

2.2.2 Laboratory : Laboratory of Tropical Forest Resources and Environments

Member:	Professor	Ohta, Seiichi, Dr. Agric. Sci
	Associate Professor	Kanzaki, Mamoru, Dr. Sci
	Assistant Professor	Kaneko, Takayuki
	Doctor's program	6
	Master's Program	9
	Undergraduate	4
	Other	1

A. Research Activities (2009.4-2010.3)

A-1. Main Subjects

a) Elements cycling and sustainable management of industrial tree plantations in the tropics

To evaluate and predict the sustainability of industrial plantation rapidly expanding in the devastated land in the tropics, and to present the measures to solve the related problems, the researches have been initiated on budget of nutrient elements and GHEG in soil-plant systems of industrial tree plantation of leguminous species and also on the mechanism of their fluctuation with forestry practices. The soil management for the reduced emission of GHEG is also studied.

b) Soil ecology and forest distribution in the area of tropical seasonal forests

To elucidate the factors which controlling the distribution of evergreen forest and deciduous forest in tropical seasonal region, the soil physical characteristics as mechanical composition, pore distribution and hydraulic conductivity, and structure, species composition and leaf area index of forests for major soil-forest combinations are studied in Northeastern Thailand.

c) Carbon sequestration function of tropical seasonal forests and its fluctuation

For the quantitative evaluation of the carbon sequestration function of forest, members of the laboratory are studying at a tropical seasonal evergreen forest of Thailand and a mangrove forest of Myanmar with special reference to coarse woody debris (CWD) and long-term forest dynamics

d) Maintenance and regeneration mechanism of tropical forests

For elucidating the maintenance and natural regeneration mechanisms of tropical forests, dynamics of seedlings and saplings and insect-plant interactions of several forest types are being studied. Furthermore, various disturbances to forests, such as fire and slash-and-burn activity of human beings in the areas of rainforest, seasonal forests and montane forests in Asian tropics are also being studied.

e) Inventory and monitoring of plants in the canopy layer of a tropical montane forest

To clarify the diversity and long-term dynamics of plants growing in canopy layer, such as epiphyte, parasite, strangler and liana, field survey is conducting in a tropical montane forest of northern Thailand.

A-2.Publications and presentations

a) Publications

Books

- Mamoru Kanzaki, Akinori Yamada. Biodiversity as fundamentals for sustainable humanosphere. In "Geosphere, Biosphere, and Humanosphere" Pp.153-184. Kyoto University Press. 2009.

Original Papers

- Sungpalee, Witchaphart, Akira Itoh, Mamoru Kanzaki, Kriangsak Sri-ngernyuang, Hideyuki Noguchi, Takashi Mizuno, Sakhan Teejuntuk, Masatoshi Hara, Kwanchai Chai-udom, Tatsuhiko Ohkubo, Pongsak Sahunalu, Pricha Dhanmanonda, Satoshi Nanami, Takuo Yamakura, Anan Sorn-ngai. Intra- and interspecific variation in wood density and fine-scale spatial distribution of stand-level wood density in a northern Thai tropical montane forest. *Journal of Tropical Ecology* 25:359-370. 2009.
- Murata, Naoki, Seiichi Ohta, Atsushi Ishida, Mamoru Kanzaki, Chongrak Wachirinrat, Taksin Artchawakom, Hiroyuki Sase. Comparison of soil depths between evergreen and deciduous forests as a determinant of their distribution, Northeast Thailand. *Journal of Forest Research* 14:212–220. 2009.
- Kanzaki, M., Kawaguchi, H., Enoki, T., Inagaki, Y., Kiyohara, S., Kajiwar, T., Kaneko, T., Ohta, S., Sungpalee, W., Kagotani, Y., Kawasaki, T., Meunpong, P., and Wachrinrat C. Long-term study on the carbon storage and dynamics in a tropical seasonal evergreenforest of Thailand. In Puangchit L. and Diloksumpun S. (eds.) *Tropical Forestry Change in a Changing World Volume 2: Tropical Forests and Climate Change*. Pp.35-51. Kasetsart University Faculty of Forestry, Bangkok. 2009.
- Ya Min Thant, Kanzaki, M. & Maung Maung Than. Mitigation effects of forests as a natural shelter in the Cyclone Nargis in Myanmar. *Asian Journal of Environment and*

Disaster Management. Vol. 1 (2), 221-237. 2009

- Hosaka, T., Yumoto, T., Kojima, H., Komai, F. & Nur Supardi M. N. Community structure of pre-dispersal seed predatory insects on eleven Shorea (Dipterocarpaceae) species. *Journal of Tropical Ecology* 25:625-636. 2009.
- Hosaka, T., Takagi, S. & Okuda, T. A pre-liminary survey of insect galls on dipterocarps in a lowland rainforest at Pasoh, Peninsular Malaysia. *Tropics* 18:93-102. 2009.
- Yonekura, Yusuke., Ohta, Seiichi., Kiyono, Yoshiyuki., Aksa, Darul., Morisada, Kazuhito., Tanaka, Nagaharu., Kanzaki, Mamoru.: Changes in soil carbon stock after deforestation and subsequent establishment of “Imperata” grassland in the Asian humid tropics. *Plant and soil* 329: 495–507, 2010
- Zuidema, Pieter A., Toshihiro Yamada, Heinjo J. During, Akira Itoh, Takuo Yamakura, Tatsuhiro Ohkubo, Mamoru Kanzaki, Sylvester Tan and Peter S. Ashton. Recruitment subsidies support tree subpopulations in non-preferred tropical forest habitats. *Journal of Ecology* 98(3):636-644. 2010.
- Yamashita, N., S.Ohta, H.Sase, J.Luangjame, T.Visaratana, B.Kietvuttinon,H.Garivait, M.Kanzak. Seasonal and spatial variation of nitrogen dynamics in the litter and surface soil layers on a tropical dry evergreen forest slope. *Forest Ecology and Management* 259: 1502-1512. 2010

Reports

- KANZAKI Mamoru, Intensive Planting in Selective Logging System of Indonesia: A Challenge to the Sustainable Forestry. *Tropical Ecology Letters* No. 78:7-12. 2010

b) Conference and seminar papers presented

- The 19th Annual Meeting of Japanese Society of Tropical Ecology(Osaka City University, June 2009: 4 presentations
- ASIAHORCs (Asian Heads of Research Councils) Joint Symposium. Nagoya University, July 2009: 1 presentation
- The 8th World Bamboo Congress, Bangkok, Thailand September 2009 : 1 presentation
- The 4th International Congress of Chemistry and Environment, Ubonratchathani, Thailand January 2010: 1 presentation
- The 57th Annual Meeting of Ecological Society of Japan,Tokyo University, March 2010 (2)
- Regional Scientific Workshop on Acid Deposition in East Asia 2009, Tsukuba: 1 presentations

- Annual Meeting of Japanese Society of Soil Science and Plant Nutrition (Kyoto University) September 2009: 1 presentation
- The 74th Annual Meeting of Japanese Society of Limnology, Oita, Japan, September 2009: 1 presentation

A-3.Off-campus activities

Membership in academic societies

- Ohta Seiichi : The Japanese Forestry Society (Council member), Japanese Society of Forest Environment (Council member), Japanese Society of Pedology (Editor)
- Kanzaki Mamoru : The Japanese Association of Tropical Ecology (Council member, Secretary), Kansai Organization of Nature Conservation (Council member, Editor)

Research grants

1. Grants-in-aid for Scientific Research(KAKENHI)

- Kiban-kenkyu A : Ohta Seiichi : Evaluation of the tropical fast growing species plantation as N2O emission source and mitigation options
- Kiban-kenkyu A; : Hayashi Takashi : Field examination of the performance of genetic modified poplar for the industrial plantation
- Kiban-kenkyu A : Ishida Atsushi : Function in carbon, nutrients and water cycling within seasonally dry tropical forests
- Kiban-kenkyu B : Kanzaki Mamoru : Inventory and monitoring of plants in canopy layer of the tropical cloud forest: Construction of monitoring site
- Kiban-kenkyu A : Shibata Shozo : Ecological study of gregarious flowering of *Melocanna baccifera* in Mizoram, India
- Kiban-kenkyu B : Ohkubo Tatsuhiro : Geographic changes of multiscale distribution pattern of tree species of Fagaceae in Asian tropical montane forest
- Kiban-kenkyu C : Maesako Yuri : Impact of deer and alien species on the dynamics of evergreen oak forest and biodiversity conservation

2.Other Research Grants

- Ministry of Environment : Ohta Seiichi : Construction of super monitoring site and networking in middle to down stream area of Mekong River (Contract Research with Forest and Forest Products Research Institute).

A-4.International cooperation and overseas activities

International joint research, overseas research surveys

- Study on clarifying the soil acidification under leguminous fast-growing tree plantation in humid tropic, Ohta Seiichi (Indonesia)
- Survey for the Project of technical development for promoting CDM tree plantation, Ohta Seiichi (Indonesia),
- Dynamics and sustainable forestry in natural teak forest under selective logging, Kanzaki Mamoru (Myanmar)
- Carbon, nutrients and water cycling within seasonally dry tropical forests, Ishida Atsushi (Thailand)
- Biomass growth and soil carbon of mangrove plantation in Myanmar, Kanzaki Mamoru (Myanmar),
- Inventory and monitoring of plants in the canopy layer of a tropical montane forest, Kanzaki Mamoru (Thailand)

Visiting Research Scholars

- Visiting Research Scholar 1 (Indonesia)

B.Educational Activities(2009.4-2010.3)

B-1.On-campus teaching

a) Courses given

- Undergraduate level: Forest Science I (Ohta, Kanzaki), Tropical Forest Environment (Ohta), Tropical Forest Resources (Kanzaki), Practice in Environmental Science (Ohta, Kanzaki), Laboratory Course in Biological and Environmental Science I (Kanzaki, Kaneko), Laboratory Course in Forest and Biomaterials Biology (Kanzaki, Kaneko), Laboratory Course in Ecology (Kanzaki, Kaneko), Practice in University Forest I (Kanzaki, Kaneko). Practice in University Forest III (Kanzaki). Environmental Studies (Kanzaki), International Exchange Subjects (Kanzaki), Leading of Foreign Literature II (Ohta, Kanzaki)
- Graduate level: Tropical Forest Environment (Ohta), Seminar in Tropical Forest Resources and Environments (Ohta, Kanzaki), Practice in Tropical Forest Environments (Ohta, Kanzaki), Scientific Writing and Presentation in English (Kanzaki)

B-2.Off-campus teaching etc.

Part-time lecturer

- Kanzaki Mamoru: Faculty of Science, Nara Women's University, Global Environmental Biology
- Kanzaki Mamoru: JICA Training Course: Conservation and Sustainable Management of Mangrove Ecosystem

Open lectures, etc.

- Kaneko Takayuki: Extension course of forest science, Division of Forest and Biomaterial Science, Kyoto University, Lecturer

B-3.Overseas teaching

International students

- International students : Doctoral 1 (Myanmar) Research Students 1 (Indonesia)

Lectures and seminars

- Kanzaki Mamoru

Kanzaki Mamoru(Doctor course co-advisor) : Faculty of Forestry, Kasetsart University(Thailand)

C.Other Remarks

- Ohta Seiichi : UFJ Research Institute, the issues of forest carbon sink (Working group member), Japanese Center for Environment and Health, Acid Deposition and Oxidants Research Center, Soil and vegetation monitoring (Analyzing group member), Interior data verification group (Committee member), Working group for soil and vegetation (Committee member), Supporting group for soil and vegetation task force (Committee member), Group for methodological development of catchment analysis (Committee member), Ministry of Environment, Project of counter-measure for acid deposition (Committee member); , Japanese Center for Overseas Plantation Promotion, Project of environmental impacts of artificial forest in developing countries (Committee member), Japan Forestry Technology Association, Project of system development for identification of carbon sink forests (Committee member); , Forestry Agency, Monitoring of acid deposition and forest decline (Committee member); , Japan Society for the Promotion of Science, funding for science research (Technical committee member)
- Kanzaki Mamoru : Environmental Committee of Higashiomi City (Committee member)