

Forest Alnarp



Southern Swedish Forest Research Centre



Euroforester: A growing network



Annual report 2018

These portraits are from last year's Euroforester alumni conference, see page 4 .



Greetings from the prefekt

It is an honour and a great responsibility to take the role of prefect after 12 years of able leadership by Matts Lindblad. This annual report highlights the Centre's vitality.

Our research is as strong as ever. The number of post-docs has never been higher and the number of scientific publications is on par with last year's record level.

In the Faculty's evaluation of spring 2018 teaching both Euroforester courses were among the top fifth that were rated of highest quality. This is an acknowledgement of excellent work by our teaching faculty. In the beginning of the summer, I attended the Euroforester alumni reunion in Estonia. I am glad to see the network continue growing in size and strength!

Since its founding 30 years ago, our Centre has been known for successfully cooperating with the forest sector, which was confirmed by praise from the external reviewers in SLU's "Quality and Effectiveness" evaluation in 2018.

With this solid foundation, we should strive for an enjoyable workplace while expanding our research, education and outreach.

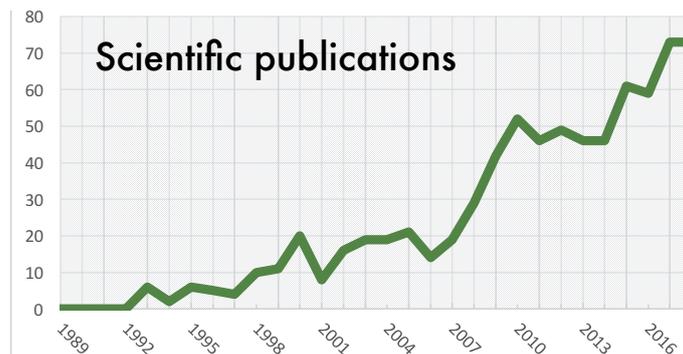
If we care for each other, the future will care for us!



Head of department
Vilis Brukas

Research

A record year



Researcher Henrik Böhlenius works to pave the way for poplars as a fast-growing alternative in silviculture. In the pictures he exhibits poplars planted four years ago. The small plant has barely survived. The larger poplars to the right are well over three meters tall. The only (and crucial) difference is that the soil with the tallest trees has been limed. Liming is a simple and relatively inexpensive method. These results were published last year and are a big step forward.



Many doctoral courses

Over the last five years, an average of three PhDs have been defended every year at our Centre, but the number varies greatly from year to year. In 2018 two dissertations were successfully defended.

One of these was by Martin Pettersson whose dissertation was titled "Diseases on Christmas trees in southern Sweden and western North Carolina." The second was Marta Agostinelli with the dissertation

"Fungal assemblages in forest trees."

Two new PhD students began in 2018, bringing the total number of active doctoral students to 14. During the last five years, an average of two doctoral courses have been organized every year. In 2018 a total of five doctoral courses were offered in the subjects of nature conservation, forest ecophysiology, silviculture, the growth and dynamics of trees, and scientific writing. Many of these were organized within the "Future silviculture in southern Sweden" (FRAS) research school.

During the year, we began to develop a new departmental strategy for post-graduate education.



FRAS is a unique collaboration between SLU Alnarp, Linnaeus University and Skogforsk about future-oriented forest management. The project engages six doctoral students. In the picture, project managers Erika Olofsson, Linnaeus University, Emma Holmström, Agricultural University of Alnarp and Karin Hjelm, Skogforsk.

Magnus Löf

New programs

To broaden our educational offerings, we are developing two new educational programs. In fall 2018 we received approval from the faculty and the university to proceed with their planning.

The first is a master's program in collaboration with Linneus University called "Ecological forest management." It will be run as an online course beginning in fall 2020. One target group is students from the undergraduate forestry program of Linneus University; another is biology students. The program's courses will be designed to respond to a broad demand for skills in the forest sector.

We are also in the first phase

of developing a new bachelor's program in Alnarp on forest and natural resource management expected to be in close cooperation with the Faculty of Landscape Architecture, Horticulture and Crop Production Science.

Since 2006, our Euroforester program has been a pioneering international master's degree in the Forestry Faculty. To date, over 750 students from 43 countries on 6 continents have taken part in the program.

In 2018 we offered six 15-credit courses to our international student group. The program's first year courses in forest policy and broadleaf forests were taught in the spring



Forest planning Eric Agestam instructs Stefan Juravle and Beatrice Stukytein.

semester. The new Euroforester students who arrived in Alnarp in late August enrolled in courses in sustainable forestry and forest planning during the autumn term.

At the beginning of the fall we also offered a course on temperate forest silviculture that attracted 16 students. During the second fall term we offered a new, recurring course on urban forests in

collaboration with the Landscape architecture, planning and management in Alnarp where landscape architects study together with forestry students.

As always, we taught students from the Forestry Faculty's programs in Umeå during their field trip to the south of Sweden.

Jörg Brunet
Matts Lindblad

Growing network

The pictures on the cover of the annual report show some of the participants at a June conference in Estonia. They come from ten different countries but all have one thing in common: all were educated in the Euroforester program in Alnarp.

This was the fourth alumni conference of the ever-growing network.

The program began in the early 2000s in collaboration with IKEA which finances scholarships for students from Eastern Europe. The focus was on forestry in the Baltic region.

Now Euroforester has grown into a master's program with choices of individual courses or a complete two year program. Several donors contribute to stipend funds.

In total over 650 people have attended at least two courses. The most represented country is Sweden, with 109 students. In second place comes Poland (87 students), followed by Russia (60), Latvia (58), Lithuania (46) and Estonia (39).

This year, a Euroforester alumni survey showed that over three-quarters of graduates work in the forest sector. Many hold key positions within companies, governments and universities. A full 15% hold PhDs.

Bonds among Euroforester alumni are strong. The survey shows that 85% of respondents regularly communicate with their former classmates. Most contact is due to lasting friendships, but 40% of contacts are work related. The Euroforester network is a clear factor in professional success.

The next alumni conference will be in Sweden 2021.



Cover images of participants in the alumni conference:

From top left: Kaspars Inkins, **Latvia**, Piotr Godziszewski, **Poland**, Denis Popov, **Russia**, Janis Magaznikes, **Latvia**, Ekaterina Makrickiene, **Lithuania**, Anna Sirotova, **Russia**, Casandra Ferrazzini, **Uruguay**, Tomasz Najgrakowski, **Poland**, Martin Kahu, **Estonia**, Aleksandra Bis, **Poland**.

Olga Polyachenko, **Russia**, Roman Poljatšenko, **Estonia**, Mindaugas Maksvytis, **Lithuania**, Krzysztof Wypij, **Poland**, Agris Gabrāns, **Latvia**, Eerik Luha, **Estonia**, Simon Trcka, **Czech Republic**, Domantas Zickus, **Lithuania**, Dagnija Berzina, **Latvia**, Oskars Zemītis, **Latvia**.

Ilze Sika, **Latvia**, Dimitri Sokolov, **Russia**, Kzysztof Flis, **Poland**, Mikko Link, **Estonia**, Tatiana Khakimulina, **Russia**.

Kalvin Kons, **Latvia**, Inna Kondur, **Ukraine**, Margus Paesalu, **Estonia**, Iwona Urban, **Poland**, Zelma Magazniece, **Latvia**, Ineta Egļite, **Latvia**, Martin Ewertson, **Sweden**, Stefania-Elena Purcaru, **Romania**, Ieva Bebre, **Latvia**, Andrii Khomiuk, **Ukraine**.

Robert Ondrejčík, **Slovakien**, Louice Wemmer, **Sweden**, Liene Kalvane, **Latvia**, Catharina Schmidt, **Germany**, Maaris Varrik, **Estonia**, Peter Meulman, **Netherlands**, Rokas Lastauskas, **Lithuania**, Benas Bitauskas, **Lithuania**, Jaan Kraav, **Estonia**, Milda Stasytyte-Logina, **Lithuania**.

Sigurds Logins, **Latvia**, Nikolay Puteshov, **Russia**, Pille Ligi, **Estonia**, Allan Sims, **Estonia**, Meelis Seedre, **Sweden**, Sigitas Girdziušas, **Lithuania**, Aušra Švagždýtė, **Lithuania**.

Sigita Bizuliene, **Lithuania**, Dmitrii Lyubimov, **Russia**, Gustaf Gustafsson, **Sweden**, Evaldas Makrickas, **Lithuania**, Evgeniya Balakhonova, **Russia**, Tõnis Tagel, **Russia**, Pavlo Polupan, **Ukraine**.

Daniil Akaikin, **Russia**, Arseniy Golubev, **Russia**, Agnieszka Gawron, **Poland**, Bartosz Standio, **Poland**, Piotr Kuczynski, **Poland**, Rihards Kepitis, **Latvia**, Tatiana Kolosovskaya, **Russia**, Kasia Woźniak, **Poland**, Oscar Nilsson, **Sweden**, Indulis Sloka, **Latvia**.

Personnel



At the beginning of 2019, the department had 51 employees. This picture shows the participants at the institution day in January 2019.

Cooperation

Close collaboration with the world outside the university is in the Centre's DNA. Our research-program grew out of industry needs. Contacts with the forestry sector have always been important for disseminating research results and seeking input on urgent emerging research questions.

– We welcome contacts. The Centre in Alnarp strives to be a partner in all issues affecting forests, emphasize Henrik Böhlenius

Newsletter



The newsletter 'Skog Alnarp' is now in its third year. It highlights new activities and research results.

It can be read on our website or by Googling 'Skog Alnarp'.

You can also subscribe for free by emailing par.fornling@slu.se.

New prefekt

His path to becoming head of the department began early. Even as a child, the now 46-year old Vilis Brukas dreamed of a future in the forest. It was never far away. His father was the vice-minister of forestry in Lithuania and the Brukas family is something of a forest dynasty.

After six years of bachelor's and master's study in forestry, Vilis met a pair of Danish researchers recruiting PhD students from Lithuania.

After Lithuania's independence, Denmark supported its economic development with different environmental projects. This led to Vilis' doctoral research on how environmental values can be integrated into Lithuanian forestry.

But environmental values were not the real problem. There were plenty of them. The challenge was the transition to a market economy. In Lithuania, as in other post-communist countries, economic thought was stuck in a backwater. Vilis saw the potential of the forest, but it was difficult to explain



because so many were stuck in the old system. In this way his interest in forest policy began.

P-M Ekö, then the director of studies in Alnarp, received a tip about the newly-minted PhD in Denmark. P-M was building the Euroforester program and Vilis was recruited to help. He began teaching courses in forest policy and to many peoples' happiness, has continued to do so, year after year. It is one of the faculty's most popular courses. Vilis is also the scientific coordinator of Alterfor, an EU project involving nine countries.

In parallel to this work he has led the centre since August 2018.

Contacts

Head of dep Vilis Brukas
Deputy/director of studies
Matts Lindblad

Education

Euroforest director of studies
Jörg Brunet
Euroforester coordinator
Desiree Mattsson
Giulia Attocchi
Research education
Annika Felton

Research

Ecology/nature conservation
Jörg Brunet
Jaime Uria Diez
Igor Drobyshev
Adam Felton
Annika Felton
Per-Ola Hedwall
Matts Lindblad
Mats Niklasson
Meelis Seedre

Silviculture

Eric Agestam
Jorge Aldea
Ignacio Barbeito
Henrik Böhlenius
Per-Magnus Ekö
Emma Holmström
Magnus Löf
Urban Nilsson
Jens Peter Skovsgaard
Narayanan Subramainen

Tropical forest/seed research

Per-Christer Odén

Policy planning

Vilis Brukas
Carl Salk
Renats Trubins

Pathology

Michelle Cleary
Marjan Ghasemkhani
Carmen Romeralo
Jonas Rönnerberg
Johanna Witzell
Lab/tekn: Mohammed Elsafy
Mimmi Blomquist

Administration

Economy Zhanna Möller
Adm Violeta Kokos
Data Klas Pernebratt
Technique Kent Hansson

Media/cooperation

Extension
Henrik Böhlenius
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Publishing

More than one scientific article per week

Last year we published over 70 peer-reviewed scientific articles in internationally-renowned journals. This rate has more than doubled in just a few years.

Here is a list of publications and book chapters by lead author. Researchers from the Southern Swedish Forest Research Centre in Alnarp are in bold type.

Aakala, T., ... **Drobyshev, I.** et al. Multiscale variation in drought controlled historical forest fire activity in the boreal forests of eastern Fennoscandia ECOLOGICAL MONOGRAPHS 88: 74-91.

Agostinelli, M., Cleary, M., Martin, J.A., Albrechtsen, B.R., **Witzell, J.** Pedunculate oaks (*Quercus robur* L.) differing in vitality as reservoirs for fungal biodiversity. FRONTIERS IN MICROBIOLOGY 9: art 1758.

Akoto, D.S., ... **Mensah, A.A.** et al. Socioeconomic indicators of bamboo use for agroforestry development in the dry semi-deciduous forest zone of Ghana. SUSTAINABILITY 10: art 2324.

Andersson, K.P., ... **Salk, C.F.** et al. Experimental evidence on payments for forest commons conservation. NATURE SUSTAINABILITY 1: 128-135.

Bergqvist, G., Paulson, S., Elmhagen, B. Effects of female body mass and climate on reproduction in northern wild boar. WILDLIFE BIOLOGY: art 00421.

Bergqvist, G., Wallgren, M., Jernelid, H., Bergström, R. Forage availability and moose winter browsing in forest landscapes. FOREST ECOLOGY AND MANAGEMENT 419: 170-178.

Böhlenius, H., Asp, H., Hjelm, K. Differences in AI sensitivity affect establishment of *Populus* genotypes on acidic forest land. PLOS ONE 13: e0204461.

Brukas, V., Stanislavaitis, A., Kavaliauskas, M., Gaizutis, A. Protecting or destructing? Local perceptions of environmental consideration in Lithuanian forestry. LAND USE POLICY 79: 1014-1023.



Marta Agostinelli nails up her thesis "Fungal assemblages in forest trees" on the pillar with the department's doctoral theses.

Cleary, M., Oskay, F., **Rönnerberg, J.,** Woodward, S. First report of *Pleuroceras pseudoplatani* on *Acer rubrum*, *A. griseum*, *A. saccharinum*, *A. negundo*, *A. circinatum* and *A. macrophyllum* in Scotland. FORESTRY CHRONICLE 94: 147-150.

Coll, L., ... **Löf, M.** et al. Knowledge gaps about mixed forests: What do European forest managers want to know and what answers can science provide? FOREST ECOLOGY AND MANAGEMENT 407: 106-115.

De Frenne, P., ... **Brunet, J.** et al. Atmospheric nitrogen deposition on petals enhances seed quality of the forest herb *Anemone nemorosa*. PLANT BIOLOGY 20: 619-626.

De Lombaerde, E., ... **Brunet, J.** et al. Responses of competitive understorey species to spatial environmental gradients inaccurately explain temporal changes. BASIC AND APPLIED ECOLOGY 30: 52-64.

De Smedt, P., ... **Brunet, J.** et al. Desiccation resistance determines distribution of woodlice along forest edge-to-interior gradients. EUROPEAN JOURNAL OF SOIL BIOLOGY 85: 1-3.

De Smedt, P., ... **Brunet, J.** et al. Linking macrodetritivore distribution to desiccation resistance in small forest fragments embedded in agricultural landscapes in Europe. LANDSCAPE ECOLOGY 33: 407-421.

Derroire, G., Powers, J.S., Hulshof, C.M., Cardenas Varela, L.E., Healey, J.R. Contrasting patterns of leaf trait variation among and within species during tropical dry forest succession in Costa Rica. SCIENTIFIC REPORTS 8: art 285.

Ding, J., **Böhlenius, H.** et al. GIGANTEA-like genes control seasonal growth cessation in *Populus*. NEW PHYTOLOGIST 218: 1491-1503.

Drössler, L., **Agestam, E., Löf, M.** et al. Over- and underyielding in time and space in experiments with mixed stands of Scots pine and Norway spruce. FORESTS 9: art 495.



Desiree Mattsson is working on recruiting Euroforester students and helping them in Alnarp, which means many international contacts.

Egbäck, S., ... Nilsson, U. Effects of phenotypic selection on height-diameter ratio of Norway spruce and Scots pine in Sweden. *SILVA FENNICA* 52: art 7738.

Ehrmann, S., ... **Brunet, J.** et al. Habitat properties are key drivers of *Borrelia burgdorferi* (s.l.) prevalence in *Ixodes ricinus* populations of deciduous forest fragments. *PARASITES & VECTORS* 11: art 23.

Fahlvik, N., Berglund, M., Holmström, H., **Nilsson, U.** Simulation of the long-term effects of different strategies for precommercial thinning in *Pinus sylvestris*. *SCANDINAVIAN JOURNAL OF FOREST RESEARCH* 33: 347-356.

Farooq, T.H., **Tigabu, M., ... Odén, P.C.** et al. Nutrient uptake, allocation and biochemical changes in two Chinese fir cuttings under heterogeneous phosphorus supply. *IFOREST-BIOGEOSCIENCES AND FORESTRY* 11: 411-417.

Felton, A.M., Wam, H.K., Stolter, C., Mathisen, K.M., Wallgren, M. The complexity of interacting nutritional drivers behind food selection, a review of northern cervids. *ECOSPHERE* 9: e02230.

Filyushkina, A., Strange, N., **Löf, M.,** Ezebilo, E.E., Boman, M. Applying the Delphi method to assess impacts of forest management on biodiversity and habitat preservation. *FOREST ECOLOGY AND MANAGEMENT* 409: 179-189.

Forbey, J.S., ... **Felton, A.M.** Review: Using physiologically based models to predict population responses to phytochemicals by wild vertebrate herbivores. *ANIMAL* 12: 383-398.

Forrester, D.I., ... **Drössler, L., Löf, M.** et al. Effects of crown architecture and stand structure on light absorption in mixed and monospecific *Fagus sylvatica* and *Pinus sylvestris* forests along a productivity and climate gradient through Europe. *JOURNAL OF ECOLOGY* 106: 746-760.

Franz, D., ... **Linder, S.** et al. Towards long-term standardised carbon and greenhouse gas observations for monitoring Europe's terrestrial ecosystems. *INTERNATIONAL AGROPHYSICS* 32: 439-455.

Hackett-Pain, A.J., ... **Drobyshev, I.** et al. Climatically controlled reproduction drives interannual growth variability in a temperate tree species. *ECOLOGY LETTERS* 21: 1833-1844.

Hedwall, P.-O., Churski, M., Jedrzejewska, B., Miscicki, S., Kuijper, D.P.J. Functional composition of temperate forest trees under chronic ungulate herbivory. *JOURNAL OF VEGETATION SCIENCE* 29: 179-188.

Hedwall, P.-O. et al. Interplay between N-form and N-dose influences ecosystem effects of N addition to boreal forest. *PLANT AND SOIL* 423: 385-395.

Helsen, K., ... **Brunet, J.** et al. Impact of an invasive alien plant on litter decomposition along a latitudinal gradient. *ECOSPHERE* 9: e02097.

Hemery, G., **Skovsgaard, J.P.** Silvology: redefining the biological science for the study of forests. *QUARTERLY JOURNAL OF FORESTRY* 112: 128-131.

Holmström, E., Goude, M., Nilsson, O., Nordin, A., Lundmark, T., **Nilsson, U.** Productivity of Scots pine and Norway spruce in central Sweden and competitive release in mixtures of the two species. *FOREST ECOLOGY AND MANAGEMENT* 429: 287-293.

Jimenez-Alfaro, B., ... **Brunet, J.** et al. Modelling the distribution and compositional variation of plant communities at the continental scale. *DIVERSITY AND DISTRIBUTIONS* 24: 978-990.

Jocher, G., ... **Linder, S.** et al. Impact of canopy decoupling and subcanopy advection on the annual carbon balance of a boreal Scots pine forest as derived from Eddy covariance. *JOURNAL OF GEOPHYSICAL RESEARCH-BIOGEOSCIENCES* 123: 303-325.

Klapwijk, M.J., ... **Felton, A.** et al. Capturing complexity: Forests, decision-making and climate change mitigation action. *GLOBAL ENVIRONMENTAL CHANGE-HUMAN AND POLICY DIMENSIONS* 52: 238-247.

Kleinschmit, D., Puelzl, H., Secco, L., Sergent, A., **Wallin, I.** Orchestration in political processes: Involvement of experts, citizens, and participatory professionals in forest policy making. *FOREST POLICY AND ECONOMICS* 89: 4-15.

Kleinschmit, D., Secco, L., Sergent, A., **Wallin, I.,** Puelzl, H. Research trends: Orchestrating forest policy-making: Involvement of scientists and stakeholders in political processes. *FOREST POLICY AND ECONOMICS* 89: 1-3.

Krizsan, S.J., ... **Felton, A.M.** et al. An in vitro evaluation of browser and grazer fermentation efficiency and microbiota using European moose spring and summer foods: *ECOLOGY AND EVOLUTION* 8: 4183-4196.

Lamba, S., ... **Linder, S.** et al. Physiological acclimation dampens initial effects of elevated temperature and atmospheric CO₂ concentration in mature boreal Norway spruce. *PLANT CELL AND ENVIRONMENT* 41: 300-313.



Johanna Witzell (to the right) talks about research on the importance of the fungi for the trees, which opens the doors to a new world.



Euroforester students on a visit to Derome in Varberg, a sawmill with extensive processing.

Loustau, D., ... **Linder, S.** et al. Sampling and collecting foliage elements for the determination of the foliar nutrients in ICOS ecosystem stations. *INTERNATIONAL AGROPHYSICS* 32: 665+.

Löf, M. et al. Regeneration patterns in mixed-species stands. In: Dynamics, silviculture and management of mixed forests (Bravo-Oviedo, A., Pretzsch, H., del Rio, M. Eds.), Chapter 4, p 103-130, Springer International Publishing.

Mason, W.L., **Löf, M.**, Pach, M., Spathelf, P. The development of silvicultural guidelines for creating mixed forests. In: Dynamics, silviculture and management of mixed forests (Bravo-Oviedo, A., Pretzsch, H., del Rio, M. Eds.), Chapter 7, p 255-270, Springer International Publishing.

Mason, E.G., **Holmström, E.**, **Nilsson, U.** Using hybrid physiological/mensurational modelling to predict site index of *Pinus sylvestris* L. in Sweden: a pilot study. *SCANDINAVIAN JOURNAL OF FOREST RESEARCH* 33: 147-154.

McCarthy, R. **Löf, M.**, Gardiner, E.S. Early root development of poplars (*Populus* spp.) in relation to moist and saturated soil conditions. *SCANDINAVIAN JOURNAL OF FOREST RESEARCH* 33: 125-132.

McCallum I., ... **Salk, C.** et al. Engaging citizens in environmental monitoring via gaming. *INTERNATIONAL JOURNAL OF SPATIAL DATA INFRASTRUCTURES RESEARCH* 13: 15-23.

Mkonda, M.Y., He, X., **Sandell Festin, E.** Comparing smallholder farmers' perception of climate change with meteorological data: Experience from seven agroecological zones of Tanzania. *WEATHER CLIMATE AND SOCIETY* 10: 435-452.

Ols, C., Girardin, M.P., Hofgaard, A., Bergeron, Y., **Drobyshev, I.** Monitoring climate sensitivity shifts in tree-rings of eastern boreal North America using model-data comparison. *ECOSYSTEMS* 21: 1042-1057.

Ols, C., ... **Drobyshev, I.** Post-1980 shifts in the sensitivity of boreal tree growth to North Atlantic Ocean dynamics and seasonal climate. *GLOBAL AND PLANETARY CHANGE* 165: 1-12.
Oswald, W.W., ... **Lindbladh, M.** et al. Subregional variability in the response of New England vegetation to postglacial climate change. *JOURNAL OF BIOGEOGRAPHY* 45: 2375-2388.

Pach, M., ... **Löf, M.** et al. Silviculture of mixed forests: An European overview of current practices and challenges. In: Dynamics, silviculture and management of mixed forests (Bravo-Oviedo, A., Pretzsch, H., del Rio, M. Eds.), Chapter 6, p 185-253, Springer International Publishing. 185-253.

Perring, M.P., ... **Brunet, J.** et al. Global environmental change effects on plant community composition trajectories depend upon management legacies. *GLOBAL CHANGE BIOLOGY* 24: 1722-1740.

Perring, M.P., **Hedwall, P.-O.**, **Brunet, J.** et al. Understanding context dependency in the response of forest understorey plant communities to nitrogen deposition. *ENVIRONMENTAL POLLUTION* 242: 1787-1799.

Pettersson, M., Talgo, V., Frampton, J. Karlsson, B., **Rönnberg, J.** Pathogenicity of *Neonectria fuckeliana* on Norway Spruce Clones in Sweden and Potential Management Strategies. *FORESTS* 9: art 105.

Petucco, C., Jensen, F.S., Meilby, H., **Skovsgaard, J.P.** Visitor preferences of thinning practice in young even-aged stands of pedunculate oak (*Quercus robur* L.): comparing the opinion of forestry professionals in six European countries. *SCANDINAVIAN JOURNAL OF FOREST RESEARCH* 33: 81-90.

Ranius, T., ... **Felton, A.** The effects of logging residue extraction for energy on ecosystem services and biodiversity: A synthesis. *JOURNAL OF ENVIRONMENTAL MANAGEMENT* 209: 409-425.

Redpath, S.M., ... **Salk, C.F.** et al. Games as tools to address conservation conflicts. *TRENDS IN ECOLOGY & EVOLUTION* 33: 415-426.

Roberge, J.-M., **Felton, A.** et al. Modified forest rotation lengths: Long-term effects on landscape-scale habitat availability for specialized species. *JOURNAL OF ENVIRONMENTAL MANAGEMENT* 210: 1-9.

Roy, H., ... **Cleary, M.**, **Witzell, J.**, et al. Increasing understanding of alien species through citizen science (Alien-CSI). *RESEARCH IDEAS AND OUTCOMES* 4: e31412.

Salk, C., Fritz, S., See, L., Dresel, C., McCallum, I. An exploration of some pitfalls of thematic map assessment using the new map tools resource. *REMOTE SENSING* 10: art 376.



Thore Alströmer, Administrator at Östad, tells about the activities on the property outside Alingsås, but focuses on supporting education. Euroforester students are repeat guests a couple of weeks every year.



At a meeting with Green innovation park, researcher Carl Salk tells how to use games to understand forest management incentives.

Salk, C., Travers, H. Not all group incentives are created equally. CONSERVATION LETTERS 11: e12432.

Seedre, M., Felton, A., Lindbladh, M. What is the impact of continuous cover forestry compared to clearcut forestry on stand-level biodiversity in boreal and temperate forests? A systematic review protocol. ENVIRONMENTAL EVIDENCE 7: art 28.

Skovsgaard, J.P., Markmann, J.J. M., Attocchi, G., Talbot, B. High-pruning of European beech (*Fagus sylvatica* L.) and pedunculate oak (*Quercus robur* L.): work efficiency for target pruning as a function of tree species, pruning height, branch characteristics, pole saw type and operator. SCANDINAVIAN JOURNAL OF FOREST RESEARCH 33: 511-517.

Skovsgaard, J.P., Ols, C., Mc Carthy, R. High-pruning of silver birch (*Betula pendula* Roth): work efficiency as a function of pruning method, pole saw type, slash removal, operator, pruning height and branch characteristics. INTERNATIONAL JOURNAL OF FOREST ENGINEERING 29: 117-127.

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Tigabu M., Farhadi M., Stener L.-G., Odén P.C. Visible + near infrared spectroscopy as taxonomic tool for identifying birch species. SILVA FENNICA 52: art 9996.

Tigabu, M., Felton, A.M. Multivariate calibration of near infrared spectra for predicting nutrient concentrations of solid moose rumen contents. SILVA FENNICA 52: art 7822.

Tor-ngern, P., ... Linder, S. et al. Water balance of pine forests: Synthesis of new and published results. AGRICULTURAL AND FOREST METEOROLOGY 259: 107-117.

Wam, H.K., Felton, A.M., Stolter, C., Nybakken, L., Hjeljord, O. Moose selecting for specific nutritional composition of birch places limits on food acceptability. ECOLOGY AND EVOLUTION 8: 1117-1130.

Widerberg, M.K., Ranius, T., Drobyshev, I., Lindbladh, M. Oaks retained in production spruce forests help maintain saproxylic beetle diversity in southern Scandinavian landscapes. FOREST ECOLOGY AND MANAGEMENT 417: 257-264.

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Ulf Johansson, from Tönnersjöhedens experimental park, tells about research results at an excursion within the Fras program at Tagel