FORSKNINGS- OCH UTVECKLINGSINSTITUTET

ARONIA

Aronia Research

2013

VID ÅBO AKADEMI OCH YRKESHÖGSKOLAN NOVIA

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Photo: Mikael Kilpi

Preface

The year which passed, was successful for Aronia. With about equal shares in terms of people involved, Aronia pursued applied projects and science. The new Coastal Zone Research Team (ACZRT) began the work of the second funding cycle, and the results of this and the other pursuits can be found in this report. The basic funding Aronia enjoys seems stable enough for predicting that the good results of 2013 in terms of science, applied science, teaching and tuition will be replicated over the next few years. Some of the applied projects face termination since the project funding cycle of the EU and some other sources sets limits, but given the good results achieved, new projects for the next cycle will emerge, most likely thematically linked to the current projects.

Aronia has again contributed to teaching at Åbo Akademi University by providing tuition in English, and supervising thesis work. This tuition is also accessible for students from Turku University.
We have taken on students from Novia as interns and supervised thesis work. While this is excellent, we still see a need to clarify the role of Aronia at both mother institutions to gain maximal synergy effects for both involved. Thus, we have started to work on a strategy for Aronia in the future, which hopefully will further highlight our strengths, and make us even better! Strengthening close collaboration on site at Campus Raseborg will be a vital ingredient in this process.

In 2013, we continued to work on improving our outreach. We do this by making our web-pages interesting and accessible, by using Facebook and by appearing in media frequently. We think the science we do matters, and it is thus worthwhile saying so!

Aronia extends it´s gratitude to the basic funders, the Town of Raseborg, Konstsamfundet and Stiftelsen för Åbo Akademi (ACZRT) and Novia. In terms of pure collaboration, the Town of Raseborg, particularily the Environmental Office, will need to be singled out as an example of fruitful synergy. Also, our permanent partner during the field season, the Tvärminne Zoological Station in Hanko (Helsinki University) deserves appreciation for years passed and years to come. Within the framework of the LTER-site WelFin (Long-term Ecological Research) we are strong actors in regionally based high-quality research for the ultimate benefit of coastal nature in Finland.

Mikael Kilpi, director

Photo: Mikael Kilpi

Behavioural and evolutionary responses to the threat of predation

Kim Jaatinen

This Academy of Finland funded post-doc project focuses how animals respond to the threat of predation. Behavioral plasticity allows animals to rapidly respond to changing levels of threat. These short-term responses will affect both the survival and fecundity of animals and thereby also the evolution of antipredatory defences.

I approach the behavioural aspects of the project by combining theoretical modelling with the analysis of long-term empirical data. Together with Prof. Hanna Kokko (Australian National University), Dr. Jussi Lehtonen (ANU) and Doc. Markus Öst (Aronia) we have set out to ask how the risk of being attacked by predators affects group formation, social interactions and reproductive tactics among animals. The predictions of the models will be tested using data on eider brood care groups.

I collaborate with Dr. Tuomas Leinonen and Dr. Scott McCairns (University of Helsinki) in studying the evolutionary responses to differing predator regimes. We have devised a series of behavioural experiments and are in the process of developing a high throughput behavioural assay to study the genetic basis for variation in antipredatory behavior of threespine sticklebacks. Our approach focuses on the genetic differences between individuals, within and between populations varying widely in their evolutionary history with respect to predation.

Current collaborators

- Tuomas Leinonen, University of Helsinki
- Scott McCairns, University of Helsinki
- Hanna Kokko, Australian National University, Australia
- Jussi Lehtonen, University of Basel, Switzerland
- Markus Öst, Aronia
- Pat Monaghan, Glasgow, UK
- Keith Hobson, University of Sascatchewan, Canada
- Aleksi Lehikoinen, Finnish Museum of Natural History
- Eldar Rakhimberdiev, Royal Netherlands Institute for Sea Research (NIOZ), Marine Ecology; Cornell University, Ecology and Evolutionary Biology and Laboratory of Ornithology; Moscow State University, Vertebrate Zoology

Publications 2013

* **Completed before Aronia affiliation**

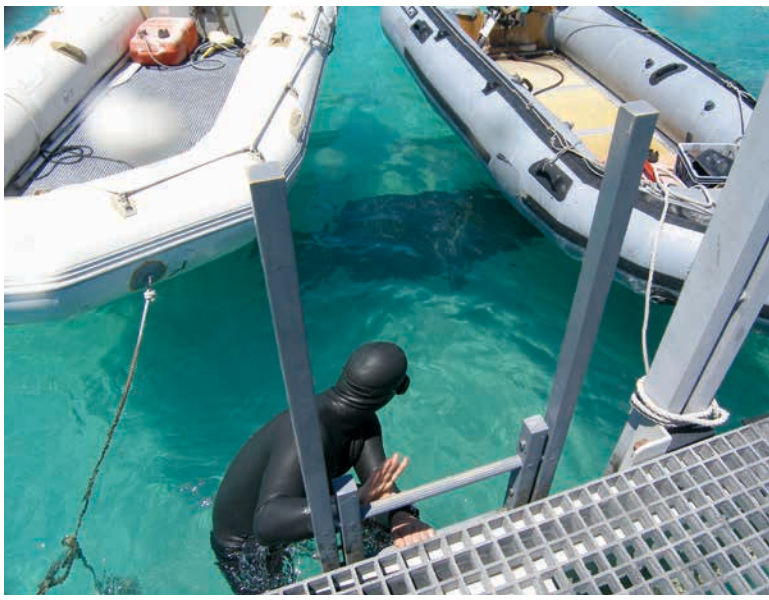
Jaatinen, K., Seltmann, M. W., Hollmén, T., Atkinson, S., Mashburn, K. & Öst, M. 2013. Context dependency of baseline glucocorticoids as indicators of individual quality in a capital breeder. General and comparative endocrinology, 191: 231-238. *

Jaatinen, K., Öst, M., Gienapp, P. & Merilä, J. 2013. Facultative sex allocation and sex-specific offspring survival in Barrow's goldeneyes. Ethology, 119: 146-155.

Jaatinen, K.& Öst, M. 2013. Brood size matching: a novel perspective on predator dilution. American Naturalist, 181: 171-181.

Lehikoinen, A., Jaatinen, K., Vähätalo, A. V., Clausen, P., Crowe, O., Deceuninck, B., Hearn, R., Holt, C. A., Hornman, M., Keller, V., Nilsson, L., Langendoen, T., Tománková, I., Wahl, J. & Fox, A. D. 2013. Rapid climate driven shifts in wintering distributions of three common waterbird species. Global Change Biology, 19: 2071–2081. *

Öst, M. & Jaatinen, K. 2013. Relative importance of social status and physiological need in determining leadership in a social forager. PLoS ONE, 8: e64778 *



Collaborator Jussi Lehtonen (University of Basel) barely escapes man eating Queensland grouper (*Epinephelus lanceolatus*) and, in accordance with theoretical predictions, decides to join a group of conspecifics.

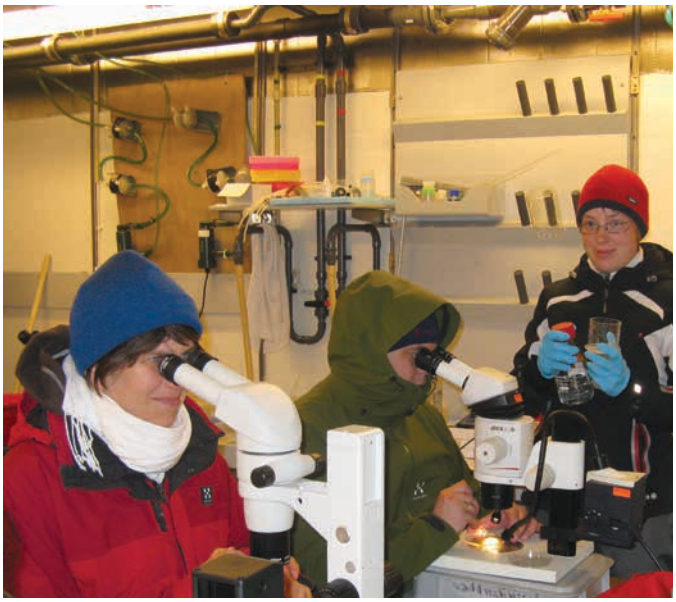
Cyanobacteria and zooplankton interactions with eutrophication and climate change

Jonna Engström-Öst, Anna-Karin Almén & Andreas Brutemark

Our main research interest is global change and its effects on plankton.

Highlights of the year

Climate change induced effects are challenging the species´ ability to adapt. We studied the combined effects of warming, acidification and toxic blooms on the important zooplankton species *Acartia bifilosa*. Fish larvae feed on these crustaceans when they are newly hatched, and that is a reason to study responses of zooplankton to climate change. Vehmaa et al. (2013) found that warming in combination with acidification reduced the copepod antioxidant defence mechanism. Warming also lowered the viability of copepod eggs, slowed down juvenile development, and caused oxidative stress in adult copepods. Copepod females with high oxidative status and therefore low oxidative stress were found to produce more viable offspring that developed faster than the offspring of females with low oxidative status.



Jonna Engström-Öst and Andreas Brutemark pick copepods for length measurements and Lara Valentič assists at Sven Lovén Centre for Marine Sciences. Photo: Anna-Karin Almén

Anna-Karin Almén and Matias Scheinin preparing for mesocosm sampling at Kristineberg. Photo: Jonna Engström-Öst

In another study focusing on eutrophication and climate change by Suikkanen et al. (2013), long-term data of hydrography and plankton between 1979 and 2011 from the Gulf of Finland, Åland Sea and northern Baltic proper were analysed. The results showed that the amount of energy available for planktivorous organisms declined after the late 1970s, as both the food quality of phytoplankton and the mean size of zooplankton decreased. The most significant change affecting plankton communities in the whole study area was the remarkable increase in late summer surface water temperatures. At the same time, salinity decreased in the Baltic proper. Concentrations of dissolved inorganic nutrients increased especially in the Gulf of Finland, which indicates heavy eutrophication. Several changes were observed also in the algal communities, mostly due to warming and eutrophication. A number of species increased in the entire study area, such as cyanobacteria, haptophytes and chrysophytes. In the zooplankton communities, there was an increase of small-sized rotifers, but a decrease of total abundance of

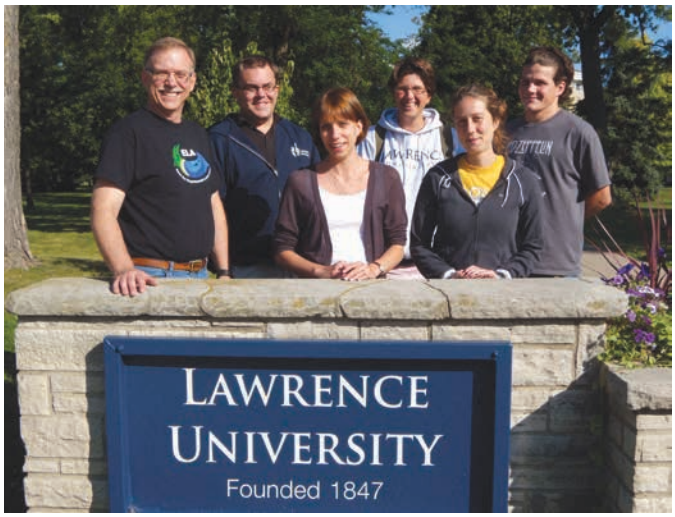
Övergödning, klimatförändring och blågrönalger

Under 2013 besökte vi svenska västkusten för att delta i ett havsförsurningsexperiment. Målsättningen var att undersöka djurplanktons responser, beteende och anpassning till ett surare hav. Senare på sommaren besökte vi Michigansjön för att samla data gällande giftiga cyanobakterieblomningar och deras inverkan på djurplankton. Sjön som hör till Stora Sjöarna hör till ett sötvattenssystem som liknar Östersjön på många sätt, och utgör därmed ett ypperligt jämförelseobjekt.

zooplankton and especially adult and large cladocerans and copepods. The proportion of younger and smaller individuals in the zooplankton community increased. In practice this means that the amount of energy available for fish has declined. It seems that the large-sized zooplankton of the northern Baltic are suffering from changes in the phytoplankton communities, combined with other stressors, such as climate warming, decrease of salinity and increase of planktivorous fish, caused by e.g. overfishing of the large predatory fish. This study was published in PLOS ONE in June and was featured in PLOS Collections.

In May we visited Sven Lovén Centre of Marine Sciences on the Swedish west coast to participate in the mesocosm sampling studying ocean acidification in collaboration with Prof. Ulf Riebesell. The results we obtained on copepod reproduction, stress levels, growth and fatty acid composition are currently under preparation. In August we visited Green Bay at Michigan Lake to work with Prof. Bart DeStasio and his students at Lawrence University, Wisconsin. We studied responses by copepods on toxic cyanobacteria. These results are also currently being analysed.

Bart DeStasio, Andreas Brutemark, Anna-Karin Almén, Jonna Engström-Öst, Amanda Dwyer and Nicholas J. Barrett at campus in downtown Appleton, Wisconsin. Photo: Elisabeth DeStasio



Publications 2013

Scientific publications

Vehmaa, A., Hogfors, H., Gorokhova, E., Brutemark, A., Holmborn, T. & Engström-Öst, J. 2013. Projected marine climate change: effects on copepod oxidative status and reproduction. Ecology and Evolution 3: 4548-4557.

Brutemark, A. & Engström-Öst J. 2013. Does the presence of zooplankton influence growth and toxin production of Nodularia spumigena? International Review of Hydrobiology 98: 225-234.

Salonen, M. & Engström-Öst, J. 2013. Growth of pike larvae: effects of prey, turbidity and food quality. Hydrobiologia 717: 169-175.

Engström-Öst, J., Repka, S., Brutemark, A. & Nieminen, A. 2013. Clay and algae-induced effects on biomass, cell size and toxin concentration in a brackish-water cyanobacterium. Hydrobiologia 714: 85-92.

Suikkanen, S., Pulina, S., Engström-Öst, J., Lehtiniemi, M., Lehtinen, S. & Brutemark, A. 2013. Climate change and eutrophication induced shifts in northern summer plankton communities. PLOS ONE 8(6): e66475.

Engström-Öst, J., Autio, R., Setälä, O., Sopanen S. & Suikkanen, S. 2013. Plankton community dynamics during decay of a cyanobacteria bloom – a mesocosm experiment. Hydrobiologia 701: 25-35.

Thesis published

Nieminen, A. 2013. Effects of turbidity on growth and toxin concentration of a brackish-water cyanobacterium. MSc Thesis, University of Turku, Finland, 48 pp.

Current collaborators

- Prof. Bart DeStasio, Lawrence University, USA (biogeography, blooms)
- Prof. Elena Gorokhova, Stockholm University, Sweden (oxidative stress responses)
- Prof. Ulf Riebesell, GEOMAR, Kiel, Germany (ocean acidification)
- Dr. Ulrika Candolin, University of Helsinki, Finland (fish larvae, ocean acidification)
- Dr. Fredrik Jutfelt, University of Gothenburg, Sweden (fish larvae, ocean acidification)
- Dr. Ane T. Laugen, ARONIA & Swedish University of Agricultural Sciences, Sweden (cyanobacteria ecology)
- Dr. Maiju Lehtiniemi, Finnish Environment Institute, Finland (plankton long-term changes)
- Dr. Sari Repka, University of Turku, Finland (toxic cyanobacteria)
- Dr. Sanna Suikkanen, Finnish Environment Institute, Finland (allelopathy)
- MSc. Angélique Vandelannoote, University College West Flanders, Belgium (allelopathy)
- Dr. Anu Vehmaa, University of Helsinki, Finland (zooplankton, ocean acidification)

Evolutionary ecology under environmental change

Ane Timenes Laugen

How does human-induced environmental stress such as pollutants, altered climate and harvesting, influence ecological and evolutionary processes in wild, farmed, and harvested populations?

Highlights of the year

A large part of my research in evolutionary ecology revolves around explaining spatial or temporal patterns of variation in wild populations. Being question-driven rather than system-driven, my ongoing research includes a variety of study organisms and approaches. Main highlights includes:

Geographic range, winter mortality and recruitment of invasive Pacific oysters in Sweden

Due to massive introductions for aquaculture purposes as well as their wide environmental tolerance and high growth rates Pacific oysters have become successful invaders in many coastal areas in Europe, including Scandinavia. Their presence often leads to major ecosystem changes, for instance through outcompeting native bivalves. Self-sustaining feral populations may also severely impair other shellfish farming by using the farmed shellfish as substrate for growth. At the same time the Pacific oyster may contribute positively to other ecosystem services, for instance by "cleaning up" waters suffering from excessive algal blooms, or serve as a resource for both recreational and commercial harvesting. Together with Dr Åsa Strand at University of Gothenburgs biological station at Tjärnö, Sweden, I combine long-term monitoring in the field with molecular genetic techniques and oceanographic modelling to determine pathways for dispersal and local recruitment, and predict future dynamics of the species. This summer's field work revealed a slight decrease in the geographic distribution compared to the first survey in 2007, mainly caused by high mortality in many localities.

Dead Pacific oysters in Getevik, Bohuslän, Sweden. Photo: AT Laugen

Regular occurrence while doing field work on yellow dung flies. Photo: AT Laugen

Latitudinal variation in life-history traits in an exploited flatfish

This project is a thorough model-based analysis of latitudinal differences in life history traits of sole (*Solea solea*). The combination of large dataset, the spatial coverage and the use of energy allocation modeling to extract information from fisheries data makes this a unique contribution to the literature in the interface between basic evolutionary ecology and fisheries science (Mollet et al 2013).

The effect of fisheries-induced evolution for metrics used by fisheries management

This paper provides a qualitative analysis of how FIE can alter population characteristics, and thereby influence the reference points managers use to maintain healthy fish stocks (Heino et al 2013). The project is one of many col-

Evolutionär ekologi under miljöförändringar

Hur påverkas levande organismer av mänskliga aktiviteter? Direkta effekter som förorening, fiske, och övergödning kan samspela med indirekta effekter som ändrade klimatförhållanden. Som forskare måste vi därför sträva efter att undersöka flera faktorer samtidigt.

Under mitt första år på Aronia har jag fortsatt min forskning om evolutionära konsekvenser av fiske, hur väderförhållanden påverkar reproduktion hos fåglar och flugor, hur marina ryggradslösa djur hanterar klimat-relaterade ändringar i salinitet, hur bra invasiva stillahavsostron förökar sej och överlever vinter i svenska vatten, och hur man kan använda statistisk modellering för att värdera vilka metoder som bäst förutsäger sjukdom på honungsbin.

laborative efforts by members of the Internation Council for the Exploration of the Sea (ICES; www.ices.dk) Working Group on Fisheries-Induced Evolution.

Seasonal variation in natural and sexual selection in an insect model system

One of the outstanding questions in evolutionary biology is how genetic variation is maintained for traits under strong selection. One explanation is that direction and intensity of selection varies in time and space, and this project aims at studying seasonal variation natural and sexual selection on body size and morphology in wild yellow dung flies (*Scathophaga stercoraria*). We can do this by observing and and collecting flies on cattle dung and measure selection accurately through male mating status (mated or unmated) and female fecundity. After having sampled flies at two localities outside Uppsala, Sweden, three times throughout the active season (between early May and early October), we are now processing the sampled flies to determine body size and measure morphological characers.

Current collaborators

- Anna Gårdmark & Ann-Britt Florin, Swedish University of Agricultural Sciences, Uppsala
- Jan Jaap Poos, Wageningen Imares, The Netherlands
- Adriaan Rijnsdorp, Wageningen Imares, IJmuiden, The Netherlands
- Alex Tidd & George Engelhard, Centre for Environment, Fisheries & Aquaculture Science (Cefas), UK
- Bruno Ernande, Research Institute for Exploitation of the Sea (Ifremer), France
- Fabian Mollet, Blueyou, Switzerland (www.blueyou.ch)
- Åsa Strand, Matthias Obst, Jon Havenhand & Elin Renborg, University of Gothenburg, Sweden
- Johan Hollander, Lunds University, Sweden
- Eva Forsgren, Joachim de Miranda, Meit Öberg, Matt Low, Debora Arlt & Tomas Pärt Swedish University of Agricultural Sciences, Uppsala

Publications 2013

*Completed before Aronia affiliation

Forsgren, E. & Laugen, A.T. Prognostic value of using bee and hive debris samples for the detection of American foulbrood disease in honey bee colonies. Apidologie, *in press* doi: 10.1007/s13592-013-0225 6.

Öberg, M., Pärt, Ö., Arlt, D., Laugen, A. T. & Low, M. Decomposing the seasonal fitness decline. Oecologia, *in press* doi: 10.1007/s00442-013-2763-z.

Mollet, F. M, Engelhard, G. H, Vainikka, A, Laugen, A. T, Rijnsdorp, A. D & Ernande, B. 2013. Spatial variation in growth, maturation schedules and reproductive investment of female sole *Solea solea* in the North-east Atlantic. Journal of Sea Research 84: 109-121. *

Heino, M., Baulier, L, Boukal, D. S, Ernande, B, Johnston, F, Mollet, F, Pardoe, H, Therkildsen, N. O, Uusi-Heikkila, S, Vainikka, A, Arlinghaus, R, Dankel, D, Dunlop, E. S, Eikeset, A. M, Enberg, K, Engelhard, G. H, Jørgensen, C, Laugen, A. T, Matsumura, S, Nusslé, S, Urbach, D, Whitlock, R, Rijnsdorp, A. D. & Dieckmann, U. 2013. Can fisheries-induced evolution shift reference points for fisheries management? ICES Journal of Marine Science 70: 707–721. *

Bussière, L. F, Tinsley, M. C & Laugen, A. T. 2013. Female preferences for facial masculinity are probably not adaptations for securing good immunocompetence genes. Invited commentary Behavioural Ecology 24: 593-594. *

Mating yellow dung flies. Photo: AT Laugen

Invasion ecology and plant population dynamics

Satu Ramula
Miia Jauni and Shou-Li Li at the University of Turku

We investigate the life history evolution of invasive plant species and factors contributing to plant invasions. Moreover, we are aiming to understand spatial and temporal variation in plant population dynamics using demographic models.

Highlights of the year

Within the project "The evolution and establishment of plant invasions", we collected data from multiple populations of the invasive herb *Lupinus polyphyllus* in a part of its invaded range in Finland, ran genetic analyses based on leaf samples, and examined causes and consequences of seed size variation.

We discovered large variation in the seed size of *Lupinus polyphyllus*, which had fitness consequences for seedlings (Sõber and Ramula 2013). Larger seeds were better establishers than smaller seeds, indicating that the success of *L. polyphyllus* invasions is likely to depend positively on seed mass. As the emergence and growth of seedlings were generally insensitive to soil pH and environmental conditions examined, *L. polyphyllus* is probably able to colonise a range of different habitats, which may partly explain its invasion success.

Testing the viability of *Lupinus polyphyllus* seeds with a chemical in the lab. The living tissues of viable seeds stain red, while dead seeds remain unstained. Photo Satu Ramula

Analyses of population dynamics for *L. polyphyllus* showed local and regional differences in population growth rate that were not associated with habitat type or population density (Ramula, in press). Population growth rate increased linearly with plant establishment, survival and growth, while flowering probability and seed production did not correlate with it. This indicates that annual seed production estimated from different populations cannot be used as proxy for invasiveness or population fitness for *L. polyphyllus* and other perennial invaders.

Plant competition experiment can inform about the invasion process. Photo Miia Jauni

In August 2013, we participated in a conference organized by the International Association for Ecology (Intecol) that took place in London. Dr. Li gave there an invited talk about our work on the life history evolution of plant invaders (Li and Ramula, submitted) in a symposium.

In collaboration with Dr. Hyvönen (MTT Agrifood Research Finland), we examined the impact of a three-degree elevation in temperature on the establishment and maintenance of populations of two annual weeds (*Amaranthus retroflexus* and *Echinochloa crus-galli*) that occasionally occur in Finland under current climate. We parameterised population models from field and greenhouse experiments conducted in Jokioinen, Finland under different temperature and competition regimes. The models revealed that *Echinochloa* is unlikely to become established in Finland even under a warmer temperature, while *Amaranthus* may succeed particularly at sites where competition with a crop species is weak (Hyvönen and Ramula, in press).

Främmande arter och populationsdynamik hos växter

Projektet arbetar för att förstå ekologiska och evolutionära processer som kan leda till snabb spridning av främmande (invasiva) växtarter i naturen.

”Variationen i frövikten hos blomsterlupinen (*Lupinus polyphyllus*) påverkade grobarheten samt groddplantornas tillväxt som båda ökade med frövikten. Resultaten tyder på att blomsterlupinen kan tåla olika miljöförhållanden och kan etablera sig i olika habitat, vilket kanske delvis förklarar varför den har blivit så framgångsrik” (Sõber and Ramula 2013).

”Fröproduktionen var inte direkt relaterad till populationens tillväxt, vilket kan betyda att den skulle vara ett dåligt mått på populationens status (Ramula, i tryck)”

Publications 2013
***Completed before Aronia affiliation**

Hyvönen, T. & Ramula, S. Crop-weed competition rather than temperature limits the population establishment of two annual C4 weeds in their northern range margin. Weed Research, *in press*.

Jäkäläniemi A., Ramula, S. & Tuomi J. 2013. Variability of important vital rates challenges the demographic buffering hypothesis. Evolutionary Ecology 27:533-545.*

Li, S-L., Yu, F-H., Werger, M.J.A., Dong, M., Ramula, S. & Zuidema, P.A. 2013. Understanding the effects of a new grazing policy: the impact of seasonal grazing on shrub demography in the Inner Mongolian steppe. Journal of Applied Ecology 50:1377-1386.

Li, S-L., Vasemägi, A., Matos-Máravi, P. & Ramula, S. 2013. Development and testing of microsatellite loci for the invasive herb *Lupinus polyphyllus* through 454 pyrosequencing. (Primer note) in Permanent genetic resources added to Molecular Ecology Resources Database 1 February 2013-31 March 2013, Arias M. C., Atteke M. et al. (includes 47 authors) Molecular Ecology Resources 13:760-762.

Ramula, S. Linking vital rates to invasiveness of a perennial herb. Oecologia, *in press*.

Sõber, V. & Ramula, S. 2013: Seed number and environmental conditions do not explain seed size variability for the invasive herb *Lupinus polyphyllus*. Plant Ecology 214:883-892.

Tuomi, J., Crone, E., Gremer, J., Jäkäläniemi, A., Lesica, P., Pedersen, B. & Ramula, S. 2013. Prolonged dormancy interferes with senescence for two perennial herbs with complex life cycles. Journal of Ecology 101:566-576.*

Trainee Hanna from the University of Turku checking whether there are any pollinators in the trap. Photo Satu Ramula

Current collaborators

- Prof. Anti Vasemägi, University of Turku, Finland
- Dr. Terho Hyvönen, MTT Agrifood Research, Finland
- Prof. Juha Tuomi, University of Oulu, Finland
- Dr. Sofia Gripenberg, University of Turku, Finland & Oxford University, UK
- Dr. Anne Jäkäläniemi, Administration of Forests, Finland
- Prof. Niclas Jonzén, Lund University, Sweden
- Dr. Jacob Johansson, Lund University, Sweden

Lupinus polyphyllus. Photo: Satu Ramula

Natural resource economy
Governance by GeoDesign

Lauri Rapeli

This project studies democratic governance of natural resources at the local-level. It introduces the concept of GeoDesign into the study of democratic decision-making.

Highlights of the year

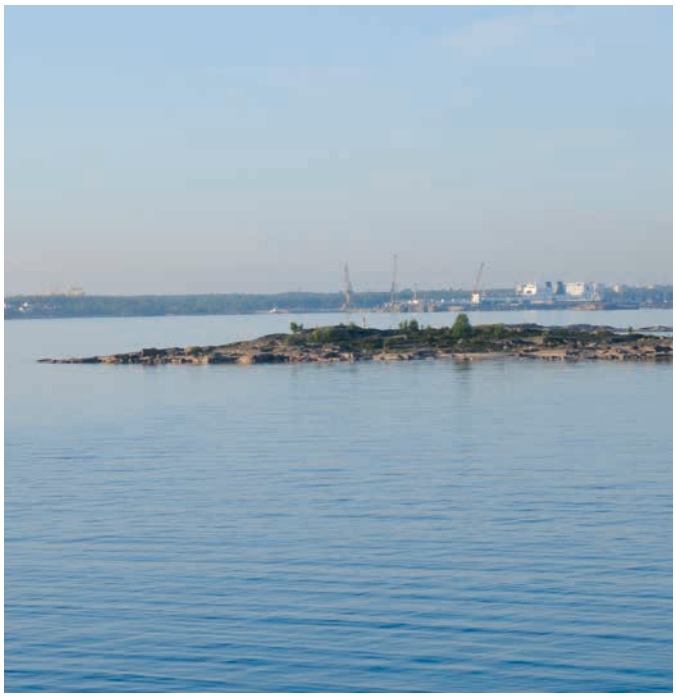
We are constantly utilizing natural resources and consequently changing the way our environment looks. We build new houses, roads, parks etc. Designing the environment is always a project that requires information about the environment and it always involves many people: city planners, politicians, citizens and often other stakeholders such as entrepreneurs. Cities and smaller municipalities are in key position for such projects, as they are subject to democratic decision-making. But how can all these people and information be brought together to make wise choices? Governance by GeoDesign – provides the tool needed for the integration of these elements.

The core of the idea is to offer GIS-based decision support for local governments as well as other governmental agencies in matters related to city-planning and environmental issues. A geographical information system or GIS is a powerful tool for producing visualized data from the physical world, for instance, in the form of 3-D imagery. Hence, a GIS can be utilized in all kinds of decision-making in both urban and rural environments.

But having data is not enough. It has to be made understandable for decision-makers, who typically are not experts in terms of the technical know-how required of them. GeoDesign is a concept that brings it all together. Through the application of GeoDesign, we can use the data provided by GIS to mold our environment to make better decisions. GeoDesign is a method that

1. Gathers the necessary data needed for e.g. planning a new residential area
2. Uses sophisticated computer programs to calculate the realities for different possible scenarios
3. Brings together the officials and the politicians to look at the data and the different scenarios
4. Collects data about public opinion on the same matter
5. Gives decision-makers an arena where they meet both one another and the information they need

The innovation is that GeoDesign incorporates the use of highly sophisticated information and its analysis with



democratic decision-making. While technical expertise has long been used for decision support, there is no holistic method for integrating people and information in the same decision-making process, with the aim of producing more informed decisions.

The emphasis is on local decision-making authorities. The empirical material is gathered by documenting several occasions where actual decision-making occurs, typically by recording the debates in municipal committees dealing with e.g. questions related to city planning. Thanks to the cooperation by the Raseborg city planning architect Simon Store, we were able to record one such meeting in early December, where representatives from the town of Raseborg met with local activists to discuss development plans in the North Harbour area. The meeting was arranged at Novia and the GeoDesign Studio was utilized as support for the debate. New similar meetings will be held next year, allowing the project to gather more

Naturresursförvaltning

Fokusområdet i detta projekt är förvaltningen och utvecklingen av stadsmiljön enligt konceptet GeoDesign. GeoDesign är en planeringsmetod som förenar den nödvändiga informationen om den fysiska omgivningen med den konkreta (när)demokratiska processen. Projektet bygger på samarbete med stadsplaneringsenheten vid Raseborgs stad. Tillsammans med staden kommer vi att organisera möten där politiker och tjänstemän kan diskutera och fatta beslut i aktuella ärenden med hjälp av GeoDesign – metoden. Denna forskningsdesign ger oss en möjlighet att studera det lokala beslutsfattandet i naturresursfrågor även i andra delområden än enbart inom stadsplaneringen.

data on local decision-making in matters that are relevant for the broader study of natural resource governance. The data allows us to study competence in decision-making as well as the way decision-makers experience GeoDesign as a tool for decision-support.

Current collaborators

- Irina Bergström, Finnish Environment Institute
- Maria Holmberg, Finnish Environment Institute
- Martin Forsius, Finnish Environment Institute
- Pekka Vanhala, Finnish Environment Institute
- The political science department at Åbo Akademi University
- GIS-center at Novia Raseborg (Romi Rancken, Georgy Rybakov, Johanna Kollin)
- City planning architect Simon Store, the town of Raseborg

Publications 2013

Mattila, M., Söderlund, P., Wass, H. & Rapeli. L. 2013. Healthy voting: The effect of self-reported health on turnout in 30 countries. Electoral Studies, 32:4, 886–891.

Rapeli, L. & Leino. M. 2013. Kansalaisten poliittinen osallistuminen ja tietämys Suomessa [Citizen political participation and knowledge in Finland]. Aikuiskasvatus, 33:1, 4-15.

Rapeli, L. 2013. Citizens' Perceptions of Left-Right Ideologies in Finland. Turkish Journal of Politics, 3:2, 5-25.

Heinonen, M., Laaninen, R., Paju, R. & Rapeli, L. 2013. Kyselytutkimusten edustavuus Suomessa 1973–2011: Katsaus keskeisistä taustatekijöistä [The representativity of Finnish surveys in 1973–2011: A review of essential background variables]. Politiikka, 55:3, 192–199.

The very first GeoDesign-assisted meeting held in Raseborg was arranged by the GeoDesign project and held at the Novia campus on December 3rd 2013. Photo: Romi Rancken

Parental care strategies, reproductive success and environmental stress in eiders

Markus Öst, Kim Jaatinen, Mikael Kilpi, Kristina Noreikienė & Martin Seltmann

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-year data set on eider ducks, our main study species, from Tvärminne, SW Finland.

Highlights of the year

A main research theme is to understand the causes and consequences of consistent individual differences in behaviour and physiology, termed animal personalities. This research made a great leap forward in this year, culminating in Martin Seltmann's PhD thesis (Seltmann 2014). In the first chapter of his thesis, Martin explored the relationship between baseline stress hormone levels (corticosterone; CORT) and individual quality (Jaatinen et al. 2013a). The "cort-fitness hypothesis" states that chronically elevated baseline levels indicate difficulties in coping with the environment, and thus low individual quality. However, the situation was considerably more complex in female eiders. The relationship between baseline CORT and body condition, a proxy of individual quality, varied depending on female age, breeding phenology and nest-site habitat. Nonetheless, elevated baseline CORT was associated with lower egg hatching success. Thus, although chronic stress may impair reproductive performance, it is impossible to define individual quality solely based on stress hormone levels without considering individual and behavioural attributes. In another chapter of Martin's thesis, he showed that female risk-taking behaviour and stress coping styles were related to nest-site choice. Open nests close to the shore offer an easier escape from predators for the incubating females, but offer a less favourable environment for egg survival, and vice versa. Less stress responsive females occupied nests with greater coverage that were farther away from the shoreline. Females nesting in nests with medium cover and farther from the shoreline had higher reproductive success. The non-random distribution of personality types in space agrees with the "trade-off hypothesis" for the evolution of personalities. This hypothesis states that personalities may evolve because individuals prioritize either reproduction (bold and less stress sensitive) or survival (shy and more stress sensitive), both of which cannot be simultaneously maximized.

Sara Neggazi admires a particularly cute brood of ducklings. Sara collected data for her MSc thesis on immunocompetence of eider females in the spring of 2013. Photo: Heikki Eriksson

Finally free to head off to new adventures! This released female eider has just undergone our handling procedures. Please note the unique colour ring combination which allows identifying the female at sea. Photo: Heikki Eriksson

Ungomvårdnadsstrategier, häckningsframgång och miljöstress hos ejdern

Martin Seltmanns avhandling (Seltmann 2014) analyserar betydelsen av personlighet, d.v.s. stabila individuella skillnader i beteende och fysiologi, hos ejdern. Vi har i avhandlingen bl.a. klargjort ifall grundnivån av stresshormonet kortikosteron avspeglar individuell kvalitet (Jaatinen et al. 2013a) och ifall personligheten bestämmer boplatsvalet. Vi har också visat att ejderhonor (ådor) med jämnstora kullar oftare sammanslår sina kullar med varandra för att dela jämnt på riskerna för att deras ungar ska bli tagna av rovdjur (Jaatinen & Öst 2013). Vi bestämde också vilka egenskaper som avgör ledarskapet bland ådorna i en sammanslagen kull (Öst & Jaatinen 2013).

We have also done progress in understanding social organization. Eider females may either fuse their broods together and form brood-rearing coalitions, or tend their young alone. We have shown that brood-tending females prefer to form coalitions with females having similar-sized broods, because then offspring of both females reap equal safety benefits of grouping (safety in numbers) (Jaatinen & Öst 2013). The finding implies that female eiders (1) resolve potential conflicts over relative contributions to predator dilution through compromise and consensus and (2) actively assess their own family size in relation to others', a remarkable cognitive achievement. We have also examined the emergence of leadership in groups (Öst & Jaatinen 2013). Group decisions on the timing of activities pose a dilemma: monopolized decision-making by a single leader compromises the optimal timing of activities by the others, while independent decision-making by all members undermines group coherence. Theory suggests that initiation of foraging should be determined by physiological demand in social foragers. Alternatively, intrinsic qualities may predispose certain individuals to leadership. We found that physiological factors were more important than social factors in predicting leadership, defined as the propensity to initiate foraging in eider brood-rearing coalitions. These results confirm that 'leading according to need' (i.e., 'hunger') is an evolutionary viable strategy regardless of dominance structure.

Current collaborators

- Hanna Kokko & Jussi Lehtonen, Australian National University
- Keith Hobson, University of Saskatchewan, Australia
- Ronald C. Ydenberg, Simon Fraser University, Canada
- Anthony D. Fox & Karsten Laursen, National Environmental Research Institute, Denmark
- Aleksi Lehikoinen, Finnish Museum of Natural History, Finland
- Martti Hario & Hannu Pöysä, Finnish Game and Fisheries Research Institute, Finland
- Juha Merilä, University of Helsinki, Finland
- Phillip Gienapp, University of Helsinki, Finland
- Børge Moe, Jan Ove Bustnes & Sveinn Are Hanssen, Norsk institutt for naturforskning, Norway
- Kjell Larsson & Peter Waldeck, Gotland University, Sweden
- David Costantini & Pat Monaghan, University of Glasgow, UK
- Benjamin B. Steele, Colby-Sawyer College, USA
- Kendall Mashburn & Shannon Atkinson, University of Alaska Fairbanks, Fisheries Division, USA
- Tuula Hollmén, Alaska SeaLife Center, University of Alaska, USA
- Graham Fairhurst, University of Saskatchewan, Canada

Publications 2013

Scientific publications:

Jaatinen, K. & Öst, M. 2013. Brood size matching: a novel perspective on predator dilution. American Naturalist 181: 171–181.

Jaatinen, K., Seltmann, M. W., Hollmén, T., Atkinson, S., Mashburn, K. & Öst, M. 2013a. Context dependency of baseline glucocorticoids as indicators of individual quality in a capital breeder. General and Comparative Endocrinology 191: 231-238.

Jaatinen, K., Öst, M., Gienapp, P. & Merilä, J. 2013b. Facultative sex allocation and sex-specific offspring survival in Barrow's goldeneyes. Ethology 119: 146–155.

Lehikoinen, A., Jaatinen, K., Vähätalo, A. V., Clausen, P., Crowe, O., Deceuninck, B., Hearn, R., Holt, C. A., Hornman, M., Keller, V., Nilsson, L., Langendoen, T., Tománková, I., Wahl, J. & Fox, A. D. 2013. Rapid climate driven shifts in wintering distributions of three common waterbird species. Global Change Biology 19: 2071–2081.

Öst, M. & Jaatinen, K. 2013. Relative importance of social status and physiological need in determining leadership in female eiders. PLoS ONE 8(5): e64778.

Seltmann, M. W. 2014. Of Milquetoasts and Daredevils – Personalities in Female Eiders. PhD thesis, Åbo Akademi, 105 pp. PhD defence 17 January 2014. https://www.doria.fi/handle/10024/94015

Thesis published:

Aikko, M. 2013. Personlighet hos nykläckta ejdrar (*Somateria mollissima*) – kan den kvantifieras? MSc Thesis, Åbo Akademi University, Finland, 37 pp.

It's important to keep a cool head when simultaneously handling an eider female and talking live on the radio with Juha Laaksonen. Kim Jaatinen is one of the few who manages this feat. Photo: Heikki Eriksson

Statistical Population Ecology

Andreas Lindén
Sara Fraixedas Nuñez (University of Helsinki), Andreas Otterbeck (University of Oslo)

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

Highlights of the year

The new project, Statistical Population Ecology, started its activity in September 2013. The project focus is to use and develop statistical modelling tools for more effective and accurate estimation of ecologically interesting parameters, largely based on existing data sets. Careful statistical modelling and controlling for sources of noise can be crucial for extracting important information, e.g., from large data sets collected by amateurs. Due to the nature of the project, collaborative work is of large importance. Research interests encompass a wide range of topics within the field of population ecology, including population dynamics, spatial ecology, variation in demographic parameters, phenology, bird migration and bioacoustical applications.

Understanding migratory movements of animals is one of the project themes. Hawk Owls (*Surnia ulula*) show an irregular pattern of irruptive migration, which is primarily related to lack of food. In autumn 2013 was probably the strongest irruption of the species ever documented in southern Finland. Photo: Andreas Lindén

Short distance migrants, such as the Robin (*Erithacus rubecula*) show a trend towards earlier spring migration. How does this affect their populations? Photo: Andreas Lindén

During year 2013 much focus has been on activity related to the project establishment. Such activities include presentations at Novia and Åbo Akademi, development of web pages, consolidating collaborative plans, writing research grant proposals and reporting previous projects. New collaborative contacts has also been established within ARONIA, e.g., on modelling the dynamics of a well-studied eider population in the gulf of Finland.

This autumn much effort has also been put into teaching at Åbo Akademi. In September–October we developed and taught a new compulsory course in statistics (5 credits) for graduate students in Environmental biology and Pharmacy. The teaching consisted of lectures, exercises in the programming environment R and independent work. Statistical Population Ecology was also involved in teaching the course Conservation Biology, organized at Åbo Akademi by members of the ARONIA Coastal Zone Research Team.

Statistisk populationsekologi

Projektet påbörjades i september 2013, med fokus att tillämpa och utveckla effektiva statistiska metoder för estimering av ekologiskt intressanta parametrar. Forskningsintressen omfattar populationsdynamik, demografiska parametrar, fenologi, fåglars flyttning och bioakustik.

Höstens aktivitet präglades av projektets etablerande, inklusive presentationer, hemsidor, förstärkandet av samarbetsplaner och ansökning av forskningsmedel. En annan av tyngdpunkterna var undervisning vid Åbo Akademi; en ny kurs i statistik (5 sp) och bidrag till kursen Conservation Biology.

Projektet handleder två personer som är stationerade vid andra institutioner. Sara Fraixedas Nuñez är doktorand vid Naturhistoriska Museet (Helsingfors Universitet) och Andreas Otterbeck är magistersstudent vid Universitetet i Oslo.

Currently the project has two associate members who are affiliated elsewhere, but co-supervised by Andreas Lindén. Sara Fraixedas Nuñez, is a PhD-student at the Finnish museum of Natural history (University of Helsinki), who started here work in the beginning of 2013. Her thesis is entitled: "Finnish birds as indicators of environmental change – tools for decision makers and conservation". Year 2013 has been successful and already resulted in one submitted research paper and two scientific presentations about the topic. Andreas Otterbeck is a MSc-student at the University of Oslo (Department of Biosciences). He does his Master's thesis about the recovery of seabird populations subject to extra mortality, e.g., due to oil spill. Related to his work, Otterbeck visited Finland for four days in October 2013.

Current collaborators

- Juha Tiainen & Jukka Rintala, Finnish Game and Fisheries Research Institute
- Mike S. Fowler, Swansea University, Department of Biosciences
- Jonas Knape, Swedish University of Agricultural Sciences, Population ecology unit
- Niclas Jonzén & Jacob Johansson, Lund University
- Aleksi Lehikoinen & Kalle Meller, University of Helsinki, Finnish Museum of Natural History
- Otso Ovaskainen, University of Helsinki, Mathematical Biology Group
- Torbjørn Ergon & Endre Knudsen, University of Oslo, Department of Biosciences, Centre for Ecological and Evolutionary Synthesis (CEES)
- Karl Inne Ugland, University of Oslo, Department of Biosciences, Marine Biology
- Brecht Verhelst, Jasper Wehrmann & Wouter Vansteelant, Batumi Raptor Count, Georgia

Publications 2013

* **Completed before Aronia affiliation**

Otterbeck, A., Dale, S., Lindén, A. & Marthinsen, G. 2013. A male Reed Warbler and Marsh Warbler hybrid (*Acrocephalus scirpaceus* × *A. palustris*) in Norway documented with molecular methods. — Ornis Norvegica, 36: 6–13 *

Tornberg, R., Lindén, A., Byholm, P., Ranta, E., Valkama, J., Helle, P. & Lindén, H. 2013. Coupling in goshawk and grouse population dynamics in Finland. — Oecologia, 171: 863–872 *

Lehikoinen, A., Lindén. A., Byholm, P., Ranta, E., Saurola, P., Valkama, J., Kaitala, V. & Lindén, H. 2013. Impact of climate change and prey abundance on nesting success of a top-predator, the goshawk. — Oecologia, 171: 283–293 *

Lindén, A., Fowler, M. & Jonzén, N. 2013. Mischaracterising density dependence biases estimated effects of coloured covariates on population dynamics. — Population Ecology, 55: 183–192 *

Many waterbirds show increasing wintering populations in Finland. Here is a flock of Common Scoters (*Melanitta nigra*). Photo: Andreas Lindén

Evolutionary dynamics of colour polymorphism and mechanisms of selection

Patrik Karell

The research project is centred around functional and evolutionary ecology. The project aims at understanding proximate mechanisms of natural selection, host-parasite interactions and genotype-environment interactions.

Highlights of the year

The focus of the project has been to investigate the mechanisms by which colour polymorphism is maintained and altered in natural populations. In the model system – the tawny owl – individuals vary in colour ranging from pale grey to reddish brown. Based on survival analyses of individual based data from 1981 onwards on tawny owl colour morphs we have previously found that survival of the brown morph is markedly lower than that of the grey morph in cold and snow-rich winters (Karell et al. 2011a). Based on theory and previous studies we predict that one potential cause for lower survival probability in the brown morph in harsh winters is that it has greater energy requirements than the grey one. In order to understand the mechanisms we have looked into potential differences between morphs in plumage characteristics, feather (plumage) insulation capacity and parasite defence, which all could be associated with the differential survival between morphs in harsh winters.

Tawny owl offspring ringing and sampling from a mother owl's point of view. Kari Ahola, Patrik Karell and Erica Leder handling offspring, which have been taken down from the nest. Photo taken from the nest box tree by Petri Valo.

We showed that brown tawny owls invest more time and energy in plumage moult compared to grey ones (Karell et al 2013), which may result in less fat reserves for the brown owls in harsh winters when voles are difficult to access under the snow. The reason for why the brown morph moults more flight feathers than the grey one is still to be resolved, but is likely to be due to either a more active life style which wears out the feathers, or due to a higher metabolic rate which leads to a faster exchange of feathers. In addition, Katja Koskenpato measured the fine structures of body feathers collected in the field from grey and brown tawny owls in her MSc thesis. She found that the grey morph has denser and proportionally more of the insulating feather structures compared to the brown morph (Picture 1), which suggests that the brown morph requires more energy to maintain body temperature than the grey one. Next we will look into how morph-specific plumage characteristics are associated with metabolism and ultimately with survival.

We have optimised and ran quantitative PCR (qPCR) on tawny owl blood samples to estimate blood parasite intensities in Lund University in Sweden. The blood para-

Evolutionsdynamik som styr färgdimorfism

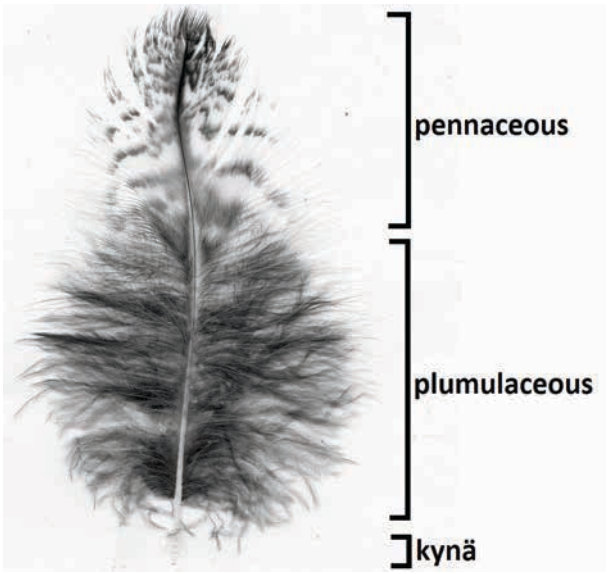
Den bruna kattuggletypen har sämre chans att överleva kalla och snörika vintar än den gråa. Den centrala frågan vi ställer oss är vad detta beror på. Bruna kattugglor satsar mer tid och energi på att rugga än de grå, och det kan hända att den satsningen inte är bra ifall vintrarna är kalla. (Karell et al. 2013, Journal of Avian Biology). Mikroskopanalys visar att den gråa färgmorfens kroppsfjädrar har tätare struktur och därmed bättre isoleringskapacitet än den bruna. Kattugglans överlevnad beror främst på vinterns snö och köld medan överlevnad hos den närbesläktade slagugglan främst påverkas av sorktillgångar (Pavon-Jordan et al. 2013, Ibis). Kroniska sjukdomar såsom blodparasitism har ofta långvariga effekter på överlevnad. Därför uppskattar vi långtidseffekterna av malariabesläktade blodparasiter hos kattugglans färgtyper.

site of interest is a Malaria-related blood parasite (Leucocytozoon spp), which infects blood cells. Our previous study has shown that these blood parasites have different impact on body condition of the tawny owl colour morphs (Karell et al. 2011b), which could cause differential long-term effects of parasite infections in the colour morphs. Preliminary results from the qPCR runs confirm our previous results and the aim with this qPCR based blood parasite quantification method is to study the long-term impact of parasites as mediators of natural selection (survival and fecundity).

Current collaborators

- Prof. Staffan Bensch, prof. Jan-Åke Nilsson & Dr. Muhammad Asghar, Lund University
- Prof. Jon E. Brommer, University of Turku
- Dr. Ismael Galván, Université Paris-Sud
- Prof. Xavier Lambin, University of Aberdeen
- Dr. Jari Valkama, University of Helsinki
- Dr. Markus Öst, Aronia

Dorsal feather of a tawny owl. The insulating plumulaceous part of the feather is denser and proportionally larger in grey than in brown tawny owls. On the right a brown and a grey tawny owl. Feather photo by Katja Koskenpato and owl photos by Mikko Honkiniemi.



Publications 2013

Karell, P., Brommer, J.E., Ahola, K. & Karstinen, T. 2013. Brown tawny owls moult more flight feathers than grey ones. Journal of Avian Biology, 44: 235–244.

Pavon-Jordan, D., Karell, P., Ahola, K., Kolunen, H., Pietiäinen, H., Karstinen, T. & Brommer, J.E. 2013. Environmental correlates of annual survival differ between two ecologically similar and closely related owl species. Ibis, 155: 823-834.

White-tailed deer workgroup VS-DNA

Jon E. Brommer

I am an assistant professor in the University of Turku, and spend part of my work-time as an associated researcher in ARONIA. My interest is in ecological interactions and ecological genetics. As part of my ARONIA / NOVIA activities I am engaged in applied research on the management of white-tailed deer.

Highlights of the year

The white-tailed deer workgroup VS-DNA (I, Mikael Wikström and Jaana Kekkonen) managed to collect a large sample of approximately 480 heads of adult white-tailed deer felled in in western Uusimaa last winter. This was possible through the amazing cooperation of almost all 70 hunting groups in this area. Jaana Kekkonen cleaned all the lower jaws and the skulls of males. Official trophy measurers from CIC measured the antlers, together with NOVIA students. Teeth were aged by a specialized lab in USA. This material shows (among other aspects) that, as we suspected, there is a near absence of mature (older than 6 years) adult males (but not females) in the current population, because the hunting pressure on young white-tailed deer males is so severe. This leads to a female-biased sex ratio in mature white-tailed deer which is likely to be harmful for the population. This result and other findings were communicated to the public in a number of popular science articles and by organizing, together with NOVIA students, a two-day educational exhibition where brochures and presentations were given in Västankvarn in June.

Dr Jaana Kekkonen preparing one of the white-tailed deer males collected during this year's large-scale sampling event. Photo: Jon Brommer

White-tailed deer antlers were mounted in "educational displays", which illustrated key aspects of the current population. Here the variation in the size of male antlers of males which are the same age is shown. In the top row the "high quality males" with large antlers, and in the bottom row the small ones. Photo: Jaana Kekkonen

In terms of basic science, most of my work this year revolved around the evolution of phenotypic plasticity and why and how to study it in wild populations. Phenotypic plasticity refers to the phenomenon where trait expression varies as a function of environmental conditions. On the level of the population, such plasticity is clear to everyone; for example, we recognize years with an "early spring" (early start of flowering of plants, birches getting leaves, migratory birds arriving) when the weather is warm, whereas in colder years spring is late. Dissecting this phenomenon deeper requires studying whether such relationships are also found in the level of the individual and on the level of the genotype (relatives). If so, then we can start to ask whether being plastic makes evolutionary

Vitsvanshjort DNA

Tack vara lyckat sammarbetet med ungefär 70 jaktlag i Västra Nyland (Ingå, Raseborg, Hangö) kunde projekt VS-DNA (Mikael Wikström, Jaana Kekkonen, Jon Brommer) samla in ett täckande prov av vuxna vitsvanshjortar i regionen. Materialet visar att populationen har ett underskott av vuxna handjur. Könsfördelningen återspeglar ett högre jakttryck på bockar än på hindar. Vi organiserade en utställning i början av juni i Västankvarn där 200 jaktintressereda fick information om tillstånd i dagens vitsvanshjortstam samt förslag om hur man kunde förbättre populationens snedvridna könskvot genom selektiv jakt.

sense. Does an individual/genotype who is plastic and hence adjusts its trait to the environment (e.g. flowering early in the season when the weather is warm) leave more descendants than an individual/genotype which is not plastic? Is "being plastic" itself an aspect which can be inherited by offspring from their parents? These questions are enjoying increasing attention in work by ecologists interested in understanding variation in reproduction and survival as well as scientists working on behavioral variation. Most of my scientific output this year revolves around, on the one hand, reviewing what we know and do not know on these aspects, as well as developing methods to improve incorporating plasticity in our current understanding of the variation we see in nature.

Publications 2013

* no Aronia affiliation

Brommer JE. 2013. Variation in plasticity of personality traits implies that the ranking of personality measures changes between environmental contexts: Calculating the cross-environmental correlation. Behavioral Ecology and Sociobiology 67, 1709-1718.

Nicolaus M, Brommer JE, Ubels R, Tinbergen JM, Dingemanse NJ. 2013. Cryptic patterns of variation in clutch size – density reaction norms in a wild passerine bird. Journal of Evolutionary Biology 26, 2031-2043 *

Saastamoinen M, Brommer JE, Brakefield PM, Zwaan BJ. 2013. Phenotypic plasticity in response to food stress in two seasons in Bicyclus anynama. Ecology and Evolution 3, 3576-3589 *

Pavon-Jordan D, Karell P, Pietiäinen H, Kolunen H, Ahola K, Karstinen T, Brommer JE. 2013. Environmental correlates of annual survival differ between two ecologically similar and closely related owl species. Ibis 155, 823-834 *

Brommer JE. 2013. Phenotypic plasticity of labile traits in the wild. Current Zoology 59, 485-505.

Brommer JE. 2013. On between-individual and residual (co)variances in the study of animal personality: Are you willing to make the individual gambit? Behavioral Ecology and Sociobiology 67: 1027-1032.

Cornulier T, Yoccoz NG, Bretagnolle V, Brommer JE, Butet A, Ecke F, Elston DA, Framstad E, Henttonen H, Hörnfeldt B, Huitu O, Imholt C, Ims RA, Jacob J, Jedrzejewska B, Millon A, Petty SJ, Pietiäinen H, Tkadlec E, Zub K, Lambin X. 2013. Europe-wide dampening of population cycles in keystone herbivores. Science 340: 63-66 .*

Kluen E, Brommer JE. 2013. Context-specific repeatability of personality traits in the wild: A reaction norm perspective. Behavioral Ecology 24(3): 650-658. *

Karell P, Ahola K, Karstinen T, Brommer JE. 2013. Brown tawny owls moult more flight feathers than grey ones. Journal of Avian Biology 44, 235-244. *

Kujala H, Vepsäläinen V, Zuckerberg B, Brommer JE. 2013. Range margin shifts of birds revisited: the role of spatiotemporally varying survey effort. Global Change Biology 19, 420-430. *

Current collaborators

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Jaana Kekkonen, FD. Department of Biosciences, University of Helsinki, 00014 Helsinki

Mikael Wikström presents the main findings of the white-tailed deer project to the stakeholders. A total of 200 persons attended the exhibition. Photo: Jaana Kekkonen

Baltic EcoMussel

Eliecer Díaz, Ann-Louise Erlund & Patrik Kraufvelin

Baltic EcoMussel focuses on the three target regions (southern Finland, Östergötland in Sweden and Kurzeme in Latvia) and involves economists, biologists, and regional developers working towards one common goal: the sustainable development of mussel farming in the Baltic Sea region to combat eutrophication and to obtain broadly useful end products/resources (the blue mussels). Our vision is to become leaders in innovation of techniques that promote rural economic activities and simultaneously clean and clear the marine environment.

Highlights of the year

Currently, the Baltic Sea faces many challenges in connection with the shortfall of traditional fishing activities in coastal communities while restoring the fragile brackish waters suffering from decades of serious environmental degradation. Mussel farming is one of the few available methods to directly remove nutrients already present in the sea and could provide a series of benefits and realistic solutions to many of these challenges. Mussel farms not only improve coastal water quality, but they also provide new jobs and produce healthy marine feed, while recycling nutrients from sea to land. It is under these premises that the Baltic EcoMussel project was developed. The project explores how mussel farming could contribute both to increased ecological and economic benefits in different regions around the Baltic Sea.

Eliecer Díaz taking sediment fauna samples at a mussel farm in Kumlinge, Åland Islands. Photo: Patrik Kraufvelin

Specific highlights

- Informing people about mussel aquaculture in the Baltic Sea
- Proving that mussel farming is feasible within the three target regions
- Showing that mussels grow considerably faster on of-bottom cultivation ropes than on natural substrates on the sea floor
- Demonstrating that a mussel farm of 40 tons did not harm the environment
- Achieving mussel recruitment to farm equipment at open coasts
- Identifying investment costs for starting up mussel farms
- Further examination of optimal end-uses
- Setting future strategies (equipment/methods/concepts) for starting up mussel farms in the Baltic Sea

Fulfilled achievements during 2013

- Technological study tours to Canada, Scotland and Spain
- International meetings and creation of partnership with other mussel projects
- Experimental trials in western Hanko and Latvia about mussel recruitment and growth
- Socio-economic studies of the effects of mussels farms in local communities
- Local stakeholder and project meetings in all three involved countries
- Presentation of results in Kiel, Germany and in Las Palmas, Spain
- Final international conference in Riga, Latvia
- Bachelor-thesis on mussel recruitment and growth: Lisang Xu, Novia
- Documentation of the project results in a popular toolkit (28 pages) and in a full technical toolkit (403 pages)

Baltic EcoMussel

Odling och skörd av blåmusslor är en av få tillgängliga metoder för att avlägsna näringsämnen (kväve och fosfor) som redan finns i havet och metoden är fullt möjlig i de tre undersökta målregionerna i Östersjön. Inom projektet har vi bl.a. utrett de lämpligaste lokalerna och vattendjupen för musselrekrytering och tillväxt, konstaterat att musslorna växer avsevärt snabbare på odlingsrep än på naturliga substrat på havsbottnen och visat att 40 ton musselodling inte skadar det marina ekosystemet. Det bästa slutanvändningsalternativet för skördade blåmusslor verkar vara som fisk- eller kycklingfoder. En satsning på musselodling i Östersjöregionen är en investering i en grön ekonomisk aktivitet och i en mer ekologiskt hållbar framtid, vilket innefattar ett renare och klarare hav, samtidigt som nya arbetsplatser kan skapas.

Outputs:

Díaz, E. & Kraufvelin, P. 2013. A mussel farm in the Baltic proper. In: Vollmann, T (ed.) Perspectives from the Åland Aquaculture Week, Mariehamn, Åland 9–12 October 2012, Mussel Farming in the Baltic Sea Region: Prerequisites and Possibilities, pp. 12-13.

Hamilton, C., Díaz, E.R., Kraufvelin, P., Laipeniece, L.., Ozolina, Z., Emilsson, M. & Svensson, J, 2013. Mussel farming the new Baltic Sea aquaculture industry. Editor: A. Gummesson, SIA "Gandrs poligrāfija", Riga, Latvia, 28 pp. http://www.kurzemesregions.lv/userfiles/files/1384854084_Brochure_popular text.pdf

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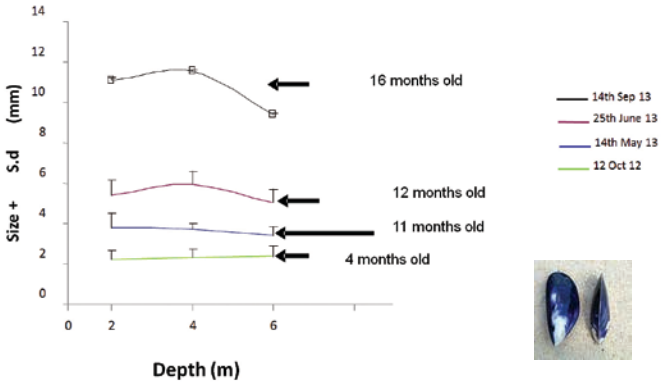
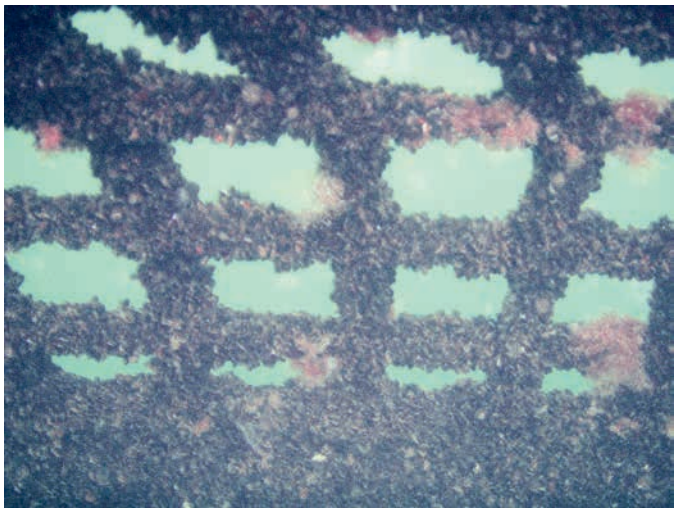


Length growth of blue mussels in western Hanko in 2012-2013. Note the low growth until May 2013 and the intense increase during the second year. The biggest mussels were found at 2-4 m depth and the biggest individual was 25 mm long (Graphics: Eliecer Díaz).

Two year old blue mussels ready for harvesting. Photo: Patrik Kraufvelin



Project partners

- East Sweden Energy Agency (Sweden) - Lead Partner
- Novia University of Applied Sciences (Finland)
- The Latvian Environmental Investment Fund (Latvia)
- Kurzeme Planning Region (Latvia)

CENTRAL BALTIC INTERREG IV A PROGRAMME 2007–2013

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BACES -Baltic archipelago and islands centres

Ann-Louise Erlund & Mikael Kilpi

The BACES project is an initiative to improve the conditions for those living, working and visiting in the Central Baltic archipelago. A total of 11 partners in Sweden, Finland and Estonia have come together to develop seven rural regions as engines for further regional development; these places are called Baltic Archipelago and Islands Centres, or simply BACES. The places are located in more remote areas, but are still considered nodes for transport and goods in the respective area. The project is partly financed by the Central Baltic INTERREG IVA program and run between May 2010 and April 2013.

Highlights of the year

The main goal of the project is to improve the living conditions at the seven specific locations: Arkösund, Tyrislöt, Fyrudden and Söderhamn in Sweden; Hanko and Raseborg in Finland; and Hiiumaa in Estonia. Three interrelated project areas have been targeted: accessibility, economy and environment. Each important in its own right, they are also closely dependent on each other. Improved economic growth and viability rely on an extended tourist season, which in turn depends on visitors having access to the regions as well as information on what do to and experience. The unique environmental values of the archipelago make up the foundation for visitors being attracted in the first place. But in order to preserve and raise awareness about these assets, information is essential. Thus, the three areas tie together studies and common strategies for an improved and sustainable regional development, as well as the opportunity to test new models and methods for economic growth.

As partner in the project Novia UAS has worked with WP2 / Accessibility and a GIS-map (www.bacesmap.eu) was created to be able disseminate information about the BACES areas on the web. Data which have been collected concern guest harbours and services provided in the guest harbours or nearby useful for visitors.

Photo: Mikael Kilpi

Students from Novia UAS have been involved in different tasks, in the region, connected to the Baces project. Novia UAS have worked with the municipalities of Hanko and Raseborg. Students have contributed with material about parks in Ekenäs for the audioguiding that was installed in six different parks. In Hanko a student worked with planning and set at start for a trail on Gunnarsörarna, a popular recreation area in the Hanko archipelago.

Within the project a serie of three lectures were arranged in cooperation with the Guide association. The theme was flora and fauna and last lecture was accomplished as an boat tour with Sunnan II along the Pojo bay, the only fjord in Finland.

Project Partners

- Östsam Regional Development Council (Lead Partner)
- County Administrative Board of Östergötland
- Municipalities of Norrköping, Söderköping, Valdemarsvik and Söderhamn from SwedenNovia University of Applied Sciences
- Municipalities of Hanko and Raseborg from Finland
- Eurohouse
- Foundation Tuuru

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BACES

BACES (=noder i en Östersjöskärgård) vill föra fram värdefull natur i skärgården på ett sätt som dels skall öppna ögonen för nya områden dit man kan ta sig på egen köl, och också göra fin natur mer lätt att nå. BACES förenar förnäm svensk Ostkustskärgård med västra Finska Viken och den gamla svenskbygden vid den estniska kusten. I regionen kör vi fram pärlor som Jussarö i Raseborg, Gäddtarmen och Gunnarsörarna i Hangö. BACES vill också främja hållbart småskaligt företagande i skärgården.

Climate and greenhouse gases

Tiina Haaspuro

The goal for this project is to develop calculation methods for evaluating how much carbon is sequestered in the so called carbon sinks. Carbon sinks are natural environments that sequestrate carbon from the atmosphere, e.g. forests and mires. The project is financed by Koneen Säätiö.

Highlights of the year

The project has developed calculation methods for the effect of greenhouse gas sinks on a local level and created a calculation model for that purpose. The LUONNIKAS model will complement the KASVENER model which is used for calculating greenhouse gas emissions in municipalities but doesn't include sinks. The new model includes coefficients and parameters needed for calculations of the different carbon sinks' effects. The model is easy to use: the user only needs to fill in some basic data about the size and extent of the natural areas in the municipality in question. The calculation methods are planned in cooperation with experts in the fields of national inventory calculations and carbon sink dynamics.

The LUONNIKAS-calculation tool has already been used in the CLIMES project (Impacts of Climate Change on Multiple Ecosystem Services: Processes and Adaptation Options at Landscape Scales) at Finnish Environment Institute SYKE.

Publication

Haaspuro, T. 2013: LUONNIKAS – laskentatyökalu kunnille luontoperäisten kasvihuonekaasujen nielujen ja lähteiden arviointiin. Yrkeshögskolan Novias publikationsserie, serie A: Artiklar 2/2013.

http://www.novia.fi/assets/filer/Publikationer/Serie-A-Artiklar/LUONNIKAS-laskentatykalu-kunnille_2.2013.pdf

Collaborators

- Finnish Environment Institute SYKE, CLIMES project http://www.syke.fi/projects/climes
- Prof. Rainer Backman, University of Umeå, Sweden
- Senior Researcher Tarja Tuomainen, Finnish Forest Research Institute / Greenhouse gases estimation and reporting
- Town of Raseborg

Klimat och växthusgaser - Lokal synvinkel

Vi har utvecklat ett nytt verktyg för kalkylering av klimateffekten på kommunnivå för den kolmängd som upptas av olika naturtyper samt den mängd som frigörs från dem. Avsikten med LUONNIKAS-verktyget är att ge bakgrundsfakta för kommunala klimatinsatser samt att förbättra kunskapen om naturliga drivhusgasförekomster och kolets totala kretslopp. Speciellt vill man framhålla markanvändningens betydelse för reglering av den kommunala kolbalansen.
LUONNIKAS är ett användarvänligt verktyg för uppskattning av jord- och skogsbruksmiljöers och naturliga miljöers sammantagna drivhusgaseffekt på kommunnivå. Med hjälp av verktyget kan man komplettera de resultat som KASVENER- kalkylmodellen ger för energins, industrins, trafikens, jordbrukets och avfallshanteringens utsläpp och därmed uppskatta olika miljöers effekt på den kommunala kolbalansen.

Photo: Tiina Haaspuro

Geodesign & Aeria

Romi Rancken, George Rybakov, Johanna Kollin, Antonio Romero, Lauri Rapeli, Marianne Fred

Project Geodesign aims at developing and implementing new ways of planning of natural resources and urban areas based on the concept of geodesign. This concept is strongly rooted in GIS but also incorporates methods from landscape planning, computer visualization and participatory approaches.

Highlights of the year

The year 2013 was the second year of the project, which is funded by Stiftelsen Finlandssvenska Jordfonden. During the first 8 months of the year a sister project, Project Aeria, led by George Rybakov, continued the work with UAVs. Project Aeria produced a range of useful products based on aerial photographs that are applicable in agriculture, forestry, mining, environmental monitoring and research. The project also arranged a UAV seminar as a part of the networking efforts, and built a low cost hexacopter and a fixed wing UAV using open source software and hardware.

George Rybakov conducting a UAV course at Novia Vasa.
Photo: Romi Rancken

Georgy Rybakov at the controls on a flight mission in Hanko where the UAV photographed near-shore habitats.
Photo: Mikael Kilpi

A group of students built a working prototype for a UAV Flight Information Web Service, this as a result of discussions with the Finnish Military Aviation Authority. Novia students were also involved to an intensive course at the Novia unit in Vasa

Project Geodesign itself continued the concept development and network building aiming at introducing geodesign as a practical planning method in the region and further. The growing interest for geodesign by Raseborg municipality led to concrete results in the form of a workshop with stakeholders and participation in a planning project for Gammelboda residential area. At the end of the year a seminar for city planners from Ingå and Hangö was arranged, and also these municipalities showed great

Geodesign

Geodesign är ett koncept och en metod för planering (design) av områden, huvudsakligen i skalan 1-1000 hektar. Geodesign stöder sig starkt på GIS, men betonar dessutom delaktigheten i planeringsprocessen. Människors intresse och möjligheter att delta i planeringen underlättas bl.a. genom olika visualiseringstekniker och möjlighet till s.k. what-if-analyser. Geodesign lämpar sig lika väl för natur- som för kulturdominerade miljöer och projektet har inriktat sig på utveckla och testa geodesignmetoder som lämpar sig i Finlands kustland.

Det tvååriga projektet har finansierats av Stiftelsen Finlandssvenska Jordfonden och fortsätter till sommaren 2014.

interest for geodesign and pointed at several possible co-operation projects.

In September, Romi Rancken, George Rybakov and Marianne Fred presented a poster at the first Geodesign Summit in Europe which was arranged in The Netherlands.

During the year the geodesign team was strengthened by Lauri Rapeli, senior researcher at Aronia. He brought important knowledge about political science and democracy to the team, and has been in charge of seeking continued funding for the project.

The establishment of a spin-off company has been seen as one alternative for securing the continuation some of the commercially viable activities in the two sister projects. To investigate the alternatives, technicalities and feasibility of such an alternative, discussions with Novago business advisory service have started.

Seminars & workshops

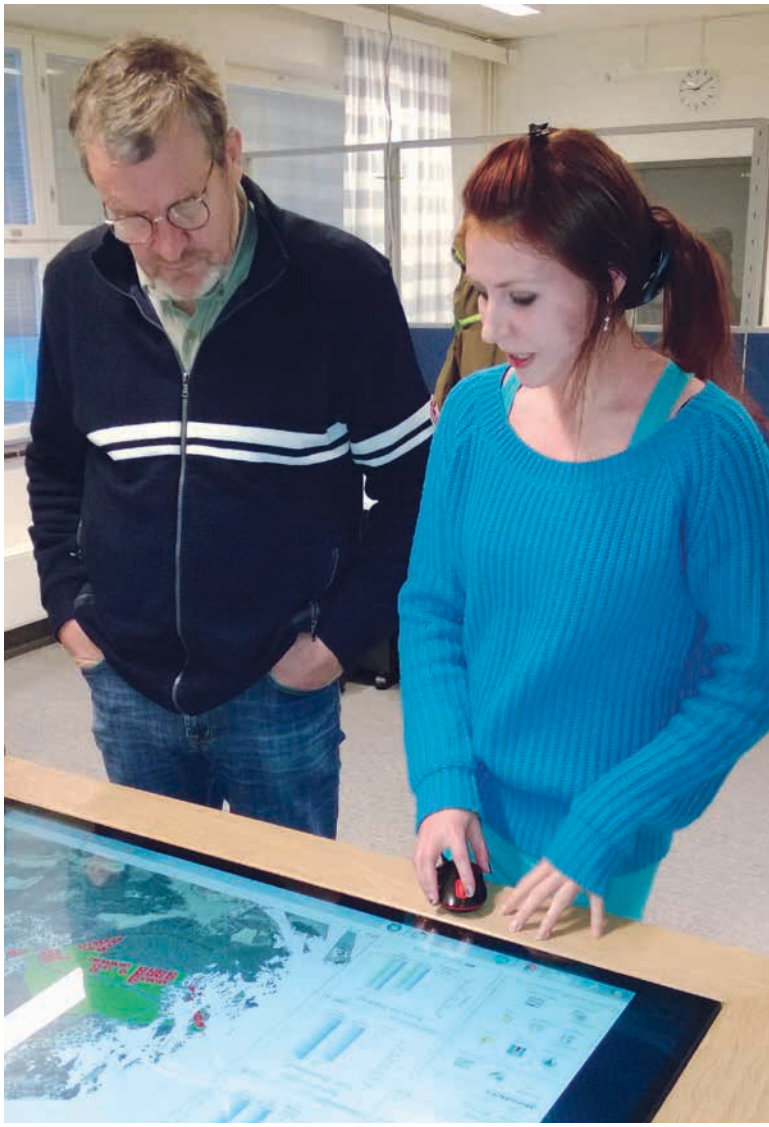
Workshop with stakeholders and participation in a planning project for Gammelboda residential area

Seminar for city planners from Ingå and Hangö

UAV seminar at Novia Campus Raseborg

Collaboration

- Town of Raseborg
- Municipality of Ingå
- Town of Hanko
- METLA
- Finnish Meteorological Institute
- Helsinki University
- Finnish Environment Institute SYKE



Johanna Kollin demonstrates CommunityViz for Ingå municipality Head of Land Use Planning, Sten Öhman. Photo: Romi Rancken

Green Islands

Kaj Mattsson, Kajsa Mellbrand, Romi Ranken & Tiina Haaspuro

The Green Islands project (2011-2013) focused on wastewater, energy issues, ecosystem services, greenhouse gas emissions and garbage on eleven islands in the Baltic Sea region. There were 6 islands from Sweden, 4 from Finland and one from Estonia participating. The Finnish islands participating were Vänö, Iniö, Skåldö and Högsåra.

Highlights of the year

2013 was the last year of the three year project. We had gathered information during the two first years, with the environmental questionnaire concentrating on energy, wastewater and garbage. Kajsa Mellbrand collected data on ecosystem services from each island. Tiina Haaspuro estimated greenhouse gas emission on each island in the project. Romi Rancken has built a portal which the data from the project collated.

All the above data was then organized to an island specific brochure. The idea was to present the data in an easy way to the islanders. It is divided in four sections; ecosystem services, energy, wastewater and garbage. These brochures will be sent to all people on all participating islands in Finland. The results of the project and the brochures were presented to the environmental departments in each municipality, Pargas, Kimitoön and Raseborg.

Cultural landscapes provides many kind of ecosystem services. Photo: Kajsa Mellbrand

During 2013 several meetings and sessions discussing wastewater treatment were organized. We concentrated on two new systems; Onewell water cleaning and reuse device, which use roots from selected plants to clean the water, and a closed system were wastewater is given to willows and can be used as energy or animal food. We proposed the municipalities would set up test stations and monitor them for two years.

Also small sessions on energy issues in private households were organized together with Alf-Peter Heino (project EETU). In Pargas and Kimitoön we had several sessions with locals, also from other islands. Main issue was how to select from new devices to produce warm water, keep houses dry and to produce electricity.

The Keistiö, Iniö, roadlamps project became successful. Pargas city bought the forty LED-lamps and the windmill was sponcored by the Leader project I samma båt. The 40 lamps were changed in October 2013 and the windmill will be in use in the spring of 2014.
Photo: Kajsa Mellbrand

Green Islands

Green Islands-projektet har under tre års tid samlat information om hur vi kan leva mer hållbart med fokus på energi-, avfalls- och avloppsfrågor. De Gröna Öarna i projektet fanns i Estland, Sverige och Finland – i Finland Iniö, Skåldö, Högsåra och Vänö.

På öarna har vi arbetat med att öka medvetenheten om den egna miljöpåverkan och försökt hitta kretsloppsanpassade, lokala lösningar. Vi har också stött lokala initiativ och fungerat som rådgivare.

Workshops and seminars

- March 14, Wastewater seminar in Lohja
- April 9, Wastewater and energy workshop in Norrby, Iniö
- April 29, Green Islands working group meeting, Novia,Ekenäs
- May 16, Wastewater workshop at Novia, Ekenäs
- June 2.-3. Kuressaar, Saarenmaa,Estonia; Ground-water seminar
- June 28, Wastewater cleaning by willows, we visited several plants in Ingå
- August 7. - 9, Energy workshops in Nagu, Korpoo and Iniö (Jumo) with project EETU.
- Sept. 5.-6. Shorelines and shore protection conference, IALE, Värmdö, Sweden.
- Oct.7.-8.,Green islands end seminar in Stockholm, Sweden

The ferry to Högsåra. Photo: Kajsa Mellbrand

Project Partners

- The Archipelago Foundation in the county of Stockholm, Sweden
- Association of Estonian Islands (AEI)
- Novia University of Applied Sciences, Finland
- Sustainable Saaremaa, Estonia

Green Islands Baltic Sea

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KRAV

Classification of water- and land areas of Raseborg – a tool for management of on-site wastewater treatment and other water management measures.

Heidi Ekholm

Project KRAV develops a GIS-based decision-making tool for the Environmental Office of Raseborg. Our applied classification method, which combines geographical and ecological factors, results in a zonation of land areas according to level of sensitivity with regards to the environment. The zonation will form a basis for management decisions, primarily regarding on-site wastewater treatment, but also for other activities, like dredging and building of small boat harbours.

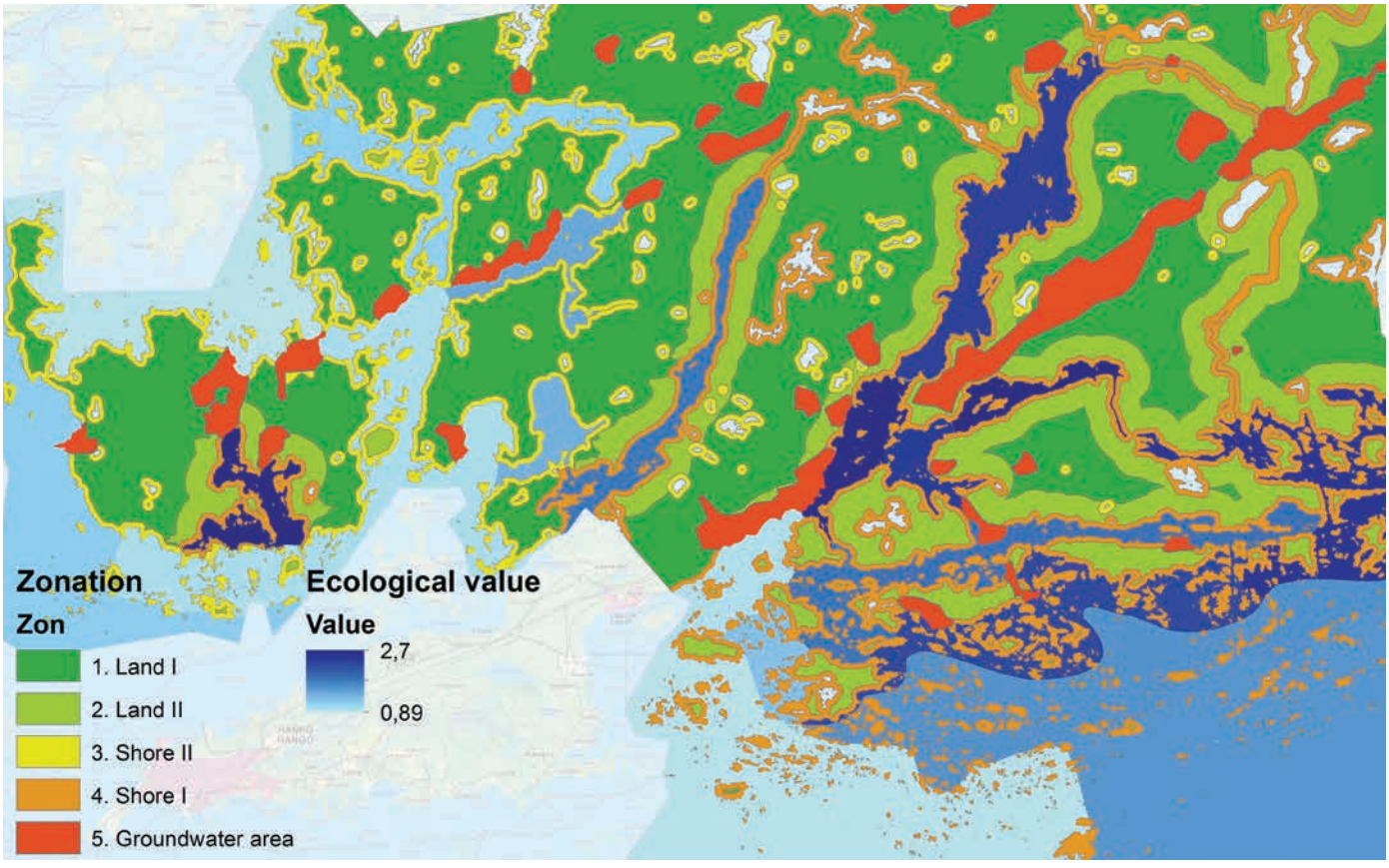
Highlights of the year

Year 2013 was the second year running for the project, which will end in the spring of 2014. The completion of the classification method was one of the main goals for last year. The classification is to reflect sensitivity of any given area in the municipality of Raseborg.

As a result of background studies, brainstorming and team-work, we decided on using four ecological factors and four geohydrological factors for our classification. The ecological value and status of a water body would be evaluated from 1) presence of important habitats, 2) presence of key macrophytes, 3) presence of fish spawning grounds and 4) the ecological status of bodies of waters as classified by the regional environmental authorities in accordance to the Water Framework Directive (2000/60/EC). The geohydrological factors accounts for the presence of groundwater sources and the closeness to the shoreline (<200 m, 200 – 1000m and > 1000m), the idea being that the longer distance the pollutant will have to travel to the water body, the smaller the load and the effect most likely will be.

Putting a value on the various classification factors and evaluating their importance in expressing sensitivity has proven to be an interesting and somewhat complicated task. For this exercise KRAV gathered ten environmental experts, both from the research community and representing environmental authorities, to weigh the factors in relation to each other. The ranking was undertaken with a so called multicriteria assessment with a computer aid-

The final zonation of land areas in Raseborg according to sensitivity to mainly diffuse wastewater load. The level of sensitivity is expressed with numbers 1-5, with 5 (red colour) translating to the most sensitive areas and 1 (dark green) reflecting areas of lower sensitivity. The ecological value of coastal water bodies according to KRAV's classification method is also presented. Picture: Heidi Ekholm



KRAV

I projektet KRAV bygger vi ett instrument för beslutsfattning tillsammans med Raseborgs Miljöbyrå. Tanken är att kombinera geografiska och ekologiska faktorer för att ta fram en zonering som klassar landområden enligt hur känsliga de är som miljöer. I främsta hand handlar det om småskalig vattenrening, men också om muddring och byggandet av t.ex. småbåtshamnar.

KRAV var inne på sitt andra år under 2013, och har arbetat mycket utgående från interaktiva sessioner med folk som vet och kan, och slutprodukten i form av en känslighetskarta i GIS arbetades fram.

Resultaten kommer att vara tillgängliga för all i kommunen Raseborg inom en snar framtid.

ed program called Web-HIPRE. For the ecological factors important habitats were seen as the factor best reflecting sensitivity, on second place came protective macrophytes closely followed by fish spawning ground, with ecological status as classified by regional authorities being perceived as the least important factor. These assessment results were used when the final weights for respective factors were determined for the classification.

Due to the applied nature of the classification we are using as much existing data as appropriate, even if there is variation in the quality and extent of the data. We have used data gathered for monitoring and modelling purposes, as well as data collected during Novia student projects and past Aronia research projects.

One underlying effort of KRAV is to bring available information from environmental research and monitoring into an accessible form for environmental authorities, decision-makers and planners. This was also one of the themes for the seminar "Water resource management in coastal municipalities", which KRAV organized on the 6th – 7th March at the Raseborg campus of Novia. During Learning Café discussions seminar participants brainstormed on ways of improving the information flow between researchers and decision-makers, so that the management and planning of activities having an effect on the marine environment would also be based on ecological facts.

The decision-making tool has been built applying geographical information systems, mainly using ArcGIS 10.1. It will consist of interactive maps, representing the classification factors, and of the final zonation, which states requirements for on-site wastewater treatment for the respective zones. The tool will be added to the map service "Spatialen" of the municipality of Raseborg and from there the public will be able to access the tool in the future.

Outputs

Publications

Söderström, M. Vattenvården - en utmaning för kustkommunerna. Skärgård 2/2013

Ekholm, H. Projektet KRAV - miljöinformation i Raseborg. Skärgård 2/2013

Posters & presentations

Ekholm, H. KRAV. YH Novia's yearly environmental exhibition 10.4.2013

Ekholm, H. KRAV Klassificering av mark- och vattenområden i Raseborg- ett verktyg för avloppsvattenhantering och vattenvård. At Novia, Raseborg for the Environmental Committee of Raseborg 11.12.2013

Workshops & meetings

A seminar focusing on management of water resources in coastal municipalities. The seminar was at the same time the yearly "Finnish-Swedish Environmental Seminar" (Finlandssvenska miljöseminariet). At Novia, Raseborg 06.-07.02.2013

Multicriteria analyses workshop to rank environmental indicators (with Web-HIPRE) in order of importance for the classification method KRAV is developing. At Novia, Raseborg 12.4 & 16.4. 2013

Collaborators

- The Environmental Office of Raseborg
- Employment and Economic Development Centre of Uusimaa
- Metsähallitus, Natural Resources

Participants getting familiar with "OIVA – the database of environmental- and geographical information" during the KRAV seminar 6-7.3.2013. Photo: Mikael Kilpi

Bra Mat i Västnyland

Ann-Louise Erlund, Jenny Öhman, Mika Nieminen & Traci Birge

Bra Mat i Västnyland's aim is to create networks to facilitate a more effective production of local foods, stimulate product development of local foods and improve the distribution of local foods in the region. The project started in September 2011 and will continue until the end of June 2014.

Highlights of the year

The project started in September 2011 and will still continue during the year 2014. The year 2013 was a comprehensive year with many activities which were successfully accomplished. An overall headline for the project work was set – create pre conditions for Västnyland/Western Uusimaa to be a gastronomic region.

The project is one of four projects in a local food project network which covers the Western Uusimaa region. The network has highlighted different issues addressed to organizations and stakeholders concerning rural development and especially issues concerning the food sector to improve the conditions for farmers and entrepreneurs.

Bra Mat i Västnyland

Projektets syfte är att bidra till att förbättra förutsättningarna för produktion av närmat. inom projektet fokuserar teamet att arbeta för ökad synlighet för närmatsproducenter och för förbättrade möjligheter för konsumenter att få tag på närproducerade livsmedel – hela året om möjligt. Inom projektet pågår forskning där man undersöker omfattningen av närmatsproduktion och vilket intresse det finns för en utökad produktion av närmat i Nyland. Ett övergripande mål för projektet kan även vara att skapa förutsättningar för Västnyland att bli en gastronomisk region.

Seminarier, diskussionstillfällen och så kallade lokala minimässor där producenter och kunder kan träffas och diskutera affärer har varit välbesökta. Fler initiativ till olika samarbeten har tagits under dylika tillfällen och samarbetena har fortsatt på ett konstruktivt sätt med goda resultat. De resultat som hittills nåtts inom projektet är resultatet av ett nära samarbete på lokal nivå med företagare, primärproducenter, organisationer och föreningar som är kopplade till livsmedelsproduktionen. Framförallt under 2013 togs många initiativ som ledde till goda resultat som t.ex. en tema vecka inom Raseborg då man serverade en måltid gjord av lokalt producerade råvaror.

Photo: Jenny Öhman

Publications

Birge, T. Framtider för mat. Västra Nyland 11.7.2013

Birge, T. Klimat och jordbruk. Västra Nyland 19.3.2013

Öhman, J. & Liewendahl H. Västnyland – en matregion med möjligheter. Västra Nyland 15.3.2013

Öhman, J. & Liewendahl H. Västnyland – en matregion med möjligheter. Landsbygdens Folk 13.4.2013

Öhman, J. Upplevelsekoncept och entusiasm hos skånska producenter och företagare. Landsbygdens Folk 7.6.2013

Öhman, J. Elämyskonsepteja ja innostusta ruotsalaisissa yrityksissä. Ruoka-Suomi 3/2013 pages 14-15

Öhman, J. & Birge, T. Kuluttajien ja tuottajien näkemyksiä lähiruoasta. Ruoka-Suomi 3/2013. pages 16-17

Öhman, J. Elämyskonsepteja ja innostusta ruotsalaisissa yrityksissä. Maaseutu Plus 4/2013

Collaboration

- Slow Food Västnyland r.f.
- Gastro Nostra r.f.
- Culinary Team of Finland
- Farmers organizations and development organizations within the food sector

Västankvarn - a food fountain

Ulrika Grönvik & Ann-Louise Erlund

Västankvarn –en västnyländsk matkälla is a local food project 2013-2015. Aim is to activate, encourage and create opportunities for the local producers to increase their production within the horticultural sector in Raasepori, Inkoo and Hanko. Focus points are the importance of developing local economy and sustainable use of natural resources. We collaborate with projects Bra Mat I Västnyland, EkoNu! , Baltic Eco Mussel, Culinary Team of Finland, Västankvarn Gård among others.

Highlights oy the year

Consumers are increasingly concerned about food safety. Transparency and tracking any food item are trends of today, social responsibility and sustainability efforts are appreciated among consumers, these are also fundamental factors for locally produced food. Finnish food is well known for being tasty, healthy and free from chemical residues.

Today the demand for locally produced products is much higher than the availability. This opportunity gives every agriculturist and horticulturist an advantage and great possibility to succeed. This project aims to develope a part of a conventional agriculture farm to a fountain of provisions.

At västankvarn, Inkoo, new ideas and techniques are tested. Västankvarn Gård (former school of agriculture) is a dairy farm and produces grain and grass on 180 ha and 360 ha forest.

The project is financed by Jordfonden, Föreningen Konstsamfundet and Utbildningssiftelsen Sydväst.

Collaboration

- Bra Mat i Västnyland project
- EkoNu! project http://www.ekonu.fi/
- Baltic Eco Mussel project
- Culinary Team of Finland http://www.ctof.fi/en.html
- Västankvarn Gård http://www.vastankvarn.fi/en/

Fresh greens from Västankvarn. Photo: Ulrika Grönvik

Field work at Västankvarn Gård. Photo: Ulrika Grönvik

Activities

Visibility and networking by attending exhibitions, seminars and fairs both as exhibitor and as visitor.

Presentations, involvement in local happenings and projects with students and colleagues to strengthen the contact between consumer and producers has been introduced and arranged.

Tastes of the production have been shared on several occations and a small scale processing has been tested.

Stakeholdermeetings were held 21.5. and 12.12.2013.

Västankvarn –en västnyländsk matkälla

Arbetet med att i Västra Nyland befrämja den lokala produktionen av livsmedel har fortgått under året 2013. Verksamheten har varit inriktad på grönsaks- och bärodlare. Vidare har projektet odlat ett demonstrationsfält på Västankvarn Gård.

I en modern trädgårdsproduktion är hållbarhet nyckelordet för att uppnå kvalitet från jord till bord. Kvaliteten omfattar slutprodukten, ekosystemet samt produktionsverktygen. Utvärdering och riskanalys implementeras i det praktiska arbetet men många åtgärder inom trädgårdsproduktionen inverkar ändå negativt på biologisk mångfald och ekosystemtjänster i livsmiljön. Inom projektet strävar vi också efter att göra mindre inverkan på miljön och samtidigt uppnå goda produktionsresultat.

Aronia Personnel

Aronia board

Chairman
Birgitta Forsström
Vice President, Novia

Vice Chairman
Kai Lindström
Professor, Åbo Akademi

Kjell Andersson
Professor, Åbo Akademi

Åsa Bengtsson
Professor, Mittuniversitetet

Ea Blomqvist
FM, Åbo Akademi

Wilhelm Fortelius
Director of Aronia

Mikael Kilpi
Research Manager, Aronia

Eva Sandberg-Kilpi
Research Manager, Novia

Aronia Coastal Zone Research Team

Ane Timenes Laugen
PhD, Docent
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Aronia
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- Novia University of Applied Sciences

Aronia Coastal Zone Research Team
Basic Funding

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- Konstsamfundet
- Stiftelsen för Åbo Akademi

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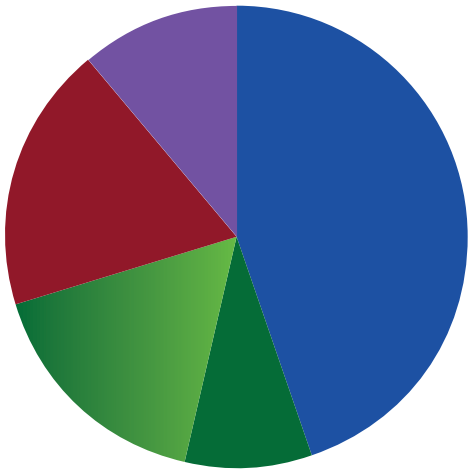
- Föreningen Konstsamfundet
- Svenska småbruk och egna hem
- Utbildningssiftelsen Sydväst



Total 1 475 000 €

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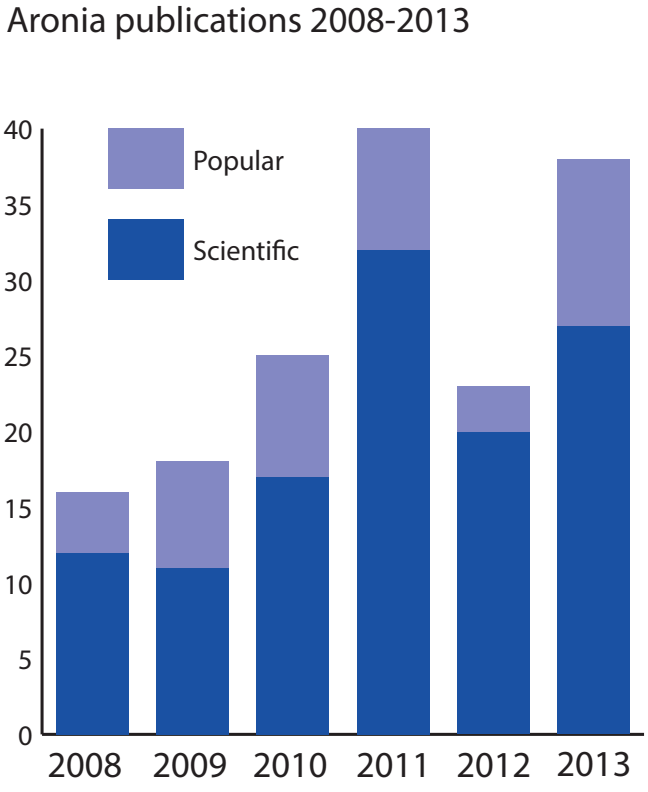

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