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Siste nytt

Tore Høisæter 25 år (++) ved UiB

[Tore Høisæter](#)



tok hovedfag (cand. real.) høsten 1975 ved Institutt for marinbiologi. Det var for hans del ikke starten på en vitenskapelig karriere, for han hadde allerede vært vitenskapelig assistent i marinbiologi 1968 – 1974. Før det hadde han vikariert i vitenskapelige stillinger samme sted 1965-67. Så det er stort sett på grunn av variable tilsetningsforhold at Tore nå får utmerkelse for 25 års tjeneste i stedet for 40-års markering! Fra januar 1977 ble Tore ansatt som forsker i Lindåspollprosjektet (finansiert av daværende NAVF: Norges almenvitenskapelige forskningsråd). Han ble ansatt som amanuensis i 1979 og fikk opprykk til førsteamanuensis mars 1989.

Solveig Aadland 25 år ved UiB

Renholder Solveig Aadland ved Marinbiologisk stasjon har opptjent 25 års sammenhengende tjeneste i høst. Fra høsten 1996 ble arbeidsgiveransvaret for de to renholderne Solveig Aadland og Ågot Gjertsen overført fra Drifts- og innkjøpsavd. til IFM.



Opplæringsmidler for tekniske og administrative

Nå er det klart for 1. runde for søknad om opplæringsmidler for det tekniske og administrative personalet ved fakultetet. Informasjon vedrørende søknad om opplæringsmidler er lagt ut på fakultetets hjemmeside <http://www.uib.no/mnfa/opplæringsmidler>

Overføring av ferie til 2005

Hei alle ansatte

Vi minner om at de av dere som er så heldige å ha feriedager igjen i år og skal overføre disse til 2005, må gjøre dette nå. Skjema finner dere på <http://www.uib.no/persok/skjema/fraver/overfferie.rtf> eller i papirversjon på ekspedisjonskontorene i Realfagbygget, Jahnebakken og HIB. Fyll ut og send til meg snarest.

Vennlig hilsen Eva Beate Hårklau, Personalkonsulent, tlf. 82465

Forskningsrådet drømmer om 1100 nye millioner i 2006

Forskningsrådet foreslår en vekst i forskningsbevilgningene i 2006 på 1100 mill. kroner. Rådet vil prioritere videre satsing på kvalitet, særlig innenfor fri grunnforskning, og stimulere til mer forskning i næringslivet. Vekstforslaget vil også forsterke forskningsinnsatsen som er rettet mot de nasjonalt viktige områdene energi, petroleum, materialer og havbruk.

Forskningsrådets forslag til Store Satsinger for 2006 er nå sendt til alle departementer og sektorer som Forskningsrådet mener bør finansiere forskning og utvikling. [Les mer her](#).

Forslag om ny lov om biologisk mangfold

Biomangfold-utvalget foreslår [en ny lov](#) om bevaring av natur, landskap og biologisk mangfold. Loven dekker både bærekraftig bruk og vern av naturen. Den skal erstatte naturvernloven, men favner atskillig videre enn den ved at den også inneholder generelle mål og prinsipper for bærekraftig bruk, regler om bærekraftig bruk og vern av arter, regler om introduksjon av fremmede arter, nye regler om naturtyper som er særlig viktig for det biologiske mangfold (såkalte utvalgte naturtyper), regler om tilgang til genetisk materiale og regler om sanksjoner, bl.a. om erstatning ved miljøskade. Loven skal bidra til å nå det norske nasjonale målet om å stanse tap av biologisk mangfold innen 2010, og til å bevare mangfoldet på lang sikt.

– Sats på unge forskarar

(Fra På Høyden) **Å satse på unge forskarar er det viktigaste universitetet kan gjere i dag, meiner UiB-styremedlem og generalsekretær i Kungliga Vetenskapsakademien i Sverige, Gunnar Öquist.**

– Mange kjem til å pensjonere seg om kort tid, og vi må passe på at det kjem til nye forskarar som kan ta over, seier Öquist til På Høyden.

Det komande generasjonsskiftet er ikkje den einaste grunnen til å satse på unge krefter, ifølgje den svenske professoren i plantefysiologi fra Universitetet i Umeå, som også er medlem av den svenske Nobelkomitéen.

Öquist meiner dei unge er sjølve nøkkelen til å bygge opp forskingsmiljø på høgt nivå, som kan fornye vitenskapen og henge med i forskingsfronten. Men for at det skal kunne skje må det leggast meir ressursar i forskarutdanninga etter doktorgrad, samstundes som kvalitetskrava må leggjast på høgt internasjonalt nivå. Og det er ikkje nok å rekruttere lokalt.



Går til rettsak mot Clemet

(Fra På Høyden) UFD (Utdannings- og forskningsdepartementet) vil avvikle sentrale retningslinjer for fordeling av arbeidstid ved universiteter og høyskoler. (Dette handler blant annet om hvorvidt hver enkelt vitenskapelig ansatt skal ha like stor rett til å drive med forskning i arbeidstiden, eller om oranisasjonen har lov til å fordele slike gode ujevnt blant personalet.) Nå varsler [Forskerforbundet](#) rettslige skritt mot departementet.

UFD har til tross for protester fra arbeidstakerorganisasjonene i sektoren bestemt seg for å holde på sitt. Dermed avvikles de sentrale retningslinjene om fordeling av arbeidstid ved universitet og høyskoler.

Forskerforbundets leder Kolbjørn Hagen uttrykker overraskelse og skuffelse over departementets beslutning, og vil nå gå til rettslige skritt for å få omgjort beslutningen, melder organisasjonen. I retningslinjene ligger det blant annet en hovedregel om at forskningsdelen for den enkelte vitenskapelig ansatte ved universiteter og høyskoler skal være like stor som undervisningsdelen. Retningslinjene ble forhandlet frem i 1992 i forbindelsen med Særavtale om lønns- og arbeidsvilkår undervisnings- og forskerstillinger ved universitetene og høyskolene.



Avsluttende hovedfagseksamen

Catherine Adam Mwakosya: Tanzanian prawn fishery resources

Catherine Adam Mwakosya from Tanzania will give a public presentation of her MPhil thesis in Fisheries Biology and Management on Tuesday 14 December.

Title of the thesis: Assessment of Tanzanian prawn fishery resources

Supervisors: Øyvind Ulltang, Jeppe Kolding

External examiner: Padmini Dalpadado (HI)

Representative from another research group: Tore Høisæter

When & where: Tuesday 14 December, 2004 at 1200 in the Seminar room 328C1, 3 floor, BIO (HIB)

Esperanca Marie Pires dos Santos: Angolan shrimp fishery bycatch

Esperanca Marie Pires dos Santos from Angola will give a public presentation of her MPhil thesis in Fisheries Biology and Management on Monday 13 December.

Title of the thesis: Bycatch in the deep water shrimp fishery off Angola

Supervisor: Jeppe Kolding

External examiner: Terje Jørgensen (HI)

Representative from another research group: Arild Folkvord

When & where: Monday 13 December, 2004 at 1200 in the Seminar room 328C1, 3 floor, BIO (HIB)

Trond Wergeland: vekst hos kveite og piggvar

Trond Wergeland avlegger hovedfagseksamen etter gammel ordning i generell akvakultur torsdag 16. desember 2004 med oppgaven: "Vekst hos feilpigmentert og pigmentert kveite (*Hippoglossus hippoglossus* L.) og piggvar (*Scophthalmus maximus* Rafinesque). Veiledere har vært Sigurd Stefansson og Albert Imsland

Johannes Nduvudi Kathena: CPU in Namibian hake fishery

Johannes Nduvudi Kathena from Namibia will give a public presentation of his MPhil thesis in Fisheries Biology and Management on Thursday 16 December.

Title of the thesis: A species separated study of catch per unit of effort in the Namibian hake fishery

Supervisors: Øyvind Ulltang, Espen Johnsen

External examiner: Asgeir Aglen (HI)

Representative from another research group: Arne Johannessen

When & where: Thursday 16 December at 1200 in the Seminar room 328C1, 3 floor, BIO (HIB)

Diep Thi Ngoc Mach: fatty acids in cod muscle

Diep Thi Ngoc Mach from Vietnam will give a public presentation of her MPhil thesis on Friday 17 December.

Title of the thesis: The fatty acid contents in the muscle and liver of wild, fed-wild and farmed cod (*Gadus morhua*), and its development of rancidity during storage in ice or in slurry

Supervisor: Ragnar Nortvedt

External examiner: Rolf Eirik Olsen (HI)

Member of the exam committee : Øyvind Lie (NIFES)

When & where: Friday 17 December, 2004 at 1030 at NIFES, "Sildetønnen"

Gjesteforskere

New Marie Curie Fellows in the EECRG

Three new doctoral students from Germany and the Italy has joined the EECRG group at FBI as Marie Curie Fellows. They are financed by the CULTLAND MCTS at the EECRG research group. In addition, a PhD student from Uganda under the NUFU program has recently started his second research period at FBI. All fellows are spending between three to six months at the University of Bergen undertaking research at the Department of Biology.

The CULTLAND MCTS training site - led by **Knut Krzywinski** - focus on the interaction between man and environment. **Leonid Rasran** is concerned with Cultural landscape restoration in Wetlands in Northern Germany, **Roberto Becattini** palaeoecological data from lake sediments in his reconstruction of cultural landscape elements in Toscani wetland. And **Kati Vogt** is studying transport of seeds in culturally influenced wetland habitats.

From left : **Knut Krzywinski** CULTLAND coordinator, **Leonid Rasran** (Germany), **Roberto Becattini** (Italy), **Raphael Oryem** (Uganda) and **Kati Vogt** (Germany), on a cold and windy day outside Realfagbygget.



From left : **Knut Krzywinski**

CULTLAND coordinator, **Leonid Rasran** (Germany), **Roberto Becattini** (Italy), **Raphael Oryem** (Uganda) and **Kati Vogt** (Germany), on a cold and windy day outside Realfagbygget.

Raphael Oryem studying recent landscape change related to recent land use changes in North East Uganda shares the research interests in cultural landscape changes common among the MCTS fellows.

Seminar

Course in how to write a competitive proposal for FP6

Invitasjon til kurs i How to Write a Competitive Proposal for Framework 6

ved Sean McCarthy, Hyperion Ltd, Cork, Ireland

12 januar kl 09.00-16.00 ved UiB

mer info på: <http://bio.uib.no/lokal/forskning/forskningsmidler.php>

Nye finansieringsmuligheter

OECD utlyser forskerstipend

Organisasjonen for økonomisk samarbeid og utvikling kunngjør en ekstraordinær søknadsfrist **15.**

januar for [forskerstipend](#) innen "Biological resource management for sustainable agricultural

systems". **Merk at "agriculture" etter deres definisjon også omfatter fiskeri!**

Sjekk opp BIOs interne webside

Clelia legger stadig ut ny info om forskningsfinansiering. Sjekk derfor stadig vekk på

<http://bio.uib.no/lokal/forskning/forskningsmidler.php>

BIO i medier

Dekanus fortsetter kampen for naturvitenskapen

I siste nummer av

Forskningspolitikk

fortsetter **Dag Aksnes** å

påvise at bevilgningene

til naturvitenskapelig

forskning i Norge er på

fullt fart mot ingen ting.

"En gjennomgang av

sentrale

forskningspolitiske

dokumenter de siste

årene har resultert i

følgende to

foruroligende

observasjoner: 1)

Manglende samsvar

mellom politiske

begrunnelser for

forskning og den

faktiske ressursbruken.

2) Svak forståelse for sammenhengen mellom kunnskapsbasert innovasjonsevne og omfanget av grunnleggende frontforskningsmiljøer i naturvitenskap og teknologi.

De siste forskningsmeldingene har fremmet satsingsområder innenfor naturvitenskapelige og teknologiske områder som marin forskning, IKT, olje og gass, skjæringspunktet mellom energi og miljø osv. Det er derfor et paradoks at norsk naturvitenskapelig forskning synes å ha blitt nedprioritert i samme periode. Fra 1987 til 2001 har andelen naturvitenskapelig forskning innenfor universitets- og høyskolesektoren gått ned fra 32% til 21% (figur 1). Som eneste fagområde har naturvitenskapelig forskning hatt en realnedgang i driftsutgifter til FoU.

Hvordan kan vi så snu denne utviklingen? Det handler om langt mer enn penger. Økt fokus på forskning for økonomisk vekst og på det såkalte «OECD-målet», er viktig, men ikke tilstrekkelig for å komme forskningsmessig på offensiven. "

Hele artikkelen kan leses [her](#).



DEBATT

Forfeilet forskningspolitikk

Forskningspolitikken er i ferd med å lede bort fra overordnede mål fremmet av flere regjeringer. Den negative utviklingen for naturvitenskapelig og teknologisk forskning illustrerer dette. Mer penger er ikke nok for å snu denne utviklingen, hevder forfatterne, som påviser flere systemfeil i norsk forskningspolitikk.

KNUT FÆGRI

DAG L. AKSNES

RANDI ELISABETH TAXT



Nye artikler

Holmstad m.fl.: Parasitter dokumenterer migrasjon hos rype

Holmstad, PR, Ø Holstad, G Karbøl, JO Revhaug, E Schei, V Vandvik & A Skorping 2004. Parasite tags in ecological studies of terrestrial hosts: A study on ptarmigan (*Lagopus* spp.) dispersal. *Ornis Fennica* 81: 128-136.

Abstract: The spatial distributions of parasites may provide valuable information in studies on host ecology. This study was conducted in Troms County, Northern Norway, and focused on the spatial and temporal variation in abundance of two nematode parasites, *Ascaridia compar* and *Trichostrongylus tenuis*, infecting the gastrointestinal tract of Willow Ptarmigan (*Lagopus lagopus*) and Rock Ptarmigan (*Lagopus mutus*). In an inland area prevalence of *A. compar* varied between 52.2- 78.1% in September during 6 years of sampling, and in a coastal area that was sampled for 10 years, the prevalence of *T. tenuis* ranged between 25.0-75.4%. Both nematodes attained significantly higher prevalences in willow ptarmigan than in Rock Ptarmigan. The nematodes showed marked differences in geographical distributions in September, where *A. compar* was common at inland localities while *T. tenuis* only was found in hosts at coastal islands. Practical use of these parasites as biological tags suggested a coast to inland winter dispersal in Rock Ptarmigan, especially among juvenile hens, but no dispersal was recorded in Willow Ptarmigan. The use of biological tags in general and the use of nematodes as indicators of ptarmigan dispersal are discussed.

Per Holmstad var stipendiat i Evolusjonær økologi-gruppa, og [disputerte i juni](#).



Birks m. fl.: Benthiske foraminiferer på den nordeuropeiske kontinentalsokkel

Sejrup, HP, HJB Birks, D Klitgaard Kristensen & H Madsen 2004. Benthonic foraminiferal distributions and quantitative transfer functions for the northwest European continental margin. *Marine Micropaleontology* 53: 197-226

Abstract A database of benthonic foraminiferal data from 298 sediment surface-samples from the northwest European (Ireland to Svalbard) and Iceland margin has been compiled. Samples deeper than 500 m on the continental slope and shallower than 30 m in coastal areas are not included. Bottom-water temperatures at the sites range between -1 and 12.5 °C and salinity between 33.5 and 35.5‰. Detrended correspondence analyses of percentage values of 65 benthonic foraminifera taxa from 260 of the samples show a strong, statistically significant relationship between modern foraminiferal assemblages and summer temperature and salinity. Utilising weighted averaging partial least square regression, transfer functions for summer bottom-water temperature (Ts) and salinity (Ss) have been developed. The transfer functions have relatively low root-mean-square errors of prediction (expressed as a percentage of the range of the modern environmental gradient sampled)—for Ts, 3.9%, and for Ss, 9.02%—compared to transfer functions developed for other proxies, which commonly range from 8% to 20%. The distributions of benthonic foraminifera species are dependent on other factors than salinity and temperature such as nutrients, substrate, turbidity, current regime, different biological factors, different depth-related factors, etc. The present analyses demonstrate that for this group as for most other groups, there is an overall, but not necessarily direct, relationship with distribution and abundance and temperature and salinity conditions. The transfer functions have been tested on a late glacial–Holocene data set and an Eemian–Early Weichselian data set from the eastern North Sea region. These experiments suggest that transfer functions on benthonic foraminifera can be a useful new tool in palaeoceanographic and palaeoenvironmental work along the European North Atlantic seaboard.

Birks m. fl.: Beregning av historiske hav- og luft-temperaturer

Telford, R. J., C. Andersson, H. J. B. Birks, and S. Juggins 2004. Biases in the estimation of transfer function prediction errors. *Paleoceanography* 19, PA4014, doi:10.1029/2004PA001072.

Abstract: In the quest for more precise sea-surface temperature reconstructions from microfossil assemblages, large modern training sets and new transfer function methods have been developed. Realistic estimates of the predictive power of a transfer function can only be calculated from an independent test set. If the test set is not fully independent, the error estimate will be artificially low. We show that the modern analogue technique using a similarity index (SIMMAX) and the revised analogue method (RAM), both derived from the modern analogue technique, achieve apparently lower

root mean square error of prediction (RMSEP) by failing to ensure statistical independence of samples during cross validation. We also show that when cross validation is used to select the best artificial neural network or modern analogue model, the RMSEP based on cross validation is lower than that for a fully independent test set.

Rapp: Nye svampfunn ved Grønland

Rapp HT. 2004. The first record of the genus *Leucascus* Dendy, 1892 from the Atlantic Ocean, with description of *Leucascus lobatus* sp. nov. (Porifera, Calcarea) from Greenland. *Steenstrupia* 28: 119-127.

Abstract: Representatives of the genus *Leucascus* Dendy, 1892 are previously known only from the Indo-Pacific region and Japan. The description of *Leucascus lobatus* sp. nov. is given, based on material from Greenland. The species bears strongest resemblance to *L. neocaledonicus* Borojevic & Klautau, 2000, from New Caledonia, and *L. soyo* (Hozawa, 1933), from Japan. *Leucascus lobatus* sp. nov. differs from *L. neocaledonicus* by having much bigger spicules, and from *L. soyo* by having an atrial skeleton composed of triactines and tetractines of the same types as those of the choanosome, and not of special atrial tri- and tetractines as in *L. soyo*. The present reports of *Leucascus lobatus* sp. nov. are the first records of the genus from the Atlantic Ocean.

Hans Tore Rapp er post doc i Marin biodiversitet, finansiert av MARE/NFR.

Rapp m. fl: Metoder for kartlegging av havbunnen

Humborstad OB, Nøttestad L, Løkkeborg S, Rapp HT. 2004. RoxAnn bottom classification system, sidescan sonar and video-sledge: spatial resolution and their use in assessing trawling impacts. *ICES Journal of Marine Science* 61: 53-63.

Abstract: Three complementary seabed characterization tools with different spatial resolution were used to locate a research site and to assess physical effects of experimental otter trawling in the Barents Sea: an acoustic seabed classification system (RoxAnn), sidescan sonar and a video-sledge. The marine protected area (MPA) around Bear Island was chosen as it offered unfished reference sites. The area was topographically complex which resulted in certain challenges for choice of the experimental site due to the requirements of representativity and homogeneity and suitable sampling substrate. Systematic waylines with RoxAnn gave broad-scale patterns of bottom conditions, the more informative sidescan revealed topographic reliefs, whilst detailed information on sediment composition and small-scale seabed features was provided by the video-sledge. Accurate positioning of towed gears (trawl, sidescan and video-sledge) ensured unbiased data acquisition. Trawl doors and rockhopper gear created furrows that were visible by sidescan sonar and video. Intensive trawling also caused changes in the acoustic properties by increasing roughness and decreasing hardness. Results are consistent with a possible resuspension of the sediment and a homogenizing effect from the trawl doors and ground gear ploughing the area. The suitability and advantages of using spatially overlapping tools in trawl impact studies are discussed.

Meland: Diversitet og fylogeni hos pungreken Pseudomma

Meland, K. 2004. Species diversity and phylogeny of the deep sea genus *Pseudomma* (Crustacea: Mysida). *Zootaxa* 649: 1-30

Abstract: The mysidacean genus *Pseudomma* G.O. Sars, 1870 occurs throughout the world's oceans, containing 38 highly endemic and primarily deep sea species. The taxonomic history of the genus and taxonomic status of species currently included in *Pseudomma* is reviewed. *Pseudomma kruppi* W.M. Tattersall, 1909 is for the first time recorded from the Pacific Ocean. A comparative study of morphology suggests morphological stasis within the genus *Pseudomma*, possibly a result of stabilizing selection in a homogeneous deep-sea environment. 71 morphological characters are used to reconstruct *Pseudomma* phylogeny. The general frequency coding method (GFC) was applied in re-coding 14 polymorphic characters. Fifty-seven conventional characters were treated in separate analyses as either ordered or unordered to investigate how assumptions on character transformation influenced phylogeny. Maximum parsimony searches with both assumptions produced incongruent trees with conflicting branching patterns particularly in deeper nodes. A meaningful interpretation of origin and radiation in early lineages proved to be difficult. Recognition of consistent and more robust branching patterns in several recent lineages suggest monophyletic species groups that are confined



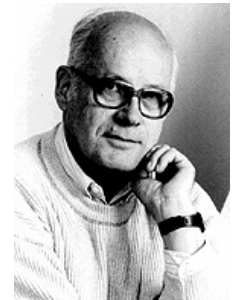
within three major geographic areas, North Atlantic, northern Pacific and Antarctic. Branching order could be attributed to speciation events that were in accordance with recent geological history, such as the closing of the Panama Isthmus and establishment of the Norwegian Sea.

Kenneth Meland er post doc i Marin biodiversitet, finansiert av MARE/NFR.

Meland & Willassen: Biogeografi og molekylær fylogeni hos pungreken Pseudomma

Meland, K. & E. Willassen 2004. Molecular phylogeny and biogeography of the genus *Pseudomma* (Peracarida: Mysida). *Journal of Crustacean Biology* 24:541-557.

Abstract: We used DNA sequences from 18S rDNA (808 bp) and COI mtDNA (599 bp) to infer evolutionary history of northern groups of the deep-sea mysid genus *Pseudomma*. The V4–V7 regions of 18S show an average of 1.31% sequence divergence between species. A secondary structure model is constructed and used in phylogenetic analyses to allow for different evolutionary rates in paired and unpaired nucleotide partitions. COI is observed as highly variable with uncorrected p-distance averaging 33%. Phylogenies for these sequences were estimated by maximum-likelihood, Bayesian, and maximum-parsimony analyses. More or less similar tree topologies were obtained for each gene with these methods. *Pseudomma longisquamosum* was placed in a basal clade, using *Parapseudomma* and *Amblyops* as outgroups, but the exact relationship of other basal taxa is less clear when results from the two genes are compared. An ancient presence of *Pseudomma* in the Tethys Sea is suggested by phylogenetic structure, molecular clock considerations, and present distributions. A well-supported Atlantic clade may have diverged from Indo-Pacific groups in the Miocene because of the closure of the Gibraltar Strait. More recent speciation events are proposed in the Norwegian Sea, and an Arctic intrusion from the North Pacific across the Bering Strait is suggested for the circumpolar species *Pseudomma truncatum*.



Fosshagen: Nye hulecopepoder fra Bahamas

Fosshagen, A; Iliffe TM. 2004. A new species of cave-living calanoid copepod from Grand Bahama. *Sarsia* 89: 346-354.

Abstract. A new species of *Fosshagenia* Suarez-Morales & Iliffe, *F. suarezi*, is described from anchialine caves in Grand Bahama. It is compared with *F. ferrarii* Suarez-Morales & Iliffe which has been re-examined. The two species are considered closely related, mainly distinguished by the fifth legs of both sexes and by the genital double segment of the female. Owing to the close relationship of *Fosshagenia* to *Temoropia* T. Scott it is inferred that its ancestors may have invaded caves from plankton in deep water.

Audun Fosshagen er emeritus-amanuensis i Marin biodiversitet, med tilhold på Marinbiologisk stasjon, Espeland.



Lindblom: utbredelse av messinglav i Norge

Lindblom, L. & Timdal, E. 2004. *Xanthoria fallax* in Norway. *Graphis Scripta* 16: 58-60.

Abstract: Two Norwegian collections of *Xanthoria fallax*, a species regarded as only erroneously reported from Norway, was discovered during revision of *Xanthoria* material in O. The collections were made in 1927 and 1971, respectively. The species is still present at one of the sites.

Louise Lindblom er post doc i Systematikk-gruppa.

Nortvedt m. fl.: Innflytelse av is-lagring på laksekvallitet

Espe M, Ruohonen K, Bjørnevik M, Frøyland L, Nortvedt R, Kiessling A 2004. Interactions between ice storage time, collagen composition, gaping and textural properties in fanned salmon muscle harvested at different times of the year. *Aquaculture* 240: 489-504.

Abstract: Atlantic salmon were sampled in June, September and February of the consecutive year and were stored on ice for up to 14 days in order to test the effect of harvest time and subsequent ice storage on meat quality. Texture and gaping frequency were analysed and were related to colour, protein degradation, collagen solubility, collagen types and final pH as well as lipid oxidation in the fillets to test possible interactions between harvest time and quality degradation during storage. In February, the connective tissue contained more soluble collagen and less insoluble collagen, as well as

more of both types I and V collagen, than in the samples collected in June. During ice storage, fish became softer with a concomitant increase in the number of fish displaying very high gaping. pH increased during ice storage and fillet colour became lighter and redder, while yellowness changed in the fattier fillets upon ice storage. Ice storage resulted in changes in pepsin-soluble collagen (PSC) depending on harvest time as did both types I and V collagen. The softer the fish, the higher the gaping score and the more insoluble collagen, the less gaping occurred

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Nortvedt m. fl. Tidsvariasjon i kvalitet på diploid og triploid laks

Bjørnevik M, Espe M, Beattie C, Nortvedt R, Kiessling A 2004. Temporal variation in muscle fibre area, gaping, texture, colour and collagen in triploid and diploid Atlantic salmon (*Salmo salar* L). JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE 84: 530-540

Abstract: Diploid and triploid Atlantic salmon were reared for 32 months in seawater, from October 1998 to January 2000. During this period of time, four samplings were taken to study differences in quality traits and chemical components in the flesh between diploid and triploid Atlantic salmon. Season was found to be the dominant factor explaining the variation in flesh quality traits in both triploid and diploid fish. Ploidy affected the majority of investigated variables while body size had lesser impact. Triploid Atlantic salmon had fewer small muscle fibres and up to 23% larger mean cross-sectional muscle fibre area than diploids. Triploids also displayed more gaping, softer fillet texture, lower post mortem end pH, darker (L value) and redder (a value) flesh colour, and more soluble and less insoluble collagen compared with diploid fish. No effect of ploidy was found on crude chemical composition. Furthermore, a negative relationship was found between gaping score and muscle fibre area, and a weak positive correlation was found between fibre density and texture firmness. However, when body size and sampling time was included in the statistical model, this relationship between gaping and fibre area became very weak, and the relationship between texture and fibre area was completely negated. This suggests that intra-species variation in both texture and gaping is more related to season and body size than to average muscle fibre area size.

Finn & Fyhn m. fl: Eggutvikling hos størarter

Lenhardt, M, Finn RN, Cakic, P, Kolarevic, J, Krpo-Cetkovic, J., Radovic, I & Fyhn, HJ 2004. Analysis of the post-vitellogenic oocytes of three species of Danubian Acipenseridae. Belgian Journal of Zoology 134 (supplement 1):77-80.

Abstract Post-vitellogenic oocytes of beluga (*Huso huso* Linnaeus, 1758), Russian sturgeon (*Acipenser gueldenstaedtii* Brandt, 1883) and sterlet (*Acipenser ruthenus* Linnaeus, 1758), sampled downstream of the "Iron Gate II" dam on the Danube River, were characterised according to diameter, dry mass, water and protein contents. All oocytes examined were ovoid in shape with the major diameter being measured in the animal-vegetal axis. The beluga oocytes were the largest with major and minor diameters of 4.35 ± 0.13 and 3.36 ± 0.15 mm, respectively. The oocytes of the Russian sturgeon were the next largest with major and minor diameters of 3.69 ± 0.16 and 3.36 ± 0.15 mm, respectively, while those of the sterlet were the smallest with major and minor diameters of 2.40 ± 0.10 and 2.14 ± 0.07 mm, respectively. Values for oocyte wet and dry mass (mg/ind) ranged from 25.9-32.1 for wet mass and 12.2-15.5 for dry mass of the beluga oocytes, 18.9 ± 1.4 and 9.01 ± 0.12 for wet and dry mass of the Russian sturgeon oocytes, and 6.5 ± 0.3 and 3.07 ± 0.14 of the sterlet oocytes. The water content of the oocytes of all three sturgeons was very similar (51-53% of wet mass). The protein content (% of dry mass) was highly conserved among the species at 53.0 ± 2.0 , 55.9 ± 3.8 and 50.0 ± 1.2 for the oocytes of beluga, Russian sturgeon and sterlet, respectively.

Nigel Finn er post doc i forskergruppa i Utviklingsbiologi hos fisk.

Fyhn m. fl.: Aminosyrebehov under larveutvikling hos fisk

Aragao, C, Conceicao, LEC, Fyhn HJ, Dinis, MT 2004. Estimated amino acid requirements during early ontogeny in fish with different life styles: Gilthead seabream (*Sparus aurata*)



and Senegalese sole (*Solea senegalensis*). *Aquaculture* 242:589-605.

Abstract Little is known about the amino acid (AA) requirements of larval fish and their possible ontogenetic changes. This paper aims to contribute to the study of these requirements in two common cultured species in Southern Europe: gilthead seabream (*Sparus aurata*) and Senegalese sole (*Solea senegalensis*). Moreover, it is intended to identify possible dietary AA imbalances occurring in normal hatchery conditions for both species. Fish larvae were reared following standard procedures and the normal feeding schemes used in hatcheries, which includes the use of live prey for several weeks. The experiments were finished once the fish were adapted to a dry feed. Samples were collected at different points for dry weight, total protein, and AA analysis. The A/E ratios [each indispensable AA content \times (total indispensable AA content including cysteine and tyrosine) $- 1 \times 1000$] of fish and food were compared to identify possible dietary AA imbalances. The AA profile of both fish species changed during ontogeny, but was more stable during seabream than Senegalese sole development. This is probably linked to the marked metamorphosis observed in sole. These changes in fish larval AA profile suggest that the AA requirements change during seabream and Senegalese sole ontogenesis. Several dietary AA deficiencies were found during the ontogenetic development of both species. These deficiencies result from ontogenetic changes in the fish AA profile, but also from differences in the AA composition of the different food items. These results suggest that both the live food (rotifers and *Artemia* at different developmental stages) and the dry feed used in the rearing of gilthead seabream and Senegalese sole does not have an AA profile that entirely meets the requirements for the early stages of these species.

Bok-kapitler

Lindblom: To kapitler i lavflora

Lindblom, L. 2004. *Xanthomendoza*. In: T.H. Nash, B.D. Ryan, P. Diederich, C. Gries & F. Bungartz (eds.) *Lichen Flora of the Greater Sonoran Desert Region*. Vol. 2. Tempe, Lichens Unlimited, pp. 583-588.

Summary: I describe the genus *Xanthomendoza* in detail, and provide an identification key to all species occurring in the area covered by the flora. Every species is described in detail, including nomenclature, morphology and anatomy, secondary chemistry, habitat, and ecology. Geographical distribution data and maps are provided. For each species, there is a notes chapter, with comparisons to similar species etc. A new species of *Xanthomendoza*, manuscript in preparation, is included.

Lindblom, L. 2004. *Xanthoria*. In: T.H. Nash, B.D. Ryan, P. Diederich, C. Gries & F. Bungartz (eds.) *Lichen Flora of the Greater Sonoran Desert Region*. Vol. 2. Tempe, Lichens Unlimited, pp. 627-633.

Summary: I describe the genus *Xanthoria* in detail, and provide an identification key to all species occurring in the area covered by the flora. Every species is described in detail, including nomenclature, morphology and anatomy, secondary chemistry, habitat, and ecology. Geographical distribution data and maps are provided. For each species, there is a notes chapter, with comparisons to similar species etc. One species of *Xanthoria*, *X. pollinarioides*, is described as new to science with illustrations.

Ekman: 7 kapitler i lavflora

Ekman, S. 2004: *Bacidia*. In: *Lichen flora of the Greater Sonoran Desert region*. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 18-28. Lichens Unlimited.

Ekman, S. 2004: *Bacidina*. In: *Lichen flora of the Greater Sonoran Desert region*. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 28-32. Lichens Unlimited.

Ekman, S. 2004: *Cliostomum*. In: *Lichen flora of the Greater Sonoran Desert region*. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 64-65. Lichens Unlimited.



Ekman, S. 2004: *Mycobilimbia*. In: Lichen flora of the Greater Sonoran Desert region. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 365-367. Lichens Unlimited.

Ekman, S. 2004: *Myxobilimbia*. In: Lichen flora of the Greater Sonoran Desert region. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 367-368. Lichens Unlimited.

Ekman, S. 2004: *Scoliciosporum*. In: Lichen flora of the Greater Sonoran Desert region. Volume 2 (T. H. Nash, B. D. Ryan, P. Diederich, C. Gries & F. Bungartz., eds.), pp. 504-505. Lichens Unlimited.

Tre kapitler av Fyhn & co

Fyhn, HJ, Mjaavatten, Larsen, JO, Evjen, MS and Gorsky, G. 2004. Amino acid and fatty acid contents in the appendicularian (*Oikopleura dioica*) fed micro algae. In Gorsky, G., Youngbluth, M.J. and Deibel, D. (eds.), *Response of marine ecosystems to global change: Ecological impact of appendicularians*. Pp 177-194. GB Scientific Publisher.

Abstract The contents of free amino acids (FAA), protein, and fatty acids (FA; by methanolysis) were measured in individual *O. dioica* reared in the laboratory, and either fed micro algae (*Isochrysis galbana* or *Thalassiosira pseudonana*) or starved (maintained in 0.22- μ m filtered seawater, SW) for 21-26 hrs. *O. dioica* was rich in glycine (48 % of the FAA pool) with alanine at 10-15%, taurine 6-8%, and glutamic acid 5-7%. Essential FAA amounted to 15-20% of the pool. The FAA content (nmoles ind⁻¹) correlated with body size ($r^2=0.88$). The weight-specific FAA content (nmoles μ g DW⁻¹) decreased significantly in starved (1.6 ± 0.5) compared to fed animals (2.9 ± 0.6). The protein content of individual *O. dioica* was difficult to determine but seemed to decrease from $\approx 60\%$ of DW in fed animals to $\approx 20\%$ in starved animals.

O. dioica was dominated by C₁₄₋₁₈ saturated FA (range 28-42%, average 32%) and C₁₈₋₂₂ n3 polyunsaturated FA (n-3 PUFA) with 4-6 double bonds (range 40-51%, average 48%), and especially by 20:5n3 (17%) and 22:6n3 (22%). The FA content (ng ind⁻¹) correlated with body size ($r^2=0.76$). The weight specific FA content (ng μ g DW⁻¹) decreased significantly in starved (59 ± 32) compared to fed animals (154 ± 66). The FA content of *O. dioica* with emptied gut (45 min in 0.22- μ m filtered SW) was significantly decreased (123 ± 26) compared to fed animals. The estimated lipid content decreased from $\approx 20\%$ of DW in fed animals to $\approx 5\%$ in starved animals.

The FAA pool of *I. galbana* contained 30% each of glutamic acid and asparagine, 11% arginine, and 6% each of aspartic acid, glutamine, and histidine, while *T. pseudonana* contained 43% proline, 25% glutamic acid, and 6% histidine. *T. pseudonana* had high levels of 20:5n3, 16:3n4, 16:4n1, and iso-17:0, while *I. galbana* had high levels of 22:6n3, 18:4n3, 18:3n3, and 18:1n9, but low levels of 20:5n3. The micro-algae contained 19% of 14:0, 15% of 16:0, and less than 1% of 18:0.

O. dioica profile of FAA and FA was conservative in relation to the micro-algal diet composition although some changes occurred in the FA profile when fed *T. pseudonana*, especially an increase in 20:5n3 (to $\approx 25\%$). The level of 22:6n3 was higher when fed *I. galbana* ($\approx 25\%$) than *T. pseudonana* ($\approx 15\%$). The high level of 20:5n3 in *O. dioica* was maintained when fed *I. galbana* despite its low content of this n3 PUFA. No dietary effect was seen in the FAA pool of *O. dioica* when fed the two micro-algae.

The high content of FAA, especially of glycine, the high protein content, the high content of PUFAs especially 20:5n3 and 22:6n3, the stability of the body FAA and FA composition despite large differences in the micro-algal diet, make *O. dioica* nutritionally apt as a prey for fish larvae. Possibly, these fast growing and fragile zooplankters are the critical prey of fish larvae at first feeding in the ocean.

Båmstedt, U, Fyhn, HJ, Martinussen, MB, Mjaavatten, O, & Grahl-Nielsen, O 2004. Seasonal distribution, diversity and biochemical composition of appendicularians in Norwegian fjords. In Gorsky, G., Youngbluth, M.J. and Deibel, D. (eds.), *Response of marine ecosystems to global change: Ecological impact of appendicularians*. Pp 231-258. GB Scientific Publisher.

Abstract The diversity and chemical composition of the appendicularian fauna in Korsfjorden (maximum depth = 650 m) and Sognefjorden (1300 m) was studied for one year. Eleven species occurred regularly in both fjords. The most abundant species in Korsfjorden were (in order of

abundance) *Fritillaria borealis typica*, *Oikopleura dioica*, *O. labradoriensis*, and *F. europea*. The dominant species in Sognefjorden were *F. borealis typica*, *O. dioica*, *O. parva*, and *O. labradoriensis*. Highest abundance of appendicularians was found in the upper water column, above the pycnocline, with a seasonal maximum of 778 ind m⁻³ in Korsfjorden and 927 ind m⁻³ in Sognefjorden in May-June. Close to 90 % of all the counted appendicularians were found above the pycnocline. *Oikopleura gorskyi* was the most numerous species below the pycnocline in both fjords. The seasonal maximum of appendicularians in both fjords coincided with a phytoplankton summer maximum, reaching 3- 3.5 mg Chl. a m⁻³ in the surface water. There was a seasonal minimum in abundance during early winter for both fjords, coinciding with the chlorophyll minimum, but absolute abundance and seasonal variation was much lower in the deep water. The appendicularian abundance was poorly correlated with the particulate organic matter (POM). The larger appendicularians (*F. polaris*, *O. dioica*, *O. labradoriensis*, *O. gorskyi*, *O. parva*) were analyzed for free amino acids, total protein, and total fatty acids. The free amino acid pool was dominated by glycine (40-60 %) in all the tested appendicularians but also alanine (5-10 %), glutamic acid (3-10 %), taurine (3-7 %), and proline (3-5 %) were quantitatively important. Fritillarids (*Appendicularia sicula*, *F. borealis*, *F. polaris*) had less than half the weight-specific contents of free amino acids compared to oikopleurids (*O. dioica*, *O. gorskyi*, *O. labradoriensis*, *O. parva*). Also, the tested oikopleurids and fritillarids differed with regard to fatty acid composition. The oikopleurids had higher contents of the poly-unsaturated fatty acids 20:5n3 and 22:6n3, together 25-40 % of the total fatty acid content, while the fritillarids had relatively more of 18:0, 16:2n6, and 18:5n1 fatty acids. The biochemical composition, the appropriate size range, as well as the relatively high abundance in the upper water layer together indicate that appendicularians are suitable food for planktotrophic predators, and especially valuable as first-feed for fish larvae.

Lopez-Urrutia, A, Harris, RP, Acuña, JL, Båmstedt, U, Flood, PR, Fyhn, HJ, Gasser, G, Gorsky, G, Irigoien, X and Martinussen, M 2004. A comparison of appendicularian seasonal cycles in four contrasting European coastal environments. In Gorsky, G., Youngbluth, M.J. and Deibel, D. (eds.), *Response of marine ecosystems to global change: Ecological impact of appendicularians*. Pp 259-279. GB Scientific Publisher.

Abstract The European Union project EURAPP (“Impact of appendicularians in European marine ecosystems”) represented an integrated European effort to elucidate specific biological and ecological aspects of appendicularians in the marginal seas of Europe. Within EURAPP, we have studied the seasonal variation in population densities and species assemblages from March 1999 to February 2000 in four contrasting European coastal environments: the Norwegian fjords, the western English Channel, and the Cantabrian and Ligurian Seas. The seasonal succession in the structure of the appendicularian community can be summarized into two distinct phases: a winter-early spring phase characterized by the presence of fritillarids prior to the onset of stratification or warming of the water column at the mixed water locations and a summer-autumn oikopleurid-dominated community. This summer phase can be subdivided into other two or three sub-steps depending on the dominant oikopleuriid species. There was a positive relationship between the abundance of total appendicularians and chlorophyll concentration and a strong geographical influence on species composition, which was related with temperature. Three different appendicularian species associations were detected, the niche of each individual species being characterized by a unimodal response to temperature. Differences in temperature and to some degree in salinity explained to a considerable extent the seasonal and geographical distribution patterns detected. The close relationship between appendicularian species assemblages and physical environmental factors suggests their potential use as indicator species of climate changes or characteristic water masses.

Bøker

Birks m. fl.: British Upland Vegetation

Averis, A.M., Averis, A.B.G., Birks, H.J.B., Horsfield, D., Thompson, D.B.A. & Yeo, M.J.M. An Illustrated Guide to British Upland Vegetation. Joint Nature Conservation Committee, Peterborough. 454 pp

Ledige stillinger

Scripps: Postdoc in planktonic ecosystem modeling

Postdoctoral position in planktonic ecosystem modeling. The recently funded [Long-Term Ecological Research \(LTER\)](#) program in the California Current System is embarking on a program investigating the mechanisms underlying ecosystem shifts in the coastal planktonic ecosystem. We seek a postdoctoral investigator with interests in planktonic ecosystem modeling and coupled physical-biological modeling to develop ecosystem models of the California Current System. The modeling effort will initially involve collation and analysis of diverse data sets for model formulation, parameterization, and testing. The candidate will then formulate models based on trophic status, taxon, size, or other criteria that are appropriate. These models will be tested with extant and future data, and will ultimately be coupled with physical models of the region. The candidate should have strong quantitative skills, a good knowledge of planktonic ecosystem dynamics, and an ability to work both independently and with a team.

Please send a CV and statement of interest to Prof. Peter Franks, Scripps Institution of Oceanography, University of California San Diego, La Jolla CA 92093-0218, or email to pfranks@ucsd.edu. The position will remain open until filled.

BioMar: Produkt rådgiver

BioMar AS utvikler, produserer, markedsfører og distribuerer fôr til fiskeoppdrett i Norge. BioMar har gjennom målrettet innsats og rask vekst fått en ledende posisjon som leverandør av høyenergifôr til oppdrettsnæringen, med dominans på fôrtyper med høy ytelse til laks og ørret. Selskapet har hovedkontor på Myre og fabrikker på Myre og Karmøy.

På grunn av overgang til ny og utfordrende stilling i vår innkjøpsavdeling søker vi etter [produkt rådgiver](#) til vår fabrikk på Myre i Vesterålen. Stillingen er organisasjonsmessig underlagt kvalitetsleder og er en støttefunksjon for fabrikkledelsen i den operative drift. Det fordres evne til samarbeid med selskapets FoU-avdeling, andre fabrikkenheter og innkjøpsfunksjonen. Som hovedoppgave er stillingen tillagt reseptoptimering på spesialutviklet programvare, råvareevaluering og råvarekontroll, evaluere og initiere forbedringsaktiviteter innenfor disse områder.

Til stillingen kreves det en person som er løsningsorientert og som kan jobbe selvstendig og systematisk i et til tider hektisk og uformelt produksjonsmiljø. Det kreves utdanning på høyskole eller universitetsnivå. Grunnleggende ernæringskompetanse og økonomisk forståelse er en forutsetning. Stillingen er internt oppfattet som utfordrende og interessant, og gir muligheter for innblikk i alle ledd i produksjonskjeden. Noe reiseaktivitet må påregnes. Vi oppfordrer spesielt kandidater med tilknytning til regionen om å søke.

NFH: 2 stipendiater i marin økologi

Ved Universitetet i Tromsø, Norges fiskerihøgskole (NFH) er det ledig 2 universitetsstipend i marin økologi på lavere trofisk nivå i Arktis. Det ene er knyttet til [karbonfluks](#) og det andre til [zooplanktonseleksjon](#). Stillingene er tilknyttet Institutt for akvatisk biologi (IAB).

Stipendiatene skal knyttes til IABs forskerskole ARCTOS, «Arktiske økosystemer, biogeokjemiske syklener og klimaforandring i antroposèn».

NFH: Postdoktor i marin økologi på lavere trofisk nivå i Arktis

Ved Universitetet i Tromsø, Norges fiskerihøgskole (NFH) er det ledig en [postdoktorstilling i marin økologi på lavere trofisk nivå i Arktis](#). Stillingen er tildelt Institutt for akvatisk biologi (IAB), og tilknyttet forskerskolen ARCTOS «Arktiske økosystemer, biogeokjemiske syklener og klimaforandring i antroposèn». Forskerskolen skal utdanne minst 5 PhD studenter per år innenfor rammen av ARCTOS (ARCTic marine ecOS research network) som er et nettverk bestående av forskere fra IAB, Norsk Polarinstitutt, Akvaplan-niva og UNIS. Postdoktorstillingen er en åremålsstilling med en tilsetningsperiode på 3 år. Den som tilsettes vil spille en viktig rolle i oppbyggingen, kvalitetssikringen og utviklingen av forskningsportefølje for forskerskolen.