

# Intensive Forest Researcher Training and Its Internationalisation in the Baltic Sea Region

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## Abstract

Based on survey of PhD training coordinators, the paper examines the status of doctoral education at universities dealing with higher forest education in the Baltic Sea region. The primary attention is given to intensive courses and possibilities for joint international training. In total, the survey found around 450 PhD students. In 2005, 39 intensive courses, involving at least 5 students, were organised at the surveyed faculties. 15 courses dealt with topics related specifically to forestry, revealing that an average PhD student has a very limited offer of specialised courses directly connected to the thesis work. Low number of students is seen as a primary hindrance for more intensive course activity at national faculties, while the lack of time and financial incentives for teachers hinder organisation of international PhD courses. Overall, the lack of systematic approach to doctoral forest education is observed. Survey respondents are supportive to joint researcher training activities at the regional level.

**Key words:** Baltic countries, doctoral forestry education, intensive courses, internationalisation, Nordic countries, Russia

## Introduction

Looking at large, forest science spans a wide range of disciplines. Regarded separately, they involve rather limited numbers of scientists, posing great challenges to doctoral studies that should prepare qualified researchers in specialised areas. It is a commonsensical presumption that doctoral education of high quality should entail strong courses on particular, more specialised topics within the discipline of a PhD student. Such courses provide the student a possibility to discuss the state-of-the-art within the area of her/his thesis and also to develop network with fellow PhD students who work on related theses, *e.g.* (NEPOS 2006). On the other hand, the organisation of intensive courses at national level is hindered by low numbers of students, which is further aggravated by the increasing degree of specialisation of doctoral studies.

These challenges had been recognised for years by Nordic universities of agricultural sciences. In 1995, the Nordic Forestry, Veterinary and Agricultural University (NOVA) was launched as a unique international university network aiming, by joint action, to enhance quality and competitiveness of higher education and research in agriculture, forestry and veterinary medicine (Jensén 2006). The core activity of NOVA has been organisation of international intensive PhD courses,

involving top lecturers and international student audience under joint funding by NOVA member universities (Jensén and Wålstedt 2005). Initially, NOVA supported around 10 courses annually, this number raised to around 15 in later years. NOVA funding typically covers travel and subsistence of international teacher team as well as accommodation and lodging for students from the NOVA member universities. On average, the NOVA support amounts to Euro 20,000 per course.

Only up to 2 NOVA courses annually dealt with topics related to forestry, in some years no applications for forestry-related courses were submitted. It is surprising that Nordic forest faculties have so poorly utilised attractive NOVA funding for joint PhD courses. The Nordic countries form the European hub of forest resources and also have significant capacity of forest science. When the NOVA secretariat attempted to grasp reasons for the low number of forestry-related applications, it turned out that very little is known about the doctoral forestry education in the Baltic Sea region.

Generally, research training in forestry is little researched as it is found at a margin of science and educational practice. Forest scientists rarely deal with questions of education; set-up of research training is accepted as unquestionable outcome of educational

system of respective country. For social scientists researching in educational issues, forestry is too marginal and accidental discipline to attract attention. As a result, comparative international studies in forestry research training are absent. Often, even the most basic data on doctoral forestry education, such as number and topics of PhD courses provided, are inaccessible at national level or from relevant universities and faculties.

This paper aims to start filling in this gap of knowledge by examining the status of doctoral forestry education in the Baltic Sea region, including educational establishments in the Nordic countries, the Baltic countries and a selected university in Northwest Russia. Particular attention is put on organisation and internationalisation of intensive research training in form of short PhD courses.

### Materials and methods

The survey aims to cover all major establishments of higher education in forestry in the Baltic Sea region. Data have been collected from the following Nordic universities:

- University of Helsinki, Faculty of Agriculture and Forestry, Finland: HU-AF
- Copenhagen University, Faculty of Life Science, Denmark: KVL
- Agricultural University of Iceland: LBHI
- The Swedish University of Agricultural Sciences: SLU
- The Norwegian University of Life Sciences: UMB
- University of Joensuu, Graduate School in Forest Sciences, Finland: UJ-GSForest

All these organisations have been members of NOVA since 1995, except UJ that joined NOVA in 2006. On the Baltic side, surveyed forestry faculties belong to universities that are members of the NOVA University network, sister organisation of NOVA (Zilinskas *et al.* 2006):

- Estonian University of Life Sciences: EMU
- Latvia University of Agriculture: LLU
- Lithuanian University of Agriculture: LZUU

Additionally, the survey included St. Petersburg State Forest Technical Academy in Russia: FTA.

A key issue in sampling was to identify suitable respondents at surveyed universities. The study did not aim to capture the diversity of opinions on research training either from trainer or trainee perspective; neither had it sought statistical inference to a wider circle of universities. Rather, this is case study that seeks to get a comprehensive picture at the sur-

veyed organisations. Consequently, a purposive sampling strategy (Punch 1999) was chosen, selecting one person at each organisation with the most thorough knowledge on research training. Typically, this is a person that is formally in charge of coordinating doctoral education at respective faculty. Such coordinators were either known via operational contacts in the NOVA and BOVA university networks or were identified upon formal requests to dean offices or corresponding administrative bodies.

The survey made use of a structured questionnaire with a total of 28 questions. The questionnaire can be found on the Internet:

<http://www.nova-university.org/Worddok/NOVA-ForestPhD/Questionnaire%20Final.doc>

Most of the questions were aimed to collect quantitative data in form of: (i) inquiries on statistics, *e.g.* number of courses at a particular faculty; (ii) multiple choice questions, *e.g.* on types of PhD courses; and (iii) ranking questions *e.g.* to rank constraints for student mobility. A few open-ended questions were included, to elicit respondents' personal opinions on specific issues. The questionnaire included enquiries on the number PhD students; set-up of research training, including the duration and structure of doctoral education; organisation of doctoral education, such as institutional coordination and hindrances for course activity; general trends for doctoral training in the region, *etc.*

The questionnaire was distributed electronically in the summer of 2006 to the identified research training coordinators at 10 surveyed faculties. Answers were received from all faculties within 3 months.

### Results

The quality of the collected answers has been dependent on the availability of data and varies a lot between surveyed units. For example, in case of LBHI, where doctoral forestry education is under development, some questions could not be answered. The quality of answers is typically higher from those units where PhD level studies are better structured and PhD training coordinator position with clear functions is in place. This paper presents some of survey findings, mostly related to intensive research training.

#### *Number of forestry PhD students in the region*

The survey reveals that SLU Faculty of Forest Sciences totally enrolls 160 PhD students (this number includes all PhD students that were studying at the faculty at the time of surveying), being the biggest forestry faculty in the region in terms of number of PhD students (Table 1). Finnish faculties, HU-AF and

UJ have together 185 forestry students. All together, the Nordic faculties enrol 403 PhD students, while the Baltic faculties and FTA have only 49 PhD students in forestry.

should span from 2.5 to 3 years. Courses should cover 20-60 ECTS corresponding to 0.5 to 1 year of the study time. Nordic units did not provide estimates for

**Table 1.** Total number of PhD students enrolled to forestry disciplines

	SLU	KVL	UMB	LBHI	HU-AF	UJ	EMU	LLU	LZUU	FTA	total
Forest ecology	80	4	4	1	58	15	3	5	2	2	174
Forest management and planning	45	2	5			8			1	3	64
Forest machinery and logistics			2			5				6	13
Forest protection (pests, risk or fire mngt)				1		7	1	1		2	12
Forest policy and economics	25	1	2	1	17	6			2	6	60
Forest selection and genetics		4				10	1			1	16
Silviculture		2	2			10		3	2	3	22
Tropical forestry		8	4			4					16
Wood products		5	8		8	3				5	29
Additional disciplines added by the respondents											
Higher education in forestry						2					2
Forest business			1								1
Urban forestry			1								1
Image analysis	5										5
Forest resource science and technology*					32						32
Mathematical statistics	5										5
<b>Total</b>	<b>160</b>	<b>26</b>	<b>29</b>	<b>3</b>	<b>115</b>	<b>70</b>	<b>5</b>	<b>9</b>	<b>7</b>	<b>28</b>	<b>452</b>

\* HU-AF respondent lacked data to attribute these students to any category provided in the survey form

The only forestry discipline that is present at all the units is “Forest ecology” with 174 PhD students in total. It is followed by “Forest management and planning” and “Forest policy and economics” with 64 and 60 students, respectively. Besides eight disciplines included by surveyors, respondents added several additional areas with relatively few students. These include subjects from the margin of traditional forest science, such as urban forestry or higher education in forestry.

Information on annual number of students that receive PhD degrees is available for 2004, from a previous NOVA-BOVA smaller-scale survey on research training. Around 60 students received forestry-related PhD degrees in the Nordic countries in 2004. From this, the largest number is estimated at SLU (25-30), followed by HU-AF and JU (9 students each) and UMB (4). Only 3 students got doctoral degrees at the Baltic forest faculties (2 at LZUU, 1 at LLU and none at EMU), while FTA awarded 10 degrees. The low numbers at Baltic faculties are particularly worrisome as they imply difficulties with adequate replacement of ageing academic staff. The situation is however expected to improve in line with gradually increasing funding for higher education and research.

**PhD course activity**

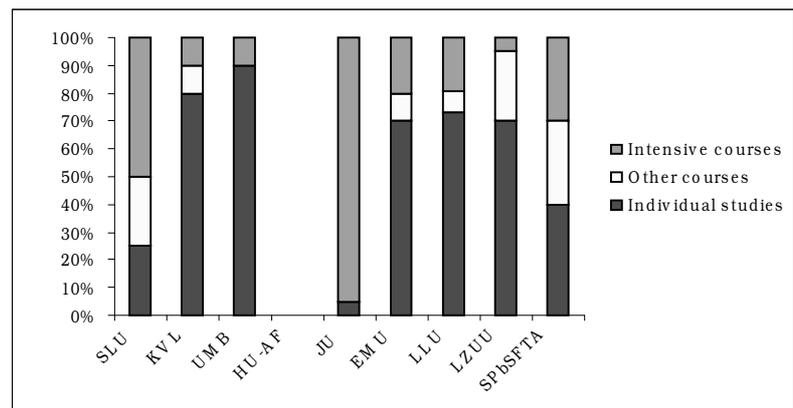
Formally, the required extent of PhD studies ranges from 3 (KVL, UMB, FTA) to 4 years (other faculties), corresponding to 180-240 ECTS (European Credit Transfer System) credits. Work with dissertation

the required extent of individual studies, implying that such component is not formally regulated. In Baltic countries and Russia, individual studies should formally extend over 0.5 year.

A different picture is obtained if, in contrast to the formal requirements, the actual time share of various researcher training activities is estimated, in addition to the direct work with thesis. The intensive courses are present to various degrees ranging from 5 to 95% of the total time allocated to researcher training in addition to the thesis work (Figure 1). An extreme position is held by UJ-GSForest, where intensive courses impressively dominate the training. It must be noted that Figure 1 shows the actual division as estimated by respondents except for SLU. At this unit, intensive courses should formally cover ca. 50% of PhD training apart from thesis; students and supervisors are allowed to set up their courses the way they consider appropriate and, in addition, each department has a great freedom in selecting training activities. Consequently, even an approximate actual time distribution is unknown to the coordinator of doctoral education. The intensive course activity most likely is lower than 50 percent. No estimate was provided for HU-AF. At KVL and all Baltic units, intensive courses make a much lower share than 50 percent of the study time (setting aside thesis work).

Figure 1 reveals prevalence of individual studies or “reading and conference” type of training, when a student works individually with defined list of readings and prepares a report or occasionally meets a

**Figure 1.** Share of time of various researcher training types in addition to the thesis work. **Intensive courses:** training that includes intensive component(s) of 1–3 weeks with at least 5 students attending and teaching personnel full-time involved; **Other courses,** e.g., a PhD course lasting one semester with teaching personnel sporadically involved irrespective of the number of students. **Individual studies:** individual readings and occasional discussions between student and supervisor without organised teaching periods



supervisor to discuss readings. Such individualised approach entails a high flexibility as the readings could be tailored specifically to the student's needs. On the downside, there is a high risk that student will lack supervision, and that learning of declarative knowledge (Biggs 2003) will prevail at the expense of functional knowledge and skills. At the other end of the scale, an intensive course gathers a group of students for a period up to 1-3 weeks, often involving several teachers sharing their areas of expertise. Such courses entail advantages of focused learning with direct teacher-student and student-student communication.

The factual time allocated to different researcher training components has been difficult to obtain, especially from the Nordic faculties. This can be partly explained by an individualised training when each student has an individual study programme often diverging from the official guidelines. Another explanation is the lack of systematic approach to arranging and coordinating PhD study programmes, which make the collection of data difficult even internally in faculties and departments. The latter assumption is backed up by the fact that it was very difficult to obtain the data on the number of PhD courses, annually arranged in 2000-2005. Many respondents struggled with getting such data, while SLU and HU-AF were not able to provide any estimates at all.

Additional effort was made to obtain titles and number of participants for PhD courses conducted in 2005. The total of 35 reported intensive courses that had 5 or more students per course involved 426 PhD students which makes ca. 12 students per course on average (Table 2). Only four courses had more than 20 participants and all of them were generic. The specialized forestry courses were on average attended by ca. 10 students. Excluding SLU because of lacking data, courses attracted 145 international students corresponding to the average of ca. 5 students per course.

In the Nordic countries, a total of 28 intensive courses were organized in the year 2005 out of which

15 (54%) were specific forestry courses. In case four KVL courses with less than 5 students per course are excluded, the share makes up 46%. There were no forestry-specific courses in the Baltic units, while FTA in Russia held 3 specialized forestry courses out of total 4 courses. Summing up all units, less than 40% of the reported intensive courses dealt with forestry-specific topics. From the regional perspective, PhD course activity is very low in the Baltic countries and Russia, which correlates with the low number of PhD students (Table 1). It is worth noting that the majority of surveyed faculties do not have formal requirements for a minimum number of PhD students to run a course. Exceptions are LZUU (minimum 3 students), EMU (5), UMB (5) and UJ-GSForest (6).

Course language is a decisive factor for international students. At LLU and FTA courses are held in national languages of the hosting units, Latvian and Russian respectively. EMU and UJ host courses in English whereas at other units English is considered optional, in case international students are attending.

#### *Constraints for course organisation and internationalisation*

Respondents were asked to evaluate the main constraints/problems in the course organising process, given prespecified items for ranking (Table 3). Two issues were standing out with high mean ranks. The low number of students (mean rank 2.4) is the most severe issue, especially for BOVA members. According to the mean values, the second most important constraint (mean rank 3.7) is the lack of financial incentives for course organizers. All Baltic respondents consider it as a considerable limitation. Generally, it seems that departments recognise their institutional mission of organising doctoral courses, however, this does not transform to adequate financial incentives to individual course organisers. Several respondents (SLU, KVL, UMB) have additionally commented on the lack of time for organising PhD courses. This issue

**Table 2.** Total number of courses students and teachers in period January - December 2005.

\*denotes courses assigned the category of forestry specific courses

Nr.	Title of a PhD course	Number of students	Number of international students	Number of teachers	Number of international teachers
<b>SLU, Sweden</b>					
1	Design of experiments and analysis of variance	5			
2	*Environmental valuation	5			
3	*Environmental economics and policy	6			
4	Focus group discussions as a data collection tool in qualitative research	7			
5	Scientific publishing	7			
6	Jackknife and bootstrap methods and applications	8	Na	Na	Na
7	*Forest growth and yield	8			
8	*Pollandcal training course	10			
9	Molecular methods for ecologists	10			
10	*Wood structure, properties and biological degradation	15			
11	Stated preference methods: state-of-the-art modelling	20			
<b>Total/Mean per course</b>		<b>101/9</b>			
<b>KVL, Denmark</b>					
1	*Sampling and modelling in tropical forestry	2	0	1	0
2	*Forest Economics and Planning	1	0	1	0
3	*Theory and application of Economics, math and statistics in forestry	2	0	1	0
4	*Theory and application of multicriteria methods and preference elicitation in planning of forest and natural resources	1	0	1	0
<b>Total/Mean per course</b>		<b>6/1,5</b>			
<b>UMB, Norway</b>					
1	*Protection of biodiversity in forests (a NORFA-course)	17	12	5	3
<b>HU-AF, Finland</b>					
1	Research process	35	Na	2	
2	The philosophy of science	25	Na	2	
3	Academic Scientific Writing and Conference Presentation	32	2	1	1
4	Course of statistics	10	Na	1	1
5	Course on argumentative writing	10	Na	2	2
<b>Total/Mean per course</b>		<b>112/22</b>	<b>2</b>	<b>8</b>	<b>4</b>
<b>GSForest in UJ, Finland</b>					
1	Autumn seminar	9	0	12	0
2	Statistical analysis of experimental results	10	7	2	0
3	*Ecological effects of windfall in the European taiga	10	8	1	1
4	*Boreal forests of Eurasia	14	11	1	1
5	*Wood supply chain management	20	6	6	1
6	*Environmental cost-benefit analysis and econometrics of contingent valuation	7	4	2	1
7	How to write scientific paper in English?	16	8	1	1
8	*Protection of biodiversity in forests (a NORFA-course, in cooperation)	17	12	5	3
<b>Total/Mean per course</b>		<b>86/12</b>	<b>44/6</b>	<b>25</b>	<b>5</b>
<b>EMU, Estonia</b>					
1	Methodology of research	25	10	2	1
<b>LLU, Latvia</b>					
1	Research methodology	7	0	2	1
2	Professional foreign language	7	0	1	0
3	Multivariable methods of data processing	5	0	1	0
4	Nonparametric methods	5	0	1	0
5	Quantitative methods for economic research	6	0	1	0
<b>Total/Mean per course</b>		<b>30/6</b>	<b>0</b>	<b>6</b>	<b>1</b>
<b>LZUU, Lithuania</b>					
No courses in 2005. Intensive int. course "Large scale forest scenario modelling" held in 2004, but it included only 3 PhD students.					
<b>FTA, Russia</b>					
1	*GIS technologies in forestry	10	3	3	0
2	*Forestry	5	2	2	1
3	*Forest ecology	6	3	1	0
4	Xilobiology	6	0	2	0
<b>Total/Mean per course</b>		<b>27/7</b>	<b>8/2</b>	<b>8</b>	<b>1</b>
<b>Grand total/Mean per course (excluding KVL)</b>		<b>426/12</b>	<b>145/5</b>	<b>71</b>	<b>21</b>
na – not available					

**Table 3.** Mean ranks for the main problems and constraints in organizing PhD courses.

Rank 1: the most important problem; rank 5: the least important; rank 6: option not chosen

Option	Nordic u-ties	Baltic u-ties	FTA	mean rank
Low number of students	1.8	1.0	6.0	2.4
No financial incentives for course organizers	4.4	2.7	1.0	3.7
Administrative constraints, specify:	5.0	5.0	4.0	5.0
Universities are not rewarded for organizing PhD studies	5.8	3.3	6.0	5.1
Low interest among students	5.4	4.7	6.0	5.3
Departments/sections are not rewarded for organizing PhD studies	5.4	6.0	6.0	5.7
Faculties/institutes are not rewarded for organizing PhD studies	5.6	6.0	6.0	5.8

may be well linked to the lack of financial incentives for course organisers and a rather low priority that universities assign to arranging PhD courses. A peculiar standpoint is represented by the UJ-GSFforest that does not face any of listed constraints and consequently does not rank them. The likely explanation is that the GSFforest research school, due to the ability to attract significant funding, established networks and efficient coordination, runs PhD courses in forestry on a regular basis.

Table 2 shows a great variation among units in terms of international students and teachers at PhD courses. Several units do not attract international PhD students at all; SLU was not capable to provide such statistics. UJ-GSForest is a salient in this respect as well, as here international students prevail. All GSForest courses are delivered in English, they are actively advertised via internal e-mail lists (about 100 students and 100 supervisors) and on the GSForest website where an announcement in English is placed for each course.

Setting aside GSForest, international PhD course activity is low. As the main reasons, respondents indicate the lack of time (mean rank 2.0) and financial incentives (2.8) for teachers to engage in such activities (Table 4). One of the respondents pointed out the duality of the lack of time for international activities as *“the co-operation usually produces more efficient solutions and saves some time”*.

**Table 4.** Reasons behind low international researcher training activity in forestry in the Nordic-Baltic region. Rank 1- the most important reason, rank 5 - the least important reason, rank 6 – option not chosen

Option	NOVA	BOVA	FTA	GSF	mean rank
Teachers lack time to engage in international researcher training activities	1.2	2.0	6.0	2.0	2.0
Teachers lack financial incentives to engage in international researcher training activities	2.6	3.7	1.0	3.0	2.8
Lacking tradition for international collaboration in forestry researcher training	5.4	3.7	1.0	1.0	4.0
Teachers do not know about international funding possibilities such as NOVA&NordForsk	5.2	3.7	1.0	4.0	4.2
Language constraints	5.4	4.3	1.0	6.0	4.7
Students do not want to attend PhD courses abroad	5.8	4.0	6.0	6.0	5.3
It appears complicated (administration) to organize courses and apply for funding	5.4	6.0	6.0	6.0	5.7
No need for joint courses	6.0	5.7	6.0	6.0	5.9
Not so many students in forestry	6.0	5.7	6.0	6.0	5.9

**Table 5.** Main constraints for international mobility of PhD students. Rank 1 – the most important, rank 2 – second most important, rank 4 – option not chosen

Option	NOVA	BOVA	FTA	GSF	mean rank
<b>Financial constraints for individual students</b>	2.3	1.7	4.0	2.0	2.2
<b>Family/personal reasons</b>	2.5	2.3	4.0	3.0	2.7
<b>Individual study plan prevents choice of other activities (e.g. studies abroad)</b>	4.0	2.0	1.0	4.0	3.0
<b>Language</b>	3.8	3.0	2.0	4.0	3.3
<b>Lacking implementation of ECTS</b>	4.0	3.3	4.0	4.0	3.8
<b>Added by respondents:</b> no need to go abroad due to courses available in Finland (UJ)	4.0	4.0	4.0	1.0	3.7

Interestingly, although the NOVA UN members ignored the “Lacking tradition...”, UJ attributed the highest importance to this item. Representative of GSForest additionally noted that more coordination of forest researcher training is needed in the region. The most likely explanation is that, while at other Nordic units PhD education and particularly the intensive training is little structured, UJ runs well-coordinated intensive courses within a strong national graduate school. Under such set-up, the lack of tangible Nordic collaboration in researcher training is more apparent.

Concerning constraints for international PhD student mobility, financial difficulties, family reasons and inflexible study plans received the highest ranks (Table 5). LLU, LZUU and FTA regard “Individual study plans” as the most severe constraint. The way how study plans are constructed at these universities limits students’ flexibility, e.g. for taking courses and particularly for having longer stays abroad. This can be linked with the lacking tradition for international cooperation in the Baltic units (Table 4) and reinforces the impression that the framework of PhD education at the Baltic faculties is more inflexible in comparison with the Nordic counterparts.

It should be noted that intensive international PhD courses are a very suitable training format for overcoming the most severe constraints in Table 5. Taking NOVA courses as an example, Nordic students should only pay for travel, accommodation and sub-

sistence being free. The typical course duration of 1 to 2 weeks is better suited to accommodate family and personal reasons compared to longer periods abroad.

All Nordic respondents stressed the lack of common coordination and pointed out the potential for improving the present state. As the representative of HU-AF put it, *“As far as I know there is not much coordination. There has been Nordic cooperation in some specific areas of forestry but it has been very dependent on personal connections.”* The Baltic and Russian respondents did not explicitly address the regional coordination, perhaps due to lacking experience of being exposed to such coordination.

**General trends and expectations**

Most respondents expect that international mobility of students and number of intensive courses will increase during the coming 10 years (Table 6), giving

**Table 6.** Trends in researcher training in forestry expected by the respondents during the coming 10 years (↑ increase, ↓ decrease, ↔ stable)

Factor	SLU	KVL	UMB	LBHI	HU-AF	UJ	EMU	LLU	LZUU	FTA
Number of intensive courses	•	•	•	•	•	•	•	•	•	•
Number of students	•	•	•	•	•	•	•	•	•	•
International mobility of students	•	•	•	•	•	•	•	•	•	•
Financial incentives for course organisers	•	•	•	•	•	•	•	•	•	•

**Table 7.** The respondents’ opinions about advantages and disadvantages from increased joint researcher training in forestry in the Nordic-Baltic region

Unit	Opinion
SLU	“Advantage of more students available.”
KVL	“Option for making better courses for more students.”
UMB	“Short, intensive regional courses serve as an interesting option particularly for countries which have relatively few PhD students within each field of forest sciences.”
LBHI	“For us in Iceland with so few BS/MS students in the subject of forest science/forestry, increased joint researcher training is ESSENTIAL!!!”
HU-AF	“Since the amount of students is low in each country it would be very beneficial to co-operate in organizing researcher training. Also there surely is special know-how in each country and in joint researcher training this could be taken advantage of better.”
UJ	“Advantage is international networking of PhD students for future career, wider selection of good quality of courses, international view for forest sciences, higher quality of courses. Disadvantages: ?”
EMU	“The international experience is worth of trying”
LLU	“Advantages: analogous ecological conditions, similar forest management problems and traditions, alike educational level of PhD students, knowing relations among countries. Disadvantages: different economical state of the countries, very intense loading of study programs.”
LZUU	“I can see only advantages. Young researches can communicate directly each other, even they can meet and get experience from leading scientists from Nordic and Baltic countries. The courses should be open for wider exchange. I mean for all European, Asian and American Universities.”
FTA	“I am optimist. I believe in advantages.”

hope that the role of international PhD training networks will increase. At KVL, LBHI and LLU, the number of forestry students is expected to rise while at SLU and UMB to decrease. This is probably related to the overall structural changes in educational systems of these countries.

Concerning advantages or disadvantages from increased supra-national cooperation, respondents stressed the great opportunity to increase the quality of PhD studies through creating international contacts, involving leading scientists and offering a wider selection of good quality forestry courses (Table 7). In some cases (e.g. LBHI and UMB) the international joint researcher training is essential because of low number of students in specific forest science subjects. The only mentioned disadvantage (LLU) concerns economic differences between the countries and the risk of too intense study programmes.

## Discussion

Thanks to the survey, the extent of PhD education in terms of student numbers in various disciplines has been disclosed along with teaching forms, constraints for course organisation and other factors and trends in researcher training. During 2005, intensive courses were attended by the total of 420 students, an unknown part of them coming from other disciplines. Only 150 students were involved by the reported 14 forestry-specific courses despite a very flexible treatment of the "specificity" (cf. Table 2). Comparing this with the total number of 450 PhD students indicates that, during her/his PhD study, an average student attends only a few intensive courses of direct relevance to the thesis work. The supply of PhD courses is too small and too accidental to cover subject-specific needs of a student. On the positive side, the revealed total number of PhD students indicates a strong base for carrying out intensive training on the regional scale.

One of prevailing impressions from surveying is a *rather weak structure of PhD education in forestry*. By structure we mean several factors including but not limited to: the overall aims and corresponding resources for doctoral education; clear though possibly flexible requirements for meriting activities, such as course work; clear coordination of PhD studies, not least at the faculty level; system of incentives for organising researcher training of high quality.

Data collection for the survey in itself serves as an evidence for difficulties with the structure of PhD educations. At the smaller units as measured by the number of PhD students (cf. Table 2), researcher training coordinators reported generally low training activities, a primary cause being insufficient numbers of students. The units do not reach the critical mass needed to actively engage in a well-organised course activity. At large units except UJ, collection of data on researcher training turned out to be unexpectedly difficult. Even such seemingly trivial data as titles of PhD courses in 2005 or number of courses provided since 2000, turned out to be unavailable. Answers to several questions have either been dropped or additional internal surveys at departmental level had to be made by the research training coordinators. Lack of record of such data would be unthinkable at undergraduate or graduate level. Concerning the coordination at postgraduate level, there were doubts at some faculties whether there is one person with a clear overall responsibility; definition of tasks for such coordinator often is rather vague.

The lack of structure is caused by objective reasons. The number of PhD students has been rising

sharply in last decades creating difficulties for higher education establishments to adapt the new changes, especially when specifically earmarked resources were lacking. Targeted incentives for organising high quality researcher training courses seem to be lacking both externally for universities and internally for faculties, departments and individual teachers. The latter feel increasing time pressure due to rising number of duties in carrying out research, teaching at undergraduate and graduate levels and coping with a growing administrative burden. There are no obvious reasons why an individual scholar should be proactive in arranging intensive researcher training courses.

In the Nordic countries, one of approaches for structuring researcher training has been establishment of research schools (Högskoleverket 2004). The survey confirms that a clear common definition of research school is lacking, it can be anything from a small set of summer courses to a large scale institution that involves dozens or even three-digit numbers of full-time doctoral students and entails elaborate enrolment routines, clear coordination, well-planned courses, *etc.* Among the surveyed units, GSForest at UJ is an example of research school that attracts substantial funding for coordinating national doctoral education. Quality and contents of UJ's responses provide strong indications that GSForest has indeed made a remarkable contribution to structuring researcher training, including intensive course activity.

The survey reveals a *positive attitude by all respondents towards joint activities and regional coordination*. Indeed, the format of short intensive courses is very suitable for cooperation. Concentrated timing gives a good possibility to gather a larger number of students and attract guest professors, thus creating decent settings for quality learning and establishment of networks among researchers. For the smaller units, lifting researcher training to the regional cooperation is almost the only possibility to offer students intensive courses relevant for their forestry-specific thesis topics. In other areas than forestry, NOVA has a rich tradition in supporting long-standing (up to 10 and even more years) networks that run successful courses repeatedly, of course, updating them with relevant scientific advancements. Such approach enables sparing resources in course preparation, stimulates more permanent network contacts and may lead to higher course quality due to continuous refinements.

As a humble start, forestry faculties could make an extra effort to open the available national courses to international students from the region. The information on available Nordic and Baltic courses could be compiled and updated periodically. Before advanc-

ing to the regional level, this work of course should be done internally at the faculties. Taking another extreme, faculties could engage in a wide-going cooperation, including permanent coordination of joint activities, periodic meetings between researcher training coordinators, elaboration of additional incentives for organising quality courses, *etc.* To reach this level, either adequate financial resources should be channelled to NOVA and BOVA or corresponding supranational body, or one of the larger national faculties would need to take on the role of regional coordinator. Whatever the pace of changes will be, it is obvious that more capacity should be built for international education and research (Hosny El-Lakany 2004), and that internationalisation of research training will have an important role to play.

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## АНКЕТНЫЙ ОПРОС О ЛЕСНОЙ ДОКТОРАНТУРЕ В РЕГИОНЕ БАЛТИЙСКОГО МОРЯ

В. Брукас и М. Хурски

Резюме

На основе опроса координаторов докторантуры, в статье рассматривается статус докторского образования в университетах, проводящих высшее лесное образование в регионе Балтийского моря. Главное внимание уделяется интенсивным курсам и возможностям для совместного обучения на международном уровне. Всего в опросе участвовало приблизительно 450 докторантов. В 2005, 39 интенсивных курсов, вовлекая 5 или больше студентов, были организованы лесными факультетами. 15 курсов имели дело с темами, непосредственно связанными с лесоводством. Это показывает, что средний докторант имеет очень ограниченный выбор специализированных курсов, непосредственно связанных с темой диссертационной работы. Низкое число студентов замечено как первичная помеха для более интенсивного обучения, в то время как нехватка времени и финансовых стимулов для преподавателей препятствует организации международных курсов. В целом, наблюдается недостаточный систематический подход к лесному докторскому образованию. Участники обзора благосклонны международному сотрудничеству в сфере лесного обучения на уровне докторантуры.

**Ключевые слова:** Балтийские страны, докторское образование лесоводства, интенсивные курсы, интернализация, Россия, скандинавские страны