

2.2.13 Laboratory : Forest Information

Member:	Professor	Takahito Yoshioka, D. Sci.
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	Assistant Professor	Nao Sakanoue, Ph. D. (Agric.)
	Assistant Professor	Asami Nakanishi, M. Agric.
	Doctor's program	2
	Master's Program	4
	Undergraduate	2

A. Research Activities (2009.4-2010.3)

A-1. Main Subjects

a) Material cycles in forested watersheds

Surveys on effects of changes in forest environments on watershed environments have been conducted from the viewpoint of the dynamics of material cyclings in the forest, soil and aquatic ecosystems. In order to elucidate characteristics on water discharge and soil/sand erosion from a naturally regenerated forest, temporal and yearly variations in inorganic and organic particles flowing down in streams were observed with a weir and particle traps. Relationship between organic matter and nutrient salts concentrations were used for analyzing the material cyclings in the forest-soil-stream systems.

b) Management of forest resources and timber trade strategies

Taking the sustainable management of forest resources into consideration, the importance of the precise evaluation and monitoring for forest resources is increasing. We conducted integrative and practical surveys on the quantitative evaluation of multi-functions of forest and on the development of forest resource management strategies and timber production technologies. Strategic surveys on the forest certification and those on the timber production, processing and trades, and the forest resource monitoring system based on GIS/image processing have been investigated.

c) Interactions between humans and natures

Interactions between humans and natures have been investigating from the viewpoint of

linkages among sub-ecosystems, such as forest, freshwaters, human-dominating and coastal areas, in order to establish future desirable relation between the forested watershed environment and human society. In the Kibunka (the culture nursed in forest) Project launched in 2009, we have surveyed in the Yura River watershed including Tango Bay, under the collaboration between the Ashiu Forest Research Station and the Maizuru Fisheries Research Station. The aim of the project is the elucidation of effects of forest managements measures (such as thinning) on the watershed environment, the local forestry, and the people's environmental consciousness to the forest watershed environment. We have started the general survey on the water quality in the Yura River watershed and Tango Bay. Preliminary results showed the close relationship between dissolved iron and dissolved organic matter.

A-2.Publications and presentations

a) Publications

Books

- Mostofa, K. M. G., Wu, F., Yoshioka, T., Sakugawa, H. and Tanoue, E. Dissolved organic matter in the aquatic environment. In F. Wu and B. Xing eds., Natural Organic Matter and Its Significance in the Environment, Science Press, Beijing, P. R. China, pp. 3-65, 2009.
- Yoshioka, T. (ed.), Survey of people's environmental consciousness: Environmental scenarios and people's preference, Keiso-Shobo, Tokyo, pp.208, 2009.
- Kawamura, M., Sakanoue, N. and Hasegawa, T: The Prospects of Japanese Forestry. In: Iguchi, T. (eds.) The Reconstruction of Agriculture and Forestry in Global Age, 113-145, J-FIC, Tokyo, 2009, in Japanese.

Original Papers

- Katsuyama, M., Shibata, H., Yoshioka, T., Yoshida, T., Ogawa, A. and Ohte, N. Applications of a hydro-biogeochemical model and long-term simulations of the effects of logging in forested watersheds. Sustainability Science, 4:179-188, 2009.
- Tateno, R., Fukushima, K., Fujimaki, R., Shimamura, T., Ohgi, M., Arai, H., Ohte, N., Tokuchi, N. and Yoshioka, T. Biomass allocation and nitrogen limitation in a *Cryptomeria japonica* plantation chronosequence. Journal of Forest Research, 14:276-285, 2009.
- Matsukawa, T., T. Yoshioka and Y.-J. Zheng. Sample survey on interest in watershed environment. Advances in Social Research, 3:59-64,2009, in Japanese.

- Nagata, M., T. Yoshioka and C. Okawa. Development of scenario questionnaire estimating people's preferences on various attributes of watershed environment: a case study in the Lake Shumarina watershed, Hokkaido, Japan. *The Japanese Journal of Experimental Social Psychology*, 49:170-179, 2010, in Japanese.
- Miura, K. and M. Shiba. Effects of forest certification on the wooden goods sales by forest corporation: a case study for five forest corporations acquiring FSC-CoC certification. *Applied Forest Science*, 18:15-20, 2009, in Japanese.
- Shiba, M. Perspectives on the linkage between forest management-planning and woody production-utilization techniques. *Kikaika-Ringyo*, 667:16-20, 2009, in Japanese.
- Sakamoto, T. and M. Shiba. The management of riparian management zones in Japan: Suggestions based on the RMZ of the FSC-certified forests. *Journal of Japanese Forest Society*, 92:8-15, 2010, in Japanese.
- Shibata, H., H. Toda, K. Fukushima, Y. Tanio, T. Takahashi and T. Yoshida. Relationship between biogeochemical processes and forest management in Japanese forest ecosystems. *Journal of Japanese Forest Society*, 91:408-420, 2009, in Japanese.
- Nakanishi, A., Inagaki, Y., Osawa, N., Shibata, S. and Hirata, K. : Effects of patch cutting on leaf-litter nitrogen concentration in hinoki cypress (*Chamaecyparis obtusa* Endlicher) at different elevations along a slope. *Journal of Forest Research* 14:388-393, 2009
- Inagaki, Y., Okuda, S., Sakai, A., Nakanishi, A., Shibata, S. and Fukata, H. : Leaf-litter nitrogen concentration in hinoki cypress forests in relation to the time of leaf-fall under different climatic conditions in Japan. *Ecological Research* 25:429-438, 2010
- Morita, E., J. Nagano, S. Fukuda, T. Nakashima, Y. Iwai, H. Yamamoto and N. Hamajima. Relationship between forest walking (shinrin-yoku) frequency and self-rated health status: cross-sectional study of healthy. *Japanese Journal of Biometeorology*, 46:99-107, 2009, in Japanese.
- Imanishi, A., Shibata, S., Imanishi, J., Terai, A., Nakanishi, A. and Sakai, S. : Change of woody-species composition in an early stage of plant succession after cutting in a suburban secondary forest dominated by *Chamaecyparis obtusa*. *Journal of Japanese Society of Revegetation Technology* 34:641-648, 2009, in Japanese.
- Imanishi, A., Morimoto, J., Shibata, S., Osawa, N. and Nakanishi, A. : Dynamics of sprouting shoots of six component species of Satoyama during the four years after cutting. *Journal of Japanese Society of Revegetation Technology* 35:158-161, 2009, in Japanese.

Reports

- Katsuyama, M., R. Tateno and T. Yoshioka. For understanding the interaction between forested watershed environment and human society. *Sinrin Kagaku*, 58:25-26, 2010.
- Shiba, M. Waldzeiten- Nachhaltigkeit, *Shinrin Gijutu*, 808:27, 2009, in Japanese.
- Nakashima, T. "Garbage" and "nourishment" from a forested watershed : Text of the 19th Open Semisar in Ashiu, pp.15-18, 2009, in Japanese.
- Nakashima, T. Dynamics of natural old forest and its ability of environmental conservation. The report of Grant-in-aid for Scientific Research (C), 2010, in Japanese.
- Nakashima, T. The trend of the Tokuyam experimental forest station. *Kenkyurin and Shikenchi Joho 2009 (Information of Forest Research Stations and Experimental Stations)*, pp.40-43, 2009, in Japanese

b) Conference and seminar papers presented

- The 121st Annual Meeting of Japan Forest Society: 5
- The 60th Annual Branch Meeting of Japanese Forestry Society in Kansai Region: 1
- The 61st Annual Branch Meeting of Japanese Forestry Society in Kanto Region: 1
- The 74th Annual Meeting of the Japanese Society of Limnology: 2
- The Japan Geoscience Union Meeting 2009: 3
- The 25th Annual Meeting of the Japanese Humic Substances Society: 1
- The open symposium of the Science Council of Japan: 1
- Sminor of the Tokai Branch of the Japanese Society of Limnology: 1
- The 57th Annual meeting of Ecological Society of Japan: 2
- The Scienific Forum of the Seto Inland Sea in Osaka:1
- The Forum on Researches on the Seto Inland Sea: 1

A-3.Off-campus activities

Membership in academic societies

- Takahito Yoshioka : Local board of The Ecological Society of Japan
- Masami Shiba : The Japan Forest Engineering Society (Trustee), Branch of Japanese Forest Society (Editorial board member), The Ecological Society of Japan (Auditor)

Research grants

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

- Scientific Research (B) : T. Yoshioka : Research on the dynamics of dissolved organic matters in forest-soil-stream system

A-4.International cooperations and overseas activities

Membership in academic societies

- M. Shiba: International Union of Forest Research Organizations IUFRO (coordinator), Concil on Forest Engineerin (international editorial board of International Journal of Forest Engineering)

Visiting Research Scholars

- Guest Scholar 1 (Malaysia)

B.Educational Activities(2009.4-2010.3)

B-1.On-campus teaching

a) Courses given

- Undergraduate level: Practice on Ecological Interactions between Forests and Coastal Areas A (Shiba, Nakanishi and others), Practice on Ecological Interactions between Forests and Coastal Areas C (Yoshioka, Sakanoue and others), Basic Science for Forest and Biomaterials I (Yoshioka and others), Laboratory Course in Applied Forest and Biomaterials Science (Shiba, Nakashima, Sakanoue and others), Seminar on Environmental Valuation (Yoshioka), Seminar on Connected Rings of Forest-Human Habitation-Marine in Seto Inland Sea Region (Nakashima), Seminar on The Way to a Richer Forest (Shiba), Seminar on Function of an Old Naural Forest (Nakashima), Seminar on Significance of Realizing Wooden Building in the Campus (Shiba and others), Environment of Winter Season in Warmtemperate Snowfall Region (Nakashima), Linkage of Forest, Human and Coastal Ecosystems (Yoshioka, Shiba, Nakashima and others), Forest Science (Yoshioka, Shiba, Nakashima, Sakanoue and others), Science of Biosphere-Life, Food and Environment (Yoshioka and others), Forest Environmental Sciences (Yoshioka and Nakashima), Forest Management System &

Applied Technology (Shiba and Sakanoue)

- Graduate level : Forest Information Sciences II (Shiba), Seminar in Forest Information (Yoshioka, Shiba, Nakashima, Sakanoue and Nakanishi), Laboratory Course in Forest Information (Yoshioka, Shiba, Nakashima, Sakanoue and Nakanishi)

B-2.Off-campus teaching etc.

Part-time lecturer

- Yoshioka, T.: University of Human Environments (Basic Biology A and B), Nara University of Education (Graduate School:Special course on Ecological Sciences)
- Nakashima, T.: Kyoto University of Education (Practice of Cultivation and Breeding II)

Open lectures, etc.

- Yoshioka, T.: Open Seminar “Structure and function of Forests” (FSERC, Kyoto Univ., Chairperson, Lecturer), Aozora-Juku (ANA, Lecturer), Coroborative lecture in Bekanbeushi River Watershed (FSERC, Kyoto Univ. and Shibeche town, commentator), The 6th Tokeidai Taiwa Shukai (FSERC, Kyoto Univ., Reporter and Panelist)
- Shiba, M.: Open Seminar “Structure and function of Forests” (FSERC, Kyoto Univ., Lecturer)
- Nakashima, T.: Open Seminar “Structure and function of Forests” (FSERC, Kyoto Univ., Lecturer)
- Sakanoue Nao: Woods Science. Arida Chuo High School, Wakayama (Lecturer), Forest Studies, Ishigaki Elementary School, Aridagawa-town (Lecturer), Open Seminar “Structure and Function of Forests” (FSERC, Kyoto Univ., Lecturer)
- Nakanishi, A.: Open Seminar “Structure and function of Forests” (FSERC, Kyoto Univ., Lecturer)

C.Other Remarks

- Yoshioka, T.: Wetlands International Japan (Working group member for the Monitoring Site 1000 for freshwater ecosystem), Council for measures against harmful wildlives in Ashiu Area
- Shiba, M. : Mie Prefecture Environmental Conservation Agency (Technical advisor), World Wide Fund For Nature, Japan (Council member of forest management system), NPO Forsta (Director), FSC National Initiative, Forest and Forestry Exchange research review board member of Kinki-Cyugoku Regional Forest Office, Administrative board member of Sakamoto Foundation, Award committee member of Society of University Forests

- Sakanoue Nao : Forestry Council of Shiga-Prefecture (board member)