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	Thormøhlensgate 55			

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Denne ukas viktigste

Viktige tidsfrister

Mer info om følgende utlysninger og mange flere (inkl. løpende, dvs. uten frister) finner du [her](#)

Husk å sende søknadsutkastet til post@bio.uib.no 1 uke i forveien (gjelder ikke mindre bevilgninger som legater og fonds)

28. mars	European-funded Integrated Infrastructure Initiative	22. apr	ERC / Adv. Investigator Grants (life sci)
28. mars	FP7 People / MC – Internatl Staff Exchange	23. apr	Bergen Forskningsstiftelse: Recrutement Programme 2009-2012
28. mars	COST Open Call 2008	29. apr	ESF: Exploratory Workshops - 2008 Call for Proposals
		18. apr	Norsk miljøforskning mot 2015
1. apr	Nordic Marine Academy (courses, mobility, conference/workshop/seminars)	22. apr	ERC / Adv. Investigator Grants (life sci)
4. apr	NordForsk annual grant schemes		
6. apr	Daniel Jouvance Prizes	15. mai	Erasmus Mundus
8. apr	FP7 Cooperation / ICT	15. mai	Mobilitetsstipend fra SCAR (Scientific Committee on Antarctic Research)
11. apr	FP7 Capacities / SMEs		
16. apr	MarinERA Pilot Call	2. juni	ESF: 2008 Call for EUROCORES theme proposals
18. apr	Norsk miljøforskning mot 2015	4. juni	NFR deadline NB kl. 12:00

** for more information check [BIO-web](#) for more deadlines, further details and on-going opportunities as well as [UiB's Department of Research Management](#)

Siste nytt fra BIO

Astrobiology at BIO

BIO researchers **Nils-Kåre Birkeland, Jørn Einen, Lise Øvreås, Ida H. Steen** and **Vigdis Torsvik** are involved in the [Nordic Network of Astrobiology Graduate Schools](#).

The [Centre for Geobiology](#) is establishing a Astro/Geobiology Laboratory, where geochemists, geomicrobiologists and organic chemists will work together to design analytical approaches and experiments necessary for the kind of interdisciplinary research in astrobiology. There is also a course associated with this activity:

[Geomicrobiology](#) (GEOL 344). The course gives an overview of main groups of microorganisms that are important in biogeochemical element cycles and how they influence on the dissolution and degradation of minerals and rocks. Analytical methods and techniques for identification of microbes in geological materials will be introduced and demonstrated. Emphasis will be on the coherence between metabolic processes and geochemical processes.



BIO vil snart lyse ut stillinger som stipendiat, postdoc, overingeniør og forskningskoordinator

Soon to be announced: **PhD** and **post-doc** positions in [Calcification by Marine Organisms](#) http://www.bio.uib.no/internesider/BIOINFO/2008/extras/13-CalMarO_cluster_salzau_0308.pdf

BIO vil også så fort vi klarer å få papirene ut lyse ut stilling som **overingeniør** i DNA-lab (etter Morten Skage som flytter til Oslo) og som **forskningskoordinator** (som har stått ledig siden Clelia ble syk).

New board of STIM

Shale Rosen (→) is the new President of STIM. Shale comes to the University of Bergen from Maine in the United States and is here doing his Masters in Fisheries Biology and Management. His thesis title is “Shifting commercial fishing effort to reduce seabed impact from bottom trawling”.



Marit Solberg (←) has been elected Vice President of STIM. Marit studied

for her Bachelors degree in Australia, before moving back to Norway to do her Masters in Aquaculture Biology here at the University. Marit is investigating water quality parameters at a local scallop hatchery.

Cathrine Henriksen (→) has taken over as Treasurer of STIM. Cathrine completed her Bachelors degree in general biology in Melbourne, Australia before returning to the University of Bergen to study for a Masters in Marine Biology. Cathrine is working on a project mapping the biogeography of crustaceans in the Gulf of Guinea, with her own masters thesis focussing on crabs.



Lene Kleppe (←) has been appointed the Secretary of STIM. Lene is born and raised on Askøy and has stayed local for both her undergraduate and postgraduate degrees. Lene is also studying for a Masters in Aquaculture Biology, and is participating in a joint project with IMR looking at reproduction parameters in cod.

STIM holds weekly meetings Mondays at 1600 in HIB room 329C1 (Møterom), and welcomes anyone from Bio to attend! You can also reach Shale on his university email, Shale.Rosen@student.uib.no with any queries, comments, or suggestions regarding STIMs work in the Department of Biology.



The 2007 STIM Board thanks everyone at BIO for their support last year, and wishes the new board all the best for the remainder of 2008.

Karin Pittman og Ivar Rønnestad i månedens "feature article" i *Aquaculture Europe*

Se bildet til høyre →

FEATURE ARTICLE

4 ved BIO fikk UiB-støtte til frie forskerinitierte prosjekter

Dette var de fire BIO-søknadene som hadde fått best karakter fra refereeene, uten å få penger. Alle fire fikk det beløpet de søkte UiB om.

Christiane Todt:

Aplacophoran phylogeny and the molluscan tree of life (250 000)

Nils Kåre Birkeland:

Comparative genomics of *Archaeoglobus fulgidus* strain 7324, a subsurface

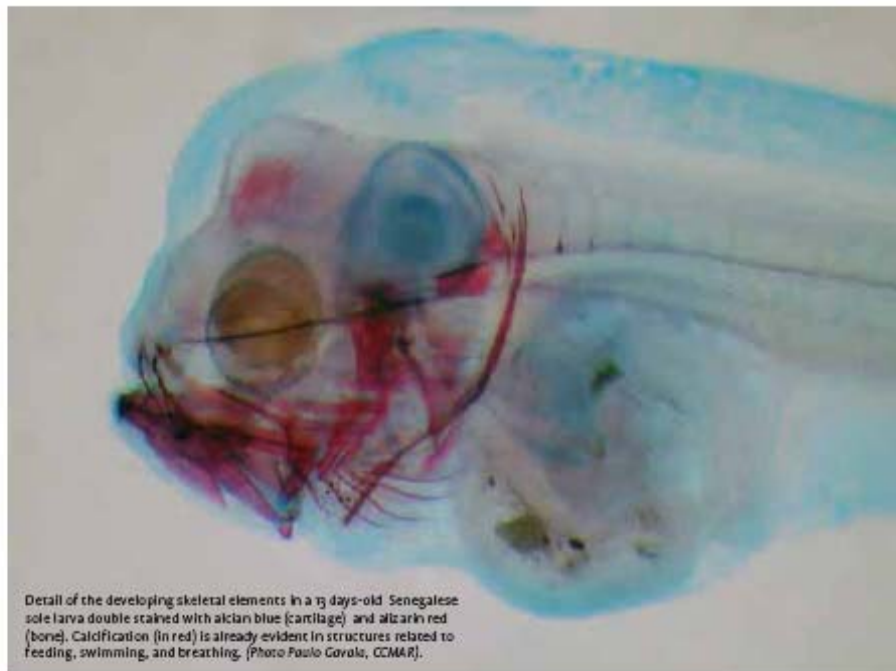
hyperthermophilic sulfate-reducing archaeon isolated from a hot North Sea oil-well (300 000)

Sigrunn Eliassen

Female infidelity promotes male cooperation in collective predator defense (300 000)

Louise Lindblom

Genetic variation, biodiversity and phylogeography in lichenised fungi (259 000)



Detail of the developing skeletal elements in a 13 days-old Senegalese sole larva double stained with alcian blue (cartilage) and alizarin red (bone). Calcification (in red) is already evident in structures related to feeding, swimming, and breathing. (Photo Paulo Govola, CCMAR).

FISH LARVAL RESEARCH:

A Tool for Sustainable Food Production and Understanding Environmental Impacts on Developing Organisms

+ INTRODUCTION

Reliable juvenile production or recruitment requires high numbers of healthy fish larvae. Despite considerable progress in marine fish farming in the past 20 years, juvenile fish production is still fraught with problems which arise during the larval phase. In fisheries, juvenile recruitment in some populations has not recovered despite long-term moratoria on captures and protection of the broodstock. These issues highlight the growing importance of multidisciplinary fish larval research.

KARIN PITTMAN, IVAR RØNNESTAD, PAULO GAVIA, MARIA LEONOR CANCELA, PEDRO GUEBREIRO, LAURA RIBEIRO, CLÁUDIA ARAGÃO, KRISTIN HANRE, MA TI MOREN, MANUEL YÚFERA, LUIS CONCEIÇÃO



Festmåltid på havbotnen

Bevæpna med ein fjernstyrt miniubåt og ein god porsjon tolmod legg ei gruppe forskarar og studentar ut på tokt for å lokalisere kvalkadaver som har vorte seinka ned i djupet. Dei vil avbryte festen for krepsdyr og børsteormar som meskar seg med kvalspekk i oppløysing. Men først må dei finne festlokalet. Les meir [På Høyden ..](#)

Siste nytt fra verden rundt oss

Unge finn ikkje mening i naturvitenskap

Naturvitenskaplege ideal som objektivitet og fokus på fakta er utdaterte, ifølgje **Camilla Schreiner**. Ho er forskar ved Naturfagsenteret ved UiO, og studerer ungdom sine haldningar til naturvitenskap og teknologi. Ho meiner realfagsmiljøa heller må vise korleis dei kan gje mening til ungdom sine sjølvutviklingsprosjekt. Les meir [På Høyden ..](#)



Ledige stillinger for biologer

Sjekk oversikten på [jobbnor!](#)

Frist	Stilling
30.03	Post-doc fellowships in Canada - guidelines - letter of recommendation - application
31.03	UNIS, Svalbard: Full / Associate Professor in Arctic Terrestrial Ecology
31.03	NIVA: dr.stipendiat i marin økologi
31.03	NIVA: forskere innen limnologi / ferskvannøkologi
31.03	BIO, UiO: Post-doctoral Research Fellowship in Evolutionary biology
01.04	post-doc in Biological Effects of Pollution School of Natural Sciences, Trinity College Dublin
01.04	sommerjobb på Jotuns biologilaboratorie
01.04	Høgskolen i Bodø: Professor/professorstipendiat i marin økologi
05.04	UiB: Fakultetsdirektør ved Det matematisk-naturvitenskapelige fakultet
07.04	Univ i Tromsø: Stipendiat i bakteriologi ved Institutt for marin bioteknologi
07.04	Univ i Tromsø: Stipendiat i zooplankton taksonomi ved Institutt for akvatisk biologi
07.04	Univ i Tromsø: Stipendiat i molekylær cellebiologi/biokjemi ved Institutt for medisinsk biologi
07.04	Univ i Tromsø: Stipendiat i medisinsk mikrobiologi ved Institutt for medisinsk biologi
07.04	Univ i Tromsø: Stipendiat i molekylærbiologi ved Institutt for medisinsk biologi. Ref. 08-508
07.04	Univ i Tromsø: Stipendiat i molekylær biologi ved Institutt for medisinsk biologi. Ref. 08-489
07.04	BIO, UiO: Post-doctoral Research Fellowship in Genomics/Molecular Biology
07.04	BIO, UiO: PhD stipendiat i bioøkonomi
14.04	PhD. Position , Charles University, Prague
15.04	three-month fellowships for scientists, technicians, PhDs and Post Doctoral Fellows
20.04	BIO: Professor in Marine Evolutionary Developmental Biology
30.04	BIO, UiO: PhD stipendiat Mikrobiell evolusjon
01.06	(start date) Post-Doctoral Scholar , Bermuda Institute of Ocean Sciences

Forskning: utlysninger, nye satsinger og prosjekter

Nordiske penger til miljø og fiskeri

Nordisk Miljø- og Fiskerisamarbejde (MiFi) og Nordisk Arbejdsgruppe for Fiskeriforskning (NAF) har felles utlysning av prosjektmidler en gang i året. Invitasjon med kriterier for søknadsvurdering vil bli lagt ut i mars/april 2008 med søknadsfrist i mai/juni. Søknader vil bli vurdert av henholdsvis MiFi og NAF's arbeidsgrupper i august, og foreløpig tilsagnsbrev utferdiget kort tid etter.

[Felles projektinnkalling for NAF og MiFi](#)  [Ansøkningsblankett](#) [Ansøkningsblankett - riktlinjer](#) 

Færre søkere til Advanced Investigator Grants

Den første fristen for European Research Council (ERC) Advanced Investigator Grants innen fagområdet "Physical Sciences and Engineering" var den 28. februar 2008. Det kom inn betydelig færre søknader enn ventet. [Les mer](#)

Marie Curie Individual Fellowships - Calls published

The calls for Marie Curie Individual Fellowships have now been published with deadline 19 August. Marie Curie Individual Fellowships support Norwegian researchers to work up to two years in another European country (Intra-European Fellowship) or in a country outside Europe (International Outgoing Fellowship). They can be also used to recruit researchers to Norway, either from another European country (Intra-European Fellowship) or from a country outside Europe (International Incoming Fellowship). [Read call](#). For more information contact simone.heinz@fa.uib.no



Important links for deadline information

Don't forget to check [BIO](#) and the [Department of Research Management's](#) web pages for more funding deadline / application information. *These pages have been recently updated.

Konferansestøtte fra VERDIKT

VERDIKT ønsker å stimulere kontaktskapende virksomhet internasjonalt og nasjonalt innen programmets fagområder. [Les mer](#)



Utenlandsstipend og gjesteforskerstipend for VERDIKT-prosjekter

Forskningsrådet ønsker å bidra til at norske forskere i større grad deltar i internasjonalt forskningssamarbeid. VERDIKT lyser ut tilleggsmidler for prosjekter som allerede finansieres av programmet. [Les mer](#)

Povpeace call for proposals 2008

The programme on Poverty and Peace (POVPEACE) is calling for proposals. Poverty-related themes will be emphasised. There will probably be no call next year. Søknadsfrist: 04.06 kl 12:00 [Les mer](#)

Ukens bilde



Surviving the survival course

27.03.2008, Elinor Bartle

A number of researchers from BIO and IMR took the Falck Nutec Survival Suit course – and survived!

You are invited to submit photos (electronically!) for "Ukens bilde". Please include a very short description and credit information. Picture can be of researchers / students in action, technology, organisms, field sites ...
Please send your pictures to [Elinor Bartle](#) (preferable format jpg, gif; size around 300px sq; saved for web - under 60kb).

Avsluttende mastergradseksamen

M.G. Mostafa Amin: Aquacultural Impacts on Nutrients and Phytoplankton Dynamics in Coastal Water

M.G. Mostafa Amin holder fredag 28. mars avsluttende presentasjon for sin masteroppgave i Joint European Master in Water and Coastal Management.

Tittel på oppgaven: Aquacultural Impacts on Nutrients and Phytoplankton Dynamics in Coastal Water

Veileder: Rune Rosland. Sensor: Morten Skogen (HI)

Tid og sted: Fredag 28. mars, kl. 10, Seminarrom 328C1, bioblokken. Alle interesserte velkommen!

Vera Torresova: Biodiversity of Parasites of the European Shore Crab *Carcinus maenas* (L.)

Vera Torresova holder mandag 31. mars avsluttende presentasjon av sin masteroppgave i Marinbiologi - marin biodiversitet.

Tittel på oppgaven: Biodiversity of Parasites of the European Shore Crab *Carcinus maenas* (L.)

Veiledere: Glenn Bristow & Christoffer Schander.

Sensor: Willi Hemmingsen (UiTø). Bisitter: Frank Nilsen

Tid og sted: Aud. 2 i Realfagbygget, 10:15. Alle interesserte velkommen!

Info fra studieseksjonen

UiB allmøte om forskerutdanningen den 14. april, påmelding innen 7. april

UiB er i gang med å utarbeide en egen handlingsplan for forskerutdanningen, og i den anledning inviterer prorektor **Anne Gro Vea Salvanes** til allmøte om forskerutdanningen 14. april 2008.

Deltagerne vil samtidig få et innsyn hvordan en driver forskerutdanning i Storbritannia.

Program for Informasjonsmøte forskerutdanningen, mandag **14.04, 9-11 i** Lite auditorium, Lauritz Meltzers hus, (SV-bygget) Fosswinckelsgate 6:

0900 Training transferrable skills to doctoral students Professor Eric Yeatman, (Chair of Academic Training Committee, Imperial College, London)

0945 Status i handlingsplanarbeidet for forskerutdanningen ved UiB (v utvalgsleder Anne Gro Vea Salvanes)

1030 Spørsmål og diskusjon

Faglige ledere oppfordres til å melde seg på! Alle samarbeidspartnere, faglig og administrativt innen forskerutdanningsfeltet oppfordres til å delta på dette møtet. Påmelding innen **7. april** til ndertegnede!!

Vennlig hilsen, Gry Kibsgaard, Forskerutdanningskoordinator, Forskningsavdelinga

Gjesteforelesninger, seminarer og kollokvier

Gjesteforelesning Sergej Olenin: Assessment of biological pollution in aquatic ecosystems: how to measure the invasive species impacts?

Dato: 02 Apr 2008, Tidspunkt: 10.15, Sted: Stort Auditorum, datablokken. [Les mer ..](#)

ECT2008 - spennende konferanse om energi, klima og teknologi

University of Bergen is coorganizer of the Energy, Climate and Technology conference (ECT 2008) which is to be held in Grieghallen, Bergen, **17 - 18 April 2008**. The basic principles and approaches in analyses and discussions of energy, climate and technology issues at ECT 2008 will be knowledge-based, long-term, multidisciplinary and internationally oriented. In addition it will focus directly on important issues in the interface between energy resource use, climate change and technology development: How will production and use of energy affect our climate and how will innovation and technology development respond to those effects and feeding back into energy resource use and climate change? What are the challenges and options in this complex setting for implementing an integrated, consistent approach to public policy and business strategies for a knowledge-based, sustainable future? Programme, instructions for registration etc. can be found at www.ect2008.com.

UiB vil dekke påmeldingsavgiften for 10-15 studenter som er engasjerte og interesserte i å delta.

Kontakt Arve Aksnes (arve.aksnes@mnfa.uib.no) som håndterer dette.



NORKLIMA brukerforum om tilpasning til klimaendringer

Norges forskningsråd ved forskningsprogrammet NORKLIMA og Direktoratet for samfunnssikkerhet og beredskap arrangerer konferansen 15.05: Tilpasning til klimaendringer - fra forskning til handling.

[Les mer](#)

Summer courses in Maine

Shoals Marine Laboratory (SML) offers [28 college-credit courses](#) at our facility on Appledore Island, Maine. Including: Field Microbial Ecology, Marine Botany, Biology of the Lobster, Diversity of Fishes, Field Ornithology, Seabird Ecology and Conservation, Anatomy and Function of Marine Vertebrates, The Sea Around Us, Marine Phylogenomics, Comparative Embryology and Life History Strategies and Forensic Science for Marine Biologists. [More information](#)

Summer School Training for young marine scientists

Analyses of the interactions between end to end marine food webs and biogeochemical cycles 11-16 August 2008, Ankara, Turkey. Application submission deadline: 15 May. [more information](#)

Mediterranean Dendrology Field Course

[Learn more.](#)

5th Congress of the European Malacological Societies

The Congress will be held in the Azores, 2-6 September 2008. [More info](#)



Nye artikler

Har du en artikkel, kapittel eller bok som ikke har stått her? Du kan sende bibliografi og abstract (helst i Word-format, helst ikke pdf av hele artikkelen!) til Jarl så snart du har sidetall eller DOI (slik at publiseringsår er fastsatt).

Stefan Ekman: begrensninger i metoder for å rekonstruere opphavelige evolusjonære strukturer

Ekman, Stefan, Andersen, Heidi L., Wedin, Mats 2008. The limitations of ancestral state reconstruction and the evolution of the ascus in the Lecanorales (Lichenized ascomycota). *SYSTEMATIC BIOLOGY* 57: 141-156

Abstract: Ancestral state reconstructions of morphological or ecological traits on molecular phylogenies are becoming increasingly frequent. They rely on constancy of character state change rates over trees, a correlation between neutral genetic change and phenotypic change, as well as on adequate likelihood models and (for Bayesian methods) prior distributions. This investigation explored the outcomes of a variety of methods for reconstructing discrete ancestral state in the ascus apex of the Lecanorales, a group containing the majority of lichen-forming ascomycetes. Evolution of this character complex has been highly controversial in lichen systematics for more than two decades. The phylogeny was estimated using Bayesian Markov chain Monte Carlo inference on DNA sequence alignments of three genes (small subunit of the mitochondrial rDNA, large subunit of the nuclear rDNA, and largest subunit of RNA polymerase II). We designed a novel method for assessing the suitable number of discrete gamma categories, which relies on the effect on phylogeny estimates rather than on likelihoods. Ancestral state reconstructions were performed using maximum parsimony and maximum likelihood on a posterior tree sample as well as two fully Bayesian methods. Resulting reconstructions were often strikingly different depending on the method used; different methods often assign high confidence to different states at a given node. The two fully Bayesian methods disagree about the most probable reconstruction in about half of the nodes, even when similar likelihood models and similar priors are used. We suggest that similar studies should use several methods, awaiting an improved understanding of the statistical properties of the methods. A Lecanora-type ascus may have been ancestral in the Lecanorales. State transformations counts, obtained using stochastic mapping, indicate that the number of state changes is 12 to 24, which is considerably greater than the minimum three changes needed to explain the four observed ascus apex types. Apparently, the ascus in the Lecanorales is far more apt to change than has been recognized. Phylogeny corresponds well with morphology, although it partly contradicts currently used delimitations of the Crocyniaceae, Haematommataceae, Lecanoraceae, Megalariaceae, Mycoblastaceae, Pilocarpaceae, Psoraceae, Ramalinaceae, Scoliciosporaceae, and Squammarinaceae.

Jon Egil Skjæraasen: atferd og morfologi som gir høy fitness hos torsk

Rowe, Sherrylynn, Hutchings, Jeffrey A., Skjæraasen, Jon Egil, Bezanson, Louise 2008. Morphological and behavioural correlates of reproductive success in Atlantic cod *Gadus morhua*. *MARINE ECOLOGY-PROGRESS SERIES* 354: 257-265

Abstract: We tested the hypothesis that reproductive success is randomly distributed within spawning aggregations of Atlantic cod *Gadus morhua*, a broadcast-spawning marine fish for which no parental care is provided. Based on microsatellite DNA-parentage assignment of 8913 offspring from 4 large ($n = 52$ to 93) experimental spawning aggregations, we quantified individual variation in male reproductive success and evaluated the degree to which this variation could be explained by aspects of morphology, condition, and spawning behaviour. Reproductive success was highly skewed, with more than 80% of the offspring within each group sired by 2 to 7 individuals. Body size and agonistic interactions initiated were positively associated with male reproductive success within each group. The lengths of fins prominent during courtship and mating were also correlated with reproductive success within one of the spawning groups for which data were available. Our observations are consistent with the hypotheses that some form of intrasexual competition or mate choice is a constituent of the mating system of this species and that the ratio of effective to census population size in broadcast-spawning marine fishes is very small.

Anders Fernö: læring hos torsk

Nilsson Jonatan, Tore S. Kristiansen, Jan Erik Fosseidengen, Anders Fernö and Ruud van den Bos 2008. Learning in cod (*Gadus morhua*): long trace interval retention. *Animal Cognition* 11, 215-222

Abstract: Basic knowledge about learning capacities and awareness in fish is lacking. In this study we investigated which temporal gaps Atlantic cod could tolerate between two associated events, using an appetitive trace-conditioning paradigm with blinking light as conditioned stimulus (CS) and dry fish food as unconditioned stimulus (US). CS-US presentations were either temporally overlapping (delay conditioning, CS duration 24 s, interstimulus interval 12 s) or separated by 20, 60, or 120 s (trace conditioning, CS duration 12 s) or 2 h (control, CS duration 12 s). The percentage of fish in the feeding area increased strongly during CS presentation in all delay, 20 s, and 60 s trace groups and in one out of two 120 s trace groups, but not in the control groups. In the 20 and 60 s trace procedures, the fish crowded together in the small feeding area during the trace interval, showing strong anticipatory behaviour. In all the conditioned groups, the fish responded to the CS within eight trials, demonstrating rapid learning. At 88 and 70 days after the end of the conditioning experiments, the delay and 20 s trace groups, respectively, were presented the CS six times at 2-h intervals without reward. All groups responded to the light signal, demonstrating memory retention after at least 3 months. This study demonstrates that Atlantic cod has an impressively good ability to associate two time-separated events and long time retention of learnt associations.

Are Nylund, Egil Karlsbakk, Stian Nylund, Trond Isaksen, Marius Karlsen, Sigurd Handeland, Karl Fredrik Ottem: ny type beta-nodavirus fra torsk

Nylund A, Karlsbakk E, Nylund S, Isaksen TE, Karlsen M, Korsnes K, Handeland S, Martinsen R, Pedersen TM, Ottem KF 2008. New clade of betanodaviruses detected in wild and farmed cod (*Gadus morhua*) in Norway. ARCHIVES OF VIROLOGY 153: 541-547

Abstract: Betanodaviruses have been isolated and detected in both farmed and wild fish species worldwide. They are classified in five clusters, and all are connected to mortalities in farmed fish. The clusters do not represent specific geographical areas or host species, but one cluster, barfin flounder nervous necrosis virus (BFNNV), is mainly associated with cold water fish species. This study presents the first species-specific clade within the BFNNV cluster. This clade consists of six isolates from wild and farmed Atlantic cod in Norway and is genetically distinct from other betanodaviruses in the North Atlantic. Screening of farmed and wild cod in Norway shows that betanodaviruses are present in wild fish on the west coast of Norway, including migratory cod, but so far we have not detected any betanodavirus-positive wild cod in northern Norway. The presence of significant amounts of betanodaviruses in wild cod represents a serious challenge for the management of viral nervous necrosis in farmed cod in Norway. Betanodavirus-positive farmed cod were present both in western and northern Norway. Mortalities in three cod farms were suspected to be caused by betanodaviruses; however, in two of these, other pathogens may have been responsible for or strongly contributed to the mortalities.

Albert Imsland: effekt av redusert salinitet på vekst hos unge kveiter

Imsland, Albert K., Gustavsson, Arnpor, Gunnarsson, Snorri, Foss, Atle, Arnason, Jon, Arnarson, Ingolfur, Jonsson, Amar F., Smaradottir, Heidis, Thorarensen, Helgi 2008. Effects of reduced salinities on growth, feed conversion efficiency and blood physiology of juvenile Atlantic halibut (*Hippoglossus hippoglossus* L.). AQUACULTURE 274: 254-259

Abstract: The effect of salinity on growth, feed conversion efficiency and blood physiology was investigated by rearing Atlantic halibut *Hippoglossus hippoglossus* (initial weight 25.5 +/- 0.8 g, mean +/- SEM) at salinities of 15, 25 or 32 parts per thousand for 4 months at 12 degrees C. The final mean weight of the fish reared at 15 parts per thousand (135.9 +/- 5.1) and 25 parts per thousand (130.8 +/- 5.1) was significantly larger than that of fish reared at 32 parts per thousand (107.6 +/- 5.2). Similarly, the specific growth rates (SGR) and feed conversion efficiency (FCE) were significantly higher at both 15 parts per thousand (SGR: 1.29 +/- 0.03; FCE: 1.21 +/- 0.04) and 25 parts per thousand (SGR: 1.25 +/- 0.04; FCE: 1.18 +/- 0.06) compared to 32 parts per thousand (SGR: 1.16 +/- 0.04; FCE: 0.97 +/- 0.10). Of the osmoregulatory and metabolic parameters analysed in plasma Na⁺ and glucose were significantly lower in fish reared at 15 parts per thousand compared to both 25 parts per thousand and 32 parts per thousand. The acid-base balance was influenced by the salinity treatment as there was a general trend towards higher pH, pCO₂ and HCO₃⁻ in the full salinity group compared to the 15 parts per thousand group. The results clearly show that the optimum conditions for farming Atlantic halibut, both with respect to growth rate and feed conversion, is at salinities lower than 32 parts per thousand. This is an important finding for the halibut industry.

Mette Remen, Albert Imsland, Sigurd Stefansson: samvirkning mellom ammoniakk og oksygen i vekst hos ung torsk

Remen, Mette, Imsland, Albert Kjartansson, Stefansson, Sigurd O., Jonassen, Thor Magne, Foss, Atle 2008. Interactive effects of ammonia and oxygen on growth and physiological status of juvenile Atlantic cod (*Gadus morhua*). AQUACULTURE 274: 292-299

Abstract: In order to investigate the interactive effects of sublethal ammonia concentrations and oxygen saturation on the growth and physiological status of Atlantic cod juveniles (*Gadus morhua*), 877 specimens (mean initial weight 20.8 g, SD =5.6) were exposed to nine different combinations of ammonia and oxygen concentrations for 64 days. The combinations applied were: control (1-2 $\mu\text{g L}^{-1}$), low (31-34 $\mu\text{g L}^{-1}$) and high (115-120 $\mu\text{g L}^{-1}$) unionized ammonia-nitrogen (UIA-N) concentrations and hypoxia (57-69%), normoxia (83-88%) and mild hyperoxia (101-104%) oxygen saturations. High ammonia concentrations caused a significant decrease in growth throughout the experiment. An interactive effect of ammonia and oxygen on specific growth rates (SGR) was found in all periods, and was related to an increase and decrease in ammonia toxicity, respectively, in hypoxic and hyperoxic conditions. High ammonia concentrations caused some physiological disturbance in terms of an initial elevation of plasma K^+ concentration, and a decrease in plasma Na^+ and glucose concentration. Low ammonia concentrations did not cause any considerable change in weight, growth or physiological status, compared to controls. It is suggested that a mild hyperoxia may increase the tolerance of Atlantic cod juveniles to sublethal ammonia toxicity.

Mikko Heino: biodiversitet viktig i fiskeri- og økosystemforvaltning

Hiddink J.G., B.R. MacKenzie, A. Rijnsdorp, N.K. Dulvy, E.E. Nielsen, D. Bekkevold, M. Heino, P. Lorance, H. Ojaveer 2008. Importance of fish biodiversity for the management of fisheries and ecosystems. Fisheries Research 90: 6-8

Abstract A group of fisheries scientists participating in a European Union Network of Excellence (MARBEF) summarizes risks to the biodiversity of fish in European seas and recommends ways how existing fish diversity can be conserved, restored and managed.

Per Holmstad, Knut H. Jensen & Arne Skorping: flere endoparasitter gir flere ektoparasitter hos rype

Holmstad Per R, Knut H. Jensen & Arne Skorping 2008. Ectoparasite intensities are correlated with endoparasite infection loads in willow ptarmigan. Oikos 117: 515-520

Abstract: Most studies exploring the effect of parasites on host fitness traits deal with a small subset of the parasite community, or with a single parasite species. The results of such studies may be difficult to interpret, because the potential effects of other parasites are not controlled for. If intensities of different parasite species tend to covary, any demonstrated effect by one parasite species could be caused by another, covarying species. In the current study we found that intensities of two different feather lice on willow ptarmigan were positively correlated. Moreover, ectoparasite intensities could be reliably predicted by endoparasite loads. This is unexpected since feather lice are controlled by preening, while endoparasites are kept in check by the immune system. Our results suggest a link between these two aspects of parasite defense, possibly mediated by endoparasite infections reducing host energy available for preening.

Gyda Christophersen & Thorolf Magnesen: test av metoder for å frakte kamskjell

Christophersen, Gyda, Roman, Guillermo, Gallagher, Jerry, Magnesen, Thorolf 2008. Post-transport recovery of cultured scallop (*Pecten maximus*) spat, juveniles and adults. AQUACULTURE INTERNATIONAL 16: 171-185

Abstract: High mortality associated with transport operations in scallop culture has been a major problem faced by European farmers. Simulated transport with *Pecten maximus* L. spat < 2 mm, spat 15-30 mm, juveniles 30-50 mm and adults > 100 mm were carried out in Spain, Ireland and Norway. Different time and temperature combinations were studied in order to maximise post-transport survival and establish best practices. Out-of-water transport could result in 100% survival if conditions were right, but the response to emersion stress depended on size, season and location. Post-transport

recovery decreased with emersion time and was strongly influenced by temperature. Air exposure was tolerated for a longer time by adult scallops than spat and juveniles, but the results differed among trials in the different countries. The maximum emersion time that gave post-transport survival $\geq 80\%$ was 12 h for the smallest spat, 18 h for larger spat and 24 h for juvenile and adult scallops. Adults were less affected by transport temperatures that deviated from ambient seawater temperature than spat and juveniles. In general post-transport recovery was high when sea temperature was < 10 degrees C, but during warm-water seasons special care should be taken to avoid stressful and lethal transport conditions. A transport temperature < 12 degrees C was recommended, though not more than 10 degrees C below ambient culture temperature. A maximum transport time of 9 h was suggested for spat and juveniles to attain post-transport survival close to 100%, but 12-24 h was feasible during the cold-water season or at favourable transport temperatures.

Hans Høie: kysttorsk kan skilles fra skrei på øresteинens form

Stransky Christoph, Hannes Baumann, Svein-Erik Fevolden, Alf Harbitz, Hans Høie, Kjell H. Nedreaas, Arnt-Børre Salberg and Tuula H. Skarstein 2008. Separation of Norwegian coastal cod and Northeast Arctic cod by outer otolith shape analysis. *Fisheries Research* 90: 26–35

Abstract For stock assessment purposes, Atlantic cod (*Gadus morhua*) from the coastal and offshore regions off northern Norway is usually allocated to Norwegian coastal cod (NCC) or Northeast Arctic cod (NEAC) by internal morphological features of their otoliths. As this classification is subject to individual interpretation by otolith age readers, this study investigated an alternative objective approach for the separation of the two cod groups, using otolith shape analysis. Several hundred otolith samples from coastal fjord areas along northern Norway and from the Barents Sea were analysed by univariate shape descriptors and elliptical Fourier analysis (EFA). When combining uni- and multivariate descriptors and applying the otolith reader typing as reference, the classification score was 89% for NCC and 90% for NEAC. These results indicate that the internal morphology of the otoliths, evaluated by the age readers, is translated to a great extent to their outer morphology and that otoliths can be allocated to NCC and NEAC by their shapes with high certainty. When genetic typing data (Pan I marker) were used as reference, the classification scores were reduced to 83% for NCC and 76% for NEAC when combining uni- and multivariate descriptors and excluding heterozygotes. This implies that differences in otolith morphology cannot directly be linked to genetic structure. Differences in environmental conditions, however, seem to have a considerable influence on how otolith growth increments and consequently otolith shapes are formed. As the various fjord systems in Norway provide local habitats and as differences within the NCC with regard to genetic structure and life-history parameters had been found in earlier studies, variation of NCC otolith shapes between three coastal regions was also examined. The region classification scores for reader-typed NCC varied between 60% and 81%.

Inger Måren & Vigdis Vandvik: restaurering av bregne-invadert lynghei

Måren Inger Elisabeth, Vigdis Vandvik & Kristine Ekelund 2008. Restoration of bracken-invaded *Calluna vulgaris* heathlands: Effects on vegetation dynamics and non-target species. *Biological Conservation* 141: 1034-1044

Abstract The coastal heathlands of north-western Europe are endangered habitats of great conservation value. Invasion by bracken *Pteridium aquilinum* is a major challenge for conservation and restoration of these heathlands, including the under-studied northern regions. Today, the herbicide asulam is the most widely applied bracken control measure, but increasing focus on organic farming and nature conservation calls for alternative, preferably mechanical, approaches. In a 7-year replicated field experiment in western Norway, we investigated efficiencies of the four bracken control measures asulam, Gratil, annual cutting and biannual cutting, in restoring the characteristic heathland vegetation structure and species composition. We specifically tested herbicide effects on diversity and composition of non-target species. Effects of treatments over time were evaluated by repeated measures ANOVA, and for multivariate data, Principal Response Curves. Our results show that UK based control methods are largely applicable to bracken at its northern limit in the European heathland habitat. Asulam resulted in the fastest reduction in cover but cutting proved equally efficient long-term. Community compositions progressed towards desired heathland vegetation, but successional trajectories differed. Asulam had unintended effects on a number of heathland species not predictable by species characteristics or functional groups. Gratil failed to have any long-term effects. In

summary, cutting is as efficient as herbicide application in reducing bracken, and more so in restoring northern heathland vegetation over time.

Inger Måren & Vigdis Vandvik: eksperimenter for kontroll av bregner på Lyngheiseret

Måren, Inger E, Vigdis Vandvik & Kristine Ekelund 2008. Effectiveness of chemical and mechanical bracken *Pteridium aquilinum* control treatments in northern coastal heathlands on the island of Lygra, Hordaland, Norway. *Conservation Evidence* 5, 12-17

SUMMARY In a 7-year field experiment undertaken in western Norway, the efficiency of four bracken control measures on a heathland was investigated: application of two herbicides i) Asulox®- and ii) Gratil®- with follow-up annual cutting; iii) annual cutting; and iv) biannual cutting. Assessments were also made as to what extent the characteristic species composition and vegetation structure of heathlands were restored, and effects of the herbicides on non-target plant species commonly found on heaths. Fastest reduction in bracken cover resulted from herbicide application, but cutting proved equally efficient in the longer term; Asulox and biannual cutting both reduced bracken cover from over 70% to below 10% in 2 years, while annual cutting achieved this in 5 years. Gratil failed to have long-term effects. Species composition progressed towards a desirable heathland vegetation community, but successional trajectories differed, and Asulox had minor unintended effects on a number of heathland plants, including heather *Calluna vulgaris*, several grasses, herbs and mosses. These effects could not be predicted by functional group or other simple species characteristics. However, any short-term detrimental effects of Asulox application were considered to be outweighed by the beneficial longer term effects of reduced bracken cover, which allowed re-establishment of the heathland flora.

Steffen Roth: artspesifikk duft-basert seksuell tiltrekking hos teger

Roth, Steffen, Janssen, Arne, Sabelis, Maurice W. 2008. Odour-mediated sexual attraction in nabids (Heteroptera: Nabidae). *EUROPEAN JOURNAL OF ENTOMOLOGY* 105: 159-162

Abstract: In many insects, mate finding is mediated by volatile sex pheromones, but evidence in nabids is still fragmentary. The role of odour-mediated sexual attraction in two nabid species, *Nabis pseudoferus* and *N. rugosus*, was studied in a Y-tube olfactometer. Females of the two species were significantly attracted by odours of conspecific males, and males of *N. rugosus*, but not of *N. pseudoferus*, were attracted by odours of conspecific females. Odours of conspecifics of the same gender were unattractive. These results suggest the existence of male pheromones in both species and a different female pheromone in *N. rugosus*.

Howaida AbdElRahman & Knut Krzywinski: miljøpåvirkning på akasjer i Sudan

AbdElRahman, Howaida F & Krzywinski, Knut 2008. Environmental effects on morphology of *Acacia tortilis* group in the Red Sea Hills, North-Eastern Sudan and South-Eastern Egypt. *FOREST ECOLOGY AND MANAGEMENT* 255: 254-263

Abstract: *Acacia tortilis* is a drought-resistant species. Its survival and existence in the arid and semi-arid area of Northern Africa and Arabian Peninsula is due to its ability to endure the harsh condition and therefore, it is generally forms open pure stands or mixed stands in these drylands. Wherever it grows, it plays an important role in human, animal and other plant species lives. Yet the relation between its adaptive features and their relation to the environmental conditions is not studied in a large scale of environmental variation. The main objective of this study is therefore to examine if the immediate environmental factors, other than human utilization, are associated to the expressed morphological variables among the *A. tortilis* sub-taxa. Three subspecies are collectively reported in the study area, Red Sea Hills of Sudan and Egypt. According to different literatures, they are distinguished by features of high plasticity under the variable pressure of human activity and climate. Such features are hair density in some parts of the plant, crown shape and number of stems. In the current study, the result of analysing 520 samples of *A. tortilis* - collected from 25 different localities representing various altitudinal gradients - showed a correlation between the expressed morphological studied and the immediate environment. When data from both regions studied as one data set, elevation, above sea level, was the only significant response variable and higher hair density was associated to plants growing in Sudan. However, when only data from Sudan was studied separately, elevation, hillside and lower part of the catchment were the statistically significant response variables.

In the Egyptian data set, the statistically significant response variables were elevation, khor bank and the upper, mid, and lower part of the catchment. An intra-morphological correlation was also shown. These results may suggest that the current *A. tortilis* sub-taxa are ecotype. Genetic and anthropogenic studies are needed to verify this assumption.

John Birks: diatome-responser på oppvarming i Ural i forrige århundre

Solovieva, N., Jones, V., Birks, H.J.B., Appleby, P. & Nazarova, L. (2008) Diatom responses to 20th century climate warming in lakes from the northern Urals, Russia. *Palaeogeography, Palaeoclimatology, Palaeoecology* 259: 96-106. doi: 10.1016/j.palaeo.2007.10.001

Abstract Changes in diatom assemblages and spheroidal carbonaceous particle (SCP) profiles during the last 200 years in ²¹⁰Pb-dated sediment cores from five remote arctic and sub-arctic lakes in the northern Urals were analysed. The study area covers a large territory from arctic tundra in the north to boreal forest on the western slopes of the Ural mountains in the south. pH was reconstructed using a diatom-based model. The degrees of compositional turn-over and rates-of-change were estimated numerically. The 20th century diatom floristic shifts, the rise in diatom accumulation rates and the rates of diatom compositional change in the northern Ural lakes correlate well with June temperature in the region and with the overall circum-arctic temperature increase from the 1970s. The main driving force behind diatom compositional shifts in the study lakes are the changes in the duration of ice-free season, timing of water turn-over and stratification periods and habitat availability. Changes in spheroidal carbonaceous particles show no pronounced effect on diatom assemblages. Pollution is restricted to regional sources originating mainly from the Vorkuta coal industry. Changes in diatom plankton are more pronounced than changes in diatom benthos. There is no clear north-south gradient in degree of compositional changes, with greatest changes occurring in Lake Vankavad situated in northern boreal forest. The degree of the 20th century diatom changes in Lake Vankavad is greater than in most circum-arctic and sub-arctic lakes from northern Europe and Canada.

Dorgeh T LaDuo: relikte rester etter skog i ørkner i Tibet

Miehe, G., Miehe, S., Will, M., Opgenoorth, L., LaDuo, Dorgeh, T. & Liu, J. (2008) An inventory of forest relicts in the pastures of southern Tibet (Xizang, A.R. China). *Plant Ecology* 194: 157-177. doi: 10.1007/s11258-007-9282-0

Abstract An inventory of isolated tree stands surrounded by desert pastures in Southern Tibet (A.R. Xizang, China) revealed more than 50 sites with vigorous trees of *Juniperus convallium* Rehder & E.H. Wilson and *Juniperus tibetica* Kom and additional more than 10 records where juniper trees had been destroyed between 1959–1976. The tree stands are not restricted to any specific habitat, and occur within an area stretching 650 km westwards from the current forest border of Southern Tibet. The trees are religious landmarks of the Tibetan Buddhists. The highest trees were found at an elevation of 4,860 m. Vegetation records, rainfall correlations and temperature data collected by local climate stations and successful reforestation trials since 1999 indicate that forest relicts fragmented through human interference could regenerate if current cattle grazing and deforestation practices are halted. The drought line of *Juniperus* forests in Southern Tibet is approximately 200–250 mm/a. A first pollen diagram from Lhasa shows forest decline associated with the presence of humans since at least 4,600 yr BP. The currently degraded commons developed in the last 600 yr. To date, no findings of remains of ancient forests in the Central Tibetan Highlands of the Changtang have been reported.

Anne Gro Salvanes: hvor mange lysing-arter gyter ved Namibia?

Kainge, P., Kjesbu, O. S., Thorsen, A., Salvanes, A. G. 2008. *Merluccius capensis* spawn in Namibian waters, but do *M. paradoxus*? *AFRICAN JOURNAL OF MARINE SCIENCE* 29: 379-392

Abstract: Spawning time and areas, and the length of the spawning season of shallow-water (*Merluccius capensis*) and deep-water (*M. paradoxus*) hake, were investigated from bottom trawl collections taken in Namibian waters between September 1998 and October 2000 and from August to November 2001. The gonadosomatic index (GSI) and the incidence of advanced maturity stages of *M. paradoxus* were low along the entire coast throughout the year, but with a few exceptions in the south (between Luderitz and Orange River). By contrast, *M. capensis* spawn in the area throughout the year, but mainly between July and October. Evaluating the accuracy of visual maturity staging by comparing results with those of image and histological analyses revealed few errors in classifications of maturity stage in the field, with the exception of Stage 5 (spent and resting) in *M. paradoxus*.

Specific GSI values were intercalibrated with the appearance of developing oocytes. As the GSI is quickly estimated, this new concept, designated here as a 'maturity reference line', could enhance understanding of the spawning biology of other species with a similarly complex, indeterminate spawning strategy. It is concluded that *M. paradoxus* do not appear to spawn in Namibian waters.

Lars Stien: bruk av billedanalyse for å finne avls-egenskaper

Kause A, L.H. Stien, K. Rungruangsak-Torrissen, O. Ritola, K. Ruohonen & A. Kiessling 2008. Image analysis as a tool to facilitate selective breeding of quality traits in rainbow trout. *Livestock Science* 114: 315-324

Abstract A quantitative genetic analysis was performed to assess the suitability of automated image analysis of cutlets as a selection tool to genetically improve flesh composition and colour in large rainbow trout. Fish were reared on two diets with different lipid and protein content to assess the robustness of the image analysis method across different nutritional environments, and the strength of potential genotype-by-diet interactions. Chops were scanned and digitally analysed for colour (chroma, hue, and lightness) and for areas of lipid stripes, dorsal lipid, red muscle and white muscle. Percents of lipid and white muscle area to whole chop area were compared to percent chop lipid and protein recorded by chemical analysis. The results showed that on both diets, percent chop lipid and percent white muscle area displayed high phenotypic (≥ 0.42) and genetic correlations (≥ 0.70) with the respective chemical lipid and protein percents. Moreover, on both diets, the lipid area percents had moderate to high heritabilities ($h^2 = 0.29-0.70$) that were of the same magnitude or higher compared to the previously published estimates for chemically analysed lipid traits. These results confirm that regardless of the diet composition, true lipid and protein deposition can be genetically improved by selecting for the respective image analysis traits. Muscle lightness, hue (tint of colour) and chroma (saturation level of colour) displayed moderate to high heritabilities ($h^2 = 0.32-0.46$), and phenotypic and genetic correlations between these traits were favourable. Muscle colour can thus be effectively improved by selection. Some genetic constraints for breeding efforts were identified, in terms of lipid deposited at different locations within the body correlating only weakly. Genetic correlations between diets were strongly positive (≥ 0.85), revealing only weak re-ranking of families across the diet treatments.