Photo: Magnus Elander

The first European adaptive flyway management plan

The case of the Svalbard population of pink-footed geese *Anser brachyrhynchus*

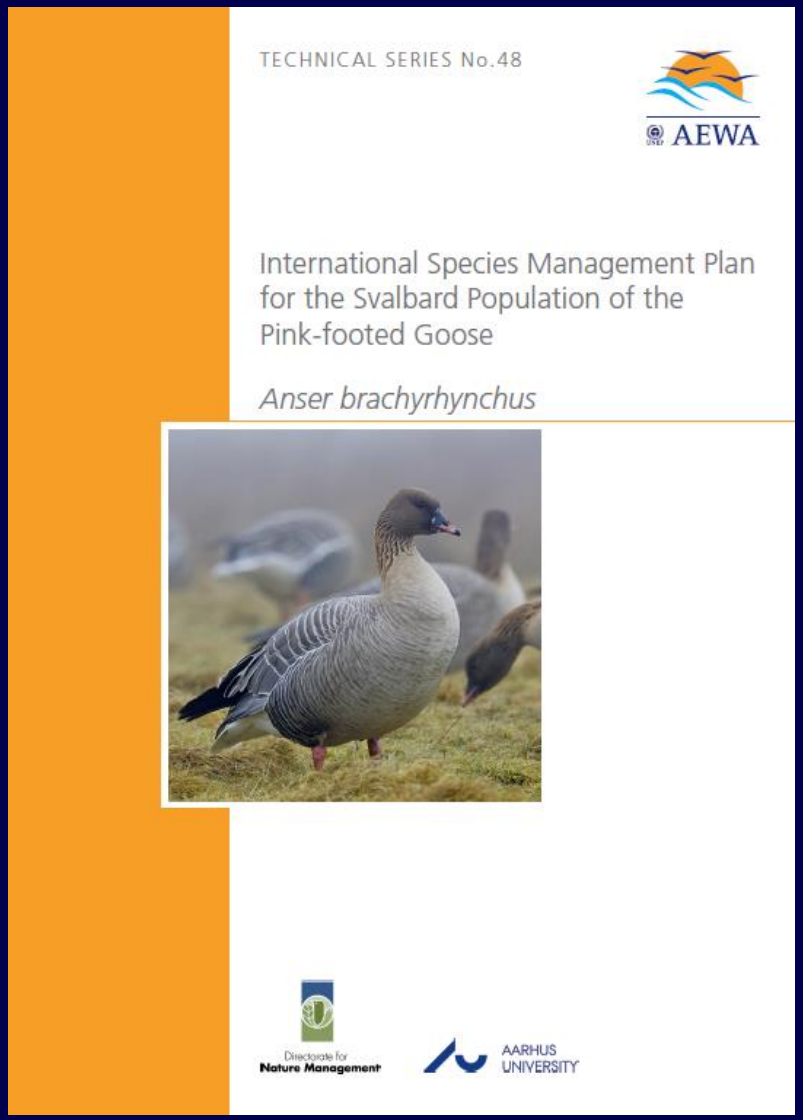
Compilers:

Jesper Madsen
James H. Williams

Aarhus University
Denmark

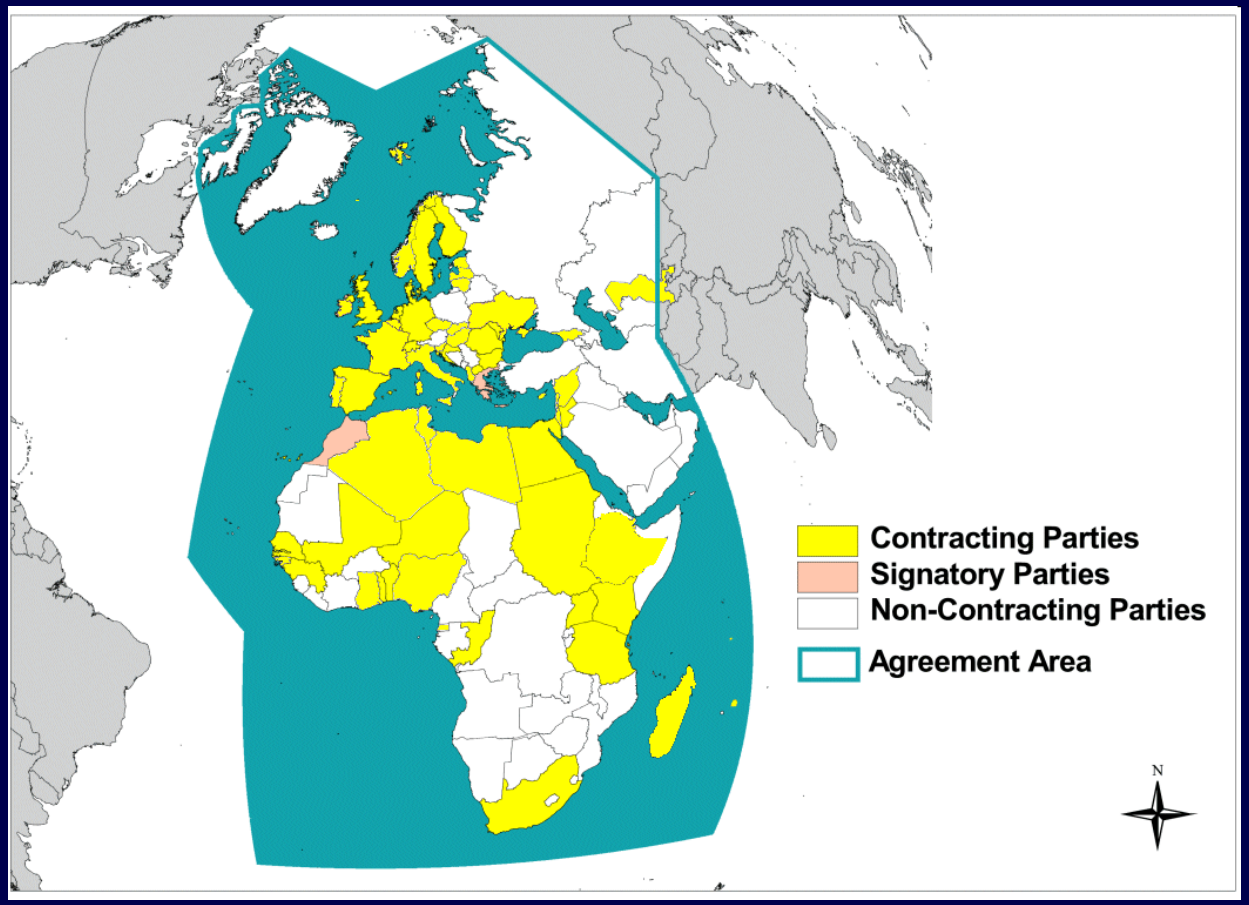
AARHUS UNIVERSITY

AEWA
Pink-footed Goose
International Working Group



AFRICAN-EURASIAN WATERBIRD AGREEMENT

AEWA covers 118 countries in Europe, the Middle East, Central Asia, Africa + Greenland and the NE tips of Canada



AEWA species coverage

554 populations, 255 species, 28 families









AEWA Action Plan

The AEWA Action Plan specifies activities under six headings:

- **Species conservation**
- **Habitat conservation**
- **Management of human activities**
- **Research and monitoring**
- **Education and information**
- **Implementation**

For further information, visit www.unep-aewa.org

Background for ISMP for pink-footed geese

In its Strategic Plan for 2009-2017, the African-Eurasian Waterbird Agreement (AEWA) is calling for means to manage populations which cause conflicts with certain human economic activities.

The Svalbard population of the pink-footed goose *Anser brachyrhynchus* has been selected as the first test case for such an International Species Management Plan to be developed including an adaptive management framework.

The Svalbard pinkfoot has been selected as the first case for a couple of reasons:

A rather well-defined flyway with relatively few countries involved

Flyway

A life in contrasting worlds

Geese cope with dynamic landscapes

And take advantage of climate change

The Svalbard pinkfoot has been selected as the first case for a couple of reasons:

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It represents a typical ‘conflicting’ goose species

Population development 1965-2011

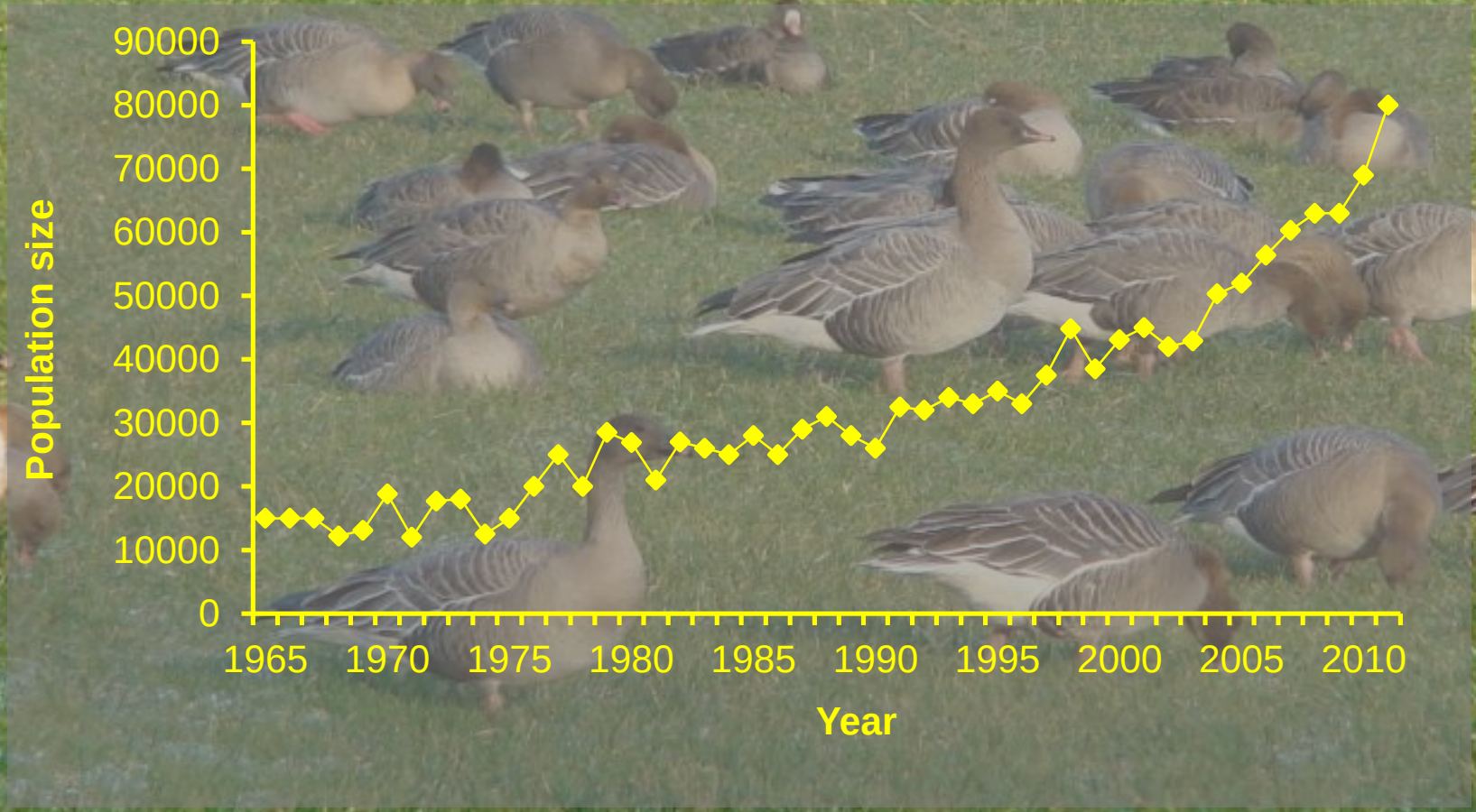

Foto: Fred Cottaar

Status regarding hunting

- Norway including Svalbard: open season
- Denmark: open season
- The Netherlands: protected
- Belgium: no open season

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There is an escalating agricultural conflict in Norway and a Norwegian wish to reduce the population size to alleviate the damage; no prior international consultation; risk of loss of control

Agricultural conflicts

Trønder-Avisa

Tirsdag 18. april 2006 • UKE 16 • nr. 86 • Løssalg kr 15,00

NYHETER
Milliondryss på Elvebredden i Steinkjer
Side 18 og 19

SPORT
Alexander ødela festen for SFK
Side 26 og 27

KULTUR
Sissy Wish trives i Rock City
Side 24 og 25

Mer bilbråk

LEVNINGER: John Thomas Krogstad i WestSide Racing oppfordrer myndighetene til å oppheve kjøreforbudet i Kirkegata. I mellomtiden frykter Krogstad mye uro de neste månedene. Side 8

Tilstår incest

STEINKJER: Den ekligere barneverninnarbeideren er tiltalt for voldtekt, incest og seksuelle overgrep mot begge døtrene sine. Mannen i 40-åra skal ved ett tilfelle ha tilbudt datteren 400 kroner for å ha samleie med ham. Side 9

Terrasse-hage for Liv Marit

STEINKJER: Terrassen gir meg følelsen av å bo i enebolig med hage, synes Liv Marit Bomo. Vår i hagen side 32-43

Million-gave

43.000 kortnebbgås kommer snart til å okkupere jordene på Innherred:

Jager kort-nebb-gåsa

Væpnet med firehjuling, hagle og gasskanon, venter gårdbrukerne Perry Frøysadal og Lars Bardal Flakkenberg på Sandvollan i Inderøy på kortnebbgåsa.

Side 4 og 5

Kostbar russefeiring

Møteplassen
Velkommen til .....
MOTESHOW
... "På reise"

Vår i lufta!
Tilbud denne uka:
SOFT-IS

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Signs of increasing damage to tundra vegetation in Svalbard

Habitat disturbance to Arctic tundra vegetation

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Signs of increasing damage to tundra vegetation in Svalbard

A reasonably good biological background knowledge

Long-term study - internationally coordinated by Aarhus University, Denmark

- Population monitoring
- Bag statistics
- Capture-recapture study
- Year-round studies
- Experimental work
- Population modeling
- Agent-based modeling

Why an adaptive approach?

- The population processes as well as the environmental and political-administrative settings are highly dynamic
- The present situation constitutes a management dilemma which calls for careful treatment and clearly agreed objectives
- A flyway plan should therefore – in a structured way - be able to predict effects of management and efficiently react to the response by the system
- Internationally coordinated management will enhance exchange of knowledge and coordination regarding agricultural conflict resolutions, sustainability of hunting, including reduction of crippling due to hunting

What are the prerequisites?

We need a structured decision process including:

International agreement on measurable management objectives

International agreement on appropriate management actions:

- availability of flexible regulatory systems in the range states

Close cooperation between scientists and stakeholders:

- develop a governance structure
- develop predictive models of system response to management (a suite of competing models)
- monitor response to regulation, revise models and adapt management
- develop an effective system for reporting, evaluating and regulating management
- develop system for mutual learning as we go along

Goal and Objectives of the International Species Management Plan for pink-footed geese

Goal:

To maintain the favourable conservation status of the Svalbard pink-footed goose population at flyway level while taking into account economic and recreational interests

Objectives:

- Maintain a sustainable and stable pink-footed goose population and its range
- Keep agricultural conflicts to an acceptable level
- Avoid increase in tundra vegetation degradation in the breeding range
- Allow for recreational use that does not jeopardize the population viability

Key actions agreed (1)

- Implement an adaptive management framework and modelling concept for the flyway population
- Maintain a population size of around 60,000 to prevent population to collapse or explode
- Optimise hunting regulations and practises to regulate the population size if needed and in range states where hunting is permitted
- Ensure sustainable hunting where practised (at present in Norway and Denmark) and following ‘wise use’ principals, including that crippling rates are kept at an acceptable level

Key actions agreed (2)

- Maintain and enhance spatial management to ensure that pink-footed geese can fulfil their ecological requirements throughout their annual cycle and allowing for their natural annual migration pattern
- Support optimisation of national and regional compensation/subsidy schemes and alternative non-consumptive methods to minimise agricultural conflicts in the range countries
- Support ‘conflict mitigation’ through the development of national and regional management plans that promote recreational uses such as tourism and hunting (where permitted)
- Increase habitat available to pink-footed geese where there is no conflict, e.g. reduce disturbance on stubble fields in autumn or by restoration of grassland complexes which can reduce the feeding on crops or pastures
- Collect systematic data on the impact and extent of tundra degradation due to goose foraging in Svalbard

The Flyway Plan process and timeline

2010

Mar. 2011

on range states, spring 2011

A consultations, autumn 2011

AEWA MOP5 endorsement, May 2012

- Implementation workshop, Aug. 2012

- Working Group est., Nov. 2012

- AHM starts, autumn 2013

Hunting experiments -

Sociological studies -

Monitoring damage to tundra -

Setting a population target: A balance between biological viability and stakeholder interests

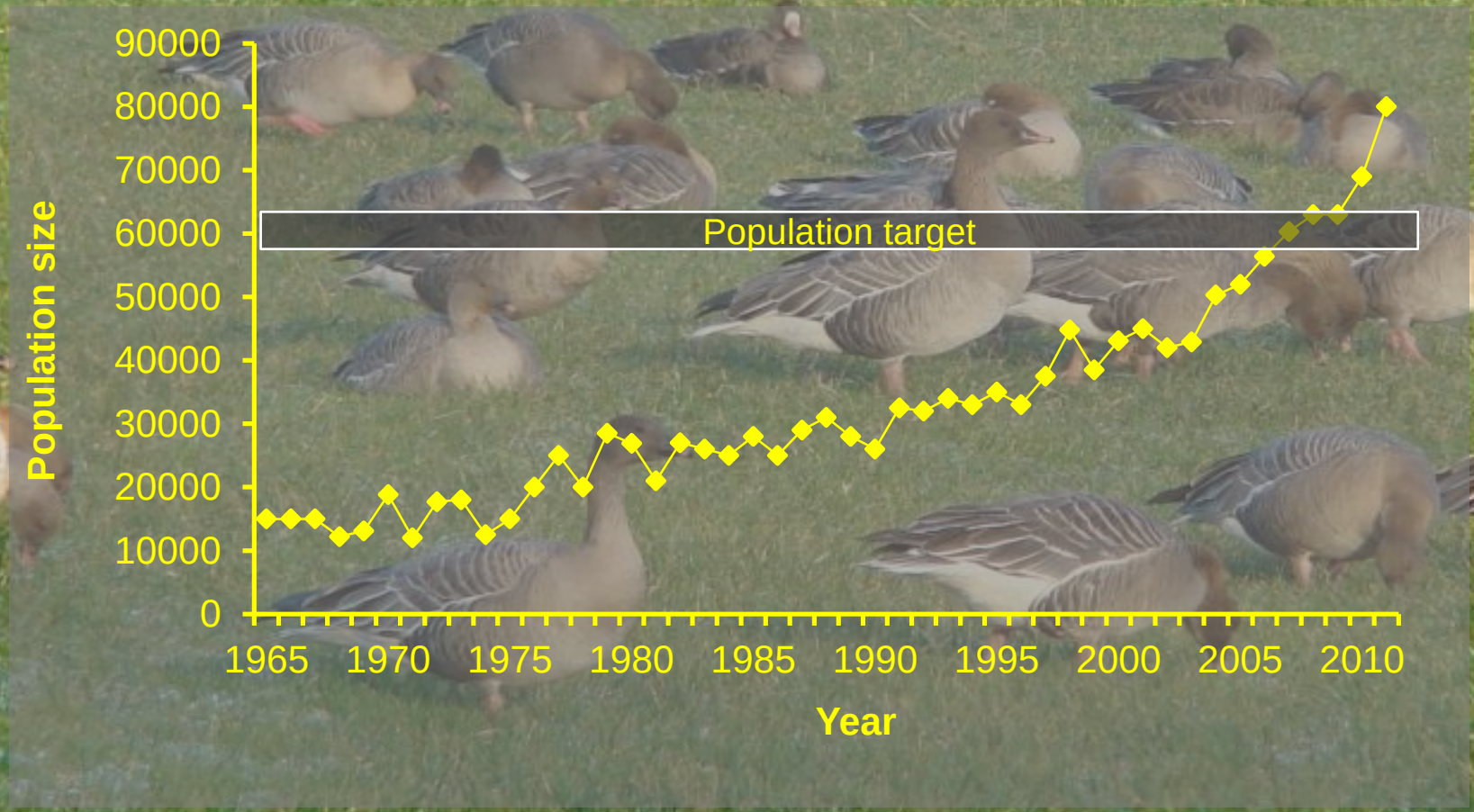
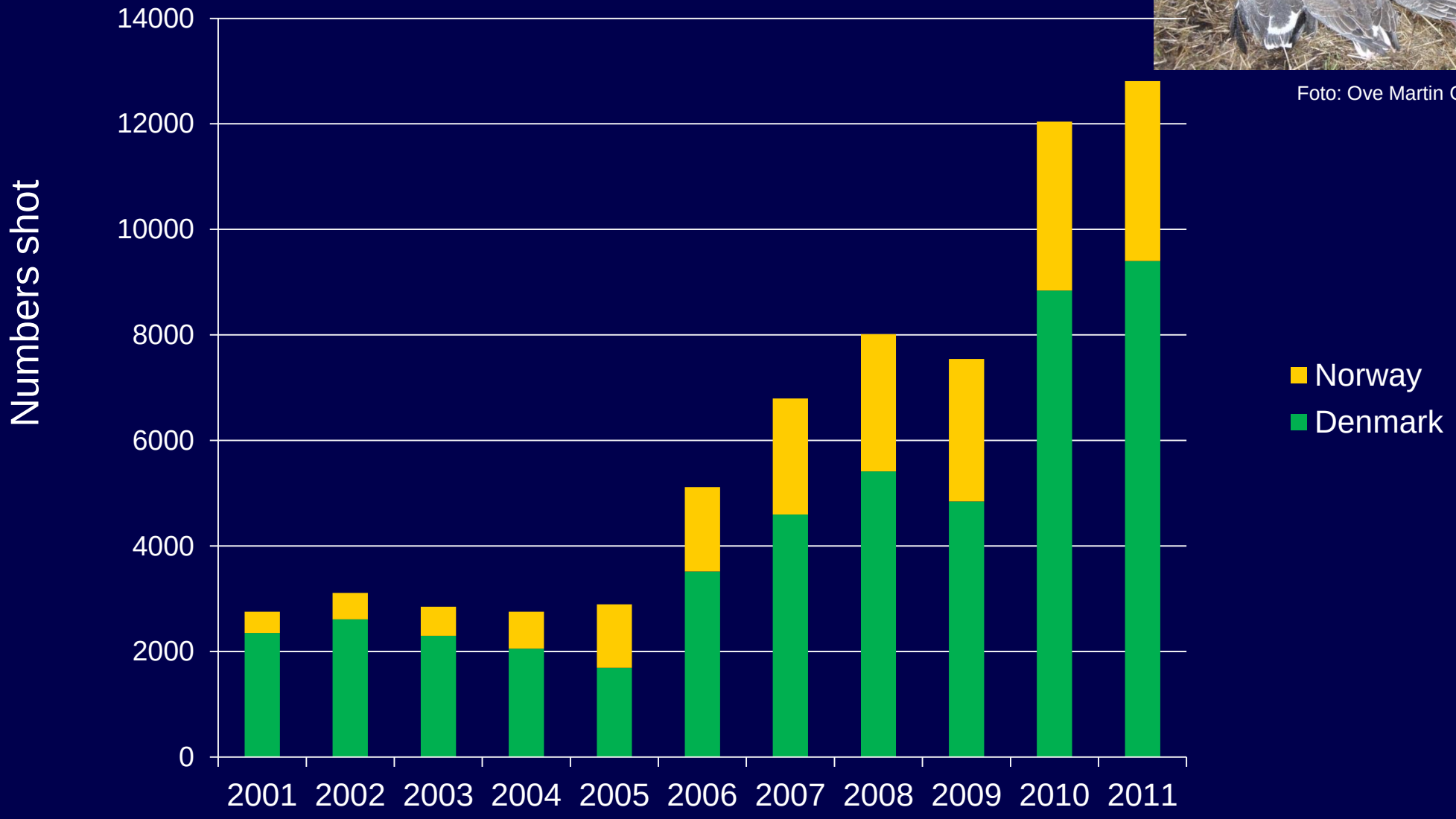


Foto: Fred Cottaar

Annual hunting bag

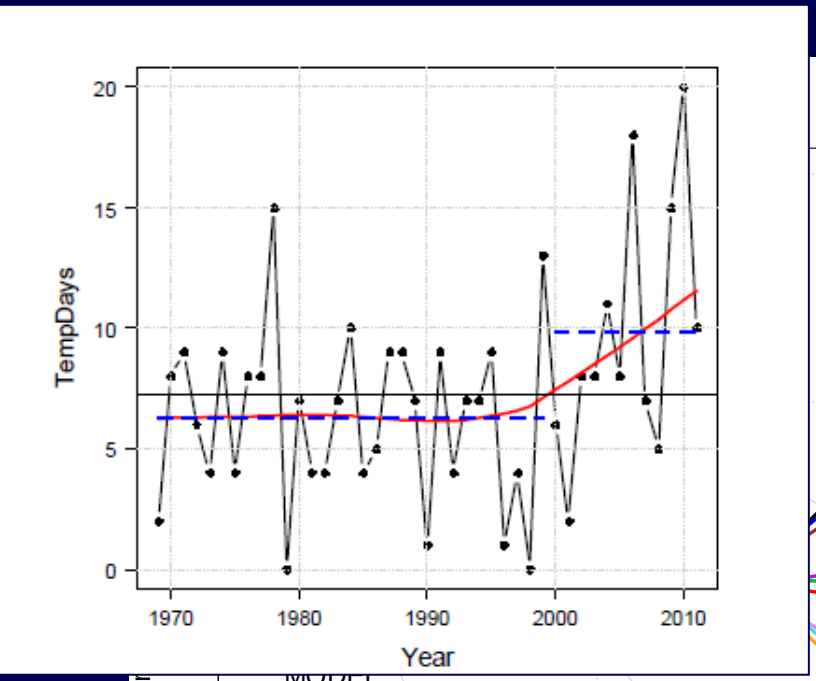
Foto: Ove Martin Gundersen



Nine alternative models of pink-footed goose population dynamics and their associated carrying capacities

Model	Survival sub-model	Reproduction sub-model	K (sd)
M0	(.)	(TempDays, A)	120 (8)
M1	(TempDays)	(TempDays, A)	129 (8)
M2	(TempDays, N)	(TempDays, A)	59 (4)
M3	(.)	(TempDays)	
M4	(TempDays)	(TempDays)	
M5	(TempDays, N)	(TempDays)	66 (3)
M6	(.)	(.)	
M7	(TempDays)	(.)	
M8	(TempDays, N)	(.)	65 (5)

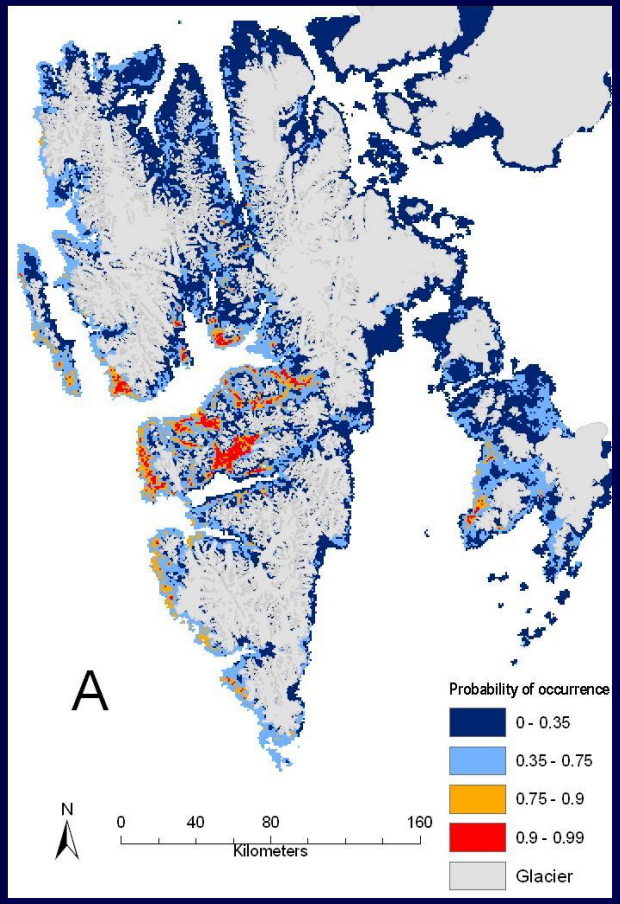
Posterior model weights for nine alternative models describing the annual dynamics of the pink-footed goose population, assuming equal prior model weights in 1991



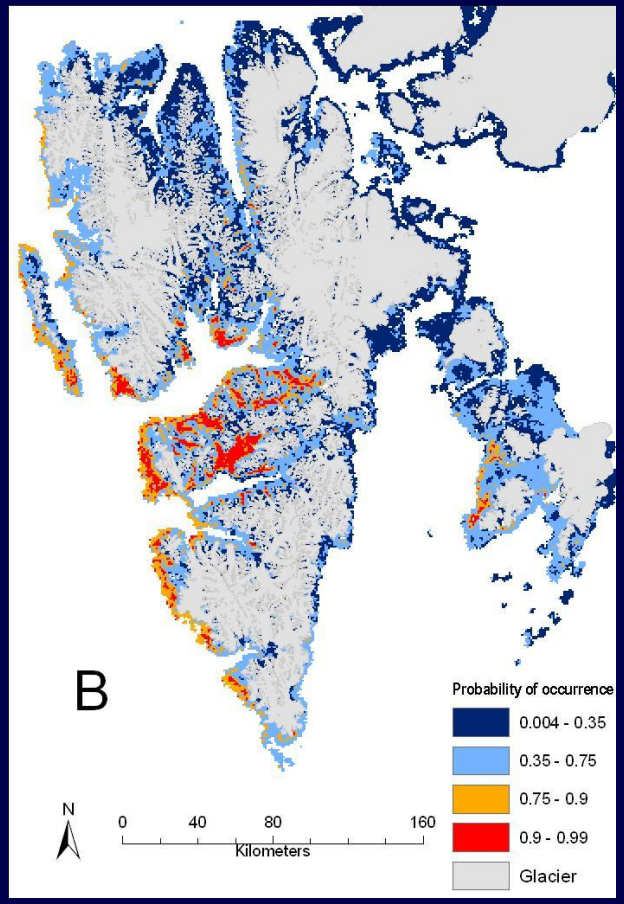
MODEL:
0: R(Days,A) + S(.)
1: R(Days,A) + S(Days)
2: R(Days,A) + S(Days, N)
3: R(Days) + S(.)
4: R(Days) + S(Days)
5 R(Days) + S(Days, N)
6: R(.) + S(.)
7: R(.) + S(Days)
8: R(.) + S(Days, N)

0.00
0.05
1995
2000
2005
2010
Year

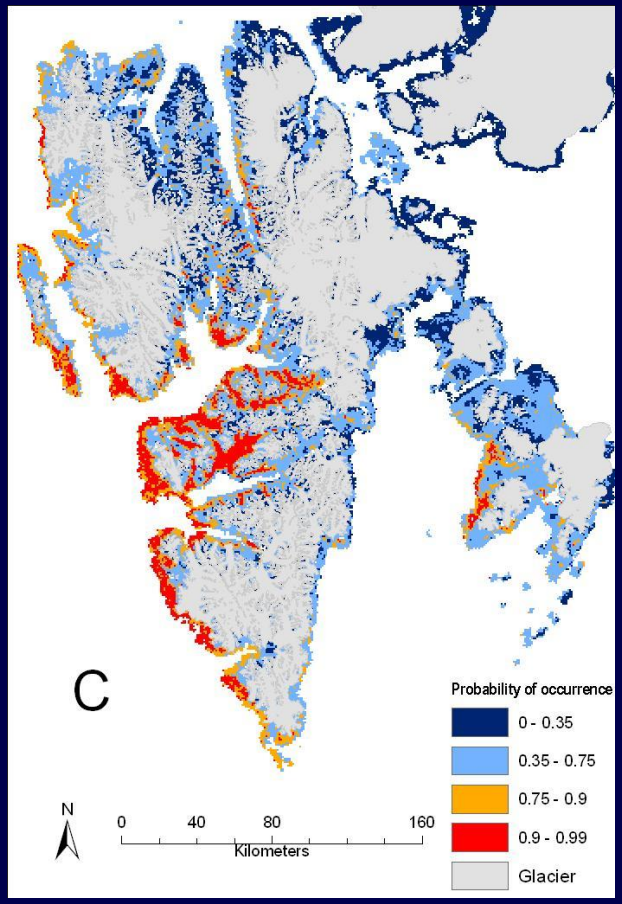
Spatial predictions of nest distributions



Present



1ºC temp. increase scenario

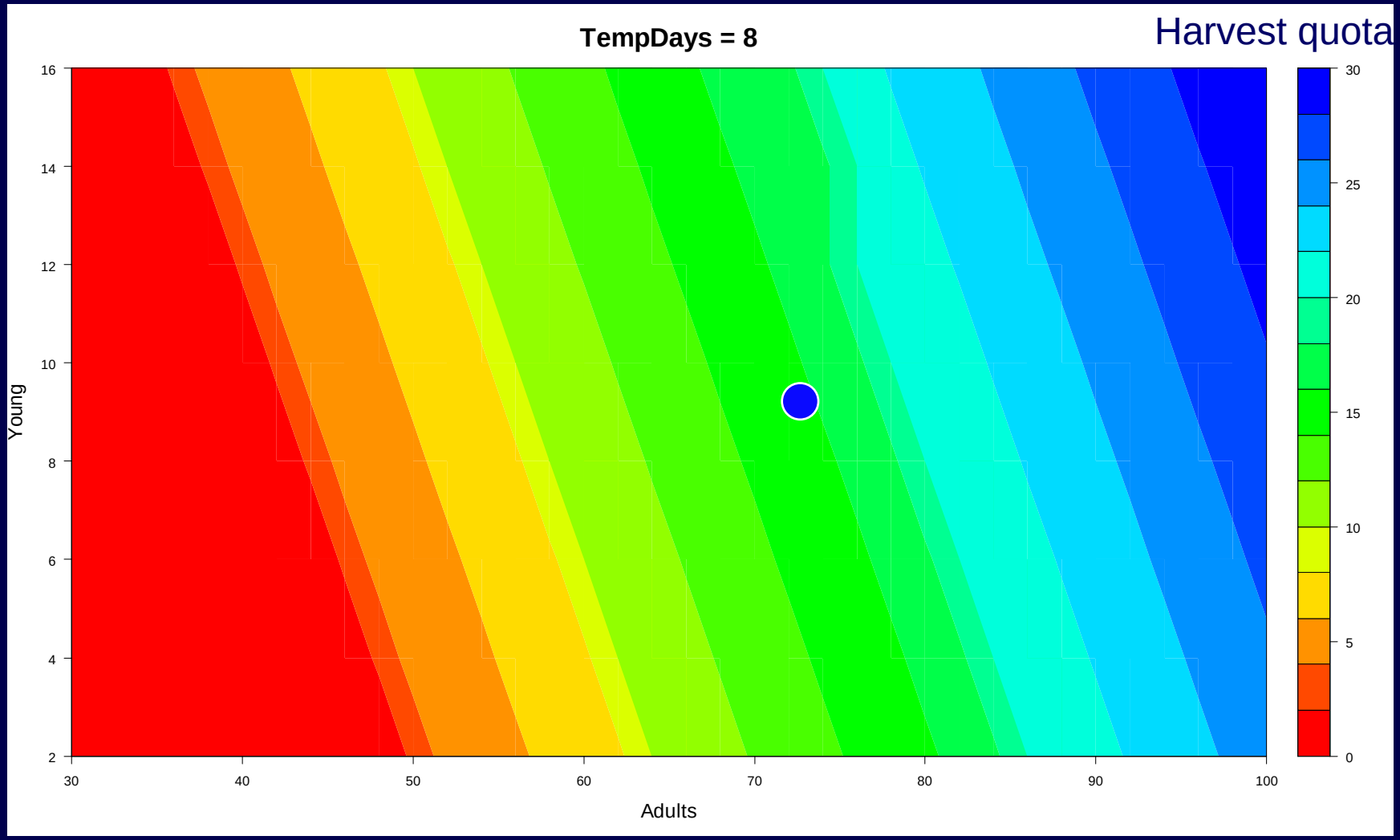


2ºC temp. increase scenario

Source: Global Change Biology 14: 1-10 (2008)

Annual cycle in adaptive harvest management decision-making process

Annual cycle in adaptive harvest management and when to pull the emergency brake?



Benefits

- Common agreements on goals and actions => commitment
- Democratic and transparent decision-making processes
- Evidence-based approach with a theory behind (strategic thinking)
- A lot of good science involved
- Monitoring is tuned to purpose (adaptive monitoring)
- Brings science into action in a close dialogue with users
- Provides a direct link to social science
- Gives a funding stream for research

Challenges

- Convincing stakeholders this is a good idea may be difficult
- ‘buy-in’ and an open process is not always wanted
- Need for a driving force – requires an investment
- Lack of capacity in institutions and among stakeholders
- Resource demanding
- Keeping it going may be tough