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## Denne ukas viktigste

### Årsrapport for PhD-kandidater og veiledningskomite / Annual report for candidates/supervision committee in the PhD-programme

I henhold til retningslinjer for PhD studiet vedtatt av fakultetet skal **både kandidat og veiledningskomité** levere rapport til instituttet innen **15. januar 2009**. Rapporten skal inneholde en kort beskrivelse av

- 1) status for utdanningsdelen,
- 2) status for avhandlingen,
- 3) eventuelle spesielle problemer
- 4) eventuelt pliktarbeid.

A report shall be submitted each year to the department by the candidate and the supervisory committee no later than **15 January 2009**. The report must include (short)

- 1) status of the training component,
- 2) status of the dissertation,
- 3) any special problems, and
- 4) any compulsory work

Nærmere orientering om rapporteringen finner du i: FELLESMAL FOR MAT.NAT. INSTITUTTER – RUTINER FOR OPPTAK, OPPFØLGING OG AVSLUTNING AV FORSKERUTDANNINGEN  
Norsk: <http://www.uib.no/mnfa/stab/Forskerutdanningsutvalg/fellesmal.pdf>

More information:

English: <http://www.uib.no/mnfa/stab/Forskerutdanningsutvalg/FELLESMAL-engelsk.pdf>

ÅRSRAPPORT/ANNUAL REPORT

Norsk: [http://www.uib.no/mnfa/skjema/PhD\\_administrasjon/arsrapport.doc](http://www.uib.no/mnfa/skjema/PhD_administrasjon/arsrapport.doc)

English: [http://www.uib.no/mnfa/skjema/PhD\\_administrasjon/arsrapport\\_engelsk.doc](http://www.uib.no/mnfa/skjema/PhD_administrasjon/arsrapport_engelsk.doc)

Sendes til Forskerutdanningsutvalget ved BIO evt. scannet dok. på e-post til / Submission to PhD-committee by: [tommy.strand@bio.uib.no](mailto:tommy.strand@bio.uib.no) **DEADLINE: JANUARY 15th. 2009.**

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

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

19. jan	<a href="#">IIASA</a> sommerprogram	19. feb	COFUND (EU tilskudd til stipendprogram) deadline <a href="#">Les mer</a>
15. jan	<a href="#">Fullbright</a> postdoc <a href="#">stipend</a>	2. mar	<a href="#">ERA-NET</a> Marifish
1. feb	<a href="#">Nordic Marine Academy</a> - organisering av forskerkurs i 2009, 2010 - mobilitetstipend - støtte til konferanser og workshops	27. mar	<a href="#">COST</a> European Cooperation in the field of Scientific and Technical Research) preliminary proposals is 27 March 2009. <a href="#">IRSES</a> Marie Curie International Research Staff Exchange Scheme
1. feb.	<a href="#">IIASA</a> postdoc stipend	apr '09	Erasmus Mundus II programmet.
11. feb	NFR deadline NB kl. 12:00 ( <a href="#">information from 2008</a> )	6. mai	ERC Advanced Grants: Life Sciences ( <a href="#">Les mer</a> )

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

## Essentials in English

### *Season's greetings!*

Take advantage of the holiday season to take a break and shift focus. Those who do not have live animal responsibilities, and even those who do, take the time to reflect and enjoy life outside work. Reflect on the season, on the people you care for and who need you ... something different from your usual day-to-day working activity. This message is particularly directed at those who do not think they have the time for it!! Everyone needs down time to re-charge their batteries.

Best wishes to all – and thanks for the birthday greetings – from Jarl

### *Mark two important dates on your 2009 calendar now!*

**Darwin Day: 12 Feb.** is the 200th anniversary of Davrwins birth. BIO is planning a celebration that day for UiB's biological sciences to be held at VilVite. There will be lectures and discussion as well as a dinner. Programme details will be released in January.

**Joint Seminar Day with BioMed: 18 Feb** BIO, together with colleagues from BioMed, is arranging a day-long seminar to present research activity areas and to open the door to future collaborations. There will be lectures, poster sessions, technical fora and course information. The Seminar will be held at Hotel Terminus from 08-16 and lunch will be served. More information and programme details will be released in January.

### *Travel refund forms – new tax rules and new forms*

1 Jan. 2008, the Norwegian Government passed new tax legislation that affects business travel abroad. All overnighting costs (including, for example, included breakfasts) must now be documented. Any difference between the actual cost and the official allowance for each given location is now taxable – both for the individual and for their employer. You can avoid this tax if you select the “pay overnight costs via receipts” option (NB per diem allowances are not included in this new tax rule). Read more or check with BIO's accounting personnel if you have questions. ([Information in Norwegian](#))

### *We have been investigated by NIFU STEP*

The research institute, NIFU STEP, has undertaken a questionnaire- / interview- based investigation of MatNat employees as part of the re-organisation and re-structuring process that has been ongoing since 2003-2004. The [report](#) has been given to the committee evaluating the leadership / management model at MatNat. Among other things, the results suggest that a majority would like to continue with Department Boards, but that these should have mandates that are more clearly defined. The report also highlighted the important role research groups have had within their respective departments. It further underlines that research group leaders are particularly important players and that this role should be better defined. Another point in the NIFU STEP report was that in contrast to the Rokkan Centre Questionnaire results, where support was shown for a Dean role as elected leader of the Faculty Board, many feel the current definition of the role of Dean is too weak. The NIFU STEP investigation has the advantage that similar studies have been conducted previously in 1991 and 2000, and it is thus possible to compare the results. It will be interesting to see what MatNat decides regarding its leadership model for the future at the board meeting in January.

### *Quality teaching prize to BIO!*

The UiB's Education Committee decided last week to award its annual prize (Ugleprisen) to BIO300, a masters course in data analysis and research approaches. Congratulations to everyone who has contributed to making this such a good course! Particular congratulations to the course leader, **Louise Lindblom** and to previous leaders **Karin Pittman** and **Per Jakobsen**. The students as well are to be commended. For the third year in a row, they have undertaken projects in collaboration with Bergen Commune to analyse water in the Bergen area. The prize will be awarded at a special ceremony in January. Ugleprisen winners are also automatically nominated for a national competition in education excellence. [Read more in Norwegian](#).

### *Insights into a bizarre microbial world*

**Kari Hjelle**, Bergen Museum, and **Jan Berge**, BIO have been involved in creating a fabulous new exhibit at Bergen Museum. The exhibit shows fantastic and colourful electron microscope images of pollen; revealing a microscopic world that most of us have never seen before. Go to the Natural History Museum and check it out!

### **Fridtjof Nansens awards**

For **research excellence** (kr 150000, diploma, Nansen medal). One of these awards is normally given within the Humanities and Social Sciences and one within Natural Sciences and Medicine. It is awarded to a Norwegian researcher, or a researcher with permanent residency in Norway, who has made a research contribution of exceptionally high international value.

For **young researchers** (kr 50000, diploma). It is awarded to a Norwegian researcher, or a researcher with permanent residency in Norway, who is not yet 35 years old.

The awards will be presented at the Norwegian Science Academy's annual meeting in May 2009. Deadline for Award nominations: 10.02.09. [More info.](#)

### **New call for Advanced Investigator Grants from the European Research Council**

#### ERC and Advanced Investigator Grants

[ERC](#) is part of the FP7 and functions as an instrument for the EU Commission's financing of exceptional, ground-breaking research within Europe within all disciplines, and particularly emphasising cross-disciplinary activity.

[ERC](#) has two funding schemes: Advanced Investigator Grants (Advanced Grants) and Starting Independent Researcher Grants (Starting Grants). Advanced Grants target leading, established researchers, while the Starting Grants aim to support young, promising researchers that could or may be in the process of establishing their own research group. Researchers who applied in 2008 are not eligible to apply in 2009.

#### Deadlines

This round of Advance Grant Calls has a budget of 490 mill. Euro. [More info about the Call.](#)

- Physical Sciences & Engineering: 25 March 2009
- Social Sciences & Humanities: 15 April 2009
- Life Sciences: 6 May 2009

### **Advanced scientific equipment and research infrastructure – new deadlines**

The Norwegian Research Council (NFR) had previously announced a deadline of 15 Feb (with an internal BIO / UIB deadline of 15 Dec). However, this deadline has been extended to 22 April for the applications from UiB to NFR, and **from BIO to MatNat/UiB 15 Feb.**

The budgets involved are 2-13 Million NOK for advanced scientific equipment and 30-200 million NOK for large scale facilities. The large scale facility support will begin with support for pre-project funding. Details will be published later in January 2009. Applications must document that the facility is of national relevance, aims to promote leading, international level research, as well as being nationally accessible. [Read more.](#)

### **Semester start January 2009**

The first day of the new semester is 5 January. Lectures will start either that week or the next – check the [schedule on the web!](#) Masters students taken up at this time will meet 6 January. There are between 8-15 new masters students expected next semester at BIO.

### **Fullbright Post doc. grant**

In climate, environment and energy research. The successful application will contribute to the development of Norwegian-American research collaboration in the arctic, with special emphasis on climate change. Deadline: 15 Jan. 2009. [Read more.](#)

### **Norway supports Bio-prospecting**

New support initiatives have been announced for bio-prospecting. Marine-based innovation is highlighted as being an important part of a knowledge-based Norwegian economy. In the most recent Innovation Press Release, the Fisheries and Coastal Zone Minister, Helga Pedersen, mentioned a new upcoming national strategy involving bio-prospecting, particularly in northern areas. [Read more.](#)

## Siste nytt fra BIO

### God jul!

Det er på tide å skifte fokus! Så sant du ikke har ansvar for levende dyr på laben, bør du bruke denne tida til å skifte fokus vekk fra jobben. Tenk gjerne på Jesusbarnet, eller på noen som trenger deg. Eller gjør noe helt annet enn hverdagens oppgaver. Det er spesielt viktig å gjøre noe annet dersom du ikke synes du har tid! Vi trenger alle å kople ut for å kunne yte.

### Mer fokus på forskningsgrupelederne

NIFU STEP har funnet ut at de ansatte mener at forskningsgrupelederne er viktige for forskningskvaliteten vår, og at deres rolle er for svakt avklart. Her har vi en klar utfordring for 2009. Utfordringen for noen av gruppene og lederne er å slutte å tenke på lederen som en tillitsvalgt talsperson, og begynne å tenke i form av ledelse, faglige mål og måloppnåelse.

### Tusen takk for gavene!

Jeg benytter denne spalten til å takke alle kolleger og venner ved BIO for det flotte Kryvi-bildet (*Flyndreyang og flyndreyin*→) og for gavekortet – og for stor oppslutning om 50-årsmarkeringen min på mandag. Hilsen Jarl Giske



### Merk av viktige begivenheter i 2009-kalenderen nå!

**Darwin dagen: 12. februar** er det 200 siden Charles Darwin ble født. Dette feirer BIO samme dag med et felles arrangement for de biologiske fagmiljøene ved UiB på ViIvite senteret. Det blir gode foredrag fra 12-17, muligheter til å snakke med andre biologer som er opptatt av evolusjon samt middag om kvelden. Flere detaljer om program og påmelding følger i januar.

**Felles fagdag med biomedisinere: 18. februar** arrangerer vi en felles fagdag med våre kolleger på Institutt for biomedisin for å finne ut hva vi har til felles og hvilken nytte vi kan ha av hverandre. Foredrag, postersesjon, teknikerforum og undervisningsinformasjon skal gi oss denne innsikten. Arrangementet finner sted på Hotel Terminus fra 08-16 og det vil bli servert lunsj. Flere detaljer om program og påmelding følger i januar.

### Latest from the external web

Here are some excerpts relating to personal web sites from a letter detailing some of the changes / guidelines relating to the new external web. [Read the letter](#). And ... a [brukermanual for personsider](#)

- \* Alle ansatte får en offisiell hjemmeside i den nye eksternweben, der de kort kan vedlikeholde informasjon om forskningsfelt/arbeidsfelt, kompetanse m.m.
- \* Det opprettes en separat adresse for ansattes private sider ("uoffisielle hjemmesider", som i dag bl.a. ligger på adressen [www.uib.no/people/\[brukernavn\]](http://www.uib.no/people/[brukernavn])). Disse blir flyttet til adressen [folk.uib.no/\[brukernavn\]](http://folk.uib.no/[brukernavn]). På denne måten ønsker vi å tydeliggjøre skillet mellom offisiell og privat informasjon fra våre ansatte. Alle ansatte som har private sider idag, vil motta et særskilt skriv om denne flyttingen og hva det innebærer.
- \* En del ansatte bruker i dag sine private sider til å informere om og formidle fra sin forskning. Det er sterkt ønskelig at slikt innhold flyttes inn i den nye eksternweben, og den lokale ledelsen henstilles til å legge til rette for og administrere dette.
- \* Parallelt med lanseringen av ny eksternweb for UiB, er alle offentlige institusjoner fra 1. januar pålagt å publisere nye dokumenter på sine websider i åpne format. Dette innebærer blant annet at skjemaer o.l. som skal lastes ned fra UiBs websider må være i formatene PDF eller ODF. IT-avdelingen ved UiB har installert programvare som kan utføre dette på alle maskiner som administreres sentralt fra.

\* Formidlingsavdelingen holder ukentlige kurs i det nye publiseringsystemet. Kursene er åpne for alle som skal kunne publisere innhold i den nye eksternweben. [Oversikt over tilgjengelige kurs](#) er på web. Denne listen vil kontinuerlig bli oppdatert.

### Jarl Giske fylte 50 år 15. desember

Sammen med gjester fra fakultetet og fra andre institutt hyllet BIO-ansatte sin instituttleder og gratulerte med hans 50 års jubileum. Jarl kunne informere forsamlingen om at i henhold til Bibelhistorien er det bare 50 år som kan kalles jubileum. Da slettes all personlig gjeld!! Dette er vi glade for ettersom det er grunn til å tro at BIO har hatt betydelig gjeld til Jarl for den tid og innsats han har bidratt med for å få instituttet opp å stå. **Peter Emil Kaland** illustrerte Jarls innsats som sju bragder:

1. Evne til å organisere og skaffe seg dyktige medarbeidere: Eks.: Ledelsesgruppen, profesjonell administrasjon + + +.
2. Evne til å "skjære igjennom" når det trengts. Eks.: Valg av navn på instituttet.
3. Organiseringen av personalet i forskergrupper. Ideen har spredt seg over hele universitetet.
4. Satte fokus på internasjonal forskning og publisering vha oppmuntrings- og belønningsmetoden.
5. BIO INFO - et glimrende informasjonstiltak som binder instituttet sammen. Det når fram til alle, også universitetsledelsen.
6. Nybygget. Han klarte å overbevise universitetsledelsen om verdien av den store investeringen. Får store faglige gevinster på sikt.
7. Integrering av laboratoriene: Biodiversitetslaboratoriet, levededyrlaboratoriet. Bygger forskergruppene sammen over faggrensene. Bedre utnytting av instrumentparken.



Beatriz Balino holdt en tale til Jarl og hyllet jublanten i henhold til Forskningsavdelingens nyinnførte hilsningstradisjon, et smelkyss på pannen!

Vi gratulerer!!  
Thelma Kraft, personalleder



## Siste nytt fra verden rundt oss

### St. Olavs Orden til Ola M. Johannessen

Nansen-senterets grunnlegger og direktør professor **Ola M. Johannessen** mottok [St. Olavs Orden](#) i går.

H.M. Kong Harald V utnevnte Johannessen til Ridder 1. klasse av Den Kongelige Norske St Olavs Orden for hans innsats for klima- og polarforskning. Ordensrådet har i sin vurdering lagt betydelig vekt på hans innsats i forbindelse med forskningen på polarhavene. Han og hans kolleger har gjennom sine arbeider gitt viktige bidrag til forståelsen av polarområdenes betydning for det globale klimaet og dermed sentrale globale miljøspørsmål. [Les mer ..](#)



### Ompa-Lompa: Lausungene overrakte grasrotmelding

Aksjon "Lausungene 2008" overrakte i går sin grasrotmelding om rekruttering til forskningssektoren og situasjonen for midlertidig ansatte forskere til leder i Kirke-, utdannings- og forskningskomiteen, Ine Marie Eriksen Søreide (H).

- Vi vil gi Stortinget den rekrutteringsmeldingen som Regjeringen parkerte i sommer, og vi håper at Stortinget vil slutte seg til vårt krav om å redusere antallet midlertidig ansatte forskere, sier Jon Iddeng og Ragnhild Hutchison i Aksjon Lausungene. Les mer hos [Forskerforbundet](#), [LO](#) og [Universitetsavisa](#).

### NIFU STEP sin rapport om fakultetet

- som ble omtalt i forrige BIO-INFO, kan nå lastes ned fra nettet (→): Her er mange nyttige refleksjoner om mulige forbedringer på institutt- og fakultetsnivå.

RAPPORT 47/2008

## Produktivitet, pragmatisme og polarisering

*Evaluering av styrings- og ledelsesmodellen ved Det matematisk-naturvitenskapelige fakultet ved Universitetet i Bergen*

Nicoline Frølich og Bjørn Stensaker

### Nasjonal konferanse ved UiB

Perspektiver på [internasjonal](#) mobilitet 18. februar 2009.

### Havet forsures av økende CO2

Et hovedmoment i klimadebatten er årsakene til, og konsekvensene av, stadig økende CO2-innhold i atmosfæren og havet. Det er fruktbart og nødvendig med debatt om et slikt alvorlig tema. Problemet oppstår når debatten preges av misforståelser og feiltokninger, skriver kronikkforfatterne Richard Bellerby, Are Olsen og Gisle Nondal, Geofysisk institutt/Bjerknessenteret i [Forskning.no](#)

### Fiskeriminister Helga Pedersen til Sjømatdagene

Årets viktigste, og kanskje eneste, politiske fiskeridebatt finner sted under Sjømatdagene på Hell 20. til 21. januar 2009. Se mer [her](#)

### Sterkt behov for mer forskning i Arktis

Til tross for hurtige miljøforandringer i Arktis vet vi altfor lite om prosesser bak isdannelse i dette området sier Professor Nalân Koç i [CORDIS](#) News "Story of the Month".

### Ledige stillinger for biologer

Sjekk oversikten på [jobbnor!](#)

Frist	Stilling
19.12	<a href="#">Sars Centre: Research Technician (Forskningstekniker)</a>
20.12	<a href="#">Postdoc</a> Biological Oceanography at Kypros
22.12	<a href="#">Assistant prof.</a> Biogeoscience, Vanderbilt University, USA
<b>30.12</b>	<b>BIO: Forskingsassistent</b>
31.12	<a href="#">Scientific Researchers</a> - Charles Darwin Foundation – Galapagos Islands
07.01	<a href="#">Postdoc</a> økologisk statistikk på NINA
?01	<a href="#">PhD</a> position molecular microbiology in Marburg, Germany. No specific application deadline.
14.01	<a href="#">UNESCO</a> : Executive Secretary of the Intergovernmental Oceanographic Commission
16.01	HI: 2 <a href="#">Forskerstillinger innen fiskehelse</a>
16.01	<b>International Chair</b> on microbiology /biology and/or geosciences of the Deep Sea Environment
31.01	European Geosciences Union (EGU): Executive Secretary ( <a href="#">info</a> and <a href="#">more info</a> )

## Forskning: utlysninger, nye satsinger og prosjekter

### ERA-NET prosjektet MariFish

har utlyst midler til forskning på "fishery management indicators". Se utlysning [her](#). Flere forskningsråd har gått sammen i å finansiere dette, bl.a. NFR med opp til 150 000 NOK/år i maks 3 år. Mer [her](#) og søkerveiledning [her](#). Søknadsfrist 2. mars 2009.

### Fullbright Post doc. stipend

innenfor fagområdene: Miljøfag, Klimaendringer, Energiforskning. Stipendnehaveren skal bidra til å sette fokus på videreutvikling av norsk-amerikansk forskningssamarbeid i nordområdene/ de arktiske områder, med særlig vekt på klimaendringer og utfordringene disse byr på. Søknadsfrist 15. Januar 2009. [Norsk/engelsk](#) utlysningstekst.

## Ukens bilde



Two seasonal-looking views from the deep sea, taken during the Centre for Geobiology's research cruise.

The first shows mineral deposits found on one of the slopes of the black smoker, Loki's Castle.

The second shows a "Christmas tree" of chrinoids!

Best wishes ...

(Looking forward to your images next year!)



*You are invited to submit photos (electronically!) for "Ukens bilde". Please include a very short description and credit information. Picture can be of researchers / students in action, technology, organisms, field sites ...*

*Please send your pictures to [Elinor Bartle](#) (preferable format jpg, gif; size around 300px sq; saved for web - under 60kb).*

## Nye artikler

Har du en artikkel, kapittel eller bok som ikke har stått her?  
Du kan sende bibliografi og abstract (helst i Word-format) til Jarl så snart du har sidetall.

### Mikko Heino: evolusjon av spisestrategier

Heino, M., Parvinen, K., & Dieckmann, U. 2008. Evolution of foraging strategies on resource gradients. *Evolutionary Ecology Research* 10: 1131-1156.

**Abstract Question:** How are competing foragers expected to distribute their lifetime foraging effort on a gradient of resource types that differ in abundance, quality, foraging costs, and associated mortality risks? **Mathematical method:** Population dynamics of foragers and resources coupled with



adaptive dynamics of foraging strategies based on continuous, function-valued traits. **Key assumptions:** We start from generalizing the classical patch-based theory of optimal foraging to continuous resource gradients following the traditional assumptions of constant renewal rates of resources, spatially homogeneous mortality risks, and of foragers that are omniscient, free to move without costs, equal, and not experiencing any saturation of intake. We then relax the restrictive assumptions of the classical model, thus accounting for nonlinear functional responses of the foragers, heterogeneous mortality risks and resource qualities, energetically costly foraging, genetic covariances constraining foraging, feedbacks between foraging and resource dynamics, and different types of competition between foragers. **Results:** (1) When expressed as instantaneous rates with the same units (time<sup>-1</sup>), mortality risks (d), foraging costs (c), and resource qualities (q) all influence the evolutionarily stable distribution of foraging effort through the dimensionless expression (d+c)/q; (2) functional responses that imply intake saturation may result in a subset of resources remaining entirely unused; (3) coupling foraging to resource dynamics results in a rich array of evolutionary outcomes, depending on the type of competition among foragers and the inter-play between forager and resource characteristics; and (4) genetic constraints may cause foraging effort to track the resource gradient more coarsely than classical models predict.

### **Loïc Baulier & Mikko Heino: ny metode for å beregne modning fra vekstmønster, anvendt på sild**

Baulier, L., Heino, M., 2008. Norwegian spring-spawning herring as the test case of piecewise linear regression method for detecting maturation from growth patterns. *Journal of Fish Biology* 73: 2452-2467

**Abstract** Data from Norwegian spring-spawning herring *Clupea harengus*, were used empirically to assess the performance of a regression method aimed at detecting the time of the onset of maturation from growth trajectories. At the level of the whole dataset, the piecewise linear-regression method was accurate and showed only a minor bias (-0.17 years) relative to age at maturation visually read from scales. The method, however, was relatively imprecise and provided an estimate of age at maturation equal to the one read from the scale in less than half of the cases (47.6%). Moreover, bias was strongly dependent on age at maturation: the age at maturation of early maturing fish was often overestimated, whereas the opposite was true for late-maturing fish. Accuracy and precision of the regression method relative to visual readings also depended on the growth type (determined by the nursery area of young *C. harengus*) and cohort but not on sex. Modifying the original regression method enabled marginally improving the precision of the approach but a strong maturation age-dependent bias persisted. The results with *C. harengus* suggested that age-at-maturation estimates from the piecewise linear regression method should be treated with caution.

### **Nils-Kåre Birkeland: evaluering av metoder for hydrogenproduksjon under termofile forhold**

O-Thong, Sompong, Prasertsan, Poonsuk, Birkeland, Nils-Kåre 2009. Evaluation of methods for preparing hydrogen-producing seed inocula under thermophilic condition by process performance and microbial community analysis. *BIORESOURCETECHNOLOGY* 100: 909-918

**Abstract:** Five methods for preparation of hydrogen-producing seeds (base, acid, 2-bromoethanesulfonic acid (BESA), load-shock and heat shock treatments) as well as an untreated anaerobic digested sludge were compared for their hydrogen production performance and responsible microbial community structures under thermophilic condition (60 °C). The results showed that the load-shock treatment method was the best for enriching thermophilic hydrogen-producing seeds from mixed anaerobic cultures as it completely repressed methanogenic activity and gave the a maximum hydrogen production yield of 1.96 mol H<sub>2</sub> mol<sup>-1</sup> hexose with an hydrogen production rate of 11.2 mmol H<sub>2</sub> l<sup>-1</sup> h<sup>-1</sup>. Load-shock and heat-shock treatments resulted in a dominance of *Thermormaerobacterium thermosaccharolyticum* with acetic acid and butyric acid type of fermentation while base- and acid-treated seeds were dominated by *Clostridium* sp. and BESA-treated seeds were dominated by *Bacillus* sp. The comparative experimental results from hydrogen production performance and microbial community analysis showed that the load-shock treatment method was better than the other four methods for enriching thermophilic hydrogen-producing seeds from anaerobic digested sludge. Load-shock treated sludge was implemented in palm oil mill effluent (POME) fermentation and was found to give maximum hydrogen production rates of 13.34 mmol H<sub>2</sub>

$l^{-1} h^{-1}$  and resulted in a dominance of *Thermoanaerobacterium* spp. Load-shock treatment is an easy and practical method for enriching thermophilic hydrogen-producing bacteria from anaerobic digested sludge.

## Bok-kapitler

### **Mikko Heino & Katja Enberg: overutnytting og bærekraftig bruk av bestander**

Heino, Mikko and Enberg, Katja 2008. Sustainable Use of Populations and Overexploitation. In: Encyclopedia of Life Sciences. John Wiley & Sons, Ltd: Chichester <http://www.els.net/> [DOI: 10.1002/9780470015902.a0020476]

**Abstract** Sustainable use refers to exploiting a resource so that the resource is not depleted or permanently damaged. Sustainability is an internationally accepted minimal goal in managing biological resources. However, many populations are managed under more stringent goals, for example obtaining maximum sustainable biological or economic yield. Overexploitation refers to exploitation that is more intensive than such specific goals. While overexploitation is not sensible from societal point of view, in practice overexploitation often occurs because of the conflicting interests between individual exploiters and the public, and because individual exploiters often are maximizing short rather than long-term benefits. When sustainable exploitation is attempted, significant practical challenges remain in determining particular exploitation levels that would guarantee chosen management goals. Good intentions may be ruined if uncertainty is not properly accounted for, and overexploitation may also result from lack of precaution.

### **Katja Enberg: nedgang og gjenvekst i torskebestander**

Lilly G.R., K. Wieland, B. Rotschild, S. Sundby, K. Drinkwater, K. Brander, G. Ottersen, J. Carscadden, G. Stenson, G. Chouinard, D. Swain, N. Daan, K. Enberg, M. Hammill, A. Rosing-Asvid, H. Svedäng, and A. Vázquez. 2008. Decline and recovery of Atlantic cod (*Gadus morhua*) stocks throughout the North Atlantic. In: Resiliency of gadid stocks to fishing and climate change, Edited by Kruse G. H., K. Drinkwater, J.N. Ianelli, J.S. Link, D.L. Stram, V. Wespestad, and D. Woodby. Alaska Sea Grant College Program, Fairbanks, Alaska. Pp 39-66.

**Abstract** Many stocks of Atlantic cod (*Gadus morhua*) on both sides of the North Atlantic are currently at much reduced levels of biomass, but this situation is not in all instances the result of long, continuous decline. Most Northwest Atlantic stocks declined to low levels during the 1970s, but increased during the 1980s before declining even more severely during the late 1980s and early 1990s. Several of these stocks have shown little recovery despite severe restrictions on directed fishing. Many stocks in the Northeast Atlantic have experienced sustained increases and sustained decreases, but generally not in concert. Among-stock comparisons illustrate that fishing has played a dominant role in the dynamics of all cod stocks, but variability in climate has contributed to variability in recruitment, individual growth, and natural mortality. A cooling event during the last three decades of the twentieth century contributed to the rapid decline of several stocks in the Northwest Atlantic, and changes in life-history traits (growth rate, age and size at maturity) and in the biotic environment (predators and prey) may be contributing to recovery being slow.