6th Workshop of "uneven-aged silviculture" IUFRO group in Shizuoka (2008).

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Abstracts of the conference on

Feasibility of Silviculture for Complex Stand Structures

-Designing Stand Structures for Sustainability and Multiple objectives-

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(IUFRO 1.05)

Oct 24-27, 2008
B-nest Shizuoka
Shizuoka, Japan

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Welcome to the conference of the IUFRO Uneven-aged Silviculture Group in Shizuoka!

Feasible silviculture for complex stand structure

"From homogeneity to heterogeneity", "from an agricultural system to a natural disturbance-based system", and "from simplicity to complexity" are new concepts in forest management that have resulted from our experience of the ecological fragility of simply structured forest. Although we have not confirmed that more complex stand structure leads to higher ecological functions or greater sustainability, it may be worthwhile to employ a silvicultural system for complex stand structure as an alternative option. However, a more complex system is generally more financially expensive and labor intensive, or requires more advanced techniques, not only in forestry but in all fields. This conference asks how we can develop a feasible design of complex structures of stands (or landscape). The answer may depend on cultural references, social backgrounds and natural conditions of the particular country or locality. As an uneven-aged silviculture group, we have attempted to increase geographic diversity and exchange ecological information as a basis of silviculture and practical knowledge in different localities.

This is our group's first session on tropical silviculture, for which we have twelve oral communications. Since tropical forests commonly have high structural diversity, how to manage the complexity of stand structure may be a central subject of tropical silviculture. For example, we know that selective cutting (not selection cutting), which is widely conducted in tropical rain forest, often simplifies the structure and species composition remarkably. Ecological rehabilitation in secondary forests after selective cutting is simply silviculture for complex stand structure. The ecological process and dynamics of forests in the biomes will provide useful information on how to manage complexity in other biomes.

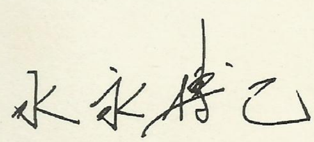
Here in Japan, monoculture conifer plantations occupy a large proportion of forested area, and where management is inadequate, degradation of ecological function in these plantations is becoming a problem. Therefore, diversifying the structure or species in these plantations is thought to be an effective means of ecological rehabilitation of the stands. However, both ecological and empirical information are insufficient to determine feasible methods to diversify their structure. We are concerned that unfeasible silviculture, contrary to its objective, increases the risk of degradation of the forest ecosystem. We also have seen that traditional single selection systems in plantations, which have had a long history, are disappearing, as they cannot adapt to present-day conditions. We should not allow the concept of moving "from simplicity to complexity" to remain solely as an idea. Collectively, we should make the process feasible, both ecologically and economically.

More than 100 scientific reports from more than 20 countries covering a wide range of subjects will be presented during this conference. We hope that the discussion on the feasibility of silviculture for complex stand (or landscape) structure contributes to the conservation and rehabilitation of forest ecosystems.

I would like to thank members of the scientific committee for their guidance and evaluation of abstracts. We are also grateful to our sponsors.

On behalf of the organizing committee, welcome! We hope that this conference meets your expectations and is of use to you.

Hiromi Mizunaga



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Genetic Consequences of Plant Propagation Methods in Indonesian Selective Cutting and Planting System: *A case study in Shorea johorensis Foxw*

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Abstract

Attempts to rehabilitate degraded natural forests in Indonesia are recently carried out by applying selective cutting and line planting system. One of the most important aspects in this silvicultural system is the procurement methods for large number of planting stocks. *Shorea johorensis* was investigated in this regards as one of the recommended *Shorea* species for forest rehabilitaton due to its fast growing character. The species is usually propagated by three different propagation methods, namely up-rooted seedlings, seeds and cuttings (stecklings). Genetic consequences due to application of different propagation methods in this species are poorly known and need to be investigated to determine genetic variation and differentiation. Materials from five origins (populations) in a forest concession holder in Central Borneo, namely: i) up-rooted seedlings, ii) seeds, iii) cuttings, iv) young plantation line and v) natural forest were randomly taken in the field and subsequently assessed by RAPD technique using three previously tested random primers of OPO-11, OPO-13 and OPO-16. Results showed that among 5 populations investigated, natural tree populations showed the highest levels of genetic variation with mean values *na* = 1.2593, *ne* = 1.2070, PPL = 25.93% and H_e = 0.1109. Cutting populations showed the lowest levels of genetic variation with mean values *na* = 1.1111, *ne* = 1.0773, PPL = 11.11% and H_e = 0.0445. Meanwhile, according to the propagation methods, up-rooted seedling population revealed the highest levels of genetic variation with mean values *na* = 1.2222, *ne* = 1.1613, PPL = 22.22% and H_e = 0.0886. Values of *ne* and H_e in natural forest were higher (*ne* = 1.2070 and H_e = 0.1109) than those of young plantation line (*ne* = 1.1609 and H_e = 0.0896). The closest genetic distance was observed between population of seeds and cuttings, namely 0.0590. It was found that a particular procedure to propagate planting stocks at large scale in this company, i.e. cutting propagation method, tended to reduce genetic variation.

Key Words
Shorea johorensis, RAPD, genetic variation, silvicultural system

Introduction

Dipterocarps are one of the best known and commercially important groups of tropical trees. In Indonesia, dipterocarps are found in a wide range of forest eco-systems, particularly in the low land forests. In this habitat, they are usually harvested through selective cutting system. In most cases, over-exploitatation of these species has led to significant degradation of dipterocarp dominated forests. Attempts to rehabilitate degraded dipterocarp forests in Indonesia are carried out among others by intensifying the enrichment planting using recommended species or locally known as intensive TPTI or intensive silviculture. One of the most important aspects of this improved system is the use of recommended species due to their fast growing and economic characters and established procurement methods for the production of planting stocks in large number. *Shorea johorensis* is one of the strongly recommended species to be selected from the list and is usually propagated by three different methods, namely i) up-rooted seedlings, ii) seeds and iii) cuttings. It is known that the reproduction system of a tree population consists of all elements of the genetic system related to propagation and the establishment of a new generation. Tree reproduction is not only required for population growth but also for the preservation of populations due to the limited life span of single trees. In this case, genetic consequences due to different production methods for *S. johorensis* or other Shorea species are poorly known due to among others the scarcity of information on the results of genetic studies in dipterocarps. Therefore, a preliminary experiment was carried out with aim at determining the patterns of genetic variation of different types of planting stock materials based on production systems in the nursery as well as population already available in the plantation lines and natural stands..

Material and Method

Sampel Collection

For DNA analysis, leaves of *S. johorensis* was taken randomly from different sources, namely nursery population (seedling, up-rooted seedling, and cutting), and field population (young plantation lines and natural forests) located in a forest concession in Central Borneo. A minimum number of six individuals was taken from five population sources, i.e seedlings, up-rooted seedlings, cutting, plantation line and natural forest.

RAPD Analysis

DNA extraction of *S. johorensis* pecies using CTAB (*Hexadecyltrimethyl ammonium bromide*) based on Murray and Thompson (1980) protocol with minor modification. Thirty five oligonucleotide primers (OPO and OPY) from Operon Technology have been tested for the amplification of DNA *S. johorensis*. Three primers were then selected for further analysis in *S. johorensis*, namely OPO-11, OPO-13 and OPO-16. PCR amplification for RAPD analysis was performed using *HotStar Taq Master Mix Kit* (Catalog No. 203433, Qiagen Company). The amplification was performed at 95°C for 15 min, followed by 45 cycles at 95°C for 1 min, 36°C for 2 min, 72°C for 2 min, followed by 10 min at 72°C. All PCR reactions were performed in the Peltier Thermal Cycler (PTC-100, MJ Research). PCR products were electrophoresed in 2% agarose gel in 1 x TAE buffer and stained with ethidium bromide for visualization on a UV transilluminator. DNA electrophoregram was then assessed as putative genotypes using binary scoring system in which score one (1) for band presence and null (0) for band absence. The results of scoring was analyzed with software programme POPGENE Versi 1.2 (Yeh et al., 1997) and NTSYS Versi 2.0 (Rohlf, 1998).

Results and Discussion

Number of DNA fragments amplified using the selected three primers, i.e. OPO-11, OPO-13 and OPO-16, ranged between 1 to 10 bands with fragment lengths of 400 bp – 2500 bp. Table 1 shows that among 5 populations investigated, natural tree populations showed the highest levels of genetic variation with mean values of *na* = 1.2593, *ne* = 1.2070, PPL = 25.93% and H_e = 0.1109. On the other hand, the cutting (steckling) population showed the lowest levels of genetic variation with mean values of *na* = 1.1111, *ne* = 1.0773, PPL = 11.11% and H_e = 0.0445. With respect to propagation methods, up-rooted seedling population revealed the highest levels of genetic variation with mean values of *na* = 1.2222, *ne* = 1.1613, PPL = 22.22% and H_e = 0.0886. In particular, values of *ne* and H_e observed in natural trees were higher (*ne* = 1.2070 and H_e = 0.1109) than young plantation (*ne* = 1.1609 and H_e = 0.0896). The closest genetic distance was observed between population of seeds and cuttings, namely 0.0590, as shown in UPGMA dendogram (Figure 1).

Table 1. Genetic variability observed in investigated population of *S. johorensis*

Population	Sample Number	*na*	*Ne*	PPL	H_e
Seedlings	6	1.1852	1.1281	18.52%	0.0710
Up-rooted seedlings	6	1.2222	1.1613	22.22%	0.0886
Cuttings	6	1.1111	1.0773	11.11%	0.0445
Plantations	6	1.2593	1.1609	25.93%	0.0896
Natural species	6	1.2593	1.2070	25.93%	0.1109

Note : *na*= observed number alle; *ne*= effective number allele; H_e = Heterozygoty ; PPL: Percentage of polymorphic loci

Siregar et al. (2005) reported the higher values of genetic variation observed in other important Shorea species sampled from the same concession, i.e. *S. leprosula* and *S. parvifolia*, based on AFLP marker with values of H_e = 0.1450 and 0.1350, respectively. The lower values of genetic variation in *S. johorensis* observed in this experiment might be attributed to the sample size or other factor related with species characteristics such as distribution, population density and dominance in the stands. In the future, if the plantation of *S. johorensis* is designated also as conservation stands for future rehabilitation projects, it should be noted that sampling for the planting stock material collection requires a sufficient number of genotypes or families, especially if progenies (seeds or wildlings) from single mother trees are collected, in order to maintain the large genetic variation within populations. However, the erratic flowering and seed production of dipterocarps of the humid tropics is well-known and was the principal motivation for the development of vegetative propagation techniques for this important family (Smits, 1993). The inevitable loss of genetic variation associated with the shift from sexual to asexual propagation techniques was observed in this experiment although it is still accepted in view of the pragmatic advantages of vegetative propagation methods by forest managers. In addititon, the genetic consequences with respects to the increased risk of clonal plantations are often neglected by forest managers.

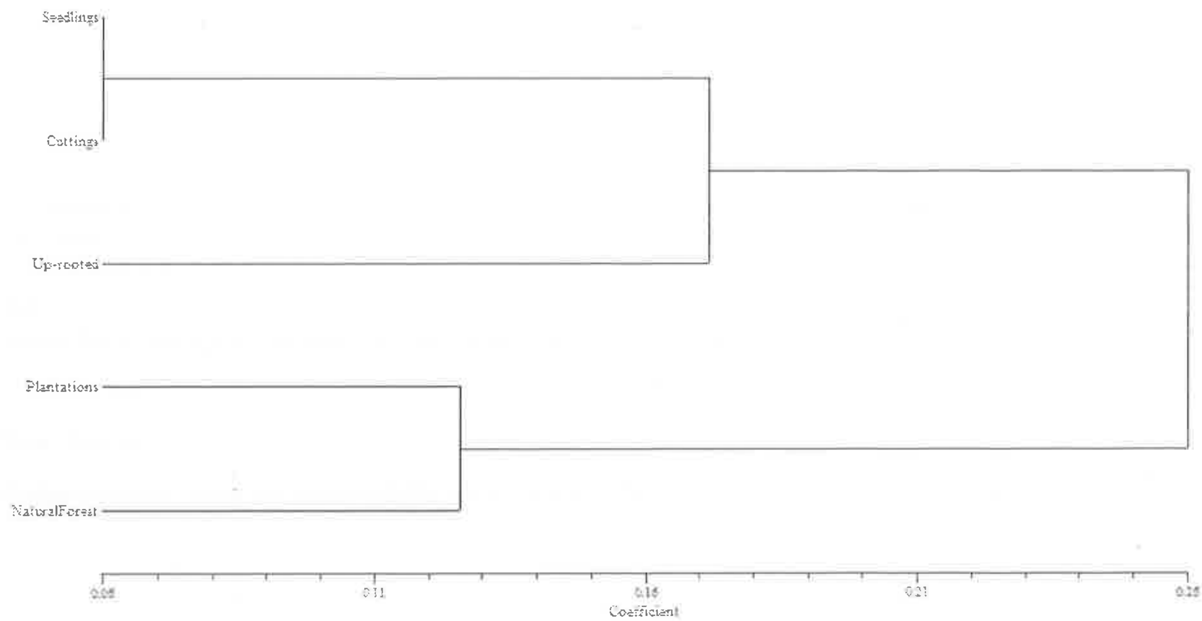

Figure 1. UPGMA dendrogram of genetic distance (Nei, 1972) among five populations

Conclusion

Natural tree populations showed the highest levels of genetic variation with mean values of *na*= 1.2593, *ne*= 1.2070, PPL= 25.93% and H_e= 0.1109, while cutting populations showed the lowest levels of genetic variation with mean values *na*= 1.1111, *ne*= 1.0773, PPL= 11.11% and H_e= 0.0445. According to the propagation methods, up-rooted seedling population revealed the highest levels of genetic variation with mean values of *na*= 1.2222, *ne*= 1.1613, PPL= 22.22% and H_e= 0.0886. The results indicated that the use of cutting propagation method for operational planting stock production of *S. johorensis* reduced genetic variation to certain extent and needs to be anticipated by the forest managers through proper combination of different available methods in the field.

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Summary program

Feasibility of Silviculture for Complex Stand Structures

24-Oct

10:10-10:30	Opening Remarks
10:40-12:20	Key note sessions (6th Floor)
12:20-13:20	Lunch :(Room B 7th Floor)
13:20-15:20	Session Reports (B1,C1,D1) (7th floor)
15:20-15:40	Tea break
15:40-16:40	Session Reports (B1,C1,D1)
16:40-17:30	Poster core time
17:45	Start for the Venue of banquet
18:30-20:30	Banquet (Hotel Associa Shizuoka)

25-Oct

9:40-11:20	Key note sessions
11:20-11:30	Announcement for in-congress excursion
11:30-12:30	Session Reports (B2,C2,D2)
12:30-13:00	Poster core time
13:00-14:00	Lunch: (at restaurants in this building)
14:00-15:20	Session Reports (B2,C2,D2)
15:20-15:40	Tea break
15:40-17:20	Session Reports (B2,C2,D2)

26-Oct

7:00-18:30	**In-congress excursion** Pick up at Oshika-so, Toki-no-sumika Hotel Century, Hotel Associa Grand-Hotel Nakashimaya and Shizuoka station

27-Oct

9:40-10:30	Key note sessions
10:30-10:50	Tea break
10:50-12:50	Session Reports (A2,~~B2,B3~~) B3 B4
12:50-14:00	Lunch :(at restaurants in this building)
14:00-15:00	Session Reports (A2,~~B3~~) B4
15:00-15:30	Closing Remarks

Detailed program- *Feasibility of Silviculture for Complex Stand Structures; -Designing Stand Structures for Sustainability and Multiple Objectives-*

Registration (7F)

Speakers for "B1, C1, D1" should install their presentation files into computer at Room E (7F) until 13:20

24 Oct, 2008 (Friday)

	Room A(6F) capa.=120person	Room B(7F) Capa.=90person	Room C(7F) capa.=70person	Room D (7F) capa.=30person
10:10-10:30	**Opening remarks**	Poster presenters should hang their posters from 12:00-14:00 Oral presenters can install their presentation files into computer at Room E(7F) from 12:00-14:00		
	Key note speech			
10:40-11:30	**A1-01: Yves Bergeron;** Maintaining biodiversity and productivity in boreal forest of eastern Canada: a major challenge for Silviculturists			
11:30-12:20	**A1-02: Simmathiri, Appanah,** ; Fine tuning plantations into 'future forests': Some thoughts on their silviculture and management			
12:20-13:20		**Lunch time (Room B 7F)**		
		B1 Modeling in structurally complex stands and its applications	**C1: Dynamics of stand structures**	**D1:Ecological rehabilitation of mono-cultured plantations**
13:20-13:40		**B1-01: Phillip, Reynolds;** Modelling water flux (transpiration) for an unevenaged, mature Ontario mixedwood stand - Mckeown Lake -implications for carbon sequestration- CANADIAN CARBON PROGRAM (CCP)	**C1-01: Toshiya, Yoshida**; Selection harvesting-induced changes in stand structure and composition of a northern Japanese mixed forest: a large-scale field observation during thirty years	**D1-01: Jiaojun, Zhu**; Is it possible to lead even aged *Larix olgensis* plantations to uneven-aged forests by thinning?
13:40-14:00		**B1-02: Phillip, Reynolds;** Modelling water flux (transpiration) for an unevenaged, mature Ontario mixedwood stand - Groundhog River-implications for carbon sequestration- CANADIAN CARBON PROGRAM (CCP)	**C1-02: Jurij , Diaci**; Regeneration response to spatiotemporal dynamics of stand structures in a silver fir-Norway spruce farmer selection forest in northern Slovenia	**D1-02: Nobuya, Mizoue**; Relationship between opening size and tree growth in group selection system of conifer plantations, southern Japan
14:00-14:20		**B1-03: Russell, Graham;** Selection systems applicable for maintaining complex forest compositions and structures using native conditions as a template	**C1-03: Zhou, Guangyi**; Exploring uneven-aged silviculture in Shenzhen, China	**D1-03: Takuo, Nagaike**; Effects of elevation on tree species composition in *Larix kaempferi* plantations and natural forests in central Japan

24 Oct, 2008 (Friday)				
	Room A(6F)	**Room B(7F)**	**Room C(7F)**	**Room D (7F)**
14:20-14:40		**B1-04:** John, Lhotka; (**Loewenstein, Edward***)Diameter increment models for individual trees within upland oak stands managed using single-tree selection	**C1-04: Tamotsu, SATO;** Short-term population dynamics of old secondary lucidophyllous forest in southwestern Japan: comparison of population structure and dynamics with surrounding old-growth forest	**D1-04: Yagil, Osem;** The potential of transforming simple structured pine plantations into mixed Mediterranean forests through natural regeneration
14:40-15:00		**B1-05: Yasuhiro, Kubota;** Resilience of subtropical forests degraded by clear logging and potential management strategies	**C1-05: Marek, Metslaid;** Stand structure and regeneration of Norway spruce forests in Estonia	**D1-05: Yuichi, Yamaura**; Multi-scale assessment of determinants of bird communities in forested landscapes: implications for plantation matrix management
15:00-15:20		**B1-06: Derek, Sattler;** A Hybrid modeling approach to estimating seedling establishment and growth following mountain pine beetle attack	**C1-06: Gary, Kerr;** Transformation to Continuous Cover Silviculture: the history and development of the Glentress Trial Area 1952-2007	**D1-06: Yuanchang, Lu;** Transformation of plantation into close-to-natural management regime for *Pinus yunannensis* forest on Southwestern Chinese plateau: system design and evidence on stand and individual tree levels
15:20-15:40		Tea break		
		(B1 continued)	**(C1 continued)**	**(D1 continued)**
15:40-16:00		**B1-07:Heikki, Surakka;** Mechanized harvesting in uneven-aged forest stands - spatial analysis of injuries	**C1-07: Shigeo, Kuramoto;** Composition and size structure of canopy tree species in conifer-hardwood mixed forests in northern Japan, under the selective logging disturbance	**D1-07: Masazumi, Kayama**; Growth characteristics of five species of seedlings planted for reforestation
16:00-16:20		**B1-08:Gabriel, Duduman;** Applying single tree selecting system (STSS) in Romania in the context of preserving floristic and structural diversity	**C1-08: Klaus, Puettmann**; Growth dynamics of overstory trees during Femelschlag regeneration periods	**D1-08: Hiroshi, Tanaka;** Chronosequential changes in plant diversity after the conversion from secondary broadleaf forest to *Cryptomeria* plantation forest
16:20-16:40		**B1-09: Thomas, Perot**; Between non-spatialized and spatialized tree growth models: an intermediate model for mixed forests	**C1-09: Andrej, Boncina;** Long-term changes of structure and tree species composition of Dinaric uneven-aged fir (*Abies alba* Mill.)-beech (*Fagus sylvatica* L.) forests, 1912-2004	**D1-09:** Bill, Mason; (**Kerr, G.***) Developing complex stand structures in windy climates - appropriate thinning strategies for use in transforming even-aged conifer plantations
16:40-17:30	Core time for **poster** presentations (7F)			
18:30-20:30	**Banquet (*Hotel Associa*) start for *Hotel Associa* at 17:45.**			

*BOLD letters show a presenter.

25 Oct, 2008 (Saturday)				
Room A(6F)		**Room B(7F)**	**Room C(7F)**	**Room D (7F)**
	Key note speech			
9:40-10:30	**A1-03: Coert, Geldenhuys**; Managing forest complexity through application of disturbance-recovery knowledge in development of silvicultural systems and ecological rehabilitation in natural forest systems in Africa			
10:30:-11:20	**A1-04: Wajiro Suzuki**; Uneven-aged forest management in Japan -twisted history and new perspectives			
11:20-11:30	Announcement for excursion			
		B2: Feasibility of managing complexity and spatial scale of complex structure	**C2:Growth response in trees to silviculture in complex stands**	**D2: Silviculture in structurally complex tropical stands**
11:30-11:50		**B2-01: Klaus, Puettmann;** Critique of Silviculture: Managing for Complexity	**C2-01:Henrik, Hartmann**; Evaluating a tree marking system and impacts of disturbances from selection harvest in uneven-aged silviculture in Quebec (Canada) using sugar maple (*Acer saccharum* Marsh.) growth, survival probabilities and stable carbon isotope analysis	**D2-01: Shigeo, Kobayashi**; Establishment of uneven Teak (*Tectona grandis*) plantation by thinning in Thom Pha Phun, Thailand
11:50-12:10		**B2-02: Olli, Tahvonen;** Optimal choice between even- and uneven-aged forestry	**C2-02: Satoshi, Saito;** Does partial removal of canopy trees improved productivity of an old secondary *Castanopsis cuspidata* forest?	**D2-02: Atsushi, Sakai**; Experiments of uneven-aged forest plantations combining fast-growing trees and indigenous trees in northeast Thailand
12:10-12:30		**B2-03**:Stjepan, Mikac **(Dusan, Rozenbergar**); Long term dynamics and spatial structure changes in an Old-Growth Beech-Fir Forest Reserve in the Dinaric Mountains of Croatia	**C2-03: Satoshi, Ito;** Establishment and early growth of hinoki (*Chamaecyparis obtusa*) trees under different topography and edge aspects in a strip-clearcut site in Kyushu, Southern Japan	**D2-03: Holger, Wernsdörfer;** Modelling the impact of selective felling on the demography and genetic diversity of *Dicorynia guianensis*, the major timber species in the tropical rainforest of French Guiana
12:30-13:00	Core time for **poster** presentations (7F)			
13:00-14:00	**Lunch time (at restaurants in this building)**			
		(B2 continued)	**(C2 continued)**	**(D2 continued)**
14:00-14:20		**B2-04:James, Guldin;** Within-stand structural heterogeneity in managed uneven-aged mixed stands of loblolly pine (*Pinus teada* L.) and shortleaf pine (*P. echinata* Mill.) in the southern United States	**C2-04: Atsuhiro, Iio;** A 3D beech canopy model used to evaluate the effect of tree architecture on photosynthesis.	**D2-04: Lawrence, Mbwambo;** The structure and dynamics of semi-arid miombo woodlands in eastern Africa: a case study of Kitulanghalo Forest Reserve, Morogoro Tanzania

	25 Oct, 2008 (Saturday)			
	Room A(6F)	**Room B(7F)**	**Room C(7F)**	**Room D (7F)**
14:20-14:40		**B2-05: Sauli, Valkonen;** Patch regeneration vs. clearcutting in spruce stands in Finland - silvicultural and economic feasibility	**C2-05: Catherine, Malo;** Impacts of forest machinery on fine root growth of sugar maple (*Acer saccharum* Marsh.) following selection cutting	**D2-05: Prijanto, Pamoengkas**; Growth and Soil Quality of Two Shorea Species After 7 Years Under the Selective Cutting and Line Planting Silviculture System in Varying Width of Planting Strip in PT. Sari Bumi Kusuma Concession Area, Central Kalimantan, Indonesia
14:40-15:00		B2-06:canceled	**C2-06:** SueKyung Lee (**Yowhan Son***); Biomass of natural pure and mixed pine and deciduous forests in central Korea	**D2-06: Hari, Saiju;** People Participation for Silviculture and Forest Management in Nepal
15:00-15:20		**B2-07:Suzanne, Brais**; Organic matter decomposition following harvesting: effects of canopy opening and topography	**C2-07: Masaaki, Naramoto;** Effect of high light environments on photosynthetic acclimation and photoinhibition after exposure to high light in shade-developed leaves of Fagus crenata seedlings	**D2-07: Haruni, Krisnawati**; Post-logging silvicultural treatment to increase growth rates of residual stand in a tropical forest
15:20-15:40		Tea break		
		(B2 continued)	**(C2 continued)**	**(D2 continued)**
15:40-16:00		**B2-08:Eric, Zenner;** Spatial Dependency of Structural Metrics and Plot Size in Managed Red Pine	**C2-08: Christian, Messier**; Resource and non-resource root competition effects of grasses on trees of different successional status	**D2-08: Trieu, Dang;** Growth of five indigenous tree species planted in a degraded area of natural forest in Hoa Binh province, Vietnam
16:00-16:20		**B2-09: Russell, Graham;** Is the stand concept relevant for managing heterogeneous forest structures and compositions over large landscapes?	**C2-09: Takashi, Masaki**; Growth response of *Pinus densiflora* trees after thinning in a dense old-growth plantation	**D2-09: Ederson, Zanetti**; The Brazilian Amazon Forest Corridor – Regional Strategy for Tree Biodiversity Cultivation
16:20-16:40		**B2-10: Mats Hagner**; Liberich. An economic principle used to maximize the net present value of tree-groups	**C2-10: Kevin, O'Hara;** Light Requirements for Growth and Survival of Coast Redwood Sprout Regeneration	**D2-10: Mamoru, Kanzaki**; Examine the sustainability of teak selective logging in a mixed deciduous forest with bamboo: the difficulties of the management of mixed forest
16:40-17:00		**B2-11: Erkki, K Lähde**; Silvicultural alternatives in a *Picea abies*-dominated uneven-sized forest		**D2-11: Ulfah, Siregar**; Changes in Species Number and Structure of Peat Swampy Forest in Central Kalimantan, Indonesia, due to Logging and Forest Fire
17:00-17:20		**B2-12:** Mbainmum Dinga Rodolphe; (**Abia, H.***) Silviculture practice in the western highlands of Cameroon		**D2-12: Iskandar, Siregar;** Genetic Consequences of Plant Propagation Methods in Indonesian Selective Cutting and Planting System: *A case study in Shorea johorensis Foxw*

*__BOLD letters__ show a presenter.

26 Oct, 2008 (Sunday) In-congress tour (departure 7:00am)

27 Oct, 2008 (Monday)		
Room A(6F)		**Room B(7F)**
	Key note speech	
9:40-10:30	**A1-05: Timo, Kuuluvainen;** Complex structural patterns and dynamics in Fennoscandian boreal forests: disturbance legacies and silvicultural challenges	
10:30-10:50	**Tea break**	
	A-2: Regeneration; from seeds to stand	**B3: Feasibility of using natural disturbances as the basis for silvicultural systems**
10:50-11:10	**A2-01: Takeshi, Sakai**; Regeneration process of Japanese cypress (Hinoki: *Chamaesparis obtusa*) seedlings in warm-temperate zone.	**B3-01: Alexander, Kryshen**; DYNAMIC TYPOLOGY OF FORESTS AS THE BASIS FOR SYSTEMATIC AND TARGETED REFORESTATION
11:10-11:30	**A2-02: Olavi, Laiho**; Dynamics of regeneration and recovering of understory in *Picea abies*-dominated uneven-sized forests	**B3-02: Rene, Alfaro**; Role of the mountain pine beetle in maintaining the complexity of lodgepole pine stands in British Columbia, Canada
11:30-11:50	**A2-03: Mahoko, Noguchi;** Regeneration of broadleaved tree species in relation to stand structure in hinoki cypress plantations in Shikoku district, southern Japan	B3-03 Canceled
11:50-12:10	**A2-04: Tom, Nagel;** Gap regeneration and tree replacement patterns in an old-growth *Fagus-Abies* forest in the Dinaric Mountains, Bosnia and Herzegovina	**B3-04: Mariano, Amoroso**; The decline of cypress forests: can a natural experiment be used as a tool to design partial cutting regimes for the regeneration of cypress forests?
	(A2 continued)	**B4: Ecological functions of uneven-aged structure**
12:10-12:30	**A2-05: Brian, Harvey**; *Abies-Populus* regeneration dynamics in the eastern Canadian boreal mixedwood: The role of canopy opening and species mix	**B4-01: Theresa, Jain**; A Silviculture System Designed to Meet Fuel and Restoration Objectives within Complex Moist Forests of the Northern Rocky Mountains
12:30-12:50	**A2-06: Hayato, Iijima**; Suitable condition of a fallen log for natural regeneration of conifer tree species	B4-02: Canceled
12:50-14:00	**Lunch time (at restaurants in the building)**	

	27 Oct, 2008 (Monday)	
	Room A(6F)	**Room B(7F)**
	(A2 continued)	**(B4 continued)**
14:00-14:20	**A2-07: Timo, Saksa**; Dynamics of seedling establishment and survival in uneven-aged boreal forests	**B4-03: Hiromi, Yamagawa**; Optimum logging size and rotation for enhancement of multiple functions in uneven-aged management of conifer plantations
14:20-14:40	**A2-08: Yoshitaka, Kakubari**; A trial to estimate of seed mass on a beech crown surface by using individual tree basis along an elevation gradient in the Naeba Mountains.	**B4-04: Robert, Deal**; Tree Size Structure and Growth 50 Years After Partial harvesting of Western Hemlock-Sitka Spruce Stands in Southeast Alaska
14:40-15:00	**A2-09: Kenji, Shimatani**; An application of mathematical molecular ecology to silviculture: a case study in shelterwood of beech forest	**B4-05: Zhou, Guangyi**; Changes of Soil Characteristics Caused by Forest Alteration
15:00-15:30	**Closing remarks**	

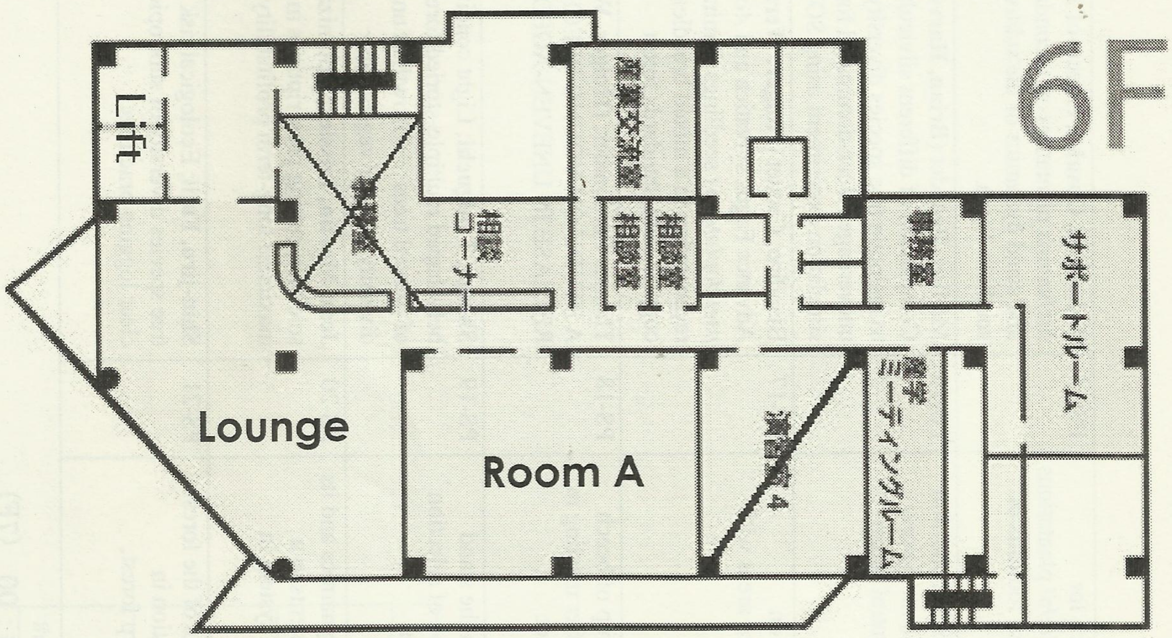
Posters

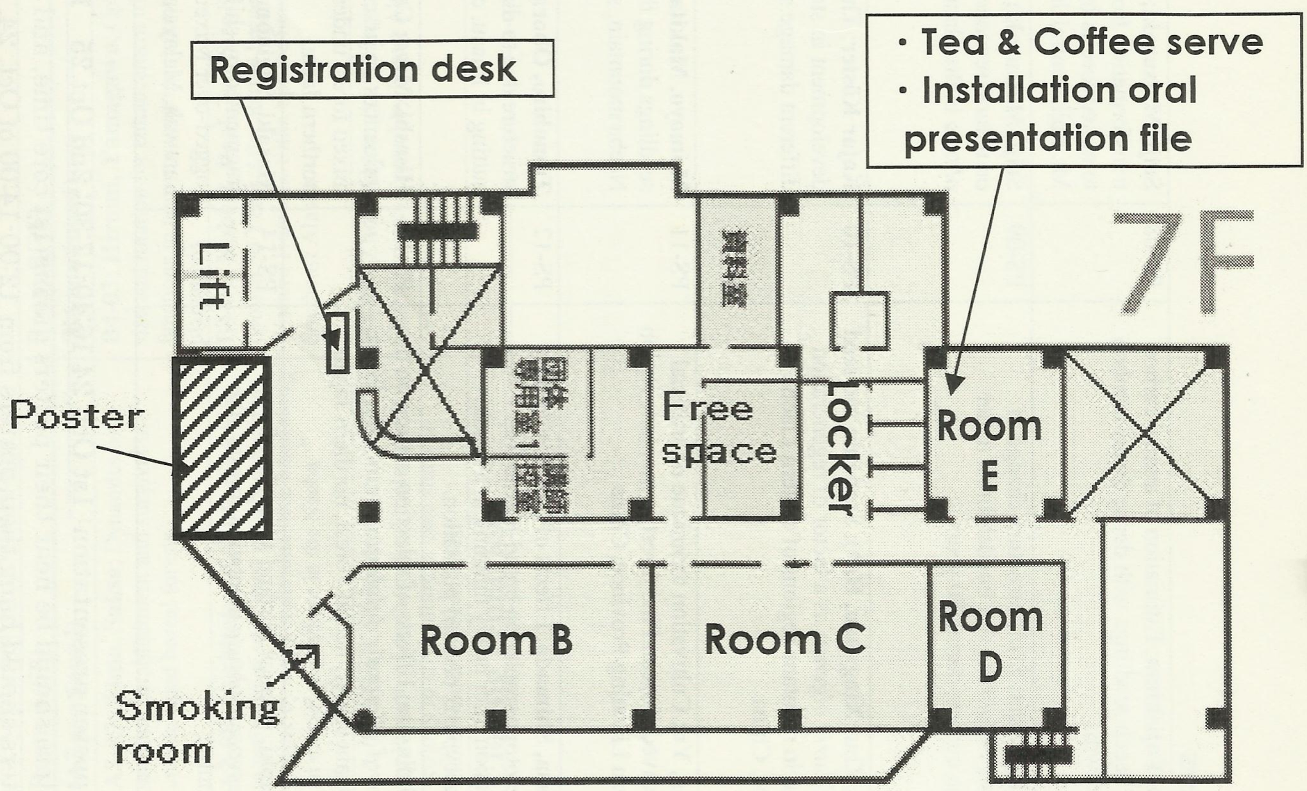
PS-01	**Mizuki, Fujishima**; Estimation of annual carbon gain of beech seedlings with dense dwarf bamboo undergrowth.	PS-08	**Seiji, Matsuzaki;** An approach for transformation from *Abies veitchii* plantations to mixed forests in the northern foothills of Mt. Fuji, central Japan	PS-15	**Takeharu, Oosako**; Effects of *Pinus luchuensis* plantation on secondary succession and stand dynamics of the subtropical forest in southern Japan
PS-02	**Gaku, Hitsuma;** Stand structure change of *Thujopsis dolabrata* var. hondai forest under selection cutting during 80 years	PS-09	**Seiji, Matsuzaki;** Effects of light condition on natural regeneration of *Chamaecyparis obtusa* in the plantations in central Japan	PS-16	Marilou, Beaudet (**Brian, Harvey***); Comparison of different silvicultural scenarios to maintain tree species diversity in temperate uneven-aged *Acer*-dominated forests? A simulation experiment using SORTIE
PS-03	Jiaojun, Zhu (**Xingyuan, He***); Seed rain and seed bank of *Larix olgensis* as a factor of regeneration potential in montane regions of eastern Liaoning Province, China	PS-10	**Kajar Köster**; The regeneration development in storm damaged areas with different damage severity	PS-17	Blandine, Caquet (**Holger, Wernsdörfer***); Advance Fagus sylvatica and *Acer pseudoplatanus* seedlings dominate tree regeneration in a mixed broadleaved former coppice-with-standards forest
PS-04	**Lizhong, Yu;** Cultivation technique of artificial broad-leaved Korean Pine forest in montane region of eastern Liaoning Province, China	PS-11	**Momoyo, Makita**; Survivorship of beech seedlings during three years after masting in Naeba mountain, snowy district.	PS-18	Thomas Cordonnier; (**Holger, Wernsdörfer***); A STUDY ON YOUNG BEECH TREE RELEASE IN UNEVEN-AGED STANDS
PS-05	**Hiromasa, Shimada**; Effects of light availability and microtopography on broad-leaved tree regeneration after heavy thinning in a hinoki (*Chamaecyparis obtusa*) plantation.	PS-12	**Tomohiro, Obora**; Change in the stand structure due to discontinuation of selection cutting in Imasu, central Japan	PS-19	**Shingo, Taniguchi**; Light conditions in belt-shaped multiple-storied forest and growth of planted trees —Growth of under trees and diversity of floor vegetation—
PS-06	**Hisashi, Sugita**; Effects of selection cutting on the structure of *Thujopsis dolabrata* var. *hondai* forest at the Ohata Experimental Forest, northern Japan	PS-13	**Hisashi, Miya;** Canopy gap dynamics and its influences on juvenile recruitments in a mixed forest under a selection system in northern Japan	PS-20	**Jean-Martin, Lussier;** Optimization of selection cutting prescriptions in order to maximize long-term profitability
PS-07	**Kei, Sasaki**; Change in stand structure of *Chamaecyparis obtusa* plantation forests after line-thinning	PS-14	**Masaki, Suginome;** Dynamics of the forest fragmented by shifting cultivation in logged-over Mixed Dipterocarp forest, Sarawak, Malaysia	PS-21	**Shin-jiro, Fujii**; Ecological risk assessments in tree species diversity of subtropical forest under clear logging practices

Core time for poster presentation: 1st Oct. 24 16:40-17:30; 2nd Oct.25 12：30-13：00 (7F)
Poster presenters should be near their posters during 1st core time, and are strongly recommended to be there during 2nd core time also.
Poster presenters should hang their posters from 12:00-14:00 of Oct. 24, and remove them from 13:00-15:30 of Oct 25.

(***BOLD letters** show a presenter.)

Floor Map


6F
Lift
Lounge
Room A
産業交流室
相談コーナー
相談室
相談室
事務室
サポートルーム
演習室4
留学ミーティングルーム


Registration desk
・Tea & Coffee serve
・Installation oral presentation file
7F
Lift
Poster
資料室
団体専用室1
講師控室
Free space
Locker
Room E
Room B
Room C
Room D
Smoking room

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