

International Marine Biology Course (IMBC) 2019

(2019 8/21-27)



Sado Marine Biological Station (SMBS), Niigata University has organized International Marine Biology Course (IMBC 2019) from 21st August to 27th in Sado Island of the Japan Sea. This was the third IMBC held in SMBS and the biggest one in terms of the number of participants. This time, we had 31 students/post-doctor and 6 researchers, in total 37 participants from 17 different universities in the Asia Oceania region.

	University (alphabetical order)	Participant number (incl. researcher)
1	Bangladesh Agricultural University	4
2	Chittagong Veterinary and Animal Sciences University	1
3	Cochin University of Science and Technology	3
4	Deakin University	1
5	Hanoi National University of Education	5
6	Keio University	1
7	Kochi University	1
8	Monash University Malaysia	2
9	Nagoya University	1
10	National Taiwan Normal University	1
11	National Taiwan University	3
12	Nihon University	1
13	Niigata University	5
14	The University of Hong Kong	4
15	The University of Tokyo	2
16	Tohoku University	1
17	University of Yamanashi	1

IMBC 2019 was supported by “Japan-Asia Youth Exchange Program in Science” (SAKURA Exchange Program in Science) under a grant by Japan Science and Technology agency. Thanks to the grant, we succeeded in getting excellent students from many universities in the Asia Oceania region. The main objective of the program was studying the biodiversity and evolution of marine animals through different fieldwork activities in a variety of marine habitats by utilizing beautiful ocean and well-preserved marine ecosystems in Sado Island. The program consisted of 5-days activities in Sado Island followed by two days activity in Tokyo.

In the course, we had hands-on activities and lectures such as 2 basic lectures “Characteristics of the Japan Sea and marine animals” and “Classification” given by SMBS staff members and 5 lectures covering from basic knowledge to advanced research topics given by invited researchers. As the hands-on activities, we had marine animal sampling using snorkeling and plankton net, artificial fertilization of sea urchin, sea firefly observation, and group/individual presentation. We also had an optional outgoing activity of visiting Sado Gold Mine museum, which used to be the largest gold mine in Japan, to learn the history of Sado Island. In Tokyo, participants visited an aquarium Tokyo Sea Life Park and a scientific museum National Museum of Nature and Science.

List of activities during the course

- 7 lectures in different fields of marine biology
- Animal sampling by snorkeling, observation, biological drawing
- Artificial fertilization of sea urchin and observation of early development of embryos
- Observation of sea firefly bioluminescence
- Plankton sampling and observation, biological drawing
- Visiting Sado Gold Mine museum
- Group/individual discussion and presentation
- Aquarium visit (Tokyo Sea Life Park)
- Science museum visit (National Museum of Nature and Science)

On the first day, all participants gathered at Niigata and moved to Sado Island by a car ferry. After 2 and half hours of voyage on blue ocean, we arrived to the Ryotsu Harbor of Sado Island and then took a charter bus to get to SMBS. Once arrived to SMBS, we had a greeting followed by general instruction of the course and introduction of SMBS. The participants also made a short tour of SMBS facilities. To build the basis for the practical course, students were given lectures about the characteristics of the Japan Sea and the animal classification. After the lectures, we had an ice-breaking dinner, during which the participants prepared Okonomiyaki pancake together to mingle with each other.



Introduction of Sado Island



Can you make it? Turning over okonomiyaki.

The second day started with a lecture from Prof. Takashi Yoshimura from the Nagoya University. He presented his series of studies about the molecular mechanisms through which animals adapt to seasonal changes on the earth. After the lecture, we got on our research vessel and collected planktons using a plankton net in the sea. Observing planktons always gives us fresh surprises about how much variety the marine animals have.



Lecture from Prof. Yoshimura



Research vessel, IBIS 2000



Plankton sampling



Observation using a microscope

Afternoon was a long-awaited snorkeling session. Although a little wavy and cloudy weather was not really suitable for the activity, students enjoyed swimming, observing, and collecting a variety of marine animals at the rocky shore in front of SMBS. Students captured fishes, sea snails, sea slugs, crabs, shrimps, sea stars, brittle stars, worms, sea urchins, sea cucumbers, sea squirts, sponges, flat worms, ribbon worm, and so on. In evening, Dr. Tran Duc Hau from Hanoi National University of Education provided an interactive lecture about marine biology and ecosystem services.



Snorkeling sampling at a rocky shore



I caught fishes!

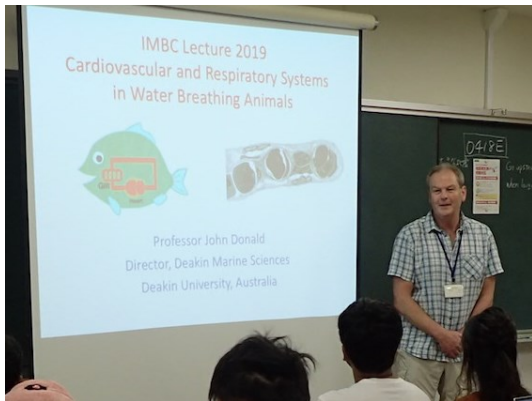


Explanation of captured animals



Interactive lecture from Dr. Tran Duc Hau

The third day started with a lecture of Prof. John A. Donald from Deakin University, Australia. He gave a talk focused on the gill, which plays a crucial role in all animals living in water. The next activity was sea urchin artificial fertilization. Each participant made a sea urchin release its eggs/sperms and performed artificial fertilization by him/herself. The beginning of life, fertilization, cleavage and embryo development, was observed using light microscopes.



Prof. Donald's lecture



Gamete collection from sea urchin

After lunch, Prof. Emer. Yoshio Takei from Tokyo University provided a lecture about the diversity of body fluid regulation in marine animals. In this afternoon, we had an optional tour to Sado Gold Mine museum. Sado Island used to be a place to produce most of Japan's gold and the mine tells us about the history and culture of that era. After dinner, people made biological drawings of the animals they collected, observed beautiful blue illumination of sea firefly (Crustacean: Ostoracoda), and prepare for the group presentation.



Bioluminescence of sea firefly

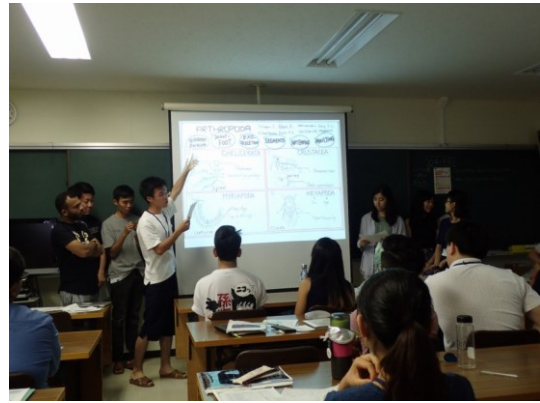


Discussion for group presentation

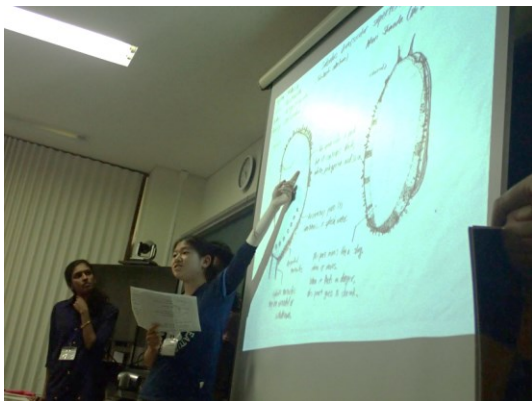
On the fourth day, a lecture about the use of zebrafish to study aquatic environment was given by Dr. Mageswary Sivalingam from Monash University Malaysia. After the lecture, we had another snorkeling session at a beach in front of SMBS. In the group presentation session, each group introduced a particular phylum selected. Firstly, each group member presented specific features of an animal species in the selected phylum. Then, as a group, all members presented the features of the phylum. The presentation of all members was quite impressive. The last activity of the course at SMBS was a BBQ party. We had a lot of fun.



Snorkeling at a beach



Group presentation



Individual presentation



BBQ party

On the fifth day, we left SMBS by a charter bus and visited the forest station of Niigata University. There we were given a lecture about the characteristic vegetation in the Sado Island. After that, we visited a northern scenery site, Oonogame, and observed the coastal geography with the huge rock and vegetation there. Then, we moved to the Ryotsu Port and took a car ferry to Niigata. From Niigata, we took Shinkansen to go to Tokyo.



Oonogame



Ocean view from Oonogame

On the sixth day, we visited an aquarium and science museum in Tokyo. The Tokyo Sea Life Park is located on the beach of Tokyo Bay and has a lot of freshwater and marine life not only from Tokyo, but also from around the world. In particular, the bluefin tuna swimming around in a huge 2,200-ton tank was quite something. National Museum of Nature and Science, which is the Japan's largest nature and science museum, sits in the Ueno Park. We visited both the Japan Gallery and the Global Gallery and learned a lot about the nature, history and science in Japan.



Tokyo Sea Life Park



Bluefin tuna tank



National Museum of Nature and Science



Beautifully displayed specimens

On the last day, we woke-up early, took a bus to move to Narita Airport, and said goodbye to each other.

This year, we have expanded the program and made it 7 days and 6 nights. I guess that it helped to make the program richer in content. All participants fully enjoyed the course, learned a lot about the marine life and diversity of them, and built new friendships among different countries/regions and universities. Hopefully some of the participants will come back to Japan in future as a post doctor or researcher. We are looking forward to having this marine course again in the next year to further expand our international relationships.

(Takashi KITAHASHI, SMBS)



Group photo (in front of SMBS)