

BIO-info 2/2011, 14. januar 2011 [BIO: sakslister og møtereferater](#) [BIO-info arkiv](#)
submission deadline to bio.info@bio.uib.no is Wednesday 16:00

Fra toppen!

Nytt budsjettår

Budsjettet for MN-fakultetet for 2011 ble vedtatt i fakultetsstyret i går, 13. januar. Et budsjett på det jevne, uten rom for de store eksesser. For BIOs del innebærer det fortsatt fokus på kostnader innenfor en ramme på ca. 98 mill. NOK. Dette er en liten nedgang fra i fjor (2,6 promille), noe som i hovedsak skyldes en reduksjon i husleieoverføringen på 3,5 mill., men også en økt belastning på grunn av BIOs store eksternt finansierte virksomhet, og dårlig uttelling i de resultatbaserte overføringene (RBO-midler).

BIOs andel av rammebudsjettet til fakultetet utenom husleie og strategiske satsinger utgjør ca. 25%. Da burde målet være å hente ut en tilsvarende andel av resultatkomponenten. Det er kun på antall mastergrader og doktorgrader vi holder dette nivået, som regnes ut som et glidende gjennomsnitt for den siste 3-årsperioden (2007-2009). På masterprogrammene har vi hatt en dramatisk nedgang i opptaket (23 sist studieår), noe som gjør at vi vil slite med å holde snittet, som var 63,8 sist periode.

Vår andel av studiepoengproduksjonen og publikasjonspoengene ligger godt under der vi bør være (19,7 og 20,1%), så her må vi ta noen grep. De økte kostnadene knyttet til eksterne prosjekter gjør det dessuten viktig å sette fokus på full kostnadsdekning i budsjettene til NFR og andre. BIOs budsjett skal behandles i rådsmøte 24. januar, så vi kommer tilbake til det i senere utgaver av BIO-info.

Hilsen Anders



Ukens bilde



Let's dance!

Photographer: **Christoph Noever**

The hermit crab, *Pagurus prideaux*, sheltered by its sea anemone symbiont. Shot during last fall's MAR 211 marine faunistics course.

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

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Siste nytt fra BIO

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Nye verneombud på BIO

Det kom inn kun sammenfallende forslag til verneombud og varaverneombud for BIO. For 2011-2012 innehar følgende personer de respektive vervene

Verneområde Marineholmen:

Verneombud: Vibeke Saure Lokøy (arbeidsplass i B – blokken)

Varaverneombud: Lene Synnøve Halvorsen (arbeidsplass i A – blokken) og Rita Karlsen (arbeidsplass i Bio – blokken)

Verneområde Marinbiologisk stasjon:

Verneombud: Tomas Sørli

Søknad om plass på forskningsinstallasjoner ved BIO og innenfor driftsavtalen UiB/ILAB

Vårsemesteret 2011: Søknadene må være de respektive ansvarlige i hende innen 24. januar. (Søknadsfrist høstsemesteret 20. august) Søknadsskjema med instruksjoner kan lastes ned [herfra](#).

Alle som arbeider med forsøksdyr skal ha godkjent kurs i forsøksdyrlære, dette gjelder også masterstudenter. Planlagte kurs for forskere, teknikere og masterstudenter finner du [her](#). Søknader til forsøksdyrutvalget om tillatelse til å utføre forsøk med dyr, skal være innsendt senest 3 måneder før forsøkstart.

Frank Midtøy

Ansvarshavende for forsøk med dyr

Minneord Runar Thyrhaug

Det er med sorg vi har mottatt meldingen om at Runar Thyrhaug er gått bort. Institutt for Biologi, Universitetet i Bergen, flyttet i årsskiftet 2009/10 inn i nye lokaler og Runar var med i den prosessen – i planene om å videreutvikle et aktivt forskningsmiljø. Nå er kontoret han tomt og vi som hans nære medarbeidere føler et stort savn i forhold til Runar som menneske og medarbeider. I sitt dr.-gradsarbeid som han fullførte i 2002 siterte han innledningsvis Euklid: *The whole is greater than the part*. Dette karakteriserte Runar – han var en fremragende lagspiller. Runar var knyttet til gruppen vår som student, som dr.-gradsstipendiat, som post. doc., og som forsker. Han tok opp et nytt og omfattende forskningsfelt knyttet til luftplankton – spesielt forekomst og spredning av bakterier i luft. Dette var på mange måter et nytt og spennende arbeidsområde der Runar raskt etablerte et internasjonalt kontaktfelt. Vi kan ikke fylle det faglige tomrommet som Runar etterlater seg, og følgelig går savnet etter han dypt inn i aktiviteten til en forskningsgruppe som vår.



Våre tanker går nå til Monica og barna – de lider det største tapet. Vi lyser fred over Runar sitt minne.

Forskningsgruppen i Marin Mikrobiologi

Minneord Øyvind Ulltang

Professor emeritus Øyvind Ulltang døde natt til tirsdag 11. januar 2011 etter lengre tids kreftsykdom. Det var med sorg vi mottok budskapet om hans død. Vi minnes ham med respekt og våre tanker går spesielt til hans nærmeste familie.

Øyvind Ulltang ble tilsatt som professor i fiskeribiologi ved Universitetet i Bergen i 1995. Han kom da fra Havforskningsinstituttet (HI) til Institutt for fiskeri- og marinbiologi og overtok professoratet i fiskeribiologi. Det var ingen lett oppgave Øyvind tok på seg, men med sin faglige integritet, ryddighet og ukontroversielle lederstil fremstod han som en verdig leder av fiskeribiologien ved UiB.

Av bakgrunn var Øyvind Ulltang matematiker (hovedfag i rein matematikk). På en forbilledlig måte bygget han opp kompetanse også i økologi og integrerte denne kunnskapen i teori og utvikling av modeller for studier av rekruttering og bestandsvariasjoner hos fisk og sjøpattedyr. Allerede i 1980-årene var han en av pionerene innen utviklingen av flerbestandsforskningen i Norge. Dette fagfeltet viet han stor interesse og hadde bl.a. ansvar for å utvikle flerbestandsmodeller for Barentshavet sammen med kolleger ved HI. Øyvind var også faglig hovedansvarlig for forskningsprosjektet "Utsetting av torsk i fjord (Masfjord-prosjektet)". Fra 1988 var han faglig hovedansvarlig for Vågehval under Sjøpattedyr-programmet fram til 1992. Etter omorganiseringen ved HI i 1991-92 var Øyvind programleder for "Ressursøkologi og flerbestandsmodeller". Før Øyvind kom til UiB hadde han vært professor II i fiskeribiologi ved UiTø (1984-88).

Usikkerhet i bestandsberegninger har vært et av kjernespørsmålene som Øyvind har vært opptatt av ved UiB. En av de første store oppgavene ved UiB Øyvind tok fatt på var som koordinator for EU-prosjektet SAP (Sustainable Fisheries. How can the scientific basis for fish stock assessments and predictions be improved), et nettverksprosjekt der forskere med forankring i grunnforskningsmiljøer ved universiteter og anvendte forskningsinstitutter arbeidet sammen. NORAD-prosjektet i Fiskeribiologi og forvaltning som finansierte Master-studenter fra utviklingsland ledet Øyvind fram til sammenslåingen av Institutt for Biologi.

Øyvind har alltid vært talsmann for ikke å bruke altfor avanserte og kompliserte modeller, men først skaffe tilstrekkelig informasjon om biologien bak for å gjøre modellene enklest mulig. Her har Øyvind gitt viktige bidrag til forståelse av rekrutteringsmekanismene hos fisk, ikke minst var han den som først påpekte depensatoriske effekter ved lave bestandsnivåer og viste at pelagiske stimfisk var spesielt sårbare ved for sterk beskatning.

Som foreleser i fiskeriforvaltning hadde Øyvind en solid ballast å dele med studentene. Sin lange erfaring fra arbeidet i ICES-systemet, der han i flere år var formann i "Herring Assessment WG"-og i ACFM (Rådgivingskomiteen for fiskeriforvaltning) var nyttig for både studentene og Ressursgruppen som Øyvind dengang var forskergruppeleder for fram til sammenslåingen til BIO. Da Øyvind trakk seg tilbake i 2008 hadde han nærmere 40 år i forskningens tjeneste.

Vi lyser fred over hans minne.

Venner og kolleger ved
Forskergruppen Fiskeriøkologi og Havbruk



Undervisningsnytt

Internasjonal dag

Internasjonal dag ved Det matematisk- naturvitenskapelige fakultet

Onsdag 19. januar 2011 blir det arrangert Internasjonal dag ved Det matematisk- naturvitenskapelige fakultet. Dette er en del av UiB sin Internasjonale uke. Fokuset vårt for denne dagen er rettet mot delstudier i utlandet og søknadsprosessen i forhold til dette.

[Programmet](#) består av presentasjoner, "Spørreorg" og "Søknadsverksted" i løpet av dagen. I tillegg til underholdning og vellyd fra Mannskoret Armer Riddere.

Hovedmålgruppen for arrangementet er andre- og fjerdesemesterstudenter, men også andre studenter ved fakultetet vil finne inspirasjon til å dra på utveksling.

Det vil også være et eget program for ph.d. – kandidater ved fakultetet. Norges forskningsråd og Forskningsadministrativ avdeling ved UiB vil presentere hvilke muligheter ph.d. - kandidater og yngre forskere har for å dra på forskerutveksling.

Siste nytt fra verden rundt oss

Ledige stillinger

Ledige stillinger for biologer

Mer info finner du [her](#).

Forskning: utlysninger, nye satsinger og prosjekter

Fast lenke

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)

PhD: disputas og prøveforelesning

Mia Bengtsson PhD forlesning

Mia Bengtsson PhD Forelesning

Mia Bengtsson vil tirsdag 18. januar holde forelesning over selvvalgt emne for PhD graden.

Tittel: The "priming effect" of microbial degradation of organic matter

Tid: Tirsdag 18. januar 2010, kl. 14:15

Sted: Seminarrom K 3, 1 etasje, Blokk B, Institutt for biologi

Bedømmelseskomité: Tron Frede Thingstad, Mikal Heldal

Alle interesserte er velkommen

Kurs, møter, seminar og arrangement

Akademisk engelsk, MCB Introductory Course 201, Glesvær, February 24-25, Bergen
March 2, 9, 16, 23, Wednesday seminars Aquatic Behaviour Ecology, Modelling, EvoFish or Fisheries and Aquaculture Ecology, CNS arrangementer, SKOK gjesteforelesning & graduate course, Summer School "Highlights in Microtechnology" (HIM),

Kurs i akademisk engelsk for vitenskapelig ansatte

Målgruppe: Stipendiater, postdoktorer og andre vitenskapelig ansatte med relativt god engelskkompetanse og som er vant til å lese engelsk tekst og har fagterminologien på engelsk inne.

Varighet: Oppstart i uke 4 og 13 kurskvelder framover. Hver ordinære kurskveld vil bestå av 3 timers undervisning fra 15.30-18.30 for hele gruppen, og 1 times individuell veiledning.

Det vil bli to parallelle kurs, det ene på mandager, det andre på tirsdager.

Målet med kurset er at deltakerne skal bli bedre til å formidle egen kunnskap på engelsk og kunne delta mer aktivt, både faglig og sosialt, i møte med utenlandske kolleger, utenlandsk presse og andre. Undervisningen vil foregå på engelsk.

Kursleder: Brendan McNulty

Sted: Christiesgt. 18, rom 3.43/44

Kursavgift kr. 2500,- som faktureres enheten deltakerne tilhører. (Tilleggsinfo fra BIO: kurset må dekkes av forskningsgruppen)

Påmeldingsfrist: 19 januar via denne [lenken](#). Kursplasser vil bli tildelt etter dette.

For mer informasjon, ta kontakt med [Ellen Grong](#) ved Personal- og organisasjonsavdelingen, telefon 82214.

MCB Introductory Course 2011 , Glesvær, February 24-25 + Bergen March 2,9,16,23

The Molecular and Computational Biology Research School, MCB, is a cross-institutional research school for PhD-students within molecular and computational biology. MCB offer scientific and general skills courses, networking events and travel fellowships for PhD-students at any of the 6 partner institutions:

- Computational Biology Unit, CBU (Uni Research, BCCS)
- Department of Biology (UiB)
- Department of Biomedicine (UiB)
- Department of Informatics (UiB)
- Department of Molecular Biology (UiB)
- Sars International Centre for Marine Molecular Biology (Uni Research)

We hereby invite all new PhD-students in Molecular and/or Computational Biology, to join the MCB Introductory Course 2011.

The course is mandatory for PhD-students who wish to join MCB. Members of MCB are eligible for travel fellowships, and have priority for MCB courses such as the Scientific Publishing course. The introductory course consists of a 2-day overnight course at Glesvær, and 5 half-day site-visits presenting the MCB partner sites. The course is free of charge.

Part I -Overnight Course

- When: 24-25 February 2011
- Deadline: 10 February 2011
- 2 ECTS credits (Part I + II).
- Sign up: contact@mcb.uib.no Please include your name, where you work, the starting date and working title of your project .
- Questions: contact@mcb.uib.no or tel: 55 58 45 03

Preliminary schedule (for updates, see www.uib.no/rs/mcb)

- A brief introduction to MCB
- Self-presentations by the participants
- Introduction to project work by Svein Winther,
- Thoughts on a researcher career, Eric Thompson, Department of Biology/Sars
- A social programme including good food and an outdoor excursion

Part II - Site Visits

Part II consists of 5 half day site-visits at the MCB-partner sites, and serves as an introduction to life science research in Bergen. You will be able to get a feel of the Bergen life science scene, and a taste of ongoing research. There will be one site-visit per week, every Wednesday of March.

Wednesday seminars series starts again!

A seminars series where all students and researchers belonging to the research group Aquatic Behaviour Ecology, Modelling, EvoFish or Fisheries and Aquaculture Ecology are asked to present their ongoing work.

Also this spring the seminar will take place on **Wednesdays between 14:15 to 15:00** in the seminar room: "**Store Puddefjorden**", **Block B 5G01**

We believe that our four research groups has so much in common that it will be an advantage for us all to get feedback on our work from a broader audience – not just the members of our one research group – or supervisors. So all students – and supervisors – find a suitable date for your presentation!

You can see the free dates and the coming presentations [here](#)

It is particularly important that all students (Master and PhD) get the opportunity to present their work. So all students – and supervisors – researchers find a suitable date for your and your student's presentation!

To book a date, please contact: Anne Christine Utne Palm (anne.palm@bio.uib.no) or Arild Folkvord (arild.folkvord@bio.uib.no).

CSN informerer om følgende arrangementer:

Norad - SIU seminar 27 January 2011 - Climate and Energy
Date: 27 January 2011, 9:00-13:00, Oslo. [Les mer](#)

Conference: Trends and future of sustainable development
Date: 9-10 June 2011, Tampere, Finland. [Les mer](#)

PhD course and Conference: The age of uncertainty
Date: February 16-18, Bergen. [Les mer](#)

Life science postgraduate programme

Life Science postgraduate programme (University of Gothenburg) and the Norwegian-Swedish research school in biosystematics - ForBio invites to:

The rise of animals and palaeozoic evolution – a field course in palaeontology
Gotland May 1 – 6, 2011 [Les mer](#)

Senter for kvinne- og kjønnsforskning (SKOK) inviterer til gjesteforelesning med professor Joanna Regulska, Rutgers University, New Jersey, USA.

Tid/sted: **Tirsdag 18. januar kl. 10-12**, Ida Bloms hus, Allégaten 34, seminarrommet, 3.etg. **Tittel:** Contesting Gender Identities and Practices: Internally Displaced Persons (IDPs) is Search of Self [Les mer](#)

Centre for Women's and Gender Research (SKOK), University of Bergen, Norway, offers the **graduate course**, On Feminism and the Animal, **18 – 20 May**, 2011 [Read more](#)

Summer School "Highlights in Microtechnology" (HIM).

The course will be held in Neuchâtel (Switzerland) from June 14 to 24, 2011 [Read more](#)

Winter school on eco-evolutionary modeling of speciation will take place from 7 to 11 March 2011 in Sweden (**deadline 15 January**; later applications will be considered subject to availability) [Read more](#)

Summer fellowships for young scientists to engage in collaborative research at the International Institute for Applied Systems Analysis (IIASA) in Austria from June to August 2011 (**deadline 17 January**). [Read more](#)

Mer info om kurs, møter, seminar og arrangement etc finner du [her](#).

Nye artikler

Heino, Birks, Mangel, Gunnarsson, Imsland, Stefansson, Brattegard, Bergh

Heino, M., F. M. Porteiro, Sutton, T. T. Falkenhaus, T. Godo, O. R. Piatkowski, U. (2011). "Catchability of pelagic trawls for sampling deep-living nekton in the mid-North Atlantic." ICES Journal of Marine Science **68**(2): 377-389.

Abstract

Material collected in summer 2004 from the Mid-Atlantic Ridge between Iceland and the Azores with three pelagic trawls was used to estimate relative catchabilities of common fish, cephalopod, decapod, and jellyfish species. Catchability is defined as the ratio of numbers caught between two trawls,

standardized for towed distance. Taxon-specific catchability coefficients were estimated for two large pelagic trawls with graded meshes, using a smaller pelagic trawl with a uniform mesh size as the reference trawl. Two of the trawls were equipped with multiple opening-closing codends that allowed sampling of different depth layers. Generalized linear and mixed models suggest that most of the taxa have catchabilities much lower than expected from the area of opening alone, indicating that only a few species are herded by the large mesh at the mouth of larger trawls. Catchability coefficients across taxa show a very large spread, indicating that the sampled volume for the larger trawls with graded meshes was highly taxon-specific. Part of this variability can be explained by body size and taxonomic group, the latter probably reflecting differences in body form and behaviour. The catchability estimates presented here form the basis for combining data for quantitative analyses of community structure.

Helama, S, H. Seppa, **Birks, H.J.B.** Bjune, A. E. (2010). "Reconciling pollen-stratigraphical and tree-ring evidence for high- and low-frequency temperature variability in the past millennium." *Quaternary Science Reviews* **29**(27-28): 3905-3918.

Abstract

Climate change and variability assessments require an understanding of their long-term and period (low-frequency) and short-term and period (high-frequency) variations. Pollen data have conventionally been thought of as a proxy of low-frequency variation of past climates but of more limited applicability for studying high frequencies. Likewise, tree-rings are commonly supposed to reflect faithfully high-frequency variations, with additional uncertainties attributable to variations at lower frequencies. Here we challenge this view in the context of pollen and tree-ring based temperature reconstructions from high-latitude Europe. The two types of records are compared and it is shown that the pollen and tree-ring based reconstructions exhibit similar temperature variability on centennial and longer scales. These can be revealed using timescale-dependent filtering. The same method surmounts geochronological discrepancies, thus enabling reconciliation of the proxies. Resulting new reconstructions validate over the instrumental period. Over longer intervals, our new proxy-fusions cover the climatic reversals of the Medieval Climate Anomaly (during the 10th to 13th centuries), Little Ice Age (during the 14th to 19th centuries), and 20th century warming. The warmest spells occurred in association with the Medieval Climate Anomaly and during the 20th century. The coolest intervals occurred in relation to Little Ice Age conditions. The new reconstructions show that decadal temperature amplitude has been approximately 2.5 degrees C in the past and thus considerably larger than inferred from spatially large-scale estimates of temperature anomalies.

Narayanaswamy, B. E., P. E. Renaud, Duineveld, G.C.A., Berge, J., Lavaleye, M.S.S., Reiss, H. **Brattegard, T.** (2010). "Biodiversity Trends along the Western European Margin." *Plos One* **5**(12).

Abstract

The seas along the western European margin encompass a vast geographical area comprising numerous different habitats, and are home to more than 10,000 metazoan species. Although research in this extensive region has been undertaken since the early 1800s, many new species are being described and distributional patterns identified. Recent studies incorporating the most extensive data series ever used in such European studies have failed to find any relationship between latitude and infaunal shelf biodiversity. Along the European shelf, species richness generally increases to a depth of 200 m and then decreases from 300-500 m. In the deep Northeast Atlantic, a unimodal curve illustrates how macrofaunal species diversity changes with depth whilst the megafauna appear to have a bimodal distribution. Regional studies are equivocal in that poleward increases in species diversity have been observed in some studies or taxa, but not in others. In the North Sea, arguably the best studied system in European waters, there appears to be a distinct increase in diversity with increasing latitude. Since this trend is confounded by similar latitudinal gradients in depth and trawling intensity, there is no clear explanation for the biodiversity pattern. Climatic shifts in diversity patterns and species ranges have recently been observed. Here we report previously unpublished data on changes in species richness that have been observed along the Norwegian coast over the past two decades, with the most northerly region seeing more than a 15% increase in the number of species being discovered there. This review synthesizes published and new biodiversity data across multiple spatial and temporal scales, and from the coast to the deep-sea, to provide an overview of what is known

along the western European margin. Threats to the biodiversity of the region are highlighted, as well as identifying where there are still gaps in our knowledge.

Watson, J. E., S.J. Brooks, Whitehouse, N. J., Reimer, P. J., **Birks, H.J.B.**, Turney, C. (2010). "Chironomid-inferred late-glacial summer air temperatures from Lough Nadourcan, Co. Donegal, Ireland." *Journal of Quaternary Science* **25**(8): 1200-1210.

Abstract

Western Ireland, located adjacent to the North Atlantic, and with a strongly oceanic climate, is potentially sensitive to rapid and extreme climate change. We present the first high-resolution chironomid-inferred mean July temperature reconstruction for Ireland, spanning the late-glacial and early Holocene (LGIT, 15-10 ka BP). The reconstruction suggests an initial rapid warming followed by a short cool phase early in the interstadial. During the interstadial there are oscillations in the inferred temperatures which may relate to Greenland Interstadial events GI-1a-e. The temperature decrease into the stadial occurs in two stages. This two-stage drop can also be seen in other late-glacial chironomid-inferred temperature records from the British Isles. A stepped rise in temperatures into the Holocene, consistent with present-day temperatures in Donegal, is inferred. The results show strong similarities with previously published LGIT chironomid-inferred temperature reconstructions, and with the NGRIP oxygen-isotope curve, which indicates that the oscillations observed in the NGRIP record are of hemispherical significance. The results also highlight the influence of the North Atlantic on BIO 2010.enl Page 3 the Irish climate throughout the LGIT.

Asaf Sadeh, Noa Truskanov, **Marc Mangel**, Leon Blaustein 2011 Compensatory Development and Costs of Plasticity: Larval Responses to Desiccated Conspecifics

Abstract

Understanding constraints on phenotypic plasticity is central to explaining its evolution and the evolution of phenotypes in general, yet there is an ongoing debate on the classification and relationships among types of constraints. Since plasticity is often a developmental process, studies that consider the ontogeny of traits and their developmental mechanisms are beneficial. We manipulated the timing and reliability of cues perceived by fire salamander larvae for the future desiccation of their ephemeral pools to determine whether flexibility in developmental rates is constrained to early ontogeny. We hypothesized that higher rates of development, and particularly compensation for contradictory cues, would incur greater endogenous costs. We found that larvae respond early in ontogeny to dried conspecifics as a cue for future desiccation, but can fully compensate for this response in case more reliable but contradictory cues are later perceived. Patterns of mortality suggested that endogenous costs may depend on instantaneous rates of development, and revealed asymmetrical costs of compensatory development between false positive and false negative early information. Based on the results, we suggest a simple model of costs of development that implies a tradeoff between production costs of plasticity and phenotype-environment mismatch costs, which may potentially underlie the phenomenon of ontogenetic windows constraining plasticity.

Snorri Gunnarsson, Albert K Imsland, Jón Árnason, Arnþór Gústavsson, Ingólfur Arnarson, Jón Kjartan Jónsson, Atle Foss, Sigurd Stefansson, Helgi Thorarensen 2011 Effect of rearing temperatures on the growth and maturation of Arctic charr (*Salvelinus alpinus*) during juvenile and on-growing periods *Aquaculture Research*, **42**, 221-229

Abstract

The effect of rearing temperature on the growth and maturation of Arctic charr (*Salvelinus alpinus*) was investigated. Arctic charr juveniles were reared for 6 months (phase I, October–April, size range 20–500 g) at constant temperatures of 9, 12 and 15 °C and according to two temperature-step groups (T_{step}) i.e. fish transferred from 15 to 12 °C or from 12 to 9 °C. All the previous treatments were then reared either at 7 °C or at 12 °C for an additional 4 months (phase II, size range 300–1000 g) and then slaughtered in August 2008. The overall growth rate was the highest at a constant temperature of 15 °C for the first 6 months of the trial, with the fish in this group being 44% and 78% heavier than the fish reared at a constant temperature of 12 or 9 °C respectively. Arctic charr showed a negative response in terms of the growth rate when transferred from higher to lower temperatures, especially

for groups previously reared at 15 °C. There was a trend for higher gonadosomatic index values at the end of the experiment for groups of fish that were exposed to higher rearing temperatures during the juvenile phase i.e. 4.18% (± 0.79) and 7.29% (± 0.89), for the temperature groups of 12 and 15 °C, respectively, compared with 2.49% (± 0.74) for the 9 °C group. Our results suggest that for the production of fish >1000 g, moderate or low temperatures (here 9 °C) should be applied during the juvenile phase in order to reduce the negative effects arising from maturation. Farmers with access to heat sources should accordingly choose more moderate rearing temperatures during the juvenile stage, especially if the fish is to be moved down in the temperature regime during the on-growing period.

Dhanasiri, A.K.S., Brunvold L., Brinchmann M, Korsnes K, Bergh Ø, Kiron, V. 2011. Changes in the intestinal microflora of wild Atlantic cod *Gadus morhua* L. upon captive rearing. *Microbial Ecology*, 61:20-30

Abstract

The commensal microbiota plays an important role in the well-being of the host organism, and it would be worthwhile to know the tenacious communities among them. Therefore, a study was undertaken to examine the changes in constitution of the intestinal microbiota of wild fish consequential to captivity. At first, the composition of intestinal microorganisms of Atlantic cod caught from the coastal area off Bodø, Norway, was examined. Thereafter, the changes in the bacterial community of the captive fish after offering them artificial feed or subjecting them to starvation were studied. The microbiota from the intestinal contents and wall segments were analyzed quantitatively by spread plate technique and DAPI staining and qualitatively by denaturing gradient gel electrophoresis. The study revealed that the counts of intestinal microbes in wild-caught Atlantic cod were not affected by captive rearing for 6 weeks, either when fed or when starved. However, the diversity of intestinal bacterial community was reduced in response to artificial feeding, whereas the change was restricted upon starvation.

Björn Thrandur Björnsson, **Sigurd O. Stefansson**, Stephen D. McCormick 2011 Environmental endocrinology of salmon smoltification. *General and Comparative Endocrinology* 170: 290–298

Abstract

Smolting is a hormone-driven developmental process that is adaptive for downstream migration and ocean survival and growth in anadromous salmonids. Smolting includes increased salinity tolerance, increased metabolism, downstream migratory and schooling behavior, silvering and darkened fin margins, and olfactory imprinting. These changes are promoted by growth hormone, insulin-like growth factor I, cortisol, thyroid hormones, whereas prolactin is inhibitory. Photoperiod and temperature are critical environmental cues for smolt development, and their relative importance will be critical in determining responses to future climate change. Most of our knowledge of the environmental control and endocrine mediation of smolting is based on laboratory and hatchery studies, yet there is emerging information on fish in the wild that indicates substantial differences. Such differences may arise from differences in environmental stimuli in artificial rearing environments, and may be critical to ocean survival and population sustainability. Endocrine disruptors, acidification and other contaminants can perturb smolt development, resulting in poor survival after seawater entry.

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