



DIWPA: *DIVERSITAS* in the Western Pacific and Asia

DIWPA News Letter

Office: Center for Ecological Research, Kyoto University, Otsu, Shiga, Japan

March
2025

No. 52



Message from the Chairperson **Shin-ichi Nakano**

The 19th International Symposium on River and Lake Environment (ISRLE-19) was successfully held at Institute of Hydrobiology (IHB) of Chinese Academy of Sciences (CAS) from November 4 to 8, 2024, hosted by IHB and co-organized by the International Society of Limnology, the Chinese Society of Limnology, the Japanese Society of Limnology, the Korean Society of Limnology and the Hubei Society of Oceanology & Limnology. We were joined by about 200 researchers and students from 16 countries, including China, Japan, South Korea, the United States, France, Canada, Pakistan, Sri Lanka, Bangladesh, the Czech Republic, Malaysia, and the Philippines. ISRLE-19 provided a valuable opportunity for participants to present their work in oral and poster sessions, fostering a collaborative environment for emerging scientists. The next conference will be held Japan in 2026. Don't miss it!

Additionally, the 11th Congress of the East Asian Federation of Ecological Societies (EAFES-11) will take place at the University of Tokyo (UT) from July 19 to 21, 2025. This event will be hosted by UT, Ecological Society of Japan, Ecological Society of China and Ecological Society of Korea. EAFES is a collaborative organization formed by these three ecological societies to promote ecological science in East Asia. The societies take turns organizing the joint meeting (EAFES Congress) at least once in 2 years. We encourage possible participants from not only the three host countries but from all over the world. Let's gather in Tokyo to enjoy science and international friendship, fostering the next generation in science of ecology and biodiversity. Through EAFES, we aim to facilitate the exchange of information among international researchers to further development in ecological and biodiversity research all over the world. Once again, don't miss it!



Message from the Secretary General **Atsushi Ishida**

This year, we organized the DIWPA International Field Biology Course (IFBC) in the Ogasawara (Bonin) Islands, a UNESCO World Natural Heritage site in Japan. The course focused on providing training in terrestrial ecosystems while also introducing ongoing conservation efforts aimed at preserving the islands' unique biodiversity. While the islands are home to many endemic species, they are increasingly threatened by a growing number of invasive alien species. We were pleased to welcome two young researchers from India and the Philippines to participate in the course, and we are delighted to present their reports in this volume. Many of the practical sessions focused on trees, an area of expertise for me, while the researcher from India specializes in the fauna that inhabits tree cavities. Along with the researcher from the Philippines, they also conducted field surveys related to the fauna within tree cavities across the islands. The researcher from the Philippines provided a well-rounded summary of the distinctive characteristics of vegetation and the ongoing nature conservation efforts in the islands. Throughout the course, both young researchers actively engaged in the practical sessions and fully embraced the opportunity to enjoy the islands' natural beauty and rich culture. The ecosystem conservation activities on the islands were made possible through the cooperation of the local office of the Ministry of the Environment in Japan, and we would like to express our heartfelt gratitude for their invaluable support.



Exploring an Oceanic Island: Insights in the International Field Biology Course 2024 in the Ogasawara Islands, Japan

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It was a great opportunity to participate in the International Field Biology Course 2024 in the Ogasawara Islands, which was filled with collaboration, joy, exploration, and learning. After completing all the formalities at immigration, I joined Ms. Gelster Paquibo (Central Mindanao University, Philippines) Dr. Ananya Popradit (Valaya Alongkorn Rajabhat University, Thailand), visiting associate professor at Kyoto University, and our guide Dr. Atsushi Ishida (Kyoto University). It was nice to have like-minded people throughout the course.

The first evening in Tokyo was spent settling at the Super Hotel in Hamamatsu-cho and enjoying a traditional Japanese dinner that included delicious fish dishes in Minato City. The exploration of Japanese cuisine set the stage for culturally different experiences.



Fig. 1. Takeshiba port, Tokyo

It was very hard for me to wake up on the morning of December 10th, 2024, to a chilly 6°C in Hamamatsu-cho. After breakfast, we visited the beauty of Tokyo Tower and Zojoji Temple with Ms. Gelster and Dr. Ananya, walking along paths covered with vibrant Japanese maple leaves. Later, we headed

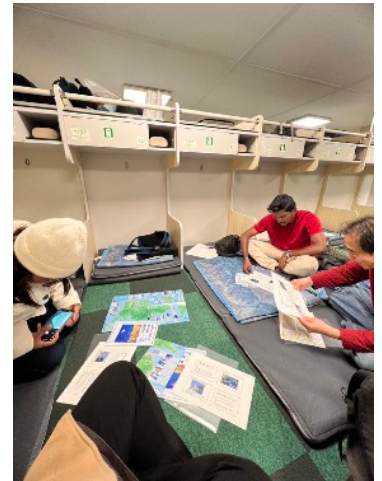


Fig. 2. Discussion in Ogasawara Maru

to Takeshiba Port, where

Dr. Ishida took care of the travel formalities for our 24-hour journey aboard the Ogasawara Maru from Takeshiba to Chichijima, the Ogasawara Islands (Fig. 1). As we departed on the 1,000 km journey from the port, we enjoyed charming views of Tokyo Bay, including glimpses of planes taking off from Haneda Airport and the industrial hubs.

Conversations with Dr. Ishida and Dr. Ananya enriched the voyage with insights into their academic and research expeditions (Fig. 2). The ship's waving motion added a thrilling edge to the journey, and we cherished the magnificent sunrise the following morning, capturing it in photos and videos. Upon reaching Chichijima Island, I felt immense pride and excitement, as I was likely to be an Indian to set foot there. The island was slightly warmer than Tokyo.

The program officially started with a visit to the Ministry of Environment at Chichijima, where we collected fieldwork permits. Ranger Mr. Yoshiaki Wakamatsu explained the Ogasawara National Park and its ecology in Japanese, with assistance from coordinator Ms. Mayu Inada, who translated for us. I was particularly excited to learn about the ‘Akopoppo’, Japanese wood pigeon, (*Columba janthina nitens*) (Fig. 3).



Fig. 3. Ranger Office, Ministry of Environment, the Ogasawara Islands

We collected soil samples from four sites near Mount Kasayama, documenting coordinates and observing that trees were stunted due to shallow soils. Our night explorations included visits to the port area, where we spotted sharks, crabs and jellyfish. A significant discovery came from a tree hole near the park, where we found a frog hiding in a nearly dry cavity, a remarkable and unexpected finding.

The following morning, we returned to the tree hole to confirm the frog’s presence but found it empty (Fig. 4). We continued with soil sampling in the high school area, where thicker soils supported taller trees. We also encountered a hermit crab near a tree hole and observed various



Fig. 4. Tree hole



Fig. 5. Nagasaki Viewpoint

tree species including *Pandanas*, *Ficus religiosa*, *Ficus benghalensis*, *Hibiscus tiliaceus*, *Terminalia catappa* and *Calophyllum inophyllum*.

The memories of the Nagasaki Viewpoint were amazing. Initially, it was challenging to take a good photo from the viewpoint, but later, I captured it with its full potential (Fig. 5). I accidentally left my cap at the Nagasaki Viewpoint but later retrieved it while driving back to our accommodation. At Suzaki Beach, we continued tree hole sampling but were interrupted by rain, which made it impossible to continue without raincoats.

Dr. Ishida instructed us on techniques for measuring soil thickness using specialized tools, providing insights into how these measurements correlate with tree height and soil characteristics. We also identified an anthrotelmata habitat near Suzaki Beach, hidden under materials like discarded electronic waste, which had transformed into a unique ecosystem supporting mosquito larvae, Tipulidae larvae, and earthworms. It has successively transformed human activity from discarded electronic waste to a viable aquatic habitat for invertebrates. On the last day, we had a rushed schedule of work including site viewing, soil thickness analysis, tree hole sampling, and anthrotelmata sampling; despite these works, we managed to visit the weather station to explore the beautiful sunset (Fig. 6).



Fig. 6. Weather station at Chichijima

Regardless of the participants' academic discipline, the course fostered collaboration with international academicians, facilitating a rich exchange of ideas and perspectives. All academic discussions aboard the Ogasawara Maru and during our explorations in Chichijima helped shape our personal growth and cross-cultural understanding (Fig. 7).

Furthermore, meals throughout the course were extremely delicious ('Oishii' in Japanese), from enjoying Japanese breakfasts and traditional restaurant setups to learning about the sustainable practices of the Japanese community. Evenings often involved a bit of relaxing sightseeing at markets and the port, where we observed marine life such as sharks, jellyfish, and crabs, further connecting us to the islands' rich biodiversity.

The course concluded with I and Gelster, under Dr. Ishida's guidance, conducting tree hole density work in Chichi-jima. We surveyed 20 m² plots in the park to record tree species and analyze data on tree holes, thereby consolidating the skills we had acquired during the program.

The certificates of the International Field Biology Course 2024, awarded by DIWPA, Kyoto University, were distributed by Dr. Ishida, who recognized our young research minds and marked the end of this enriching experience. I wrote about my overall experiences in the research station's logbook, which was a heartfelt moment, symbolizing the lasting impression the course left on me.



Fig. 7. Discussion with Dr. Ishida at Chichijima

In conclusion, it was a rare opportunity to explore the unique ecosystems of the Ogasawara Islands while working with academicians and like-minded peers. This prime course of DIWPA, the Center for Ecological Research, not only enhanced my research skills but also expanded my view on global research and collaboration, reinforcing the value of preserving biodiversity and understanding ecological interactions within communities.

This journey, filled with scientific discoveries, cultural immersion, and meaningful connections, will remain a cornerstone of my academic and personal growth. It has inspired me to pursue further research and contribute to the global discourse on biodiversity conservation and sustainability.

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Biodiversity and Conservation Efforts in the Ogasawara Islands, a World Heritage Site of Japan

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As a graduate student from Central Mindanao University, Musuan, Maramag, Bukidnon, Philippines, pursuing a Master of Science in Biology with a major in Animal Biology, I never imagined that my academic journey would lead to such an extraordinary opportunity. My professor, Dr. Dave P. Buenavista, a member of DIWPA (Diversity of the Western Pacific and Asia), encouraged me to apply for the DIWPA 2024 International Field Biology Course, funded by the Center of Ecological Research (CER), Kyoto University. To my great delight, I was selected as one of only two graduate students from Southeast Asia to become a DIWPA fellow for this prestigious program. It was a dream come true—not only was this my first overseas travel, but it was also fully sponsored, and my destination was none other than Japan. Adding to this incredible experience was the privilege of visiting the Ogasawara Islands, a UNESCO World Heritage Site and a highly conserved location.

This year's International Field Biology Course focused on the ecophysiology of woody plants, combining both field and laboratory work. Under the leadership of Professor Atsushi Ishida, director of CER and a long-term researcher of the islands' ecosystem, we used specialized instruments to measure soil thickness, digital and manual dendrometers to gauge tree diameters, and customized tools for determining tree heights. Witnessing the meticulous efforts of Professor Ishida and his team to sustain conservation initiatives on the islands was truly inspiring. I felt privileged to contribute to this work alongside my

fellow participant from India, Fahis, and with the invaluable assistance of a visiting professor from Thailand, Dr. Ananya.

During the fieldwork, we visited eight distinct sites across the islands to collect soil samples of varying thickness. These samples were analyzed to assess the nutrient components at each site. Based on existing studies, the variation in soil thickness across these sites significantly impacts the growth and height of both native and introduced trees. Our objective was to determine whether soil nutrients also varied across these thickness gradients and how these factors collectively influence tree growth. Over the course of three days, we collected and prepared these soil samples for laboratory analysis, drying and processing them with Dr. Ananya's guidance to assess their nutrient content.

The Ogasawara Islands

The Ogasawara Islands, also known as the Bonin Islands, are a group of small oceanic islands located in the subtropical North Pacific Ocean approximately 1,000 km south of Tokyo. The main island, Chichi-jima, lies at 27°04' N and 142°23' E. The area is approximately 24 km², with a maximum elevation of 318 m above sea level (Fig. 1). Compared to other oceanic islands, such as Okinawa and Hawaii, the Ogasawara islands have preserved up to 70% of wood plant species (UNESCO). This high endemism, along with notable conservation efforts has led to their recognition as a World Heritage Site. However, despite extensive conservation efforts, the presence of invasive species remains significantly high. This

ongoing challenge has promoted researchers to conduct further studies to develop additional strategies for preserving their unique biodiversity.

Ecologically, the Ogasawara Islands exhibit a rich and diverse vegetation structure, consisting of subtropical forests, coastal shrubs, and grasslands. The islands support a high number of endemics of both plant and animal species, many of which have evolved in isolation, resulting in unique adaptations to their environment. Dominant vegetation types include evergreen broad-leaved forests, which are home to species such as *Machilus boninensis*, *Rhaphiolepis indica* var. *integerrima* *Pandanus boninenses*, and *Hibiscus* tree species.

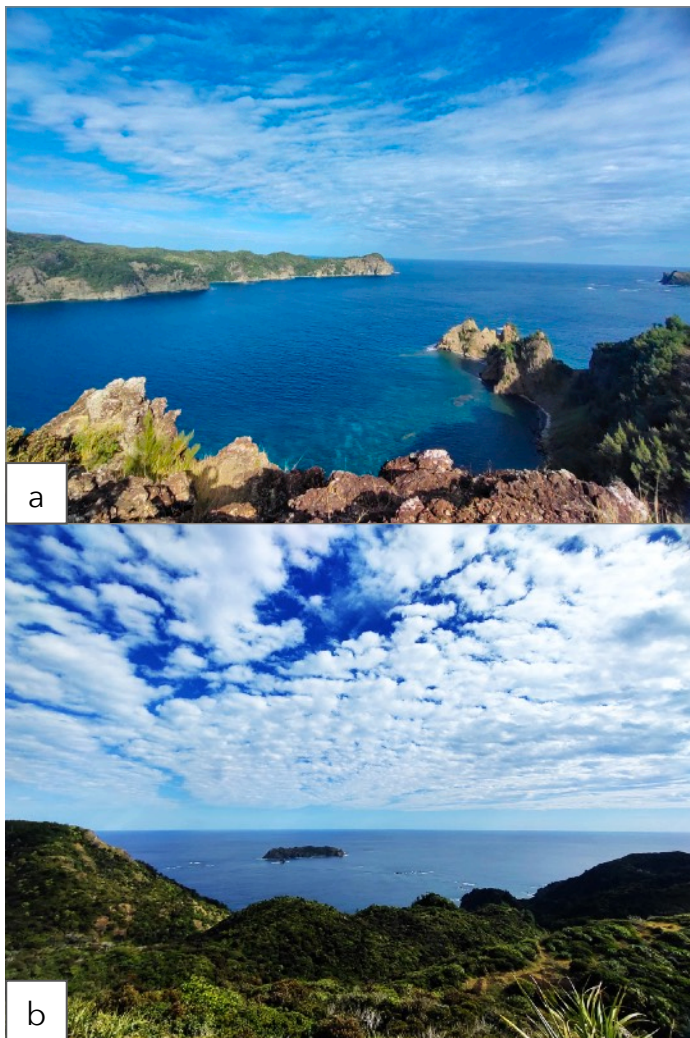


Fig. 1. (a) Panoramic View of Anijima Island captured from Nagasaki Lookout
(b) Scenic view of smaller islands as observed from Mt. Kasayama Viewpoint

Effects of Soil Thickness on Plant Species in the Ogasawara Islands

The Ogasawara Islands have variations in terms of soil thickness due to volcanic activities, which have influenced the growth forms and heights of both native and non-native species. Due to the high adaptability of non-native species, they tend to outcompete native species, posing a significant threat to the islands' biodiversity (Kumar Rai & Singh, 2020) (Fig. 2).

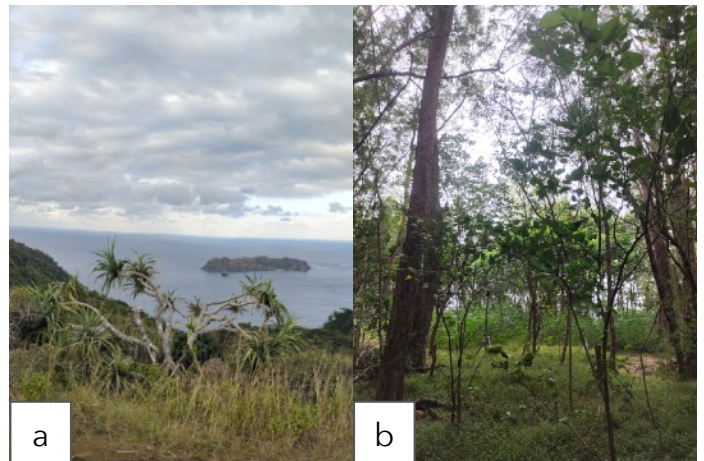


Fig. 2. (a) Native *Pandanus* Tree grew in shrub-like growth form in thin soil
(b) Non-native tree grows tall in thick soil

To understand the mechanisms behind the significant differences in height and growth forms of plant species on the island, an ongoing study is being conducted by Center of Ecology Research (CER) to assess the nutrient composition and elements present in soils of varying thicknesses across the islands. Research findings suggest that soil thickness plays a significant role in influencing plant height (Helliwell *et al.*, 2019). Investigating the nutrients in these soils is crucial to further understanding this relationship. The variation in plant height not only impacts the growth of native species but also affects their survival within the forest ecosystem. These variations can influence key processes such as photosynthesis and adaptation, ultimately impacting species-specific animals and the broader ecosystem, including the islands themselves (Moles *et al.*, 2009).

Conservation Strategies on the Ogasawara Islands

Conservation strategies on the Ogasawara Islands are critical to preserving both its natural flora and fauna. One of the native species representing the Ogasawara Islands is the Red-headed Japanese Wood Pigeon (Fig 3), which was once under threat due to predation by introduced cats. This predation led to a drastic decline in their population. As a resolution, researchers initiated a program to capture the cats using traps. These captured cats were then sent back to the mainland of Tokyo, where they were vaccinated and prepared for adoption. Researchers collaborated with animal hospitals and clinics to coordinate with households willing to adopt the cats free of charge.

Over several years, this conservation program was successfully implemented, leading to a significant increase in the population of endemic birds, including the Red-headed Japanese Wood Pigeon. These birds are now more commonly seen in their natural habitat (Fig 3).



Fig. 3. Presence of a juvenile Red-headed Japanese Wood Pigeon spotted in their natural habitat in Ogasawara Natural Park

As a creative tribute to the captured cats, a non-governmental organization developed unique initiative. For each cat adopted, a drawing was created (Fig 4), symbolizing their journey and new beginning. More than a hundred cats were successfully relocated to the mainland through this initiative.



Fig. 4. Artistic portraits of relocated cats, serving as a tribute to their existence on the islands

Another important conservation effort involves raising awareness not only among researchers, but locals, and tourists as well about the islands' conservation status, their origins, and the causes of their high endemism. Public educating is essential for understanding what needs to be protected. The Ogasawara World heritage Center, a museum on the island, filled with illustrations showcasing the islands' World Heritage journey and conservation initiatives, plays a key role in promoting awareness. Additionally, ex situ conservation programs at the museum help protect several species of snails (Fig. 5).



Fig. 5. Orientation about the Conservation Status of the Ogasawara Islands

Promoting Biodiversity and Cultural Heritage in the Ogasawara Islands

To further promote the rich biodiversity of the Ogasawara Islands, locals share the beauty of native plants. They craft souvenirs featuring the widely distributed palm tree and *Hibiscus* flower as farewell gifts for tourists (Fig 6). These tokens symbolize the islands' rich endemism and their commitment to preserving their natural heritage.

Beyond the scientific knowledge and techniques, I gained, this training course provided other memorable experiences. We enjoyed delicious and healthy meals prepared by the professors who accompanied us, fostering a sense of camaraderie and cultural exchange. The entire experience was both intellectually enriching and personally fulfilling.

This opportunity has been a turning point in my academic journey. It not only enhanced my understanding of ecophysiological research but also deepened my appreciation for conservation work. The experience has inspired me to excel further in my studies and to contribute meaningfully to the field of science. Being part of the DIWPA 2024 International Field Biology Course is a once-in-a-lifetime experience that I will always cherish and remember.

May DIWPA continue to create such opportunities for more students to experience incredible learning journeys with the guidance of experts. Thank you so much, DIWPA 2024 IFBC!



Fig. 6. Native species such as *Pandanus boninensis* and *Hibiscus* species are given as farewell souvenirs to tourists

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