

Novia UAS Campus Raseborg Research & Development 2016



NOVIA
UNIVERSITY OF APPLIED SCIENCES

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Front cover: Novia student Magnus Hanstén (BSc program Sustainable coastal management and Ane T. Laugen's research group) doing field work in Bohuslän, Sweden, July 2016, as part of an exchange agreement with University of Gothenburg. Photo by Adamantia Tsouchnika.

Pages 4, 5, 30, 39: Photos by Ane Timenes Laugen

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Preface

Ane Timenes Laugen

One of five areas of research and development (R&D) at Novia UAS is Bioeconomy, which is based at Campus Raseborg. The Bioeconomy focus area is divided in two major parts; the Bioeconomy Research Team and a conglomerate of applied research projects.

Goodbye Aronia, hello Bioeconomy Research Team

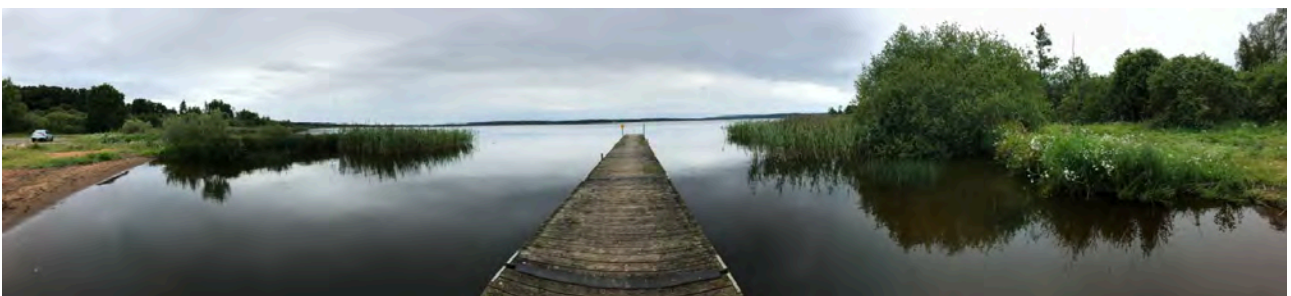
When the tenure of the research institute Aronia terminated at the end of 2015, the Aronia Coastal Research Team with most of its members resurrected as the Novia Bioeconomy Research Team (NBRT) in 2016. The team and its associated members address many topics at the interface between fundamental ecological research and ecosystem management. Having a solid foundation in basic research, the senior researchers and their group members aim at producing high-quality results relevant for policy-and decision-making. Moreover, the team members are now more than ever involved in Novia teaching as well as outreach to the general public. In the first section of this report, we present the team members and their activities.

A multitude of applied R&D projects

While the NBRT mainly deals with basic science, the second part of the research and development activities in Bioeconomy is the many shorter and longer applied research projects. Some of the ongoing projects are presented in the second part this report.

Kustlandsteamet Aronia avvecklades ultimo 2015 och återuppstod som Forskarkollegiet för bioekonomi på Novia. I tillägg till förvaltningsrelevant forskning är forskarkollegiet involverat i Novias undervisning och tredje uppgiften. Rapportens första del presenterar forskarkollegiet och deras aktiviteter under 2016.

Rapportens andre del presenterar några av FoU-projekten inom fokusområdet bioekonomi som drivs på Novia Campus Raseborg.



The Novia Raseborg Bioeconomy Research Team

Ane Timenes Laugen, Jonna Engström-Öst, Patrik Karell & Andreas Lindén

The Bioeconomy Research Team at Campus Raseborg (NBRT) had quite an inaugural year. One of the most important components is that our new academic home, the Novia University of Applied Sciences, have given us new and improved opportunities for interacting with students and teachers (see pages 24-25). As a complement to our research activity, we have taken on course coordination and lecturing, we have supervised internships, BSc students in Sustainable Coastal Management, and MSc students in Natural Resource Management, and we have organised a Research Symposium (see page 37) for the whole campus. We have taught courses in both English and Swedish, and we have aimed at keeping the standard high by using cutting-edge teaching methods on topical issues in ecology and evolution.

Our biweekly research seminars has mainly featured young scientists such as MSc and PhD students to give them an opportunity to present their work to a non-familiar, but friendly, audience. The seminars have been interesting and the discussions lively! We have made a conscious effort to increase our activity level at the Novia Raseborg Facebook page (facebook.com/noviaraseborg/), and we have succeeded in attracting attention to our research and teaching activities. Outreach plans for 2017 includes revamping NBRT's web pages for easier updates and more streamlined newsfeed to the main Novia web page. Many of our team members have appeared in the media as experts or commenting on their own research (see page 30), and we continue our interaction with the general public and important stakeholders.

As you can read on the following pages, we continue collaborating with national and international experts in many scientific fields, and despite being a relatively small team, our research output is substantial (see pages 26-29). We are also successful in attracting research funding from a wide range of funders (see page 39), and plan to extend this in the near future by submitting larger collaborative grants involving all team members and our network of collaborators. In the report you can read about our research in ecology, marine biology, and sustainable natural resource management – the foundation for sustainable bioeconomic development.

2016 var ett mycket bra första år för Forskarkollegiet inom Bioekonomi vid Yrkeshögskolan Novia Campus Raseborg. En av de viktigaste nyheterna var en förbättrad integration i undervisningen på flera av Novias studieprogram. Sidorna 24-25 berättar mer om våra undervisnings- och handledningsaktiviteter. Vi organiserade för första gång ett gemensamt symposium för forskare, studerande, och lärare (se sida 37), ett arrangemang vi hoppas blir en årlig tradition. Vi har fortsatt att samverka med omvärlden via seminarier, samarbeten, sociala och traditionella media, vetenskapliga och populärvetenskapliga artiklar, tidningskolumner, och konferenspresentationer (se sidorna 26-30). Vi strävar till att förstärka vår externa finansiering med anslag till större projekt som involverar alla medlemmar av kollegiet med respektive samarbetspartners.

I skrivande stund (sept 2017) har kollegiets ena doktorand, Anna-Karin Almén, disputerat, men nya rekryteringar förväntas tillkomma i och med Patrik Karells Akademiforskaranslag. 2017 har med andra ord börjat bra och har potential att bli även bättre än 2016.

I rapporten kan du läsa om vår forskning inom ekologi, marinbiologi och hållbar naturresursförvaltning – grunden för en hållbar bioekonomisk utveckling



Ecology of forest raptors and archipelago birds

Patrik Byholm, Heidi Björklund (University of Helsinki),
Sanna Mäkeläinen (University of Helsinki), Wouter Vansteelant (University of Amsterdam),
Caroline Howes (University of the Witwatersrand)

We study the population and conservation biology of forest raptors and the Caspian tern. While much of this work requires intensive field work, the use of GPS-trackers is a central technique used to answer questions of the species' movement ecology. What part of the forest landscape does the different raptor species use while hunting, and where does Caspian terns migrate to spend the Nordic winter?

Highlights of the year

The field monitoring efforts of forests raptors - in particular the northern goshawk (*Accipiter gentilis*) and the European honey buzzard (*Pernis apivours*) - in Southern Ostrobothnia came with no big surprises in 2016. The perhaps biggest highlight was the fact that 2016 was the first year after 2009 in which an increase in the number of breeding goshawk pairs could be registered. This increase in breeding numbers was, however, small (3 pairs) and the reproductive success stayed on a low level (2,37 ringed chicks/successful pair) if compared to the long-term average. Because of this, it is uncertain whether the small increase in breeding pairs will have any real consequences for future population development or if it merely was a temporary event without long-term effects. In the meanwhile, it is clear that more attention could be paid to goshawks from a biodiversity conservation and management perspective since we now have been able to show that conserving



This young honey buzzard which was the only Finnish bird to be tagged with a GPS-tracker in 2016, turned up on Malta in the Mediterranean Sea on its autumn migration, receiving a lot of media attention. Although surviving from Malta it unfortunately succumbed in southern Algeria one week after leaving the island.

the nest sites of goshawks is a cost-effective alternative in comparison with many alternatives, including traditional reserve selection procedures (Burgas et al. 2016).

During 2016 only one new honey buzzard was equipped with a GPS-tracker. This was the 43rd bird to be equipped with a tracker since the start of the project in 2011. Most likely this individual was the last individual given the honor to be a part of Finland's largest bird GPS-tracking project. This is because the project now has shifted from the field-work phase to the phase of writing up scientific results, with the first manuscript with Dr. Wouter Vansteelant from the University of Amsterdam as main author soon to be sent in for publication.

The project has also continued to gain media attention, also outside the Finnish country borders. The bird attaining the most attention this year was definitely the juvenile individual showing up on Malta during its autumn migration where it almost immediately ended up in at least two national newspapers. Also on the wintering grounds in Africa the honey buzzard project has received a good share of media attention, and moreover the efforts to initiate a collaborative research project on the tropical ecology on wintering honey buzzards in Africa took a big leap forward in 2016. Caroline Howes at the University of the Witwatersrand in Johannesburg, South Africa then initiated her PhD-project entitled The demography of the European Honey Buzzard in southern Africa. The whereabouts of a selection of birds can be followed at: <http://www.luomus.fi/en/satellite-honey-buzzards>.

The Caspian tern project initiated in 2015 continued in 2016. The project, which initially aimed at providing better understanding of the home range behavior, habitat use and movement ecology of the species, now also expanded to monitor

Caspian tern reproductive performance given that the many nest failures observed along the Finnish coast. The observations in 2016 strongly suggest high levels of predation is the main reason for low breeding success in Caspian terns, but this preliminary result needs to be confirmed in future years. The current year twelve new terns were equipped with GPS-trackers at different locations along the west and south coasts of Finland and in cooperation with the Lund University in Sweden a study on the space use and home range behavior of nesting terns was initiated.

Finally, I in 2016 initiated a new project within the field of applied ecology on the how to integrate conservation of forest species with forestry practices together with Dr. Patrik Karell. This project is presented in more detail in Karell's section below.

Collaborators

- University of the Witwatersrand: Craig T. Symes & Caroline Howes
- University of Helsinki: Daniel Burgas
- Natural Resources Institute Finland and University of Oulu: Artti Juutinen
- Lund university: Susanne Åkesson
- Estación Biológica de Doñana: Vincenzo Penteriani
- Finnish Museum of Natural History: Jari Valkama



An adult female honey buzzards being equipped with a GPS-transmitter.

Under 2016 fortgick det under tidigare ått påbörjade arbetet med skogsrovfåglar. För första gången sedan 2009 hade duvhökarna i Sydösterbotten nu ett litet bättre år, och de häckande paren ökade en aning. Ungkullarna var förblev dock små. Uppföljningen av bivråkar m.h.a. GPS-sändare fortskred, även om endast en ny fågel försågs med sändare under 2016. Orsaken till minskat fältarbete är att projektet nu har övergått till sin analys- och publikationsfas. Det år 2015 inledda nya projekt rörande skräntärnans ekologi intensifierades under 2016, bl.a. genom utökat samarbete med forskare vid Lunds universitet i Sverige.



Caspian terns breeding in Finland suffer from a high degree of predation on both eggs and chicks.

Climate change-induced effects on plankton

Jonna Engström-Öst, Anna-Karin Almén (Åbo Akademi), Olivier Glippa, Mirella Kanerva, Katja Koli (University of Helsinki), Louise Lindroos (Åbo Akademi) & Pankaj Pant (University of Helsinki)

We study climate change and effects on Baltic zooplankton reproduction, stress levels and population dynamics in the lab and the field. The project is funded by the Academy of Finland, Victoriastiftelsen, and Onni Talas stiftelse. We usually work at Tvärminne Zoological Station, optimally located in the outer archipelago in the western Gulf of Finland.

Highlights of the year

In May and June, Jonna Engström-Öst and Olivier Glippa participated in the West Coast Ocean Acidification Cruise 2016, organised by National Oceanic Atmospheric Administration and Pacific Marine Environmental Laboratory. During almost three weeks, where we collected copepod and pteropod samples for oxidative stress analyses along the coast of California, Oregon, Washington and British Columbia. In this study, we are interested in how oxidative stress and antioxidant levels of two contrasting species respond to environmental conditions. California Current System is characterised by seasonal upwelling and is a good playground for scientists as the area is experiencing CO₂ concentrations similar to projections for high-latitude regions. We hope our results will provide insight into the impacts of ocean acidification on zooplankton species (Glippa et al. in prep). The paper is prepared in collaboration with Anna McLaskey, Julie Keister and Nina Bednaršek.

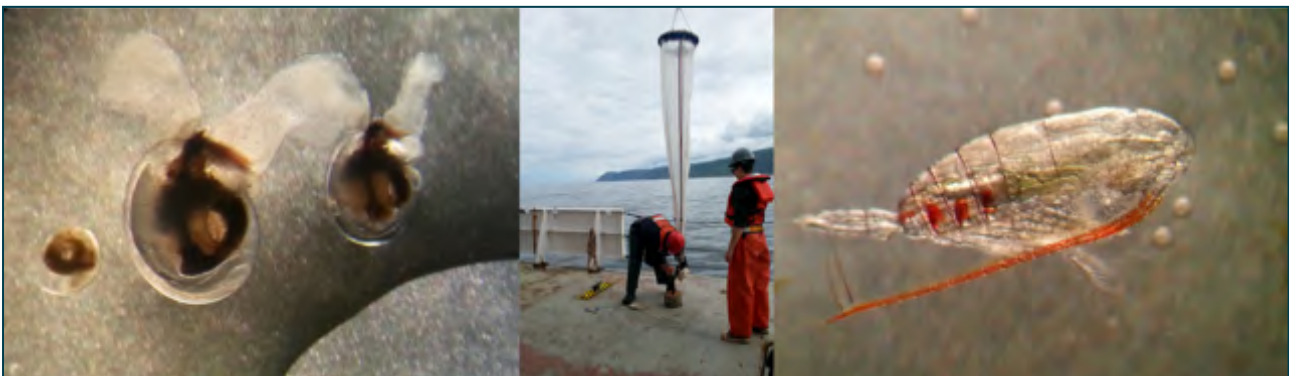
During summer, Katja Koli collected data for her MSc thesis at Tvärminne Zoological Station. The aim was to study the evolutionary adaptation of the marine diatom *Skeletonema marinoi* to eutrophication. The main question was to know if this adaptation affects the capacity of the model



Jonna, Olivier and Anna McLaskey leaving San Francisco. Photo: Carrie Weekes

species to adapt to climate change. Katja collected sediment containing resting cells of *S. marinoi* from different shallow coastal inlets (flads) constituting a gradient in their degree of eutrophication. Monoclonal strains of *S. marinoi* were isolated from the sediment and cultured under three different temperatures in order to test the capability of different strains to adapt to climate change (Koli, in prep.). The work was done in collaboration with Olivier Glippa and Matias Scheinin.

In 2016 Louise Lindroos finished her fieldwork related to zooplankton sampling repeatability and



From left: Pteropods, zooplankton sampling, *Calanus* copepod with eggs. Photo: Olivier Glippa

is currently analysing the samples. She has also been working on models to quantify effects of temperature, salinity and other variables on selected phytoplankton species, using long-term data collected during national monitoring schemes (Lindroos et al., in prep.). This work is done in collaboration with Inga Lips and Sirpa Lehtinen.

Anna-Karin Almén and Olivier Glippa analysed long term data from the Gulf of Finland, looking at changes in wintertime pH, temperature and salinity at four monitoring stations along the Gulf (Almén et al., 2017). The study is also part of Anna-Karin's PhD thesis defended 19 May 2017 in Åbo Akademi University (Almén et al., 2017).

Collaborators

- Finnish Meteorological Institute: Alenius Pekka, Pettersson Heidi, (long-term data)
- NOAA: Bednaršek Nina, (pteropod ecology)
- Calluna Ab: Brutemark Andreas, (plankton ecology)
- University of Helsinki: Candolin Ulrika, (fish behaviour)
- Lawrence University: De Stasio Bart, (harmful algae blooms)
- Stockholm University: Gorokhova Elena (molecular analyses)
- Novia UAS: Karell Patrik (Havsmanualen II), Laugen Ane T (invasion ecology), Lindén Andreas (modelling),
- University of Washington: Keister Julie (Pacific ecology)
- Finnish Environment Institute: Lehtinen Sirpa, Lehtiniemi Mäiju (long-term data, microplastics)
- Tallinn University of Technology: Lips Inga (monitoring data)
- GEOMAR - Helmholtz Centre for Ocean Research Kiel: Riebesell Ulf (ocean acidification)
- Tvärminne Zoological Station: Scheinin Matias (phytoplankton ecology)
- University of Lille I: Souissi Sami (invasion ecology)
- University of Turku: Vuori Kristiina (biomarkers)



Matias Scheinin is doing his weekly flada-tour.
Photo: Jonna Engström-Öst

Hur påverkas plankton av en förändrad miljö? Vi forskar i hur klimatförändringen samt övergödningen i den marina miljön påverkar plankton i Östersjön. Vi jobbar främst med djurplankton och undersöker deras reproduktionsframgång, stressnivåer samt populationsdynamik. Projektet är finansierat av Finlands Akademi, Onni Talas stiftelse och Victoriastiftelsen. Vi gör också jämförande studier för att undersöka hur plankton reagerar på klimatförändring i andra hav t ex Stilla havet och Atlanten.



West Coast Ocean Acidification cruise 2016, photo: Jon Sharp

Functional ecology and applications

Patrik Karell, Katja Koskenpato, Kati Schenk (University of Helsinki) & Sanna Mäkeläinen

Our research group combines basic field- and lab-based research in ecology with approaches to apply data-based models in bioeconomy and natural resource management. The focus in basic research is on understanding evolutionary adaptations to environmental change in the study system of colour polymorphic tawny owls, whereas the applied research aims at developing tools for ecological economics in forestry, agriculture and data-based (coastal) land-use planning.

Highlights of the year

The year 2016 has been a year of synergy build-ups and development of new research projects in bioeconomy at Novia. In addition to the new projects and plans in forest bioeconomy and coastal water state assessments we have made some interesting discoveries about the ecophysiology of tawny owl colour morphs.

The rate of ageing depends on a tawny owl's colour and disease profile

The tawny owl project aim at understanding how and why colour polymorphism fluctuates in response to winter severity and how the colour morphs cope with diseases. We are mainly using long-term data from our tawny owl population in western Uusimaa for this work.

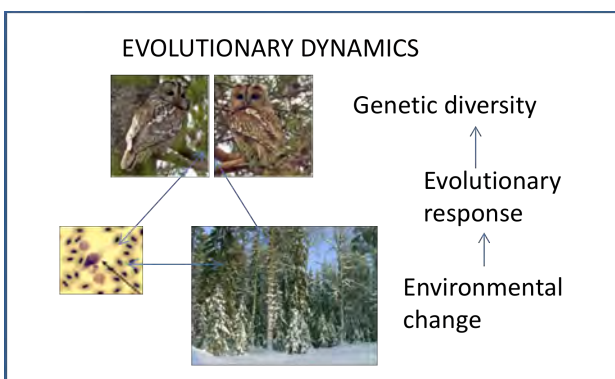
In tawny owls individuals vary in colour ranging from pale grey to reddish brown. We have previously shown that the grey morph has higher survival than the brown one under harsh winter conditions, whereas during milder winters the morphs have similar survival probabilities. Together with collaborators at Lund University and Karolinska Institute we found that this difference in life expectancy between the colour morphs is linked to faster rate of molecular senescence in brown than grey tawny owls and further affected by disease defence variation between the colour morphs.

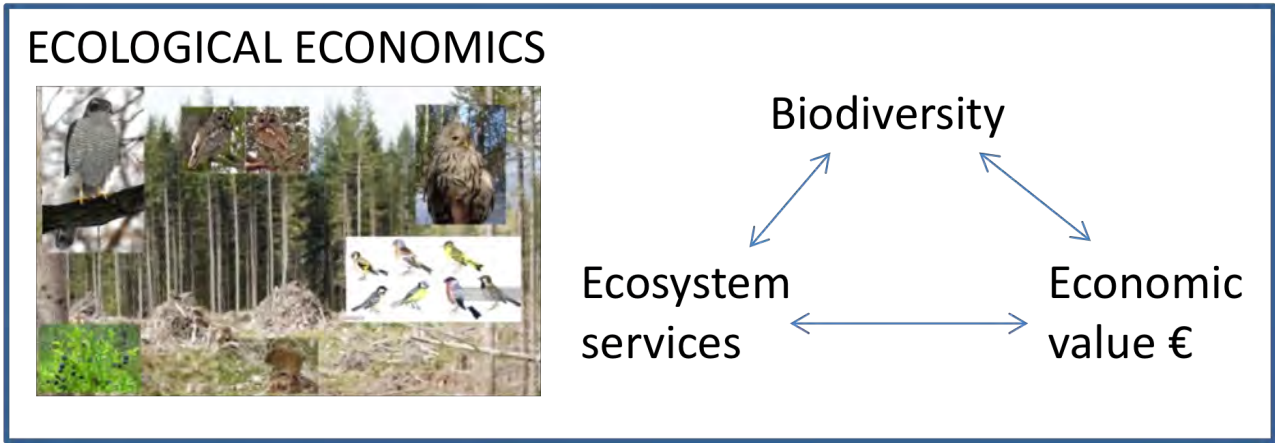


Katja Koskenpato is working on the ecophysiology of tawny owl colour morphs in her PhD-thesis. Her field work includes sampling and monitoring of the owls in the field.

This novel insight came from studying telomeres and blood parasite disease from tawny owl blood samples.

Katja Koskenpato published the first chapter in her PhD thesis (Koskenpato et al. 2016) as 'Editor's choice' in the first issue of Journal of Avian Biology in 2016. In this work Katja found that the grey morph has denser and more insulating feather structures than the brown morph. This finding suggests that the brown morph requires more energy to maintain body temperature than the grey one and could be a reason for why the brown morph suffers higher mortality in harsh winters. After her maternity leave in 2016 Katja will continue her studies on morphology and physiology of the tawny owl colour morphs in 2017.





Ecological economics in forestry

The bioeconomic strategy in Finland and Europe aims at simultaneously maximizing forest resource utilization and conserving functional biodiversity and different ecosystem services with an ultimate ambition to generate higher values from forest biomass. Despite the intriguing expectations of the circular bioeconomy model there is a risk of collision between economic and nature conservation interests. Thus, there is an urgent need to find solutions for combining economic profit and maintaining a functional biodiversity with its ecosystem services.

Together with Patrik Byholm we developed a forest bioeconomy project aiming at investigating how we can assure ecologically sustainable harvesting and a sustainable economy from a forestry

entrepreneur’s perspective. In 2016 the project was initiated with funding from Svenska kulturfonden and together with Sanna Mäkeläinen we have started the GIS analyses, which have set the basis for the project.

Collaborators

- Lund University: Staffan Bensch & Jan-Åke Nilsson (Molecular immunology and ecological energetics)
- Karolinska Institute: Muhammad Asghar, Sweden (Infectious diseases and senescence)
- Novia UAS: Patrik Byholm (Biodiversity and forestry), Jonna Engström-Öst (Havsmanualen II), Mikael Kilpi (Eider demography), Andreas Lindén (Bioacoustics in tawny owls, Eider demography)
- University of Turku: Jon E. Brommer (Quantitative genetics), Satu Ramula (Eider demography)
- University of Helsinki: Hannu Pietiäinen & Jari Valkama (Owl ecology), Sanna Mäkeläinen, Daniel Burgas (Biodiversity and forestry), Matias Scheinin (Havsmanualen II)
- Åbo Akademi: Markus Öst, (Eider demography)



A brown male and a grey female tawny owl sleeping in their nest box. The female is brooding her three new hatched offspring. Our results suggest that the brown morph has a faster physiological rate of aging than the grey morph, which will affect their probability to survive

I forskningsgruppen försöker vi förstå processer i naturen på olika plan genom att studera olika modellsystem. Vi strävar till att tillämpa data och resultat från dessa projekt inom bioekonomiskt relevanta frågeställningar genom att analysera ekologiska data ur ett samhälls- och företagsekonomiskt relevant perspektiv. Hur anpassar sig organismer till förändringar i miljön och vilka är urvalsprocesserna? I hur stor utsträckning kan man avverka skog utan att utarma biodiversiteten och ekosystemtjänster och finns det lönsamhet i en sådan ekologiskt hållbar strategi? Vilka åtgärder kan göras för att minska belastningen i haven från land och vilka är de ekonomiska fördelarna i en sådan strategi? Vi jobbar också med frågor kring hur man kan förbättra lönsamheten inom lantbrukssektorn i ett cirkulärekonomiskt sammanhang.

Statistical population ecology

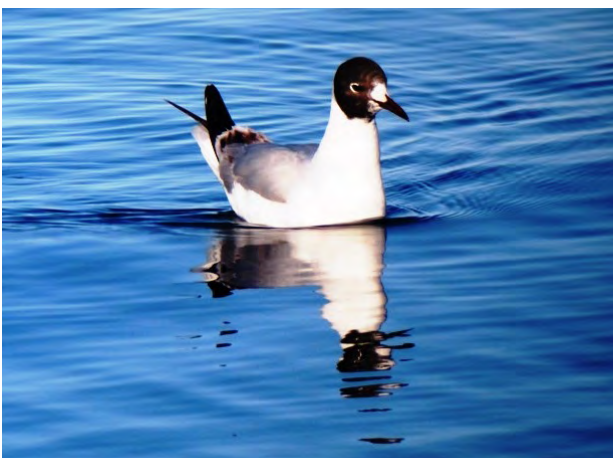
Andreas Lindén, Louise Lindroos, Sara Fraixedas (University of Helsinki),
Patrik Korn (Åbo Akademi), Marianne Karlemo (Åbo Akademi),
Andreas Otterbeck (University of Oslo), Oscar Gordo (Doñana Biological Station)

Our aim is to do basic and applied research in the field of population ecology using sound statistical analysis. We use and develop methods that makes effective use of data and provides quantitative answers with as little bias as possible

Highlights of the year

The group consisted of seven persons, including two independent researchers, two PhD students, and three MSc students. Our core topics of research are population dynamics, demography, biodiversity monitoring, bird migration, phenology (the schedule of annual cycle events) and bioacoustics. During 2016 we have worked on a wide range of topics, in both terrestrial and aquatic environments, on birds, plankton as well as fish.

Two of us contributed with presentations at the 5th International Statistical Ecology Conference in Seattle (Washington, USA) in June. Lindroos talked about the spatial scale of phytoplankton population dynamics in the Baltic Sea, while Lindén presented results on phenological modelling of bird migration. Another highlight was the arrival of Dr. Oscar Gordo (Spain) in September for a half-year research visit to Novia. Gordo and Lindén together developed statistical techniques for fitting phenological models to count data, taking further some ideas recently published by Lindén *et al.* in *Journal of Avian Biology*. We are

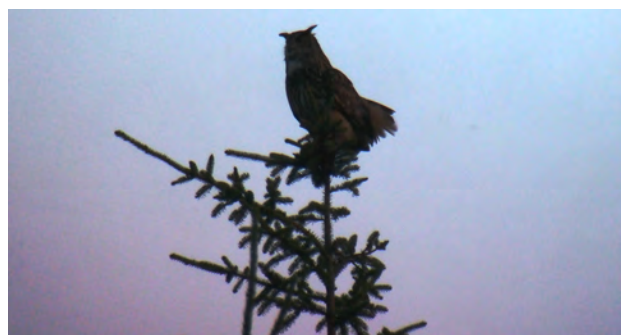


In their first spring Black-headed Gulls return to Finland clearly later compared to adults. This leads to a drawn-out pattern of phenology in the species' spring migration. Such special patterns can be accommodated using the parametric models we have developed. Photo: Andreas Lindén

making the models available to a wider audience, as a free software package in the programming environment R. These models and software provide useful tools for phenological research, not only on birds, but also research on e.g. economically important cultivated fish and plants.

In her PhD thesis Louise Lindroos studies how coarse scale phyto- and zooplankton population dynamics can be explained by external factors, such as salinity, temperature and wind. She uses statistical models distinguishing between randomness in the population process and in the sampling (including counting and timing of sampling). During the summer Lindroos finished her fieldwork, where she sampled zooplankton at the Tvärminne Zoological Station to find out the magnitude of sampling variation associated with the method.

Sara Fraixedas investigates the trends and drivers of Finnish bird populations in different habitats. She has developed bird-based biodiversity indicators, which can be used by decision makers as summarizing tools for monitoring the state environment. Regrettably, we found rapid loss of bird biodiversity in Finland, in particular in forests and peatlands. Fraixedas has now three published articles and two manuscripts included in her PhD



The owl project proceeds nicely, with Patrik Korn's MSc thesis as the current flagship. In addition to our primary study species Tawny Owl (*Strix aluco*) we regularly encounter other species of owls. Here is the largest owl species - Eagle Owl (*Bubo bubo*) - which may even predate unlucky individuals of the study species. Photo: Andreas Lindén

thesis. She submitted her thesis in February 2017 and had the public defence in May 2017.

During the spring Patrik Korn did the field work for his MSc thesis about Tawny Owl (*Strix aluco*) responses to artificial territorial intrusion. Based on the recorded response of 29 males' territorial calls we constructed an index of territorial aggressiveness, which correlated negatively with time and bounced up again when more playback was done. However, we found no differences in the response or calls between the brown and grey colour morphs, as we initially expected.

A new MSc student, Marianne Karelmo, started working on the population dynamics of Willow Warblers (*Phylloscopus trochilus*) in Southern Finland using Finnish monitoring data and migration data from Hanko and Jurmo bird observatories. She will study population consequences of spring migration timing, hypothesizing that mistiming causes poor reproduction, mediated through lower survival of young. Andreas Otterbeck finished his MSc thesis in August at the University of Oslo (Norway). His study about annual patterns in partial migration of birds is based on Swedish data. We are planning to publish the results as a scientific article, hopefully with Otterbeck working at Novia on external funding in 2017.

Collaborators

- University of Helsinki: Aleksi Lehikoinen, Kalle Meller, Kaisa Välimäki
- Åbo Akademi: Anna Papadopoulou, Mikael Himberg, Tom Wiklund, Markus Öst

- Finnish Meteorological Institute: Heidi Petterson
- Technical University of Denmark: Inger Daalgaard
- Swedish University of Agricultural Sciences : Jonas Knape
- Novia UAS: Jonna Engström-Öst, Patrik Karell, Mikael Kilpi
- Natural Resources Institute Finland: Jukka Rintala, Juha Tiainen
- Swansea University: Mike S. Fowler
- University of Turku: Satu Ramula
- Finnish Environment Institute: Sirpa Lehtinen, Maiju Lehtiniemi
- University of Oslo: Torbjørn Ergon, Karl Inne Ugland

Projektet fokuserar på tillämpning och utveckling av effektiva och tillförlitliga statistiska metoder inom ekologi. Våra forskningsintressen omfattar populationsdynamik, demografi, uppföljning av biodiversitet, fenologi (årscykelns tidtabell), fåglars flyttning och bioakustik. Året har varit mångsidigt, med studier om både fåglar, plankton och fisk. Under 2016 handledde projektet två doktorsavhandlingar och tre pro gradu avhandlingar, varav en blev färdig och godkänd under årets lopp (Andreas Otterbeck; partiell migration hos fåglar). Andreas Lindén och Louise Lindroos höll föredrag om sina nyaste resultat på en internationell konferens i statistisk ekologi (ISEC 2017) i Seattle, USA. En ytterligare höjdpunkt var då Dr. Oscar Gordo i september anlände från Spanien till Novia för ett halv år långt forskarbesök. Vi har tillsammans utvecklat programvara som anpassar fenologiska modeller för såväl data på fågelflyttning, som t.ex. tidpunkten för när ett sädeslag gror eller blommar.



The Doñana National Park (Andalucía, Spain) is without doubt one of the most important wetland hotspots for biodiversity in Southern Europe. Migration data from Doñana will help us to pinpoint changes in the winter distribution ranges and schedules of many species of migratory birds. This aerial photo displays a part of Doñana and a flock of flying Greater Flamingos (*Phoenicopterus roseus*). Photo: Oscar Gordo

Causes and consequences of aquatic species invasions

Ane Timenes Laugen, Magnus Hanstén, Shahriar Pervez, Eena Värne

Our research this year has been focused on the ecology of aquatic invasive species. We have investigated positive and negative effects of non-native Pacific oysters on coastal ecosystem in Bohuslän, Sweden, and we developed projects on predicting geographic range expansion in invasive cyanobacteria. Many of the projects involved students from **Novia University of Applied Sciences**.

Highlights of the year

The main focus of the first half of the year was to plan and implement a number of projects on the invasive Pacific oyster, which has been present on the Swedish west coast since 2006. This work was as always carried out in collaboration with Dr. Åsa Strand at the Tjärnö laboratory in Strömstad. This year we had a group of five students, including two from the Sustainable Coastal Management program at Novia.

Shariar Pervez has investigated the relationship between native predators, sea stars and shore crabs, and two types of prey; the native blue mussel and the non-native Pacific oyster. We found that both species easily can use Pacific oysters as food, but if given a choice they tend to prefer blue mussels.

Magnus Hanstén spent the summer investigating the biological basis for economic exploitation of wild Pacific oyster populations. He quantified the proportion of harvestable oysters (how many oysters have the "right" shape for commercialization?)



Magnus Hanstén och Shahriar Pervez on oyster field work outside Uddevalla on the Swedish west coast.

and tested methods for live storage of harvested oysters to ensure continuous delivery of high-quality products.

In addition to making sure that the students got the practical field and laboratory skills needed for



The 2016 oyster research group; Åsa Strand, Joakim Rimberg, Shahriar Pervez, Magnus Hanstén, Sanne Odenlund, Adamantia Tsouchnika & Ane T. Laugen at Tjärnö.



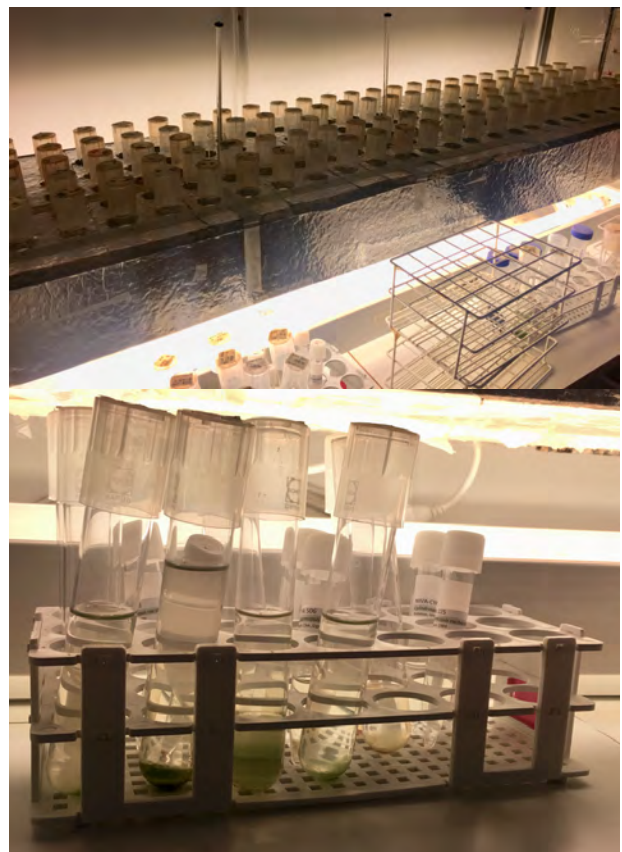
Teaching introduction to statistics and the programming language R to the oyster group and other interesting people at Tjärnö in May 2016. Photos: Åsa Strand and Ane Timenes Laugen.

their projects, we also gave them an introduction to basic data analysis and the coding language R. As rumours about the course spread around the station, several other participants – students and researchers at Tjärnö – joined the successful 4-day course.

During the second half of 2016 we focused on investigating the possibility for the tropical invasive cyanobacterium *Cylindrospermopsis raciborskii* to invade Nordic waters. The Novia student Eena Värne conducted experiments in the lab of Stina Drakare at the Department of aquatic sciences and assessment at Swedish University of Agricultural Sciences in Uppsala. The main aim of the experiments was to test the temperature tolerance of the species as well as the range of temperatures over which it is able to grow.

Collaborators

- Swedish University of Agricultural Sciences: Åsa Berggren, Stina Drakare, Eva Forsgren, Anna Lundhagen, Joachim de Miranda, Christer Solbreck (evolutionary ecology in insects, disease prevention in honey bees, invasive aquatic cyanobacteria)
- Göteborgs Universitet: Jon Havenhand, Matthias Obst, Åsa Strand (invasion ecology and bioeconomy of Pacific oysters)
- Institute of Marine Research (Norway): Torjan Bodvin (invasion ecology of Pacific oysters, Mikko Heino (fisheries-induced evolution)
- University of Stirling: Luc Bussière (evolutionary ecology in insects, pedagogical research)
- Ifremer: Bruno Ernande (fishing-induced evolution)
- IIASA: Ulf Dieckmann (fishing-induced evolution)



Testing the response of the cyanobacterium *Cylindrospermopsis raciborskii* to different temperatures from tropical to temperate conditions. Photos: Ane Timenes Laugen

Vi undersöker orsaker och konsekvenser av främmande invasive arter i Nordiska vatten. Hur kommer de främmande arterna hit? Hur påverkar de våra ekosystem? Har de bara negativa konsekvenser eller har de någon potential som resurs? Våra modellsystem för dessa frågeställningar är invasive cyanobakterier som i stort bara har negativa effekter och Stillaohavsstron som har både negativa och positiva effekter på lokala ekosystem och som kan utnyttjas ekonomisk på flera sätt.

Birds, maths, and a southern dude

Oscar Gordo

I am an ecologist from the Doñana Biological Station (EBD-CSIC), Seville, Spain. I have been a visiting researcher in the Statistical Population Ecology group between September of 2016 and March of 2017 thanks to a grant from the Spanish government

My research focuses on the effects of climate change in Mediterranean ecosystems. I am particularly interested to understand how the biological rhythms of plants and animals, i.e. their phenology, are responding to the ongoing increase of temperature and whether or not they are properly adapting to the new climate conditions.

Currently, I run a project where I investigate the effects of climate change on the migratory behavior and population dynamics of bird populations at the Doñana National Park. Doñana harbors large numbers of European migratory birds, which use these marshlands in the south west of Europe



Occasionally in our ringing station, we trap non-passerine migrants in their journey to Africa. In this case, I was ringing a juvenile booted eagle (*Hieraaetus pennatus*) at the end of October of 2015. Photo: María Ruiz.

as a passage area during their migration from and to Africa. Moreover, almost one million individuals of European waterbirds, including many from Finland, move there for the winter escaping from the harsh weather of northern latitudes.

Since 1994, we are running a constant effort ringing programme at Doñana to study the autumn migration of songbirds, quite similarly to other European ringing stations, such as Hanko or Jurmo in Finland. We work during the period of most intense migration passage of birds, in September to November.

In the last 24 years, we have been able to trap over 75 000 birds of 121 species. However, there is already some southward movement of birds in July and it continues until December. Because we miss the earliest and latest migrants our data is incomplete (truncated) for studying migratory phenology. This is potentially a serious problem, because conclusions drawn from a truncated dataset can be misleading if this feature is not accounted for in the statistical analyses.

To solve this mathematical issue I moved to Finland for working half a year in the Statistical Population Ecology group. I chose the destination group due to its internationally recognized profi-



The Doñana National Park is one of the most biodiverse natural areas of Europe. It harbors some of the last populations of our most endangered species, like the Iberian lynx (*Lynx pardinus*). Photo: Oscar Gordo.



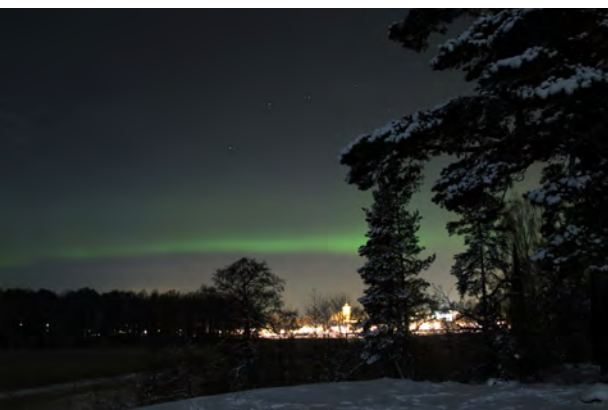
Migratory birds may flight thousands of kilometers between their breeding and wintering areas. The timing and destination of these routes are changing in response to climate change. This Siberian accentor (*Prunella montanella*), which should spent the winter in north-east China and Korea, was trapped in Hanko in November of 2016. Photo: Oscar Gordo.

ciency in applying sound statistical analyses to study population ecology.

We have been working with developing software for fitting various generalized normal distributions to the occurrence of seasonal natural phenomena, such as the arrival of migratory birds to a site. This tool is expanding the findings published by Dr. Andreas Lindén in 2016 in *Journal of Avian Biology*, and helping me to analyze properly my bird migration data from Doñana.

Despite of the fact that our research was motivated by a particular study case (Doñana bird data), we designed a tool potentially applicable to forecast and manage other seasonal events of economical interest, such as crop harvesting, fish spawning, algal blooms, fungi production, etc.

These months at Novia University of Applied Sciences have been extremely beneficial for my sci-



During a cold night of November in Ramsholmen, I was lucky to enjoy the most impressive natural spectacle for a southern European: the northern lights. Photo: Oscar Gordo.

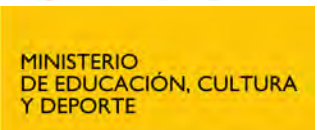
entific skills and will help to improve the quality of my future research. The effects of my stay will last beyond my presence in Finland thanks to the strong collaborative link forged during this time with the Statistical Ecology Population group, as well as with the rest of the Novia staff.

The long bridge established between Seville and Ekenäs will help us to strengthen the European research space and to be more competitive, enhancing our possibilities for further funding, promoting knowledge and workforce transference, and finally obtaining a better outreach of our science in our society.

Last but not least, these months living in Ekenäs have been a really nice experience from a personal point of view, and a unique opportunity learning to know Finland in detail, enjoying its nature, culture, traditions, food, and, especially, its fantastic people.

Jag är en ekolog från Doñana Biologiska Station (EBD-CSIC), i Sevilla (Spanien). Från och med september 2016 har jag jobbat i sex månader som gästande forskare vid Novia i gruppen Statistisk Populationsekologi, finansierad av den spanska regeringen.

Under min tid här har jag utvecklat matematiska modeller för att prediktera tidpunkten för fåglars flyttning i ett föränderligt klimat. Dessa fenologiska modeller kan tillämpas även för att studera andra säsongsbundna händelser av ekonomiskt intresse.



Parental care strategies, reproductive success, and environmental stress in eiders

Kimi Jaatinen & Markus Öst

Our research combines intensive fieldwork, laboratory-based methods and theoretical modelling to study a range of basic and applied questions in evolutionary and behavioural ecology, population dynamics and conservation biology. Despite different objectives, each subproject benefits from the others and from a unique twenty five-year data set on eider ducks, our main study species, from Tvärminne, SW Finland.

Highlights of the year

The very productive year 2016 saw the finalization of Kim Jaatinen's post-doctoral project. The project was a success as it finally produced 13 publications over the three years.

The eider group's collaboration with the Norwegian eider researchers also came to a grand finale and the result so far is four high quality papers describing the pollutant levels in Baltic Sea and Svalbard eiders as well as the physiological and potential ecological consequences these pollutants are having, or may have in the future.

Our collaboration with Prof. Keith Hobson also resulted in one more nice publication on the effects of individual state on the allocation strategies of eider females. As it turns out eiders are very flexible in their use of local and stored food resources, which was not previously known.

M.Sc. Kristina Noreikienė successfully defended her thesis entitled "Physiological stress and life-history strategies in the eider" at the beginning of December (Noreikienė 2016). Prof. Ben Hatchwell from the University of Sheffield, UK, acted as opponent and gave rise to a vigorous scientific discussion during the defence.

Finally, two studies have addressed the recent alarming population decline of eiders, the first one focusing on modelling eider population dynamics in the Archipelago Sea (Kurvinen et al. 2016), and the other one in the Gulf of Finland (Öst et al. 2016).

Eidergruppen använder fält- och labstudier samt matematiska modeller för att studera evolutionär ekologi, beteendekologi, populationsdynamik, och bevarandebiologi. Alla delprojekt drar fördel av en unik 25-årig tidsserie med data från skärgården runt Tvärminne i Nyland.



Eider field crew 2016

How to count individuals when you can't see them

Jon Brommer, Jenni Poutanen (Åbo Universitet), Mikael Wikström (Finlands Viltcentral), Jyrki Pusenius (Naturresursförvaltning, LUKE)

The objective of this project is to test Spatial Capture–Recapture methods for estimating density of white-tailed deer.

Highlights of the year

The approach uses “traps” placed in an area where each trap point is able to collect information on which individuals was present (if any). We used DNA methods and about 40 “traps”: 20m x 20m plots where we collected fecal samples of white-tailed deer. We sampled an area northeast of Ekenäs and preliminary analyses suggest about 40 deer/1000ha.

Current work is using a combination of cameras and DNA. The analyses from 2015 suggests that the density of white-tails deer is slightly below 40 individuals mer 1000 ha



Male deer can be identified using characteristics of their antlers



Collection of white-tailed deer DNA



Wildlife cameras do not allow distinguishing females and calves individually. Picture is a white-tailed deer calf.

Hur kan en räkna antal individer utan att se dem? Projektets mål är att uppskatta täthet av vitsvanhjärtstammen med hjälp av “Spatial Capture Recapture”. Metoden utgår ifrån att det finns inom ett område en del punkter som samlar information om vilka individer har varit där (eller inte).

Man behöver dock inte vara själv på plats för att se varje individ men moderna metoder som t.ex. DNA eller kameror kan användas för att identifiera individen. I vår pilotprojekt i 2015 använde vi DNA som extraherades från spillning som samlades in i ett område NO om Ekenäs (Dragsvik – Ekerö). Inom området hade vi ungefär 40 “punkter”: ett 20m x 20m stort område som vi besökte och tömde på spillning varje vecka tre veckor i rad. NOVIA studeranden var del av teamet.

Analyserna i labbet blev färdiga i 2016 och visar att det sannerligen finns vitsvanhjärt i.o.m. att uppskattningen av täthet var lite under 40 vitsvanhjärt (alla ålder) per 1000 ha!

Hösten 2016 samlades data in i Egentliga Finland där vi insamlade båda DNA och använde viltkameror för att identifiera individer. Analyserna av det materialet är på kommande.

Quality of democracy

Lauri Rapeli

I study how modern democracy works. I am particularly interested in how ordinary citizens form political opinions, how well informed about politics they are and how they utilize political ideologies as a guideline for political action. My work is primarily based on survey data.

Ongoing projects

Health and political engagement (Academy of Finland 2013-2017)

Led by Professor Mikko Mattila (University of Helsinki) we examine how personal health affects political engagement. The research team also includes Hanna Wass and Achillefs Papageorgiu (Univ. of Helsinki) and Peter Söderlund (Åbo Akademi University).

Consequences of political sophistication

This project seeks to answer does the political sophistication of ordinary citizens matter for how well democracy works? To what extent can institutional arrangements affect the sophistication of citizens? A key collaborator in the project is Professor Gabor Toká from Central European University (Budapest, Hungary).

Facts in politics (Kone foundation, Kaks foundation, 2016-2018)

Together with Professor Matti Wiberg (University of Turku), we are going to carry out an empirical test of the factual accuracy of statements made by candidates in the 2017 municipal elections in Finland. In addition, we develop the methodology of political fact-checking.

Jag forskar i hur den moderna demokratin fungerar. Jag är speciellt intresserad av hur vanliga människor formulerar politiska åsikter, hurdana kunskaper om politik de har och hur de utnyttjar politiska ideologier som hjälpmedel för politiska handlingar. Mitt arbete baserar sig huvudsakligen på surveyundersökningar.

Pågående projekt:

Hälsa och politiskt engagemang (Finlands akademi 2013-2017). I projektet, som leds av professor Mikko Mattila (Helsingfors universitet),

studerar vi hur personlig hälsa inverkar på politiskt beteende. I forskargruppen ingår även Hanna Wass och Achillefs Papageorgiu (Helsingfors universitet) och Peter Söderlund (Åbo Akademi).

Politik och fakta (Kone, Kunnallisalan kehittämissäätiö 2016-2018). Tillsammans med professor Matti Wiberg (Åbo universitet) kommer vi att kolla i vilken utsträckning uttalanden av kandidater i kommunalvalet 2017 stämmer överens med verkligheten. Samtidigt utvecklar vi metodologin för faktagranskning inom politiken.

Konsekvenserna av politisk kompetens. I det här projektet söker jag svar på frågor som till exempel spelar medborgarnas politiska kompetens någon roll för hur demokratin fungerar? Kan institutionella arrangemang påverka medborgarnas politiska kompetens? En viktig samarbetspartner är professor Gabor Toká från Central European University (Budapest, Ungern).

Postdoc: Olivier Glippa

My research focus on how zooplanktonic organisms (mainly copepods) cope with the changing environment in which they live.



Olivier is looking a zooplankton sample recently collected in Hanko archipelago, near Tvärminne Zoological Station. Photo: Anni Rein.

What is your background?

I did my Master's degree at the University of Lille (France) in 2007 on the ontogenetic dietary changes of whitefish larvae in Lake Geneva. In 2011, I defended my PhD thesis on the role of resting eggs in the population dynamics of the main calanoid copepod species in the Seine estuary. Then, I've mainly worked in France as post-doctoral researcher but I spent also few months in Umeå (Sweden) where I provided my expertise in plankton ecology.

Why Novia?

Well, when I heard that a postdoctoral position was offered in Southern Finland in order to study the responses by zooplankton to ocean acidification and warming in the marine environment, I jumped at the chance and I applied straight away.

First of all, it was the opportunity to broaden my knowledge in plankton ecology by taking part in this project funded by Academy of Finland, but also to gain professional experience abroad. Finally, I was already quite familiar with the study area since I read during my previous experiences many articles, thesis about it.

What is your research about?

On the last two years, I have been involved in the different steps of the project in collaboration with Dr. Jonna Engström-Öst. Thus, we have collected zooplankton (copepods, cladocerans, pteropods) from different areas (Atlantic, Baltic and Pacific) in order to see their responses to environmental changes. To respond to this question, we are interested in the determination of antioxidant defense and oxidative stress variables and are currently working on it with Dr. Kristiina Vuori and Dr. Mirella Kanerva (University of Turku). During these two years, I have also worked on and the response of three-spined stickleback larvae to pH and on long-term data analyzing by collaborating with Anna-Karin Almén and Drs. H. Petersson and P. Alenius. (Finnish Meteorological University)

One thing is sure, working in Finland at Novia was great and I will miss all that!

Jag är en forskare från Frankrike som började som post-doc på Novia för två år sedan. Jag undersöker hur djurplankton, (främst hoppkräftor) är anpassade till för den fluktuerande miljö de lever i. Min forskning baserar sig främst på data från fält, experiment och långtidsdata



Zooplankton (copepods, cladocerans and Pteropods) from the West Coast of the United States. Photo: Olivier

PhD student Anna-Karin Almén

**Research interests: climate change, ocean acidification, zooplankton, phytoplankton.
Anna-Karin defended her thesis in May 2017.**



Back from field sampling in Gullmarsfjord, Sweden.
Photo: Anna-Karin Almén

What made you consider a PhD in marine biology?

After graduating as a MSc in marine biology I worked in a laboratory, analyzing water samples for a couple of years, but felt that I wanted to try something else. I have always been very fascinated by science and enjoyed sitting by the microscope, discovering the diversity of life you can find in just a tiny drop of water. I contacted the senior researcher Jonna Engström-Öst in Novia. She suggested that I could take part in an upcoming international research project, and enroll as a PhD student at Åbo Akademi. Since then I have mainly studied the effects of climate change and ocean acidification on small zooplankton; crustaceans called copepods. I defended my thesis in May 2017 and hope to be able to continue my career as a researcher.

Why Novia?

As my supervisor has her office in Novia and I live in Ekenäs, I am very grateful to have had the opportunity to have my office in Novia. The closeness to Tvärminne Zoological station, where I have done my fieldwork, is of course very convenient too.

How would you describe a normal workday?

In summer, during the field season, I do field sampling and run experiments. After sampling, there are many hours of counting or sorting plankton by the microscope, filtrating water and analyzing samples in the lab. During the most intense field season, this sometimes means that you are working in the middle of the night, which can be both challenging and fun. In the autumn, I analyze my data and present my results in manuscripts, which are submitted to scientific journals. PhD students are also required to participate in advanced courses in your field and to present your research at international conferences.

Jag var doktorand vid Åbo Akademi och forskar i klimatförändringens och främst havsförurningens effekter på små djurplankton, så kallade hoppkräftor, samt undersöker långtidförändringar i havets hydrografi. Jag disputerade i maj 2017 men vill gärna fortsätta söka svar på frågan hur havet förändras och vad dessa förändringar innebär för ekosystemet

PhD student Louise Lindroos

Research interests: Zooplankton, phytoplankton, time-series analysis.
Louise is halfway through her PhD project.



Louise is microscoping zooplankton in Tvärminne. Photo: Jonna Engström-Öst

What made you consider a PhD in marine biology?

When I started my graduate studies I never really considered going into research. In retrospect I realise that I was slowly moving in that direction all along. As I was finishing up my master's thesis I gained an interest in statistics, and I felt like I wasn't done learning new things. Then the perfect opportunity came along; a PhD-project where I could combine my knowledge of marine biology with my newfound interest in statistics. Now I am on my second year quantifying the effects of climate change on phyto- and zooplankton species, using time-series analysis. The general idea is to do things that haven't been done before, to answer questions that we don't have the answers to yet, and to be able to do this kind of work, is a privilege. My aim is to complete my PhD and to continue working with science.

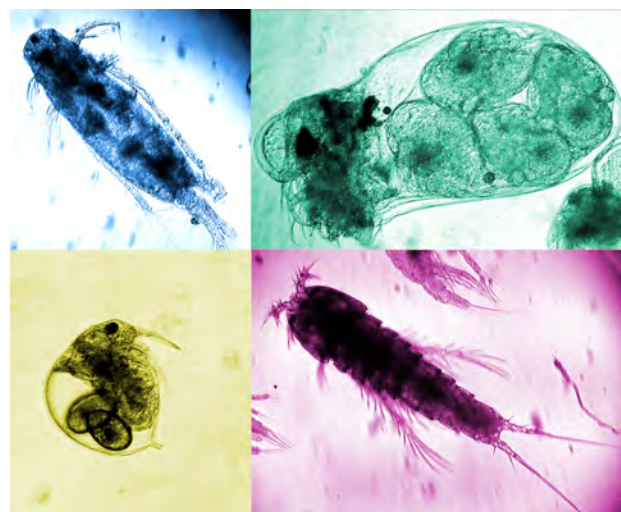
Why Novia?

I am enrolled as a PhD student at Åbo Akademi University, but two of my supervisors work at Novia UAS as senior scientists in the Bioeconomy Research Team. In practise this means that you can see me at the Raseborg campus frequently.

How would you describe a normal workday?

The normal workday can vary quite a bit, but that is all part of the charm. Most of my time is spent in front of the computer. But I also spend time analysing samples; that means that the computer will be exchanged for a microscope and I will count zooplankton. To analyse samples you also have to get them from somewhere, for me this usually means going out with a boat to take samples. The field season is one of the reoccurring highlights.

Jag började som doktorand år 2015 och jobbar med att kvantifiera effekterna av klimatförändringen på populationsdynamiken hos växt- och djurplankton. Jag är doktorand vid Åbo Akademi, men eftersom två av mina handledare jobbar på Novia



A selection of zooplankton; clockwise from upper left corner: *Acartia* sp., *Evadne* sp., *Harpacticoida* sp. and *Eubosmina* sp. Photos: Louise Lindroos.

Collaboration with students from Novia and other universities

The members of the research team recruit and supervise several undergraduate students every year. Here are the students who worked with us in 2016



Magnus Hanstén, BSc student in Sustainable Coastal Management at Novia, worked at the marine station at Tjärnö from May through September 2016. He investigated the biological potential for harvest, live-storage, and food safety, of wild Pacific oysters. Supervised by Ane Timenes Laugen.



Katja Koli, University of Helsinki, MSc, collected data in 2016. Thesis preliminary title: "Hur övergödning inverkar på planktonpopulationers anpassningsförmåga till varierande miljöförhållanden". Supervised by Jonna Engström-Öst.



Shariar Pervez, BSc student in Sustainable Coastal Management at Novia, worked at the marine station at Tjärnö from May through September 2016. He investigated whether native predators (seas stars and shore crabs) can use non-native Pacific oysters as prey. Supervised by Ane Timenes Laugen.



Eena Värne, BSc student in Sustainable Coastal Management at Novia, worked at Swedish University of Agricultural Sciences in Uppsala from September 2016 through February 2017. She investigated the ability of different strains of the invasive cyanobacterium *Cylindrospermopsis raciborskii* to grow in different temperatures with the aim of testing if this tropical species has the ability to grow in Nordic waters.



Marianne Karelmo (Åbo Akademi University) does her MSc thesis on Willow Warbler.

Patrik Korn (Åbo Akademi University) does his MSc thesis on the territorial responses of Tawny Owls, mainly based on bioacoustic analyses.

Both are supervised by Andreas Lindén.

Teaching

The members of the research team contributes significantly to the education at Novia University of Applied Sciences. Here is an overview of our teaching activities in 2016.



Teachers and students participating in field excursion at the Coastal Ecology course. Photo: Hernan Abad Ortega

Patrik Byholm

- Senior lecturer at Novia UAS
- Head of Master-programme in Natural Resource Management.
- Teaching courses in research methodology (BSc and MSc level), bird and vascular plant identification, nature inventory methods, statistics, GIS, natural resource management, and ecology course.
- Supervising MSc- and BSc-thesis projects

Jonna Engström-Öst

- Coastal Ecology (course teacher)
- Conservation Biology (course coordinator, course teacher)
- Experimental Plankton Ecology (course coordinator)
- Supervising BSc-thesis projects

Patrik Karell

- International agriculture, course teacher
- Bioeconomy innovations, course teacher
- Conservation Biology, course teacher

- Ekologi (Ecology), course administrator, course teacher
- Supervising MSc- and BSc-thesis projects

Ane Timenes Laugen

- Conservation Biology, course teacher
- Evolutionary Analysis, course administrator, course teacher
- Supervising MSc- and BSc-thesis projects
- Introduction to statistics and R (at University of Gothenburg)
- Advancing with linear models in R (with PR-statistics)

Andreas Lindén

- Conservation Biology, course teacher
- Supervising MSc-thesis projects
- Organises statistics helpdesk for students and staff at Novia

Publications

Scientific articles

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- Jaatinen K, Öst M, Hobson KA (2016) State-dependent capital and income breeding: a novel approach to evaluating individual strategies with stable isotopes. *Frontiers in Zoology* 13:24
- Kekkonen J, Wikström M, Brommer JE. 2016. Age distribution and growth of Finnish white-tailed deer: implications for management of an introduced cervid. *Annales Zoologici Fennici* 53: 69-80.
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 Rapeli L. Ensam är inte stark. Västra Nyland, 18.10.2016
 Rapeli L. Kan demokratin överleva mediafriheten? Västra Nyland, 22.11.2016
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22.05.2016; <http://www.mtv.fi/uutiset/kotimaa/artikkeli/paivi-haukan-muuttomatka-vasta-puolivalissa-nyt-tarvittaisiin-ihme/5906902>

28.06.2016; <http://www.mtv.fi/uutiset/kotimaa/artikkeli/paivi-haukka-jatti-taas-pesimisen-valiin-ja-lo-mailee-kesaleskena/5966172>

29.08.2016; <http://www.mtv.fi/uutiset/kotimaa/artikkeli/toinen-naaras-vei-paivi-haukan-kumppanin-ja-pesan/6049862>

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gozonews.com (honey buzzard migration)

11.10.2016 <http://gozonews.com/64365/finnish-juvenile-honey-buzzards-migration-tracked-to-malta/>

Times of Malta (honey buzzard migration)

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11.04.2016

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Grant assessment, Naturvårdsverket, Sweden

Expert statement for a legal case in the Supreme Administrative Court

Jonna Engström-Öst

Västra Nyland

11.09.2016 <https://www.vastranyland.fi/artikel/nya-dorrrar-oppnas-for-forskare-pa-novia/>

13.12.2016 <https://www.vastranyland.fi/artikel/expedition-i-stilla-havet-breddar-forskningen/>

13.12.2016 <https://www.vastranyland.fi/artikel/forskarnat-fick-fler-maskor/>

Guest editor in 2016 for special issue in Biogeosciences: "Effects of rising CO₂ on a Baltic Sea plankton community: ecological and biogeochemical impacts". http://www.biogeosciences.net/special_issue204.html

Ane Timenes Laugen

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Expert commentary Swedish public radio (effects of oil spill on oyster sizes)

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Research and Development projects

Marianne Fred

Bioeconomy is one of five focal areas of R&D at Novia UAS. We are in the unique situation of having a research team combined with the R&D focal area in Bioeconomy giving us the depth and width of combining applied developmental projects with fundamental and applied research. Because of this Bioeconomy is currently the largest of the focal areas at Novia UAS with a total project portfolio of 4.2 M€ in 2016.

Through project funding we can aim our efforts in R&D. Our main areas the past years have been developing local food systems, participatory processes in rural planning, helping entrepreneurs in Bioeconomy network, increasing sustainability, and introducing circularity into local systems.

One focus in Bioeconomy is on developing local systems as a counterweight to large enterprise and bulk production. Increasing the level of processing and stimulating local entrepreneurs to further develop local produce is an important step. Stimulating local food systems and increasing the competence of local actors is an important part in this development. Sustainability is, however, not limited to food systems in Bioeconomy but can be seen as a lead motive in all our projects. Social sustainability and investing in the well-being and meaningful everyday life is also part of Bioeconomy. Rural planning, sustainable tourism, and citizen science, are features in Bioeconomy that can be combined for increasing knowledge, well-being through nature, and making rural space available for citizens and visitors alike.

Combining sustainable rural planning with tourism and local food systems is a focal point of the entire Western Uusimaa region. Finding new business in Bioeconomy is also an important part of developing rural areas and an important part of keeping livelihood in the countryside. Through all the people we have working in our projects and through all the people we reach in our projects I am confident we have made changes towards our aims of increased sustainability and maintained rural livelihood and will continue doing so, one project at a time.

Fokusområdet i Bioekonomi vid YH Novia är unikt eftersom vi här kan jobba över hela vidden av forskning och utveckling tillsammans med forskarteamet i Bioekonomi. Tack vare samarbetet uppgick den externa finansieringen i projektportföljen för fokusområdet i Bioekonomi till 4.2 miljoner euro år 2016 vilket också gjorde Bioekonomi till fokusområdet med mest extern projektfinansiering vid YH Novia 2016.

Tack vare projektfinansiering kan vi arbeta med forskning och utveckling i Bioekonomi. Vi har de senaste åren koncentrerat oss på att utveckla lokala livsmedelssystem, deltagande processer i planering av landsbygden, att facilitera nätverkandet mellan entreprenörer i Bioekonomi, öka hållbarheten och hämta in cirkulär ekonomi i vår lokala verksamhet. Tack vare alla de personer som jobbar i våra projekt och alla dem som vår projektverksamhet når vi våra målsättningar, ett projekt i taget.



Food of the Coast 2016-2018

Ann-Louise Erlund

In March 2016 after an almost three years long process to prepare the application and to get the approval decision the courses within artisan food making started in regional cooperation. The project is a cooperation between four coastal regions and a project team is the project is managing the project. In the team are members from the regions. The artisan food entrepreneurs are a new growing profession and the consumers shows a growing interest for the products. For more information: www.novia.fi/kustensmat

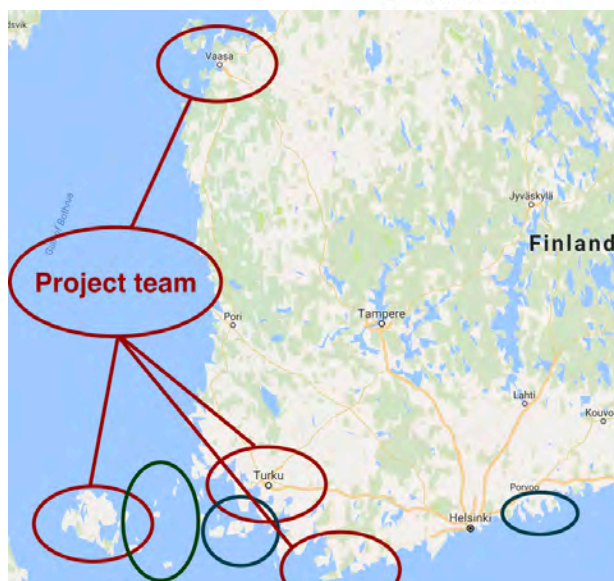
The objectives of the project are to plan and implement 1) education in artisan food making in regional cooperation, 2) Finnish Championship in Food Craftmanship 2016, 2017 and 2018, 3) study trips on artisan food making in other countries, and 4) "Artisan Food" days with seminars about artisan food making to enlighten customers and anyone interested in the subject.

The education is organized as follows. The students meet via video link in Vasa, Turku, Mariehamn and Ekenäs (red rings in map below) or in remote areas (blue rings). The lecturer can be in one of the regions. The first education has 45 participants. In this mode the regional group of entrepreneurs is crucial to establish the local/regional/national network.

The network itself, the entrepreneurs consider as the most important forum to get right information from artisan food entrepreneurs with longer experience. An initiative to establish a national association for Artisan food entrepreneurs in Finland is ongoing



Bread is an important part of the project.
Photos: Kustens Mat.



The project organisation

Projektet Kustens Mat har som mål att utbilda och informera om mathatverk genom att organisera utbildningar, studieresor, seminarier, samt finsk mästerskap i mathantverk.



Europeiska jordbruksfonden för landsbygdsutveckling: Europa investerar i landsbygdsområden

Finnish Championship in Food Craftsmanship 2016

Ann-Louise Erlund

Finnish Championship in Food Craftsmanship was organized at Novia 10-13.10.2016.

During Finland's presidency of the Nordic Council of Ministers in 2016, many events in the food sector were organized, the largest of which was the food craftsmanship competition. The championship was open to participants from all Nordic countries and took place at Novia University of Applied Sciences in Ekenäs 10-13 October 2016.

The competition was organized in cooperation with the Ministry of Agriculture and Forestry and the team from Novia's Food of the Coast project. During the competition several mini-seminars, discussions and visits related to food and food artisanship was organized.

The purpose of the competition is to inspire students in artisan food education arranged by the project Food of the Coast and the established artisan food entrepreneurs in making new artisan food products and to enlighten customers what artisan food products really are.

The interest for the artisan food products are increasing and hotels, restaurants and catering

businesses are new important customers to use these products. (www.novia.fi/mathantverkfm).

To the competition were 170 artisan food products registered by 60 food artisan entrepreneurs in following categories: dairy products, meat products, fish products, bakery products, berries and fruit products, vegetable and mushroom products, cold sauces, snacks, beverages and innovative artisan food products.

Fifty jury members assessed the registered products and they nominated winners in 29 competition classes. The competition essentially follows rules created by Eldrimner which is a Swedish resource center for food artisans (www.eldrimner.com).

Finsk mästerskap i mathantverk arrangerades på Novia 10-13.10.2016. 170 produkter från 60 mathantverkare deltog i 29 konkurrenssklasser.



Tävlingen är i full gång. Photo: Bitte Westerlund

Bioekonomi i Västnyland

Marianne Fred

Bioeconomy in Western Uusimaa was a preparatory project where project leader Klaus Yrjönen developed a plan for further enhancing bioeconomy in Western Uusimaa. The project mapped the potential for bioeconomic entrepreneurship in the region. The project described the current state of play and interviewed experts in different sectors of bioeconomy. The project also conducted a survey amongst entrepreneurs in bioeconomy and finally held a seminar aimed at presenting the multitude of bioeconomic potential in the region.

The results of the studies were encouraging and some main target areas were identified. One important result was that bioeconomy should be dealt with in themes where many actors cooperate rather than sector by sector. These themes for a planned 2-year project are:

Bioenergy

Making use of bioenergy is a basis for bioeconomy. Already wood-based products are used in the region and several local businesses work with this. Biogas is a field of large interest in the region right now, making biogas of side-flows of organic waste-products from households is identified as having potential in the region.

Tourism

Nature in Western Uusimaa is varied and offers much potential for recreation and tourism. The tourist business has potential in the region especially when combining the services of several types of businesses from transport to food and accommodation with programs and activities.

Wildlife tourism

Tourism surrounding wildlife (hunting-, photography-, and adventure-tourism) is clearly underdeveloped in the region. Many types of cooperation is needed to develop attractive wildlife tourism.

Wood products

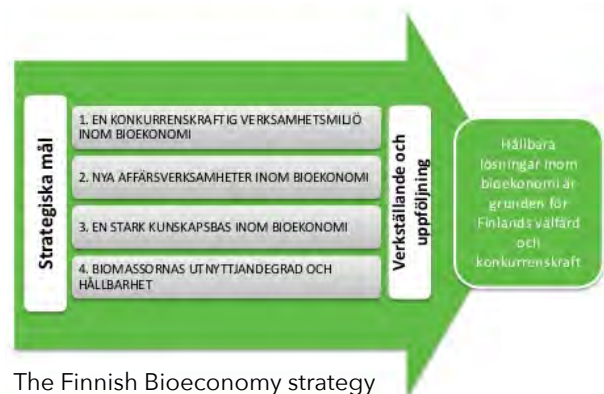
Processing wood-products to a higher degree both for batches of special wood and products such as cross-laminated timber (CLT) for construction.

Local food production

Local food continues to be a megatrend in the area of food and agricultural production. Distribution and logistics together with customer connections is distinctly different in local food systems

compared to conventional food systems. This requires local entrepreneurship and local networks to be functional.

Projektet Bioekonomi i Västnyland var ett 6-månader långt planeringsprojekt finansierat av den lokala Leader föreningen Po-moväst. Under projektets gång identifierades vilken typ av Bioekonomiskt företagande som finns i regionen samt hur kommande jobb med att utveckla branschen ska se ut. En glädjande mängd olika teman identifierades under projektets gång såsom utvecklandet av bioenergi från lokal flis och biogas från hushållens sidoströmmar, naturturism, viltturism och viltbruk, närmat samt förädling av virke. Finansiering för ett fortsatt 2-årigt projekt har erhållits och projektet startas upp under hösten 2017.



The Finnish Bioeconomy strategy



Europeiska jordbruksfonden för landsbygdsutveckling: Europa investerar i landsbygdsområden

Ekenäs Storywalk

Marianne Fred

The project was a 6-month long preparatory financing to develop a project plan for Ekenäs Storywalk. The preparatory financing came from the local Leader office Pomoväst. The detailed project plan for Ekenäs Storywalk was worked out during six work-filled months by project leader Ylva Rancken-Lutz. The working group members were Åsa Lönnqvist from Pro Artibus, Annabelle Antas freelance photographer, Eleonor Broberg City of Raseborg, Gunilla Wasström Pomoväst, Anna Sannholm and Marianne Fred from Novia.

The main aim of the preparatory project was to find partners locally and to develop methods for international cooperation with two other rural areas, one in France and one in Sweden.

Ekenäs Storywalk is about developing models combining multiple planning methods for rural/urban areas, where citizen science and inclusive democracy is key. In Ekenäs we plan to work with a recreational foot- and bike-path along the shoreline where information on history and natural history are intertwined with artistic features and stories.

The information is presented in an audio/multi-media-walk in the format of short podcasts, photos and videos available in a mobile application. The storywalk will be found on an already existing free app and can be enjoyed via any mobile device while strolling along the walking path.

The features presented in the storywalk are collected from several sources and aim at giving a voice to all citizens. The method and process of collecting and analyzing the material is something we work together with the municipal planners on, whereas the storywalks are aimed at the tourism office of the municipality.

A highlight of the project was a visit to Ekenäs by the French Leader group from the city of Guéret, where we could discuss mutual interests during two hectic days in fall. The discussions were fruitful and we will plan a cooperation project exchanging experience and expert knowledge on facilitating citizen science in the planning process and applying GIS-based Geodesign as a planning tool.



Visitors from the French Leader group and municipality of Guéret on campus in Raseborg. Admiring the old buildings of the campus and the traditional Scandinavian building styles.

För att förbereda en ansökan till projektet Ekenäs Storywalk erhöll vi ett halvår av finansiering från den lokala Leader gruppen Pomoväst. Projektledare Ylva Rancken-Lutz tog i samarbete med representanter från Raseborgs stad, Pro Artibus och Pomoväst fram en plan för Ekenäs Storywalk.

Projektet handlar om att ta fram metoder för inkluderande planering. Projektet ska utarbeta en vandringsled längs Ekenäs kustremsa där man via mobilteknik kan följa en guidning där historia och biologi blandas med konst och berättelser. Målet är att ge olika segment i samhället en röst och samla tyst kunskap. Den sammanställda produkten kan användas för olika ändamål som turism, planering, marknadsföring och forskningsändamål



Europeiska jordbruksfonden för landsbygdsutveckling: Europa investerar i landsbygdsområden



Svenska kulturfonden

Vår Nylandsbygd - Meidän Uusimaaseutu 2016-2017

Susanne Wikström

Vår Nylandsbygd - Meidän Uusimaaseutu is a bilingual information channel for the rural development program for mainland Finland in the Uusimaa region. The project is carried out in cooperation between HÄME University of applied sciences (lead partner) , HÄME UAS, and YH Novia. The rural development program for mainland Finland covers most of the country, including smaller cities.

The project's stakeholders are entrepreneurs, farmers and people who are interested in local development in rural areas.

In spring 2016 the project arranged about 10 meetings for farmers where the topics were the latest news about agricultural subsidies, new technics and development in farming.

In the autumn of 2016 the project arranged five meetings for entrepreneurs. The idea was to show the possibilities for development by using the tools given in the program. Enterprises can receive subsidies for various purposes including product development, marketing, testing of new concepts, globalisation and collaboration.

The project also produces articles and videos showing how the money in the program have been used. The material will be published on nylandsbygd.fi, uusimaaseutu.fi that will open in 2017.

During 2017 the activities will be similar to previous years. Interviews, pictures and videos produced by the project will be found on the webpage. The project also uses Facebook and Instagram for information.



In November 2016 five meetings for entrepreneurs were arranged. The participants got information about the rural development program and the subsidies for various purposes including product development, marketing, testing of new concepts, globalisation and collaboration



One of the aims of the project is showing how the money reserved in the rural development program is used.

The impact area of the program can be found on <http://www.arcgis.com/home/webmap/viewer.html?webmap=816018cf62ef40899-ca26b8d17e24902>.

Vår Nylandsbygd är ett tvåspråkigt projekt som har som mål att informera om landsbygdsutveckling i Nyland. Vi informerar genom möten, informationsvideos, vår hemsida, samt sociala medier.



Europeiska jordbruksfonden för landsbygdsutveckling: Europa investerar i landsbygdsområden

Stora Komet – Career counselling in transition

Dana Björkström-Ljung

The project “Stora Komet” (Big Comet) focuses on facilitating the process for Swedish-speaking young people in the transitions from one phase of life to another, particularly in the Uusimaa Region.

The transition from studies on one level to another level, the transition from studies to working life, as well as the transition to and from the military service are central in this project.

The project works on making life transitions smooth and easy for the young people. It is important that the counsellors and teachers working with young people and their families on one hand, and the young people themselves on the other, find information and supporting services in situations where professional support is required and especially when there is a risk for dropping out from school or for alienation. There is a clear need for a forum for cooperation between different support services offered in Swedish - we need to enhance the utilization of the services, fill the gaps, and define more clearly the Swedish options.

The project develops a better overall support for career planning for young students and for those who are at risk of marginalization and exclusion. The target group consists of young people under 30 years of age and the counsellors (guidance counsellors, tutors, mentors, teachers, parents and other adults) who encounter them during their education and their critical transition periods.

The project involves two universities of applied sciences, i.e. Novia (project owner) and Arcada, the two vocational schools Axxell and Yrkesinstitutet Praktikum and a representative of the third sector, Luckan rf (registered association)(project partner) plus a list of other project partners.

The project creates services, information channels and tools for advice, guidance and integrates career planning and counselling in the curricula. The planned activities for the target group of young people focus on advice and guidance, improved information, mentoring and peer support. For the



Högskoledagen: Photo: Stora Komet

adult target group the planned activities consist mainly of further education in this special area.

During the first year of the project we have set up our PoP-Up career counselling tent in places where young people spend their time. The tent is a place for career counselling but also for networking. Here different counsellors meet and exchange knowledge and test new methods and tools. In the tent information about mentorship and peer support is given and spread.

Four groups consisting of teachers and counsellors have started to explore how to make the transitions smoother between vocational school and higher education. In order to facilitate the work the project has offered lectures in career counselling and relational pedagogy. This is how we have tried to build common knowledge and networks for the second year of the project

Stora Komet är ett projekt som hjälper svensk-språkiga ungdomar i livets övergångsfaser, särskilt i Nyland.

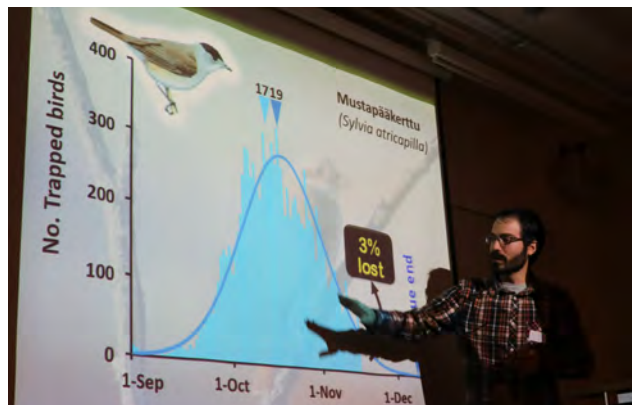


Novia Raseborg R&D Research Symposium 2016

Novia research symposium 24.11.2016		
8.15–9.00	Registration, coffee and sandwiches	
9.00–9.10	Welcome	Ane Timenes Laugen, Wilhelm Fortelius, Lauri Rapeli
9.10–9.25	Expertis och demokratiskt beslutsfattande	
9.25–9.40	I skarven mellan vetenskap och beslutsfattande – hur är det på riktigt att vara där?	Mikael Kilpi
9.40–10.10	Measuring environmental impacts through population change	Andreas Lindén, Oscar Gordo, Louise Lindroos, Sara Fraixedas
Coffee		
10.30–11.00	Climate change and eutrophication — focus on plankton	Jonna Engström-Öst, Anna-Karin Almén, Olivier Glippa, Pankaj Pant
11.00–11.30	Non-native species in Nordic waters — resources and nuisances	Ane Timenes Laugen, Magnus Hanstén, Shahriar Pervez, Eena Värne
Lunch		
12.30–12.45	The Baltic Sea is changing — why focus on blue mussels and eider ducks?	Kim Jaatinen
12.45–13.00	Blowing in the wind: crosswinds encountered by juvenile honey buzzards determine the settlement areas in Africa	Patrik Byholm
13.00–13.30	From genetic diversity under climate change to biodiversity and bioeconomy in forestry and agriculture	Patrik Karell, Katja Koskenpato, Kati Schenk, Sanna Mäkeläinen
13.30–13.40	Stora Komet	Dana Björkström-Jung
13.40–13.50	Kustens Mat	Ann-Louise Erlund
13.50–14.00	Vår Nylandsbygd	Susanne Wikström
14.00–14.10	Ekenäs StoryWalk	Ylva Rancken-Lutz
14.10–14.20	Pro Naturbruk	Niklas Andersson
Coffee		
14.45–15.00	Research and development in bioeconomy at Novia	Marianne Fred
15.00–16.00	Paneldebatt: Bioekonomi, en regional utvecklingspotential	



Jonna Engström-Ost presents her research group and their work on climate change and the effect on plankton in the Baltic Sea. Photo: M. Kilpi



Oscar Gordo presents his work on bird migration in Doñana National Park. Photo: M. Kilpi

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Novia Raseborg R&D, Funding

The Novia Bioeconomy Research Team

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