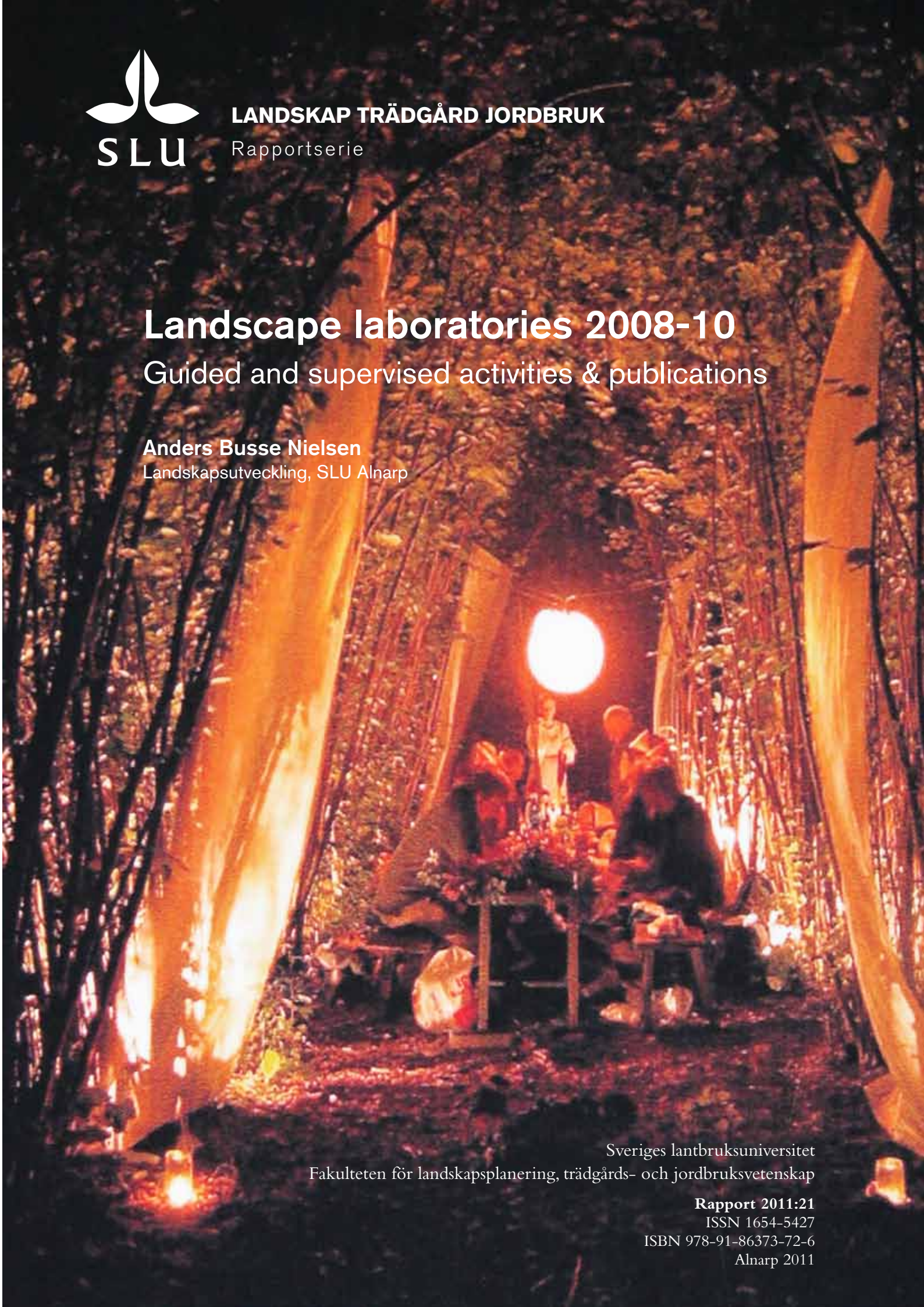

SLU
LANDSKAP TRÄDGÅRD JORDBRUK
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Landscape laboratories 2008-10

Guided and supervised activities & publications

Anders Busse Nielsen
Landskapsutveckling, SLU Alnarp

Sveriges lantbruksuniversitet
Fakulteten för landskapsplanering, trädgårds- och jordbruksvetenskap

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Why this report?

In autumn 2010 the Faculty of Landscape Planning, Horticulture and Agricultural Science at the Swedish University of Agricultural Sciences (SLU), initiated an evaluation of the trial areas and green spaces that frame and intersects the Alnarp campus and jointly make up the campus' green structure. Focus for the evaluation was on the use of the trial areas and other outdoor facilities in the educations hosted by the Faculty. The landscape laboratory is an essential part of the Alnarp campus' trial areas and its overall green structure. Since its establishment in 1991 the landscape laboratory has become a popular and much used arena for teaching of students enrolled at SLU educations and students from other Swedish and international university as well as for interdisciplinary research and demonstration to practice. Evaluating the landscape laboratories from the perspective of education only is thus in principal misguiding. Therefore, the theme group on Vegetation for peri-urban landscapes and urban green space at the Department of Landscape Management, Design and Construction, SLU Alnarp initiated a thorough evaluation of Alnarp landscape laboratory and its two sister laboratories in Snogeholm and Holstebro. This report conveys the results of the evaluation and the hope is that it can be supportive for the identification of initiatives than can enhance the landscape laboratories' contribution to SLU' teaching, research and development activities.

One behalf of the theme group on Vegetation for peri-urban landscapes and urban green space, enjoy the reading.

Anders Busse Nielsen

Alnarp, June 17, 2011

Thanks to…

The theme group on Vegetation for peri-urban landscapes and urban green space at the Department of Landscape Management, Design and Construction, SLU Alnarp has documented and compiled information, with support from colleagues at the Department of Southern Swedish Forest Research, SLU Alnarp and Danish colleagues.

Without contribution from the following persons, the overview provided in this report would still be a dream: Cecilia Öxell, Christine Haaland, Helena Mellqvist, Jennifer Boynton, Karin Svensson, Petra Thorpert, Allan Gunnarsson, Björn Wiström, Erik Svensson, Gustav Richnau, Henrik Sjöman, Leif Andersson, Kenneth Lorentzon, Mårten Hammer, Patrick Bellan, and Roland Gustavsson, all from the theme group on Vegetation for peri-urban landscapes and urban green space. Thanks to Erik Agestam, Mateusz Liziniewicz, Per-Magnus Ekö, Rolf Övergard, from the Department of Southern Swedish Forest Research. And last but not least thanks to Carl Aage Sørensen, Emeritus Chief landscape architect, Holstebro and Stefan Darlan Boris, The School of Architecture, Aarhus.

Front page Photo by Roland Gustavsson: Cray fish party in Alnarp landcape laboratory

Executive Summary

This report on the landscape laboratories set out, for the first time, data about the type and frequency of activities and publications tied to these arenas for interdisciplinary education, demonstration and research on urban and peri-urban forests landscapes and their elements.

While universities world wide have shut down or sold larger parts of their landscape trials during the last decades, SLU Alnarp has geared up and initiated new experimental trial areas conceptualised as "landscape laboratories". In 1991, the first landscape laboratory was established right around the university campus at Alnarp as an arena for full scale experimental research on enrichment of urban–rural fringe landscapes by afforestation. This was followed up by establishment of a second landscape laboratory in Snogeholm, Sweden in 1994 focusing on afforestation and multiple-use forestry practice. The third landscape laboratory was established between 2000-04 as part of a new housing district in Holstebro, Denmark, and focuses on new types of neighbourhood forest landscapes and residents-landscape interactions.

The Landscape laboratories form full-scale outdoor research and teaching environments that other universities lack and admire. This report provides and overview of groups of students, researchers, practitioners and voluntary organisations that have as visited the landscape laboratories as part of outdoor teaching activities, workshops, conferences and guided tours during 2008-10. This is supplemented with an overview of recent and ongoing research activities and publications related to the landscape laboratories and their reference landscapes around the world. Key findings include:

5415 visitors on 163 guided tours during 2008-10

During 2008-10 a total of 163 groups have visited the landscape laboratories. This equals one group per week all year round in all three years. As much as 5415 people participated in those activities with an average group size of 33 people. With 62 % off all visits (n = 101), the landscape laboratory at SLU Alnarp was by fare the most frequently used. This illustrates the added value of having a landscape laboratory as part of the students, teachers, and researchers' every day campus landscape, where it becomes an 'outdoor class room' that replaces indoor lectures and provide possibilities for combining theory and practice in one and the same course moment.

External groups more frequent visitors than SLU groups

The landscape laboratories have attracted policy makers, stakeholders, practitioners, students and researchers. With 90 groups, students accounts for just above half of the guided group visits. Student groups from other universities than SLU - many of which are international universities - are just as frequent visitors as groups enrolled at SLU. This illustrates that the laboratories appeal to students of many different disciplines and nationalities. When the 49 groups of professional organisations, the 13 research groups and 11 stakeholder groups are added, external groups amounts to nearly two third of the group visits. This illustrates that the landscape laboratories have become one of the main outlets for SLU's research, teaching and demonstration of approaches to the development of urban and peri-urban forests and landscapes.

Shared arena for multiple disciplines

The 193 groups visiting the landscape laboratories between 2008-10 represent a vast diversity in terms disciplinary focus. Groups that primarily focus on peri-urban landscapes and urban green space accounts for nearly 50 % of the groups being guided. Forestry students and organisations are also well represented with 30 %. In comparison students and organisation focusing on horticulture and dendrology respectively ecology and nature conservation has been less frequent visitors, as have groups with other disciplinary focus such as art, music, health care and stakeholder groups. Nevertheless, the vast diversity of disciplinary focuses show that the landscape laboratories have succeeded in becoming shared arenas for multiple disciplines and the teaching, research and demonstration activities ties to them, thus meeting society's demand for interdisciplinary approaches to landscape and natural resource management.

Extensive publication & dissemination

The landscape laboratories have generated 107 publications and scientific presentations, while a similar number of publications have been generated from the web of reference landscapes in Sweden and around the world. More than half of the publications and presentation are in English, while the remaining is – with falling numbers - in Danish, Swedish, Norwegian, German, and Spanish. Publications focused on disseminating the landscape laboratory concept and findings to practitioners and conference participants dominate and reflect the joint efforts of SLU researchers in making the landscape laboratories known among practitioners and researchers.

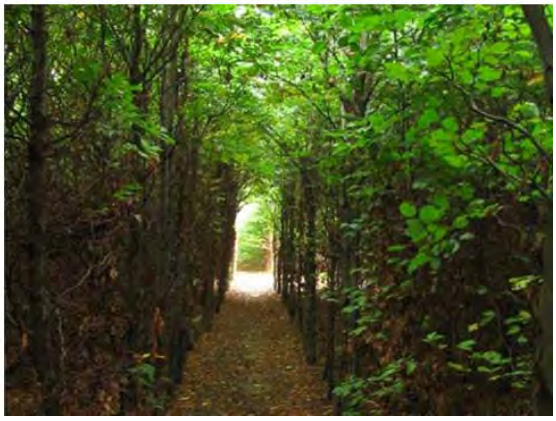
In conclusion

In conclusion, this report sets out a baseline for evaluating the landscape laboratories and for analysing future activities and trends in the landscape laboratories. The report is also intended to raise awareness about the landscape laboratories and how they can contribute to SLU's ambitions of carrying out interdisciplinary education, demonstration and research.

Contents





Snapshots from Västerskogen, Alnarp Landscape Laboratory. Photo: Top left, Roland Gustavssson; Top right, Anders Busse Nielsen; Mid left, Jan Sestak, Mid right, Anders Busse Nielsen; Bottom left, Anders Busse Nielsen; Bottom right, Dana L. Sestak

Introduction

The landscape cannot be moved to a laboratory for study. Rather the laboratory thinking needs to be conveyed to the landscape. Guided by this, SLU Alnarp has geared up and extended its trial areas over the last decades and initiated new experimental landscapes located directly at the doorstep of the campus. This development contrasts most other universities world wide where trial areas have been detached from the campuses and gradually shut down or sold due to the larger costs and hinder for use caused by the detachment.

At SLU Alnarp the laboratory thinking has been brought to the campus landscape and sensibly integrated with the rich cultural history of the place to form full-scale outdoor research and teaching environments that other universities lack and admire. The trial areas have been conceptualised into Alnarp Horticultural & Garden Laboratory, Alnarp Healing Garden, and Alnarp Landscape Laboratory, each combining research, teaching and demonstration in one and the same landscape to be shared between disciplines.

This report focuses on the landscape laboratory part of the trial areas at the Alnarp campus and its two sister laboratories in Snogeholm near Ystad and in Holstebro, Denmark. The report provides and extensive overview of:

- Education activities during 2008-10, distinguishing between student groups from, other Swedish universities, and international groups.
- Guiding of external groups during 2008-10, distinguishing between different disciplines and between researchers, practitioners and voluntary organisations.
- Publications, distinguishing between publications related to the initial scope of the landscape laboratory concept respectively publications on applied dendrology related to the landscape laboratories and their reference landscapes
- Research projects

Based on this documentation the reports assess the extent to which the landscape laboratories live up to the initial aims and scope of active use in multidisciplinary education, research and demonstration for practice. This in order to identify future initiatives that can enhance the landscape laboratories contribution to SLU's teaching, research and development activities.

Landscape laboratory – concept and scope

In 1990 Hans Lindén, head of the "intendentbyrå" at SLU assigned Professor Roland Gustavsson to develop a landscape plan for the Alnarp estate. During this work the idea of Alnarp as an experimental area for research, teaching and demonstration of elements and processes for landscape enrichment and conservation was developed and conceptualised as "Landscape laboratory" (Folkesson 1996). The landscape laboratory concept was a further development of the Tor Nitzelius Park where research on plant material and composition had been fused in the mid 1980s to form a new type of arboretum (see appendix 1 and Nielsen et al. 2005b).

The idea of forest and landscape trial areas is nothing new. Forestry, ecology, park management, landscape architecture and dendrology all have traditions for disciplinary trail areas and reference landscapes. The scope of landscape laboratories, in contrast, is to

be a common experimental arena to be shared between disciplines, thus meeting society's call for multidisciplinary approaches (Gustavsson, 2002 and 2010, Tyrväinen et al. 2006).

The term 'laboratory' goes back to von Humbolt who described the term as an experimental meeting place for different knowledge fields. Landscape laboratory as a term stresses the central role of landscape and spatial aspects in the experimental meeting between disciplines and between people and landscape (Gustavsson 2002). Landscape laboratories are conceptualized as experimental areas having the size of a local landscape, where species, elements and management concepts from the past as well as totally new "prototypes" are studied in full scale over a long period of time (Gustavsson 2010, Tyrväinen et al. 2006). Landscape laboratories supplies classical disciplinary trial areas and other empirically directed field stations where focus is on natural processes and human interference regarded as disturbances. By providing for studies of alternatives side-by-side, landscape laboratories aim to be effective and active arenas for education, demonstration and research. Teaching and research on new plant material for urban green space (applied dendrology) was not formulated in the initial scope of the landscape laboratory concept (Folkesson 1996). Yet this thematic line has developed to be a third major line of teaching, research and demonstration in the Alnarp landscape laboratory, where it is fused with the initial scope on landscape research and design and management of forest and other vegetation for peri-urban landscapes and urban green spaces.

The landscape laboratories in Alnarp, Snogeholm and Holstebro

Alnarp landscape laboratory was the first to be established in 1991. It is located right around the university campus, with the advantage this has for students, teachers and researchers. The landscape laboratory aims at enriching a modern, intensively used agricultural landscape in the urban-rural fringe by afforestation (Gustavsson 2002). Thus, the profile of Alnarp landscape laboratory is directed towards landscape research integrated with nature conservation and urban woodlands and other types of urban green space (Folkesson 1996). While the landscape plan for Alnarp perceived the whole estate as included in the vision of Alnarp as an experimental area for research, teaching and demonstration landscape enrichment and conservation, only part of the estate has been actively included in the landscape laboratory. The landscape laboratory is by most people coupled to Tor Nitzelius Park and Alnarps Västerskog. Yet, the Avenue between Alnarp and Åkarp, the Magnoliea forest, the China Field and the new plant selection field are also part of the landscape laboratory, and key stones in the research on plant material for urban green space (applied dendrology).

For more information about Alnarp landcape laboratory see Folkesson (1996). For more information about Tor Nitzelius park, the China field, Magnolia skogen and the new plant school field see appendix 3 and Nielsen et al. (2005b). For more information about Alnarp västerskog see Nielsen et al. (2005c) and Wiström and Pålsson (2010).

Snogeholm landscape laboratory was set up in 1994. It was established on 30 ha arable land in collaboration between Region Skåne, the Department of Landscape planning and Department of Southern Swedish Forest Research, SLU Alnarp and Skogssällskapet. The laboratory is located on Romelåsen between Malmö and Ystad in a hilly landscape characterised by a mosaic of intensively cultivated farmland, lakes and forest of varying sizes. The experimental research is focused on afforestation and forestry practice. It

encompasses over 60 different woodland interior and edge types established to gain knowledge about how to develop new types of mixed forests types.

For more information about Snogeholm see e.g. Gustavsson (2002) and Nielsen et al. (2005d).

The landscape laboratory in Holstebro was established between 2000-04 in collaboration between Holstebro municipality, the Danish Centre on Forest, Landscape and Planning and the Department of landscape planning, SLU Alnarp. The landscape laboratory is an integral part of housing development on 160 hectares of arable land at the eastern fringe of Holstebro. The focus of the landscape laboratory is on developing knowledge about new types of neighbourhood woodlands and resident-woodland interactions (Maegaard-Nielsen 2002, Sørensen and Tvedt 2004). The plan for Sletten involved structuring of the built development by a matrix of woodland (32 ha) and meadows (30 ha). Eight villages have been placed in clearings in the woodland, and six viallges at the forest edge looking out over the meadows. The woodland contains 85 different tree and shrub species combined into 52 different species combinations and stand types of both dense and open, high forest and coppice forest types, indigenous and exotic species (Nielsen et al. 2005).

For more information about Holstebro Landscape laboratory see e.g. Boris (2010), Maegaard-Nielsen (2002), Nielsen et al. (2005e), Sørensen (2002), Sørensen, and Tvedt (2004a) and (2004b).

A place to enjoy and relaxing created by one of the families living with the young forest in Holstebro Landscape laboratory as their neighbour. Photo: Anders Busse Nielsen

Methodology

Educational activities and guiding of external groups included in this evaluation are restricted to those that have been documented. Such documentation has so fare been on individual basis and often limited to listing in respective person's calendar, email correspondence or course material, where it primarily has served as reminders before the activity rather than documentation of the activities after they have been carried out.

We applied a snowball method, were key persons at different SLU departments and Danish organisations were contacted and requested to provide information about the guiding and teaching activities they had been envolved in during 2008-10. The key persons were also asked to forward the request to colleagues and encourage them to provide information in case they had been involved in other guiding or teaching activities in the landscape laboratories during 2008-10. The following information was requested:

- name of the landscape laboratory visited,
- date of the activity,
- name of the organisation/student group being guided,
- nationality,
- group size,
- name of the guide(s).

As expected some activities had not been documented and in some cases the documentation was lost because course material calendar's and emails from especially 2008 and 2009 had not been archived. Thus, a number of activities, which "are almost sure have been carried out are not included, especially activities from 2008 and 2009" to use the wording found many colleagues reply emails

Key persons were also requested to provide information about publications related to the landscape laboratories, and to forward this request to colleagues. To allow for a full overview, all publications were to be included, despite year of publishing.

Analysis of guided and supervised activities

The information was entered into excel to allow for descriptive analysis. The groups guided in the landscape laboratories represent a vast diversity in terms of organisations and disciplinary focus. For the purpose of this evaluation, individual groups were thus allocated to one of four main types of group:

- Student groups, (e.g. SLU courses, visits from Gymnasiums and other universities)
- Research groups (e.g. conference participants, and visiting university groups)
- Practitioner groups (e.g. municipality organisations, Södra, Landscape architects)
- Voluntary organisations (e.g. SNF, Alnarp Parkens venner)

Further each group was allocated to one of five main disciplinary focuses:

- Nature conservation, (e.g. SNF, student at floristic courses)
- Peri- and urban green space, (e.g. Municipality departments, landscape students)
- Forestry, (e.g. Danish Forest and Nature Agency, Södra, Forestry students)
- Horticulture & dendrology (e.g. TRING students, plant selection groups)
- Others (e.g. artist, music groups, Dements groups, Health care groups)

Analysis of publications

Publications were split in publications where the initial scope of the laboratories are described, discussed or studied, in the following called “publications related to the initial scope of the landscape laboratories”, and applied dendrology publications related to the landscape laboratories and their reference landscapes, in the following termed “publications on applied dendrology”. For each of the two groups, publications were secondly allocated to the following categories:

- peer-review scientific publications,
- other scientific publications,
- extension publications,
- popular publications,
- conference posters and proceedings,
- master thesis

Groups guided and supervised in the three Landscape laboratories - Overall figures

Number of groups and participants

In total 163 group visits to the three landscape laboratories could be documented during 2008-10. As much as 5415 people participated in those activities, equally to 33 people in each group. Alnarp landscape laboratory was by fare the most frequently visited with nearly 2/3 of the guided activities and participants (Table 1).

On average each visit to the landscape laboratories has duration of 3 hours, many student groups however engaging in full day educational activities. Extrapolating on these figures guided and supervised visits to the landscape laboratories has had an allocated duration of app. 500 hours during 2008-10 (transportation and other logistics not included). If the average duration of 3 hours is multiplied with the number of participants, we can assume that visiting groups jointly have spend 16.245 hours in the three landscape laboratories. This is equal to one year and teen month, day and night, or in other words, more than half of the period being assessed (2008-10).

Landscape laboratory	Activities	Participants
Alnarp Landscape laboratory	101	3323
Snogeholm Landscape laboratory	47	1448
Holstebro Landscape laboratory	15	646
Sum	**163**	**5415**

Table 1. Total number of documented activities in the landscape laboratories during 2008-10 and number of participants in those activities.

Distribution of groups over years and seasons

As shown in table 2, the number of documented activities is rather evenly distributed across the three years, yet with most activities in 2010 and least in 2008. This does not nessecarily indicate increased use of the landscape laboratories. Thus, as described in the methods some activities have not been noted and for some of the staff the course material, calendar's and emails from 2008 and 2009 have not been archived. It is thus likely that the number of guided visits in 2008 and 2009 has been at the same level as 2010.

As expected spring and autumn are the peak periods (Figure 1). Groups are evenly distributed over the spring months March, April, May and June, while being more uneven distributed in the autumn, with September being the most "hectic" of all month with 42 guided activities. This corresponds to three groups being guided each September week during the three years.

The few guided group visit during July is to be explained with the summer holiday, and the few groups during the winter (November-February) is to be explained with outdoor excursion and learning activities in general are limited at this time of the year.

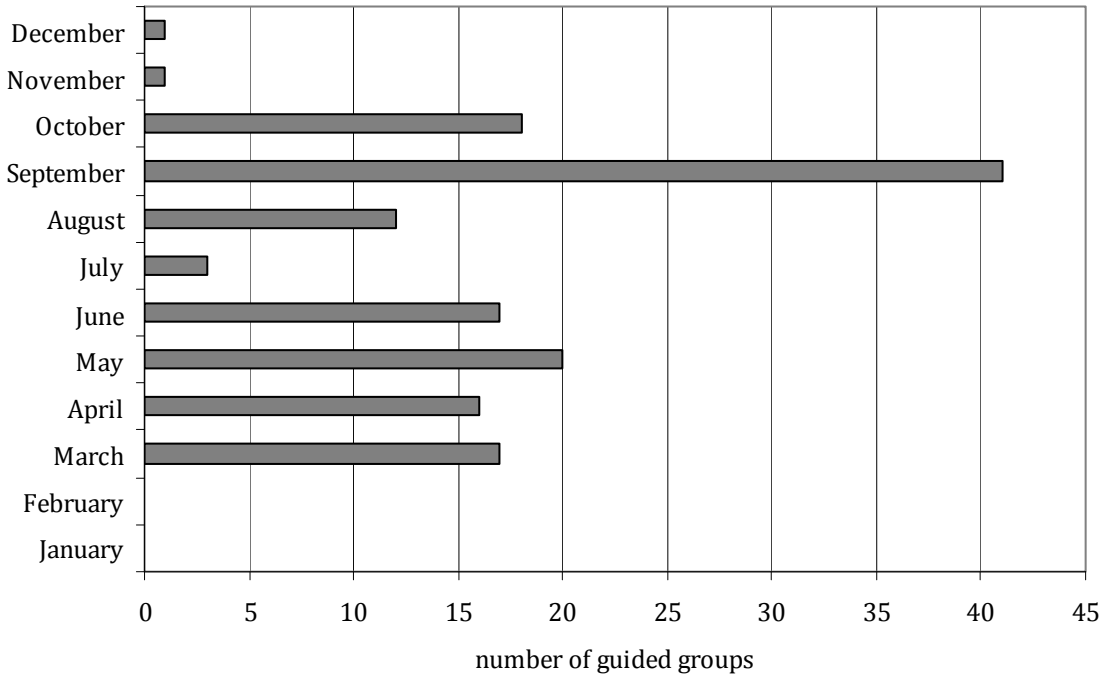


Figure 1. Guided groups allocated to the month in which the activity has taken place

Type of groups and their nationality

Student groups accounts for just above half of the guided group visits, followed by groups of practitioners, while researcher groups and voluntary organisations have been less frequent visitors (Table 2). Among the 90 student groups, 51 were from SLU, 27 from other Swedish universities and 12 were student groups from Denmark, Germany, England and USA. Among the 13 guided research groups, 6 came from SLU, 3 from other Swedish universities and 4 were international groups. All 49 groups of practitioners came from the Scandinavian countries. Not surprisingly Swedish practitioners dominate with 33 group visits, while 13 groups came from Denmark and 3 from Norway. All voluntary organisations in Alnarp and Snogeholm were Swedish (n = 6), while in Holstebro they were all Danish (n = 5).

Main disciplinary focus of the groups

As shown in table 2, student groups and organisations primarily focusing on peri-urban and urban green space accounts for 47,2 % all guided groups. Forestry students and organisations are also well represented with 30,1 %. In comparison students and organisation focusing on horticulture and dendrology and nature conservation groups have been less frequent visitors, and surprisingly perhaps, groups with other disciplinary focus such as art, music, health care or different types of voluntary groups such as Friends of the Alnarp park, garden associations, dement groups have been more frequent participants in guided activities. (Table 2).

	Student groups	Research groups	Practice groups	Voluntary org.	Sum	Pct.
2008	31	4	19	1	47	*28,8 %*
2009	24	3	14	5	52	*31,9 %*
2010	35	6	16	5	64	*39,3 %*
Sum	**90**	**13**	**49**	**11**	**163**	*100 %*
Nature conservation	8		2	1	11	*6,7 %*
Peri- & urban green space	46	8	20	1	77	*47,2 %*
Forestry	23	2	23	1	49	*30,1 %*
Horticulture & dendrology	4	1	1	1	7	*4,3 %*
Other	7	2	3	7	19	*11,6 %*
Sum	**90**	**13**	**49**	**11**	**163**	*100 %*
SLU	51	6		1	58	*35,6 %*
Sweden	27	3	33	4	67	*41,1 %*
Denmark	8	1	13	6	28	*17,2 %*
Norway		1	3		4	*2,5 %*
Other	4	2			6	*3,7 %*
Sum	**90**	**13**	**49**	**11**	**163**	*100 %*
Pct.	*55,2 %*	*8,0*	*30,1*	*6,7 %*	*100 %*	

Table 2. Groups guided in the three landscape laboratories differentiating between year of activity, main disciplinary focus of the group, and nationality where SLU groups are separated from other Swedish groups.

Västerskog

V1. Pyrus communis L.
V2. Quercus petraea (Matt.) Liebl.
V3. Quercus robur L., Larix x eurolepis Henry
V4. Quercus robur L.
V5. Quercus robur L., Betula pendula Roth
V6. Populus tremula L.
V7. Betula pendula Roth, Prunus avium L.
V8. Betula pendula Roth
V9. Prunus avium L.
V10. Quercus robur L., Prunus avium L.
V11. Quercus robur L., Alnus glutinosa (L.) Gaertn.
V12. Sorbus intermedia (Ehrh.) Pers.
V13. Sorbus aucuparia L.
V14. Fraxinus excelsior L., Quercus robur L., Carpinus betulus L., Prunus padus L., Alnus glutinosa (L.) Gaertn., Tilia cordata Mill.
V15. Acer platanoides L.
V16. Fraxinus excelsior L., Larix x eurolepis Henry
V17. Tilia cordata Mill.
V18. Pyrus communis L.
V19. Ulmus glabra Huds., Fraxinus excelsior L., Carpinus betulus L., Euonymus europaeus L., Fagus sylvatica L., Quercus robur L., Prunus avium L., Crataegus laevigata (Poir.) DC., Corylus avellana L., Prunus padus L., Alnus glutinosa (L.) Gaertn., Tilia cordata Mill., Acer platanoides L., Viburnum opulus L., Salix caprea L., Malus sylvestris (L.) Mill.
V20. Populus x wettsteinii Hämet-Ahti, Fraxinus excelsior L.
V21. Prunus padus L., Fraxinus excelsior L.
V22. Alnus glutinosa (L.) Gaertn., Fraxinus excelsior L.
V23. Fraxinus excelsior L.
V24. Alnus glutinosa (L.) Gaertn.
V25. Prunus padus L., Fraxinus excelsior L.
V26. Alnus glutinosa (L.) Gaertn.
V27. Punus cerasifera Ehrh.
V28. Carpinus betulus L.
V29. Alnus glutinosa (L.) Gaertn., Fagus sylvatica L.
V30. Carpinus betulus L., Fagus sylvatica L., Sambucus nigra L., Prunus avium L., Crataegus laevigata (Poir.) DC., Prunus padus L., Tilia cordata Mill., Sorbus aucuparia L., Salix caprea L.
V31. Fagus sylvatica L., Larix x eurolepis Henry
V32. Fagus sylvatica L., Betula pendula Roth
V33. Fagus sylvatica L.
V34. Pyrus communis L.
B1. Quercus robur L., Sorbus intermedia (Ehrh.) Pers.
B2. Acer platanoides L., Fraxinus excelsior L., Malus sylvestris (L.) Mill., Prunus avium L., Pyrus communis L., Quercus robur L., Salix caprea L., Sorbus aucuparia L., Sorbus intermedia (Ehrh.) Pers., Tilia cordata Mill.
B3. Fagus sylvatica L., Fraxinus excelsior L., Malus sylvestris (L.) Mill., Populus tremula L., Prunus avium L., Quercus robur L., Salix caprea L., Sorbus aucuparia L., Sorbus intermedia (Ehrh.) Pers., Tilia cordata Mill., Corylus avellana L., Crataegus laevigata (Poir.) DC., Salix cinerea L., Rosa dumalis Bechst., Viburnum opulus L.
B4. Alnus glutinosa (L.) Gaertn., Malus sylvestris (L.) Mill., Sorbus aucuparia L., Sorbus intermedia (Ehrh.) Pers., Corylus avellana L., Crataegus laevigata (Poir.) DC., Prunus spinosa L., Rosa dumalis Bechst., Sambucus nigra L.
B5. Sorbus aucuparia L., Corylus avellana L., Crataegus laevigata (Poir.) DC m. Euonymus europaeus L., Prunus spinosa L., Rhamnus cathartica L., Frangula alnus Mill., Ribes alpinum L., Rosa dumalis Bechst., Sambucus nigra L., Viburnum opulus L.

TNP - Tor Nitzelius Park

T1. Acer platanoides L., Alnus glutinosa* (L.) Gaertn., Cornus sanguinea L., Corylus avellana L., Pyrus communis L., Quercus robur L., Ribes alpinum L., Sorbus intermedia (Ehrh.) Pers, Viburnum opulus L.
T2. Malus sieboldii (Regl.) Rehder
T3. Malus sylvestris (L.) Mill.
T4. Alnus glutinosa* (L.) Gaertn., Cornus sanguinea L., Corylus columa L., Crataegus intricata Lange, Populus canadensis Moench., Quercus cerris L., Ribes alpinum L.
T5. Acer negundo L., Acer pensylvanicum L., Alnus glutinosa* (L.) Gaertn., Betula alleghaniensis (lutea) Britton, Populus canadensis Moench., Prunus grayana Maxim., Prunus mahaleb L., Pyrus ussuriensis Maxim.
T6. Malus domestica Borkh.
T7. Prunus avium L.
T8. Prunus cerasifera Ehrh.
T9. Prunus maackii Rupr.
T10. Pyrus ussuriensis Maxim.
T11. Amelanchier spicata (Lam.) K. Koch, Aronia melanocarpa (Michx.) Elliott, Aronia prunifolia (Marsh.) Rehder, Cotoneaster multiflorus Bunge, Malus sieboldii (Regl.) Rehder, Physocarpus opulifolius (L.) Maxim., Punus cerasifera Ehrh., Viburnum lantana L.
T12. Amelanchier spicata (Lam.) K. Koch, Aronia melanocarpa (Michx.) Elliott, Cotoneaster multiflorus Bunge, Malus sieboldii (Regl.) Rehder, Physocarpus opulifolius (L.) Maxim., Prunus cerasifera Ehrh., Syringa vulgaris L., Viburnum lantana L.
T13. Quercus robur L.
T14. Acer platanoides L., Alnus glutinosa* (L.) Gaertn., Betula pendula Roth, Carpinus betulus L., Fagus sylvatica L., Fraxinus excelsior L., Larix x eurolepis* Henry, Quercus robur L., Ribes alpinum L., Salix caprea L., Tilia cordata Mill., Viburnum opulus L.
T15. Cercidiphyllum japonicum Siebold & Zucc.
T16. Alnus glutinosa* (L.) Gaertn., Carya tomentosa (Lam.) Nutt.
Castanea sativa Mill., Cornus alba L., Cornus mas L., Hamamelis japonica Siebold & Zucc., Pyrus ussuriensis Maxim.
T17. Acer campestre L., Crataegus monogyna Jacq., Euonymus europaeus L., Fagus sylvatica L., Larix x eurolepis* Henry, Malus sylvestris (L.) Mill., Prunus spinosa L., Pyrus communis L., Rhamnus cathartica L., Rosa canina L., Sambucus nigra L., Sorbus aucuparia L., Sorbus intermedia (Ehrh.) Pers., Viburnum opulus L.
T18. Acer negundo L.
T19. Abies holophylla Maxim., Abies homolepis Siebold & Zucc., Abies koreana E.H. Wilson, Abies sikokiana Nakai, Acer japonicum Thunb., Acer mono Maxim., Acer palmatum Thunb.
Acer pseudosieboldianum (Pax) Komar, Acer rufinerve Siebold & Zucc., Acer shirasawanum Koidz., Acer sieboldianum Miq., Alnus glutinosa* (L.) Gaertn., Betula ermanii Cham., Betula maximowicziana Regel, Cercidiphyllum japonicum Siebold & Zucc., Hamamelis japonica Siebold & Zucc., Juglans sieboldiana Maxim., Kerria japonica (L.) DC., Larix kaempferi (Lambert) Carr., Larix x eurolepis* Henry, Magnolia kobus DC., Picea smithiana (Wall.) Boiss., Prunus grayana Maxim., Prunus sargentii Rehder, Prunus ssionii F. Schmidt, Rhododendron japonicum (A. Gray) Suringar, Sorbus commixta Hedl., Stephanandra incisa (Thunb.) Zabel 'Crispa', Taxus cuspidata Siebold & Zucc.
T20. Metasequoia glyptostroboides Hu & W.C. Cheng
T21. Acer campestre L., Acer platanoides L., Alnus glutinosa* (L.) Gaertn., Carpinus betulus L., Cornus sanguinea L., Corylus avellana L., Crataegus monogyna Jacq., Fagus sylvatica L., Fraxinus excelsior L., Lonicera caerulea L., Lonicera xylosteum L., Quercus robur L., Ribes alpinum L., Tilia cordata Mill., Ulmus glabra Huds., Viburnum opulus L.
T22. Larix x eurolepis* Henry, Pterocarya fraxinifolia (Lam.) Spach
T23. Populus laurifolia Ledeb., Populus simonii Carrière, Populus x berolinensis (K.Koch) Dipp., Populus x petrowskyana (Regel) Schneid., Pterocarya insignis Rehder & E. H. Wilson, Pterocarya stenoptera C. DC., Pterocarya x rehderiana Schneid.
T24. Fagus sylvatica L., Larix x eurolepis* Henry
T25. Aesculus hippocastanum L., Larix x eurolepis* Henry
T26. Carpinus betulus L.
T27. Juglans cinerea x mandchurica, Larix x eurolepis* Henry
T28. Acer circinatum Pursh, Acer pensylvanicum L., Acer spicatum Lam., Aesculus parviflora Walter, Alnus glutinosa* (L.) Gaertn., Betula alleghaniensis (lutea) Britton, Betula lenta L., Betula nigra L., Carya ovata (Mill.) K. Koch, Carya tomentosa (Lam.) Nutt., Clethra alnifolia L., Cornus alternifolia L.f., Cornus florida L., Euonymus atropurpureus Jacq., Halesia monticola (Rehder) Sarg., Hamamelis virginiana L., Juglans cinerea L., Larix x eurolepis* Henry, Liriodendron tulipifera L., Magnolia acuminata (L.) L., Myrica pensylvanica Loisel, Nyssa sylvatica Marsh., Parthenocissus quinquefolia (L.) Planch, Prunus pensylvanica L. f., Prunus serotina Ehrh., Quercus macrocarpa Michx., Quercus rubra L., Rhododendron arborescens (Pursh) Torr., Rhododendron vaseyi A. Gray, Rhus typhina L., Rubus odoratus L., Tsuga canadensis (L.) Carr., Tsuga caroliniana Engelm., Tsuga heterophylla (Raf.) Sarg.
T29. Betula pendula Roth
T30. Sorbus mougeotii Soy.-Will. & Godr.
T31. Amelanchier spicata (Lam.) K. Koch, Cotinus coggygria Scop., Magnolia hybrids, Pinus nigra Arnold 'Fastigiata'
T32. Ostrya carpinifolia Scop.
T33. Acer ginnala Maxim., Amelanchier canadensis (L.) Medik., Amelanchier spicata (Lam.) K. Koch, Aronia melanocarpa (Michx.) Elliott, Aronia prunifolia (Marsh.) Rehder
Exochorda Lindl. ssp., Malus sargentii Rehder, Potentilla L. 'Goldfinger', Punus cerasifera Ehrh., Ribes alpinum L., Rosa canina L., Syringa vulgaris L., Viburnum lantana L.
T34. Corylus maxima Mill.
T35. Malus domestica Borkh.
T36. Mixture of trees remaining from the old plant nursery

Map of main part of Alnarp Landscape Laboratory showing forest interior types and species composition of the 68 forest stands and 5 forest edge types.

Groups guided and supervised in Alnarp landscape laboratory 2008-10

In total 101 group have participated in guided and supervised visits to Alnarp landscape laboratory during 2008-10. In total 3323 people participated in those activities. Staff from the theme group on Vegetation for peri-urban landscapes and urban green space, at the Department of Landscape Management, Design and Construction, SLU Alnarp has hosted all 101 groups.

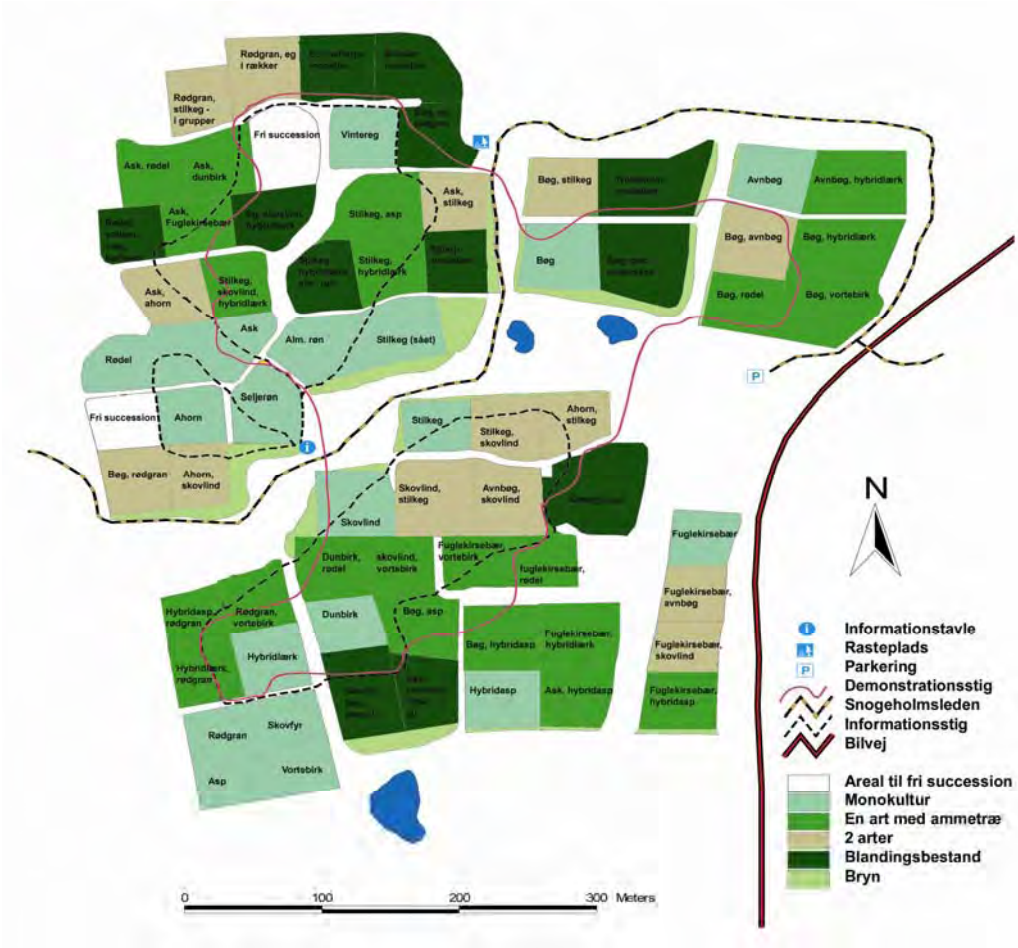
As shown in table 3, Peri-urban and urban green space is the main disciplinary focus for more than half of all groups. On the contrary, only 6,9 % of the visiting groups have had forestry as their main disciplinary focus.

With a total of 65 groups, students accounts for more than half of all guided activities in Alnarp landscape laboratory. Of these, 45 groups were students enrolled in SLU courses for Landscape architect students (LARK), landscape engineer students (LING), Garden design students (TRING), and forestry students (EUROFORESTER), while the remaining 20 groups came from other Swedish or international universities and schools.

External groups (other than SLU) accounts for just above half of the guided visits to Alnarp landscape laboratory. All of these groups have been guided free of charge regardless of them being student groups from other universities, practitioner groups, research colleagues or voluntary organisations.

	Student groups	**Research groups**	**Practice groups**	**Voluntary org.**	**Sum**	**Pct.**
2008	23	4	**5**	1	33	*32,7 %*
2009	16	2	**7**		25	*24,7 %*
2010	26	5	10	2	43	*42,6 %*
Sum	**65**	**11**	**22**	**3**	**101**	*100 %*
Nature conservation	8		1	1	10	*9,9 %*
Peri- & urban green space	45	7	14	1	67	*66,3 %*
Forestry	2	1	4		7	*6,9 %*
Horticulture& dendrology	4	1			5	*5 %*
Other	6	2	3	1	12	*11,9 %*
Sum	**65**	**11**	**22**	**3**	**101**	*100 %*
SLU	45	4			49	*48,5 %*
Sweden	11	3	14	3	31	*30,7 %*
Denmark	5	1	6		12	*11,9 %*
Norway		1	2		3	*3 %*
Other	4	2			6	*5,9 %*
Sum	**65**	**11**	**22**	**3**	**101**	*100 %*
Pct.	*64,4 %*	*10,9 %*	*21,8 %*	*3 %*	*100 %*	

Table 3. Groups guided in Alnarp landscape laboratory differentiating between year of activity, main disciplinary focus of the group, and nationality where SLU groups are separated from other Swedish groups.



Mp and Arial photo of Snogeholm landscape laboratory by Lars G. B. Andersson

Groups guided and supervised in Snogeholm landscape laboratory 2008-10

In total 47 guided group visits to Snogeholm landscape laboratory could be documented during 2008-10. In total 1448 people participated in those activities. Staff from Southern Swedish Forest Research, SLU Alnarp guided all activities except one, hosted by the theme group on Vegetation for peri-urban landscapes and urban green space, at the Department of Landscape Management, Design and Construction, SLU Alnarp.

As shown in table 4, nearly all groups have had forestry as their main disciplinary focus. Groups with other disciplinary main focuses are less than 10 % of the total number of guided groups. Students and groups of practitioners are both well represented, each with app. 45 % of all visits.

Surprisingly perhaps, SLU student and research groups account for less than one fifth of the guided activities, while other Swedish groups accounts for more than ¾. As for Alnarp, all external groups (other than SLU) have been guided free of charge regardless of them being student groups from other universities, practitioner groups, research colleagues or voluntary organisations.

	Student groups	**Research groups**	**Practice groups**	**Voluntary org.**	**Sum**	**Pct.**
2008	7		12		19	*40,4 %*
2009	7	1	5		13	*27,7 %*
2010	7	1	5	2	15	*31,9 %*
Sum	**21**	**2**	**22**	**2**	**47**	*100 %*
Nature conservation			1		1	*2,1 %*
Peri- & urban green space		1	2		3	*6,4 %*
Forestry	21	1	19	1	42	*89,4 %*
Horticulture & dendrology						
Other				1	1	*2,1 %*
Sum	**21**	**2**	**22**	**2**	**47**	*100 %*
SLU	5	2		1	8	*17 %*
Sweden	16		19	1	36	*76,6 %*
Denmark			2		2	*4,3 %*
Norway			1		1	*2,1 %*
Other						
Sum	**21**	**2**	**22**	**2**	**47**	*100 %*
Pct.	*44,7 %*	*4,3 %*	*46,8 %*	*4,3 %*	*100 %*	

Table 4. Groups guided in Snogeholm landscape laboratory differentiating between year of activity, main disciplinary focus of the group, and nationality where SLU groups are separated from other Swedish groups.

Facts about the woodlands at Sletten

- 30 ha of woodland: habitat, Seed-source, and Density-gradient-model
- Manifold of woodland structures, habitats and experiences
- 125.000 plants
- 85 different species of trees and shrubs
- 52 different species combinations and planting designs
- Approved by Forest Supervision Authorities
- Price pr. plant after two years of mechanical weeding: ~ 1,8 Euro
- EU-support: 1/3 of the planning and establishment costs
- Price similar to that of establishing a production plantation

Groups guided and supervised in Holstebro landscape laboratory 2008-10

As shown in table 5, 15 guided group visits to Holstebro landscape laboratory could be documented during 2008-10, with and allocated number of participant of 646 people. Carl Aage Sørensen, Chief Landscape Architect Emeritus, Municipality of Holstebro has guided 13 activities, one of which jointly with the theme group on Vegetation for peri-urban landscapes and urban green space, at the Department of Landscape Management, Design and Construction, SLU Alnarp. Stefan Darlan Boris from the School of Architecture in Aarhus, DK has guided two activities as part of courses for the architect students.

The markedly lower number of groups guided in Holstebro landscape laboratory is to a great extend to be explained by the hinder for educational uses caused by the markedly detachment from SLU as well as Danish universities. To our knowledge, only one group of SLU students and one other student group have visited the landscape laboratory during the last three years, while most of the practitioner groups and voluntary organisations have been local to the region.

	Student groups	**Research groups**	**Practice groups**	**Voluntary org**	**Sum**	**Pct.**
2008	1		2		3	20,0 %
2009	1		2	5	8	53,3 %
2010	2		1	1	4	26,7 %
Sum	**4**		**5**	**6**	**15**	100 %
Nature conservation						
Peri- & urban green space	3		4		7	46,7 %
Forestry						
Horticulture & dendrology			1	1	2	13,3 %
Other	1			5	6	40,0 %
Sum	**4**	**-**	**5**	**6**	**15**	100 %
SLU	1				1	6,7 %
Sweden						
Denmark	3		5	6	14	93,3 %
Norway						
Other						
Sum	**4**	**-**	**5**	**6**	**15**	100 %
Pct.	26,7 %		33,3 %	40,0 %	100 %	

Table 5. Groups guided in Holstebro landscape laboratory differentiating between year of activity, main disciplinary focus of the group, and nationality where SLU groups are separated from other Swedish groups.

Publications related to the initial scope of the landscape laboratories

Since their establishment the landscape laboratories have generated more than 100 publications where the initial scope of the landscape laboratories are described, discussed or studied (Table 6, the publications are listed in appendix 2). Proceedings generated from conference presentations and extension publications dominate. The predominance of publications focused on disseminating the landscape laboratory concept and findings to practitioners and conference participants reflects the joint efforts of SLU researchers in making the landscape laboratories known among practitioners and researchers.

More than half of the publications and presentation are in English (n = 55), four are in Norwegian, four in German and one in Spanish. Surprisingly perhaps publications in Danish (n = 23) exceed publications in Swedish (n = 20).

Type of publication	Nr
Scientific publications with review	10
Other scientific publications	10
Extension publications	27
Popular publications	14
Conference proceedings and posters	34
Master thesis	12
Total	**107**

Table 6. Type and number of publications related to the initial scope of the landscape laboratories.

Publications on applied dendrology related to the landscape laboratories

The landscape laboratories have a whole web of reference landscapes in Sweden, e.g. Oxhagen and Trolleholm in Skåne and Sjöarp in Blekinge, as well as reference landscapes around the world. The latter especially being the case for the experimental research on plant material for urban green space (applied dendrology). While not directly generated from the landscape laboratories, studies of these reference landscapes are important input to the theme group on Vegetation for peri-urban landscapes and urban green spaces and its experimental studies of concepts and test of new species, compositions and management approaches in the landscape laboratories, especially Tor Nitzelius Park, the China field, Magnolia skogen and the new plant selection field in Alnarp landscape laboratory (see appendix 3).

As for the publications generated from the initial scope of the landscape laboratories, the publications on applied dendrology related to the landscape laboratories and their reference landscapes have an applied nature, with many popular publications and conference presentations (Table 7). All publications summarised in table 7 are from landscape laboratory reference landscapes.

Few colleagues have provided information about publications on applied dendrology related to the landscape laboratories and their reference landscapes. The figures provided in figure 7 should therefore be regarded as a preliminary list, to be further developed (the publications are listed in appendix 3).

Type of publication	Nr
Scientific publications with review	2
Other scientific publications	3
Extension publications	9
Popular publications	7
Conference proceedings and posters	8
Total	**29**

Table 6. Type and number of publications on applied dendrology related to the landscape laboratories and their reference landscapes.

R&D projects in the landscape laboratories during 2008-10

A successful Landscape laboratory is never finished. Rather landscape laboratories are to be perceived as long-term program that becomes increasingly valuable for each year. In order to keep the 'nerve', projects and activities are meant to come and go. This said, trees takes a century to mature and accordingly much of the research and development in the landscape laboratories is long-term studies and time-series. The long-term scope of research related to the landscape laboratories should be kept in mind in the following where only research and development projects initiated during 2008-10 are described. For a more comprehensive overview of research and experiences based on the last twenty-five years the reader is referred to Gustavsson (2010).

Type of project	Nr.	Project partners	Active SLU researchers	L-Lab
International funding	1	Nordic Council of Ministries Nordic and Baltic Life Science Universities	DLMDC	A, S, H
FORMAS projects	2	FORMAS DLMDC	Gustav Richnau, Björn Wiström, Roland Gustavsson, Anders Busse Nielsen	A, S, H
Movium Partnership projects	4	DLMDC Helsingborg municipality, Växjö municipality, Värnamo municipality, Swedish Ass. Plant Nurseries	Roland Gustavsson, Kenneth Lorentzen, Mårten Hammer, Björn Wiström, Magnus Svensson, Henrik Sjöman, Erik Wallstedt	A
PhD projects	4	FORMAS, APULA DLMDC The Swedish Transport Adm. Aarhus School of Architecture	Gustav Richnau Henrik Sjöman Björn Wiström Stefan Darlan Boris	A A A, S A, H
DLMDC funded projects	2	DLMDC Holstebro municipality	Hanna Fors, Anders Busse Nielsen, Roland Gustavsson, Petra Thorpert, Björn Wiström, Gustav Richnau	A, H
Master thesis	8	DLMDC Southern Swedish Forest Research Copenhagen University University of Nairobi	Petra Thorpert Richard Lyhmer Björn Wiström M. Liziniewicz D. Loginov I. Witowska Julie Foged Andersen Jacquiline Wamuyu Bubi	A A A S S S A, H A

Table 7. Research and development projects initiated during 2008-10 in the landscape laboratories with information about project type, project partners and active researchers/master students.
DLMDC: abbreviation of the Department for Landscape Management, Design and Construction
A: Alnarp Landscape laboratory, H: Holstebro Landscape laboratory, S: Snogeholm Landscape laboratory

As shown in table 7, 13 research and development project and 8 master theses with a research setup have been initiated during the last three years. Only one project Nordic

Baltic Centre of Advanced Forestry Serving Urbanised Society, CARe-FOR-US, has international funding, while the reaming have Swedish (n=11) or Danish funding (n=1). Also project partners are mainly Swedish municipalities and organisation, and the active researchers all come from SLU, PhD student Stefan Darlan Boris from Aarhus School of Architecture, DK being the only exception. In comparison the eight master theses studying the landscape laboratories during 2008-10 have a broad international scope, with half of the students being exchange students, two of which have been enrolled at universities other than SLU.

Taking stoke and looking ahead

As evident from the vast number of guided and supervised activities in the landscape laboratories during 2008-10 and publications reaching students, practitioners and researchers from different disciplines, the landscape laboratories have to day become one of the main outlets for SLU on research, demonstration and teaching related to forest and vegetation in peri-urban landscapes and urban green space.

Alnarp landscape laboratory has hosted nearly 2/3 of all activities while the landscape laboratory in Holstebro is only used to a limited extend and the laboratory in Snogeholm being in between. These numbers illustrate the value of having a landscape laboratory directly adjacent to the Alnarp campus, and the hinder for use in Snogeholm and especially Holstebro caused by the detachment from the everyday landscape of students, teachers and researchers at SLU an other universities. Having a landscape laboratory - not to speak of the healing garden and horticultural and garden laboratory - directly at the doorstep of the campus provides possibilities for outdoor research, teaching and demonstration that many other universities lack and admire. Thus, there is scope for more active utilization of these extensive and innovative trial areas in profiling and branding the Faculty for students, researchers and professionals.

"World class"

The heading is words taken from the international Forestry Student Association' summary of their visit to Alnarp Landscape laboratory, published as an article published in Skov&Land (Eeg 2009). Feedback from other groups visiting the three landscape laboratories is in line with this statement, regardless of the groups' main disciplinary focus. This indicates that, the three landscape laboratories have succeeded in becoming appealing arenas for multiple disciplines. Nonetheless, there is scope for further development of the multidisciplinarity in each landscape laboratory. Thus, visits to Alnarp landscape laboratory is dominated by groups with a main disciplinary focus on peri- and urban green spaces. In comparison Snogeholm landscape laboratory has primarily attracted forestry organisations and student groups, while the guided groups in Holstebro a more diverse in terms of disciplinary focus.

Groups of students and practitioners are frequent visitors to the landscape laboratories, while research groups are markedly fewer. Well aware that the potential number of research groups is lower than that of student and practitioner groups, the low rate of visits from research groups suggest a need to improve the scientific profile of the landscape laboratories, e.g. by initiating more cross-university and cross-border research project in the laboratories. The two landscape laboratories that have recently been established in Germany (Lohrberg 2009 and 2010), and the landscape laboratory currently being planned in Stavanger Norway can be supportive in such efforts.

To day Alnarp landscape laboratory is an important arena for SLU Alnarp's research, teaching and demonstration of new, especially exotic plant material for urban green space. This line of research was not formulated in the initial scope of the landscape laboratory concept (Folkesson 1996). The integration of this line of research into the landscape laboratory in Alnarp illustrates the robustness of the landscape laboratory as trial area and the open mind set to include new disciplines and adapt to different research approaches. Yet it also illustrates the need of re-formulating the concept. Based on the first

twenty-five years of experimental research Gustavsson's (2010) has taken the first step in reformulating and developing landscape laboratories as a Scandinavian concept.

Fee and funding

Guiding of groups in the landscape laboratories during 2008-10 has had an allocated duration of app. 500 hours. While the 56 SLU groups that have been guided or supervised in the landscape laboratories as part of courses or other financed activities, guiding of the 105 external groups have been free of charge, regardless of them being students, researcher, practitioners or voluntary organisations. Thus, approximately 350 guide-hours (presuming there is only one guide pr. Group) have been unfinanced during 2008-10. However with the quantity of external guiding in mind introduction of a fee for all or parts of the external groups might need to be considered in the future as a way to cover the labour cost for SLU staff acting as guides.

As evident from the broad disciplinary span of the groups participating in guided tours during 2008-10, the Landscape laboratories have succeeded to become arenas for many disciplines and related educations at SLU and other universities. The interdisciplinary approach is unique and might be strengthened further if the economic responsibility for the basic management of the landscape laboratory at the Alnarp Campus resort under the Faculty of Landscape Planning, Horticulture and Agriculture rather than under the Department of Landscape Management, Design and Construction. Being a shared resource also administratively and economically, researcher, teachers and students from other departments might develop deeper sense of 'ownership' and 'right of use', all in all enhancing the use and utility of the landscape laboratories, as well as their dissemination in research, teaching and dissemination.

Documentation of activities

In preparing this report initiatives were taken to bring together information about landscape laboratory activities and publications from individual teachers and researchers to form a joint list of activities and publications. In this work we were taken by surprise of the quantity of activities and publications as well as the difficulties in documenting and compiling them. With this lesson in mind, the theme group on Vegetation for Peri-urban landscapes and urban green space has developed a common platform for documentation of landscape laboratory related activities and publications based on the methods and tools described in the methodology section of this report.

As a supplement to the type of documentation provided in this report, some of the staff in the theme group on Vegetation for Peri-urban landscapes and urban green space has requested short written feedback from external groups since 2008. This feedback has proven to be valuable input to the research group it its effort to identify research needs and relevance of the landscape laboratories to different groups and disciplines. Thus the new platform for documentation of landscape laboratory activities will also include feedback from the visiting groups (external only).

Appendix 1

Växtmaterialforskning inkluderat i Landskapslaboratoriet

Av Henrik Sjöman

Landskapslaboratoriet innefattar en lång tradition i kunskapsutvecklingen beträffande växtmaterial och deras användning. Tor Nitzelius Park, som är en av de äldre delarna av Alnarps landskapslaboratorium, har varit en viktig arena för detta ändamål och innefattar en unik kombination av vegetationsbyggnad samt demonstration av alternativa användningsområden för träd, buskar och örter. I dessa försök testas dels alternativa användningsområden för ett välkänt växtmaterial, för att på så vis påvisa en alternativ användning av ett redan välbekant material. Dels testas och utvärderas nya arter och släkten som tidigare aldrig eller haft en mycket begränsad användning i offentliga grönmiljöer. Sammantaget utgör dessa försök viktiga referensplanteringar, viktiga i såväl undervisningen som i forskningen. Denna inriktning med materialforskning och vegetationsbyggnad har sedan vidareutvecklats inom ramen för landskapslaboratoriet genom bl.a. nedan beskrivna aktiviteter. Dessa nya(are) aktiviteter där materialforskning och vegetationsbyggnadsforskning samverkar ger tillsammans med de äldre försöken i exempelvis Tor Nitzelius Park viktiga och omfattande kunskaper och erfarenheter såväl vetenskaplig som pedagogiska.

Ett bakomliggande syfte till den växtmaterialforskning som bedrivs i landskaps laboratoriet är att behovet om kunskap och erfarenheter om alternativa växter och växtanvändning är omfattande, vilket den mängden av besök i anläggningen avslöjar.

Kinaskogarna

Under ett forskningsprojekt med inriktning emot kunskapsutveckling av Central kinesiska träd och buskar för Skandinaviska förhållanden har flera demonstrationsskogar anlagts. Dessa skogssystem är anlagda efter de principer att besökare i dessa byggda skogar kan gå i liknande skogssystem med liknande artsammansättningar som de skogssystem som träd- och buskarterna härstammar ifrån i Kina. Förutom denna pedagogiska design pågår en kontinuerlig utvärdering av dessa insamlade trädarter, flera av dem har aldrig tidigare varit i odling utanför Kina, vilket gör dessa skogssystem väldigt unika med ett stort vetenskapligt värde där dessa utvärderingar av arterna kommer resultera i flera publikationer.

Magnoliaskogen

Denna del av Alnarp landskapslaboratorium är ett resultat från ett selektionsarbete inom Svenska Magnoliagruppen där målsättningen varit att genom korsning selektera fram magnolior som är utvalda specifikt för ett svenskt klimat, vilket aldrig tidigare genomförts. Selektionsarbetet resulterade i stora mängder plantor som behövdes utplanteras för vidare utvärdering. Tillsammans med Odlingsenheten på Alnarp anlades en magnoliaskog väster om alnarpsparken. Denna magnoliaskog anlades inte som ett traditionellt plantskolefält utan följde den tradition som skapats och utvecklats i landskapslaboratoriets anda med beståndsplanteringar där designade skogsmiljöer med

stora pedagogiska värden varit målsättningen. Samtidigt som dessa korsningar av magnolior utvecklas där en kontinuerlig utvärdering genomförs, kommer en mycket unik miljö att skapas – en magnoliaskog, vilket är den enda i världen.

De pedagogiska värdena detta bestånd har är dels referensplantering hur man genom systeminriktad design skapar karaktärsfulla och unika grönmiljöer. Denna inriktning innefattar såväl etableringsproblematik som utvecklings- och skötselaspekter av s.k. naturlika planteringar. Dels fungerar detta bestånd som en viktig referensplantering där man använder sig av en otraditionell användning av ett unikt växtmaterial. De vetenskapliga ansatserna detta projekt har är dels den struktur- och beståndsuppbyggande aspekterna som det innebär med systeminriktad växtanvändning, vilket är en viktig referens till de andra bestånden som finns i ex. Tor Nitzelius Park och Västerskog. Dels är det korsningsarbete som genomförts och som utvärderas kontinuerligt av stort vetenskapligt värde.

Nya träd och buskar för framtiden

Utifrån ett initiativ från Sveriges största trädplantskolor har ett nystartat selektionsarbete utvecklats på Alnarp(start våren 2010), där målsättningen är att ta fram nya buskar och träd för offentlig miljö. Detta arbete har valts att ligga under - landskapslaboratoriet, då dessa materialstudier ligger som grund för de vegetations-byggnadsförsök som idag finns men som också planeras i landskapslaboratoriet. I dagsläget kommer dessa plantskolefält omfatta ca 4 ha, där flera arter av lovande träd och buskar skall utplanteras för fortsatt utvärdering. Ansatserna i detta projekt är att dessa planteringar skall till en början utvärderas i 15 år, och därefter beslutas det om en eventuell fortsättning. Detta långsiktiga arbete överensstämmer med den tradition som landskapslaboratoriet har, där forskning av vedartat material kräver tid för att kunna presentera säkra resultat och rekommendationer. En annan mycket viktig aspekt, som detta projekt har gemensamt med tidigare arbeten i landskapslaboratoriet, är användningen av referenslandskap. I selektionsarbetet för framtida träd och buskar sker den initierande forskningen i naturliga habitat där kunskap om olika arters potential för en framtida användning i urbana miljöer i Skandinavien kan identifieras – se publikationer. Dessa fältstudier ligger till grund för det arbete som sedan genomförs på försöksfälten då selektionsarbetet kan fokusera på arter med stor potential istället för att testa utan denna förhandskunskap.

De pedagogiska värdena med dessa försök är att påvisa olika arters variation beroende på deras genotypiska bakgrund vilket dessa försöksfält kommer att visa. De vetenskapliga aspekterna i detta arbete är omfattande då dels de fältrelaterade studierna ger oumbärlig information för ett fortsatt selektionsarbete. Dels kommer den kontinuerliga utvärderingen av växtmaterialet på fälten ge viktig och intressant data för vidare publikationer.

Appendix 1:
Publications generated from the landscape laboratories

Scientific papers and reports with review

1. Boris, S.D. 2010. "Urban skov og landskabsinfrastruktur", Ph.d.-afhandling fra Institut for By og Landskab, Arkitektskolen Aarhus.
2. Gustavsson, R. 2004. Exploring Woodland Design: Designing with complexity and Dynamics - woodland types, their dynamic architecture and establishment. Dunnett, N. & Hitchmough, J. (eds.). The Dynamic Landscape; Design, Ecology and Management of Naturalistic Urban Planting. Spon Press, London. 184-215.
3. Gustavsson, R., Hermy, M., Konijnendijk, C. and Steidle-Schwahn, A. 2005. Management of Urban Woodlands and Parks - searching for Creative and Sustainable Concepts. In: In Konijnendijk, C.C., Nilsson, K., Randrup, T.B., Schipperijn, J. (Eds), Urban Woodlands and Trees. Springer: 369-397.
4. Gustavsson, R. 2009. The Touch of the world: Dynamic vegetation studies and embodied knowledge. 42-55, JoLA, Journal of Landscape Architecture, Spring 09.
5. Jönsson, A. and Gustavsson, R. 2002. Management styles and knowledge cultures. Past, present, and future, related to multiple-use and urban woodlands. Urban Forestry & Urban Greening. 1: 39-47.
6. Haaland, C. and Gyllin, M., 2010 Butterflies and bumblebees in greenways and sown wildflower strips in southern Sweden. Journal of Insect Conservation 14: 125-132.
7. Konijnendijk, C.C., 2008. The Forest of Learning. In Konijnendijk, C.C. The Forest and the City - The Cultural Landscape of Urban Woodland. Springer: 143-160.
8. Nielsen, A.B. and Nielsen, J.B., 2005. The use of profile diagrams for mixed stands in urban woodlands – the management perspective. Urban Forestry and Urban Greening 3: 163-175.
9. Nielsen, A.B. and Jensen, R.B., 2007. Some visual aspects of planting design and silviculture across contemporary forest management paradigms – perspectives for urban afforestation. Urban Forestry & Urban Greening 6: 143-158.
10. Tyrväinen, L., Gustavsson, R., Konijnendijk, C., Ode, Å., 2006. Visualization and landscape laboratories in planning, design and management of urban woodlands. Forest Policy and Economics 8: 811-823.

Other scientific publications

1. Axelsson Lindgren, C., Berggren-Bärring, A.-M., Chiverton, Ph., Ekbom, B., Göransson, G., Hammer, M. 2002. Ekologisk odling som skapare av nya mångfunktionella landskapsstrukturer. Slutrapport SJFR.
2. Boris, S.D. 2010. "Gardens of Situations: Learning from the Danish Modern Landscape", artikel in: Vigano, Paola (Ed.), Quaderno 5: On Landscape Urbanism, Venedig.
3. Boris, S.D. 2009. "Landscape Infrastructures: On Boundary Objects and Passage Points", artikel i: Kiib, Hans (Ed.), Architecture and Stages of the Experience City, Aalborg Universitet.
4. Boris, S.D. 2009. "Landscape Infrastructures: On Boundary Objects and Passage Points", arbejdspapir #7, Institut for By og Landskab, Arkitektskolen Aarhus, 2009.

5. Boris, S.D. 2009. "Gardens of Situations: Learning from the Danish Modern Landscape", arbejdspapir #6, Institut for By og Landskab, Arkitektskolen Aarhus, 2009.
6. Gundersen, V.S., 2004 Estetikk i skog og landskap: Visjoner om et tverrvitenskap i landskapslaboratorier. Skogforsk, Aktuelt fra skogforskningen 7/04: 1-23.
7. Gustavsson, R. 2010. Landscape laboratories as a Scandinavian concept – Concepts and experiences based on twenty-five years of experimental work. In: Konijnendijk, C.C. and Jóhannesdóttir, H. (Eds.). Forestry serving urban societies in the North Atlantic Region. TemaNord 2010:577, Nordic Council of Ministries, Copenhagen: 131-163.
8. Nielsen, A.B., Hedblom, M., Söderström, B. 2010. From large woodland landscapes to small wooded lots – urban woodlands in Denmark and Sweden and management lines to pursue. In: Konijnendijk, C.C. and Jóhannesdóttir, H. (Eds.). Forestry serving urban societies in the North Atlantic Region. TemaNord 2010:577, Nordic Council of Ministries, Copenhagen: 93-110.
9. Richnau, G., 2010. Multilayered canopy structures in young urban woodlands – aspects on recreation and biodiversity. GeoScape 1 (5): 151–156.
10. Wiström, B., Pålsson, D., 2010. Structural development and visual qualities in young forest stands. TemaNord: Forestry serving urban societies. In: Konijnendijk, C.C. and Jóhannesdóttir, H. (Eds.). Forestry serving urban societies in the North Atlantic Region. TemaNord 2010:577, Nordic Council of Ministries, Copenhagen: 111-130.

Extension papers

1. Andersen, J.F., Nielsen, A.B., 2010. Skovbundsflora i bynær skov. Skov & Landskab, Videnblade Park og Landskab, 8.0-14.
2. Axelsson Lindgren, C. 2001. Upplevelse av mellanfältsytor vid omställning till ekologisk odling. Rapport 02:1, Institutionen för landskapsplanering, SLU-Alnarp.
3. Burkhardt, I., et. al. 2010. Urbane Wälder. Natureshutz und Biologische Vielfalt, 63. Bonn – Bad Godesberg. 214 pages.
4. Burkhardt, I. Et. Al. 2010. Urbaner Wald - ein neuer Freiflächentypen. Forschungsvorhaben und Modellprojekt in Leipzig. Garten + Landscaft. Zeitschrift fur Landschaftsarchitektur. Mai 2010. 62-66.
5. Folkesson, A. 1996. Att forma ett rikare landskap. Utformningsprinciper för Alnarps landskapslaboratorium. Stad & Land nr 144:1996. MOVIUM, Alnarp.
6. Fry, G. and Gustavsson, R. (1996) Testing landscape design principles; The landscape laboratory. pp. 153-164 in R. H. G. Jongman (Ed) Ecological and landscape consequences of land use change in Europe. European Centre for Nature Conservation, Tilburg.
7. Gunnarsson, A. & Gustavsson, R. 1989. Etablering av lövträdsplantor. Stad & Land, rapport Nr 71. MOVIUM, SLU. Alnarp.
8. Gustavsson, R., Gemmel, P. och Paulsson, A. 1996. Anläggande av miljöapassade produktionsskogar inom Alnarps landskapslaboratorium och Snogeholm. Slutrapport, Alnarp 1996-10-21. Institutionen för landskapsplanering och Enheten för sydsvensk skogsforskning, SLU-Alnarp samt Skogssällskapet.
9. Gustavsson, R. & Gemmel, P. 1997. Miljöanpassade produktionsskogar blir verklighet i Alnarp och på Snogeholm. Skog & Forskning, 1: 58-66.
10. Gustavsson, R. 2000. Teenage Woodlands - A Difficult Age? In: SER 2000. Conference Report. Society for Ecological Restoration. International Conference, Liverpool, 4-7 September.

11. Gustavsson, R. 1995. A structural approach to woodland plantations. In: Griffiths, G.H. (editor). Proceedings for the IALE (UK) conference in Reading 1995. IALE (UK), Garstang.
12. Gustavsson, R.2002. Afforestation in and near Urban Areas. Dynamic Design Principles and Long-Term Management Aspects. Landscape Laboratories as Reference and Demonstration Areas for Urban and Urban-Rural Afforestation. In: COST Action E12 – Proceedings No 1. EUR 19861. Directorate-General for research. Brussels. 286-315.
13. Gustavsson, R., Tvedt. T., Sørensen,C.AA. 2001. Bynær skovrejsning i naturens eget værksted.
14. Gustavsson, R. & Ingelög, T. 1994. Det nya landskapet - kunskaper och idéer om naturvård, skogsodling och planering i kulturbygd. (The New Landscape - facts and concepts about nature conservation, silviculture, and planning in cultural landscapes). Skogsstyrelsen, Jönköping.
15. Grønt Miljø 7/2001: 56-59
16. Lagerström, T., Eriksson, G. 1996. Improvement of trees and Shrubs by Phenotypic Selection for Landscaping in Urban and Rural Areas – A Swedish Example. For. & Landsc. Res.
17. Maegaard-Nielsen, C. 2002 Sletten – en bydel på 160 ha. Byplan 5/6: 183-188
18. Nielsen, A.B., Nielsen, J.B., Gustavsson, R., 2005a. Demonstration af nye skovtyper – landskabslaboratorier i Skåne. Videnblad 3.1-49, Skov og landskab.
19. Nielsen, A.B., Nielsen, J.B., Gustavsson, R., 2005b. Nye artsblandinger til rekreationsskove og parkplantninger – Tor Nitzelius park. Videnblad 3.1-50, Skov og landskab.
20. Nielsen, A.B., Nielsen, J.B., Gustavsson, R., 2005c. Skovrejsning med fokus på kreativ etableringspleje – Alnarps Västerskog. Videnblad 3.1-51, Skov og landskab.
21. Nielsen, A.B., Nielsen, J.B., Gustavsson, R., 2005d. Skovrejsning med fokus på flersidighed – Snogeholm landskabslaboratorium. Videnblad 3.1-52, Skov og landskab.
22. Nielsen, A.B., Nielsen, J.B., Gustavsson, R., Sørensen, C.AA., 2005e. Nye modeller for bynære blandingsskove – Sletten landskabslaboratorium. Videnblad 3.1-53, Skov og landskab.
23. Rizell, M. & Gustavsson, R. 1998. Att anlägga skogsbryn. Modeller och referenser för anläggning och rekonstruktion. Forskningsrapport, Stad & Land nr 160. MOVIUM, SLU. Alnarp.
24. Sørensen, C.AA. 2002. Nye skovlandsbyer i Holstebro. Vækst 2/2002 18-21
25. Sørensen, C.AA og Tvedt, T., 2004 Byudvikling og skov tæt integreret. Skov & Landskab, Park og landskabsserien. Videnblad 3.1-45.
26. Sørensen, C.AA. og Tvedt, T., 2004. Erfaringer med bynære skovplantninger. Skov & Landskab, Park og landskabsserien. Videnblad 3. 1-46
27. Wiström, B., Richnau, G., Nielsen, A.B., Gustavsson, R., 2009a. Strukturrika planteringar – en möjlighet för stadens grönska. Görna Fakta 5. Movium, SLU.

Popular publications

1. Brysting, s. 2002. Laboratorium uden reagensglas og kolber. Skov & Land.
2. Eeg, M., 2009. Landskabslaborarioriet i Alnarp er et vellykket eksempel på, hvordan byær skov kan gøres indbydende for publikum allerede få år efter etablering. Med DSK på oplevelse. Skov & Land 9: 4-5.

3. Jakobsen, K.,Holstebros enestående boligkvarter. Sletten er et landskabslaboratorium, der følges nøje af Sveriges Lantbruksuniversitet i Alnarp. Holstebro Dagblad 26.04.2010
4. Landscape Design, Japan. No. 551, 2007. The On line Resource for Landscaping & Movement. UFUG. 110-113.
5. Lohrberg, F., and Humbolg, C., 2009. Urbane Wladnutzung – das Waldlabor Köln. Garten + Landschaft 7/2009: 1012.
6. Lohrberg, F., and Noll, H-P., 2010. Biomasse zum Anfassen. Garten + Landschaft 5/2010: 12-16.
7. Nielsen, A.B., Kristoffersen, P., Dam, T., 2007b. Plantestrategier i spændet mellem teknologi og gartnerisk tradition. Landskab 88 (7): 170-172.
8. Paisajismo, Revista de Arquitectura del paisaje, espacios exteriores urbanos yáreas verdes, 26, 2008. De tú a tú con Roland Gustavsson. 46-52. (Spanish magazine)
9. Rindom, Pia, 2005. Samarbejdet om Sletten, Danmarkshistoriens første landskabslaboratorium. Skov & Land 1/ 2005 10-13
10. Svensson, J., Mellqvist, H., Sjöman, H. & Gustavsson, R. 2005. Alnarps landskapslaboratorium. Besök ett inspirerande parkutvecklingsprojekt!
11. Sørensen, Carl Aage, 2009. Nye landsbyer i skoven på Sletten. By & Land 85/2009.
12. Thinggaard, M., Skov & Land 5/2007 10-11
13. Wade, E., Folkesson, A., Gustavsson, R. 1996. Alnarps landskapslaboratorium. Institutionen för landskapsplanering, SLU-Alnarp.
14. Wiström, B., Richnau, G., Nielsen, A.B., Gustavsson, R., Holgersen, S., 2009b. Strukturige bevoksninger. Grønt Miljø 9: 4-10.

Conference presentations and posters

1. Gustavsson, R. 2010. Föreläsning på seminarium om landskapslaboratoriet för det regionala museet i Stavanger, Norge. 16-17 juni.
2. Gustavsson, R., Folkesson, A., Bjerkén, J. & Hammer, M. 1993. Alnarp Landscape Laboratory; enriching the landscape in agricultural and urban environments. Poster at IALE:s world Conference in landscape ecology in Angers, France.
3. Gustavsson, R. 1999. 'New concepts for urban woodlands based on pilote studies in Alnarp and Snogeholm landscape laboratories' was presented at the 'Öresunds conference', Köpenhamn.
4. Gustavsson, R. 1999. 'Dynamic Management Experiences' at the international research symposium 'Urban greening and landscape architecture',Copenhagen.
5. Gustavsson, R. And Gemmel, P. 1999. At the IUFRO Working Party in Florence Italy, August 1999, the paper "Forest Establishment in Urban Regions, plantations for education, demonstration and inspiration"
6. Gustavsson, R. 2000. Invited as a speaker at the world conference of 'Landscape Restoration´, Liverpool, 5th -8th of September. Teenage Woodlands - A Difficult Age? In: SER 2000. Conference Report. Society for Ecological Restoration. International Conference, Liverpool, 4-7 September.
7. Gustavsson, R. 2000. Invited to The Agricultural, Forestry and High technical University in Yangling, the South-west of China to give lectures, seminars and prepare a research cooperation program.
8. Gustavsson, R. 2000. Key note speaker at the COST-Action E12 'Urban Forests and Trees' conference in Reykjavik, Iceland, 11th-13th of October.

9. Gustavsson, R. 2000. Speaker at the Danish seminar. Afforestation Design Principles. FSL og Dansk Frökildeudvalget. Odense, 6th of November.
10. Gustavsson, R. 2002. Afforestation in and near Urban Areas. Dynamic Design Principles and Long-Term Management Aspects. Landscape Laboratories as Reference and Demonstration Areas for Urban and Urban-Rural Afforestation. Rejkjavik, Iceland. International COST-Action conference.
11. Gustavsson, R. 2002. Key note speaker at the European Forum for Urban Forestry. Landscape laboratories and reference landscapes as concepts. Conference in Trondheim May 2002.
12. Gustavsson, R. 2004. Exploring woodland design beyond the habitat stereotype. Paper at the international conference Nature enhanced in Sheffield, England, 21-23 of June.
13. Gustavsson, R. 2004. Utanför det konventionella - Europeiska utblickar om parkförvaltning. Speaker at the Swedish Park conference. 24 augusti.
14. Gustavsson, R. 2004. Teacher at the international course in Stockholm September 29th-October 1st in Urban Woodland Planning and Management. Life-environment project Urban Woods for people and the European Urban Forestry Research and Information centre EUFORIC.
15. Gustavsson, R. 2004. Afforestation concepts. Alnarp landscape laboratory. Speaker and organizer of excursion at the Interreg project Afforestation on abandoned farmland. Smygehus, 5-8 December.
16. Gustavsson, R. 2005. The New Landscape; ideas for improvements of the agricultural landscape by introducing new elements. Speaker at the International seminar Countryside development and multifunctionality, KVL, Copenhagen. 1 of March.
17. Gustavsson, R. 2005. Avoiding mass produced landscape management concepts: contextualizing and its consequences for education and research. Presentation at the European IALE conference 29 March- 2 April. Faro, Portugal.
18. Gustavsson, R. 2005. Beyond mainstream management concepts in a European context. Conference in urban forestry, Prague, Tjeckien. 3-7 October.
19. Gustavsson, R. 2006. Articulating design for landscape and woodland elements. Presentation in a Seminar for Italian landscape architect students. Florence, Italy.
20. Gustavsson, R. 2008. The thin and thick sense of aesthetics. Challenges for a landscape architecture in an increased urban society; Integrating design aspects, aesthetics and biodiversity into the early construction as well as the long time management. Keynote speaker at an international conference about management and landscape architecture. University of Porto. Porto, Portugal.
21. Gustavsson, R. 2008. The use of landscape elements to solve pollution problems related to intense production; Researching about prototypes, how to construct and integrate through a place-directed, communicative design. Key note speaker, at the international conference in horticulture. ISHS 2008. Symposium Toward Ecologically Sound Fertilization Strategies for Field Vegetable Production. Malmö.
22. Gustavsson, R. 2008. Demonstration of Alnarp landscape laboratory, The ECLAS conference, Alnarp 10-13 September.
23. Gustavsson, R. 2008. Planting Design, Dynamics and Complexity. Open lecture, festsalen, Ås, Norge 20 November.
24. Gustavsson, R. 2009. The landscape laboratory concept. Keynote-speaker at the European Urban Forestry Conference in Iceland, 16-20 September.

25. Gustavsson, R. 2010. June. Stavanger, Norway. Front person in a seminar, starting the first Norwegian landscape laboratory.
26. Gustavsson, R. 2010. Guest in ELASA:s yearly two-week seminar as teacher and organizer of workshop about "Mapping". Theme "Pimp a Woodland". European landscape architect student association. September, Latvia.
27. Gustavsson, R. 2010. A series of open lectures about Woodland architecture, structure and dynamics at Helsinki Architectural school, section for landscape architecture. Project expert at Helsinki. Development and maintenance plan for the area of The Otaniemi Chapel, as a world heritage (The XX International Carlo Scarpa Prize for Gardens 2009), and the university campus area. 13 September – 20 October.
28. Nielsen, A.B., and Jensen, R.B., 2007. Some visual aspects of planting design and silviculture across contemporary forest management paradigms - perspectives for urban afforestation. Proceedings from the 10th European Forum on Urban Forestry, 16-19. May, Gelsenkirschen, Germany. http://www.industriewald.nrw.de/industriewaldruhr/content/en/efuf2007/abstracts/efuf2007-artikel_anders-busse-nielsen.html
29. Nielsen, A.B., 2007. Design aspects of urban afforestation – the case of Sletten landscape laboratory, Holstebro, DK. Key note presentation at the "Union of European Forester European seminar on Urban Forestry, August 29 – September 1., 2007. Herning, Denmark.
30. Nielsen, A.B., 2007. Sletten landscape laboratory – collaboration between citizens, local authorities and researchers. Presentation given at seminar on urban woodlands, Reykjavik, Iceland
31. Richnau, G., Wiström, B., Nielsen, A.B., 2009. Developing multilayered canopy structures in young nature-like woodlands. Aspects of species mixture and initial management. Abstract book from the 12th European Forum on Urban Forestry, 26-30 May, 2009, Arnhem, The Netherlands: 26-27.
32. Richnau, G., 2010. Kreativ utveckling av unga urbana skogsplanteringar. Presented at the open seminar on Tätortsnära natur – skötsel, biologisk mångfald, rekreation och övervakning, March 16, 2010, Institutionen för växt och miljövetenskaper, Göteborgs Universitet.
33. Wiström, B., Pålsson, D., 2009. Structural development in young stands. Presentation given at the International Conference "Forestry serving urban societies in the North Atlantic", Reykjavik, Iceland, September 16th - 20th, 2009
34. Thorpert, P., 2009. Urban vegetation and perceived colour. Presentation given at the 2nd International conference on Landscape and Urban Horticulture, Bologna, Italy, June 9th-13th, 2009

Master thesis

1. Thorpert, P. (ongoing). Färgupplevelse i skogsmiljö. En undersökning av individens upplevelse av färg i skogsbestånd utifrån avstånd, årstid och art. Examensarbete vid Landskapsarkitektprogrammet, SLU Alnarp.
2. Bubi, Jacquiline Wamuyu 2010. Created grassland diversity after 12 years of mowing in Southern Sweden. AM.Sc. draft thesis submitted to the School of Biological Sciences, Univ. of Nairobiin Biology of Conservation.
3. Andersen, J.F., 2010. Blomstrende skov (Woodland in bloom). Master thesis at the landscape architecture program at LIFE, Copenhagen University.

4. Liziniewicz, M., 2009. The development of beech in monoculture and mixtures. Master thesis no 132. Southern Swedish forest research centre, SLU, Alnarp.
5. Loginov, D., (ongoing). Oak in mixture and in monoculture. Overview of various planting methods and differences between them. Master thesis at Southern Swedish forest research centre, SLU, Alnarp.
6. Lyhmer, R., 2009. Introduktion av buskar i ungskog. Examensarbete vid landskapsingeniörprogrammet, SLU Alnarp.
7. Jensen, R.B., 2006. Future perspectives on urban Afforestation in relation to planting design – learning from paradigmatic cases. Degree work on the international master in Urban Forestry & Urban Greening
8. Hamm, A. 2006., A landscape laboratory in Germany – reaching out for new landscape concepts. Degree work on the international master in Urban Forestry & Urban Greening.
9. Ståhl, Johan (2006) *Skogen i parken*. Dept. of Landscape Planning, SLU. Examensarbeten inom landskapsingenjörsprogrammet vol. 2006:26.
10. Widman, Anna (2007) *Unga Bestånd - en tillgång i park- och landskap*. Dept. of Landscape Architecture, SLU. Examensarbeten inom Landskapsarkitektprogrammet vol. 2007:28.
11. Wiström, B., 2009. Skiktning och strukturell utveckling i unga naturlika planteringar. Examensarbete vid Landskapsarkitektprogrammet, SLU Alnarp.
12. Witowska, I., 2008. Spruce quality in mixed stands. Master thesis no 104. Southern Swedish forest research centre, SLU, Alnarp.

Appendix 3:

Scientific papers and reports with review:

1. Sjöman, H., Nielsen, A.B., 2010. Selecting trees for urban paved sites in Scandinavia – A review of information on stress tolerance and its relation to the requirements of tree planners. Review Article. Urban Forestry and Urban Greening 9: 281-293.
2. Sjöman, H., Nielsen, A.B., Pauleit, S., Olsson, M. 2010. Habitat studies in order to identify potential trees for urban paved environments – case study from Qinling Mt., China. Arboriculture and Urban Forestry 36: 261-271.

Other scientific publications:

1. Sjöman, H., Oprea, A., 2010. Potential of Tilia tomentosa for use in urban environments in the North-West Europe based on habitat studies in North-East Romania and Republic of Moldavia. Ekologia 29: 360-372.
2. Sjöman H. 2010. Trees adapted for urban paved sites - ongoing research concerning selection of site-adapted species use, learning from nature. Geoscape: 167-172
3. Sjöman H., Richnau G. 2009. North-East Romania as a future source of trees for urban paved environments in North-West Europe. Journal of Plant Development: 37-46

Extension papers

1. Sjöman H. 2010. Nya växter och strategier för offentlig grönmiljö. Viola, 27-29
2. Sjöman H. 2010. Trädgård i mager lövskog. In: Sol eller Skugga - Trädgårdsplanering på växternas villkor. 90-103, Norstedts.
3. Öxell C., Sjöman H. 2010. Stadsträd för framtiden - Björkar. Gröna fakta, vol 4/2010
4. Sjöman H. 2009. Odlingsvärda ekar för sydsvenska städer. Dansk Dendrologisk årsskrift, 6-25
5. Sjöman H. 2009. Stadsträd för framtiden; Ekar. Gröna fakta, vol 2009:7
6. Walhlsteen E., Sjöman H. 2009. Tåliga perenner för hårdgjorda stadsmiljöer. Gröna Fakta, vol 2009:8
7. Sjöman H., Lagerström T. 2007. Stadens hårdgjorda miljöer som växtplats. Gröna fakta
8. Sjöman H., Lorentzon K. 2005. Barrväxter - mer än bara vintergrönt. Gröna fakta
9. Sjöman H. 2005. Conifers in Taibai Mountains. Conifer Quarterly, 32-35

Popular publications

1. Sjöman H. 2009. Planting large trees - controversial examples from China. City Trees, 16-18
2. Sjöman H. 2008. Referenser från Kina: Grön stadsbyggnad. Stadsbyggnad, nr 2008:2, 16-18
3. Sjöman H. 2008. Spännande stadsträd i Kina. Trädbladet, 8-10
4. Sjöman H., Slagstedt J. 2007. Pontiska bergen i nordöstra Turkiet, del 1. Trädgårdsamatören, 72-76

5. Sjöman H., Slagstedt J. 2007. Pontiska bergen i nordöstra Turkiet, del 2. Trädgårdsamatören, 120-125
6. Sjöman H., Lorentzon K. 2007. Magnolior - både för den lilla och stora trädgården. Fakta. Trädgård - fritid, vol 126
7. Sjöman H., Svensson M. 2005. Två kinesiska ädelgransarter. Lustgården, 19-28

Conference presentations and posters

1. Sjöman H. 2010. The use-potential of Cornus mas L. for urban plantations in North-West Europe based on habitat studies in North-East Romania and Republic of Moldavia. Horticulture - Scince, Quality, Diversity and Harmony, Iasi, Rumänien, 27-28 may.
2. Sjöman H. 2009. Alternativa trädarter för kyrkogården. SKKF´s Rikskonferens, Stockholm, 11-12 maj.
3. Sjöman H. 2009. China - mother of gardens. Scientific Symposium - Plant Diversity Conservation, Iasi, Rumänien, 16-18 oktober.
4. Sjöman H. 2009. Direction in seeking for tomorrow´s city trees - habitat studies as a selection model. 2nd International Conference on Landscape and Urban Horticulture, Bologna, 9-13 June.
5. Sjöman H. 2009. Habitat studies as a selection model for trees for urban use - a case study from the Qinling Mountains, China. European IALE Conference 2009, Salzburg, 12-16 July.
6. Sjöman H. 2009. Identifying plant strategists for urban use - a case study from the Qinling Mountains, China. 12th European Urban Forestry Congress, Arnhem, 27-30 may.
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