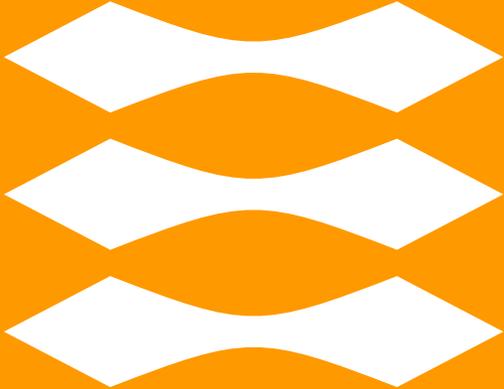


DTU



Advancing ecosystem-based management of marine mammals through the use of an ecosystem service approach

-Based on a conceptual paper + DK tourism study

Christian Riisager-Simonsen

- DTU Aqua

Morten Tange Olsen

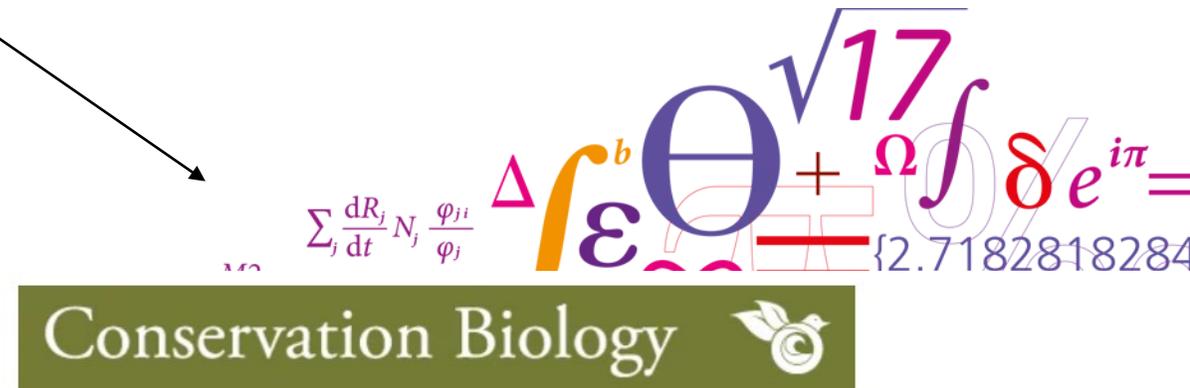
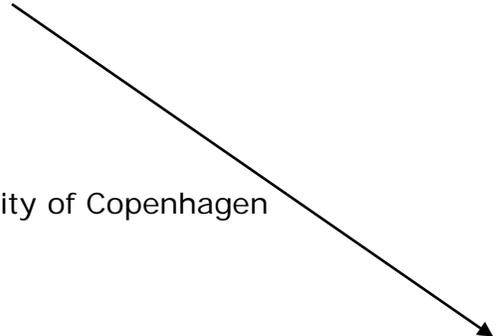
- Natural History Museum Denmark, University of Copenhagen

Anders Galatius

- Dep. of Bioscience, Aarhus University

Olivia Rendon & Nicola Beaumont

- Plymouth Marine Laboratory, UK



Essay

Using ecosystem-services assessments to determine trade-offs in ecosystem-based management of marine mammals

Christian Riisager-Simonsen✉, Olivia Rendon, Anders Galatius, Morten Tange Olsen, Nicola Beaumont

First published:14 April 2020 | <https://doi.org/10.1111/cobi.13512>



Brundtland-Report
«Our Common Future» 1987

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

World Commission on Environment and Development (WCED), 1987. *Our Common Future: Report of the World Commission on Environment and Development*. Transmitted to the General Assembly as an Annex to document A/42/427 - Development and International Co-operation: Environment.



Brundtland-Report
«Our Common Future» 1987

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

World Commission on Environment and Development (WCED), 1987. *Our Common Future: Report of the World Commission on Environment and Development*. Transmitted to the General Assembly as an Annex to document A/42/427 - Development and International Co-operation: Environment.



But how?

Policy levels

Global goals



EU directives



Management plans



How are we doing?

Global goals



IPBES global assess. 2019

- We are NOT protecting aquatic nature sufficiently
- Management must change
- General call for integrated ecosystem approaches

EU directives



EU's marine policies

- MSFD, MSPD, CFP
- Suggest ecosystem-based management of human activities = sustainability
- UNEP suggest ecosystem service framework (trade-offs)

Management plans



National questions

- How should ecosystem-based management account for both Environmental, Economic and Social trade-offs, scenarios etc. (integrated assessments)
- Where does wildlife management fit in?

How are we doing?

Global goals



EU directives



Management plans

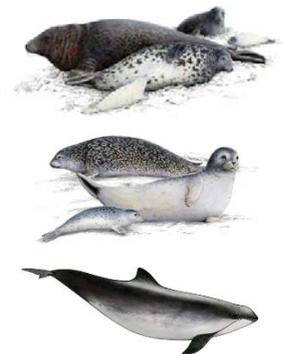


IPBES global assess. 2019

- We are NOT protecting aquatic nature sufficiently
- Management must change
- General call for integrated ecosystem approaches

EU's marine policies

- MSFD, MSPD, CFP
- Suggest ecosystem-based management of human activities = sustainability
- UNEP suggest ecosystem service framework (trade-offs)



Marine managers in charge of implementing EBM

Need

- Information that allow trade-off analyses
- Must be able to link EBM goals to lower level management plans/regulation
- Must be able to consider the complex socio-ecological management of areas, stocks, sectors etc.

Known solutions

- Information on direct and indirect benefits (trade-offs) = the ecosystem service approach's focus
- Efforts to operationalise the ecosystem service approach has been increasingly adopted
- Recent work by e.g. Hammerschlag et al. (2019) suggest focus on large aquatic predators

Marine managers in charge of implementing EBM

Our main suggestion: *"Explore the ecosystem service approach on the population/stock level"*

Why look at marine mammals?

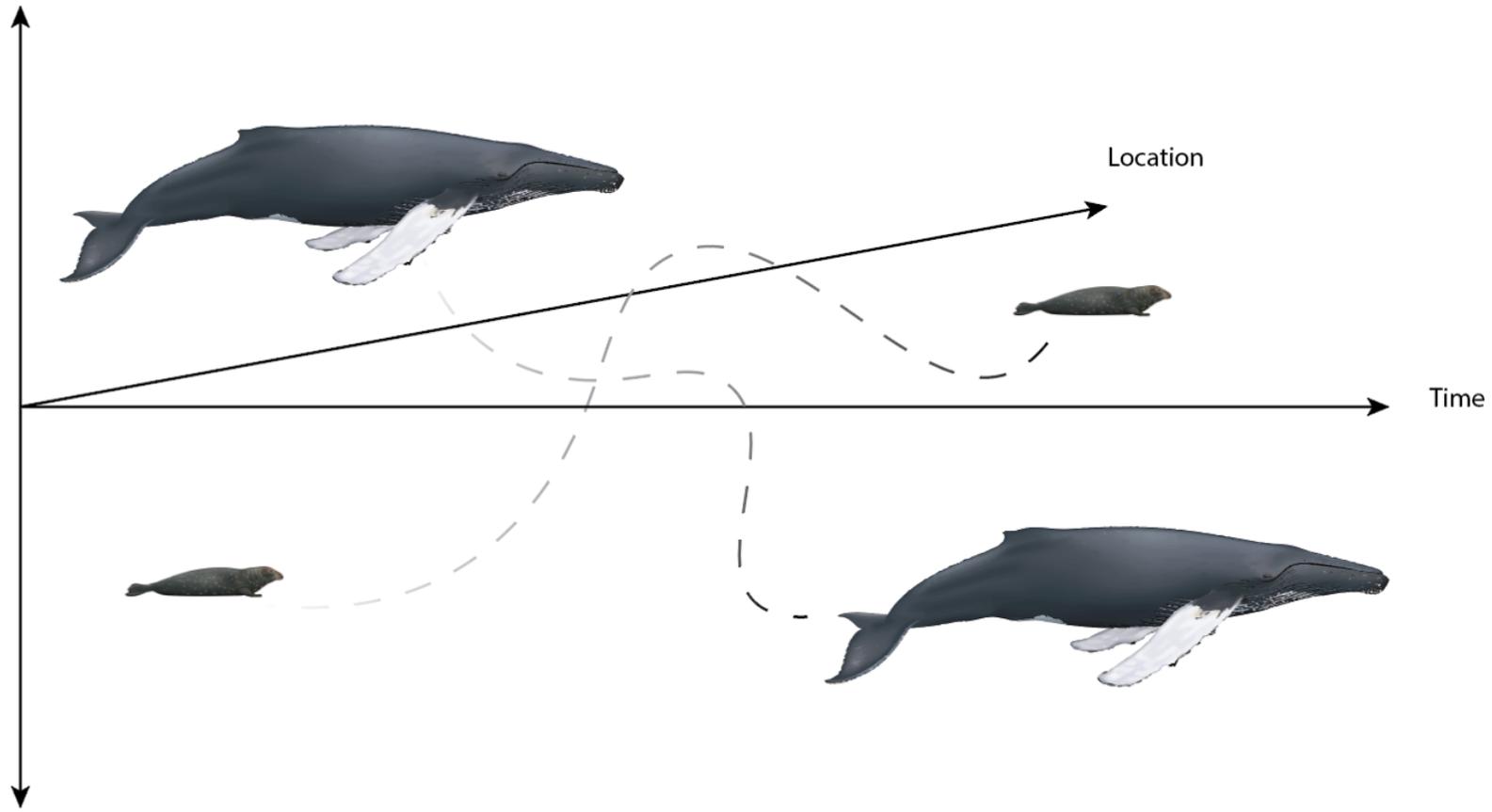
- 1) Many studies suggest significant, cultural, economic and ecological benefits
- 2) But also significant direct and indirect disservices (i.e. long-term conflicts with fisheries)
- 3) No comprehensive description and classification of ecosystem services from marine mammals exists
- 4) Recent studies focus on areas, but do not account for the migratory ecosystem service providers

How could we account for the ecosystem services they provide?



We provide categories & indicators and examples of direct services + examples of indirect supporting services

Provided Ecosystem Services



Ecosystem disservices inflicted

Benefits to operationalising an ecosystem service approach to the management of wildlife, and marine mammals in particular



Benefits to operationalising an ecosystem service approach to the management of wildlife, and marine mammals in particular



- 1) The ecosystem service concept is now sufficiently acknowledged (IPBES)
- 2) First papers made on e.g. PES schemes for e.g. marine mammal related conflicts and other wildlife
- 3) Likely to see increasing request for science-policy advice which use ecosystem service terminology
- 4) Unwise to leave wildlife/stock management as a discipline detached from overarching policy agendas such as EBM
- 5) Will be particularly important for marine populations, who's ecological roles and value might not be easily understood by the public or policy makers
- 6) Could provide a basis for structured and transparent discussions with stakeholders about what management trade-offs are at stake, and who (equity), how, when

Danish example

The Danish discourse

Seals are disliked by fishermen



Photo: Andreas Salling, DCE, AU

Grey seal in pond net caught on video

The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets



Photo: Andreas Salling, DCE, AU

Grey seal in pond net caught on video

The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost

- Forgone fishing opportunities due to competition
- Host for parasites



Photo: Andreas Salling, DCE, AU

Grey seal in pond net caught on video

The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost



s due



Photo: Andreas Salling, DCE, AU

Grey seal in pond net caught on video

The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost



Andreas Salling, DCE, AU
Screenshot on video

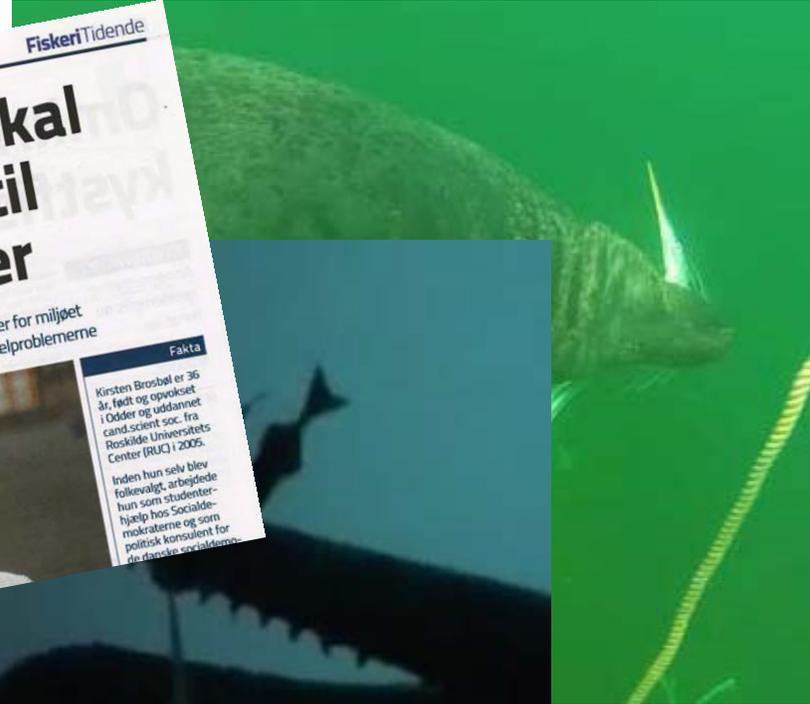
The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost



Areas Salling, DCE, AU
 nt on video

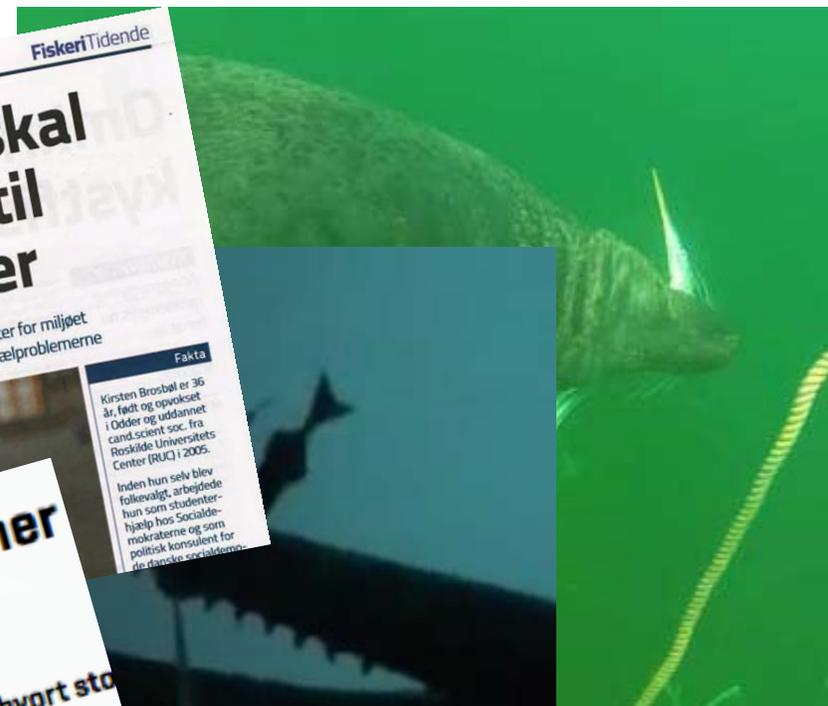
The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost



Areas Salling, DCE, AU
 Interview on video

The Danish discourse

Seals are disliked by fishermen

Direct cost

- Destroy gear
- Damage fish in nets

Indirect cost



The Danish discourse

Seals are disliked by fishermen

FiskeriTidende

Lørdag den 5. juli 2014 | 19

Sæler, sælorme og deres påvirkning af dansk fiskeri

Baggrund Orme spredt i havmiljøet af sæler volder stadig større problemer for dansk fiskeri



Ormene dør ved 60 grader

FiskeriTidende

Minister skal

Orme i miljøet
oblemene

Fakta

Kirsten Brosbøl er 36 år, født og opvokset i Odder og uddannet cand.scient.soc. fra Roskilde Universitets Center (RUC) i 2005. Inden hun selv blev folkevalgt, arbejdede hun som studenterhjælp hos socialdemokraterne og som politisk konsulent for de danske socialdemokrater.

TVB TV 2/Bornholm

Politiker: Sælproblem skal tages alvorligt

Auken vil undersøge

Af Anders Jerking | 29. januar 2014 kl. 1:33

FISKERI: Miljøminister Ida Auken om kystfiskeriet.

Maria Salling, DCE, AU

The Danish discourse

Seals are disliked by fishermen

FiskeriTidende | Lørdag den 5. juli 2014 | 19

Sæler, sælorme og deres påvirkning af dansk fiskeri

Baggrund Orme spredt i havmiljøet af sæler volder stadig større problemer for dansk fiskeri



Ormene dør ved 60 grader

FiskeriTidende
 Minister skal

FiskeriTidende | Lørdag den 24. maj 2014 | 15

Naturstyrelsen åbner for nedskydning af gråsæler

Fiskere kan nu søge om tilladelse til midlertidig regulering af gråsæler

Her bliver det frembarvet at gråsæleren - i modsætning til den spættede sæl - fortsat vurderes til at have en ugunstig bevaringsstatus. Det betyder, at Danmark er forpligtet til at sikre gunstige vilkår for gråsæleren, kan man læse på hjemmesiden.

Man har i Naturstyrelsen siden marts arbejdet på at lave en konsulentrapport vedrørende sagbehandling, vilkår for tilladelse og klarlægning af IT-systemer, bliver det ligeledes nævnt på hjemmesiden.

Den interne tidsplan for processen er overholdt, og det er nu muligt for de berørte fiskere at søge om tilladelse til regulering af gråsæl, siger Trine Fuqmann til konsulentrapporten.

Her bliver det frembarvet at gråsæleren - i modsætning til den spættede sæl - fortsat vurderes til at have en ugunstig bevaringsstatus. Det betyder, at Danmark er forpligtet til at sikre gunstige vilkår for gråsæleren, kan man læse på hjemmesiden.

Man har i Naturstyrelsen siden marts arbejdet på at lave en konsulentrapport vedrørende sagbehandling, vilkår for tilladelse og klarlægning af IT-systemer, bliver det ligeledes nævnt på hjemmesiden.

Den interne tidsplan for processen er overholdt, og det er nu muligt for de berørte fiskere at søge om tilladelse til regulering af gråsæl, siger Trine Fuqmann til konsulentrapporten.

Auken vil undersøge

Af Anders Jerking | 29. januar 2014 kl. 1:33

FISKERI: Miljøminister Ida Auken
 kystfiskeriet.

TV 2/Bornholm

Politiker: Sælproblem skal tages alvorligt

Treas Salling, DCE, AU

No benefits to marine mammals in Denmark? – No ecosystem services?



Grey seal



Harbour seal



Harbour porpoise

No benefits to marine mammals in Denmark? – No ecosystem services?



Grey seal



Harbour seal



Harbour porpoise

Cultural services = ?

Supporting services = ?

Regulating services = ?

Provisioning services = ?

The cultural services from marine mammals in Denmark – a mapping of recreational services

The cultural services from marine mammals in Denmark – a mapping of recreational services

In 2015:

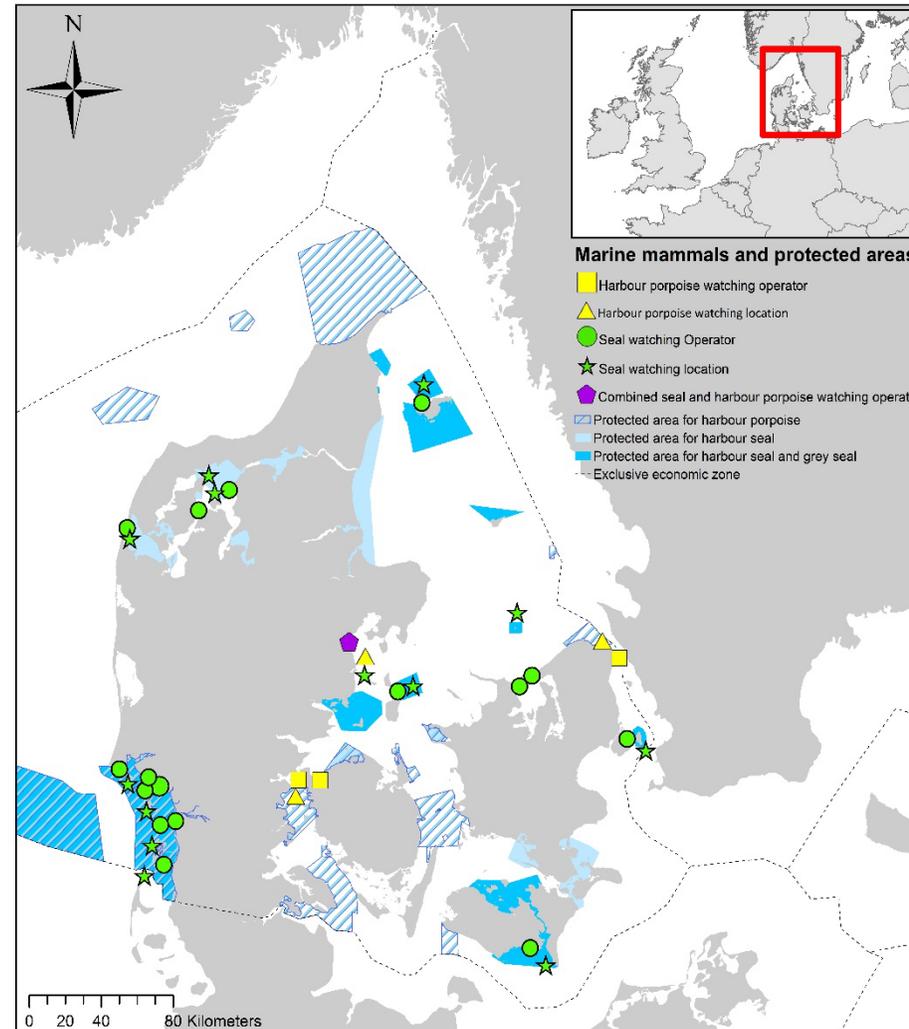
22 marine mammal watching operators

- 17 focused on seals
- 4 on harbour porpoises
- 1 combined

➤ 41,000 tourists in total

➤ 29.000 seal tickets sold

> 900,000 € in revenue on tickets alone



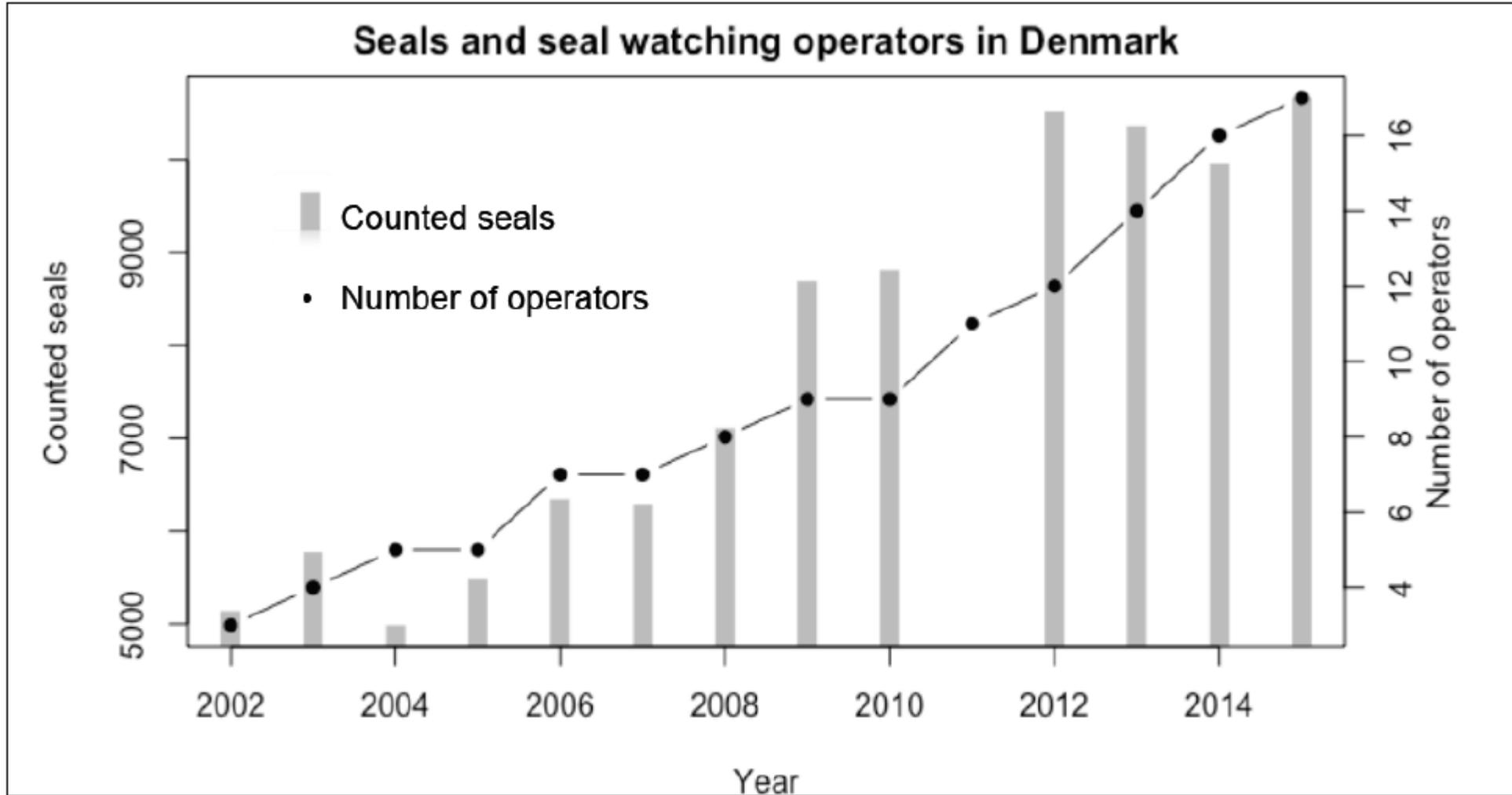


Figure 7: Number of harbour and grey seals counted on main haul out sites in Denmark compared to the number of operators between 2002 and 2015.

No benefits to marine mammals in Denmark? – No ecosystem services?



Grey seal



Harbour seal



Harbour porpoise

Cultural services = Yes (recreational)

Supporting services = ?

No benefits to marine mammals in Denmark? – No ecosystem services?



Grey seal



Harbour seal



Harbour porpoise

Cultural services = Yes (recreational)

Supporting services = ?

Regulating services = ?

No benefits to marine mammals in Denmark? – No ecosystem services?



Grey seal



Harbour seal



Harbour porpoise

Cultural services = Yes (recreational)

Supporting services = ?

Regulating services = ?

Provisioning services = ? / no

Going back to the conceptual discussion

Challenges to operationalising an ecosystem service approach to the management of marine mammals and other wildlife



Challenges to operationalising an ecosystem service approach to the management of marine mammals and other wildlife



The ecosystem service literature is rich with examples of conceptual critiques

Concerns include e.g. the concept's:

- normative anthropocentric perspective
- economic framing
- its vagueness
- lack of ability to properly account for non-instrumental ethical values incl. relational values

Will be important to address, these concern in a way that is acceptable for stakeholders

Selection of relevant categories and indicators

Should be adapted to local policies, and stakeholders + could include indirect/realised/potential benefits

Global variations in what constitute ecosystem-based management

The way forward

The way forward

- 1) The ecosystem service approach could provide a systematic and transparent framework to structure discussions related to marine and wildlife management in general incl. development of management plans, compensations schemes, regulation etc.
- 2) Initialising research programs focused on untangling the multiple ways which ecosystem services are provided by wildlife populations, could thus serve as a natural step for conservation science
- 3) Acknowledge that it will demand considerable effort (considering the known challenges), but should be worth the effort. Emphasis should be on local adaptation and stakeholders
- 4) Will be particularly important for marine management, considering the increasing pressures and economic development projected for the world's oceans in the next decades (OECD 2016)



Final reflections

Thank you



Questions?



For further reflections

<https://conbio.onlinelibrary.wiley.com/doi/abs/10.1111/cobi.13512>



Essay

Using ecosystem-services assessments to determine trade-offs in ecosystem-based management of marine mammals

Christian Riisager-Simonsen , Olivia Rendon, Anders Galatius, Morten Tange Olsen, Nicola Beaumont

First published: 14 April 2020 | <https://doi.org/10.1111/cobi.13512>