2019 4th ASIAN MARINE BIOLOGY SYMPOSIUM

Contents

Welcome Messages

On behalf of the local organizing committee of The Fourth Asian Marine Biology Symposium (AMBS), I would like to welcome all of you to the Fourth Asian Marine Biology Symposium to be held in Taipei, Taiwan, between November 4 and 6, 2019.

Because surrounded by ocean, Taiwan has fruitful marine resources and strong aquacultural industries. Recently, the ecology and ecosystem services at both marine and coastal areas has drawn increasingly attentions. Thanks to the help of previous AMBS organizing committees, especially Dr. Hiroaki Tsutsumi and Dr. Suriyan Tunkijjanukij, it is very pleased for us to have AMBS in Taipei to not only promote the interactions and collaboration among the communities of marine biologists and ecologists in Asian regions, but also to enhance the friendships between scholars in Taiwan and Asian countries.

I am looking forward to seeing you all in Taipei for a scientifically stimulating and socially enjoyable meeting.

Professor Hwa-Lung Yu
Chairman, the 4th AMBS organizing committee
Director, Ecological Engineering Research Center,
Department of Bioenvironmental Systems Engineering,
College of Bioresources and Agriculture, National Taiwan University

More Welcomes and Greetings from Previous AMBS Chairmans

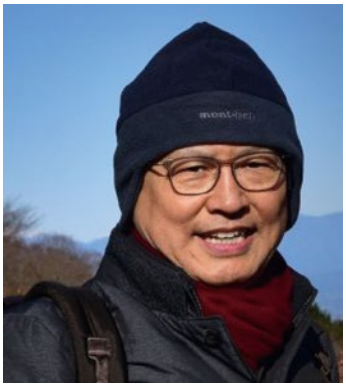
Professor Hiroaki Tsutsumi
The chairman of the 3rd AMBS organizing committee
Faculty of Environmental and Symbiotic Sciences,
Prefectural University of Kumamoto,
Kumamoto, Japan

In Phuket, Thailand, in December 2013, Asian Marine Biology Symposium started to promote the exchange of information of the most recent achievements on the research in the fields of biological studies of marine and coastal areas in the Asian countries.

Very fortunately, due to the big efforts and cooperation of various researchers in various countries, this symposium has been held regularly (The 2nd in Jeju, Korea, in October 2014, The 3rd in Kumamoto, Japan, in November 2017). It is a great pleasure that we are able to have the fourth symposium in Taipei, Republic of China (Taiwan), between November 4 and 6, 2019. I would like to appreciate deeply to the efforts for preparation and management for the symposium held in Taipei by the members of the local committee of the symposium and the staff of Taiwan National University.

One of the most important things for us to meet each other regularly, and talk and discuss about the most interesting issues on the research of each other with the participants that we cannot meet to meet frequently. We are able to learn many things from the people with different sense, knowledges, experiences, techniques, and ways of thinking in research. I hope that all of the participants enjoy to get the latest information of various studies related to the biological studies in marine, coastal seas, estuaries, and related aquatic environment in Asian countries through this symposium in Taipei.

I am looking forward to seeing all of you soon at the symposium and having an exciting time to talk.



Professor Emeritus Jae-Sang Hong
Department of the Ocean Sciences,
College of Natural Science, Inha University
Incheon 22212, Republic of Kore

The Asian Marine Biology Symposium were dedicated to promoting researches in various topics in the field of marine biology and ecology and facilitating communications especially among the Asian marine biologists to protect, and ensure the sustainable use of our regional seas. These goals were possible by convening conferences to discuss a variety of issues and share ideas through the research collaboration and information exchanges on the regional and global issues in our coastal regions.

In fact, the past three Asian Marine Biology Symposia (The 1st in Phuket, Thailand, in 2012, The 2nd in Jeju, Korea, in 2014, and The 3rdin Kumamoto, Japan, in 2017) served as a source of current issues on coastal matters by addressing not only the local and regional marine biological phenomena, but also the global issues such as biological invasion, tsunami, hypoxia, and ocean acidification etc…

To me, as one of the international organizing committee (Scientific Committee) members, it is really a great pleasure for the 4th AMBS to be continued, and held in Taipei, Republic of China (Taiwan). I sincerely congratulate the meeting, and hope many Asian marine biologists participate in this event and it will be a great success.

I would like to express my appreciation to the supports and efforts for preparation of the 4th AMBS by the members of Local Organizing Committee of the symposium and the staff of Taiwan National University.

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I am looking forward to seeing all the participants at the symposium, and enjoying a talk with you.

Assistant Professor Suriyan Tunkijjanukij
The chairman of the 1st AMBS organizing committee
Faculty of Fisheries, Kasetsart University
Bangkok, Thailan

Since the first Asian Marine Biology Symposium (AMBS) in Phuket, Thailand, in December 2012, followed by the second one in Jeju, South Korea, in October 2014, and the third one in Kumamoto, Japan, in November 2017, this symposium has gained many fruitful achievement for promotion of the exchange of scientific information, discussion on various approaches to the future studies and collaboration in research among marine biologists and marine environmental scientists in Asian countries.

I then hope that the fourth symposium in Taipei, Republic of China (Taiwan), between November 4 and 6, 2019 could provide more chance of further active exchange of the researchers studying various issues including basic research fields of marine biology, application fields of marine fisheries, and environmental issues in the coastal seas, among the Asian countries.

I believe that the efforts to continue AMBS will strengthen our academic society, and encourage collaboration among the researchers in these fields in the Asian region as well as those in the European and American regions.

In future, I hope that the symposium will grow fast and regularly catch the attention of many marine biologists and marine environmental scientists not only of Asian countries but also all over the world. Such activity will strengthen our academic society to have an efficient exchange of research information and will encourage collaboration among marine biologists working in a wide range of issues in marine biology in both regional and global scales.

I believe that the efforts to continue AMBS, especially the coming one this year in Taipei will strengthen our academic society, and encourage collaboration among the researchers in these fields, not only in the Asian region, but also in other region worldwide. I would like to meet and welcome all of you again to the Fourth Asian Marine Biology Symposium to be held in Taipei, Republic of China (Taiwan) between November 4 and 6, 2019. I look forward to seeing all of you soon at the symposium.

Symposium Schedule

Symposium venue

Day 1 (Nov. 4): Center for Condensed Matter Sciences, National Taiwan University
Day 2 (Nov. 5) and Day 3 (Nov. 6): Howard Civil Service International House

November 4 (Mon)

13:00 ~ 14:30	Registration at Center for Condensed Matter Sciences, NTU
14:30 ~ 14:50	Opening Ceremony
15:00 ~ 15:40	**Keynote Speech by Thamasak Yeemin, D.Sc.**
15:40 ~ 16:20	**Keynote Speech by Waka Sato-Okoshi, Ph.D.**
16:20 ~ 17:00	**Keynote Speech by Hsing-Juh Lin, Ph.D.**
17:00 ~ 17:30	Q&A
18:00 ~ 20:00	Welcome Party at Garden Cafeteria, 1F Howard Civil Service International House

November 5 (Tue)

08:30 ~ 09:00	Registration at Howard Civil Service International House
09:00 ~ 10:30	**Session A1 @ Room 101 | Session B1 @ Room 103**
10:30 ~ 11:00	***Coffee Break***
11:00 ~ 12:30	**Session SC1 @ Room 101 | Session S1 @ Room 103**
12:30 ~ 13:30	***Lunch***
13:30 ~ 15:00	**Session SC2 @ Room 101 | Session S2 @ Room 103**
15:00 ~ 15:30	***Coffee Break***
15:30 ~ 17:30	**Poster Presentation Ⅰ**

November 6 (Wed)

08:30 ~ 09:00	Registration at Howard Civil Service International House
09:00 ~ 10:30	**Session A2 @ Room 101 | Session B2 @ Room 103**
10:30 ~ 11:00	***Coffee Break***
11:00 ~ 12:30	**Session C @ Room 101 | Session D @ Room 103**
12:30 ~ 13:30	***Lunch***
13:30 ~ 15:15	**Session E @ Room 101 | Session F @ Room 103**
15:30 ~ 17:00	**Poster Presentation Ⅱ**
17:40 ~	Closing Ceremony & Banquet at Yueshiang Restaurant, 2F Howard Civil Service International House

Conference Information

Registration Information

For all registered participants, the symposium packages will be available at the registration desks. The desks will be located at the International Conference Hall at Center for Condensed Matter Sciences, National Taiwan University on Nov 4, and the Conference Area at Howard Civil Service International House on Nov 5, respectively. The symposium package contains symposium name badge, brochure, registration fee receipt, and relevant information.

The online registration can be available and please contact the conference staff for the further assistance.

Symposium name badge

Symposium name badge will be required to attend welcome party, banquet, and pick up lunch boxes.

- **Welcome Party Information**
  Date: November 4 (Mon), 2019
  Time: 6:00 pm
  Location: Garden Cafeteria, 1F Howard Civil Service International House
- **Closing Ceremony & Banquet**
  Date: November 6 (Wed), 2019
  Time: 5:40 pm
  Location: Yueshiang Restaurant, 2F Howard Civil Service International House

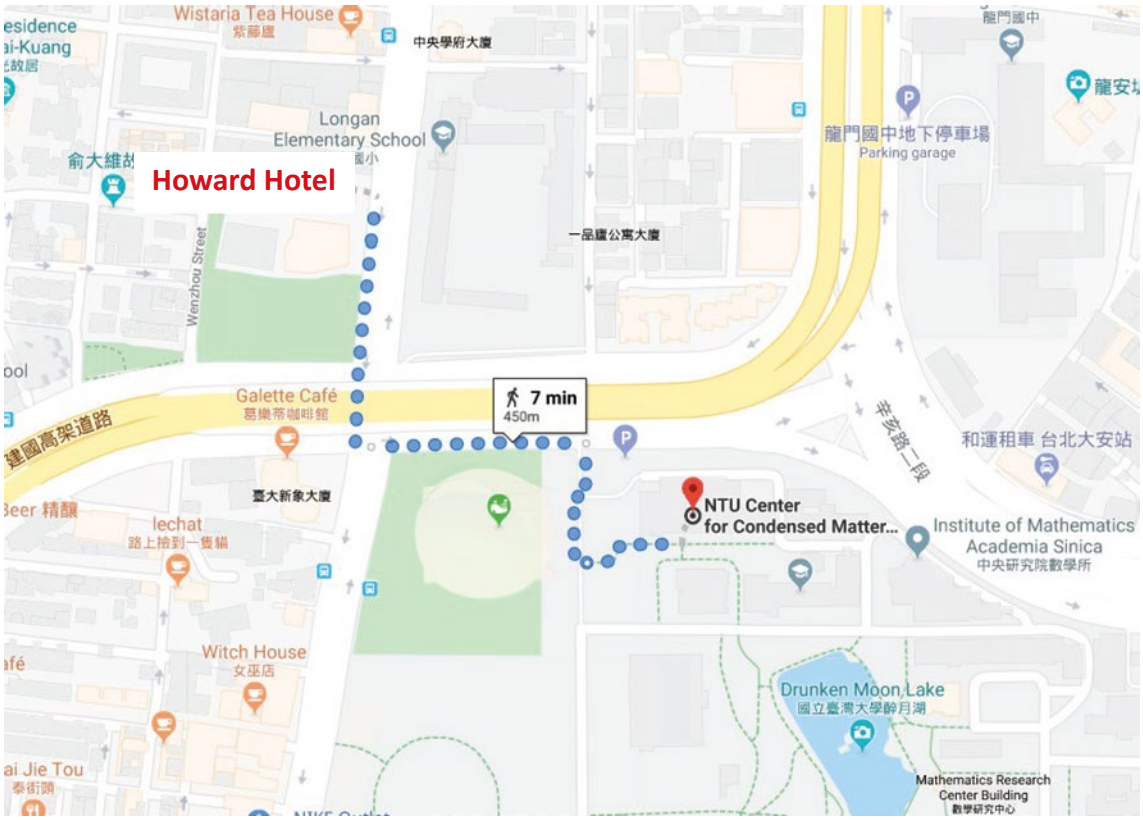
WiFi service

Free wifi service will be available at the conference area. Please follow the step-by-step instructions below

1. Find and connect to Howard-Meeting wireless service
2. Go to the login page at 192.168.254.253 with your browsers
3. Account name/password: Howard02/9dbqx8

Symposium Venue Map

Direction between
Opening Ceremony Hall (NTU Center for Condensed Matter Sciences)
and
Welcome Party (Howard Hotel)

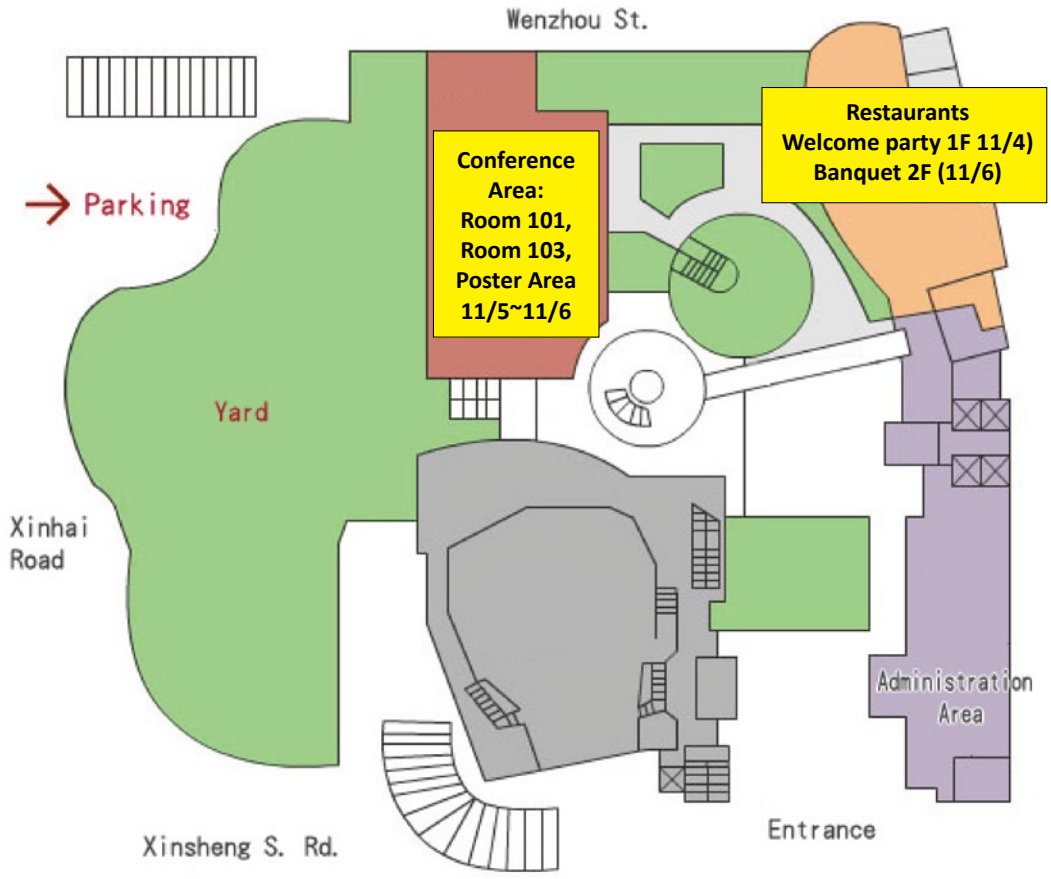


November 4 (Mon)

Registration at International Conference Hall (R204), Center for Condensed Matter Sciences, NTU

Symposium Venue Map

Room 101, 103, and Poster area are all located at the Conference Area



November 5~6 (Tue ~ Wed)

Registration at Conference Area, Howard Civil Service International House

Information for the Presenters

Oral Presentation

The presentation time is 15 minutes, including discussion.

The computer for presentation is available in each room.
Please upload your presentation file to the following link:
https://stemlab.bse.ntu.edu.tw/file/sharing/CR53zT3cc

Remarks:
You can also use your own computer but please come to test whether the file can be projected normally before the session starts.

Poster Presentation

The size of the poster is A0 (841 mm in width and 1189 mm in length).

Please put up a poster on the designated board before the poster presentation starts.
Please take off the poster right after the poster presentation ends.

Student Presentation Contest Rules

Student Oral Presentation Contest

Evaluation

1) Each presenation will have 12 minutes for presentation and 3 minutes for Q&A
2) The oral presentation will be evaluated based on:
   - Clarity of oral expression (1-5)
   - Professional knowledge (1-5)
   - Slide design (1-5)
   - Significance of the study (1-5)
3) The participant **must attend Room 101 in the designated time** and **can be disqualified if he or she is absent** during the time of oral competition session.

Student Poster Presentation Contest

Evaluation

1) The participant **must present his or her poster in the designated time** and **can be disqualified if he or she is absent** during the time of poster competition session.
2) The poster presentation will be evaluated based on:
   - Clarity of oral expression (1-5)
   - Professional knowledge (1-5)
   - Poster design (1-5)
   - Significance of the study (1-5)

Presentation Schedule

November 4th (Monday) Schedule
Center for Condensed Matter Sciences, NTU

Reception of the registration

13:00 ~ 14:30

Opening ceremony of the symposium

14:30 ~ 14:50

Keynote Speeches

Chairs: Dr. Sau-Wai Yam and Dr. Hsuan-Wien Chen

15:00 ~ 15:40
Speaker: Thamasak Yeemin, D.Sc.
Ecological resilience to climate change and anthropogenic disturbances: lessons learned from coral reef studies in the Western Pacific

15:40 ~ 16:20
Speaker: Waka Sato-Okoshi, Ph.D.
Global aquaculture activities can alter species distribution and marine ecosystem

16:20 ~ 17:00
Speaker: Hsing-Juh Lin, Ph.D.
The driving force for intertidal tropical seagrass beds over decadal timescales

Q&A Time

17:00 ~ 17:30 Chairs: Dr. Hsuan-Wien Chen and Dr. Sau-Wai Yam

Welcome Party at Howard Civil Service International House

18:00 ~

November 5th (Tuesday) Schedule

Howard Civil Service International House

Start Time	Room 101	Room 103
	Session A1 Biology and ecology of benthic animals and plankton (I) Chairs: **Yo-Jin Shiau** & **Naoko Isomura**	**Session B1** Assessment and conservation of coastal and estuarine (I) Chairs: **Chaolun Allen Chen** & **Nozawa Yoko**
09:00	A1-1 **Kenta Nakamoto,** Jun H, Tomohiko K.; Spatial variability in composition of brown algae along Sanriku Coast, northeastern Japan	B1-1 **Tzu-Hao Lin,** Florence E, Jhoanna J L,Claire A ,Pia C, Haazel A.; Ocean biodiversity listening project: an acoustic approach of marine ecosystem assessment
09:15	A1-2 **Gaël Dur,** Won E-J,Jeonghoon H, Lee J-S,Sami S.; Individual-Based Model for evaluating the post-traumatic effect of UV-B radiation on zooplankton reproduction.	B1-2 **Chaolun Allen Chen**; Unprecedent effort in conserving the critically-endangered caryophyllid coral Polycyathus chaishanensis (Scleractinia; Caryophyllidae) in the Datan algal reef, Taiwan
09:30	A1-3 **Tomohiko Kondoh,** Hirokazu A, Okoshi W- S.; Recolonization of two *Pseudopolydora* species (Annelida Spionidae) in relation to reproduction and larval development in a shallow, brackish and eutrophic lagoon after the 2011 tsunami	B1-3 **Osamu Miura,**Won E-J,Jeonghoon H, Lee J-S,Sami S.; Effect of the 2010 Tohoku earthquake tsunami on trematode community in the mud snail, *Batillaria attramentaria*
09:45	A1-4 **Naoko Isomura,** Taichiro Y.; The genes expression of hormone and neuronal transmitter receptor in relation to gametogenesis and spawning in *Acropora intermedia*	B1-4 **Felipe Monteiro Gomes de Mattos,** Thamasak Y.; Reef fish diversity in the Mu Ko Surin marine national park, Andaman sea, Thailand
10:00	A1-5 **Jun Nishikawa,** Mitsumi A.; Effect of posture on somatic growth and asexual reproduction in the polyp stage of *Aurelia coerulea*	B1-5 **Nozawa Yoko,** Villanueva R.D., Munasik Roeroe K.A, Mezak T, Kawai T, Guest J, Arakaki S., Suzuk G., Tanangonan J.J.B , P.O. ANG, Jr. P.; Latitudinal variation in growth and survival of juvenile corals
10:15	A1-6 **Chae-Lin Lee,** Yoo J-W.; Biogenic habitats as home for invertebrates: comparison of communities associated with tubeworms, oysters, mussels on Rocky shore of Masan Bay, Republic of Korea.	B1-6 **Machida Ryuji,** Matthieu L,Nancy K.; GenBank is a reliable resource for 21st century biodiversity research
10:30	***Coffee Break***	

Start Time	Room 101	Room 103
	Session SC1 Student Oral Presentation Contest (I) Judges: **Dr. Shiau Yo-Jin** **Dr. Mark Grygier** **Dr. Ichiro Imai**	**Session S1** Contributed Session: Biodiversity monitoring projects in shallow coastal habitats along the Japanese Coast Chairs: **Hsuan-Wien Chen** & **Kanaya Gen**
11:00	SC1-1 **Noboru Kitagawa,** Tsutsumi H,; The impacts of physical disturbances caused by strong waves and winds on the seasonal fluctuations of the macro-benthic community on the sandy tidal flats	S1-1 **Aoki Misuzu,** Saki T, Takuya K.; Coastal surveys (rocky shores, tidal flats, seagrass beds, and algal beds) in Monitoring Sites 1000 Projects: A long-term monitoring project in Japan
11:15	SC1-2 **Ko Hinokidani,** Ushioda A, Nakanishi Y.; A role of leaf-removing crabs in iron solubilization processes in mangrove sediments	S1-2 **Suzuki Takao,** Takeshi Y, Jotaro U.; Citizen-based monitoring projects in tidal flats along the Japanese Coast.
11:30	SC1-3 **Aziz J Mulla,** Lin C-H, Takahashi S, Nozawa Y.; Phototaxis in Pocillopora verrucosa Larvae	S1-3 **Kanaya Gen,**Kazuo K, Yasuhisa H, Masami H, Tsunenori K, Taeko K, Masanori T, Takao S, Masahiro N, Misuzu A.; Spatiotemporal variation in the macrozoobenthic biodiversity and community structure in Japanese tidal flats: Analyses based on data from the Monitoring Sites 1000 Project
11:45	SC1-4 **Jutarat Pornamnuaylap,** Monthum Y, Jitchum P; Species diversity of the coastal Phytoplankton in the Northern Andaman Sea, Thailand	S1-4 **Hirokazu Abe,** Matsumasa M,; Habitat alteration and benthic animal biodiversity in the Sanriku Coast after the 2011 earthquake and tsunamis
12:00	SC1-5 **Luna Yamamori,** Kato M; Evolution of limpet-shaped shell in trochid snails: adaptation to two different environments	S1-5 **Genki Kobayashi,** Itoh H, Kanaya G, Abe H, Kojima S; Population genetic structures of two ocypodoid crab species along the Japanese coast
12:15	SC1-6 **Manzhi Tang,** Okoshi K, Nishitani G, Okoshi W-S.; Population dynamics of *Boccardia proboscidea* and *Boccardiella hamata* (Annelida, Spionidae) inhabiting oyster beds in Sasuhama, northeastern Japan	S1-6 **Hajime Itoh,** Kanaya G, Miura O, Nakai S, Kobayashi G, Kojima S.; Phylogeographic variation in the Asian horn snail *Batillaria attramentaria* (Mollusca: Gastropoda) along the Japanese coast
12:30	***Lunch***	

Start Time	Room 101	Room 103
	Session SC2 Student Oral Presentation Contest (II) Judges: **Dr. Hsieh Chih-Hao** **Dr. Phongchate Pichitkul** **Dr. Taeko Kimura**	**Session S2** Contributed Session: Symbiosis and parasitism in Crustacea: diversity and ecology studies in Asian region Chairs: **Gyo Itani** & **Yumi Henmi**
13:30 13.35	SC2-1 **Satoshi Takahashi,** Tanu F-Z, Nakanishi Y.; Relationship between mangrove foliar δ15N and land use in some watersheds in Okinawa, Japan	(13:30~13:35) **Introduction** S2-1 **Benny K.K. Chan,**WangT-W, Lin H-C.; Are coral associated barnacles suspension feeders or they have to derive carbon from their coral hosts?
13:45 13:50	SC2-2 **Wei-Siang Hong,** Chiou H-Y, HuR-H, Tilley A, Hsu W-Y.; On the estimation of marine resource distribution of Timor-Leste by data fitting	S2-2 **Ryutaro Goto**; Diversity of bivalves symbiotic with crustaceans
14:00 14:05	SC2-3 **Chi Chen**; The characteristics and expression profile of SQOR under sulfide tolerance in hydrothermal vent crab, *Xenograpsus testudinatus* **Author:** Chiou H-Y, HuR-H, HongW-S, Tilley A, Hsu W-Y.	S2-3 **Meng-Chen Yu,** Wong Y-H, Kolbasov G-A, Chen H-J, Wada N, Tang S-L, Chan B-k.k.; Windows for animals: Understanding the functions of the unique window structure in the shell of sponge-inhabiting barnacles
14:15 14:20	SC2-4 **Pakorn Tongboonkua,** Chen W-J.; Systematics of the Bothid Flatfishes (Pleuronectiformes: Bothidae)	S2-4 **Niklas Dreyers,** Olesen J, Palero F, Grygier M, Machida R, Chan B-K; The biology and lifecycle of enigmatic crustacean y-larvae
14:30 14:35	SC2-5 **Kamonlak Ninsuwan,** Praiboon* J, Muangmai N, Yuthavisuthi P.; Comparative of various carbon sources on docosahexaenoic acid production from *Aurantiochytrium limacinum* FIKU003	S2-5 **Sungtae Kim,** Lee C-L, Hong J-S.; The effect of the isopod parasite, Gyge ovalis on the mud shrimp, *Upogebia major* in the west coast of Korea
14:45 14:50	SC2-6 **Anirut Klomjit,** Praiboon* J, Thamlikitkul V.; Phytochemical compositions and potential pharmaceutical uses of *Padina australis* extract	S2-6 **Yumi Henmi,** Itani G.; Symbiotic relationships between crustaceans and fishes
15:05		S2-7 **Akira Asakura,** Imazu M.; Species composition and seasonal abundance of ectoparasitic crustaceans on intertidal hermit crabs in the Pacific rocky shore of Japan. (15:20~15:50) **General discussion** (15:50~16:00) **Concluding remarks**
15:30	Poster Presentation I	

November 6th (Wednesday) Schedule
Howard Civil Service International House

Start Time	Room 101	Room 103
	Session A2 Biology and ecology of benthic animals and plankton (II) Chairs: **Shuh-Sen Young** & **Kenji Okoshi**	**Session B2** Assessment and conservation of coastal and estuarine (II) Chairs: **Hwa-Lung Yu** & **Akira Umehara**
09:00	A2-1 **Shuh-Sen Young,** Jhao J-S,; Suggested type and benefit of the bottom trawl for sampling macrobenthos in Taiwan coast	B2-1 **Ichiro Imai,** Kakumu A, Shimada H.; Expanded occurrences of red tides by the warm-water dinoflagellate *Karenia mikimotoi* in Hakodate Bay, Hokkaido, northern Japan
09:15	A2-2 **Kenji Okoshi**; The multiple effects of the Great East Japan Earthquake on the Pacific oyster *Crassostrea gigas*	B2-2 **Akira Umehara,** Borja A, Nakai S, Nishijima W.; Long-term changes in the benthic environment in the Seto Inland Sea
09:30	A2-3 **Li-Tzu Hou,** Ko C-Y.; Multi-scale temporal variation in phytoplankton biomass (chlorophyll-a) in the northern South China Sea	B2-3 **Wai-Zhian Soo,** Chen Y-R, Hou W-S,; Study on the Influence of Leaf Fan Form of Aeration Equipment on Dissolved Oxygen Distribution and Flow Field in Water
09:45	A2-4 **Kay Sakuma,** Ueda Y.; Validating fisheries-dependent catch and effort data with observations from trawl surveys: an example of the Pacific northern shrimp *Pandalus eous* in the Sea of Japan	B2-4 **Masaaki SATO**; Assessing local fish communities around artificial reefs using environmental DNA metabarcoding
10:00	A2-5 **Mark J. Grygier,** Dreyer N, Fujita Y, Jacobsen D-E, Chan B-K.K, Olesen J.; A new attempt to document the extraordinarily diverse form-taxa of “nauplius y” and “cypris y” (Crustacea: Thecostraca: Facetotecta) in plankton at Okinawa, Japan	B2-5 **Sommai Janekitkarn**; Diversity and Community of Composition of Coral reef fishes of the Ra Island, Pang-Nga province, Andaman Sea, Thailand
10:15	A2-6 **Chen-Lu Lee,** Liu S-L, Lin H-J, Liu P-J.; Allelopathic algae effect on coral reef fish	B2-6 **Hwa-Lung Yu**; An ecological risk assessment around a petrochemical industrial area
10:30	***Coffee Break***	

Start Time	Room 101	Room 103
	Session C Biogeochemistry of coastal ecosystem Chairs: **Chih-Yu Chiu** & **Shang-Shu Shih**	**Session D** Environment and ecosystem Chairs: **Sau-Wai Yam** & **Suchana Chavanich**
11:00	C-1 **Tomohiro Komorita,** Nizzoli D, Viaroli P-L.; Characterization of the organic matter of biodeposits derived from marine aquaculture bivalves: a meta-analysis approach	D-1 **Teerapong Duangdee,** Tsutsumi H.; Accelerated bioaccumulation of mercury in red stingray (Hemitrygon akajei) by the change of feeding habits relative to growth
11:15	C-2 **Chih-Yu Chiu,** Shiau Y-J, Cai Y, Lin Y-T, Jia Z-G; Phylogenetically distinct methanotrophs modulate methane oxidation in rice paddies and mangrove soils	D-2 **Chih-hao Hsieh**; Fluctuating interaction network and time-varying stability of a natural fish community
11:30	C-3 **Chiao-Wen Lin,** Kao Y-C,Lin H-J.; Seasonal variations of methane emissions from mangrove forests soils across Taiwan	D-3 **Hans-Uwe Dahms,** Cho M-F, Gurunathan R, Hong J-F, Liu C-H,Selvar P, Deepak C, Ambarsari W, Schizas N-V, James R A, Hwang J-S.; Shallow marine hydrothermal vents (HVs) provide valuable bioresource information
11:45	C-4 **Hsuan-Wien Chen,** Lian Y-J, Hsieh L-Y, Hsueh M-L.; From trophic contribution to ecosystem services: a mangrove case	D-4 **Do Wan Kim**; Effecive initiation diffusion model based on data of species growth
12:00	C-5 **Yo-Jin Shiau**; Biological N_2 fixation of mangrove forest soils in the western coastal of Taiwan	D-5 **Sau-Wai Yam**; Flow of metallic contaminants in food-web components within a subtropical mangrove ecosystem
12:15	C-6 **Shang-Shu Shih**; Coupling tidal creek evolution model with mangrove habitat suitability model in estuarine wetlands	D-6 **Chaolun Allen Chen**; Potential resilience of Taiwanese Coral reef in Changing Climate
12:30	***Lunch***	

Start Time	Room 101	Room 103
	Session E Fisheries and aquaculture Chairs: **Wen-Shang Hou** & **Hiroaki Tsutsumi**	**Session F** Taxonomy and phylogeny of aquatic organisms & Other general issues of marine biology Chairs: **Keryea Soong** & **Chang-Bae Kim**
13:30	E-1 **Tirawat Rairat,** Thongpiam W, Hsieh C-Y, Chou C-C.; The effects of water temperature on pharmacokinetics, optimal dosing regimen, and the occurrence of non-linear kinetics of florfenicol in Nile tilapia (Oreochromis niloticus)	F-1 **Shigeaki Kojima,** Kido M, Itoh H, Sakuma K, Shinohara G.; Evolution of deep-sea demersal fishes of the *Bothrocara hollandi* species complex around Japan
13:45	E-2 **Hiroaki Tsutsumim,** Nishi T, Duangdee T, Tunkijjanukij S.; DO control of the water at a shrimp farming pond with a micro-bubble aeration system, and its effect on the growth of shrimp	F-2 **Chang-Bae Kim,** Do T-D, Jung D-W, Kim J-I.; Morphological Examination and DNA Analysis Reveal a New Record and a New Species of Cadlina (Nudibranchia) from Korea
14:00	E-3 **Masahiro Suzuki,** Suzuki K.; The effect of rapid invasion of clam eating moon snail Laguncula pulchella on the abundance of Manila clam Ruditapes philippinarum in artificial tidal flat constructed after the Great East Japan Earthquake	F-3 **Keiichi Kakui,** Tomioka S.; Diversity of *Nesotanais* tanaidacean crustaceans in the Ryukyu Islands, Japan
14:15	E-4 **Min-Yu Tsai**; High resolution larval fish compositions of catch and by-catch species in coastal waters of Taiwan, ascribable to spatiotemporal and environmental factors	F-4 **Jintana Salaenoi,** Jaowatana N, Chuangcham K**,** Salaenoi J.; Minerals in the Sediment Collected from Blood Cockle Cultured Area at Bandon Bay
14:30	E-5 **Wai-Zhian Soo**; The effect of water quality, growth and survival of *Macrobrachium Rosenbergii* by lower power circulating water system	F-5 **Thipphawan Chothonglang,** E-kobon, Chumnanpuen P, Salaenoi J.; Antibacterial Activity in Haemolymph of the Oyster, Saccostrea commercialis
14:45		F-6 **Chananya Pinsri,** Suksangchan C, Boonprab K, Salaenoi J.; Protein and elements composition in Cephalopods ink
15:00		F-7 **Keryea Soong,** Lin P-H.; Two scientific stations open to all in South China Sea
15:30	Poster Presentation Ⅱ	

Poster Presentation Schedule

※P1-1 ~ P1-25 and P1-36: Student Poster Contest

No.	Poster Presentation I (15:30~17:30 on Nov. 5)
P1-1	**Tomo Tateishi**: Impact of torrential rain on the population dynamics of brackish water clam, *Corbicula japonica*, in the Kikuchi River Estuary, Kumamoto, Japan
P1-2	**Aika Oyama**: Seasonal changes of the distribution and population dynamics of hard clam, *Meretric lusoria*, on Midri River Tidal Flats, Kumamoto, Japan
P1-3	**Kouki Suga**: Food web analysis of benthic ecosystem with stable isotope signatures of carbon and nitrogen on Arao Tidal Flats, Kumamoto, Kyushu, Japan
P1-4	**Yuki Shimada**: Seasonal fluctuations of short-neck clam, Ruditapes philippinarum, population and its controlling factors on Shira River Tidal Flats, Kumamoto, Japan
P1-5	**Dang Do Hung Viet**: The role of sea urchins on coral recruitment in Taiwan
P1-6	**Wan-Chien Hsiao**: Identification of abiotic drivers shaping marine coastal benthic communities
P1-7	**Ploypailin Rangseethampanya**: Species composition and abundance of macrofauna at Mu Ko Chumphon, the Western Gulf of Thailand
P1-8	**Akiyuki Kenmochi**: Mass occurrence and its ecological significance of marine cladocerans in offshore Suruga Bay, Japan
P1-9	**Kohei Oshiro**: Morphological and molecular assessment of the species diversity of the genus *Phascolion* (Annelida: Sipuncula) in Japan
P1-10	**Kengo Kajiyama**: Seasonal variation in distribution and species composition of infaunal spionid polychaetes (Annelida: Spionidae) in the intertidal zone of Tokyo Bay
P1-11	**Arirush Wongnutpranont**: Seasonal variation of abundance and composition of benthic invertebrates in Phuket, the Andaman Sea
P1-12	**Kyeonglim Moon**: Changes in diversity and structure of marine benthic assemblage
P1-13	**Phunsin Kantha**: Toxic Effects of Nanoplastic Polystyrene on Developmental stages and Behavior on Zebrafish Larvae.
P1-14	**Charernmee Chamchoy**: Abundance and composition of juvenile corals on shallow reef flat and reef slope at a popular tourist destination in the Andaman Sea
P1-15	**Rocktim Ramen Das**: Surveys of coral reactions to fishing line garbage around Sesoko Island, Okinawa
P1-16	**Tomoe Kuno**: Feeding habits and niche of short-finned pilot whales and bottlenose dolphins around Kii Peninsula
P1-17	**Masaomi Shiromoto**: Genetic diversity of the red tide-forming dinoflagellate, *Noctiluca scintillans*, in Japanese and Korean coastal waters
P1-18	**Yoshiko Matsuoka**: Experiment to re-establish high-density patches of short-neck clam, *Ruditapes Philippinarum*, with protective fences to the predation by fishes on Sashiki Tidal Flats in Yatsushiro Sea, Japan
P1-19	**Kyeonglim Moon**: Spatial trends of morphology and genetic structure in seagrass *Zostera marina* on Jeju Island, Korea
P1-20	**Tzu-yu Lai**: Ready to spawn? Final gamete maturation and egg-sperm bundle formation in Acropora and Merulinidae corals

No.	Poster Presentation I (15:30~17:30 on Nov. 5)
P1-21	**Chia-Ling Fong**: Citizen scientists reveal main threats to the foraging sea turtles in Taiwan
P1-22	**Akihiro Yoshikawa**: Molecular Phylogeny of Clibanarius Dana, 1852 from the Indo-West Pacific: Habitat Adaptation and Evolution of Pereopod Colour Pattern
P1-23	**Yucheol Lee**: A mitochondrial genome phylogeny of Mytilidae (Bivalvia: Mytilida)
P1-24	**Takahiro Sugiyama**: Interspecific or intraspecific variation?: host-specific color morphs in the parasitic scale worm *Gastrolepida clavigera* (Annelida: Polynoidae)
P1-25	**Mizuki Ohta**: Species richness of the deep-sea Asellota isopods (Arthropoda: Crustacea) off Tohoku, Japan
P1-27	**Chih-Hsien Chang**: The splash detection technology for fish feeding monitoring in cage culture
P1-28	**Sawada Hideki**: Spatial distribution of the sea cucumber Apostichopus japonicus in the natural habitat of Miyazu Bay, Kyoto, Japan
P1-29	**Jin-Young Seo**: Toxicity assessment for the wastes removed from the in-water ship's surface cleaning activities using sea-urchin embryos
P1-30	**Laongdow Jungrak**: Meiofaunal composition of sandy beach and soft-bottom of coral reefs in the Western Gulf of Thailand
P1-31	**Shoko Hosoi-Tanabe**: Distribution of toxic *Alexandrium tamaense* and *A. catenella* in Akkeshi-ko estuary and Akkeshi Bay, where oyster is cultivated on a large scale in Japan
P1-32	**Tohru Takahashi**: Microcystine (freshwater origin cyanotoxin) hibernates in the sea bottom
P1-33	**Taeko Kimura**: Long-term monitoring of macrobenthic fauna on three tidal flats in the Tokai Region, Central Japan from 2008 to 2018 (the Monitoring Site 1000 program)
P1-34	**Rumiko Kajihara**: Feeding ground function of fishing ports for fish in southwestern Hokkaido, Japan
P1-35	**Jia-Ho Shiu**: Shifting in bacteria *Endozoicomonas* is independent to coral bleaching
P1-36	**Moeko Kato**: Seasonal change of benthic diatoms in Gamo Lagoon, Miyagi Prefecture, northeastern Japan
P1-37	**Kyosuke Momota**: The importance of habitat diversity for biodiversity of benthic macrofaunal species in a semi-enclosed coastal sea
P1-38	**Sungtae Kim**: Vertical distribution of the introduced Invasive smooth cordgrass, *Spartina alterniflora* in the West Coast of Korea
P1-39	**Yu-Te Lin**: Denitrification activities in coastal mangrove soils of Taiwan
P1-40	**Shun Kawaida**: The role of crabs having cellulose digestion ability in mangrove organic carbon processing
P1-41	**Sosuke Otani**: Bioturbation of Sesarmid crab Chiromantes dehaani at reed marsh in Yodo river estuary, Japan

No.	Poster Presentation II (15:30~17:00 on Nov. 6)
P2-1	**Mutsuo Ichinomiya**: Parmales abundance and species composition in the waters surrounding Hokkaido, North Japan
P2-2	**Yaowaluk Monthum**: Species composition and distribution for phytoplankton of Tung Nang Dam estuary in Phang-Nga Province during dry and rainy seasons in 2018-2019
P2-3	**Parinya Limviriyakul**: Host detection of symbiotic crab Tetralia rubridactyla
P2-4	**Daishi Yamazaki**: Comparative seascape genetics revealed contrasting genetic structure and habitat preferences between co-distributed closely related marine species
P2-5	**Jeong Hyeon Kim**: Summer variations of macrobenthic community structures in Gwangyang Bay, South Korea
P2-6	**Waka Sato-Okoshi**: Survey of the family Spionidae (Annelida) in Danshuei River and Estuary, north Taiwan
P2-7	**Ryo Orita**: Profiling gene expression responses of the blood clam *Anadara kagoshimensis* to anoxia by *de novo* RNA-Seq analysis
P2-8	**Che-Hung Lin**: The reef-building coral *Acropora hyacinthus* may use chemical signals to synchronize spawning timing between conspecifics
P2-9	**Seok-Hyun Kim**: Distribution patterns of some Polychaetes in the intertidal rocky shores in Jeju Island, Korea
P2-10	**Siriluck Rongprakhon**: Abundance of macro-invertebrates on shallow reefs flats in the Western Gulf of Thailand
P2-11	**Napakhwan Whanpetch**: Spatial and temporal distribution of polychaetes in seagrass bed at Kung Krabaen Bay, Chanthaburi Province, Thailand
P2-12	**Chae-Lin Lee**: On some population characteristics of the parasitic bopyrid isopod Gyge ovalis (Shiino, 1939) in the mud shrimp Upogebia major (de Haan) in Jugyo tidal flat, west coast of Korea
P2-13	**Katsumasa Yamada**: Community structure of brachyuran crab (Crustacea, Decapoda) among tidal rivers at the Ariake Sea, Kyushu, Japan
P2-14	**Chao-Kai Kang**: Investigation of marine benthic communities in sandy bed of Fangshan coast near Fenggang harbor
P2-15	**Hyun-Sig Lim**: Effect of Spartina anglica and Suaeda japonica vegetation on the macrobenthic community structure of the mud flat in Korea
P2-16	**Yu-Kai Chen**: Long-term observation of ichthyoplankton community structure and its relation to environmental factors in the Taiwan Strait in winter
P2-17	**Takefumi Yorisue**: Latitudinal gradient of cold temperature tolerance in an introduced barnacle (Balanus glandula) in Japan
P2-18	**Nami Okubo**: Microplastic disturb coral-algae symbiotic relationship
P2-19	**Pailin Jitchum**: Microzooplankton Community Structure in the Northern Andaman Sea, THAILAND
P2-20	**Wiphawan Aunkhongthong**: Assessing diversity and abundance of scleractinian corals on shallow reef flats in Mu Ko Phangan, the Western Gulf of Thailand
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P2-21	**Wanlaya Klinthong**: Long-term monitoring of coral recruitment on settlement panels at Mu Ko Similan, the Andaman Sea after the 2010 coral bleaching event
P2-22	**Makamas Sutthacheep**: The recovery potential of corals at Mu Ko Chang, the Eastern Gulf of Thailand

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P2-22	**Makamas Sutthacheep**: The recovery potential of corals at Mu Ko Chang, the Eastern Gulf of Thailand
P2-23	**Sittiporn Pengsakun**: Coral community on an underwater pinnacle at a proposed dive site for marine ecotourism in the Western Gulf of Thailand
P2-25	**Wachirah JAINGAM**: THE CORRELATION OF MERCURY CONTENT OF THE LIVER AND MUSCLE OF FISHES IN AN ENCLOSED ISAHAYA BAY, KYUSHU, JAPAN
P2-26	**Suchana Chavanich**: Marine debris and microplastics in the upper Gulf of Thailand
P2-27	**Phongchate Pichitkul**: Effect of Asian Sea Bass (Lates calcarifer) Cage Culture on Benthic Communities in Estuary of the Bang Pakong River Basin at Chachoengsao Province, Thailand.
P2-28	**Hans-Uwe Dahms**: Are in silico endocrine disruption screenings useful for seafood safety predictions for children?
P2-29	**Hans-Uwe Dahms**: Risk assessment by chemcomputation of biotoxins from marine cyanobacteria
P2-30	**Hans-Uwe Dahms**: Hypersaline saltpan bacterium Pseudomonas aeruginosa provides antibacterial agents against diabetic wound infections
P2-31	**Hans-Uwe Dahms**: Hydrothermal vent bacteria from Taiwan provide antibacterials and metalloproteinases
P2-32	**Hans-Uwe Dahms**: Bacterial diversity of shallow marine hydrothermal vents at Kueishantao, Taiwan
P2-33	**Hans-Uwe Dahms**: Status of ESβL producing bacteria along the southern Indian coast
P2-34	**Hans-Uwe Dahms**: Development of a marine featured curriculum in the coastal elementary school San Gu, Tainan, Taiwan
P2-35	**Hyojin Ahn**: Seasonal changes of fish biodiversity in Hakodate Bay, Japan, revealed by eDNA metabarcoding technique
P2-36	**Chiang, Wei-Chuan**: Vertical and horizontal movements of bigeye tuna (Thunnus obesus) off southeastern Taiwan
P2-37	**Hirokazu Abe**: Identification guide to the planktonic larvae of marine annelids in Japan
P2-38	**Chang-Bae Kim**: Next-Generation Sequence for Mitochondrial Genome Construction: An Integrated Pipeline, Assembly to Annotation case of Dermatobranchus otome
P2-39	**Yucheol Lee**: Marine Mollusk Resource Bank of Korea (MMRBK)
P2-40	**Gyo Itani**: Morphological characteristics of an undescribed species of gaeticine crab (Crustacea: Brachyura: Varunidae) clinging to mud shrimp abdomen from Japan
P2-41	**Hiroaki Tosuji**: Molecular evidence of two sibling species in "*Perinereis shikueii*" (Annelida: Nereididae) and their distributions in Taiwan and Japan

Keynote Speaker Abstracts & Biographies

Thamasak Yeemin, D.Sc.

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EDUCATION

1984 B.Sc. in Marine Biology from Chulalongkorn University, Bangkok, Thailand
1986 M.Sc. in Marine Biology from Chulalongkorn University, Bangkok, Thailand
1988 M.Sc. in Biology from the University of the Ryukyus, Okinawa, Japan
1991 D.Sc. in Biology from Kyushu University, Fukuoka, Japan
1993 Diploma in Environmental Management from the Netherlands International Institute for Management, Maastricht, The Netherlands

EXPERIENCES & MAIN STUDIES

Thamasak Yeemin has worked at Marine Biodiversity Research Group, Department of Biology, Faculty of Science, Ramkhamhaeng University, in Bangkok since 1992. His education background includes a D.Sc. in Biology from Kyushu University, M.Sc. in Biology from the University of the Ryukyus, M.Sc. and B.Sc. in Marine Biology from Chulalongkorn University and a diploma in Environmental Management from the Netherlands International Institute for Management. He has studied ecology, biology, environmental science and socio-economics of coastal ecosystem management and marine protected areas. He has experience in many aspects of coastal and marine ecosystems, including management, conservation, research, and administration, based on nearly 30 years of fieldwork in Thailand and other parts of the Western Pacific. He has provided expertise to several management agencies, including local governments, national institutions, international organizations and NGOs, to design and implement management plans for coastal resources and the environment. He is a founding member of the Asia Pacific Coral Reef Society and a former councilor of the International Society for Reef Studies (ISRS). He has also worked as a consultant for some regional collaborative projects under international organizations, such as the International Maritime Organization (IMO), UNEP, ASEAN Center for Biodiversity, etc. He is currently a president of the Marine Science Association of Thailand (MSAT).

Ecological resilience to climate change and anthropogenic disturbances: lessons learned from coral reef studies in the Western Pacific

The resilience concept was introduced in an ecological context as the amount of disturbance that an ecosystem could withstand without changing self-organized processes and structures. Resilience concepts are being increasingly applied to coral reefs in the Caribbean, Indo-Pacific and other parts of the world. Large numbers of people in the Western Pacific are highly dependent on coral reef ecosystem services. However, most coral reef ecosystems are under severe threat from natural and anthropogenic disturbances, particularly coral bleaching events. Major coral bleaching phenomena have led to widespread coral mortality in the last three decades. The assessment of coral reef resilience to climate change is an important task for coral reef studies. Some coral reef resilience assessments are not practical for developing countries in the Western Pacific but some researchers developed practical resilience indices. A case study on quantitative assessment of coral reef resilience was conducted at twenty study sites in the Gulf of Thailand and the Andaman Sea, following the 2010 severe coral bleaching event. The resilience assessment was based on the percentage of non-bleached coral colonies, the percentage of surviving coral colonies and the density of juvenile corals. The results showed that coral reef resilience varied greatly among the study sites and major reef groups according to their community structure, largely due to the differing bleaching resistance and tolerance of the dominant coral species. Recent studies revealed that the speed of coral recovery from a first round of bleaching event contributes strongly to sensitivity to a second round of bleaching event. Some naturally occurring climate-resilient corals were used for coral restoration projects. The compiled coral abundance data from over 2,548 Indo-Pacific reefs to evaluate the influence of 21 climate, social and environmental drivers on the ecology of coral communities showed that high abundances of corals were typically associated with several factors, including weaker thermal disturbances and longer intervals for potential recovery, slower human population growth, reduced access by human settlements and markets, and less nearby agriculture. Resilience-based management and some management strategies have been proposed for coral reef management and conservation.

Keywords: climate change, coral reef, disturbance, resilience, Western Pacific

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EDUCATION

1979-1983	B.Sc. from Faculty of Agriculture, Tohoku University, Japan
1983-1985	M.A. from Graduate School of Agricultural Science, Tohoku University, Japan
1985-1988	Ph. D from Graduate School of Agricultural Science, Tohoku University, Japan

EXPERIENCES

1988-1991	Chief Curator, Natural History Museum and Institute, Chiba Prefecture, Japan
1991-2005	Associate, Graduate School of Agricultural Science, Tohoku University
2005-2007	Assistant Professor, Graduate School of Agricultural Science, Tohoku University
2007-2018	Associate Professor, Graduate School of Agricultural Science, Tohoku University
2018-present	Professor, Graduate School of Agricultural Science, Tohoku University
1994	Guest Researcher, University of Alberta, Canada
1996-1999	Adjunct Investigator, Center for Interdisciplinary Research, Tohoku University
1998	Expert Instructor in Aquaculture in Chile, Japan International Cooperation Agency
2000-2001	42nd Japanese Antarctic Research Expedition
2002	Deep Sea Research Expedition, Ryukyu Islands (Natsushima)
2002	Deep Sea Research Expedition, Japan Trench (Kairei)
2003	Japan-Thailand cooperative studies on fisheries science, Ministry of Education, Culture, Sports, Science and Technology, Japan
2005	Guest Professor, Murdock University, Australia
2010, 2016	Visiting Professor, Inha University, South Korea

ACADEMIC ACTIVITIES

2007-present	Advisory council of the International Polychaete Association
2009-2013	Executive committee of the Japanese Association of Benthology
2011-2015	Editor-in-Chief of “Plankton and Benthos Research”
2011-2013	Executive Editor of “Plankton and Benthos Research”
2013-2016	Council of the Japanese Society of Fisheries Science
2015-2019	Executive committee of the Japanese Association of Benthology
2019-present	President of the Japanese Association of Benthology

SCIENTIFIC INTERESTS

1. Biology and ecology of marine macrobenthos
2. Biology of polydorid complex (Annelida, Spionidae)
3. Natural and anthropogenic disturbances
4. Deep sea ecology
5. Polar biology

Global aquaculture activities can alter species distribution and marine ecosystem

Today, not only natural but serious anthropogenic disturbances are increasingly witnessed all over the world. Due to world population explosion, global environmental change and overfishing conditions, a world food shortage is conceivable, as the ocean can only sustainably nourish a fraction of this steadily growing population. With the goal of addressing this deficit, expansion of aquaculture activities has resulted in global distribution of certain commercially important animal and plant species, quicker and easier than ever before. Consequently, various species, many of which have not been identified, are transported inadvertently during the transport of these economically important species. Here, I will provide two concrete examples from our research findings of species introductions by anthropogenic means, and discuss the impacts on marine ecosystems of each.

First, Annelida is one of the biggest Phyla in the Animal Kingdom in terms of not only abundance and biomass but also species diversity. Annelids comprising the polydorid species complex of the family Spionidae, possess distinguishing morphological characteristics on the 5th chaetiger but species are easily confused due to their morphological similarities. They are observed burrowing into sand-mud sediments, and inhabiting the surface or inside of various host animals in symbiotic relationships. Some polydorid species are well-known for their boring activity into the shells of mollusks and damage commercially important mollusks by decreasing commercial value, reducing both growth rate and meat yield and causing heavy mortality. I will share some of our recent findings on polydorid species whose distribution has likely expanded due to their association with mollusks transported for aquacultural purposes. Next, asari clams of the species *Ruditapes philippinarum* are one of the most familiar bivalves consumed by Japanese people since very ancient times. However, asari clam populations in Japan have been declining steadily since 1980, although the reason for this decline is complex and requires further clarification. In northeastern Japan, for example, it is suggested that the long-standing continuous importation of asari clams from East Asia has caused the decline of native asari population due to simultaneous introduction of the associated moon snail *Laguncula pulchella*, a natural predator of asari clams. I will share a summary of the biological characteristics of the moon snail and present our hypothesis of the scheme of its introduction into Japanese waters.

Hsing-Juh Lin, Ph.D.

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EDUCATION

1983-1987	Ph.D. from Graduate School of Oceanography, University of Rhode Island, RI, U.S.A.
1990-1994	B.S. from Department of Marine Resources, National Sun Yat-sen University, Taiwan

EXPERIENCES

1994	Scientist of NOAA RV Delaware II, Woods Hole, U.S.A.
2005-2008	Adjunct Professor of Institute of Marine Environmental Chemistry and Ecology, National Taiwan Ocean University, Taiwan
2007-present	Honorary Distinguished Professor of Department of Life Sciences, National Chung Hsing University
2009-2013	Chair of Department of Life Sciences, National Chung Hsing University, Taiwan
2010-2016	Adjunct Professor of Institute of Ecology & Evolutionary Biology, Chinese Medical University, Taichung, Taiwan
2012-2013	The Evaluation Committee of Taiwan's Wetlands of Importance, Ministry of the Interior
2013-2014	Council of Agriculture
2013-2016	Director of Research Center for Global Change Biology, National Chung Hsing University
2015-2016	Environmental Protection Agency
2015-present	President of Taiwan Wetland Society
2015	The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), United Nations Environment Programme (UNEP)
2008-present	Academia Sinica
2016	International Union for Conservation of Nature (IUCN)

MAIN STUDIES

The specialty of Dr. Lin is on the structure, function, and service of coastal ecosystems, particularly in the tropical/subtropical region. In the past 20 years, Dr. Lin have been studying on a variety of tropical aquatic ecosystems, from streams, estuaries, coastal lagoons, coastal wetlands, mangroves, seagrass beds to coral reefs, particularly Blue Carbon. He was charged in making the standard operation procedure for ecologically monitoring the wetlands of national importance in Taiwan.

The driving force for intertidal tropical seagrass beds over decadal timescales

As we know little about how disturbances such as typhoons and El Niño-Southern Oscillation (ENSO) events affect seagrass beds, diverse seagrass habitat types (*Thalassia hemprichii*) were surveyed once every three months for 17 years (January 2001 to February 2018) in southern Taiwan, which is regularly affected by typhoons and ENSO events. Environmental, seagrass and periphyton data collected in the wet season of a year without a typhoon were treated as controls. The data collected before the typhoon season (summer) and within 30 days after a total of 6 typhoons were treated as posttyphoon responses. Our results show that La Niña and El Niño events had distinct effects on the biomass and growth of *T. hemprichii*. During La Niña years, higher 1) precipitation levels and 2) seawater nitrogen concentrations (DIN) led to increases in seagrass leaf productivity, canopy height, and biomass. However, the latter simultaneously stimulated the growth of periphyton on seagrass leaves; this might lead to decreases in seagrass cover and shoot density. There were no significant overall differences in either the environmental data or the seagrass response variables in response to the typhoons. However, DIN was significantly higher and periphyton biomass declined after the typhoons. The significant losses in periphyton suggest that the typhoon impacts on the intertidal seagrass beds were primarily short-term wind events or storm surges. Relative to the chronic and persistent effects of ENSO, the typhoon effects on the intertidal seagrass beds were dramatic and rapid. Our long-term dataset revealed that intertidal tropical seagrasses are resilient to typhoons over decadal timescales.

Keywords: El Niño, La Niña, *Thalassia hemprichii*, typhoon, DIN, periphyton

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