

2.2.14 Laboratory : Silviculture

Member :	Professor	Shibata, Shozo Ph.D.
	Associate Professor	Ando, Makoto Ph.D.
	Associate Professor	Tokuchi, Naoko Ph.D.
	Associate Professor	Hasegawa, Hisashi Ph.D.
	Assistant Professor	Sakimoto, Michinori Ph.D.
	Doctor's program	6
	Master's Program	7
	Undergraduate	3
	Other	2
	Post-Doctoral fellow	1

A. Research Activities (2009.4-2010.3)

A-1. Main Subjects

a) Studies on forest management and harvest

Present Japan's managed forests like artificial forest, Satoyama etc. are not under well-managed condition because of the decline of forestry. We notice these forests as the target to restore their management, ecosystem and biodiversity and to develop new harvest systems. To consider these theses, researches of harvest systems of woody products, monitoring of environmental characteristics of managed woodlands, discussion of restoration methods of Satoyama including ecological research of bamboo forest etc. are practiced.

b) Regeneration and dynamics of forest

The establishment of forests and the distribution of tree species are influenced by climate, soil and topography, or natural disaster, artificial disturbance, animal, insect, disease, and the like. Main theme of this study is to clarify the relationship between various environmental factors and dynamics of forest by long-term research of stand structure, diversity, growth and regeneration for natural forest, secondary forest, man-made forest and urban forest of warm-temperate zone, cool-temperate zone and subarctic zone in Japan.

c) Nitrogen cycling

Nitrogen is the limiting factor for plant growth. N dynamics is important for forest, especially

in plant-soil system. Nitrogen dynamics is described the typical Japanese vegetation which belongs to Field Science and Education Center, Kyoto University.

d) Studies on dynamics, maintenance mechanisms of biological diversity, and life historical strategies of plant species in forests

Natural forests are heterogeneous in time and space, and are composed of various many plant species. Those plant species have their own specific life history strategies. To develop the methods for ecological management and conservation of forests, we are engaged in analyzing spatial structure, dynamics mechanisms of diversity, and reproductive ecology and demography of plant species in natural forests.

A-2.Publications and presentations

a) Publications

Original Papers

- Imanishi, A., S. Shibata, J. Imanishi, A. Terai, A. Nakanishi, S. Sakai, N. Osawa and Y. Morimoto: Change of woody-species composition in an early stage of plant succession after cutting in a suburban secondary forest dominated by *Chamaecyparis obtusa*. J. Jpn. Soc. Revegetation Technology 34(4); 641-648, 2009 (in Japanese with English summary)
- Shibata S.: Succession of bamboo (*Phyllostachys bambusoides* Sieb. Et Zuc.) riparian forest vegetation after gregarious flowering. Proc. 8th World Bamboo Congress.4; 139-148, 2009
- Shibata S.: Consideration of the flowering periodicity of *Melocanna baccifera* through past records and recent flowering with a 48-year interval. Proc. 8th World Bamboo Congress 5; 90-99, 2009
- Murata H., H. Hasegawa, M. Kanzaki and S. Shibata: Gregarious flowering of *Melocanna baccifera* around north east India – Extraction of the flowering event by using satellite image data - . Proc. 8th World Bamboo Congress 5; 100-106, 2009
- Abe Y. and S. Shibata: Stand structure of non-management *Phyllostachys pubescens* forest and dynamics for 3 years after improvement management in Mt. Tennozan. J. Jpn. Soc. Revegetation Technology 35(1);57-62, 2009 (in Japanese with English summary)
- Nakanishi A., Y. Inagaki, N. Osawa, S. Shibata and K. Hirata Keiichi: Effects of patch cutting on leaf nitrogen nutrition in hinoki cypress (*Chamaecyparis obtusa* Endlicher) at different elevations along a slope in Japan. J. For. Res. 14; 388-393, 2009

- Imanishi A., J. Morimoto, J. Imanishi, S. Shibata, A. Nakanishi, N. Osawa and S. Sakai: Sprout initiation and growth for three years after cutting in an abandoned secondary forest in Kyoto, Japan. *Landscape Ecol. Eng.*, 2010 (DOI 10.1007/s11355-009-0090-7)
- Inagaki Y., S. Okuda, A. Sakai, A. Nakanishi, S. Shibata and H. Fukada: 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 (DOI 10.1007/s11284-009-0672-8)
- Shibata S.: Examination into records and periodicity concerning to *Melocanna baccifera* flowering with 48-year interval. *J. Ecol. Soc. Jpn* 60(1); 51-62, 2009 (in Japanese with English summary)
- Yamasaki, M., Sakimoto, M. : Predicting oak tree mortality caused by the ambrosia beetle *Platypus quercovorus* in a cool-temperate forest. *Journal of Applied Entomology* 133:673-681, 2009
- Matsuyama, S., Osawa, N., Sakimoto, M. : Generalist pollinators in the dioecious shrub *Rhus trichocarpa* Miq. (Anacardiaceae) and their role in reproductive success. *Plant Species Biology* 24: 215-224, 2009
- Wu chuping and Ando makoto: Effects of different ground treatments on the establishment and growth of *Pinus densiflora* seedlings on Daimonji-yama Mountain, Kyoto, Japan, *J. Jpn. Soc. Reveget. Tech.* 34(4), 623-630, 2009
- Wu chuping and Ando makoto: Stand structure and dynamics during a 10-year period of pine wilt disease forests in Kyoto City. *J. Jpn. Soc. Reveget. Tech.* 35(3), 440-447, 2010
- Tokuchi, N. and Fukushima, K.: Long-term influence of stream water chemistry in Japanese cedar plantation after clear-cutting using the forest rotation in central Japan. *Forest Ecology and Management*. 257:1768–1775, 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
- Ueda, M. U., Tokuchi, N. and Ogawa, R.: High nitrate reductase activity in sprouts of *Phllostachys pubescens*. *Journal of Forest Research*. 14: 55-57, 2009
- Ueda, M., Mizumachi, E. and Tokuchi, N. : Allocation of nitrogen within the crown during leaf expansion in *Quercus serrata* saplings. *Tree Physiology* 29: 913-919, 2009

- Aikawa, M., Hiraki, T., Komai, Y., Umemoto, S., Tokuchi, N. : Characterization of chemical species in input-output budget balance on nitrogen in a catchment area of Japan. *Journal of Japanese Society of Atmospheric Environment* 44: 202-210, 2009
- Sugimoto K., Niinaga S., and Hasegawa H.: Consideration on flow harvesting system utilizing system dynamics. *J Jpn For Eng Soc* 25(1); 5-14, 2010.
- Shimamura T., Tokuchi N., Ooka K., Itoh M., Ohte N., Takemon Y.: Assessments of spatial distribution of water quality in Lake Mizoro-ga-ike for water quality management. *Japanese Journal of Conservation Ecology* 14: 153-163, 2009

Reviews

- Suyama, Y., T. Saito, A. Nishiwaki, A. Makita, H. Hasegawa and S. Shibata: Gregarious Bamboo flowering in 48-year interval – Flowering records of *Melocanna baccifera* in Mizoram, India. *J. Jpn Soc. Chronobiology*: 15(2); 12-16, 2009(in Japanese)
- Shibata S.: Bamboo forest management for new utilization of bamboo resource. *Forest Science* 58; 15-19, 2010(in Japanese)

Reports

- Tanaka, E., C. Tanaka and S. Shibata: Bamboo witches' broom in Japan. *Jpn. J. Mycology* 50; 56-60, 2009(in Japanese)
- Imanishi, A., J. Morimoto, S. Shibata, A. Nakanishi and N. Osawa: Dynamics of sprouting shoots of six component species of Satoyama during the four years after cutting. *J. Jpn Soc. Revegetation Technology* 35(1); 158-161, 2009(in Japanese)
- Fujisawa, S., H. Okusumi, N. Yasumoto, S. Shib(ata, S. Tanaka and T. Kozawa: Revegetation study on man-made slopes using transplanting method of top-soil blocks (I). *J. Jpn Soc. Revegetation Technology* 35(2); 351-356, 2009(in Japanese)
- Fujisawa, S., H. Okusumi, N. Yasumoto, S. Shibata, S. Tanaka and T. Kozawa: Revegetation study on man-made slopes using transplanting method of top-soil blocks (II). *J. Jpn Soc. Revegetation Technology* 35(2); 357-362, 2009(in Japanese)
- Shinjo H., K. Ando, Y. Noro, H. Kuramitsu, K. Takenaka, H. Miyazaki, R. Miura, U. Tanaka, S. Shibata and S. Sokotela: Impact of land clearing on crop productivity and soil fertility in a Miombo woodland in eastern provionce, Zambia. "Vulnerability and Resilience of Social-Ecological Systems" FY2009 FR3 Project Report (Project E-04 (FR3)); 16-20, 2010
- Nakanishi, A., Y. Inagaki, S. Shibata, N. Osawa and H. Fukada: Influence of nitrogen resource to the distribution of regeneration in Hinoki cypress forest. Abstracts of 57th annual meeting of Ecol. Soc. Japan, 2010(in Japanese)

- Matsuura, Y., A. Takayanagi, S. Shibata: Habitat assessment of *Microtus montebellii* in Shiga Prefecture, Japan, Abstracts of 57th annual meeting of Ecol. Soc. Japan, 2010(in Japanese)
- Ishihara, M., Ishida, K., Iida, H., Itoh, A., Enoki, T., Ookubo, T., Kaneko, T., Kaneko, N., Kuramoto, K., Sakai, T., Saito, S., Sakio, H., Sakimoto, M., Shibano, H., Sugita, H. et al: Outline of tree census data in core and semi-core sites, forests and grasslands, the monitoring site 1000. Jpn. J. Ecology 60: 111-123, 2010
- Sakimoto, M., Gregorio, A.P., and Hirayama, K. :Spatial pattern, response to topography and coexistence of *Abies firma* and *Tsuga sieboldii*. Abstract of 14th annual meeting of Vegetation Science, Japan. 2009 (In Japanese)
- Sakimoto, M., Morishita, K. and Sakanoue, N. :Spatial distribution pattern and regeneration of *Chamaecyparis obtusa* in a hilly area of Kyoto City. Abstract of 60th annual meeting of Kansai Branch, Forest Society, Japan. 2009 (In Japanese)
- Matsuyama, S. and Sakimoto, M. : Sexual dimorphism of reproductive allocation and leaf phenology and their interaction in a dioecious tree, *Zanthoxylum ailanthoides*. Abstract of 57th annual meeting of Ecological Society of Japan (In Japanese). 2010
- Kuninaga, T., Hirayama, K., Sakimoto, M., Matsuda, Y., Okuda, K. and Takahara, H.: Regeneration site of *Fagus crenata* in a cool-temperate conifer-hardwood forest. Abstract of 57th annual meeting of Ecological Society of Japan (In Japanese). 2010
- Hasegawa H.: Future of Forest Harvesting System. Sanrin 1501; 64-70, 2009.
- Yoshimura T., Nose M., Hasegawa H., and Sakai T.: Relationships between GPS positional errors and stand conditions. Proceedings, Environmentally Sound Forest Operations 32nd Annual Meeting of the Council on Forest Engineering: CD-ROM, 2009

b) Conference and seminar papers presented

- Shibata, S.: 52th Annual meeting of Ecological Society of Japan (2)
- Shibata, S.: Annual meeting of Japan Society of Revegetation Technology (2)
- Shibata, S.: Annual meeting of Japanese Society of Tropical Ecology (1)
- Shibata, S.: Annual meeting of Jpn. Soc. Chronobiology (1)
- Shibata, S.: Annual meeting of Jpn. Assoc. Rural Planning (1)
- Sakimoto, M.: 57th Annual meeting of Ecological Society (2)
- Sakimoto, M.: 14th Annual meeting of Vegetation Science (1)
- Sakimoto, M.: 60th Annual meeting of Kansai Branch, Forest Society (1)

- Hasegawa H.: The 16th annual meeting of Japan Forest engineering Society (1)
- Hasegawa, H.:The 57th annual meeting of Ecological Society of Japan (1)
- Hasegawa, H.:The 32nd annual meeting of the Council on Forest Engineering (1)

A-3.Off-campus activities

Membership in academic societies

- Shibata, Shozo Ph.D. : Jpn. Inst. Landscape Architecture (Councilor, Organizer of Kansai Branch, International committee member), pn. Soc. Revegetation Technol. (Vice-president, Chairman of academic section, Chairman of environmental forest section, Chairman of the selection of award), Japan Forest Society (Councilor), Ecological Society of Japan (Committee member of Kinki district), Japan Bamboo Society (Consultant, Editorial member of Bamboo Journal), Japan Association of Forestry Technology, Kansai Branch (Chairman of Kyoto Univ. Branch, Auditor), Association for Bamboo Research (Representative), Jpn. Bamboo Soc. (Councilor, Editorial member), Center for Support of Forest regeneration (Councilor), Japan Bamboo Foundation (Councilor), Consortium for Bamboo Resources Effective Uses (Advisor), CDM Network in Osaka (Advisor), Research Institute of Environmental Resource (Vice President)
- Ando, Makoto : Hokkaido Branch of the Japanese Forest Society (Councilor)
- Hasegawa, Hisashi : Japan Forest Engineering Society (Executive director, Editorial member), Japan Society of Forest Planning (Project planner), Society of Forest Production System (Executive), Society of Forest Spatial Utilization (Executive)

Research grants

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

- Basic Research (A) : Shibata, Shozo : Influence of bamboo gregarious flowering in Mizoram, India to the local ecosystem and local shifting cultivation agriculture
- Basic Research (B) : Kobayashi, Masami : Solution of actual condition of sluggish hazard around local unfortunate people and regional recovery mechanism in Indochina area
- Basic Research (A) : Nakamura, Futoshi : Academic research of scientific estimation , restoration methods and abstraction of important ecosystems

2.Other Research Grants

- Sponsored Research Funds(the Meeting for the Promotion of the Forest of Traditional Culture in Kyoto) : Ando, Makoto, D.Agric.Sci:Dynamic survey of the vegetation after the improvement operation of forest cover type in the Higashiyama scenery forest, Kyoto

A-4.International cooperation and overseas activities

Membership in academic societies

- Shibata, Shozo: International Conference of Urban Biodiversity & Design 2010 (Auditor), World Bamboo Organization (Board of General member)

International meetings(country,roles)

- Shibata, Shozo: 8th World Bamboo Congress (1 Chairman and 3 presentation), Biological Society monthly Meeting, Nepal (presentation)
- Hasegawa, Hisashi: International Union of Forest Research Organizations (Member), Council on Forest Engineering (Member), International Conference on Multipurpose Forest Management - Strategies for sustainability in a climate change era (executive, presentation)

International joint research, overseas research surveys

- Survey of flowering Melocanna baccifera forests (Shibata, Shozo, India)
- Arrangement of the site in natural history museum, Tribhuvan Univ.
- Survey of forest landscape in Cambodia (Shibata, Shozo, Cambodia)
- Workshop for the built-up of cooperation system of university in Indochina area (Shibata, Shozo, Vietnam)

Visiting Research Scholars

- Master 1 (China)
- Doctor 1 (China)
- Master 1 (Brazil)

B.Educational Activities(2009.4-2010.3)

B-1.On-campus teaching

a) Courses given

- Undergraduate level: Shibata, Shozo: pocket seminar “Learning in “Afin’s forest” of C. W. Nikol” (Shibata), Pocket seminar “Creation of woody school buildings – Restoration of woody culture” (Shiba, Shibata, Kobayashi), Linkage of forest, human, and coastal ecosystems (relayed), Integrated Coastal Management (relayed), Basic forest science IV (Osawa, Isagi, Yoshioka, Shibata), Silviculture (Shibata, Tokuchi, Sakimoto), Forestry (Shibata, Ando, Hasegawa, Tokuchi, Sakimoto), Laboratory course in applied

forest and biomaterial science (Ando, Sakimoto)

- Graduate level: Shibata, Shozo: Silviculture (Shibata, Ando), Seminar in Silviculture (Shibata, Ando, Tokuchi, and Sakimoto), Practice Course in Silviculture (Ando, Shibata, Tokuchi, and Sakimoto), Restoration of Satoyama (Shibata and Fukamachi), Silviculture II (Ando,)

B-2.Off-campus teaching etc.

Part-time lecturer

- Shibata, Shozo: Kyoto College of Art (Correspondence course, Landscape Design and Nature conservation)
- Hasegawa, H.: Tokyo University of Agriculture and Technology (Theory of Precision Forestry)

Open lectures, etc.

- Shibata, Shozo: Spring open seminar of Kamigamo Experimental Station (Kyoto Univ., lecture), The 4th Ecological School (Ecology Cafe, lecturer), Spring action of Bamboo Linkage Project of Kyoto University (Kyoto Univ., lecturer), ANA Blue Sky Lecture in Nagasaki (ANA, lecturer), Lecture for Ibaraki High-school (Ibaraki Highschool, Osaka Pref., lecturer), Workshop of International Cooperation Station, Kyoto 2009 (Kyoto Pref., Speech), Culture School of Kochi Newspaper Bureau (Kochi Newspaper Bureau, lecturer), Regional Lecture of FSERC in Kochi (Kyoto Univ., lecturer), Autumn action of Bamboo Linkage Project of Kyoto University (Kyoto Univ., lecturer), ANA Blue Sky Lecture in Noto (ANA, lecturer), Autumn open seminar of Kamigamo Experimental Station (Kyoto Univ., lecture), Younger forum of 50th annual meeting of Japan Bamboo Association (Japan Bamboo Association, adviser), Panel discussion of 50th annual meeting of Japan Bamboo Association (Japan Bamboo Association, coordinator), Three-cornered talk of 50th annual meeting of Japan Bamboo Association(Japan Bamboo Association, talk), 6th Clock Tower Meeting of FSERC (Kyoto Univ., Coordinator), Senior Nature College 2009 (Senior Nature College, lecturer), Seminar for Takatsu Watershed area (Masuda City, Shimane Pref., lecturer), Forest and Green Forum (Kyoto Pref., keynote Speaker), Annual meeting of Woody-Society Project of FSERC (Kyoto Univ., coordinator), Culture School of San-in Chuo Newspaper Bureau (San-in Chuo Newspaper Bureau, lecturer), Workshop for Preservation and Restoration of Ishikawa Prefecture (Ishikawa Pref., keynote speaker), Annual meeting of Forestry Association of Kyoto Pref. 2009 (Kyoto Pref., keynote speaker)
- Hasegawa, H.: The 6th Clock Tower Open Seminar, Field Science Education and Research

Center, Kyoto University, Panelist

- Hasegawa, H.: Open Seminar of Forest Science, Division of Forest and Biomaterials Science, Kyoto University, Lecture
- Hasegawa, H.: Spring Open Seminar of Kamigamo E.F.S., Field Science Education and Research Center, Kyoto University, Lecture
- Hasegawa, H.: Autumn Open Seminar of Kamigamo E.F.S., Field Science Education and Research Center, Kyoto University, Lecture
- Hasegawa, H.: Open Seminar in Ashiu Forest Research Station, Field Science Education and Research Center, Kyoto University, Lecture
- Hasegawa, H.: Forest and Forestry Symposium in Kochi Prefecture, Field Science Education and Research Center, Kyoto University, Keynote speaker / panelist
- Hasegawa, H.: Workshop on low-cost thinning in Yoshino, Yoshino Ringyo Club, Lecture
- Hasegawa, H.: Seminar on low-cost thinning in Kyoto Prefecture, Kyoto Prefecture, Keynote speaker
- Hasegawa, H.: Training Course of low-cost forest operation in Hyogo Prefecture, Hyogo Prefecture, Lecture
- Hasegawa, H.: Workshop for forming new forestry, Forestry Forming Society, Lecture

B-3.Overseas teaching

International students

- International students : Master 1 (Brazil) Doctral 1 (China)

C.Other Remarks

- Shibata, Shozo : Committee to consideration of policy for green public works, Kyoto Pref. (chairman), CENEED (Centre for Nepal of Environmental and Educational Development) Supporting Group (president), Committee for built-up of bamboo forest management system, Agency of Forestry (member), Committee of unutilized bamboo natural resources in Mitoyo city, Kagawa Pref. (chairman), Committee of unutilized bamboo natural resources in Miyadsu city, Kyoto Pref. (chairman), JSPS judgment committee (member)
- Ando, Makoto : Special Committee of the Meeting for the Promotion of the Forest of Traditional Culture in Kyoto (Member), Sakamoto Shougakkai(Director), Committee of Forest Promotion in Shibechea-cho(Member), Committee of Revegetation in Shibechea-cho(Member)
- Hasegawa, Hisashi : Committee of forest planning in Hyogo Prefecture (Member), Promotion Project for Low-cost Forestry in Wakayama Prefecture (Advisor), Committee of

Forest Management in Hiroshima Prefecture (Chairman), Executive Committee of Forest Owners database in Northeast Okayama Prefecture (Chairman), Committee of House Building for Takatsu River (Member), Committee of New Forest Production System in Nara Prefecture (Member), Forest Deliberative Council in Hyogo Prefecture (Member)