols. A draft Technical Bulletin was crafted in July 2015.

Working towards a critical mass: the role of early education on the future of Philippine biodiversity

Henry G. Calilung, Sefali Moira M. Francisco, Enrique Javier R. Salvador
(*Holistic Education and Development Center*)

The workshop begins with a talk about the need for a critical mass of environmentally aware students at the pre-school to high school levels. The fate of the Philippine environment (and hence, its biodiversity) lies in the hands of these young people since it is up to them to (1) pursue careers in environmental science and allied fields and (2) adopt and promote sustainable lifestyles. Their "ripple effect" (as measured by the number of people they can potentially "infect" with the environmentalism fever) is incalculable since they are still very young.

So how do we build up such a critical mass of young environmentally aware Filipinos? The workshop proper seeks to address this question as it consists of a series of demos of lessons and best practices that teachers and schools nationwide may incorporate into their existing programs. There is no need to reinvent the wheel—we just have to color it green.

This workshop is intended for pre-school to high school teachers, school administrators and those who are connected in any way with the business of educating our youth.

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About the BCSP

Vision
A country that appreciates and conserves Philippine biodiversity.

Mission
An organization that catalyzes effective biodiversity conservation through science-based research, education, and management anchored on collaboration for the Philippine society.

Goals
- Promote scientifically-sound biodiversity research and education
- Provide training for future generations of biodiversity researchers and conservationists
- Facilitate knowledge-sharing to the general public, policy-makers, and those involved in biodiversity management
- Harness individual and organizational expertise to influence biodiversity awareness, policy, and action
- Promote the integration of local and indigenous knowledge in conservation practices

Key Programs
- Conservation Awareness – promotes biodiversity and conservation through information, education and public awareness such as exhibits, lectures and production of promotional materials
- Mentoring – provides capacity building of students and professionals through short courses and trainings, site visits, and networking
- Publications – facilitates exchange of knowledge and research through publications of proceedings and knowledge products
- Policy – contributes to national and local policy development by integrating scientific facts and experts' knowledge on key biodiversity issues

Special Programs
- Annual Philippine Biodiversity Symposium – yearly gathering of local and international biodiversity researchers and conservationists
- The Philippine Threatened Species Committee – provides recommendations on the Philippines' Red List of Threatened Fauna as stipulated in the Wildlife Act of the Philippines (RA 9147).

Committees
- Membership Committee
- Conservation Awareness Committee
- Mentoring Committee
- Publications Committee
- Policy Committee
- Fundraising Committee
- Symposium Committee
- Philippine Threatened Species Committee

Biodiversity Conservation Society of the Philippines

The Biodiversity Conservation Society of the Philippines (BCSP), formerly the Wildlife Conservation Society of the Philippines (WCSP), is a non-profit, non-stock organization duly registered under the Philippine law. It is a professional organization of wildlife researchers, managers, scientists and conservationists, which 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.

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.

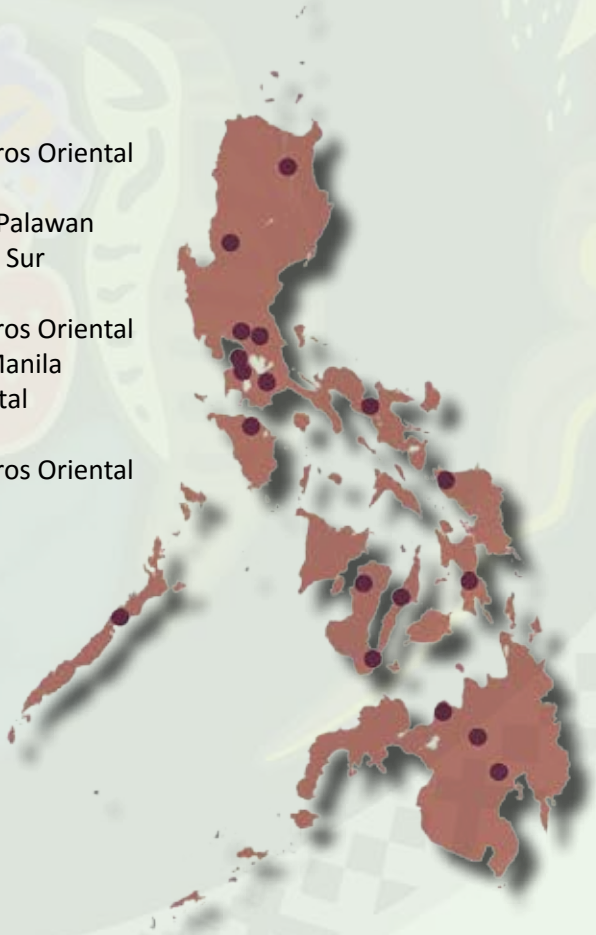
The symposium draws over 250 participants from the academic and research institutions, government agencies, non-governmental organizations, independent researchers, and high school, undergraduate and graduate students.

Where we have been

Since 1992, Filipino and international wildlife biologists and practitioners working on research and conservation of Philippine biodiversity have been meeting every April at different venues around the Philippines for the annual Philippine Biodiversity Symposium.

Symposium Venues:

2016: Calapan City, Oriental Mindoro
2015: Catarman, Northern Samar
2014: Talamban, Cebu City, Cebu
2013: Musuan, Bukidnon
2012: City of Manila & Dasmariñas City, Cavite
2011: Dumaguete City, Negros Oriental
2010: Legazpi City, Albay
2009: Baguio City, Benguet
2008: Baybay, Leyte
2007: Davao City, Davao del Sur
2006: Puerto Princesa City, Palawan
2005: Tuguegarao City, Cagayan Valley
2004: City of Antipolo, Rizal
2003: Murcia, Negros Occidental
2002: Cebu City, Cebu
2001: Dumaguete City, Negros Oriental
2000: Tagaytay City, Cavite
1999: Puerto Princesa City, Palawan
1998: Davao City, Davao del Sur
1997: Los Baños, Laguna
1996: Dumaguete City, Negros Oriental
1995: Quezon City, Metro Manila
1994: Initao, Misamis Oriental
1993: Los Baños, Laguna
1992: Dumaguete City, Negros Oriental



For more information:

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