DENVI
Doctoral programme in interdisciplinary environmental sciences

ABSTRACT BOOK

2nd ANNUAL DENVI MEETING 2017

UNIVERSITY OF HELSINKI

DENVI - DOCTORAL PROGRAMME IN INTERDISCIPLINARY ENVIRONMENTAL SCIENCES

2nd ANNUAL DENVI MEETING 2017

ABSTRACT BOOK

Layout: Karna Dahal

Background picture: Timo Huvilinna

University of Helsinki 2017

Annual Meeting Information

2nd Annual DENVI meeting will take place in 6-7th of February 2017, at auditorium Pieni Juhlasali (Fabianinkatu 33 4th floor) in the City Centre Campus. The annual DENVI meeting gathers together all DENVI students and supervisors and gives students the opportunity to present their work, get feedback for the talk and meet internationally renowned keynote speakers in DENVI's fields of science. The meeting is multidisciplinary so all DENVI students regardless of their field are encouraged to participate and present their work.

This year's theme for the annual meeting is "**Interactions between human and environment**" which covers all disciplines from social sciences to biological and environmental sciences. The program includes poster presentation, oral presentation, and workshop. Workshop is only for PhD students. Master degree students can also participate both in the oral and poster presentation. In addition, there will also be fun competitions in teams.

The Keynote Speakers are **Dr. Sara Tjossem** from Columbia University, New York City, USA, and **Dr. Sonja Salovius-Laurén** from Åbo Akademi University, Turku, Finland.

About DENVI

DENVI doctoral programme in interdisciplinary environmental sciences started in January 2014 and is coordinated by the Helsinki University Centre for Environment, HENVI. DENVI belongs to the Doctoral School in Environmental, Food and Biological Sciences (YEB) and is funded by the University of Helsinki. There are approximately 120 PhD students in DENVI. The central themes of DENVI are environmental change and sustainable development as well as climate change, land use, and the Baltic Sea and its catchment area. The program gathers together the essential fields of natural and social sciences, law and humanities that are needed to study the complexity of environmental change and pathways to sustainable development. DENVI aims to study environmental change from biological processes to environmental governance – seeking solutions for a more sustainable future. DENVI considers environment broadly from natural habitats to built environments

KEYNOTE SPEAKERS

DR. SARA TJOSSEM

sft2101@columbia.edu

School of International and Public Affairs, Columbia University, New York, USA.

Keynote: Scientific and Political Networks in an Age of Climate Change

Dr. Sara Tjossem works on the interplay of science and society in the 20th century through the development of scientific institutions and environmental movements. Her training in the natural sciences and the history of science informs her research and teaching on environmental policy and politics. Her most recent book, Fostering Marine Science and Internationalism: The Journey with PICES, the North Pacific Marine Science Organization (Springer, 2017), describes the development and growth of a premier intergovernmental science organization. She looks forward to renewing her ties to Finland, having spent a year at the University of Helsinki on a Fulbright-Hays fellowship in 1984.

DR. SONJA SALOVIUS-LAURÉN

sonja.salovius@abo.fi

Department of Biosciences, Åbo Akademi University, Turku, Finland

Keynote: Science for everyone: The VELMU program and its advantages for society.

Dr. Sonja Salovius-Laurén is a senior Lecturer in the Department of Biosciences, Åbo Akademi University, Turku, Finland, and a research scientist in "The Finnish Inventory Programme for the Underwater Marine Environment (VELMU)" research project. VELMU aims at mapping the marine areas around Finland to support management and nature protection. The project work includes large efforts of geological and biological field inventories, handling of data sets, GIS, statistics, spatial modelling and research at several levels. The communication and outreach to stakeholders and to the general public are of central importance. The work is done as a large cooperation between different research institutions and authorities in Finland. Her primary interests, being a marine biologist, are in biodiversity and functions in coastal shallow productive areas and how anthropogenic activities affect these important habitats. Environmental conditions set the limits for the water vegetation, being the base in the food chain, and mechanisms driving the interactions between vegetation and fauna are of special interest.

DENVI STUDENTS' ABSTRACTS IN THE ORDER OF THE PROGRAMME

MONDAY 6th FEBRUARY (ORAL PRESENTATIONS)

Kaisa Paananen

kaisa.paananen@helsinki.fi
Faculty of Science
Department of Geosciences and geography

Nitrogen production and oxygen dynamics in contrasting estuaries of the Baltic Sea

Estuarine systems receive high amounts of nutrients and organic matter (OM). Thus, estuarine sediments play a vital role in the turnover of river load and subsequent biogeochemical element cycling. The functioning of these sediments in regard to turnover processes and rates, especially removal of nutrients such as nitrate, is of particular interest. We compare nitrogen (N) and oxygen (O_2) dynamics of two contrasting Baltic Sea estuarine systems, the northern Baltic Öre estuary (ÖE) and the southern Baltic Vistula estuary (VE). Both differ in that ÖE receives small loads and is dominated by muds and cohesive sands, whereas VE receives high loads and is dominated by permeable sands, adding mass transport via advective pore water flow to the latter system. We present sedimentary O_2 penetration depths and nitrate removal rates from both estuaries, with particular focus on sand sediments. Our aim is to describe the coastal filter efficiency in regard to nitrate removal in these contrasting.

Dana Hellemann

dana.hellemann@helsinki.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

How logging residues of different tree species affect soil nitrogen cycling and losses?

Logging residue harvesting decreases the amount of fresh organic matter entering the forest soil. In stem-only-harvesting, executed by modern harvesting technics, logging residues are piled to vehicle paths instead of being evenly distributed to the forest floor. Uneven distribution of logging residues influences to decomposition and nutrient release from organic matter. The aim is to determine how logging residues of different tree species affect processes of N cycle and losses after clear-cutting. Processes of N cycling (N mineralization, nitrification, denitrification, N fixation, the amounts of N in the microbial biomass) and contribution of nitrification/denitrification to N_2O production are studied. According to first year results logging residues increased pH, accelerated net N mineralization and increased the amount of mineral N. Nitrification had started under some of the piles. There were signs of differences between tree species

Mohammad Mozumder

mohammad.mozumder@helsinki.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

Enhancing the resilience of fishing communities to climate Change through co-management in the Hilsa fishery - A case study of Bangladesh

Bangladesh is one of the vulnerable continental nations in the world to climate change due to poverty, high population density, food insecurity, and exposure to flooding. Coastal fishing communities lack the economic, social, and political power to improve their resilience to these shocks and stressors. Hilsa (Tenualosa ilisha) is the national fish of Bangladesh and an important source of livelihood and seafood in Southern Asia. However, the stocks are subjected to serious depletion due to a number of threats and stressors including climate change. This PhD project combines ecological, social, economic, and political aspects to examine the impact of co-management in enhancing the resilience of climate-vulnerable Hilsa fishing communities. This case study is applying qualitative methods to engage the community in exploring how co-management is (or can be) linked to community resilience. In-depth individual interviews and focus group discussions will be carried out to obtain information.

Anita Heim

anita.heim@helsinki.fi
Faculty of Agriculture and Forestry
Department of Forest Sciences

Changing food environment and its impact on dietary patterns among the Khwe San people in Namibia

Indigenous communities are experiencing rapid environmental, cultural and socioeconomic transitions through which their food environment is significantly altered. Food environment can be characterized by different dimensions of food access that incorporates availability, accessibility, affordability, acceptability, and accommodation.

These dimensions are rarely investigated together in the recent scientific literature. This study aims to measure the impact of the changing food environment on dietary practices of an indigenous group in Namibia.

I have used participatory observation, key informant interviews, free listings of food items, diet recalls and food source ranking exercises to explore the impact on nutritional quality and satisfaction of the different dimensions of the food environment.

The preliminary results show, that the contemporary food environment is fragile and not able to support a satisfactory diet, that secures the Khwe San people in Bwabwata National Park.

Sophia E. Hagolani-Albov

sophia.hagolani-albov@helsinki.fi
Faculty: Agriculture and Forestry
Department: Department of Forest Sciences

Metabolic Rift and the Future of the Finnish Countryside

The globalization of food production and consumption, especially long supply chains, have contributed to rural de-structuring, loss of rural communities, and widening metabolic rifts (MR). These MRs are characterized by ecological degradation at the sites of production and consumption and the social alienation of producers and consumers. Agroecological symbiosis (AES) is an agricultural system model based on the development of traceable, cyclical food systems aimed at (re)localization of food procurement and revitalization of rural communities. My research uses an AES model in Palopuro village, Finland. Palopuro village has lost its train stop and is school, yet, it has not been culturally absorbed into the adjacent town, Hyvinkää. This talk will explore the role of AES in maintaining the vitality and cultural of Palopuro village. In addition, it will touch on the social manifestations of MR in the Palopuro case and the potential effects on MR through participation in an AES model.

Siri Pisters
siri.pisters@luke.fi
Faculty of Rural Sociology
Department of Economy & Society Unit

Transformative learning and societal transformation in and through ecovillages - Exploring Connection, Compassion and Creativity in Kurjen Tila (Finland), Vainola (Finland) and Tamera (Portugal)

This research explores the potential of ecovillages to be transformative social innovations by embodying transformative learning processes. Transformative learning is defined as a shift in consciousness from a modern, instrumental consciousness to an ecological consciousness. Three key processes of transformative learning are highlighted: connection, cultivating (self) compassion and creativity. Through transformative learning processes, peoples and societies self-identity and self-worth can be detached from modern life securities which is rendered key to get people on board of a transformative journey, without directly threaten their self-identity and self-worth. To get from this to actually creating a new world, the concept of creativity comes in It is argued that traditional scientific methods fall short in capturing processes of transformative learning. The research then combines sensory ethnography with an intuitive, transpersonal research approach.

Angela Moriggi

angela.moriggi@luke.fi
Faculty of Natural Resources Institute Finland (Luke)
Department of Economics and Society Unit

Green care practices: transforming people, transforming places? A theoretical proposition

This presentation interrogates the meaning and nature of transformation in relation to green care (GC) practices - an umbrella term comprising activities carried out in contact with nature, yielding beneficial social and health effects to different target groups. Building on a scholarly tradition claiming the transformative potential of caring practices, I inquire over the capacity of GC practices to shape places in transformative ways, as a result of two main dynamics: (1) caring for places: when GC activities are initiated for place- based reasons - to sustain and (re)generate places via a specific kind of socio-spatial practices; (2) caring with people (in places): when through empowering caring practices, the people engaged become partners of a new social model and shape places in new ways, ideally contributing to social justice and inclusion. These assumptions constitute the theoretical backbone of a PhD project focused on green care practices in Finland.

Joel Jalkanen

joel.jalkanen@helsinki.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

How to Prioritize Urban Biodiversity?

Methods in conservation biology, such as spatial conservation prioritization (SCP), can be used as a part of land-use planning that is sensitive to biodiversity and ecosystems. However, if the conservation goal in cities is to preserve the dynamic nature of urban biodiversity and ecosystem processes it produces, spatial prioritizations should not be based merely on sets of observed species and/or biotopes. Here we introduce a city-scale SCP approach to identify the most important green infrastructure sites in an urban ecologically relevant manner. First, 68 urban biotopes are evaluated in terms of how they support different taxonomic groups' species richness, richness of specialist species, biomass, abundance, evenness, uniqueness, and regional representativeness. The evaluation is translated into spatial form and prioritized with a SCP analysis, here using the Zonation software. The approach is demonstrated with a case study from the Helsinki Metropolitan Region, Finland.

Henrikki Tenkanen

henrikki.tenkanen@helsinki.fi
Faculty of Science
Department of Geosciences and Geography

A framework for dynamic accessibility modelling

Recent research in transport and urban science has recognized the need for more realistic spatial accessibility modelling regarding the incorporation of temporal dimensions and multimodality for planning smart and sustainable cities. In my talk I will present a generic conceptual framework for dynamic accessibility modelling where the three core elements of accessibility - spatial distribution of people, points of interest, and transportation network - are all considered as a function of time.

In an empirical study in Tallinn, Estonia open, spatio-temporally accurate data sources are applied for public transport and services, and the distribution of observed population in time is derived from Big Data, namely mobile phone and geolocated social media data. We compare the dynamic accessibility measures to more traditional and static accessibility measures and analyse the suitability of different Big Data sources for accessibility research.

Anna Salomaa

anna.salomaa@helsinki.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

Policy development of conservation of mires: knowledge use and policy instruments

Mires are important for biodiversity conservation and carbon storage. We studied the interface of science and policy in Finnish mire conservation: how the use of ecological knowledge and planned policy instruments developed 2011-2015 when policy was intensively defined. Our data consists of central policy documents: Peatland strategy, Finnish Government Resolution on the Sustainable Use and Protection of Mires and Proposal of mire conservation group, which we analysed qualitatively with Atlas.ti. Our results show how consideration of knowledge on species, ecosystem services, climate change and green infrastructure have changed during policy development. Planned policy instruments have changed to highlight voluntariness. Supplementation programme for conservation was not implemented but Environment Protection Act was reformulated to prohibit use of most valuable mires. Balance of ecological knowledge and instruments decreased.

TUESDAY 7th FEBRUARY (ORAL PRESENTATIONS)

Taina Laaksoharju

taina.laaksoharju@helsinki.fi
Faculty of Agriculture and Forestry
Department of Agricultural Sciences

The role and meaning of trees for (urban) children

Contact to nature is vital to all people. However, children & apos's opportunities to real natural experiences are diminished in particularly urban areas. In this study, I explored what was the role and meaning of trees for 7 to 10 year-old children in their free time. Research methods included participatory action research, non-participatory observation, and informal interviews in a garden summer camp. Results showed that the children used trees to fulfill their needs: to show or to improve their competence, and to relax and rest. In addition, they expressed affection by personalizing trees in a devotional way, and nature inspired children & apos's imagination with various materials. According to our results, children use trees in ways which benefit their development; especially their socio-emotional growth. Architects and other stakeholders should take into account the affordances that trees provide for children when planning and renovating living areas.

Sanna-Riikka Saarela

sanna-riikka.saarela@ymparisto.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

From speaking-truth-to-power to collaborative knowledge exchange: the science-policy nexus in forest bioenergy policy

It has been pointed out that particularly for current societal and environmental policy problems, such as forest bioenergy, dialogue and interaction between policy-makers and researchers is essential. Despite the decades-long debate, day-to-day interaction and impact remain a challenge. By investigating and reflecting researchers' perspective on challenges and opportunities of evolving interaction between science and policy, this paper contributes to ongoing discussions on and development of workable and effective science-policy nexus. Research material consists of 12 in-depth interviews with experienced forest researchers working at different organisations in Finland. The results highlight multiple challenges researchers constantly encounter. At the same time, it proves to be important and rewarding for a researcher to contribute to policy-making. Thus, more emphasis should still be put on establishment of effective collaboration practices around science-policy nexus.

Tiina Törmänen

tiina.tormanen@luke.fi
Faculty of Agriculture and Forestry
Department of Forest Sciences

How logging residues of different tree species affect soil nitrogen cycling and losses?

Logging residue harvesting decreases the amount of fresh organic matter entering the forest soil. In stem-only-harvesting, executed by modern harvesting technics, logging residues are piled to vehicle paths instead of being evenly distributed to the forest floor. Uneven distribution of logging residues influences to decomposition and nutrient release from organic matter. The aim is to determine how logging residues of different tree species affect processes of N cycle and losses after clear-cutting. Processes of N cycling (N mineralization, nitrification, denitrification, N fixation, the amounts of N in the microbial biomass) and contribution of nitrification/denitrification to N2O production are studied. According to first year results logging residues increased pH, accelerated net N mineralization and increased the amount of mineral N. Nitrification had started under some of the piles. There were signs of differences between tree species.

Aino Assmuth

aino.assmuth@helsinki.fi
Faculty of Agriculture and Forestry
Department of Forest Sciences

Optimal carbon storage in uneven-aged mixed species forests

This study analyses economically optimal carbon storage in boreal uneven-aged mixed-species forests. We optimize the co-production of timber and carbon storage services in size-structured stands using detailed harvesting cost functions. In addition to carbon storage in the stand, we consider carbon in sawlog and pulpwood products. The ecological model applied in the study is a transition matrix model with empirically estimated Scandinavian growth functions for Norway spruce, birch, and other broadleaves. The optimization problem is solved in its general dynamic form using gradient-based interior point methods. According to our results, the inclusion of carbon storage benefits increases the optimal stand density and the predominance of spruce in stands consisting of only spruce and birch. In stands with spruce, birch and other broadleaves, carbon pricing motivates forest management that maintains a considerable amount of other broadleaved trees even though they have no commercial value.

Poster presentations

Attila Paksi

attila.paksi@helsinki.fi
Faculty of Social Sciences
Department of Development Studies

Photovoice - Well-being and ecosystem services among the indigenous youth

The well-being of indigenous societies is highly dependent on ecosystem services from their surrounding environment supported by their traditional knowledge. However, the recent changes in their surrounding environment and the erosion of traditional knowledge is starting to impact their well-being.

This poster illustrates the present-day relationship between human well-being, ecosystem services and traditional knowledge based on a recent fieldwork carried out among the Khwe San indigenous group in the Bwabwata National Park (Namibia) by showcasing the Photovoice participatory photography method.

Photovoice is a multi-stage process by which participants identify, capture and reflect on specific topics within their own community. The 24 Khw_e participants captured in a total of 854 photos reflecting on their well-being and environment. The method of analysis for these photos is provided by the Millennium Ecosystem Assessment framework.

Gonzalo Cortés Capano

gonzalo.cortescapano@helsinki.fi
Faculty of Science
Department of Geosciences and Geography

A systematic literature reviews of private land conservation globally to enhance conservation success in Uruguay

Protected areas help conserve biodiversity and ecosystem services, as well as support human well-being. Aichi target 11 of the Convention of Biological Diversity promotes the expansion of the global protected area network to 17% of all terrestrial land by 2020. While protected areas remain crucial to help achieve this target, decision makers need to consider additional conservation actions to protected area creation, such as conservation on private and communal land. There are many different strategies worldwide to promote private land conservation, including involuntary strategies that might involve regulatory prohibitions and voluntary tools, which range from conservation easements to voluntary non-monetary conservation strategies. However, no previous study assessed the effectiveness of different strategies to help achieve conservation on the ground and the complex ecological, social and economic processes that characterize them. Following a systematic literature review, I will explain how lessons learnt in other parts of the world can be used to enhance private land conservation in Uruguay, where more than% of the land is privately owned.

Janne J. Salovaara

janne.salovaara@helsinki.fi
Faculty of Biological and Environmental Science
Department of Environmental Science

Universities Co-creating Sustainable Societies

My poster diagram is about the causal chain and feedback loops on how Environmental Global Change has led to reactions such as Sustainability Science, it's education, to concepts of transformation and co-creation. This diagram leads an explanation of my theoretical framework and how it is operationalised in the research.

Paula Kajankari

paula.kajankari@helsinki.fi
Faculty of Biological and Environmental Sciences
Department of Environmental Sciences

Passive sampling for priority substances at semi polluted River Porvoonjoki, Finland

European Union has set the water policy directive 2008/105/EC which classifies 45 substances or substance groups as priority substance list. It sets environmental quality norms for inland and other surface waters and biota. The quality norm sets values for annual average and maximum allowable concentrations. The chosen substances for this study are flame retardants polybrominated diphenyl ethers (PBDE), neurotoxic pesticide cypermethrin and industrial chemical nonylphenol. The sampling was done with passive sampling devices (PSDs) from water with exposure of 30 days.

River Porvoonjoki is 143 km long and its drainage basin is 1273 km^2. The river is located in Southern Finland and runs from the Lahti region to the Gulf of Finland. Three wastewater treatment plants along the river are the major source of chemical input to natural watercourse including a discharge of treated wastewaters of 150 000 citizens. The natural flow of the river is low and from time to time one third of the river's water can be treated wastewater.

Viljami Viippola

viljami.viippola@helsinki.fi
Biological and Environmental Sciences
Environmental Sciences

Urban vegetation and particle pollution

We have measured particle number concentrations in several urban locations in Finland. Here we present results from one study site in Helsinki, where we used three portable aerosol spectrometers to observe airborne particulate matter in densely vegetated and open courtyards. According to this study, courtyards surrounded by 7-storey apartment blocks do not seem to be influenced by pollutants emitted at roadsides. This means that the local peak events from the nearby roads were not reflected on the courtyards, where the observed levels were rather regional background. Moreover, air quality was not improved in the vegetated courtyard compared to open courtyard.

Vuokko Heikinheimo

vuokko.heikinheimo@helsinki.fi
Faculty of Science
Department of Geosciences and Geography

User-generated geographic information for national park visitor monitoring: a comparison of social media data and visitor survey

Protected area management and marketing require up-to-date information on visitors' activities and preferences. Visitor surveys and countings have been the primary means for collecting visitor information in protected areas. Today, large amounts of content-rich geographic data are continuously produced by users of different social media platforms across the globe. These data, combined with other sources of data, could potentially provide information about peoples' activities and interactions with the environment. We compared social media data with traditional survey data from the most popular national park in Finland in order to assess the suitability of social media data for visitor monitoring. The objective was to map peoples' activities and preferences in the park based on these two data sources and to see what complementary information geotagged social media data can provide. The comparison demonstrated that geotagged social media content provides relevant and versatile information about the use of the national park. For the most popular activities and locations, the results were similar between the two data sources. Social media content could complement and enrich traditional forms of visitor monitoring by providing insight on emerging activities, spatio-temporal patterns of shared content and mobility patterns of visitors. Limitations of social media data are related to spatial and temporal accuracy of the shared content, different use profiles and access to data. Despite the limitations, social media provides a promising and cost-efficient data source for monitoring management concerns in protected areas.

Siri Pisters, Angela Moriggi, and Sara Grenni
siri.pisters@luke.fi
Faculty of Rural Sociology
Department of Economy & Society Unit

Sustainable Place Shaping (SUSPLACE) - A Marie Curie ITN Research Project- Exploring the Transformative Capacity of sustainable place-shaping practises

Structural processes of globalization have led to unevenly dispersed sustainability problems, inequalities between people in places and a place-less development. As a result, many citizen's initiatives have spread recently, in the attempt to build the capacities to transform places according to people's needs, ideas and demands. Sustainable place-shaping processes are indeed driven by a desire to (re-)connect people to places, via the localization and the embedding of daily lived practices in social-ecological systems and place-based assets. This poster shows the core of the SUSPLACE Marie Curie ITN project: 15 research projects exploring the transformative capacity of sustainable place-shaping practices through five interrelated themes: Inclusive Places, Resilient Places, Connected Places, Greening Economies and Pathways to Sustainability. Particular attention will be given to the three projects based at Natural Resources Institute Finland (Luke), focusing respectively on Sense of Place, Green Care and Ecovillages.

Sophia E. Hagolani-Albov

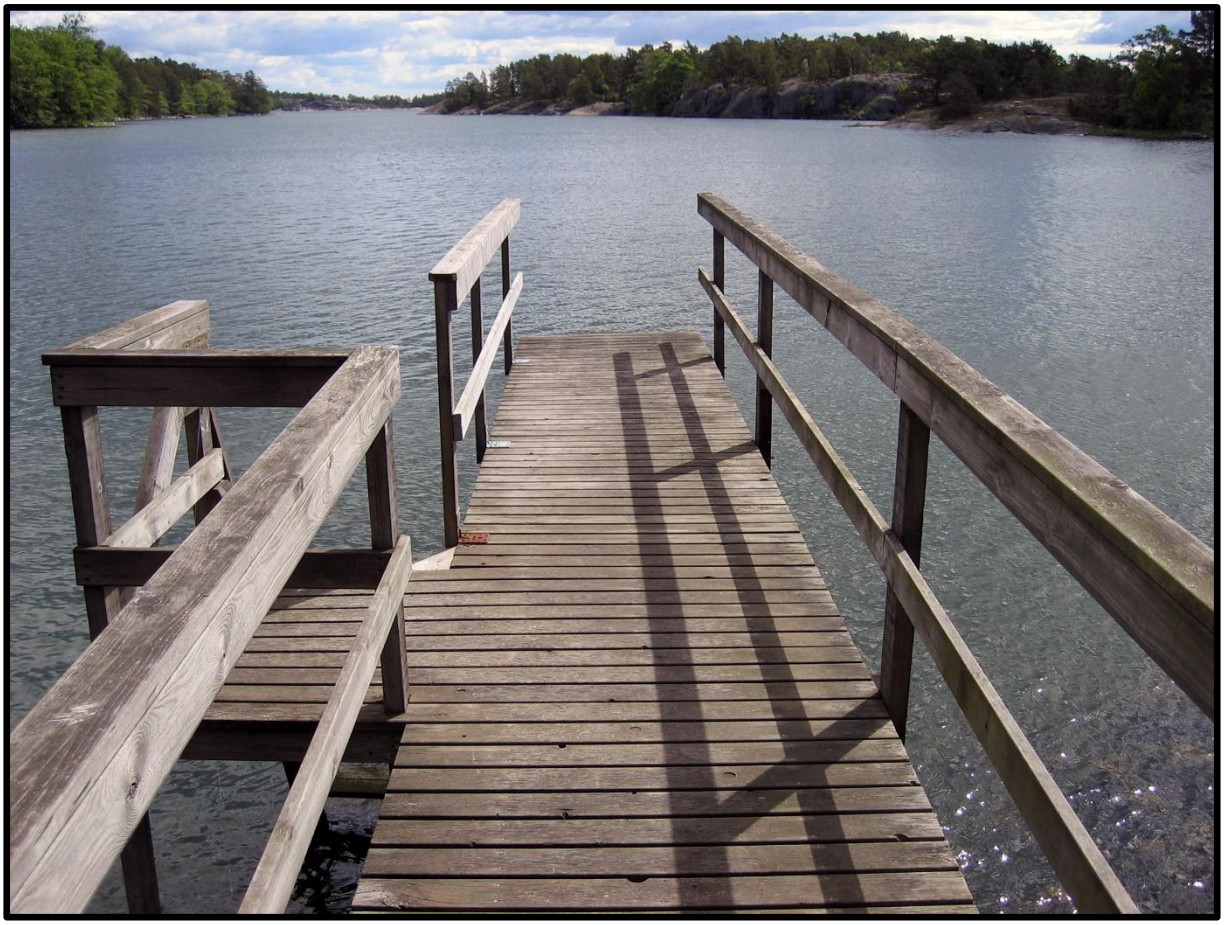
sophia.hagolani-albov@helsinki.fi
Faculty of Agriculture and Forestry
Department of Department of Forest Sciences

Organic Agriculture in the Shadow of the Arctic Circle: The Case of Finland

This poster examines the role of geographical factors and policy prescriptions in shaping the emerging organic agricultural landscape in Finland. Emphasis is placed on identifying the factors that influence the uptake and spatiality of organic farming and organic farmers' livelihood prospects in specific regions of the country. The poster also explores the policy mechanisms which drive the organic sector. The findings emphasize the temporal and spatial dimensions of Finnish agriculture. This investigation of the geographic and policy context of the organic sector sheds light on how agriculture is being reworked to support the economic and environmental goals. Finding socio-ecologically sustainable approaches to agricultural production is one of Finland's major agriculture-related objectives. This study provides the analytical framework and foundation for field investigation into Finnish farmers' experience in the organic sector.

DENVI

Doctoral programme in interdisciplinary environmental sciences



UNIVERSITY OF HELSINKI