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Newsletter on MAB Activities in Japan
Japanese Coordinating Committee for MAB

UNESCO/MAB-IUCN Workshop: Nature Conservation Cooperation on the Kunashir, Iturup, Shikotan and Habomai Islands

21 January 2001, Tokyo

Yusho ARUGA

The workshop was held at the National Olympic Memorial Youth Center, Yoyogi, Tokyo. Mr. Han Qunli, Program Specialist in Environmental Science, UNESCO/Jakarta Office, 4 Russian scientists and 4 Japanese scientists made presentations on the trans-boundary conservation cooperation, the biosphere reserves network in Siberia and the Russian Far East, the biodiversity of plants and animals in Kunashir, Iturup, Shikotan and Habomai Islands and its conservation, the bioresources in Kunashir, Iturup, Shikotan and Habomai Islands and their conservation, the present status and perspectives of ecotourism developmet in the Russian Far East, and the proposals for nature conservation of Kunashir, Iturup, Shikotan and Habomai Islands. After general discussions, the joint resolution: On a New Approach to the "Kunashir, Iturup, Shikotan and Habomai Islands" Issue was adopted.

The workshop was financially supported by the UNESCO/Jakarta Office and the Keidanren Nature Conservation Fund under the cooperation of Japanese Coordinating Committee for MAB, Russian National Committee for MAB, EABRN (East Asian Biosphere Reserves Network), IUCN and Biodiversity Network JAPAN. The total number of participants was 135.

The speakers and their presentations are as follows, and the joint resolution is annexed.

Han Qunli (Program Specialist, UNESCO/Jakarta Office): Trans-boundary Conservation

V. B. Stepanitski (Deputy Director, Department of Environmental Protection and Ecological Security, Ministry of Natural Resources, Russian Federation):Trans-boundary Nature Reserves: Experience in the Russian Federation

V. M. Neronov (Deputy Chair, Russian National

Committee for MAB): The Network of Biosphere Reserves in Siberia and Russian Far East as a Part of the EABRN and Perspectives of Their Participation in International Scientific Programs

Ken Sato (Professor, Hokkaigakuen University):Biological Diversity of Vascular Plants in the Four Islands: Iturup, Kunashir, Shikotan and Habomai

Noriyuki Ohtaishi (Professor, Hokkaido University Graduate School):Animal Diversity in Kunashir, Etorofu, Habomai and Shikotan

E. M. Grigoriev (Director, Nature Zapovednik "Kuril'sky"):Plant and Animal World of the Southern Kuril Islands. A Role of the Kuril'sky Nature Reserve in the Protection of Nature Complexes and Biodiversity

Haruo Ogi (Professor, Hokkaido University Graduate School):Distribution and Conservation of Seabirds in the Sea of Okhotsk

N. V. Moraleva (Researcher, Institute of Ecology and Evolution, Russian Academy of Sciences):Present State and Perspectives of Ecotour Development in the Nature Reserves of the Russian Far East

Norihisa Kondo (Curator, Nemuro City Folk Material Center):Proposal for Nature Conservation of Iturup, Kunashir, Shikotan and Habomai Islands

JOINT RESOLUTION: ON A NEW APPROACH TO THE "Kunashir, Iturup, Shikotan and Habomai Islands" ISSUE

WE, the participants of this scientific workshop, recognize that:

The Kunashir, Iturup, Shikotan and Habomai Islands are home for some of the finest pristine wilderness left on earth. These islands support many species endangered in Hokkaido, serve as part of a major feeding area and migratory route of marine mammals and birds, and represent an invaluable scientific "control" site, rich in the marine resources which have been ravaged in more developed areas of the region.

Conserving the islands is in the best interests of the peoples of Russia, Japan and the rest of the world, in light of the global problems of dwindling forests, oceanic pollution, loss of biodiversity, and ozone depletion.

The nature reserves of Kunashir, Shikotan and Habomai should serve as a starting point for, and play a key role in, Russian-Japanese nature cooperation.

WE BELIEVE THAT:

The existing bilateral conservation effort -- a few brief and highly restricted trips each year by Japanese scientists – however well-intentioned, is of largely symbolic value, and does not even begin to adequately address the urgent conservation needs of the islands.

WE THEREFORE URGE OUR COUNTRIES TO:

Move energetically ahead on joint research, field expeditions and conservation. Regular and comprehensive joint Russian-Japanese biological surveys, including censuses of migrating species, should be conducted, so that the islands' vast biodiversity can be properly assessed and maintained. These actions would be enhanced through the publication of joint scientific articles and monographs, joint workshops and conferences, and cooperative programs in the fields of ecotourism and eco-education.

Equally important, our countries should take effective measures to combat poaching, which has reached epidemic levels and threatens to destroy not only the islands' sanctuary but also commercially vital fisheries in the Sea of Okhotsk. We recognize that this action will not only save wilderness but also protect the marine resources that provide food and jobs for Russians and Japanese.

FINALLY, WE RECOGNIZE THAT:

By working together to protect the wilderness of these islands, our countries would make a huge contribution to environmental conservation as well as to world peace, setting a model for all mankind.

We urge our countries to act fearlessly, boldly, and with all urgency.

Resolution issued at the conclusion of the "UNESCO/MAB-IUCN Workshop: Nature Conservation Cooperation on the Kunashir, Iturup, Shikotan and Habomai Islands" held Jan. 21, 2001, at the National Olympic Memorial Youth Center in Tokyo; sponsored by Biodiversity Network Japan, UNESCO/Jakarta, MAB/Russia/Japan, IUCN and EABRN. (end)

(Professor, Tokyo University of Agriculture)

Report of International Symposium on Rehabilitation of Terrestrial Ecosystems in East and South-east Asia And Enhancement of Biological Productivities.

Nobumasa ICHIZEN

International Symposium on Rehabilitation of Terrestrial Ecosystems in East Asia and Enhancement of Biological Productivities was held on December 8, 2000, in Utsunomiya University. The details of this symposium are as follows.

Background

Today, deterioration of global environments has become a serious problem. This is caused by careless human activities including excessive logging, cultivation, and irrigation, and overgrazing, especially in semi-arid and humid tropical zones. Although, thanks to mild climate, we have not yet faced such a problem in Japan, it is important for Japan as a member of world community to actively participate in the international effort for restoration of degrated global environments.

Some Japanese researchers have been struggling to establish new technologies in semi-arid area in Huangtu plateau in China, saline soil area in Huang-Huai-Hai Plain in China, in tropical rain forest in Sarawak in Malaysia and tropical swamp forest in southern Thailand. In order to overcome environmental deterioration in East Asia in close cooperation with national and international researchers, we decided to hold an international symposium by Center for Research on Wild Plants, Utsunomiya University.

Objectives

I. To exchange the fruits of field research in Huangtu Plateau and Huang-Huai-Hai Plain in China, Sarawak tropical rain forest and narathiwat tropical peat swamp forest.

II. To discuss the future direction of rehabilitation of terrestrial ecosystems in East Asia and enhancement of biological productivities.

Program

Keynote Speech

Dr. S. Tamura (Professor emeritus of the University of Tokyo, Japan)

Session I: Huangtu Plateau

"Nature and Bio-production in Huangtu Plateau, China"

Prof. K. Takeda (Okayama University, Japan)

"Research on Eco-agriculture with Soil and Water Conservation in Hilly-gully Region of Loess Plateau-Brief on research situation of Ansai Comprehensive Research Station of Soil and Water Conservation, Chinese Academy of Sciences"

Prof. Z. Lu (Chinese Academy of Sciences, China)

Session II: Hang-Huai-Hai Plain

"Investigations on the development of biological production harmonizing with environment in saline soil area of Huang-Huai-Hai Plain,China "

Prof. S. Yamazaki (The University of Tokyo, Japan)

"The evolution and development of saline soil in Huang-Huai-Hai Plain of China "

Prof. K. Tian (Chinese Academy of Sciences, China)

Session III: Tropical peat swamp forest

"Melaleuca cajuputi, a promising tree species for swamp conservation in south Thailand "

Prof. T. Hogetsu (The University of Tokyo, Japan)

" Agroecosystem of Narathiwat Peat Swamp, Peninsular Thailand"

Dr. P. Vijarnsorn (Department of Land Development Ministry of Agriculture and Cooperatives, Thailand)

" Heat and carbon balance in a tropical peat swamp forest "

Prof. T. Ishida (Utsunomiya University, Japan)

Session IV: Tropical rain forest

" Silvicultural difficulties in plantation forestry in Sarawak "

Prof. T. Yamakura (Osaka City University, Japan)

"Rehabilitation of Degraded Shifting Cultivation areas-the Sarawak Experience "

Mr. J. J. Kendawang (HQ, Forest Department, Sarawak, Malaysia)

"Present Status and Future Directions of Fungi Research (basic and applied) in Sarawak "

Ms. L. Chong (Forest Research Centre, Sarawak, Malaysia)

About 200 audience including the students participated in this symposium, actively discussed the future direction of rehabilitation of Terrestrial Ecosystems in east and south-east Asia. Importance of on-site-field study was strongly stressed by speakers.

(Professor, Center for Research on Wild Plants, Utsunomiya University)

Keynote Speech for "International Symposium on Rehabilitation of Terrestrial Ecosystems in East and South-east Asia And Enhancement of Biological Productivities" by Dr. Saburo TAMURA.

Nobumasa ICHIZEN, Takayoshi NISHIO

Introduction

As is commonly known, the recent explosive growth of human activities directed upon the biosphere has inevitably brought about the degradation of ecosystems. Under these circumstances, Dr. Saburo Tamura organized various research groups in Japan and positively conducted international joint researches in several Asian countries, aiming at the rehabilitation of devastated terrestrial ecosystems and the enhancement of biological activities. In this symposium, the fruits of our international cooperations obtained in Loess Plateau (Huangtu Plateau) and Huang-Huai-Hai Plain in China, Narathiwat in Thailand and Sarawak in Malaysia, were reviewed (Fig. 1).

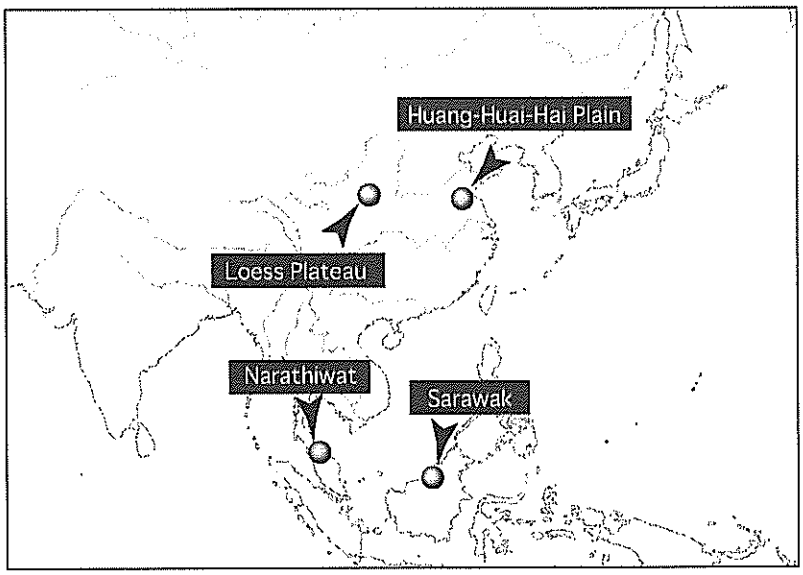

Fig.1 The locations of Loess Plateau, Huang-Huai-Hai Plain, Narathiwat and Sarawak.

I. Loess Plateau

The Loess Plateau in China is located in the middle reaches of the Yellow River (Fig. 2). This Plateau is covered with the largest (area of

580,000km2) and thickest (depth of 50-100m) loess deposit on the earth.

Before the dawn of history, abundant vegetation grew on the Plateau, but, due to human impacts for long periods of time, the natural ecosystem has been completely destroyed. At present, the Plateau consists of innumerable denuded hills divided by deep gullies (Photo 1).

On the Plateau, soil erosions are still continuing on massive scale, and it threatens to result in the final desertification of this region in the near future. At the request of the Chinese Academy of Sciences to prevent the erosion on the Plateau by ecological means, Dr. Tamura organized a research group consisting of a dozen or so Japanese scientists and started various kinds of experimental studies in 1988 in cooperation with scientists from the Academy.

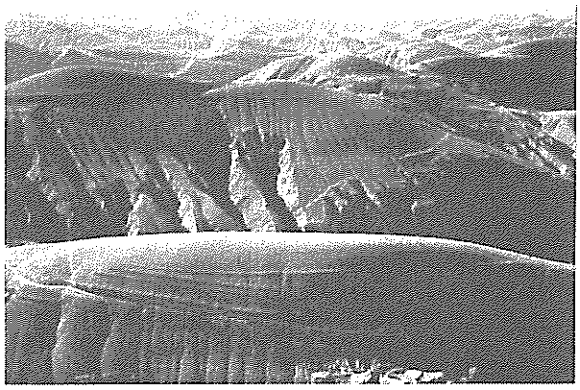

Photo 1 A desolate landscape of Loess Plateau in winter.

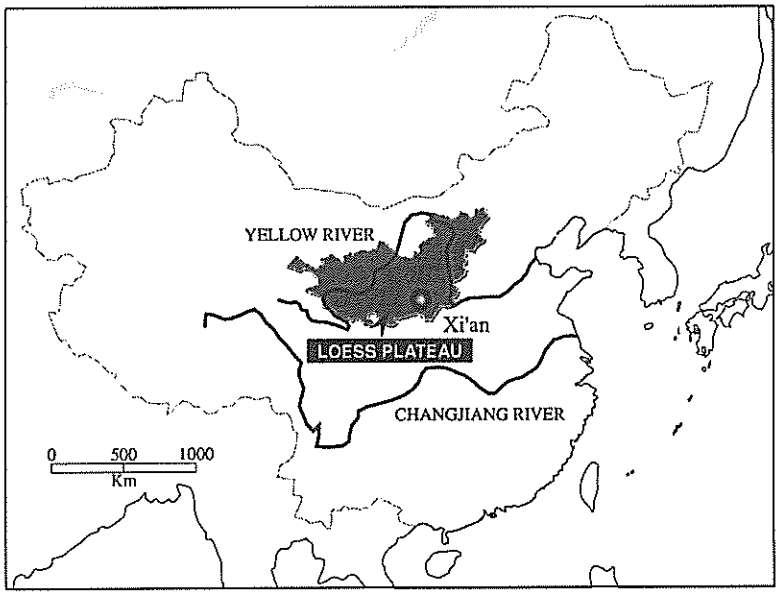

Fig. 2 The location of Loess Plateau in China.

Among them, the selection test for grasses was in charge of Emeritus Professor T. Takematsu and I, each belonging to Utsunomiya University. From all parts of the world, they collected seeds of more than 9600 species of herbs including pasture grasses, which were expected to be resistant to drought and cold as well as to be non-toxic to domestic animals. These seeds were sown in the spring of 1988 on a slope of a hill in the Plateau and grown without irrigation and manuring, thereafter. Up to the present, more than ten species of herbage (Table 1) have shown remarkable adaptability to the extremely severe natural conditions on the Plateau. Among them, Panicum virgatum, being a kind of pasture grass, whose place of origin is considered to be tropical

America, revealed the most vigorous growth (Photo 2). Other various topics concerning their activities on the Loess Plateau were presented by Professor K. Takeda of Okayama University and Professor Z. Lu of the Chinese Academy of Sciences .

Prof. Takeda explained the increasing and stabilizing bio-production and introducing plant species, Prof. Lu mentioned the research on eco-agriculture with soil and water conservation in hilly-gully region.

Table 1 Names of herbages found to be resistant to severe natural conditions on Loess Plateau.

Family	Scientific Name
Boraginaceae	Echium vulgare
Asteraceae	Tragopogon pratensis
Gramineae	Agropyron sp.
	Bromus inermis
	Elymus sp
	Festuca sp
	Panicum virgatum
Leguminasae	Medicago sativa

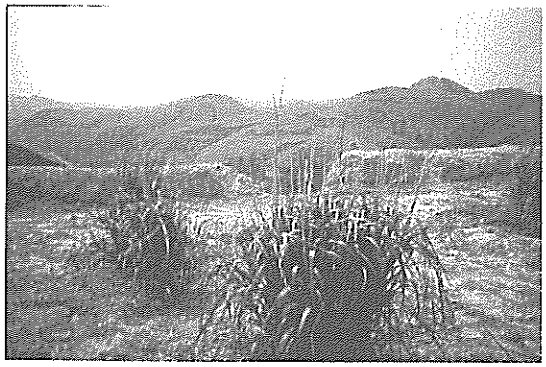

Photo 2 Panicum virgatum revealed vigorous growth even under a long drought in 1998 on Loess Plateau.

II. Huang-Huai-Hai Plain

Huang-Huai-Hai Plain is an alluvial plain formed by Huang River (Yellow River), Huai River and Hai River. On the Plain, there are upland fields of 20 million ha, which correspond to 18% of the whole cultivated lands in China and is considered to be a principal granary of this country (Fig.3). However, the agricultural productivity on the Plain is relatively low due to the accumulation of salts such as NaCl, Na2SO4 and Na2CO3 in arable soils there.

Up to the present, saline soil areas have been widely distributed on earth being originated in natural factors and/or human activities. Besides, along with the recent propagation of upland irrigation, salinization of cultivated soils and exhaustion of water resources have become serious. In due consideration of these circumstances, Dr. Tamura decided to organize a group, aiming at the establishment of an universal model of technology being effective to realize sustainable agriculture on every saline soil area in the world. Thus, this group entered on a cooperative research between the Chinese scientists led by Professor K. Tien belonging to the Chinese Academy of Sciences in 1990 on Huang-Huai-Hai Plain, and conducted various kinds of experiments.

Among their activities, the selection test of barley and wheat being in charge of Prof. K. Takeda of Okayama University was worthy of special mention.

He collected 8,704 varieties of barley and 1,548 varieties of wheat throughout the world. For saving the trouble of handling, he took ten seeds from each variety and mixed together into one seed lot. A half of the lot was sown in the saline soil of the Plain in October 1991, and the remaining half was similarly treated in February 1992. About 60 % of barley and 25 % of wheat

seeded in the autumn of 1991 were killed during the first winter (Photo 3). After seven cycles of selection, he finally obtained two varieties of winter wheat, both of which were extremely resistant to soil salinity and drought (Photo 4).

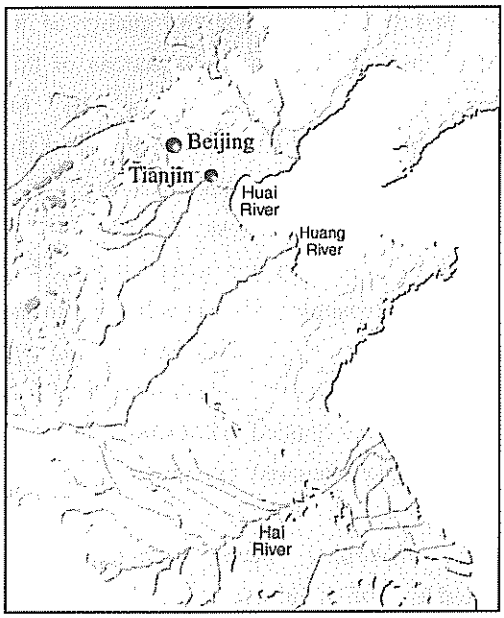

Fig.3 The location of Huang-Huai-Hai Plain in China.

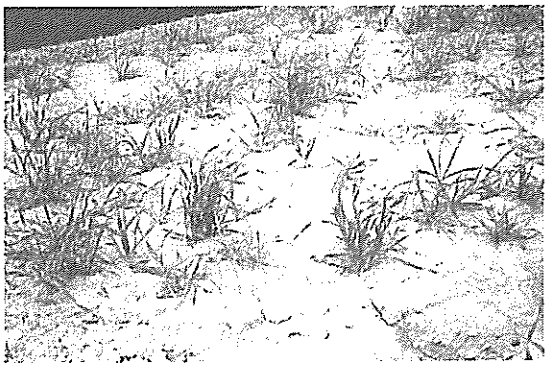

Photo 3 Most of the barley varieties seeded in the saline soil in the autumn of 1991 were killed during the first winter.

Other various topics concerning their activities on the Huang-Huai-Hai Plain were presented by Professor S. Yamazaki of the University of Tokyo and Professor K. Tien of the Chinese Academy of Sciences. Prof. Yamazaki explained the selection of high salt-and drought-tolerant plants, secondary salinization by introduction of the Yellow river water, biological desalinization, and effect of Glycinebetaine on the salt tolerance. Prof. Tien mentioned the evolution and developmet of saline soil, espcially to the potential crisis of secondary salinization.

Photo 4 A promising winter wheat variety was selected after seven cycles of selection.

III.Tropical Peat Swamps Forests

Formerly, peat swamp forests were widely found in Narathiwat Province located on the Malay Peninsula (Fig. 4). These forests were left intact for a long period of time but, during the last two decades, considerable parts of the forests were turned into farmlands through drainage followed by cutting of trees, in order to cope with the explosive increase in population. Contrary to expectation, however, these efforts brought about the appearance of vast wastelands due to the complicated characteristics of tropical peat soils. Below the peat soil layer, there exists the marine clay layer, which contains a large quantity of pyrite, being mainly composed of FeS2. After the drainage from swamp areas, the clay layer was gradually exposed to the air and FeS2 was oxidized. Then, the peat soil layer changed into the acid sulfate soil with strong acidity. Needless

to say, farmers were obliged to give up their cultivation there.

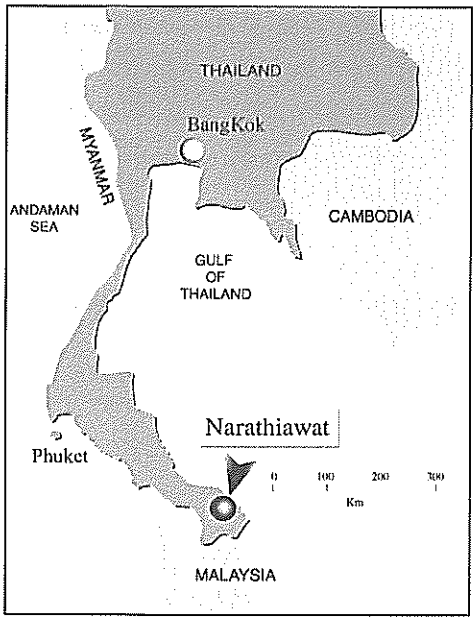

Fig. 4 The location of Narathiwat Province in Thailand.

Since the beginning of the 1980's, cooperative researches have been repeatedly conducted by the scientists of the inside and outside of this country aiming at amelioration of devastated peat soils, but their attempts all met with failure.

Photo 5 Melaleuca trees vigorously growing in a strongly acidic swamp in Narathiwat.

In August 1991, Dr. Tamura noticed that trees belonging to Melaleuca cajupti were growing vigorously in degraded swamps (Photo 5). Further, He learned that this wood has no industrial or commercial uses. It has been used only for charcoal making by farmers for their own use.

The moment He knew these, he had a unique idea. Since Melaleuca is resistant to strong soil acidity and water stress and the quality of its lumber is hard and heavy, afforestations of this species should be promoted actively on devastated peat swamp areas in Narathiwat for the development of wood processing industry.

According to his request, studies on the utilization of Melaleuca are being conducted at present by the Japanese scientists belonging to the University of Tokyo and Kyusyu University, respectively. Up to now, they have confirmed that a kind of cement-bonded particleboard can be successfully manufactured by use of Melaleuca (Photo 6).

Topics concerning these problems were presented by Prof. T. Hogetsu of the University of Tokyo, Prof. T. Ishida of Utsunomiya University, and Dr. P. Vijarnsorn belonging to the Ministry of Agriculture and Cooperatives, Thailand.

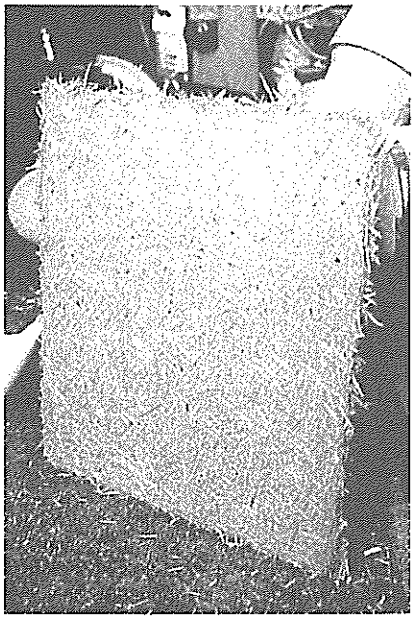

Photo 6 A sheet of particleboard produced from Melaleuca wood chips.

IV.Tropical Rain Forests

In the world, tropical rain forests corresponding to the area of 15 million ha disappear every year owing to human activities. In consideration of these circumstances, Dr. Tamura decided to organize a Japanese research team in the "Ecology Group", aiming at the reclamation of tropical rain forests. The research was conducted in Lambir Hills National Park, Sarawak with the close cooperation of the Department of Forestry, Sarawak (Fig. 5).

The project was composed of three main subjects (Table 4). For the long–term ecological observation on tropical rain forests, a large-scale research plot with an area of 52ha was established. Under the leadership of Professor T. Yamakura of Osaka City University, the work for plot demarcation including topography survey was initiated in October 1990 and finished in March 1992. In succession, the census was conducted over a period of three years. As the results, it was revealed that the site is very rich in diversity and very dense in stocking. Approximately 1,150 species of trees were identified.

The number of individuals with the stem being greater than 1cm in diameter at breast height was found to be 358,000.

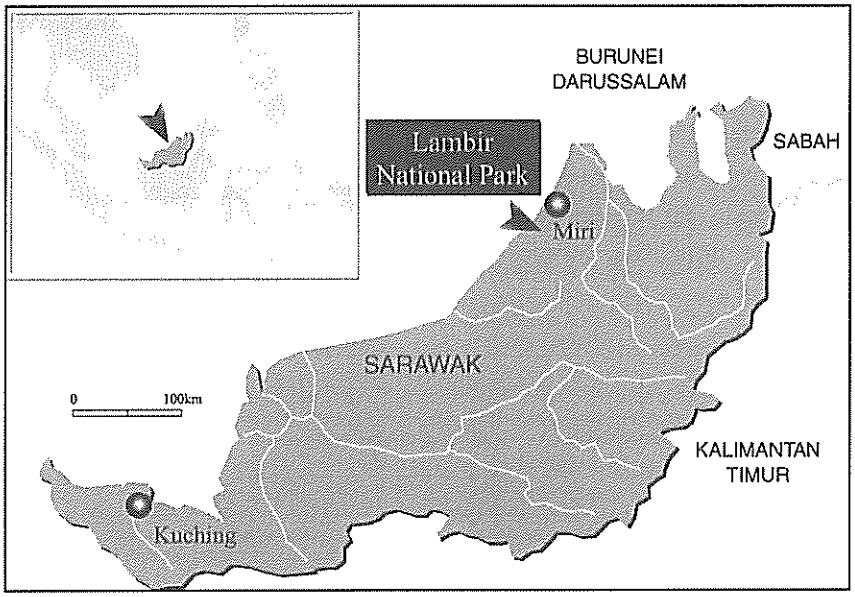

Fig.5 The location of Lambir National Park in Sarawak.

In order to establish canopy biology, we constructed an observation system consisting of two tree towers (ca.50m in height) linked by an aerial walkway (300m in length) (Photo 7) in a forest adjacent to the long-term ecological research site. Thus, studies on eco-physiology, phenology and pollination have become possible at the canopy level.

The study on tree planting for the rehabilitation of ecosystem was initiated in 1996 on the experimental site located at Bakam, Sarawak. As our first trial, seedlings of two tree species, i.e. Shorea macrophylla and Dryobalanops aromatica, were planted in ordinary line planting. The survival rates of both species were over 92% in March 1997. Unexpectedly, from the end of 1997, Sarawak was struck by serious drought over a long period of time, and all the seedlings which

had been newly planted at Bakam died.

Photo 7 An aerial walkway constructed for the establishment of canopy biology.

Based on this hard experience, new planting schemes are being examined by the joint research group. In this symposium, Professor T. Yamakura of Osaka City University, Mr. J. J. Kendawang and Ms. L. Chong disclosed their new experimental results. Professor Yamakura indicated silvicultural difficulties in plantation forestry, especially to origin of difficulties, problem of seed and seedling, Mr. Kendawang and Ms. Chong explained the present status of Sarawak experience to rehabilitation of degraded shifting cultivation area and basic and applied fungi research respectively.

Table 2 Long Term Ecological Research on Tropical Rain Forests in Sarawak

1) Establishment of a large-scale research plot in a tropical rain forest for the long-term ecological observation.
2) Establishment of canopy biology.
3) Development of fundamental technology for the rehabilitation of tropical rain forests

(Center for Research on Wild Plants, Utsunomiya University)