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Denne ukas viktigste

Søknad om tokttid 2010

FRIST 1. SEPTEMBER 2009. Forskningsfartøyutvalget (FFU) tar sikte på et møte for å behandle søknadene den 15. september – se [søknadsprosedyre](#) her

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)

Løpende	Stimulering til bilateralt forskningssamarbeid innenfor grunnleggende forskning (BILATGRUNN)	Løpende	Arrangementsstøtte HAVBRUK
		Løpende	Utenlandsstipend for FRIBIO-stipendiater
Løpende	Prosjektetablering (PES) støtte til enkeltprosjekter	Løpende	Nærings-PhD
		Løpende	Støtte til norsk deltagelse i etablering av forskningsinfrastruktur på ESFRI Roadmap 2008
12. aug	BIO internfrist HAVBRUK Yngre fremragende forskere	18. aug	Marie Curie individuelle stipend
2. sept	IS-AUR og IS-DAAD (NFR forskerutvekslingsprogram med Frankrike og Tyskland)	2. sept	HAVBRUK (Forskningsprosjekter, internasjonalt samarbeid)
		2. sept	NORGLOBAL
		2. sept	PROREAL
14. okt	NORKLIMA og HAVKYST (fellesutlysning fra Havet og kysten og NORKLIMA)	14. okt	HAVBRUK (Brukerstyrt havbruksforskning)
		14. okt	Rammebevilgning under PES-ordningen (PES)

Siste nytt fra BIO



Nytt semester og snart ny instituttleder

De fleste ansatte og mange studenter er nå tilbake fra ferie, og resten (meg inkludert) kommer om få dager. Jeg håper at alle har hatt god hvile i ferien og ser fram til å komme i jobb igjen.

Om ei uke går fristen for å søke instituttlederstillingen ut. Kjenner du noen som har søkt eller skal søke? Kanskje noen trenger en oppmuntring? For min del søkte jeg trøst i at en B-skuespiller (Arnold S) hadde tatt på seg å lede verdens syvende største økonomi (California), og da måtte vel de fleste kunne lede et institutt. Nå gikk det jo ikke så bra med California, så det kan trenge andre argumenter i dag.

Men oppmuntring er viktig!

Hilsen Jarl Giske

Fjorårets mest siterte BIO-arbeider

ISI-databasen holder ikke rede på alt, og siteringer i bøker og i tidsskrift som ikke dekkes av ISI er ikke inkludert i denne oversikten. Trolig ville slike tillegg ikke endre at dette er de BIO-artiklene som ble mest sitert i 2008. Med ett unntak er alle de ti mest siterte arbeidene skrevet av mikrobiologene.

Frede Thingstad sin bestselger ligger øverst, og nærmer seg nå 2000 siteringer uke for uke. Ellers kan man jo merke seg at suksessforfatterne har valgt prestisjefylte tidsskrift, og lista kan tyde på at det har en effekt. **Lise Øvreås** er med på tre av disse arbeidene, **Christa Schleper** på to.

ISI-siteringer i 2008	Arbeid
102	Title: THE ECOLOGICAL ROLE OF WATER-COLUMN MICROBES IN THE SEA Author(s): AZAM F, FENCHEL T, FIELD JG, et al. 1983 Source: MARINE ECOLOGY-PROGRESS SERIES Volume: 10 Issue: 3 Pages: 257-263
73	Title: Archaea predominate among ammonia-oxidizing prokaryotes in soils Author(s): Leininger S, Urich T, Schloter M, et al. Source: NATURE Volume: 442 Issue: 7104 Pages: 806-809 Published: AUG 17 2006
50	Title: HIGH ABUNDANCE OF VIRUSES FOUND IN AQUATIC ENVIRONMENTS

	Author(s): BERGH Ø, BØRSHEIM KY, BRATBAK G, et al. Source: NATURE Volume: 340 Issue: 6233 Pages: 467-468 Published: AUG 10 1989
49	Title: Microbial biogeography: putting microorganisms on the map Author(s): Martiny JBH, Bohannan BJM, Brown JH, et al. 2006 Source: NATURE REVIEWS MICROBIOLOGY Volume: 4 Issue: 2 Pages: 102-112
47	Title: Distribution of bacterioplankton in meromictic Lake Saelenvannet, as determined by denaturing gradient gel electrophoresis of PCR-amplified gene fragments coding for 16S rRNA Author(s): Øvreas L, Forney L, Daae FL, et al. 1997 Source: APPLIED AND ENVIRONMENTAL MICROBIOLOGY Volume: 63: 3367-3373
45	Title: Microbial diversity and function in soil: from genes to ecosystems Author(s): Torsvik V, Øvreas L 2002 Source: CURRENT OPINION IN MICROBIOLOGY Volume: 5 Issue: 3 Pages: 240-245
44	Title: Pathways of carbon assimilation and ammonia oxidation suggested by environmental genomic analyses of marine Crenarchaeota Author(s): Hallam SJ, Mincer TJ, Schleper C, et al. Source: PLOS BIOLOGY Volume: 4 Issue: 4 Pages: 520-536 Published: APR 2006
42	Title: Climate-driven regime shifts in the biological communities of arctic lakes Author(s): Smol JP, Wolfe AP, Birks HJB, et al. 2005 Source: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA Volume: 102 Issue: 12 Pages: 4397-4402

ILA: for tidlig å ta stilling til om det er vertikal smitte?

Fra canadiske forskere har det dukket opp ny dokumentasjon på at ILA viruset vi finner i Chile kan stamme fra Norge. - Det er likevel for tidlig å ta stilling til om ILA kan smitte vertikalt, mener Brit Hjelt ved Veterinærinstituttet. Les mer fra [Kyst.no](#)

ILA: hemmer ny kunnskap i å fremkomme

Professor **Are Nylund** bekreftet for over ett års siden det samme som de canadiske forskerne nå har gjort, at ILA viruset i Chile stammer fra Norge. Han fikk massiv kritikk fra de store stamfiskstasjonene og dette har hemmet ny kunnskap i å fremkomme, mener Nylund. Les mer fra [Kyst.no](#).

Iberiasneglen på retur

Iberiasnegl. Brunsnegl. Mordersnegl. Uansett hva du kaller den, den slimete plageånden er endelig på vei bort fra norske hager. Stipendiat **Bjørn Arild Hatteland** forteller mer i [Bergens Tidende](#).



Lite håp for menneskene?

Fattigdom, sult og klima-krise har én årsak. Det er for mange mennesker på jorda. Det mener professor **Harald Kryvi** i forbindelse med FNs dag for verdens befolkning. Les mer fra [Klar tale](#)

Nature Inc: Jens Nejtgaard på TV

Jens Nejtgaard has made a fleeting appearance on TV in one of the programmes in the second Nature Inc series: SERIES 2: NOW AND FOREVER.

The programme aimed to show that the increasingly grim findings of the scientists of the Intergovernmental Panel on Climate Change have shocked politicians and public alike as have the assessments by Nicholas Stern and others of the cost in trillions of dollars of "business as usual". The series aimed to provide background before the climate meetings in Copenhagen. Nature Inc. asks what will be the impact on the global economy if the politically- possible does not match up to what the overwhelming majority of climate scientists say must be done? [Learn more.](#)



Siste nytt fra verden rundt oss

UiOs nye rektor har tanker om framtida

Rektor Ole Petter Ottersen ved UiO sier at de store utfordringene i 2020 vil være klima, energi, økologi og helse, i følge Aftenposten. Som vi skulle ha sagt det selv!

ASLO launches new journal

Following several years of discussion and planning, ASLO is pleased to announce its new online journal, "Limnology and Oceanography: Fluids and Environments". Produced in collaboration with Duke University Press, this journal will explore the link between fluid dynamics and aquatic system processes. We are set to begin publishing in late 2010. Learn more.



Ledige stillinger for biologer

Sjekk oversikten på [jobbnor!](#)



Ole Petter Ottersen.
FOTO: PER KRISTIAN BJØRKENG

Den nye rektoren rettet i sin tale blikket frem mot 2020 og beskrev hvordan han ser for seg universitetets rolle da. Da tror han klima, energi, økologi og ikke minst helse være de store utfordringene.

Frist	Stilling
15.08	Director Mammal Research Institute, Polish Academy of Sciences , Bialowieza, Poland.
15.08	BIO: Instituttleder – åremålsstilling
15.08	Executive Officer for International GEOTRACE Programme, Toulouse , France
31.08	PhD position in Geomicrobiology at Institute for Geosciences at the University of Tuebingen
05.09	PhD position at UMR6539 Laboratoire des Sciences de l'Environnement marin

Forskning: utlysninger, nye satsinger og prosjekter

Midler til formidlingsprosjekter (PROREAL)

Prosjekter med årlig budsjett mellom 50.000 og 500.000 kroner kan søke. Deler av utlysningen gjelder spesielt formidling egnet til å øke interessen og forståelsen for havbruk, energi, klima og miljø og nanoteknologi.

Søknadsfrist: 02.09.2009 13:00 [Les mer](#)

Rammebevilgning under PES-ordningen (PES)

Universiteter, høyskoler, institutter og regionale helseforetak kan også for 2010 søke om rammebevilgning for å etablere prosjektforslag rettet mot utlysninger fra EUs 7RP, med randsone.

Søknadsfrist: 14.10.2009 13:00 (Husk også at det er løpende søknadsfrist for søknad om støtte til enkeltprosjekter under PES ordningen) [Les mer](#)

Inviterer bedrifter til å søke senter-status (SFI)



Forskningsrådet starter ny utlysningrunde for Sentre for forskningsdrevet innovasjon (SFI). Ambisjonen er å starte opp minst seks nye sentre i 2011. I henhold til NFR sin foreløpige tidsplan er 25. november 2009 frist for obligatoriske skisser og 17. februar 2010 frist for endelige søknader, men denne tidsplanen kan bli endret. Forskningsrådet samarbeider nært med departementene om en ny SFI-runde.

Nærmere informasjon om ny utlysningrunde for SFI vil bli lagt ut på Forskningsrådets nettside etter sommerferien. Mer informasjon: [NFR nyhetsside](#) og www.forskningsradet.no/SFI

Assemble EU FP7

The Roscoff Culture Collection (RCC) in France and the Culture Collection for Algae and Protozoa (CCAP) in Oban, UK are members of the ASSEMBLE EU FP7 research infrastructure network which

has been recently launched and which offers on-site and remote access for European research groups to conduct marine research projects. Under ASSEMBLE, European teams may write short proposals to obtain 10 or more cultured strains from either RCC or CCAP free of charge (except shipment costs). Deadline: 15 September 2009. Further information.

EUR-OCEANS Consortium call for 'Foresight workshops' and 'Flagships'

This [document](#) can also be found, along with the full text of the call, on the EUR-OCEANS website at: http://www.eur-oceans.eu/project/EUR-OCEANS_Consortium_Calls_2009.php

Application deadlines:

20 July 2009 for foresight workshops

10 September 2009 for flagships

COST support for network building

COST invites researchers throughout Europe to submit proposals for research networks and use this unique opportunity to exchange knowledge and to embark on new European perspectives.

Deadline for application: 25 September 2009 [Further information](#)

COST support for PhD and post-doc missions

COST Action 735 offers financial support for students and post-docs in Europe for short-term scientific missions (STSMs) to qualifying European institutions for the purpose of training, development of collaborations and new techniques. [Further information](#)

ESF support for conferences

European science foundation (ESF) [lyser ut midler](#) til organisering av konferanser (2011) i fagfeltene:

- Molecular Biology at the interface with other science disciplines
- Brain, Technology and Cognition (focus on "Action")
- Physics/Biophysics and Environmental Sciences

Informasjonsdager i Brussel

fra vår "National contact point" (NCP) for FP7 Environment programmet i Forskningsrådet:

For utlyste temaer under ENVIRONMENT (including Climate Change) planlegges det [informasjonsdager](#) i Brussel 13. juli (se vedlegg), og 16. sept ("The Ocean of Tomorrow joint call"), 17.-18. september (Andre tema i ENVIRONMENT (including Climate Change)). Her vil Kommisjonen presentere utlyste temaer og du vil møte potensielle samarbeidspartnere og få mulighet til å presentere egne ideer. Endelige datoer og program blir offentliggjort på [CORDIS](#). Benytt deg av muligheten til å spille inn nye temaer til neste arbeidsprogrammet. Forslagene sendes til Anja.Hegen@fa.uib.no (senest 17. august), ta gjerne kontakt med henne hvis du trenger hjelp. [Lær mer.](#)

Gjesteforelesninger, seminarer og kollokvier

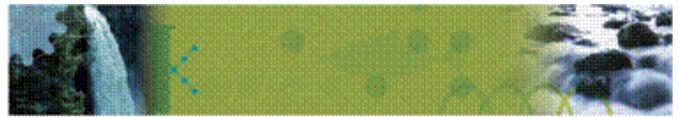
International symposium on Remote Sensing and Fisheries

The SAFARI initiative (Societal Applications in Fisheries and Aquaculture using Remote Sensing) is organising an international symposium on Remote Sensing and Fisheries to be held in Kochi, India from 15-17 February 2010. The symposium will address a number of themes including Operational Use of Remote Sensing for Fish Harvesting; Ecosystem Indicators to assess Fish Health, Growth and Recruitment; and Implications of Climate Change on Fisheries, amongst others. For further information please see the symposium website at: <http://www.geosafari.org/kochi>



Marine Microbe Gordon Conference

Please mark your calendar for the next Marine Microbe Gordon Conference, July 4-9 2010, to be held at the Tilton School in Tilton, New Hampshire (Tilton School). The program of the conference will reflect the diversity of marine microbes, the scales at which they are being studied, and their numerous contributions to biogeochemical processes in the oceans. The [web site](#) for this GRC will eventually have the program and other information. In the meantime, please email me (kirchman@udel.edu) if you have any questions.



Kjære samarbeidspartnere og interessenter

Onsdag 9. september 2009 skal Vitenskapskomiteen for mattrygghet (VKM) markere sitt 5-års jubileum i auditoriet til Nasjonalt folkehelseinstitutt.

Alle samarbeidspartnere og interessenter inviteres til å delta på markeringen. Vedlagt finner dere program for dagen med smakebiter fra VKMs arbeid. VKMs 5-årsmelding vil også bli presentert.

Vi håper at dere har lyst og anledning til å delta på dette.

Det er fint om jeg får beskjed om du kommer (mlw@fhi.no).

5-års markering for Vitenskapskomiteen for mattrygghet

[Les mer om programmet.](#)

Hjemmeside/URL: www.vkm.no

Nye artikler

Beatriz Diaz Pauli: innavlsdepresjon under parringsatferd

ALA-HONKOLA O., A. UDDSTRÖM, B. DIAZ PAULI & K. LINDSTRÖM 2009. Strong inbreeding depression in male mating behaviour in a poeciliid fish. *Journal of Evolutionary Biology* 22: 1396 - 1406

Abstract: The magnitude of inbreeding depression is often larger in traits closely related to fitness, such as survival and fecundity, compared to morphological traits. Reproductive behaviour is also closely associated with fitness, and therefore expected to show strong inbreeding depression. Despite this, little is known about how reproductive behaviour is affected by inbreeding. Here we show that one generation of full-sib mating results in a decrease in male reproductive performance in the least killifish (*Heterandria formosa*). Inbred males performed less gonopodial thrusts and thrust attempts than outbred males ($\delta = 0.38$). We show that this behaviour is closely linked with fitness as gonopodial performance correlates with paternity success. Other traits that show inbreeding depression are offspring viability ($\delta = 0.06$) and maturation time of males ($\delta = 0.19$) and females ($\delta = 0.14$). Outbred matings produced a female biased sex ratio whereas inbred matings produced an even sex ratio.

Frank Nilsen: nye mikrosattelittmarkører for torsk

Delghandi Madjid, Mette Serine Wesmajervi, Saskia Mennen and Frank Nilsen 2009. New polymorphic di-nucleotide microsatellite markers for Atlantic cod (*Gadus morhua* L.). *Conservation Genetics* 10: 1037-1040

Abstract Twenty three polymorphic microsatellite markers were developed from approximately 2,300 expressed sequence tags (ESTs) of Atlantic cod (*Gadus morhua* L.). Seventy two primer pairs were designed for EST sequences containing perfect di-nucleotide motifs and characterised in 96 unrelated fish. Twenty three markers were successfully amplified with number of alleles from 2 to 18 per locus and observed and expected heterozygosity ranging from 0.03 to 1.00 and 0.04 to 0.90, respectively. Loci *Gmo*-C280, *Gmo*-C283, *Gmo*-C290 and *Gmo*-C293 deviated from Hardy-Weinberg equilibrium. Genetic linkage disequilibrium analysis between all pairs of the loci showed significant departure from the null hypothesis between loci *Gmo*-C267 and *Gmo*-C269 and *Gmo*-C262 and *Gmo*-C291. The gene identity was determined at three of the loci, confirming the associated microsatellites as Type I markers. These microsatellite markers provide useful tools for studies of population genetics, reproductive ecology and constructing linkage maps of Atlantic cod.

Ole Brix: akustisk metode til å måle svømmebevegelser i stim

Handegard, N. O., Pedersen, G., and Brix, O. 2009. Estimating tail-beat frequency using split-beam echosounders. – *ICES Journal of Marine Science*, 66: 1252–1258.

Abstract: Data from a standard split-beam echosounder are used to estimate tail-beat frequency within a dense herring (*Clupea harengus* L.) layer. The data were collected by lowering a horizontally

projecting 38 kHz split-beam transducer into a herring layer at 245-m depth. Individual targets were concatenated into tracks, and a fast Fourier transform was used to estimate the periodogram of the backscattering strengths along each track. A simple model, assumed accurate under certain conditions, was used to relate the periodogram to tail-beat frequency. The requisite conditions are discussed. Examples of accurate tail-beat estimates from single high-quality tracks, which are consistent with statistics on all tracks in the test dataset, are presented. In addition, the cross periodogram between closely spaced individuals was calculated on selected tracks to estimate the relative phase between the adjacent tracks within the school. Finally, the potential use of this method to resolve schooling behaviour, improve target-strength estimates, and even estimate fish condition, is discussed.

Anne-Grethe Gamst Moen, Sigurd Stefansson, Ann-Elise Olderbakk Jordal, Tom Ole Nilsen & Ivar Rønnestad: maternale effekter på proteinekspresjon hos laks

Moen, Anne-Grethe Gamst, Stefansson, Sigurd, Jordal, Ann-Elise Olderbakk, Nilsen, Tom Ole, Kurokawa, Tadahide, Björnsson, Björn Thrandur & Rønnestad, Ivar 2009. Nutritional status of Atlantic salmon (*Salmo salar*) broodstock. Maternal effects on early expression of leptin, IGF-I, IGF-IR, and GHR. CYBIUM 32: 62-63 Suppl. S

Abstract: In fish and other vertebrates the IGF-I/GH axis plays an integral role in regulating differentiation, growth and reproduction. In mammals, leptin is a peptide hormone produced by adipocytes, which indicates the nutritional status. The effect of nutritional status on age at 1(st) maturity (puberty) is postulated to reflect the action of unknown metabolic signal(s) that are recognized by the brain and serve as indicators of metabolic state. In rats leptin receptors have been reported in the brain as well as in the ovary and testis; hence leptin may act as a metabolic signal to the reproductive system acting through the brain-pituitary-gonad axis and directly on the gonads. In this trial we wanted to look at the early expression of leptin, IGF-I and the receptors IGF-IR and GHR. Three females were sampled at spawning and their offspring followed until 2 weeks after first feeding (FF). The results showed leptin expression in Atlantic salmon larvae prior to the onset of exogenous feeding (FF). Leptin expression increased during the endogenous feeding stage, but after onset of exogenous feeding expression of leptin declined. To our knowledge, this is the first time leptin has been detected and followed up in early developmental stages of Atlantic salmon. An expression profile similar to leptin was also found for IGF-I, as well as for the receptors (IGF-IR and GHR).

Anne-Laure Groison: svømmehastighet av sperm hos torskefisk

Cosson, Jacky, Groison, Anne-Laure, Suquet, Marc & Fauvel, Christian 2009. Motility characteristics of spermatozoa in cod (*Gadus morhua*) and hake (*Merluccius merluccius*). CYBIUM 32: 176-177, Suppl. S

Abstract: As in many marine fish, motility is triggered by osmotic pressure (OP) in cod and hake spermatozoa and motility ranges several minutes with a high velocity (above 50 $\mu\text{m/s}$) period restricted to 100 s. A decrease in the flagellar beat frequency (BF) is partly responsible of this briefness. Detailed observations of the flagella during the motility period showed: 1) sea water provokes OP damages (blebs) which impair the correct wave propagation 2) waves become restricted to the proximal flagellum and tip becomes devoid of wave 3) the wave amplitude decreases. The combination of these factors drastically limits to the earliest period of motility the ability for spermatozoa to efficiently progress towards egg for fertilization.

Anne-Laure Groison: spermen til lysing

Groison, Anne-Laure, Suquet, Marc, Cosson, Jacky, Le Coz, Jean-Rene, Jolivet, Aurelie & Garren, Francois 2009. Biological characteristics of European hake (*Merluccius merluccius*) sperm. CYBIUM 32: 178 Suppl. S

Abstract: Very little is known on European hake's reproductive biology and especially on biological characteristics of its sperm despite a growing interest in its aquaculture potential. This study reports, for the first time some hake sperm characteristics. After activation, the swimming phase lasts 3 min (8 min when activated with 50% sea water (SW) but lower initial velocity). The initial flagellar beat frequency (BF), velocity and percentage of motile cells decreased after 100 s. After 2 days at 4 degrees C, the mean Adenylate Energy Charge (AEC) level was 0.71. Sperm stored at 4 degrees C still

showed motility after 9 days for 2 individuals. When cryopreserved, the motility recovery index of thawed spermatozoa ranged from 11.8% to 29.6%

Stephanie Kramer-Schadt: motorveier og dødelighet hos europeisk villkatt

Klar, Nina, Mathias Herrmann & Stephanie Kramer-Schadt (2009). Effects and mitigation of road impacts on individual movement behaviour of wildcats. *The Journal of Wildlife Management* 73 (5): 631-638. DOI: 10.2193/2007-574

ABSTRACT Roads can affect the persistence of wildlife populations, through posing mortality risks and acting as barriers. In many countries, transportation agencies attempt to counterbalance these negative impacts. Road mortality is a major threat for European wildcats (*Felis silvestris*); therefore, we tested the effectiveness of a newly developed wildcat-specific fence in preventing wildcat mortality along a new motorway. We hypothesized that such a fenced motorway would at the same time be a significant barrier to wildcats and may at worst result in 2 isolated populations. We used radiotracking data of 12 wildcats, resulting in 13,000 fixes, to investigate individual movement behavior during and after construction of a new motorway in southwestern Germany. The motorway was fenced with the wildcat-specific fence and included crossing structures, not especially constructed for wildlife. Additionally we collected road kills on stretches of the same motorway with various types of fencing. A rate of 0.4 wildcat kills/km/year on the motorway, which was traveled by 10,000 vehicles/day and fenced with a regular wildlife fence, was reduced by 83% on stretches with wildcat-specific fencing. Of the available crossing structures, wildcats preferred open-span viaducts. Road underpasses were used but hold a mortality risk themselves. As opposed to our expectations, the fenced motorway (fenced with wildcat fence) posed only a moderate barrier to wildcats. Individuals were hindered in their daily routine and some stopped crossing completely but others continued crossing regularly. The adaptation of spatial and temporal behavior to traffic volume and location of crossing structures has an energetic cost. Hence, we suggest that only a small number of major roads can be tolerated within a wildcat's home range. To meet the demands of the European Habitats Directive, we recommend installing the wildcat fence in wildcat core areas along motorways to reduce wildcat mortality. We suggest that fences should incorporate safe crossing structures every 1.5–2.5 km. Our findings in terms of fencing design and crossing structures can be used by transportation agencies for an effective reduction of road mortality and barrier effect for carnivores.

Stephanie Kramer-Schadt: bevaringsstrategier for skilpadder

Mazaris, Antonios D.; Kramer-Schadt, Stephanie; Tzanopoulos, Joseph; Johst, Karin; Matsinos, Giannis; Pantis, John D. 2009. Assessing the relative importance of conservation measures applied on sea turtles: comparison of measures focusing on nesting success and hatching recruitment success. *Amphibia-Reptilia* 30: 221-231. DOI: 10.1163/156853809788201180

Abstract: Conservation measures applied to sea turtle nesting sites have a beneficial effect on population trends and dynamics. Such measures aim to protect nesting females, increase nesting success (proportion of female emergences resulting in nests) and/or to improve hatching and hatchling emergence success. However, taking into account financial and time constraints it is important to identify those measures that have the most positive impact on the sea turtle population. The aim of this paper is to assess and compare the relative importance of the different factors that may influence the efficiency of conservation actions and to investigate which factors, those associated with decreased nesting success, or others leading to higher embryonic and hatchling mortality have a higher impact on overall hatchling recruitment. We developed a model that simulates the nesting activity of sea turtles. For model parameterization, we used data collected from nesting sites of the loggerhead sea turtles (*Caretta caretta*) in the Eastern Mediterranean. We conducted a series of simulations by simultaneously changing model input parameters. The results of the model illustrate that an increase in hatchling recruitment success (i.e., hatching and hatchling emergence success) would have a more positive effect on overall hatchling production than a similar increase in nesting success. Our analysis further suggests that changes in hatchling recruitment success even at a single site, could have an important impact on overall hatchling production of the rookery.

Ole Brix & Patricia Apablaza: kvantifisering og lokalisering av fett hos makrell

Brix Ole, Patricia Apablaza, Andrew Baker, Torfinn Taxt & Renate Grüner 2009. Chemical shift based MR imaging and gas chromatography for quantification and localization of fat in Atlantic mackerel. *Journal of Experimental Marine Biology and Ecology* 376: 68–75

The purpose of this study was to quantify the content and localization of fat in Atlantic mackerel (N=17) in order to assess fish quality and understand the bioenergetics of different life stages for this species. Measurement of total fat content using chemical shift based water-fat separation (MR) imaging was performed both when the fish was most starved (June) and well fed (September). The results were compared to triglyceride content measured by gas chromatography in the same fish. For starved fish a fat content of 40 ± 23 mg/g tissue was estimated by MRI compared to 39 ± 16 by GC analysis ($p=0.732$). For well fed fish, however, there were no agreements between the two techniques (447 ± 101 by MRI; 212 ± 89 by GC; $p=0.032$). This could be due to the presence of non-triglyceride lipids, and the two approaches different sensitivity to these lipids. The results demonstrate that chemical shift based MR imaging is a powerful method for visualizing the seasonal variations in fat distribution, allowing storage fat to be distinguished from volatile fat based on their differences in hydrolytic stages. These findings underpin the potential of this imaging technique to obtain quantitative, accurate and non-invasive measures of tissue fat content.

Albert K Imsland, Bjørn Roth, Sigurd O Stefansson: effekten av lysregime på vekst og kvalitet av kveite

Albert K Imsland, Bjørn Roth, Atle Foss, Erik Vikingstad, Sigurd O Stefansson, Skjalg Pedersen, Trond Sandvik & Birgitta Norberg 2009. Long-term effect of photoperiod manipulation on growth, maturation and flesh quality in Atlantic halibut. *Aquaculture Research* 40, 1260-1269

The aim of this study was to investigate the effect of continuous light at different stages during the production cycle of Atlantic halibut *Hippoglossus hippoglossus* L. on growth, age at first maturity, endocrine parameters and flesh quality. A group of juvenile halibut [mean (SD), initial weight 191.3 g (44.7)] was reared in indoor tanks under ambient temperature conditions for 38 months until harvesting (mean final weight, 4.6 kg). The entire photoperiod experiment was divided into four phases, where the fish in each phase were exposed to either natural photoperiod (621330N) or continuous light (L). Thus, the following five photoperiod combinations were tested: (a) Control group (NNNN), (b) Group 2A (NLNN), (c) Group 2B (NNLN), (d) Group 2C (NNNL) and (e) Production group (LNNN). Exposure to continuous light stimulated growth, and the final mean weights of Groups 2A and 2B were 23% and 11% higher than those of the Control group (NNNN). The final plasma 11-ketotestosterone levels were lower in Groups 2A (2.94 ngmL^{-1}) and 2B (2.46 ngmL^{-1}) compared with the Control (5.29 ngmL^{-1}), Group 2C (5.09 ngmL^{-1}) and the Production group (4.78 ngmL^{-1}) during spring 2007 (age 4 years), indicating higher age at first maturity in Groups 2A and 2B. Photoperiod regime had only a minor, and transient, effect on flesh-quality traits of the fish, whereas a significant seasonal effect was seen with a tendency towards increased gaping, lower pH, lower hardness and lower shear force in July compared with December and March.

Albert K Imsland: kryopreservering av sperm

Snorri Gunnarsson, Sindri Sigurdsson, Helgi Thorarensen & Albert K. Imsland 2009. Cryopreservation of sperm from spotted wolffish. *Aquacult Int* 17:385–389

Abstract The effects of different concentrations of cryoprotectant (dimethyl sulfoxide; DMSO), cooling rate and straw size on the post-thaw motility of frozen sperm from spotted wolffish, *Anarhichas minor*, were studied. There was no significant difference in the postthaw motility of sperm treated with three different concentrations of DMSO (10, 20 and 30%). Similarly, there was no significant difference in the post-thaw motility of spermatozoa when using different freezing rates (i.e. distance of straws from the surface of liquid N₂, 4.7, 5.5 and 7.1 °C min⁻¹) and the straw size (0.5 and 1.0 ml) did not affect survival. The cryopreservation of sperm can be used to make up for the frequent lack of sperm and/ or the unsynchronised timing of sperm production in spotted wolffish males and the ovulation time in females. The results show that sperm from spotted wolffish can be frozen to secure access to viable sperm, but further experiments are needed in order to reveal the effect of different parameters on the post-thawing mortality and define the optimum conditions for cryopreservation.

Magnar Aksland: program for å beregne fisketetthet fra ekko av enkeltfisk

Aksland, Magnar 2009. Estimating Fish Densities from Single Fish Echo Traces. *The Open Ocean Engineering Journal* 2: 17-32 doi: 10.2174/1874835X00902010017

Abstract: Estimating mean fish density per unit area has been done by counting single fish echo traces with a split beam echo sounder system in the open sea. A data program has been written that scans the

acoustic signals for echo peaks and classify these into echo traces. The program counts the number of echo traces from fish that cross the beam within given distances from the acoustic axis over a known sailing distance, and gives an absolute estimate of fish density. This is obtained by using the off acoustic axis angles of fish that generate resolved echoes to compute the athwartship distance from the vertical acoustic axis to the fish. The program is described and demonstrated on selected files of raw data recorded by the SIMRAD EK 60 split beam system. Estimated fish densities for these files are also obtained by the echo integration method, and the echo trace method gives estimates that agree well with these estimates under sufficiently “good conditions”.

Magnus Devold & Are Nylund: torsk kan smittes av NNV-virus fra kveite

Korsnes K, E Karlsbakk, M Devold, A H Nerland & A Nylund 2009. Tissue tropism of nervous necrosis virus (NNV) in Atlantic cod, *Gadus morhua* L., after intraperitoneal challenge with a virus isolate from diseased Atlantic halibut, *Hippoglossus hippoglossus* (L.). Journal of Fish Diseases 32: 655 - 665

Atlantic cod, *Gadus morhua*, averaging 100 g, were experimentally challenged by intraperitoneal injection of nervous necrosis virus (NNV) originating from Atlantic halibut. Cod tissues, including blood, gill, pectoral fin, barbel, ventricle, atrium, spleen, liver, lateral line (including muscle tissue), eye (retina) and brain, were sampled at day 25 and 130 and investigated by real-time RT-PCR for the presence of NNV. Relative quantifications at day 130 were calculated using the $2^{-\Delta\Delta C_t}$ method. Immunosuppression by injection of prednisolone-acetate was introduced for a 30-day period, and tissue sampled at day 180 and relative quantification estimated. No mortality or clinical signs of disease were observed in the challenged group. The challenge resulted in detection of NNV in blood, spleen, kidney, liver, heart atrium and heart ventricle at day 25, and by the end of the experiment NNV showed a clear increase in brain and retina, suggesting these to be the primary tissues for viral replication. There was no increase in the relative amount of NNV in blood, atrium, ventricle, spleen, liver and kidney. Corticosteroid implants resulted in a weak increase in virus RNA in spleen, kidney, liver and brain. These findings suggest that Atlantic cod is susceptible to infection with NNV from halibut. The observed tissue tropism patterns suggest an initial viraemic phase, followed by neurotrophism. Head-kidney is the best tissue identified for possible NNV detection by non-lethal biopsy, but detection was not possible in all injected fish.

Ronald Semyalo & Petter Larsson: effekt av giftig cyanobakterie på vekst og overlevelse hos tropisk vannloppe

Semyalo, Ronald, Rohrlack, Thomas & Larsson, Petter 2009. Growth and survival responses of a tropical *Daphnia* (*Daphnia lumholtzi*) to cell-bound microcystins. JOURNAL OF PLANKTON RESEARCH 31: 827-835

Abstract: Eutrophic tropical freshwater bodies often have cyanobacterial blooms that last throughout the year and some of these blooms may produce compounds that are toxic to *Daphnia*. Nevertheless, tropical species like *Daphnia lumholtzi* continue to remain abundant in the presence of such blooms. We conducted an experiment on the growth and survival of *D. lumholtzi*. We fed a toxic cyanobacteria *Microcystis aeruginosa* PCC 7806 to study the response of *D. lumholtzi* to cell-bound microcystins. *Daphnia lumholtzi* showed poor growth and survival in the presence of *M. aeruginosa* PCC 7806 both with and without microcystins. Survival and growth improved significantly when *M. aeruginosa* comprised < 50% of the food offered. However, regardless of the amounts of *M. aeruginosa* in the food, we did not find any significant difference in the growth or survival between the microcystin-containing and the microcystin-lacking treatments. We observed a significant difference in age at maturity between the microcystin-containing and the microcystin-lacking groups when the amount of *M. aeruginosa* in the food offered was < 50%. The toxic cyanobacteria *M. aeruginosa* PCC 7806 contains substances other than microcystins that reduce the growth and survival of the tropical *D. lumholtzi*. However, under low cyanobacteria concentrations and in the absence of microcystins, *D. lumholtzi* shows improved reproduction rates.

Louise Lindblom, Morten Skage & Stefan Ekman: beregning av spredningskapasitet hos lav

Lattman H, Lindblom L, Mattsson JE, Milberg P, Skage M & Ekman S 2009. Estimating the dispersal capacity of the rare lichen *Cliostomum corrugatum*. BIOLOGICAL CONSERVATION 142: 1870-1878

Abstract: The objective of this study was to estimate the dispersal rate in an organism assumed to be confined to tree stands with unbroken continuity. We used the lichen-forming ascomycete *Cliostomum corrugatum*, which is largely confined to old oak stands. Five populations, with pairwise distances ranging from 6.5 to 83 km, were sampled in Ostergotland, south-eastern Sweden. DNA sequence data from an intron in the small subunit nuclear ribosomal RNA gene was obtained from 85 samples. Nearly all molecular variance (99.6%) was found within populations and there were no signs of isolation-by-distance. The absolute number of immigrants per population per generation (estimated to 30 years), inferred by Bayesian MCMC, was found to be between 1 and 5. Altogether, evidence suggests abundant gene flow in the history of our sample. A simulation procedure demonstrated that we cannot know whether effective dispersal is ongoing or if it ceased at the time when oaks started to decrease dramatically around 400 years BP. However, a scenario where effective dispersal ceased already at the time when the postglacial reinvasion of oak had reached the region around 6000 years BP is unlikely. Vegetation history suggests that the habitat of *C. corrugatum* was patchily distributed in the landscape since the early Holocene. Combined with the high dispersal rate estimate, this suggests that the species has been successful at frequently crossing distances of at least several kilometres and possibly that it has primarily been limited by the availability of habitat rather than by dispersal.