An International Network for Biodiversity Research
Diversitas Western Pacific and Asia

DIWPA News Letter

Offce: Center for Ecological Research Kyoto U No.34

Message from the Chairperson

Shin-ichi Nakano

Our Center for Ecological Research (CER) is registered as a Joint Usage / Research Center (JURC) by the Ministry of Education, Culture, Sports, Science and Technology Japan (MEXT). It is important for CER to register under JURC, so as to receive support from MEXT. Institutions and research centers can be established because their scientific researches are evaluated by MEXT, and MEXT provides financial support only to assigned winners.

CER is the only JURC for ecology and biodiversity in Japan, registered in 2010. As the term of JURC is six years, CER had the defense interview on renewal of JURC in August 2015 for the coming another six years. Fortunately, the evaluation score on CER were very high, and we CER will be assured of more six-years activities from April 2016. Even after the renewal, CER remains as the only JURC for ecology and biodiversity. To our surprise, in one of the evaluation items, the evaluation panel gave positive and favorable comments on DIWPA, and this is also the case for Kyoto University. Though our CER budget is limited, we need to provide more funding to DIWPA because of the high MEXT evaluation.

As you already know, National Ecological Observations Network (NEON, US) have been shrunk (Mervis 2015, 349: 574 Science; Cesare 2016, 529: 274-276 Nature), and Natura 2000 (EU) has been suffering from shortage of funding (http://www.birdlife.org/europe-and-central-asia/funding-natura-2000). DIWPA covers Asian Green Belt which is the only region of continuous forests from northern to southern hemisphere in the earth, and where the highest biodiversity all over the world has been threatened through human activities due to expanding population and economy. So, we DIWPA have to make more progress for future studies on ecosystem and/or biodiversity dynamics and functions toward the creation of resilient environments, through better conservation of ecosystem and biodiversity.

Message from the Secretary General

Atsushi Ishida

We held International Field Biology Course (IFBC) at Thailand in November 2015. Two researchers from India and Thailand enrolled in the IFBC. We are pleased to introduce their activity reports in this newsletter. In this IFBC, we learned how to measure the leaf gas exchange (photosynthetic rate, stomatal conductance and transpiration rate) in the top canopy leaves of forest trees, and I explained why we want to know leaf function. In the lowland of Thailand, there are various forest types, such as 3ry dipterocarp forest (DDF), n ixed deciduous forest (MDF) and Dry evergreen forest (DEF), even in the areas with a similar annual precipitation and a similar seasonality of rainfall. However, soil types are different among the forest types. Furthermore, there is a distinct dry season during two or three months in Thailand. During the dry season, deciduous trees fall their canopy leaves and evergreen trees severely depress the leaf gas exchange rates. Recently, the precipitation in Thailand. Such situation may strongly affect the forest and agricultural ecosystems. To consider how we conserve biodiversity in the future, we need much knowledge and information from the broad range in biotic and abiotic environments. Therefore, DIWPA always welcome various information from your countries.

Report 1

Reflections on the International Field Biology Course conducted by DIWPA at the Mae Klong Watershed Research Station, Kanchanaburi Province, Western Thailand

Anoop Das K.S
Centre for Conservation Ecology, Department of Zoology, M.E.S Mampad College (India)
Wildlife Research and Conservation Trust (India)

DIVERSITAS in the Western Pacific and Asia (DIWPA) is an organization for "capacity building of scientists from developing countries" since 1993. This is a report on the International Field Biology Course (IFBC) conducted in Mae-Klong Watershed Research Station, Kanchanaburi Province, Western Thailand between 8th and 14th November 2015.

After a sumptuous s ght, awakened around 3am as the plane made its landing in Don Mouang International Airport, Bangkok. After the routine emigration process, it was not difficult to identify Mr. Shin-Taro Saiki, a student of Prof. Atsushi Ishida, who was waiting for me outside in the cold night. He took me to the nice Maruay Garden Hotel.

After the program briefing that was held on the 9th November morning, we procured the necessary stationaries for field work from Bangkok City. Under the leadership of Prof. Ishida, we had a brainstorming discussion on what faces Asian Science. He reiterated the need of collaboration with the research team in the region. The participants had an icebreaking cum supper session along Chao Phraya River (Fig. 1).

Fig. 1. A supper along Chao Phraya River

On the next day, we had a brief discussion with the officials of the Department of Forests and Wildlife. After that, our large Toyota vehicle, loaded fully with f eld equipment, drove t vince, Mae-Klong Watershed Research Station (4°34'N, 98°50'E) with an average altitude of 160 m a.s.l.

After the long drive, upon arrival at the research station, we were warmly welcomed by the Range Forest Officers. The Mae-Klong Watershed Research Station was in Thong Pha Phoom District, Kanchanaburi province, Western Thailand. The forest department have a well- with basic amenities (Fig. 2).

The next day, we headed toward the mixed deciduous forest of the region. Mixed deciduous forest (MDF) is a type of tropical seasonal forests found in Thailand, where it covers large areas with high variation in species composition such as *Tectona grandis*, *Pterocarpus macrocarpus*, *Xylia xylocarpa var. kerrii*, *Afzelia xylocarpa* and *Vitex peduncularis*. The middle layer of MDF is usually dominated by bamboos in which *Gigantochloa albociliata*, *Bambusa tulda* and *B. nutans* were most commonly seen (Fig. 3).

Fig. 2. Mae Klong Watershed Research Station

Report 1

Fig. 3. The middle layer of MDF usually dominated by bamboos

Prof. Ishida patiently explained the mechanism of measuring leaf gas exchange, photosynthetic rate, stomatal conductance and transpiration rates, to the participants (Fig. 4). All of us were busy collecting leaves with long leaf cutter, putting their tip in the mug of water and measuring the leaf gas exchange within the stipulated time. The and we returned to the camp. Later, we assembled in the field station to sort Shin-Taro Saiki was very kind to explain the details of further procedures involved in the preservation of leaf.

The following day, it was also sunny and nice. Under the guidance of t trip was a worthwhile experience as I was taught to engage all my senses. Prof. Ishida was very friendly and his keen interaction with all the members helped to build the team camaraderie. Before we started on the measurement of the gas exchange of leaf, I was given a time to introduce the l filled tree holes.

Insects living in also known as phytotelmata (plantheld waters), received little attention from naturalists over the last century. For biological investigations, the relatively small accumulations of water occurring in epiphytes and tree holes offer several methodological advantages over lakes, streams and other comparatively large systems. They are discrete, and can be treated as individual units for sampling and faunal surveys. These habitats are often abundant where they occur, permitting sample sizes appropriate for statistical analyses. The macrofauna of phytotelmata is often specialized and of manageable diversity and abundance. This is especially true for the aquatic insect holes are among the most tr systems, partially because they are relatively persistent, and can be mimicked with plastic cups, bamboo sections or other inexpensive materials. Despite possessing unique features, that affected the biodiversity and community structure to larger systems would need more in-depth discussion and studies. We managed to f study area and I demonstrated the collection of insects from those holes.

In the evening, an exploration to familiarize the butterfly fauna of the station was conducted for the team. Dr. Ananya Popradit, a participant from Thailand, was keen to know about the identity of some of the butterfies such as t Thailand's largest butterfly, with a wingspan of more than six inches. It has been sighted many times during the survey. The mating between the two individuals belonging to *Euploea* and its was a notable ill ev observation from the feld.

Next day, we climbed the Flux Tower and samples Meteorological Data station to have an overview of the area (Figs 5 & 6). The principal objective of the station was to directly determine the net ecosystem exchange of CO_2 and the surface energy budget over these forests, the during the peak growing season. These observations were coupled with a comprehensive characterization of the physical environment (Photosynthetically Active Radiation (PAR), soil temperature, etc.). We experienced the thrill of the hot springs near the station.

On our return journey, we concluded that the DIWPA in th and the organisers had earned our respect.

Fig. 4. Prof. Atsushi Ishida and tea analysis

Report 1

Fig. 5. The Flux Tower

Fig.6. On the top of the Flux Tower（45 m high above the goround)

The intention of this program is to share and express the programmatic developments in the field of ecology and conservation biology, and also to facilitate the overall development of researchers. This program enabled hands-on brainstorming discussion with talented scholars coming from all over the world. The meeting of researchers coming from the same feld through this course, and the bonds fostered o discussions, create future collaboration opportunities. Beyond this, it is anticipated that by listening to the expert's discussions at the host country, it is possible to identify specifc localities and areas where the pre research are concentrated. The practical information disseminated through the discussions would go a long way to facilitate the mitigation measures used to tackle current problems and they generate ideas for the conservation of natural resources.

This training program has showed me an assemblage of a variety of issues around the globe, diverse methodologies in action and an interesting spark of curiosity within the program. As my research focus is on the intricate relationship between the bird, butterfly and insect communities in both functional and trophic forests, this course has exposed me to the methodological rigours, especially in the conversation ecology, the changing paradigms in conservational thoughts and the subtleties of other research groups.

I believe that the program helped me to:

1. Test the rigour of my work at an international platform.
2. Better understand the conservation research currently undertaken by various research group in diverse spatial settings.
3. Look out for advances in the area.
4. Interact with eminent personalities to share the fascination of our common interest□
5. To update myself as a conservation researcher, and to contribute in all possible ways to get involved in the conservation activities of the region.

Report 2

2015 DIWPA International Field Biology Course in Thailand

Ananya Popradit
Inter-Department of Environmental Science, Chulalongkorn University (Thailand)

I was a student of doctoral course in Graduate School of Environmental Science in Chulalongkorn University, Thailand, when I participated the DIWPA International Field Biology Course (IFBC) in 2015. My research topic in PhD is focused on human effects on tropical forests. As a young scientist, I wish to continually accumulate my knowledge and to enhance my research skill. While I was a PhD student, I enjoyed the intensive feld work with local communities. The DIWPA IFBC is a part of the Joint-Use and Cooperative Research Program managed by Center of Ecological Research (CER) in Kyoto University. One of the objectives of DIWPA is to train young researchers to be the leading ecologists of next generation. I sent my application for the workshop for the capacity building for young researchers, and I received the acceptance to participate the 2015 DIWPA IFBC. This DIWPA IFBC was conducted in Thailand in November 2015. The main program was to learn how to measure leaf gas exchange.

The 2015 DIWPA IFBC was a good opportunity for me to be familiarized with Plant Ecophysiology, and it trained me to measure the photosynthetic and respiration rates of the top-canopy leaves of woody plants with a portable photosynthetic measurement system (LI-6400XT, LI-COR, NE, USA), which is a state-of-the-art equi leaf g exchange (Fig. 1). We enter the intact leaves in a chamber with a lighting source and we can know the net photosynthetic rates or respiration rates in the leaves from the differences in CO_2 and H_2O concentrations between the inlet and outlet air-gas stream in the chamber. LI-6400XT can regulate light intensity, CO_2 and H_2O concentrations in air and leaf temperature. Thus we can know detailed leaf physiology using this is new field for me and I will be able to gain new knowledge about set special and was a fascinating toge experience. Ecophysiological be an important aspect for my research in the future. I conducted the IFBC with Professor Atsushi Ishida and a student of doctoral course in Kyoto University, a post-doc researcher in Forestry and Forest Product Research Institute in Japan, a researcher from India, a researcher in Department of National Park, Wildlife and Plant Conservation in Thailand, and a teacher of Kasetsart University in Thailand. I had a good chance

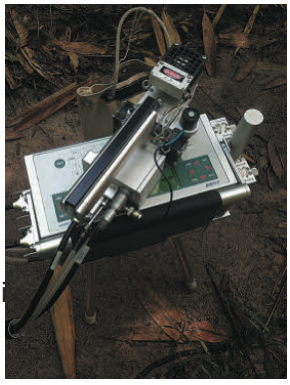
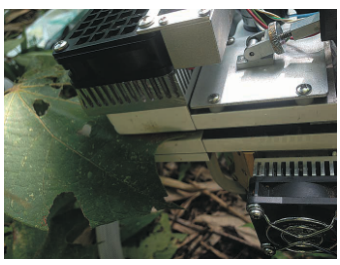


Fig. 1. A portable photosynthetic measurement system (LI-6400XT)



Report 2





for working and discussion with many researchers who are interested in various fields. In especially, the researcher from India has studied biodiversity in insect. The 2015 DIWPA IFBC was mainly conducted in a Mixed deciduous forest (MDF) at Mae-Klong Water Shed Research Station belonged to Department of National Park, Wildlife and Plant Conservation, relatively located near Myanmar. After the IFBC, Ishida's group continued their research in Thailand. Because I stayed in Bangkok, I joined them again to learn their field study in the Phu Kao - Phu Phankham National park.

The Phu Kao - Phu Phankham National park exists in the Nong Bua Lam Phu Province located between the south of Udon Thani Province and the north of Khon Kaen Province in Thailand. "Phu Kao" means "nine mountains" in Thai language. In the fact, there are some mountain peaks in the Phu Kao area and there are some forest types, Mixed deciduous forests (MDF), Dry dipterocarp forests (DDF) and Dry evergreen forests (DEF). This is the famous place where we can look many fossils including dinosaurs. At the Phu Kao, we enjoyed a night festival after the daytime working. It was an unforgettable experience. We experienced the Northeastern traditional dance together with local people. Most of the team members joined in the dance and enjoyed the festival. Furthermore, we looked a Snake Show in a local village.

I had mainly studied forest structure and dynamics in the PhD course and got PhD in Chulalongkorn University in 2015. According to this experience, I would like to expand my research area and to conduct study connected with forest dynamics, tree physiology and forest conservation. Now I contact Prof. Atsushi Ishida in CER in Kyoto University to apply the Post-Doc program of JSPS in Japan. I hope to continue my study in his laboratory.


Report 3

The discovery of the Bryan's Shearwater in the Bonin Islands

Kazuto Kawakami[1] and Kazuo Horikoshi[2]
[1]Forestry and Forest Products Research Institute (Japan)
[2]Institute of Boninology (Japan)

Fig 1. The Bryan's Shearwater, a small black and white Puffinus species

Bryan's Shearwater, *Puffinus bryani,* is a seabird species that was described in 2011 based on a specimen collected in the Midway Atoll in 1963 (Pyle *et al.* 2011). The morphological characteristics specific to this species are small body size, relative long tail, dark undertail coverts and bluish legs (Fig. 1). A shearwater with these characteristics was observed at the Midway Atoll during the winter of 1991–1992 (Pyle *et al.* 2014). These sightings had been the sole reliable records of this species throughout the world. However, given the paucity of records, this shearwater probably does not breed regularly in the northwestern Hawaiian Islands (Pyle *et al.* 2011). The authors suggested that their breeding areas are possibly located on other Pacific islands In any case, this species is likely to be very rare, highly threatened, and require

The Bonin Islands are subtropical oceanic islands, off Japan. The islands were inscribed as a World Natural Heritage Site in June 2011 (see No. 25, 29 and 32 in DIWPA Newsletter for more details). Since 1997, one alive and five dead individuals of a small *Puffinus* shearwater species were found on the Bonin Islands; unfortunately, the alive individual died later. Although some of these specimens were tentatively identified as the Little Shearwater, *Puffinus assimilis*, the morphology of the Bonin samples was not completely consistent with the Little Shearwater and was probably to be more similar to the Bryan's Shearwater. Therefore, my colleagues and I examined the six Bonin samples genetically and morphologically to identify the species definitively. In the result, the Bonins were confirmed to be (Kawakami *et al.* 2012). Because the most recent individual was found on an islet to the north of Chichi-jima Island in 2011, the species has surely survived in this island system. Thus, the breeding grounds of Bryan's Shearwater should be located on the Bonin Islands.

Three of the individuals found on Higashi-jima which is next to Chichi-jima Island were carcasses preyed upon by Black Rats, *Rattus rattus* (Figs 2 & 3). The rat is one of the worst 100 of the World's Worst Invasive Alien Species nominated by the International Union for Conservation of Nature and Natural Resources (IUCN). On Higashi-jima, the rat had preyed upon an appreciable number of small seabirds such as Bulwer's Petrels, *Bulweria bulwerii,* and Tristram's

Fig 2. The environment of Higashi-jima

Report 3

Fig 3. The carcass of the Bryan's Shearwater preyed upon by the Black Rats

Storm Petrels, *Oceanodroma tristrami* (Kawakami et al. 2010). Attempts were made to eradicate rats on this island in 2008. While the rat eradication has been conducted on several other islands, alien rats inhabit in more than 20 islands. Further rat eradication on other islands should be conducted to rescue the shearwater from the extinction.

From the limited number of records, Bryan's Shearwater appears to be very rare and seriously threatened on the Bonin Islands. This species is listed as Critically Endangered in the IUCN Red List. To conserve this species effectively, the estimation of population size and breeding distribution are urgently required. And further, we need to put much efforts comprehensive conservation of biodiversity to preserve the World Natural Heritage Site.

References

Kawakami K., Eda M., Horikoshi K., Suzuki H., Chiba H. and Hiraoka T. 2012. Bryan's Shearwaters have survived on the Bonin Islan The Condor 114: 507-512.

Kawakami K., Horikoshi K., and Suzuki H. 2010. Severe predation impacts by invasive black rats *Rattus rattus* on the Bulwer's petrel *Bulweria bulwerii* in the Bonin Islands, Japan. *In* Restoring the oceanic island ecosystem (K. Kawakami and I. Okochi Eds.), pp 51–55. Springer Tokyo, Tokyo, Japan.

Pyle P., Welch A.J., and Fleischer R.C. 2011. A new species of shearwater (*Puffinus*) recorded from Midway Atoll, Northwestern Hawaiian Islands. The Condor 113: 518–527.

Pyle P., David R., Eilerts B.D., Amerson A.B., Borker A. and McKown M. 2014. Second record of Bryan's Shearwater Puffinus from Midway Atoll, with notes on habitat selection, vocalizations and at-sea distribution. Marine Ornithology 42: 5-8.

New Site 1

Landscape conservation of Amano-hashidate in Kyoto, Japan: a guideline against pine wilt disease

Takefumi Ikeda
Kyoto Prefectural University
(Japan)

Fig. 1. The landscape of Amano-hashidate

Since hundreds of years ago, Amano-hashidate is well known for being one of the three most beautiful scenic spots, *The Three Great Views of Japan*. The site locates in the western Japan (35°43' N, 135°11'E). The location is characterized by its coastline vegetation of white sands, evergreen pines and blue sea on a sandbar spreading 3.2 km long and 40-170 m wide, making beautiful contrasting colors (Fig. 1). The pine trees on the sandbar are one of the important elements, contributing to the beautiful landscape. Such coastal sceneries are highly appreciated by Japanese. Most of Japanese will be hard to imagine Amano-hashidate without pine trees in the beach landscape. There are approximately 5,000 big pine trees with over 10 cm dbh (diameter of breast height) in Amano-hashidate. Both *Pinus thunbergii* and *Pinus densiflpra* are common species, but *Punus thunbergii* is more abundant. Pine trees often suffer from a pine wilt disease caused by pine wood nematode (Mamiya 1983). A symptom of the disease is very severe. Majority of the pine trees infected by pine wood nematodes will die within a few months, especially during dry summer season. In 2001, the pine death was conspicuous at Amano-hashidate. This site is a very important for economy in the northern Kyoto, because many tourists visit every year for sightseeing to look the beautiful pine forests and beach. Therefore, even in the death of a pine tree, it is not allowed for our image or governments. Here I report various ecological procedures that we have implemented under such situation for preventing the spread of pine wilt disease and its accomplishments.

The protective program for pine death in Amano-hashidate

First, the number of dead pines caused by the pine wilt disease ranged from 10 to 30 individuals per year. However, the rates of pine death were twice after 2000, and 178 individual pines died in 2001 at Amano-hashidate. In 2001, we could predict that the pine death would be over 350 individuals in the next year. Thus, since the autumn in 2001, several procedures have been rolled out to prevent pine death caused by the pine wilt disease.

The protective program was as follows: at first as precautionary measures (1) felling, removing and spraying with insecticides of dead pine trees during the autumn to winter, (2) spraying insecticides on preventive ground three times during the late May to late June, and aerial spraying with insecticides for enhancement of the effects of ground spraying, using a sprinkler and remote-controlled small-scale helicopter, and (3) conducting the injection of nematicides to 4,291 pine trees to kill the pinewood nematode introduced by maturation feeding of Japanese pine beetles, *Monochamus alternatus* Hope, which is a vector of pinewood nematode.

Tree wilting damage had seriously spread to pine forests in the mountain area, surrounding the core site at the sandbar. It was viewed as an outbreak of the pine death at Amano-hashidate. To suppress the damage in the affected pine forests, the further action was carried out, as follows: (1) removing the source of infection,

(2) eradicating the dead pines infested by *Monochamus alternatus* Hope, and (3) conducting preventive action against infection for the remained living pine trees (Yoshida 2006). To eradicate infection sources, the control program was focused on felling and spraying of the dead pines in the surrounding mountain area within 2 km distance from Amano-hashidate.

As the results of the control program, the number of dead pines decreased dramatically. This action plan would be successful. Note that educational activity on the pine wilt disease for local residents is also indispensable to perform the control program.

Current situation of pines at Amano-hashidate

To evaluate the current situation in Amano-hashidate pine forests, the vegetation, soil, fungi and landscape were surveyed. The following situations have emerged: (1) an increase in broad-leaved trees within the pine forest, the exuberance of herbaceous plants (Fig. 2), and the eutrophication in soil, (2) a decline in root systems of big trees, because of an elevation of the ground water level and the soil dressing covering the original forest floor and (3) an increase in the stand density over the ideal level for pine trees. Furthermore, (4) up to 30% of tree thinning did not significantly affect our landscape image on the pine forests, according to the results of a montage photo-test.

The soil eutrophication allows pine forests to a gradual transition towards broad-leaved forests in the vegetation, because the successional climax in this area is evergreen broad-leaved forests. Such situation was due to soil improvement conducted in the past, to promote the growth of above-ground part of pine trees. However, the top/root ratio of tree individuals increased and the risk of windfall of trees increased. In 2004, approximately 200 pine trees fell down due to a typhoon,

Future efforts for pine-forest conservation at Amano-hashidate

The maintenance of the beautiful, healthy pine forests is important for forest conservation. To progress the regeneration of pine seedlings and saplings at artificial stands, we must perform further ecological activity, as follows: (1) thinning of pine trees to improve the light condition in forest floor and to establish the balanced growth of pine trees, (2) cutting of broad-leaved trees, (3) removing litter and humus layer of soil to make or ma soil for pines), (4) replanting at disturbed gap sites, and (5) maintaining root systems. In addition, it is necessary for tree doctors to take care the old pine trees with pet names. Invasion and expansion of diseases are world-widely found in forests, may related to global climate change or an increase in human effects on forest ecosystems. This is an important issue that we must resolve in many forests in the world. I am pleasure if this guideline will help many ecologists and policy makers. Co-working together with many ecologists, policy makers and local people is needed for the challenge to such large issue.

Fig. 2. The grove of pine forests, where many herbaceous plants are closely growing

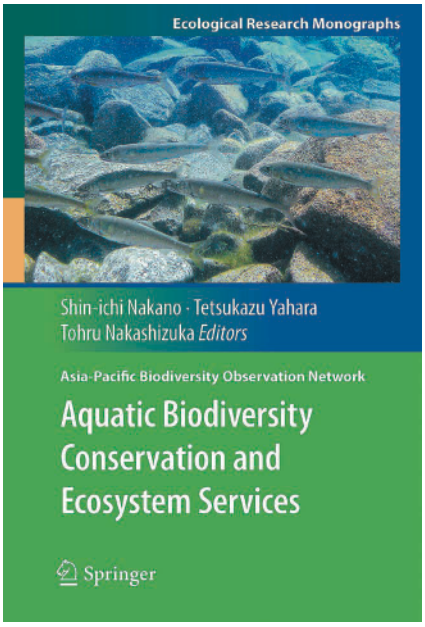
References

Ikeda T. 2008. Control program of pine wilt disease for landscape conservation – The case of Amanohashidate, Kyoto, Japan. *In* Pine Wilt Disease: A Worldwide Threat to Forest Ecosystem (M.M. Mota and P. Vieira Eds.), pp. 397-403. Spriger Netherlands, Dordrecht, Netherlands

Mamiya Y. 1983. Pathology of the pine wilt disease caused by *Bursaphelenchus xylophilus*. Annual Review of Phytopathology 21: 201-220.

Yoshida N. 2006. A strategy for controlling pine wilt disease and its application on-site. Journal of the Japanese Forestry Society 88: 422-428.

AP-BON Book3 is coming soon



This is the third volume of "*The Biodiversity Observation Network in the* ". This volume examines the topic of local biodiversity conservation in the Asia-Pacific region, one of the most rapidly changing areas in the world. With a focus on aquatic systems, this of local biodiversity, challenges in management and conservation of biodiversity, and newly developed methods for monitoring biodiversity.

The first part, "Local Biodiv four chapters presented at "International Workshop on Freshwater Biodiversity Conservation in Asia" in Kyushu University, Japan in November 2012. Our planet is currently facing a freshwater biodiversity crisis, and the key to preventing further extinction is found by understanding the threat chapters in the part refer to local biodiversity, management and conservation of biodiversity in freshwater systems.

Better management of biodiv frequent and spatially detailed assessments of s information, laborious and expensive support is needed. The usefulness of modern sophisticated technologies that measure the distribution and status of biodiversity is probably an ideal way to gather these crucial data. Thus in the second part, "Advanced Methods of Biodiversity Monitoring", we include a chapter on remote sensing technology applied to a eutrophic lake and another chapter from marine seagrass beds.

Ecosystem service in terms of biodiversity is now attracting increasing interest all over the world. When an ecosystem provides services to humans, so socioeconomic aspects with special reference to biodiversity would be an appropriate approach to evaluate ecosystem services in a given ecosystem. In the third part, "Ecosystem Service and Socioeconomic Aspects with Special Reference to Biodiversity", we have and, to provide a broader perspective, two more chapters on terrestrial ecosystem services.

The present book, together with our previous in the biodiversity research that still lacks information from developing countries. In addition, we have included contributions, providing reviews on advances in concepts and methods of biodiversity observations and on the challenges to study spatial variability of biodiversity and ecosystems by linking monitoring across various ecosystems in the Asia-Pacifc regi is invaluable for effective conservation and sustainable use of biodiversity. This work will interest all stakeholders in biodiversity conservation, including policy makers, NPOs, NGOs, environment-related industries, and biodiversity researchers, not only

CALL FOR NEW MEMBER OF DIWPA

We are now calling for membership of DIWPA. Membership fee is no charge. When you become a member, you can;

1. Receive the DIWPA News Letter
   You can receive the News Letter by post or e-mail. News Letter contains various information of

3. Run your articles regarding your biodiversity activities in DIWPA News Letter
   DIWPA introduces our member's various activities in DIWPA News Letter. Your activities would spread throughout the world, and you may receive more information about biodiversity conservation as well as the supports.

   DIWPA can introduce people who have information you want. More than 500 members in 44 countries

DIWPA OFFICE

For a free subscription to this news letter, or address change, please e-mail to the DIWPA OFFICE
diwpa@ecology.kyoto-u.ac.jp

We are ready to deliver an electronic copy to you. Thank you for your cooperation in promoting paperless.
Also, we always welcome your articles, news, or information related to biodiversity for DIWPA News Letter. Please send them to us.

Center for Ecological Research
Kyoto University
509-3, 2-chome, Hirano, Otsu, 520-2113, JAPAN
Tel. & Fax: +81-77-549-8238
E-mail: diwpa@ecology.kyoto-u.ac.jp
http://diwpa.ecology.kyoto-u.ac.jp/