

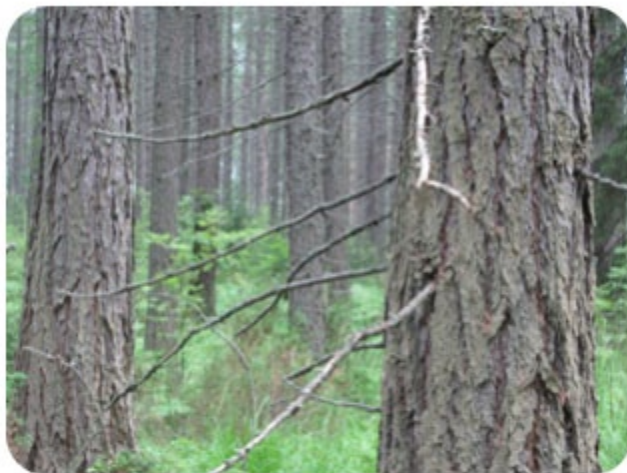
*Research School*

*Sustainable  
Management and Utilization of Forests*

*Interim report 2010*







*Research School Sustainable Management and Utilization of Forests  
Interim report  
September 2010  
Johanna Witzell  
Swedish University of Agricultural Sciences*

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# Summary

Research School Sustainable Management and Utilization of Forests has been active since November 2008. During this time, the number of PhD students associated to the school has varied around 15 and is currently 17. Since autumn 2008, eight PhD theses in forest management and six new PhD student positions have been announced on the homepage [www.phd-forestry.se](http://www.phd-forestry.se). In 2009-2010, the research school has initiated and supported six PhD courses, including the course “Strategies in Sustainable Forest Management” with PhD students from Sweden, Finland and Estonia and with external supervisors from Skogssällskapet, Sveaskog, Swedish Forest Agency and Federation of Swedish Forest Owners. The course includes a study trip to British Columbia, Canada, and takes place in October 2010. PhD students have independently organized a one-day workshop on carbon dynamics in forests. The school has been active in a Nordic-Baltic network of PhD education and altogether 11 students from universities in Finland, Estonia, Latvia and Denmark have participated into the activities organized within the frameworks of the research school. With help of engaged alumni, the school has organized two information days for forestry students, to stimulate their recruitment as PhD students in the faculty. Information about the school and about individual PhD projects has been spread to the stakeholders and common public through the homepage, in information evenings with forest owners (in collaboration with Swedish Forestry Agency) and during workshops and excursions.

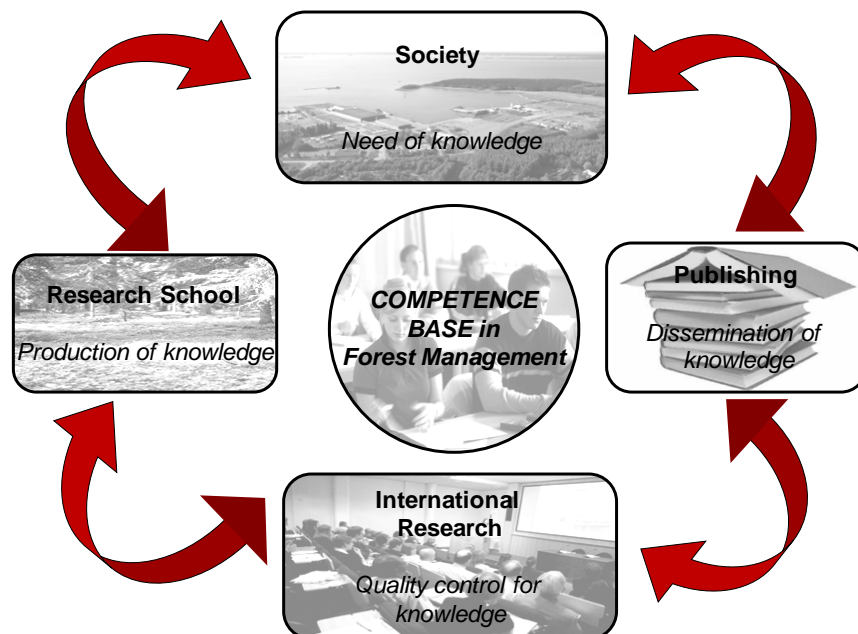


# Organization and functions

## Organization

The research school is financed by FORMAS in 2009-2013. The project is coordinated by Associate Professor Johanna Witzell, Southern Swedish Forest Research Centre, SLU Alnarp, (2009-2010 employed 30-35 % in the project). Professor Urban Bergsten, Department of Forest Ecology and Management, SLU Umeå, and Professor Urban Nilsson, Southern Swedish Forest Research Centre, SLU Alnarp, provide advice in strategic aspects and act as contacts towards forest companies. Board of the thematic research program for increased forest production at SLU, "Tema Tillväxt" (<http://tematillvaxt.slu.se/>), acts as a supervising and advisory group. During 2009 and 2010, 13 to 18 PhD students from SLU's Faculty of Forestry's departments in Umeå and Alnarp have been associated to the school. The association is voluntarily, and does not necessitate that a student takes a certain number of higher education points from research school courses.

## Functions



### *Strategic functions of the research school*

The strategic function of the research school is to promote and stimulate production and dissemination of new knowledge about sustainable management of forests, which is demanded



# Activities

## **Courses 2009-2010**

*Courses are organized within five thematic fields (1-5, see below), defined by faculty members in an early stage of the research school planning:*

- 1. Forest ecosystem processes and ecophysiology**
  - *Forest ecology and management – 2010 – 3 HEC (13 students)*
  - *Chemical defenses of forest trees – 2010 – 3 HEC (6 students)*
- 2. Global environmental and policy issues**
  - *Implications of SRA, NRA and FTP in forest management research – 2009 – 3 HEC (6 students)*
- 3. Target oriented silviculture**
  - *Modeling growth and yield for decision analysis – 2009 – 7,5 HEC (14 students)*
- 4. International forest management**
  - *Strategies for sustainable forest management – 2010 -7,5 HEC (16 students)*
- 5. Human dimensions and gender aspects in forest management**

*Higher education credits in total: 26*

*Participants in total: 55*



## **Workshops and seminars**

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Workshop **Cost-effective forest regeneration in multiple-use forestry in a harsh climate** including the excursion: *Young stand treatment - new opportunities and threats*. Haparanda, September 22-23, 2010.

A thematic seminar planned and organized by PhD students in Umeå **Carbon cycling in boreal forests – from C-allocation to forestry and economy during climate change**. SLU Umeå, Aulan, May 11, 2010.

Seminar by Dr. Thomas Jung (Brannenburg, Germany): ***Phytophthora* diseases of deciduous trees**. SLU Alnarp, Southern Swedish Forest Research Center, May 17 (followed by an excursion on May 18), 2010.

A thematic seminar organized by SCA and with PhD students involved: **Young stand treatment**, April 29, 2010.

Mats Olsson (SLU, Uppsala) **Forest soil processes**, Alnarp , April 23-24, 2009.



## ***Specific dissemination activities***

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- ✓ The homepage [www.phd-forestry.se](http://www.phd-forestry.se) was established in late 2008. It was visited 6053 times in 2009, and 6299 times in January-September 2010. The page contains general information about the school, information about courses (links to the university course catalogue) and other activities, lists of associated PhD student's projects, and collaborations. Relevant open positions are also announced on the homepage. The homepage is linked to from the SLU page <http://www.slu.se/sv/utbildning/forskarutbildning/forskarskolor/>.
- ✓ Information about the research school has also been spread in a folder (in Swedish, Appendix 1)
- ✓ In January 2010, the research school was presented in the faculty newsletter (Appendix 2).
- ✓ The Research school is listed as a project within NRA-forestry <http://www.nra-sweden.se>
- ✓ The research school and its projects has been communicated to common public during "The Day of the Forest" in Torup, September 2009 and 2010.



# Associated PhD students and their projects

## ***THEMATIC AREA: Increased assets and availability of forest resources***

- **Ingegerd Backlund** - Intensive cultivation of lodgepole pine for early harvesting to use in biorefineries
- **Lars Karlsson** - Profitable harvest of fuelwood in young forests
- **Lars Andersson** - Long-term planning in forest management with high production of fuel wood
- **Liyang Wang** – *Heterobasidion* - modeling, spread and control
- **Martin Ahlström** - Silviculture and future storm risks
- **Mateusz Liziniewicz** - Population dynamics in Scots pine and Norway spruce stands
- **Nicole Suty** - Inventory and growth modelling
- **Per-Ola Hedwall** - Environmental effects of balanced fertilization in young forests
- **Samuel Egbäck** - Silviculture in cloned stands of spruce and pine

## ***THEMATIC AREA: Sustainable management of forests in different conditions***

- **Anna Gunulf** - *Heterobasidion* - biology and implications for silviculture
- **Anna Monrad Jensen** - Restoration of oak forests
- **Jakob Schelker** - Impact of forestry on water quality in streams in the boreal landscape
- **Renats Trubins** - Land use change and landowners' behavior
- **Till Jochum** - Regeneration of broadleaved trees in north

## ***THEMATIC AREA: Forest management for multiple use and diversity***

- **Eugene Ezebilo** - Economic valuation of multiple land use in a tropical rainforest
- **Matilda Annerstedt** - Forest, health and recreation
- **Tove Hultberg** - Is there an extinction debt? – Fossil beetles and pollen as a tool for understanding the pattern of today's biodiversity

## Future plans

**December 2010:** Workshop “International Forestry I - FAO” with an integrated 1-2 day study trip to FAO, Rome.

**January-February 2011:** PhD course “Forest biomass as material in biorefineries (collaboration with Green Chemical Centre of Excellence at University of York)

**February 2011:** Workshop: “International forestry II - EU” with an integrated 1 day study trip to European Forestry House in Brussels.

**February - May and September – November 2011:** Two seminar series (3-5 invited lectures each) on a theme chosen by the students.

**March 2011:** seminar on supervision and/or communication skills (preliminary plan)

**April 2011:** PhD course on gender aspects in forestry (preliminary plan)

**April 2011:** PhD course “Forest Restoration” 4 HEC

**August - September 2011:** PhD course “Forest regeneration in Nordic-Baltic countries” 7,5 HEC (organized in collaboration with GSFOREST, Finland)

**October 2011:** Autumn meeting of the Research School

**November 2011:** “Forest Damages – mechanisms, ecology and management” 6 HEC

**December 2011:** Seminar “Social dimension of forestry” (preliminary plan)



## Teacher's view

**Professor Ljusk-Ola Ericsson**, Department of Forest Resource Management, SLU Umeå, was responsible for the PhD course “Modeling growth and yield for decision analysis” (7.5 HEC), organized in Umeå, December 2009 and January 2010.

“The course extended 7<sup>th</sup> December 2009 to 15<sup>th</sup> January 2010 and gathered 14 students from Estonia, Latvia, Finland and Sweden. The course was directed towards enhancing knowledge of different kinds of growth and yield models and how they could be used for analyzing different forest management problems. The course should also give practical experience of using the Heureka decision support system.

The reason for giving a course with this content was that decision problems in forestry inevitably are dynamic, i.e. different options have to be evaluated based on their effects in the long term. It is therefore important to have at least a basic knowledge of different growth models, their pros and cons and their suitability for decision analysis. Growth functions are also built into support tools for forest decision analysis that are used by researchers as well as practitioners. It is also essential to understand how analyses at stand and forest level are related and how they are affected by the choice of growth and yield functions. The Heureka system was here used to give insight into forest level analyses.

The course had an initial week in Umeå with lectures given by experts: Associate Professor Bronson Bullock on diameter distribution models, Professor Björn Elfving, Professor Annikki Mäkelä on process based models, Associate Professor Kenneth Nyström on models for young forest, Researcher Enno

Uhl on the Silva system, and Professor Ola Eriksson on the Heureka system. A theoretical and practical assignment was thereafter completed. The former consisted of a written review of growth and yield models and an evaluation of them in lieu of the students own PhD subject. The latter was an analysis of own choice with PlanWise of the Heureka system. This task was examined by an oral presentation over Skype; according to reports it worked quite well although talking without hearing or seeing the audience felt a bit strange.

The course evaluation (following the NOVA template) gives indications of a successful course that over all met expectations; the average on almost all criteria rated over 4 on a 1-5 scale. Especially encouraging is that the highest average pertains to the quality of the teachers – 4.83. It is undoubtedly so that the support given by the research school has facilitated in engaging good lecturers.”



## *PhD student's views*

**Ingegerd Backlund** is a PhD-student at Department of Forest Ecology and Management, SLU Umeå. She was one of the organizers of the seminar “Carbon cycling in boreal forests – from C-allocation to forestry and economy during climate change” in Umeå, May 11, 2010.

“We were seven PhD-students within the Research School, all of us at SLU Umeå, who began to plan for a spring seminar to be held in Umeå in May 2010. During the first discussions in March, we tried to find a common topic for the thematic seminar, that somewhat was related to all our PhD-projects and that were of current interest to the public – both at the university and to the forest industry. The subject that we agreed on was “Carbon cycling in boreal forests – from C-allocation to forestry and economy during climate change”. Invitations to potential speakers were sent out in April. Sune Linder at SLU Alnarp, Björn Berg at SLU Uppsala, and Sofia Backéus and Hans Petersson, both at SLU Umeå, accepted our invitation.

The seminar took place the 11<sup>th</sup> of May in the Aula at SLU, Umeå. Invitations had gone out to forestry companies and universities around Umeå. The attendance was small though, about 10 people including our supervisors. Yet, we had the opportunity to listen to four very interesting lectures with a nourishing debate afterwards. The speakers’ different knowledge about - and approaches to - Carbon cycling gave us the opportunity to discuss the subject from different views: e.g. how carbon sequestrate in the soils, influences of forest management, the report systems of the current climate agreement and how carbon cycling affects our economy. The audience had many questions and we learnt a lot about carbon cycling in boreal forests. Maybe, the subject was a bit too heavy to attract a larger public, especially from the forest companies. A more practical theme would have drawn a larger audience.

At the end, we were four PhD-students organizing the seminar. Lars Karlsson acted as a coordinator within the group. I think that the planning and coordination of the seminar was an appreciated element in my postgraduate studies, an organizational part that otherwise tends to be lacking in a PhD exam. In that manner, I think it was very valuable for us PhD-students to organize a seminar. The Research School “Sustainable Management and Utilization of Forests” is a great support for us PhD-students in this type of activities.”

**Mats Varik**, a PhD student at Estonian University of Life Sciences attends the course “Strategies for Sustainable Forest Management” in October 2010.

“My greatest expectations for this course are international connections. I expect that the acquaintances we get in this course will also be helpful for us in the future. I truly believe that any kind of multinational courses are useful. These foreign courses are very important for horizon enlargement, especially for students, whose projects are associated with environment. I am thrilled about the fact that this course has so much open-air excursions and tours. It will be astonishing – Canada, British Columbia, for forestry students – imagine!

The course has also an ultra cyber initial, theoretical week. As the matter of fact, I have not participated in discussions through Adobe Connect before. So, that kind of know-how is definitely new and absorbing.

Certainly we cannot forget the course main topic: “Sustainable forest management”, which is very actual and strategic. This course can be combined with all of our research subjects. I expect qualified lecturers with fascinating presentations, which help us to gain knowledge about strategies for sustainable forestry.”



## *Alumni's view*

**Doctor Charlotta Erefur** defended her thesis “Regeneration in continuous cover forestry systems” in May 2010. She has worked at Sveaskog and is currently affiliated to SLU, Vindeln Experimental Forests research park.

“I think that the PhD education in a good way has given me the knowledge I need in order to be able to conduct independent research. I have learned a lot about experimental design and statistical analysis, developed my ability to express myself, and I have had the opportunity to build a network of contacts.

The Research School opens up new opportunities for the important networking. It contributes to the formation of interdisciplinary collaborations, which drives research forward. An important function of a research school is to gather knowledge from the forest industry and provide the PhD students with an opportunity to establish contacts. Links between research and practical forestry ensure that forest management issues will be explored in a thorough and profitable way. Practical experience is an important basis for research in the same way as PhD students are developing valuable knowledge for the industry. As a PhD student, you can feel quite alone in your

work and then a research school may fill a social role as well.

Furthermore, research schools offer relevant PhD courses on topics of concern, which make up the central part in the activities and which need to be further developed and expanded. The range of postgraduate courses in forest management has generally been too narrow and the level too often quite low. Also in PhD courses, links to practical forestry are a positive element.”



## Coordinator's view

**Associate Professor Johanna Witzell, Southern Swedish Forest Research centre, SLU Alnarp, has coordinated the research school Sustainable Management and Utilization of Forests during 2009-2010.**

“The project time of the Research School Sustainable Management and Utilization of Forests has now reached its mid point. Many things have been done, but much more can be done during the time we have ahead us.

As I see it, our research school can provide an extra dimension to the PhD studies in forest management. While the school cannot, and should not, replace the department as the first affiliation of a PhD student, it can contribute to the success of PhD education by promoting new courses, stimulate contacts by bringing people together and prepare the PhD students for the landscape that they enter after finishing their PhD student period.

As a coordinator, it is rewarding to have the contact with PhD students. In the middle of the PhD period that tends to be filled with experiments, field work, complicated statistics, exams and writing, it is often difficult to see the forest from the trees. However, when you have a possibility to follow the PhD student's work from aside, it is fascinating to witness the transformations from rookies to early stage

researcher, and to watch how the students (usually) reach their goal despite all the failed experiments and ANOVA problems.

During my time as coordinator, I have been positively surprised by the genuine interest that our faculty alumni have shown for our work. They have willingly invested their valuable time to travel to speak to forestry students, in order to inspire them to start PhD studies and to advice them about how to build a career after the PhD. Alumni are a resource that we should engage much more into our PhD education activities in the future. Another great resource in the coordinator work has been the network of colleagues from Finland, Norway, Estonia, Latvia and Denmark. To share the experiences with them and to learn from them has been invaluable. It is my hope that in the future we could further strengthen the international dimension in PhD education in forest management. “



*“You don't necessarily have to be a professional football player to succeed.”*

*- Zlatan Ibrahimović*

# Self-evaluation

## *Has the research school reached the goals set by FORMAS in the call?*

### **Evaluation scale:**

**0** = the goal has been reached poorly      ---      **5** = the goal has been reached very well

<b>GOALS set by FORMAS for research schools:</b>	<b>Grade:</b>
<i>to stimulate researcher training in Formas' areas and to foster recruitment to emerging research areas.</i>	4
<i>to stimulate interdisciplinary and multidisciplinary research</i>	3
<i>to contribute to the national research endeavor</i>	4
<i>to promote international perspectives in researcher training</i>	5
<i>to promote dialogue and cooperation among postgraduate students and with the users of research results</i>	4



***Has the project reached the specific goals defined in the FORMAS grant proposal in 2008?***

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*The specific objectives defined in the grant proposal were (scale as above):*

<b><i>Specific goals of the project:</i></b>	<b><i>Grade:</i></b>
<i>to organize a structured curriculum in forest sciences</i>	<i>4</i>
<i>to intensify and broaden the dialogue between research and sector</i>	<i>4</i>
<i>to be active in an international network of PhD education</i>	<i>5</i>
<i>to provide training in pedagogic, supervisory and communication skills</i>	<i>2</i>



## ***Experiences from activities and plans for improvements during 2011-2012***

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### **✓ To provide training in pedagogic, supervisory and communication skills**

This goal has not been sufficiently reached mainly because of the difficulty of finding a professional pedagogue that would be interested in committing to development of this aspect in the research school, which was the initial plan. However, the student's have received indirect training in communication skills e.g. through a possibility to plan, organize and execute a scientific seminar on a subject that they considered to be of current interest. An effort to fulfill this goal was also made by inviting Dr. Bert Jonsson, Department of Psychology, Umeå University, to present recent research in the psychology of learning and exam as a learning situation in an evening seminar of the research school in December 2009. To further improve the activities towards this goal, the school will invite speakers with expertise in these issues to research school meetings. In addition, we plan to place a folder with information about pedagogic, supervisory and communication skills on the homepage. A book: "Reflekerande forskarhandledning: om samarbetet mellan handledare och doktorand" by Monika Appel and Åsa Bergenheim, will be donated to the involved supervisors.

### **✓ To stimulate interdisciplinary and multidisciplinary research**

Although the school does not finance research projects, it can take actions to stimulate interdisciplinary and multidisciplinary research through courses and seminars. An example of this is the course "Strategies for Sustainable Forest Management" (October 2010, Appendix 3) where focus will be on sustainability criteria and implications in practical forestry. A seminar on social dimension of forestry is planned to take place in December 2011. Efforts to organize additional activities, including methodological courses, in this field need be intensified during 2011.

### **✓ To contribute to the national research endeavor**

In 2009 and 2010, the research school has been involved in different research planning activities. PhD students are encouraged to participate in workshops that are focused on research collaboration. One example is the NORFOR workshop in Haparanda (September 2010) "Cost-effective forest regeneration in multiple-use forestry in a harsh climate" including the excursion "Young stand treatment - new opportunities and threats". The overall aim of the workshop is to continue to establish a borderless platform on the field of research and higher education of forest management, and to create an action plan for the platform for the next years. Another example was a seminar arranged by the forest company SCA on "Young stand treatment" (April 2009) where research issues were discussed and PhD students were actively participating.

In 2011, new initiatives will be taken by the research school to increase national research collaboration. A new intake of PhD students is planned under the working title "SFM: From "fashion expression" to meaningful guidelines". Another example is the planned PhD course "Forest Biomass as material in biorefineries" (see "Future plans") that is expected to work

as a catalyst for initiating research collaboration on a subject with high importance for the forest industry.

✓ **To promote dialogue and cooperation among postgraduate students and with the users of research results**

The research school activities are open for PhD students from the faculty's research school FIRST (and vice versa). This should support future multidisciplinary research collaboration in management and utilization of forests. Study trips are prioritized as an effective way of stimulate dialogue among associated PhD students across the participating departments. Participation of PhD students from network countries promotes international research collaborations in the future. Interactions with other Swedish research schools are promoted e.g. by inviting these to participate to activities. More efforts need to be invested to support research school students' participation in the activities of other research schools in Sweden and abroad.

In 2009, the research school students and supervisors, together with Skogforsk researchers, were active in "Skogskvällar", information evenings for forest owners that were organized in Southern Sweden by the Swedish Forest Agency. This kind of activities are planned to be organized again, and the research school will again seek collaboration with Forest Agency. Thematic seminars and workshops with forest companies and other actors in the sector need to be further increased in the future.

Representatives of stakeholders (Skogssällskapet, Sveaskog, Swedish Forest Agency and Federation of Swedish Forest Owners) are involved in the course "Strategies for Sustainable Forest Management" as supervisors of group projects. This kind of activities where students get in direct contact with representatives of forest sector should be developed further.



# Acknowledgements

*Following persons or organizations have contributed in different ways to the activities of the research school during 2009 and 2010:*

## *FORMAS*

*Involved PhD students, supervisors and teachers at Faculty of Forest Sciences, SLU Umeå and Alnarp*

## *“Tema Tillväxt” board*

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*Andreas Brunner (UMB, Norway)*

*Charlotta Erefur (SLU/Sveaskog),*

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*Fredrik Nordborg (Södra)*

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*Satu Lantiainen (Bureau of Nordic Family Forestry)*

*Siegfried Lewark (SILVA network)*



## Appendices

**Appendix 1.** *“Forskarskola Skogens skötsel och hållbara nyttjande” – Information folder in Swedish.*

**Appendix 2.** *Newsletter of the Faculty of Forest Sciences, “S-fak nyhetsbrev”, January 2010.*

**Appendix 3.** *PhD Course “Strategies for sustainable forest management”, syllabus and schema of the integrated study trip to British Columbia.*

