BIO-info

Nyheter fra Institutt for biologi

BIO-info 30/2011, 23. sept 2011 BIO: sakslister og møtereferater BIO-info arkiv
submission deadline to bio.info@bio.uib.no is Wednesday 16:00

Fra toppen!

Forskningsdager

Denne helgen arrangeres Forskningsdagene her i Bergen, med en rekke arrangementer av ulike slag. Universitetet er en sentral aktør, sammen med andre forsknings- og formidlingsaktive insitusjoner i byen. Mange ulike aktiviteter og arrangement blir servert publikum gjennom et tettpakket program.

Selv om BIO under Forskningsdagene i fjor hadde en andel både i deltakere i Forsker Grand Prix og andre aktiviteter, er det denne gang litt trist å konstatere at vi blir passive tilskuere og tilhørere. Biologien blir riktignok godt ivaretatt av f.eks. Inger Elisabeth Måren (Uni Bjerknes) som snakker om skogforvaltning i Himalaya, og Lars Asplin (HI) om lakselus.

Vi har mange arenaer å formidle vår forskning på, og Forskningsdagene er en av de viktigere. Forhåpentligvis klarer vi å legge en slagplan for å bli mer synlige ved neste korsvei. I mellomtiden kan vi lytte til og lære av de som har turd å kaste seg utpå.

Hilsen Anders

Ukens bilde

BIO300 tests Bergen H_2O

Photographer: **Christian Irgens**

Atabak Mahjour Azad taking water samples from Frotveitvannet in Bondtveit..

In total, eight groups in BIO300 will do investigations on water quality for Bergen Municipality in various locations around Bergen. The course is profiled here.

(Other BIO courses that should be profiled? Contact Elinor)

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 bio.info@bio.uib.no

Innhold:

Siste nytt fra BIO

Fiskaren; Brannvernopplæring høst 2011; Olav Dragesund fyller 85

Fiskaren om forskning

Anders Goksøyr, instituttleder, Institutt for biologi og Dag Rune Olsen, dekan, Det matematisk-naturvitenskapelige fakultet konstaterer i et leserbrev i På Høyden at PFU har slått fast at FiskeribladetFiskaren (FF) ikke har brutt god presseskikk i sine oppslag om varslingssaken ved Institutt for biologi i vår. De skriver at de er overrasket over konklusjonen, men tar PFUs vurdering til etterretning. - Det forhindrer oss ikke fra å være uenig i FFs saksfremstilling. Varsleren trakk varselet i erkjennelse av at det ikke forelå saklig grunnlag. Innlegget til FFs ansvarlige redaktør Pål Korneliussen («Med skylapper», På Høyden), som også sto som leder i avisen 2. september, reflekterer ikke denne erkjennelsen, skriver Olsen og Goksøyr.

Brannvernopplæring høst 2011

Alle ansatte ved UiB skal ha gjennomført brannvernopplæring, teori og praksis hvert 5. år. Dette er lovfestet i brannloven og HMS-forskriftene. Kurset går over 2 timer, 1 time teori og 1 time praktisk slukking. Følgende datoer er det kurs på Studentsenteret kl. 9-11.00:

Torsdag 29.09.11, teori kl. 09.00-slukking kl. 10.00
Torsdag 27.10.11, teori kl. 09.00-slukking kl. 10.00
Torsdag 24.11.11, teori kl. 09.00-slukking kl. 10.00
Torsdag 15.12.11, teori kl. 09.00-slukking kl. 10.00

Sted: Seminarrom A på Studentsenteret alle dager.
Kostnad pr. deltaker: 250 kr, som dekkes av instituttet. NB! Fakturering skjer pr. påmeldte, ikke frammøtte. Hvis du er påmeldt og blir forhindret, vennligst gi beskjed til bio.ekspedisjon@bio.uib.no så raskt som mulig slik at vi kan melde deg av kurset.
Påmelding til: bio.ekspedisjon@bio.uib.no

Fire Safety Course

All UiB employees are required to take a Fire Safety Course every fifth year. The courses are 2-hours long and are held in Seminar Room A at the Student Centre (dates and times above). Sign up occurs via BIO please contact the BIO main office at bio.ekspedisjon@bio.uib.no with the date you would like to attend (if you have not taken a UiB course before). Please also contact the main office if for any reason you are unable to attend.

Prof. emeritus Olav Dragesund fylte 85 år

En av nestorene i norsk fiskeribiologisk forskning, Prof. Emeritus Olav Dragesund fylte 85 år 11. sept. 2011. Han ledet opprettelsen av Institutt for fiskeribiologi ved Universitetet i Bergen i 1972, og var professor ved universitetet frem til han gikk av i 1995. Dragesund har innehatt en rekke sentrale verv nasjonalt og internasjonalt innen forskning og undervisning i fagfeltet, og for denne innsatsen ble han tildelt St. Olavs orden, Ridder av 1. klasse. Utdrag av Dragesunds virke og visjoner kan leses om i en nylig utgitt artikkel i fagbladet *Naturen*. Vi ønsker jubilanten vel overstått, og håper at jubilanten får god anledning til å følge den spennende utviklingen i fiskeribiologien videre.

Hilsen kollegaer og venner ved Institutt for biologi

Utdanningsnytt

Masterblogg

Masterbloggen søker realfagsmasterstudenter

Er du snart ferdig med master, underveis eller akkurat startet? Masterbloggen (masterbloggen.no) søker deg og din oppgave.

Masterbloggen har som oppgave å formidle forskning på masternivå, og drives av Foreningen for Masterformidling (MaFo). Bloggen har ca 1500 treff om dagen, og retter seg mot journalister, politikere og resten av samfunnet.

Nå trenger Masterbloggen realfagsstudenter som deg til å vise og skrive om det du har gjort og funnet ut av på master.

Du vil få hjelp til å skrive om oppgaven din til et populærvitenskapelig blogginnlegg, og ikke minst gleden av å spre din kunnskap til folket!

Publisering av masteroppgaver krever at oppgavene er ferdige, men Masterbloggen søker også masterstudenter som ikke er ferdige, men kanskje nettopp startet. På Masterbloggen blogger også masterstudenter om livet på master. Og vi trenger realfagsstudenter.

Har du lyst til å få masteroppgaven din publisert og spredt til resten av verden på et forståelig språk som foreldrene dine også skjønner? Eller lurer du på om du har lyst til å blogge om masterlivet? Send en mail til: n.eckbo@gmail.com eller SMS til 97161019.

Siste nytt fra verden rundt oss

Forskningsdagene; Ny samarbeidsavtale med UNIS

Forskningsdagene

Universitetet i Bergen er vertskap for Forskningsdagene i Bergen, 23. september - 2. oktober 2011. I dag er det Forsker grand prix.

UiB styrker samarbeidet med Svalbard

Mandag 19. september underskrev Universitetet i Bergen og seks andre fastlandsuniversiteter en ny samarbeidsavtale med Universitetssenteret på Svalbard (UNIS). Kunnskapsminister Tora Aasland var til stede ved signeringen. Dette er en viktig samarbeidsavtale for BIO. Les mer.

Newsletters

Nordic Development Fund (NDF) CICERO Norecopas nyhetsbrev Brussels in Brief

Ledige stillinger for biologer

Mer info finner du her. Stillinger utlyst på BIO finner du nederst til høyre på instituttets nettside .

Forskning: utlysninger, nye satsinger og prosjekter

Mer info om utlysninger 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)

Do you have an exciting result from your research project?; Norge og Russland utvider samarbeidet; Fullbright har frist 1 oktober;

BTO&Sparenbanken Vest Idea Competition Fall 2011

We invite researchers and employees to participate in BTO & Sparenbanken Vest Idea Competition Fall 2011. 1 stipend of **NOK 100 000,- will be assigned the best research project with commercial potential**. Researchers/employees at the University of Bergen, Haukeland University Hospital, the Marine Institute, and the University College may participate.

BIO-info

Nyheter fra Institutt for biologi

BTO will visit Institute of Biology week 39 and hand out flyers, feel free to ask any questions.

- Deadline: 17th. October
- Application: Form + guidelines available here
- Announcement: Bergen Chamber Conference 17th November
- Idea competition hotline, call: 900 69645

More info here

New agreement on research cooperation with Russia

The Russian Foundation for Basic Research (RFBR) yesterday signed a Memorandum of Understanding with the Research Council of Norway. Through joint calls in areas of common interest, both parties hope to gain in quality and create new synergies.
Read more

Fullbright stipend til USA

U.S. Norway Fulbright Foundation minner om at søknadsfristen for Fulbright stipend til USA for skoleåret 2012-13 er 1 oktober. Stipender tilbys i alle fagfelt på Master, PhD, post-dok. og seniorforsker nivå, for studie- eller forskningsopphold på 3 til 12 måneder. Stipendbeløpene varierer fra NOK 60.000,- til NOK 150.000. Men viktigere enn pengene er prestisjen som følger med; et Fulbrightstipend er et betydelig aktivum for opptak ved USAs mest ettertraktede universiteter, og vil være en viktig døråpner for stipendiaten både under og etter oppholdet i USA. Jeg vil også understreke - overfor universiteter og høyskoler som naturlig nok spør "what's in it for us?" - at med en flink Fulbrightstipendiat i USA får moderinstitusjonen en enestående mulighet til å knytte kontakter og innlede verdifullt samarbeid med amerikanske partnere.

I St.meld. nr. 14 (2008-2009) ***Internasjonalisering av utdanning*** presiseres det: *Når denne meldingen likevel retter søkelyset mot de kunnskapspolitiske behovene og interessene, er det fordi veien mot en mer målrettet internasjonaliseringspolitikk på utdanningsområdet både begynner og slutter her, også med tanke på utdanningens nytte for norsk samfunns- og arbeidsliv*. Fulbright i Norge slutter seg til og drives ut fra dette prinsippet, og mottar da også vesentlig økonomisk støtte fra den norske stat. Og det bør også nevnes at Fulbrightstipendiater er meget sikre investeringsobjekter; en klausul forutsetter at Fulbrightstipendiaten tar med seg gevinsten hjem og forblir i Norge i minst to år etter studieoppholdet i USA!
Les mer

PhD: disputas og prøveforelesning

María Luisa Ávila Jimenez

María Luisa Ávila Jimenez: En lang reise for virvelløse dyr

María Luisa Ávila Jimenez disputerte for ph.d. graden torsdag 22. september på UNIS, Svalbard med avhandlingen: "High Arctic Invertebrate Biogeography: Patterns and Colonization Processes since the Last Glacial Maximum"
Veilederere: Stephen Coulson, UNIS, Torstein Solhøy,BIO
Bedømmelseskomite:, Individual Merit Scientist, ph.d Peter Convey British Antarctic Survey, Cambridge, United Kingdom, Senior Scientist, dr.scient. Tone Birkemoe
Nasjonalt folkehelseinstitutt, Oslo, Post Doktor, dr.scient. Gaute Velle

Bergen Museum, Universitetet i Bergen
Leder av disputasen: Professor Tor Gammelsrød, Universitetet i Bergen
http://www.uib.no/info/dr_grad/2011/jimenez_MariaLouisaAvila.html

Avsluttende mastergradseksamen

Siril Lillebø, Issarapon Jithlang, Siri Elisabeth Skoglund

Siri Lillebø: Competition of pathogens and probionts in cod yolk sac larvae measured in vivo, and the impact of increased temperature

Siril Lillebø holder mandag 26. september avsluttende presentasjon av sin masteroppgave i Fiskehelse.
Veileder: Øivind Berg, Heidrun Wergeland, Sensor: Craig Morton, HI, Bisitter: Sigurd Stefansson
Tid og Sted: Mandag 26. september, kl. 10:15, Seminarrom K2, 1. etasje, Biobyggene

Issarapon Jithlang: Zooplankton abundance and distribution around on a seamount in the Andaman Sea, Thailand, measured with acoustic methods and biological sampling

Issarapon Jithlang holder mandag 26. september avsluttende presentasjon av sin masteroppgave i fiskeribiologi og forvaltning.

Tittel på oppgaven: Zooplankton abundance and distribution around on a seamount in the Andaman Sea, Thailand, measured with acoustic methods and biological sampling

Veileder: Egil Ona. Sensor: Bjørn Erik Axelsen. Bisitter: Anders Fernø.

Tid og Sted: Måndag 26. september, kl. 10:15, K3, 1. etasje, Biobyggene
Alle interesserte er velkommen.

Siri Elisabeth Skoglund: Vegetasjonsendringer i myr og lynghei på Runde i perioden 1928-2010

Siri Elisabeth skoglund holder fredag 30. september avsluttende presentasjon av sin masteroppgave i biologi – biodiversitet, evolusjon og økologi.
Tittel på oppgaven: Vegetasjonsendringer i myr og lynghei på Runde i perioden 1928-2010
Veileder: John-Arvid Grytnes .Sensor: Gunnar Austrheim. Bisitter: Arne Johannessen.
Tid og sted: **Fredag 30. september** kl. 13:15, K1, 1. etasje, Biobyggene

Alle interesserte er velkommen.

En liste over avlagte mastereksamener ved BIO kan du finne her

Kurs, møter, seminar og arrangement

Mer info om kurs, møter, seminar og arrangement etc finner du her.

Åpent møte om ERA og JPI; Marin bioteknologi konferanse i Bergen

Åpent møte om ERA og JPI

Forskningsrådet inviterer til åpent møte om utviklingen av det europeiske forskningsområdet (ERA) og de felles europeiske programsatsingene (JPI) på Gardermoen onsdag 19. oktober.
Les mer

Marin bioteknologi, KONFERANSE I BERGEN 12 OKTOBER

Det arrangeres en konferanse for marin bioteknologi her i Bergen den 12. oktober på Vilvite senteret. Nesten alle forskningsmiljøene i Bergen er representert og Kunnskapsdepartementet og NFR kommer også!! Mer info

Nye artikler

***A full listing of BIO's ISI publications can be found on BIO's internal web pages. Click here for an alphabetic listing for 2010. Click here for a listing sorted by date in ISI (most recent at the top).

Töpper; Larsen; Imsland; Lohne; Pittman; Sverdrup; Meager; Fernö; Rodewald; Salvanes; Geffen; Birks; Zahl; Samuelsen; Rahman; Birkeland; Erga; Braithwaite; Larsson; Petersen; Hoistad; Grotmol; Christophersen; Magnesen

Seuthe L, **Töpper B**, Reigstad M, Thyrhaug R, Vaquer-Sunyer R; Microbial communities and processes in ice-covered Arctic waters of the northwestern Fram Strait (75 to 80°N) during the vernal pre-bloom phase

ABSTRACT: Marine microbial communities have been little studied in Arctic waters, especially during the winter–spring transition before the development of extensive phytoplankton blooms. This study investigated microbial plankton in the ice-covered polar surface waters of the northwestern Fram Strait (75 to 80°N) at the onset of the 24 h light period in spring (April to May). The system we encountered was characterised by low concentrations of chlorophyll a (<0.2 µg l−1) and a low abundance of both bacteria (1.4 to 2.5 × 108 cells l−1) and protists (1 to 1.7 × 105 cells l−1). Bacterial production was very low (≤0.63 µg C l−1 d−1), despite the dominance of nucleic-acid-rich bacteria (58 ± 6% of total bacterial abundance). Small (2 to 5 µm) phototrophs dominated the eukaryotic assemblage in the surface and most probably had profound effects on the composition and metabolic balance of the microbial community as a whole. Most stations appeared to have been net-autotrophic, and calculations of phagotrophy indicated a balanced carbon budget for the microbial community. Mixotrophy was seen in a large part of the ciliate assemblage and may have contributed to the productivity and stability of the pre-bloom system that we encountered.

Sondre V. Larsen, Albert K. Imsland, Petter Lohne, Karin Pittman, Atle Foss. Stepwise temperature regulation and its effect on growth, feeding and muscle growth patterns of juvenile Atlantic halibut (Hippoglossus hippoglossus L.) Aquacult Int (2011) 19:825–837 DOI 10.1007/s10499-010-9402-z

Abstract: To investigate the possible direct effect of a stepwise reduction in temperature with increasing size on growth, feeding parameters and muscle growth patterns of juvenile Atlantic halibut (Hippoglossus hippoglossus L.), 804 juvenile halibut (mean initial weight individuals: 14.2 g ± 0.2 SEM) were reared at constant 9, 12 and 15_C or shifted (T-step, i.e. 15–12_C after 36 days) for 99 days. Despite indications of lower optimal temperature for growth with increasing size, equal end weights were obtained between the constant 12_C, constant 15_C and T-step groups. Best overall growth was observed for the group kept at constant 12_C. The limited effect of the T-step group may relate to the size at movement (too big), the temperatures investigated (close to optimum) and the time and size interval investigated (too narrow). Differences in growth were reflected more by alterations in feed intake (CT and F%) than by differences in feed conversion efficiencies (FCE). Differences were found with respect to the density of muscle cells, whereas no differences were found between the average muscle cell diameters. The mean diameter of muscle cells tended to increase only slightly with increasing fish weight, while the mean density of muscle cells tended to decrease. Using an optimum temperature of 12_C, an indication of a possible increased rate of hyperplasia in relation to higher growth was seen.

Sverdrup, G.K, Meager, J.J., Fernö, A., Skjæraasen, J.E., Rodewald, P., Salvanes, A.G.V. and Järvi, T. 2011. Territorial and agonistic interactions between farmed and wild cod (*Gadus morhua*). Aquaculture Research 42, 1539-1548.

Abstract: Studies of contest competition between wild and farmed fish have mostly focused on fish with strongly territorial behaviour. Little is known about species with more plastic social behaviour, such as Atlantic cod (*Gadus morhua* L.), a species that can either aggressively defend territories or shoal. There is also concern that cod that escape from farms will compete with wild populations. We examined dyadic contest competition between wild and farmed juvenile cod using an intruder-resident experimental set-up in the laboratory. No prior residency advantage was observed, but the differences between farmed and wild cod were clear. Farmed cod were more submissive than wild cod and fled earlier during contests, which suggests that wild fish often out-compete farmed intruders. Both fish types initiated aggression earlier against fish of the same background. A multivariate analysis of 11 different behavioural traits indicated that a group of 59% of farmed fish were behaviourally very similar to the 55% most submissive wild fish. These results suggest that wild juvenile cod may be quite robust towards competition for food and shelter from juvenile farmed cod, but further research is needed to verify this pattern.

Geffen AJ, Nash RDM, Dickey-Collas M (2011) Characterization of herring populations west of the British Isles: an investigation of mixing based on otolith microchemistry. Ices Journal of Marine Science 68:1447-1458

Abstract: Herring along the west coast of the British Isles are managed and assessed as a series of discrete stocks. The relationship between the spawning components, mixed (feeding) aggregations, and juveniles in nursery areas for these stocks was modelled by discriminant analysis and integrated stock mixture analysis based on otolith elemental composition data. The relative elemental concentrations produced otolith signals corresponding to three main groupings of nursery-ground fish representing the Irish Sea, Scottish sea lochs, and the Minch. There were significant differences among spawning groups in the otolith concentrations of Li, Na, Mg, Mn, Sr, and Ba. Inclusion of length-at-age information improved the classification rates, ranging overall from 35 to 100%. Spawning groups consist of individuals from a number of different nursery areas and originate from several different management areas. Each of the mixed aggregations contained at least three spawning components. Results suggest that most west coast herring belong to interconnected populations subject to mixing and that populations are not discrete, so the current practice of assessments based on individual spawning components will probably not provide sufficiently robust information for management advice. The complexity of herring populations needs to be considered for both fisheries and coastal-zone management.

Herzschuh U, Ni J, **Birks HJB**, Bohner J (2011) Driving forces of mid-Holocene vegetation shifts on the upper Tibetan Plateau, with emphasis on changes in atmospheric CO(2) concentrations. Quaternary Science Reviews 30:1907-1917

Abstract: Numerous pollen records across the upper Tibetan Plateau indicate that in the early part of the mid-Holocene, Kobresia-rich high-alpine meadows invaded areas formerly dominated by alpine steppe vegetation rich in Artemisia. We examine climate, land-use, and CO(2) concentration changes as potential drivers for this marked vegetation change. The climatic implications of these vegetational shifts are explored by applying a newly developed pollen-based moisture-balance transfer-function to fossil pollen spectra from Koucha Lake on the north-eastern Tibetan Plateau (34.0 degrees N; 97.2 degrees E; 4540 m a.s.l.) and Xuguo Lake on the central Tibetan Plateau (31.97 degrees N; 90.3 degrees E; 4595 m a.s.l.), both located in the meadow-steppe transition zone. Reconstructed moisture-balances were markedly reduced (by similar to 150-180 mm) during the early mid-Holocene compared to the late-Holocene. These findings contradict most other records from the Indian monsoonal realm and also most non-pollen records from the Tibetan Plateau that indicate a rather wet early- and mid-Holocene. The extent and timing of anthropogenic land-use involving grazing by large herbivores on the upper Tibetan Plateau and its possible impacts on high-alpine vegetation are still mostly unknown due to the lack of relevant archaeological evidence. Arguments against a mainly anthropogenic origin of Kobresia high-alpine meadows are the discovery of the widespread expansion of obviously 'natural' Kobresia meadows on the south-eastern Tibetan Plateau during the Lateglacial period indicating the natural origin of this vegetation type and the lack of any concurrence between modern human-driven vegetation shifts and the mid-Holocene compositional changes. Vegetation types are known to respond to atmospheric CO(2) concentration changes, at least on glacial-interglacial scales. This assumption is confirmed by our sensitivity study where we model Tibetan vegetation at different CO(2) concentrations of 375 (present-day), 260 (early Holocene), and 650 ppm

(future scenario) using the BIOME4 global vegetation model. Previous experimental studies confirm that vegetation growing on dry and high sites is particularly sensitive to CO(2) changes. Here we propose that the replacement of drought-resistant alpine steppes (that are well adapted to low CO(2) concentrations) by mesic Kobresia meadows can, at least, be partly interpreted as a response to the increase of CO(2) concentration since 7000 years ago due to fertilization and water-saving effects. Our hypothesis is corroborated by former CO(2) fertilization experiments performed on various dry grasslands and by the strong recent expansion of high-alpine meadows documented by remote sensing studies in response to recent CO(2) increases. (C)

Zahl IH, Kiessling A, **Samuelsen OB**, Hansen MK (2011) Anaesthesia of Atlantic halibut (Hippoglossus hippoglossus) - Effect of pre-anaesthetic sedation, and importance of body weight and water temperature. Aquaculture Research 42:1235-1245

Abstract: The efficacy of the anaesthetic agents benzocaine, metacaine (MS-222), metomidate, 2-phenoxyethanol, quinaldine and isoeugenol was studied in Atlantic halibut (Hippoglossus hippoglossus). Fish with an average body weight of 33 g were anaesthetized at 8 degrees C and fish with an average body weight of 1243 g were anaesthetized at 8 and 15 degrees C. Agents were tested individually and as combination anaesthesia comprising pre-anaesthetic sedation, followed by anaesthesia. Induction and recovery times varied in relation to the body weight and water temperature. Large fish had longer induction times and shorter recovery times, and displayed reduced responsiveness to handling compared with small fish. A higher temperature resulted in shorter induction times, longer recovery times and increased responsiveness to handling. Lower dosages were used for all agents in combination anaesthesia. In small fish, this had no effect on the induction times but resulted in shorter recovery times and reduced responsiveness to handling. In large fish, combination anaesthesia resulted in shorter induction times whereas no uniform trend in recovery times and no differences in responsiveness to handling were observed. Neither individual agents nor combinations blocked all reflex reactions to external stimulation in all fish of any treatment group. MS-222 and benzocaine, used separately or in combination anaesthesia, were the most effective agents in reducing reflex reactions.

Rahman MZ, Azmuda N, Hossain MJ, Sultana M, Khan SI, **Birkeland NK** (2011) Recovery and Characterization of Environmental Variants of Shigella flexneri from Surface Water in Bangladesh. Current Microbiology 63:372-376

Abstract: Little is known about the distribution, survival, and transmission of Shigella in environmental surface waters. To gain more insight into the environmental biology of Shigella we isolated five bacterial strains serotyped as Shigella flexneri 2b from a freshwater lake in Bangladesh using a modified nutrient broth supplemented with nucleic acid bases. The biochemical properties of the isolates, including inability to ferment lactose and a negative lysine decarboxylase test, indicated common physiological characteristics with Shigella, but differed significantly from that of standard clinical strains. The isolates possessed the ipaH virulence gene and a megaplasmid, but lacked other Shigella-related virulence marker genes. Genetic fingerprinting and sequence analysis of housekeeping genes confirmed the strains as S. flexneri isolates. An apparent clonal origin of strains recovered with a one-year interval indicates a strong environmental selection pressure on Shigella for persistence in the freshwater environment. The lack of a complete set of virulence genes as well as uncommon biochemical properties suggest that these strains might represent a group of non-invasive and atypical environmental Shigella variants, with the potential for further elucidation of the survival mechanism, diversity, and emergence of virulent Shigella in tropical freshwater environments.

Svensen O, Stamnes JJ, Kildemo M, Aas LMS, **Erga SR**, Frette O (2011) Mueller matrix measurements of algae with different shape and size distributions. Applied Optics 50:5149-5157

Abstract: The full Mueller matrix was measured to obtain the polarization state of the scattered light for a variety of algae with different shapes, wall compositions, sizes, and refractive indices. The experimental setup was a multiple laser Mueller matrix ellipsometer, by which measurements were performed for scattering angles from 16 degrees to 160 degrees sampled at every second degree for wavelengths of 473 nm and 532 nm. Previously, the polarization of light scattered from microalgae

was investigated only for a few species, and the Mueller matrix was found to have little variation between the species. In our work a total of 11 algal species were investigated, representing diatoms, dinoflagellates, coccolithophorids, green algae, and a cryptophyte. The selection of species was made to obtain high variability in shape, size, cell wall, and refractive index. As in previous investigations, very small variations were found between species for most of the Mueller matrix elements, but noticeable variations were found for M(11), (M(12) + M(21))/2 and (M(33) + M(44))/2

Eriksen, M. S., Faerevik, G., Kittilsen, S,.McCormick, M. I., Damsgard, B., **Braithwaite, V. A**., Braastad, B. O., Bakken, M.

Abstract: Mature female Atlantic salmon Salmo salar were given intraperitoneal cortisol implants 1 week prior to stripping to examine the influence of simulated maternal stress on offspring boldness and social dominance. Behavioural tests originally designed to investigate stress responsiveness and coping styles in salmonids (i.e. feeding in isolation, dominance tests and acute confinement) were carried out on the offspring 1.5 years after hatching. In the feeding test, there were no differences between the two treatment groups in total feeding score or number of pellets eaten, but offspring from the cortisol-implanted females made more unsuccessful feeding attempts than offspring from control females. In dominance tests, there was no difference between controls and cortisol-treated fish regarding propensity to become socially dominant. A higher proportion of individuals with bite marks, however, was observed in the cortisol group when compared to controls. Cortisol-treated offspring that gained dominant rank in the dominance tests performed more aggressive acts after stable dominance-subordinate relationships were established compared to control winners. During acute confinement stress, offspring from cortisol-implanted females showed a reduction in the proportion of time they were moving compared to the controls. These results indicate that the maternal endocrine state at spawning affects several aspects of progeny behaviour potentially related to subsequent success and survival in farmed S. salar.

Larsson P, Lampert W (2011) Experimental evidence of a low-oxygen refuge for large zooplankton. Limnology and Oceanography 56:1682-1688

Abstract: We tested the hypothesis that hypoxic zones in the metalimnion and hypolimnion of lakes can provide a refuge against fish predation for large zooplankton. Experiments were run in a large indoor mesocosm system (Plon Plankton Towers). We compared mortality rates of Daphnia pulicaria due to free-ranging fish in mesocosms with either oxic or hypoxic hypolimnia. In the presence of fish Daphnia moved down below the thermocline. Under hypoxic conditions their distribution peaked in the upper hypolimnion at a concentration of approximately 1 mg O(2) L(-1). In oxygen-saturated hypolimnia Daphnia were distributed evenly. The mortality rate of Daphnia in the hypoxic treatment was only one third of that in the oxic treatment. The hypoxic habitat provided a refuge, as Daphnia tolerated lower oxygen concentrations than did fish. However, there may be demographic costs associated with living in low-oxygen conditions. Hence, the importance of a hypoxic refuge under natural conditions will most likely depend on the trade-off between predation risk and cost of living in hypoxic waters.

Meier, S., Morton, H. C., Andersson, E., **Geffen, A. J**. Taranger, G. L., Larsen, M. **Petersen, M.,** Djurhuus, R.**,** Klungsoyr, J. Svardal, A. Low-dose exposure to alkylphenols adversely affects the sexual development of Atlantic cod (Gadus morhua): Acceleration of the onset of puberty and delayed seasonal gonad development in mature female cod. Aquatic Toxicology 105:136-150

Abstract: Produced water (PW), a by-product of the oil-production process, contains large amount of alkylphenols (APs) and other harmful oil compounds. In the last 20 years, there have been increasing concerns regarding the environmental impact of large increases in the amounts of PW released into the North Sea. We have previously shown that low levels of APs can induce disruption of the endocrine and reproductive systems of Atlantic cod (Gadus morhua). The aims of this follow-up study were to: (i) identify the lowest observable effect concentration of APs; (ii) study the effects of exposure to real PW, obtained from a North Sea oil-production platform; and (iii) study the biological mechanism of endocrine disruption in female cod. Fish were fed with feed paste containing several concentrations of four different APs (4-tert-butylphenol, 4-n-pentylphenol, 4-n-hexylphenol and 4-n-heptylphenol) or real PW for 20 weeks throughout the normal period of vitellogenesis in Atlantic cod from October to January. Male and female cod, exposed to AP and PW, were compared to unexposed fish and to fish

fed paste containing 17 beta-oestradiol (E(2)). Approximately 60% of the females and 96% of the males in the unexposed groups were mature at the end of the experiment. Our results show that exposure to APs and E(2) have different effects depending on the developmental stage of the fish. We observed that juvenile females are advanced into puberty and maturation, while gonad development was delayed in both maturing females and males. The AP-exposed groups contained increased numbers of mature females, and significant differences between the untreated group and the AP-treated groups were seen down to a dose of 4 mu g AP/kg body weight. In the high-dose AP and the E(2) exposed groups, all females matured and no juveniles were seen. These results suggest that AP-exposure can affect the timing of the onset of puberty in fish even at extremely low concentrations. Importantly, similar effects were not seen in the fish that were exposed to real PW.

Hoistad F, Gjerde I (2011) Lobaria pulmonaria can produce mature ascospores at an age of less than 15 years. Lichenologist 43:495-497

Long, J. H. Koob, T., Schaefer, J., Summers, A., Bantilan, K., **Grotmol, S**., Porter, M. Inspired by Sharks: A Biomimetic Skeleton for the Flapping, Propulsive Tail of an Aquatic Robot. Marine Technology Society Journal 45:119-129

Abstract: The vertebral column is the primary stiffening element of the body of fish. This serially jointed axial support system offers mechanical control of body bending through kinematic constraint and viscoelastic behavior. Because of the functional importance of the vertebral column in the body undulations that power swimming, we targeted the vertebral column of cartilaginous fishes-sharks, skates, and rays-for biomimetic replication. We examined the anatomy and mechanical properties of shark vertebral columns. Based on the vertebral anatomy, we built two classes of biomimetic vertebral column (BVC): (1) one in which the shape of the vertebrae varied and all else was held constant and (2) one in which the axial length of the invertebral joint varied and all else was held constant. Viscoelastic properties of the BVCs were compared to those of sharks at physiological bending frequencies. The BVCs with variable joint lengths were then used to build a propulsive tail, consisting of the BVC, a vertical septum, and a rigid caudal fin. The tail, in turn, was used as the propeller in a surface-swimming robot that was itself modeled after a biological system. As the BVC becomes stiffer, swimming speed of the robot increases, all else being equal. In addition, stiffer BVCs give the robot a longer stride length, the distance traveled in one cycle of the flapping tail.

Andersen S, **Christophersen G, Magnesen T** (2011) Spat production of the great scallop (Pecten maximus): a roller coaster. Canadian Journal of Zoology-Revue Canadienne De Zoologie 89:579-598

Abstract: The great scallop (Pecten maximus (L., 1758)) has been of interest for aquaculture in Europe since the early 1970s. Since then, a large part of the research and development has focussed on reproduction and early life stages to support hatchery production of spat. Results from the last two decades show that production stability is lacking and have followed a roller-coaster trend. Production strategy varies, but in general, broodstock are collected from the wild and conditioned to gonad maturity sufficient for successful spawning. Natural reproduction cycle varies between populations, which is a challenge to hatcheries aiming at stable year-round production. Larval survival was for many years dependent on addition of antibiotics until a flow-through culture was established, and seasonal variation may be caused by variation in gamete or seawater quality. Settlement, metamorphosis, and spat growth depend on healthy larvae and appropriate culture environment. For efficient spat production, the use of land-based nurseries is promising. Results show that mean yield of spat from eggs is less than 1%. The review concludes that the gap between results obtained in hatchery production and in experiments shows a great potential for production increase.