



XXIV IUFRO WORLD CONGRESS 2014

Sustaining Forests, Sustaining People: *The Role of Research*

Salt Lake City, Utah, USA

5-11 October 2014

THE IUFRO INCUBATOR
Student and young scientist sessions
Call for abstracts

The Congress Scientific Committee (CSC) and the International Forestry Students' Association (IFSA) welcome submission of abstracts from students and young scientists for presentation in **The IUFRO Incubator** sessions.

The IUFRO Incubator sessions are aimed specifically for graduate students and recent graduates to present a summary of their BSc, MSc or PhD thesis work. The presentations should be ultra-brief. Each speaker is allowed only *three minutes* and *one power point slide*.

Submitted abstracts should address one or more of the following session themes:

- Forest inventory and modelling,
- Forest ecology, biodiversity and silviculture,
- Forest health, tree physiology and genetics,
- Forest operations, engineering, products, biomass and bioenergy,
- Forest policy, social aspects and economics.

The sessions will be moderated by representatives from IFSA - the International Forestry Students' Association.

Submit your title, abstract and an indication of the preferred session using the form below and send it via e-mail to IncubatorIUFRO@slu.se no later than 20 March 2014. Acceptance letters will be issued by 20 April 2014. Note that we accept only one submission per presenting author.

Abstracts and power-point slides for presentation should be in English, but the oral presentation at the congress may be delivered in Spanish, French or German (official IUFRO languages). All incubator abstracts will be made available electronically for download through the congress website and on a cd for congress participants. Submission of an abstract implies consent by the author(s) to have the abstract published by the congress.

All presenting authors are required to register for the congress by 30 April 2014. Failure to do so will mean that the presentation will be deleted from the program.

Please practice your presentation well before the congress to make sure that you stay within the three-minute time limit. You can see examples of three-minute presentations at <http://threeminutethesis.org/>

We are looking forward to receiving your abstracts and meeting you at the congress. Questions about the incubator sessions should be directed to IncubatorIUFRO@slu.se.



THE IUFRO INCUBATOR 2014

Title of presentation (less than 20 words, should clearly summarize the topic of the abstract)

Name, organization, country and e-mail address of the author(s)

Presenting author's name (given name, family name)

Preferred session (tick one session)

- 1 Forest inventory and modelling
- 2 Forest ecology, biodiversity and silviculture
- 3 Forest health, tree physiology and genetics
- 4 Forest operations, engineering, products, biomass and bioenergy
- 5 Forest policy, social aspects and economics

Main text of abstract (max. 1300 characters (including blanks, approx. 200 words); should describe context, study topic, methods, main results and conclusions in plain writing (see examples on next page))

**Submit this form (*one page only*) as a word file to IncubatorIUFRO@slu.se before 20 March 2014.
Please name the file by combining session number and your family name (for example, 3Smith.doc).
Do not change the format of the form or include or enclose other information or files in the e-mail.**

EXAMPLE ABSTRACTS

Site-specific height growth models for three common tree species in Mongolia

Site-specific height growth models were developed for larch, spruce and pine in Mongolia. The models were derived based on base-age invariant methods to fit the three-dimensional surface of stand age, stand top height and site index in a manner that directly estimated site indices as parameters from the fitting procedure. The estimated base-age invariant models represented the observed age height patterns well across the range of site conditions. For all species the model explained more than 98 percent of the observed variation in stand height development and exhibited no apparent bias across the range of predicted site indices. Compared to historical site index curves, the growth patterns expressed by the site-specific height growth models were considerably different, indicating that the historical site index curves were biased. The pattern of deviation depended on tree species and site conditions.

Biomass, basic density and biomass expansion factor functions for Madagascar rosewood

The objective was to develop biomass functions for above- and below-ground components of rosewood growing in dense tropical forests of eastern Madagascar. Separate functions were developed for stem, branches, below-ground stump and root system, total above-ground biomass and total tree biomass. For each of these components or aggregate components, models were also developed for the average basic density of wood and bark and for the biomass expansion factor (BEF). The functions were based on 66 trees measured for total biomass. Model performance was evaluated based on 74 trees measured only for above-ground biomass. The trees were sampled in 18 different forest stands covering a wide range of tree sizes and stand treatments. Models were estimated using a linear mixed-effects procedure to account for within-stand correlations. The functions for biomass and BEFs included only diameter at breast height and total tree height for individual trees as predictor variables. Inclusion of additional variables reflecting site quality or stand density did not improve model performance. The functions for basic density included individual tree diameter, tree height and quadratic mean diameter as predictor variables, indicating an effect of stand density on the basic density of wood and bark.

Nutrient concentrations in stumps and coarse roots of willow and birch in Greenland

The objective was to evaluate the concentrations of nutrients in stumps and coarse roots of willow and birch in Greenland, and to assess how nutrient concentrations vary with site characteristics, stand age and root size. Concentrations of nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg) and sodium (Na) were assessed in stumps originating from ten neighbouring stands of each species, located at eight sites across a north-south gradient from Thule to Ammassalik. Stand ages ranged from 20 to 380 years. Nutrient concentrations were higher in birch than in willow and were generally higher at southern sites, except for P. For all nutrients, concentrations were significantly higher in the bark of the stump and roots than in the wood. Furthermore, nutrient concentrations increased significantly with decreasing root diameter. The study did not demonstrate any correlations with stand age. Further studies are needed to provide a broader picture of how the stump nutrient contents vary with site characteristics and forest management practices to provide a better foundation for nutrient balance calculations when setting up recommendations for stump removal.

Colonization of secondary woodlands by *Anemone nemorosa*

The study concerns migration of the herb species *Anemone nemorosa* (anemone) from older woodlands into adjacent, recently established woodlands of oak on former arable land. The anemone had colonized part of all studied recent woods, varying in age between 30 and 75 years. The cover of anemone in the recent woods decreased with increasing distance from the older woodland at all sites but one, indicating dispersal limitation during colonization. The advancing edge of most populations was characterized by negative logarithmic decrease in cover with establishment of isolated pioneer individuals and later gradual infill between pioneers. The mean migration rate of anemone based on observed maximum cover in recent woods was 0.20 m per year, 0.40 m per year' based on half maximum cover, and 0.85 m per year based on the individual found farthest from the former woodland border. The estimated migration rates were consistently higher than the rate of possible rhizome growth. Seed dispersal and establishment is thus important for colonization of new woodlands. The spatial pattern of colonization appeared to depend on micro-site availability, indicating a possible dependence on site preparation practices as well as subsequent forest management practices.

Patterns and severity of mahogany crown dieback in previously unlogged virgin forest in relation to stand density, bud flushing phenotype and time since logging

The extent and temporal pattern of mahogany crown damage attributed to *Fungal fungus* J.P. in previously unlogged virgin forest in the Ecuadorian Amazon was investigated in relation to bud flushing phenotype, residual stand density and time since logging. Data were collected during 2013 in four statistically designed experiments located in representative 5-ha forest patches (6-10 mahogany trees per ha, dbh > 20 cm). The study included 24 plots of three contrasting, residual stand densities: (1) approx. 45,000 trees/ha (unthinned control), (2) 15,000 trees/ha, and (3) 1,500 trees/ha. All plots were logged in December 2012. Assessments included flushing phenotype in January and an evaluation of the severity of crown damage (percentage of crown killed) in May and October. The seasonal pattern of disease severity was similar in all plots, and disregarding stand density the extent of crown damage increased significantly with increasing time since logging ($P < 0.005$). Disease severity was the worst in the control plots, but otherwise unrelated to stand density. Late-flushing trees were most severely affected ($P < 0.001$). The observed patterns of disease severity are probably associated with ecological features of the pathogen that still remain largely unknown.

Ecosystem services of a subtropical evergreen broadleaved forest type in China

This paper evaluates the ecosystem services of a subtropical evergreen broadleaved forest type in the Simian Mountain National Forest Park in Three Gorges Areas of China by using the methods of opportunity-cost and market price replacement. The study concerns six types of values of forest ecosystem services: water conservation, soil conservation, air purification, carbon dioxide fixation, biodiversity maintenance, and tourism. All are calculated based on field data, statistics data from a local travel agency, and related published studies and reports. The water conservation service included water yield and water quality protection. The soil conservation service included soil immobilization, fertility preservation, and soil erosion and sediment mitigation. The results indicate that the annual gross forest ecosystem services values in this area amount to 978 million yuan, of which 235 million yuan are for water conservation service, 140 million yuan for soil conservation service, 193 million yuan for carbon dioxide fixation service, 141 million yuan for air purification service, 159 million yuan for biodiversity maintenance service, and 110 million yuan for tourism service. The potential implications of these estimates are briefly outlined and discussed.

Recreational preferences depending on thinning practice in young stands of eucalypt: comparing the opinions of foresters and the general population in Australia

The aim was to investigate to which extent foresters agree with the general population regarding recreational preferences for contrasting stem densities in young stands of eucalypt. The study was based on five pairs of photographs from each of five recently thinned plots in a 10-year-old stand. The plots represented five different residual stem densities: 7000, 5000, 3000, 1000 and 100 stems ha^{-1} . All cut trees were left on the ground. The analysis was carried out based on questionnaires. Interviewees ranked the photographs according to the criterion: "Which forest environment do you prefer as a visitor?" Principal component factor analysis showed that the general public ($n = 243$) tended to group photos according to similar overall pattern of openness, presence of row structure and stand accessibility (including presence/absence of slash). Stand density had little influence on their preferences for a wide range of stand densities (5000-1000 stems ha^{-1}). In contrast, foresters ($n = 158$) grouped photos according to treatment type. The presence of slash had little influence on their preferences. This suggests an influence of professional background, making experts visually analyse and evaluate stands according to contemporary management standards and paradigms within the profession.