New Forms and Needs for Communication

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Challenges: within the scientific community

1. The large scale of global issues:
   – Require interdisciplinary or intersectorial solutions
   – Require flexibility in project designs

2. Reproducibility:
   – Communicating results in an increasingly open data format

3. Broken reviewing system
   – Lack of a credit system for reviews
   – Reformatting requirements and more competitive publishing atmosphere cause a scientific lag in reporting
Interdisciplinary workshops

• Lock young scientists of different disciplines inside a room and see what happens...
Natural scientists vs Social scientists

Boonstra, ..., Whittington *in review*
Interdisciplinary work is stagnant in GCC research

Figure 2: Trends in proportions of disciplinary and interdisciplinary research within north-east Atlantic marine climate change literature. Proportions (lines) with 95% confidence envelopes (shaded areas) fitted to observed annual proportions (circles) using binomial generalized linear models. D is the estimated doubling time of the absolute number of papers per year. Significant trends were observed for physical and biological sciences while social and interdisciplinary were non-significant.
Scientific Reproducibility

- Scientific outputs are measured by Impact Factor, not quality.
- “Unexpected” results have high impact, but are often wrong
  - See Bacterium That Can Grow by Using Arsenic Instead of Phosphorus", 256 citations, but also with two followups confirming that the authors were wrong (doubts pretty much were immediately present upon publication - reviewers did a lousy job).
    - paper: http://www.sciencemag.org/content/332/6034/1163.full
    - later paper: http://www.sciencemag.org/content/337/6093/470.short
    - later paper: http://www.sciencemag.org/content/337/6093/467.abstract

- From the perspective of a scientific journal, a controversial paper is good for attracting interest in the journal.
- From the perspective of the field of science, we are generating more and more bad work amidst the good work.
Broken Reviewing System

• it takes effort to do well, yet these do not count towards a scientists' achievements.
• slow down publication by long periods of time, leading to 1-2 year lag in scientific reporting
• Can be seen in the growth of alternate publication options:
  1. Pre-print servers - http://arxiv.org/ and its siblings (See also http://blog.pubchase.com/we-can-fix-peer-review-now/ )
  2. Post-publication reviewing (http://scholarlykitchen.sspnet.org/2013/03/27/how-rigorous-is-the-post-publication-review-process-at-f1000-research/)
Challenges:

beyond the scientific community

1. Attraction of talented youth:
   – Leveraging blogs and social media
   – Finding new scientific communication pathways

2. Funding realities:
   – Further efforts must be made to consider research applications to secure funding

3. Communication
   – Communication to nonscientists allows others to (mis)interpret your work.
Attraction of new scientists

- Blogs
- School activities
- Twitter
- Facebook groups
- Public media
- Magazines
- Google search results
  - “Nordic Marine Research”
Nordic Centre for Research on Marine Ecosystems and Resources...

Nordic Centre for Research on Marine Ecosystems and Resources under Climate Change: www.nomer.ning.org is a Nordic Centre of Excellence that...

Nordic Marine Academy

To strengthen intra-Nordic research co-operation, expertise and innovation in marine sciences, and to enhance research training and mobility of researchers...

Nordic Marine Academy: Activities - Scientific Workshops...

NMA has granted support to a Nordic Marine Science Conference. Student and young scientist support, deadline for registration August 20. NMA will provide...
Attraction of new scientists

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  - “Nordic Marine Research”
  - “Marine Research”
Leveraging media
An expert approach to global change

Leading NeMeER scientists: Nils Chr. Stenseth (Chair), Carl Folke (co-Chair), and Philippe Cury (Centre Advisory Panel Chair) discuss a new coordinated strategy for managing the impact of global changes on Nordic marine life, using Atlantic cod as an example of the challenges ahead.
Safeguarding the future of the Nordic cod

Nils Christian Stenseth

Nordic cod stocks have already undergone major changes, caused in large part by intensive harvesting and a warming climate. The Nordic Centre for Research on Marine Ecosystems and Resources under Climate Change (NorMERE), a new Nordic Centre of Excellence (CoE), will study the impacts of climate change on cod and the ecosystem in which it lives, generating knowledge about how to better safeguard the future of this important Nordic fish species.

Professor Nils Christian Stenseth, chair of the new centre, has headed research showing that intensive harvesting of cod in the Barents Sea and along the Norwegian coast has selected for individuals to be smaller in size and to reach sexual maturity at a younger age—and these changes will have economic repercussions. The scope of NorMERE’s activities will geographically broaden this research, to include studies of cod stocks in the Barents Sea, North Sea, Baltic Sea, northwest Italy, the Skagerrak strait, and coastal regions of Greenland and Iceland.

Ecology, evolution and economics—NorMERE will use cod as a model organism for studying the direct and indirect impacts of climate change on cod stocks, and the ability of cod to adapt to these changes. The centre will study cod with an ecological perspective, with an examination of different cod life stages and the population and other marine organisms and conditions affecting their habitat and growth. These studies will be combined with economic models to evaluate current stock management practices and to explore the economic impacts of climate change on cod harvests. The chair of NorMERE, Professor N. Christian Stenseth, is an ecologist and chair of CES, and the co-chair, Professor Carl Falkevik, is an economist and Scientific Director at the Ecobeat Research Centre.

Professor Stenseth’s specialty is using available data to gain an understanding of the overarching ecological and evolutionary processes of nature. Cod is a good model for these studies since the knowledge is already available throughout the Nordic region. Moreover, cod provides us with a unique opportunity to apply an interdisciplinary approach to many areas that are described in scientific literature. This approach aims to use the information that is already known to better understand the processes that lead to changes in cod populations. To that end, NorMERE’s full research programme is designed around cod, which in turn provides knowledge on the status of other species and is essential for understanding the entire ecosystem.

When Professor Stenseth began assembling an advisory panel of scientific experts for the new Centre, every member he approached expressed immediate interest in being involved. Such a positive response is in testament to both the concept of NorMERE and the expertise Professor Stenseth and colleagues have expertise and knowledge. The centre has a strong team of experts from around Europe, and it is the first Nordic Centre to be established in the Nordic region.

Whirlpool of interest—NorMERE is a collaborative effort between research institutions in eight countries, comprising established researchers with experience in studying physical, biological, social, and economic aspects of ecosystems. The centre will include up to 12 researchers, each of whom will have a home institution and several months hosted by at least one other institution—and five postdoctoral researchers, who will visit between all institutions. It is the first Nordic Centre to be established in the Nordic region.

—If we make this thing happen, we will generate a great deal of new knowledge, which will provide the next generation of marine biologists with interdisciplinary expertise, says Professor Stenseth. —I have never claimed that my research can have immediate practical applications, but it certainly hopes to be useful in the long run.
Studerer torsken

Nordiske staten streber for å sørge for en effektiv, selvkostende og strømmen og som er beregnet på å sokker og sterke. Dagens Næringsliv

11 October 2011
8 NYHETER

Skild: Nye B-Klasse, Landkrabbenes nye

Nye B-Klasse er i september.

Norge er nå på topp

62 millioner på torsk

Klima

Torskesuccess

Fiskere er overvokst.

Fiskeren 14.10.11 (page 8)
Competitive funding

• The number of scientists is growing faster than funding allocations.
• We must learn to communicate better about our scientific applications.
Communication with nonscientists

• Making scientific data public takes effort
  – genetic reads are often put into short-lived archives to fulfil obligations of publishing genetic data, but without the meta-data and the effort that goes into getting sequences properly into large sequence databases, those genetic sequences are very inaccessible.

• Communication of methods and data is *hard*
  – with journalists and general people from outside the field, almost every sentence can lead to misunderstandings ("So you normalized your data? Removing those peaks. Right.. What are you hiding?") of things that are scientifically sound, ie., excluding bark beetle years from tree-ring samples, correcting for urbanization nearby climate stations, etc).

• Scientists are not retained/supported for Outreach activities
Thanks!!!

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