

## ACTIVITY ACCOMPLISHMENT REPORT

- A. Title of Activity: 2<sup>nd</sup> Philippine Symposium on Freshwater Biodiversity and Ecosystems (including post-conference field trip to Lake Pandin, San Pablo City and the 2-day Aquatic Insect Taxonomy Workshop)
- B. Date and Venue: December 11-14, 2018 / Institute of Biology, University of the Philippines, Diliman, Quezon City, Philippines
- C. Brief Description of Activity:

The 2nd Philippine Symposium on Freshwater Biodiversity and Ecosystems (PSFBE) was hosted by the Institute of Biology, University of the Philippines Diliman, together with the University of Santo Tomas, Ateneo de Manila University, Laguna Lake Development Authority, Department of Agriculture-National Fisheries Research and Development Institute, Department of Environment and Natural Resources-Biodiversity Management Bureau, the Association of Systematic Biologists of the Philippines, and the United States Agency for International Development (USAID) Philippines in cooperation with the International Society of Limnology (SIL).

Participants for this year's symposium were members of related professional organizations, science teachers, environmentalists, limnologists, professors, scientists and the enthusiasts in the field as well as graduate and undergraduate students from different universities in the Philippines and in the Southeast Asian nations. Also represented were national government agencies, local government units, private sectors, and civil society groups.

This 4-day event gathered international and national experts from the fields of limnology, freshwater ecology, biodiversity and conservation biology. Like the 1<sup>st</sup> PSFBE, this symposium served as a venue for the presentation of recent, relevant, and updated results on studies focusing on the ecology and biodiversity of freshwaters in the Philippines and the rest of tropical Asia. Moreover, this Symposium aimed to (1) establish a network of freshwater scientists, researchers, leaders and policy makers who will be able to work together to find creative solutions to the issues facing the freshwater ecosystems and their biodiversity in the Philippines and the rest of tropical Asia, (2) encourage dialogue between local researchers in different fields including international researchers, (3) increase general knowledge on freshwaters among participants and the general public, and (4) highlight connections between the Philippine freshwater ecosystems and the rest of Asia. Accomplishment of these objectives was also facilitated through a session devoted to Asian tropical inland waters where researchers in the region were given an opportunity to interact and have hopefully identified possible projects for future collaboration. This session was supported by the Working Groups on Inland Waters of Tropical Asia of the International Society of Limnology (SIL).

Two keynote and six plenary speakers were invited who are internationally-known experts in their respective field in the USA, France, Israel, Japan, Singapore and the Philippines:

- Teodoro J. Herbosa, MD, University of the Philippines System, Diliman, Quezon City, Philippines
- John C. Morse, PhD, Clemson University, South Carolina, USA

- Karl M. Wantzen, PhD, Université François-Rabelais, Tours, France
- Junjiro Negishi, PhD, Hokkaido University, Sapporo, Japan
- Darren C.J. Yeo, PhD, National University of Singapore, Singapore
- Tamar Zohary, PhD, Kinneret Limnological Laboratory, Israel Oceanographic and Limnological Research, Israel
- Noboru Okuda, PhD, Research Institute for Humanity and Nature, Kyoto, Japan
- Rey Donne S. Papa, PhD, University of Santo Tomas, Philippines

In summary, these speakers provided lectures on (i) the link between healthy freshwater ecosystems and human public health; (ii) the use of aquatic biota as bioindicators of freshwater ecosystem health; (iii) the threats facing these ecosystems; and (iv) possible solutions to address these threats.

This 4-day event was also made possible through the support of University of the Philippines Office of International Linkages (UP OIL), University of the Philippines Media and Public Relations Office (UP MPRO), University of the Philippines Diliman Information Office (UPD IO), University of the Philippines Diliman Office for Initiatives in Culture and the Arts (UPD OICA), Department of Science and Technology-Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD), Metro Pacific Water, MicroLab, Dakila Trading Corporation, Lesinc Scientific Equipment, Inc., ENZED Trading, and Human Nature.

Also acknowledged was the support of the Symposium co-organizer United States Agency for International Development (USAID), through the Protect Wildlife Project, which covered the accommodation expenses of the foreign keynote and plenary speakers as well as the production of the conference bags, IDs, notebooks and pens.



*The 2<sup>nd</sup> PSFBE 2018 conference kit. (Photo courtesy of Khristine L. Sandoval, CEU Manila)*

#### D. Participants/Attendees:

The event was raised into public awareness through the designed PSFBE website (<http://psfs.org.ph/psfbe2018/>) and shared through social media and was able to gather a total of 131 participants last December 11-14, 20018. Of these, 76 individuals (or 58% of the total) are males and 55 individuals (or 42%) are females. Table 1 below shows the participants by group with the biggest delegation coming from the academe.

Classification/Institution	Sex		Total
	Male	Female	
<b>Academe</b>			
University of the Philippines Diliman	23	11	34
University of Santo Tomas	12	9	21
University of the Philippines Los Baños	7	4	11
Ateneo de Manila University	4	4	8
National University of Singapore	5	2	7
Hokkaido University	1	2	3
Silliman University	2		2
University of the Philippines System	1		1
Southern Luzon State University	1		1
Mindanao State University - Iligan Institute of Technology		1	1
Mindanao State University - General Santos	1		1
Laguna State Polytechnic University - San Pablo City		1	1
Angeles University Foundation	1		1
Caraga State University - Ampayon Campus	1		1
Centro Escolar University		1	1
Cebu Technological University	1		1
University of St. La Salle - Bacolod City		1	1
Clemson University	1		1
Imperial College London		1	1
Universite Francois-Rebelais, France	1		1
<b>High School</b>			
Batasan Hills National High School		1	1
Philippine Science High School - Main Campus	1		1
Philippine Science High School - Central Visayas Campus	1		1
<b>Government</b>			
Laguna Lake Development Authority	3	5	8
Biodiversity Management Bureau	1	1	2
National Fisheries Research and Development Institute	1	1	2
Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development		1	1
Bureau of Fisheries and Aquatic Resources		1	1
DOST-National Academy of Science and Technology	1		1
Department of Science and Technology	1		1
National Museum of the Philippines		1	1

<b>Bilateral agency</b>			
US Embassy		1	1
United States Agency for International Development	1	1	2
<b>International Research Institute</b>			
Southeast Asian Fisheries Development Center (Binangonan)		1	1
Research Institute for Humanity and Nature	1		1
Kinneret Limnological Laboratory		1	1
<b>NGO, Private institution</b>			
MicroLab		2	2
Pasig City LGU	1		1
Metro Pacific Water	1	1	2
Independent researcher	1		1
<b>Total</b>	76	55	131

E. Highlights of accomplishments:

**Day 1**

The 2nd PSFBE started on December 11, 2018 with a welcome message from the University of the Philippines Diliman Vice-Chancellor for Academic Affairs Dr. Evangeline C. Amor. She welcomed the participants, experts, speakers, and presenters to the 2nd PSFBE and to the University of the Philippines Diliman. She underscored the significance of the Symposium as a valuable opportunity for research scientists, specialists and decision-makers to share experiences and come up with solutions to problems besetting freshwater resources.



*(From left) PSFBE 2018 Symposium Co-chair Dr. Rey Donne S. Papa (UST), UPD Vice-Chancellor for Academic Affairs Dr. Evangeline C. Amor, and PSFBE 2018 Symposium Chair Dr. Francis S. Magbanua (UPD). (Photo by Jonathan Madrid, UP MPRO)*



*(From left) PSFBE 2018 Symposium Co-Chair and UST Prof. Dr. Rey Donne S. Papa, LLDA Department Manager Adelina C. Santos-Borja, NAST Academician Dr. Rafael D. Guerrero III, UP Executive Vice President Dr. Teodoro J. Herbosa, DOST Secretary Fortunato De La Peña, DENR-BMB Assistant Director Armida P. Andres, PSFBE 2018 Symposium Chair and UPD Asst. Prof. Dr. Francis S. Magbanua (UPD), USAID Deputy Director for Environment Paul Seong, UST Prof. and College of Science Dean Dr. John Donnie A. Ramos, and UPD Assoc. Prof. and IB Director Dr. Ian Kendrick C. Fontanilla. (Photo by Shea Guinto, UST)*

The University of the Philippines President, Danilo L. Concepcion, was represented by UP Executive Vice President Dr. Teodoro J. Herbosa. In his opening address, read by EVP Herbosa, UP President Concepcion valued the role of the 2<sup>nd</sup> PSFBE as an excellent opportunity for the University of the Philippines to achieve its mandate under RA 9500 or the UP Charter of 2008 to “serve as a regional and global university in cooperation with international and scientific unions, networks of universities, scholarly and professional associations in the Asia Pacific Region and around the world.” The UP President also pointed out the importance of water as the most vital resource. He, in fact, provided a succinct description of what the 2<sup>nd</sup> PSFBE is about “biodiversity thrives where there is water.” Hence, he encouraged everyone to “take all the necessary steps to conserve it (water) wisely to promote the quality of life...and ensure the overall development of our people.” UP President Concepcion’s address was followed by series of opening messages from the Department of Environment and Natural Resources Secretary Roy A. Cimatu (represented by DENR-Biodiversity Management Bureau Assistant Director Armida P. Andres), Laguna Lake Development Authority General Manager Jaime C. Medina (represented by LLDA Department Manager Adelina C. Santos-Borja), United States Agency for International Development Director for Environment Mr. John Edgar (represented by USAID Deputy Director for Environment Mr. Paul Seong), and the Department of Science and Technology Secretary Fortunato T. De La Peña.

LLDA General Manager Joey Medina emphasized the contribution of science-based outputs as “triggers in revisiting our current policies on the development, management and conservation of our freshwater ecosystems.” He also pointed out that through continuous collaborative efforts coming from different local and international private and public sectors, problems will be identified and interventions will be done

accordingly. DENR Secretary Cimatu underscored the importance of “knowledge to be able to more effectively protect and conserve what remains for our freshwater biodiversity...” He even proposed that PSFBE should be conducted more often to significantly increase knowledge of our freshwater biodiversity and ecosystems. On his part, DOST Secretary De La Peña challenged researchers to come up with breakthroughs and innovations that are appreciated by the general public. He also reminded everyone that DOST, through the PCAARRD and NRCP, is ready to assist activities on freshwaters.

Overall, our guests encouraged participants to update our knowledge on freshwater biodiversity and their habitats to help protect, conserve, and sustainably manage these freshwater resources.

Following the tradition established during the 1<sup>st</sup> PSFBE, five individuals were given special awards for their achievements and contributions in the Philippine freshwater science field during the 2<sup>nd</sup> PSFBE.

- Prof. Emerita Milagrosa R. Martinez-Goss, Ph.D. – Freshwater Taxonomist Award (Phytoplankton)
- Pasig City Councilor Alejandro E. Santiago, M.A. – Public Service Award
- Teresita R. Perez, Ph.D. – Freshwater Biology Mentor Award
- Adelaida L. Palma, D.F.T. – Environmental Science and Management Award
- Victor S. Soliman, Ph.D. – Freshwater Conservation Award



*With the 2018 PSFBE Special Awardees. (From left) PSFBE 2018 Symposium Co-Chair and UST Prof. Dr. Rey Donne S. Papa, UPD Assoc. Prof. Dr. Michael C. Velarde, Pasig City Councilor Alejandro E. Santiago, Former BFAR Center Chief Dr. Adelaida L. Palma, UPLB Prof. Emerita Dr. Milagrosa R. Martinez-Goss, UST Prof. and College of Science Dean Dr. John Donnie A. Ramos, and PSFBE Symposium Chair and UPD Asst. Prof. Dr. Francis S. Magbanua. (Photo by Jonathan Madrid, UP MPRO).*

The two keynote speakers were University of the Philippines Executive Vice President and former Health Undersecretary Dr. Teodoro J. Herbosa and Clemson University Professor Emeritus Dr. John C. Morse. EVP Herbosa set the stage for the conference by highlighting the importance of freshwaters for society, and the link between freshwater quality and water-borne diseases (e.g., cholera, dengue, leptospirosis, schistosomiasis, etc.) that affect human population communities.

Professor Morse, for his part, further expanded the talk of Dr. Herbosa by providing an overview of what freshwater pollution is and how aquatic organisms, particularly insects, can help in managing freshwater resources. He underscored the role of bioassessment and the value of biomonitoring (with living organisms) vis-à-vis monitoring water quality with chemical water samples or physical measurements. He has high hopes for the future of freshwater ecology and biomonitoring in the Philippines and Asia given the number of highly enthusiastic graduate students that participated and the numerous paper presentations during the parallel sessions of the Symposium.



*University of the Philippines Executive Vice President Dr. Teodoro J. Herbosa giving his keynote lecture on Freshwater Ecosystems, Health and Human Development during the PSFBE 2018. (Photo by Jonathan Madrid, UP MPRO)*

*Clemson University Prof. Emeritus Dr. John C. Morse giving his keynote lecture on Freshwater Pollution in Asia and the Role of Insects in its Management during the PSFBE 2018. (Photo by Jonathan Madrid, UP MPRO)*



Research conducted by Filipino scientists were presented simultaneously in the afternoon of Day 1. These researches were grouped into (1) systematics and taxonomy, and (2) conservation, policy and management. Topics in parallel session 1 were fish parasite taxonomy, unique adaptive features of cave aquatic fauna, testing emerging nanopore NGS technologies for barcoding of aquatic beetles, and red listing process of Philippine aquatic organisms particularly the *Sardinella tawilis*. On the other hand, talks in parallel session 2 focused on research updates on the Seven Lakes of San Pablo City, water quality management at the sub-watershed scale, fish stock assessment of Lake Taal, and the tropical anguillid eel resources and their sustainable use, management and conservation. While more researches are needed given the now endangered status of *S. tawilis*, these presentations further show that we are addressing the call to increase knowledge on our freshwater biodiversity and their habitats to help protect, conserve, and sustainably use and manage them.

*Parallel Session 1. (From left) Dr. Jonathan Carlo A. Briones (UST), Assoc. Prof. Dr. Hendrik Freitag (AdMU), Prof. Emerita Dr. Milagrosa R. Martinez-Goss (UPLB), Assoc. Prof. Dr. Daniel Edison M. Husana (UPLB), Academician Dr. Mudjekeewis D. Santos (DA-NFRDI and NAST), and session moderator Dr. Dino T. Tordesillas (UST). (Photo by John Claude Renan B. Salluta, UPD)*



*Parallel Session 2. (From left) Prof. Dr. Rey Donne S. Papa (UST), session moderator Prof. Ma. Vivian C. Camacho (UPLB), Dr. Teresita R. Perez (AdMU and UPD), Dr. Maria Lourdes A. Cuvin-Aralar (SEAFDEC), Ms. Adelina C. Santos-Borja (LLDA), Dr. Maria Theresa Mercene-Mutia (DA-NFRDI) and PSFBE 2018 Symposium Chair Dr. Francis S. Magbanua (UPD). (Photo by Leonardo N. Sibal III, UPD)*





The first general assembly of the Philippine Society for Freshwater Science (PSFS) was also held in day 1 of the Symposium. It was during this assembly when the by-laws of the PSFS were presented and approved. The following newly elected officers of the Society were also presented to the general membership:

### **PSFS Officers 2018-2020**

Interim President:	Francis S. Magbanua, PhD (UPD)
Vice President:	Rey Donne S. Papa, PhD (UST)
Corresponding Secretary:	Teresita R. Perez, PhD (AdMU)
Recording Secretary:	Jhoana M. Garces, MS (AdMU)
Treasurer:	Jhaydee Ann Pascual, MS (NMP)
Business Manager:	Daniel Edison Husana, PhD (UPLB)
Press Relations Officer:	Milette Mendoza, MS (UST)
Auditor:	Ma. Vivian C. Camacho, PhD (UPLB)
Liaison Officer:	Jonathan Carlo A. Briones, PhD (UST)



*Interim officers and board of directors of the newly established Philippine Society for Freshwater Science. (Photo by Shea Guinto, UST)*

To cap off day 1 of the symposium, keynote and plenary speakers, guests and participants were treated to a Welcome Dinner at Ang UP Bahay ng Alumni sponsored by the Laguna Lake Development Authority through the initiative of its General Manager, Mr. Jaime Medina. Performances from UP Diliman's Kontemporaryong Gamelan Pilipino (Kontra-GaPi) were the highlight of the Welcome dinner. Since it was also the season of giving, souvenirs and several UP merchandise were raffled off.



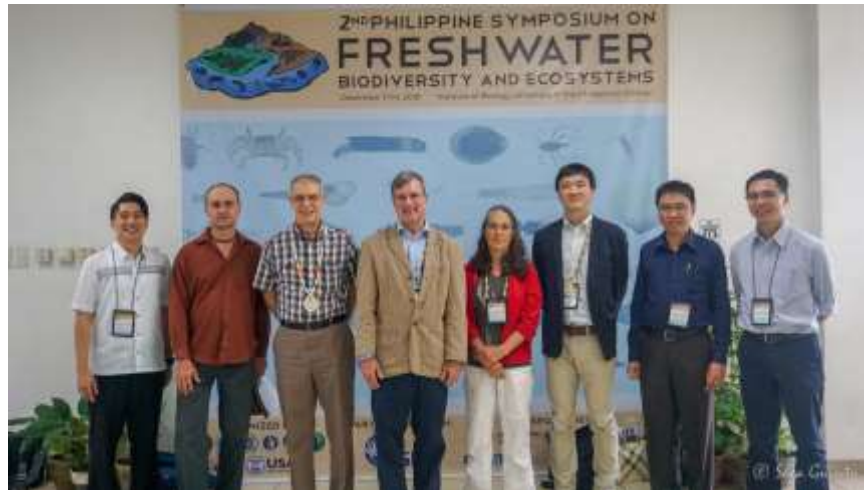
*PSFBE 2018 Welcome Dinner at Ang UP Bahay ng Alumni. (Photo by Leonardo N. Sibal III, UPD)*

## **Day 2**

The morning session started with the talk of the UNESCO Chair of “Fleuves et Patrimoine / River Culture” Dr. Karl Wantzen of the Université François-Rabelais, Tours, France. Dr. Wantzen discussed the River Culture Approach (RCA) and to use the strategies of river biota in managing river ecosystems sustainably. He enumerated five tenets: (1) reset values and priorities in riverscape management (harmonious coexistence of man and riverscape); (2) live in the Rhythm of the Waters (adaptive management); (3) transform traditional use of rivers into modern cultural activities and management options; (4) ecosystem bionics: use nature’s strategies for human lifestyle; (5) basins of political responsibility (river basin-based management). These tenets of the RCA can also be applied to the Philippine settings to help conserve, protect, and sustainably manage our natural resources but more importantly to “develop a culture of respect for nature”. The second plenary speaker was Dr. Junjiro Negishi of the Hokkaido University. He shared his recent findings on ecological processes associated with groundwater in river systems. Like in Japan, very few studies have been conducted in groundwater systems in the Philippines and the importance of groundwater in freshwater science & management is hardly recognized. The third plenary speaker for day 2 was Dr. Darren C.J. Yeo of the National University of Singapore. His talk focused on the increasing number of alien invasive species in Southeast Asia and its link to expanding human development and disturbance. Accordingly, the spread of invasive species into the natural habitats are influenced by abiotic, biotic, or human factors. Dr. Yeo also stressed a lack of published invasion

biology research, both fundamental and applied. He further mentioned that Singapore has no legislation or policy on alien species (only indirectly) and lacking a standardized risk assessment procedure. Similar to groundwater ecosystems, there is limited research being done on invasive alien species in the Philippines. And most likely we also do not have policies on these species.

In all, the three plenary talks pointed out other research areas that freshwater scientists and practitioners need to work on.



*With PSFBE 2018 Keynote and Plenary Speakers. (From left) PSFBE 2018 Symposium Chair and Asst. Prof. Dr. Francis S. Magbanua (UPD), Assoc. Prof. Dr. Hendrik Freitag (AdMU), Prof. Emeritus Dr. John C. Morse (Clemson University, USA), UNESCO Chair and Prof. Dr. Karl M. Wantzen (Université François-Rabelais, France), Prof. Dr. Tamar Zohary (Kinneret Limnological Laboratory, Israel), Assoc. Prof. Dr. Junjiro N. Negishi (Hokkaido University), PSFBE 2018 Symposium Co-Chair and Prof. Dr. Rey Donne S. Papa (UST), and Asst. Prof. Dr. Darren C.J. Yeo (National University of Singapore). (Photo by Shea Guinto, UST)*

The afternoon of Day 2 focused on (1) the four thematic parallel sessions, (2) a workshop on “The Young Leading the Young: Youth-led Collaborations for the SDGs” co-presented by Metro Pacific Water and the Philippine Young Water Professionals, and (3) the poster session.

The following were themes for the four parallel sessions with each session having six to seven presentations: freshwater ecosystems of tropical Asia, Philippine freshwater ecosystems, freshwater biodiversity – taxonomy and systematics, and conservation, management and policy. Participants had the opportunity to transfer from one session to another depending on the talk they were interested in.

*One of the four parallel sessions. The theme for this session was Freshwater Ecosystems of Tropical Asia.*



The Young Leading the Young workshop, however, explored various examples of youth leadership and encouraged the active engagement of participants, mostly graduate students and young professionals, in youth-led collaborations towards the attainment of the Sustainable Development Goals (SDGs).



*Participants in the workshop on "The Young Leading the Young: Youth-led Collaborations for the SDGs" co-facilitated by Metro Pacific Water and the Philippine Young Water Professionals (PYWP). (Photo courtesy of Yang Villa, Metro Pacific Water and PYWP)*

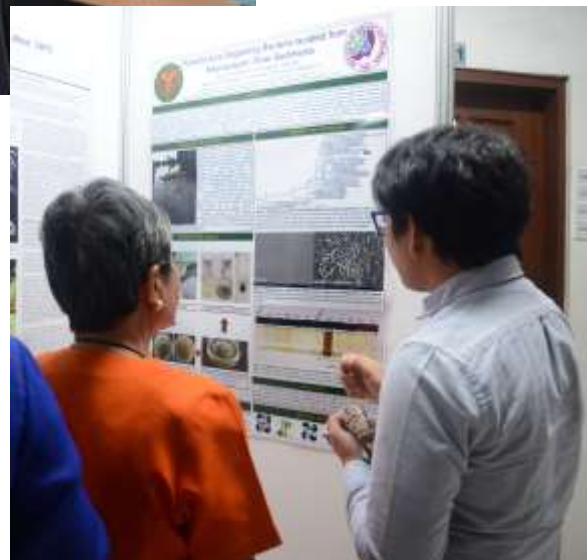
Finally, day 2 of the Symposium ended with the Mix “n” Mingle poster session. This provided the opportunity for poster authors to meet and network with fellow freshwater researchers in a relaxing environment held in the atrium (garden) of IB.



*Prof. Emeritus Dr. John C. Morse (Clemson University), assisted by PSFBE Symposium Chair Dr. Francis S. Magbanua (UPD), opened the poster session by cutting the ceremonial ribbon. (Photo by Angelo Joshua C. Luciano, UPD)*



*Graduate students from the University of Santo Tomas (above, Ms. Shea Guinto) and University of the Philippines Diliman (right, Mr. Aroin Verdera) answer questions from the Symposium participants and poster competition judges (Prof. Emerita Milagrosa Martinez-Goss). (Photo by Angelo Joshua C. Luciano, UPD)*



### Day 3

Dr. Tamar Zohary of the Israel Oceanographic and Limnological Research and Dr. Noboru Okuda of the Research Institute for Humanity and Nature, Japan presented on the physiological, biological and anthropogenic impact and management of rivers and lakes. Dr. Zohary, the first plenary speaker for the day, emphasized that detecting not just one environmental stressor is essential for water resource management. For instance, excessive water level fluctuations in lakes directly affect the ecology of aquatic microorganisms. It could decrease species richness and abundance and increase the chance of alien species invasion that could further lower the biodiversity of a lake. She also mentioned other factors such as nutrient loadings and other land use practices which were also pointed out by Dr. Okuda. Dr. Okuda strongly considered issues of watersheds such as nutrient imbalance, particularly phosphate and nitrogen, biodiversity loss and eutrophication and social issues of the communities as important components to be identified and resolved. Interaction of these components would have a considerable effect on biodiversity conservation so as to human well-being. Watershed governance would be possible if scientists learn local knowledge, if the community would understand scientific knowledge and if there will be institutional support from private and local sectors and the government. The plenary session ended with the talk delivered by Dr. Rey Donne Papa of the University of Santo Tomas who shared history of the Philippine Zooplankton Reference Collection, as an integral tool in documenting zooplankton diversity, distribution and ecology in Philippine inland waters. He presented pioneering studies on zooplankton, which included the works of his mentors leading up to the present with his leading effort on establishing a systematic and organized laboratory and zooplankton collection and a research group that is continuously working on studying freshwater zooplankton in the Philippines.



*Day 3 Plenary Speakers. Above: Dr. Noboru Okuda (Research Institute for Humanity and Nature). Below (from left): Dr. Tamar Zohary (Kinneret Limnological Laboratory), and Dr. Rey Donne Papa (UST). (Photo by Shea Guinto and Elfritzon Peralta, UST)*

The Graduate Students' Oral Competition started off in the afternoon. There were 10 competitors divided into two clusters. Each presenter was only given fifteen minutes to discuss his/her research work. The clusters were facilitated by Dr. Francis Magbanua (UPD) and Dr. Teresita R. Perez (AdMU). They were evaluated on the same criteria established since the 1<sup>st</sup> PSFBE in 2016.



*Elfritzson Peralta, a graduate student from the University of Santo Tomas, presenting his research on the use of stable isotopes in determining human impacts on aquatic community and food web structures. (Photo by Shea Guinto, UST)*

The 2<sup>nd</sup> PSFBE presentation concluded by gathering in the auditorium for a brief sharing of participants' impressions and experiences on the 2<sup>nd</sup> PSFBE and was followed by the announcement of winners for the poster presentation and graduate students' oral competition. Participants highly commended the event's organization and the opportunity given to them to meet and learn from the experts of different fields. The invited plenary speaker, Dr Tamar Zohary, also mentioned she was amazed by the active participation of women scientists and students and was also thankful for the warm welcome of the Filipinos. Dr. Hendrik Freitag (AdMU) looks forward to the 3<sup>rd</sup> PSFBE and hopes to see again the participants.

The following studies and researchers were recognized as winners of the following competitions:

- 1<sup>st</sup> Place Poster Presentation

**Polyethylene-degrading bacteria isolated from Meycauayan River sediments**

*Aroin B. Verdara, Jessica F. Simbahan, Michael C. Velarde, and Marie Christine M. Obusan*

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

- 2<sup>nd</sup> Place Poster Presentation

**Two new species of *Geosesarma* De Man, 1892 (Crustacea: Brachyura: Sesamidae) from Palawan, the Philippines**

*Marivene Manuel-Santos, Peter K. L. Ng, and Hendrik Freitag*

National Museum of the Philippines; National University of Singapore; Ateneo de Manila University, Philippines

- 3<sup>rd</sup> Place Poster Presentation

**A checklist of aquatic Polyphaga beetles of Cambodia with 19 new records and a presumable new species from the *Pelthydrus vitalisi* Orchymont, 1926 complex (Coleoptera: Hydrophilidae)**

*Hendrik Freitag, Jody Helena Voges, Sarah Ehlers, and Sophany Phauk*  
Ateneo de Manila University, Philippines; Museum für Naturkunde-Leibniz Institute for Evolution and Biodiversity Science, Berlin, Germany; Institut für Biologie, Humboldt-Universität Berlin, Germany; Royal University of Phnom Penh, Cambodia

- Cluster 1 Graduate Students' Oral Competition Winner

**Taxonomic account and new records of freshwater crab fauna (Crustacea: Brachyura) of Northern Mindanao, Philippines**

*Nickel Jean S. Lagare, Olga M. Nuñez, and Jose Christopher E. Mendoza*  
Mindanao State University-Iligan Institute of Technology; National University of Singapore

- Cluster 2 Graduate Students' Oral Competition Winner

**Ichthyofaunal responses to anthropogenic disturbances in fresh waters of Sundaland: a functional trait perspective**

*Kenny WJ Chua, Amirrudin Ahmad, and Darren CJ Yeo*  
Department of Biological Sciences, National University of Singapore, Singapore



*Winners of the PSFBE Graduate Students' Oral Competition and Poster Presentation. (From left) PSFBE 2018 Symposium Chair and Asst. Prof. Dr. Francis S. Magbanua (UPD), Assoc. Prof. Dr. Hendrik Freitag (AdMU), Kenny WJ Chua (NUS), Nickel Jean S. Lagare (MSU-IIT), Jody Helena Voges (Museum für Naturkunde Berlin), Aroin B. Verdera (UPD), and Asst. Prof. and IB Deputy Director for Academic Affairs Dr. Brian S. Santos (UPD). (Photo by Shea Guinto, UST)*



In closing remarks by Dr. Ian Kendrick Fontanilla, UP IB Director, intoned “all good things come to an end so as with the symposium’s presentations”. He formally thanked the organizers, sponsors, guests and participants for their active involvement in Freshwater Science and mostly in partaking in the 2<sup>nd</sup> PSFBE. He hoped that it was not only the scientific and academic aspect that transpired in the event but the Philippine culture that UP has been valuing as well. The 1<sup>st</sup> and 2<sup>nd</sup> PSFBE were successfully held at UST and UP respectively. In 2020, the 3<sup>rd</sup> PSFBE will be awaited and will be organized by the Ateneo de Manila University.

## Day 4

### Field trip to Lake Pandin, San Pablo City

To cap off the symposium, the Laguna Lake Development Authority sponsored a one-day field trip to Lake Pandin, San Pablo City, Laguna. This exposed the participants to local aquaculture practices and local government initiatives to boost sustainable ecotourism in the area.



*PSFBE 2018 participants had a great, wet field day in Lake Pandin, San Pablo City, Laguna. (Photo by Jonathan Madrid, UP MPRO)*

## Aquatic Insect Taxonomy Workshop

After the symposium, the Institute of Biology also organized a two-day workshop on aquatic insect taxonomy facilitated by Prof. Emeritus Dr. John Morse. There were 32 workshop participants, composed mainly of graduate students from different Philippine universities.



*Participants of the 2-day Aquatic Insect Taxonomy Workshop held at the Institute of Biology, University of the Philippines Diliman. (Photos above and at the bottom left by Francis S. Magbanua, UPD; photo at the bottom right by John David P. Endriga, UPD)*

### F. Issues/Problems and Recommendations:

One issue that was raised during the Symposium was the endangered status of the only freshwater sardinella, *Sardinella tawilis*. This sardinella found in Lake Taal drastically decline due to overfishing. Regulations on illegal fishing and invasive species must be formulated and strictly implemented for conservation. Another serious problem is the polluted inland waters brought about by anthropogenic activities and population growth especially in urban areas. Assessment may be done through studying nutrient imbalances and identifying macroinvertebrates such as insects that serve as bioindicators. These approaches may be done together with the water quality monitoring efforts of government agencies. Research initiatives on fish parasites and cave fauna are also highly encouraged since there are only limited data available and there are much to be known. It was also raised into concern that fieldworks conducted were impeded by the late release of working permits. There were already instances wherein the government agencies kept on directing researchers in other offices prolonging the process. Acad. Dr. Santos, Scientist II of NFRDI, mentioned that he will be raising this issue to BFAR and encourage devoted young scientists to serve in government agencies to establish monitoring and management of various fields.

#### G. Next Steps:

Three initiatives have been identified to help move forward research in Philippine freshwater ecosystems and their biodiversity. Firstly, Dr. John C. Morse of Clemson University, one of the keynote speakers during the 2<sup>nd</sup> PSFBE, would like to formally establish link between his university and the University of the Philippines to help graduate students and early career scientists working on aquatic insects. Dr. Morse is currently a Professor Emeritus of Entomology and Director Emeritus of the Clemson University Arthropod Collection of the Department of Plant and Environmental Sciences. Through a Memorandum of Understanding (MOU) between the two universities, UP students working on the taxonomy and systematics of aquatic insects will have access to museum specimens and to Dr. Morse's lab in Clemson University.

Secondly, given Dr. Morse's knowledge, expertise, and experience working on aquatic insects of East Asia, we agreed to develop, together with other Filipino freshwater biologists, a book on Philippine freshwater invertebrates. A recent review on freshwater research in the Philippines from 1988-2012 has noted a lack of consolidated reference or monograph that can serve as standard taxonomic guide for the Philippines (Magbanua et al., 2017). A possible reason why freshwater invertebrate research is lagging behind fishes where exceptionally rich collection of identification tools on Philippine fishes are available. We plan to propose this to DOST-PCAARRD and the Protect Wildlife Project of the USAID to provide financial support for the publication of this book.

Finally, the newly established Philippine Society for Freshwater Science will collaborate with the Department of Agriculture-National Fisheries Research and Development Institute to further study the biology of *Sardinella tawilis*.

Submitted by:



**Francis S. Magbanua, PhD**  
Symposium Chair, PSFBE 2018