

Building time series of female reproductive parameters for Northeast Atlantic harp and hooded seals

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Why monitor harp and hooded seal reproductive parameters?

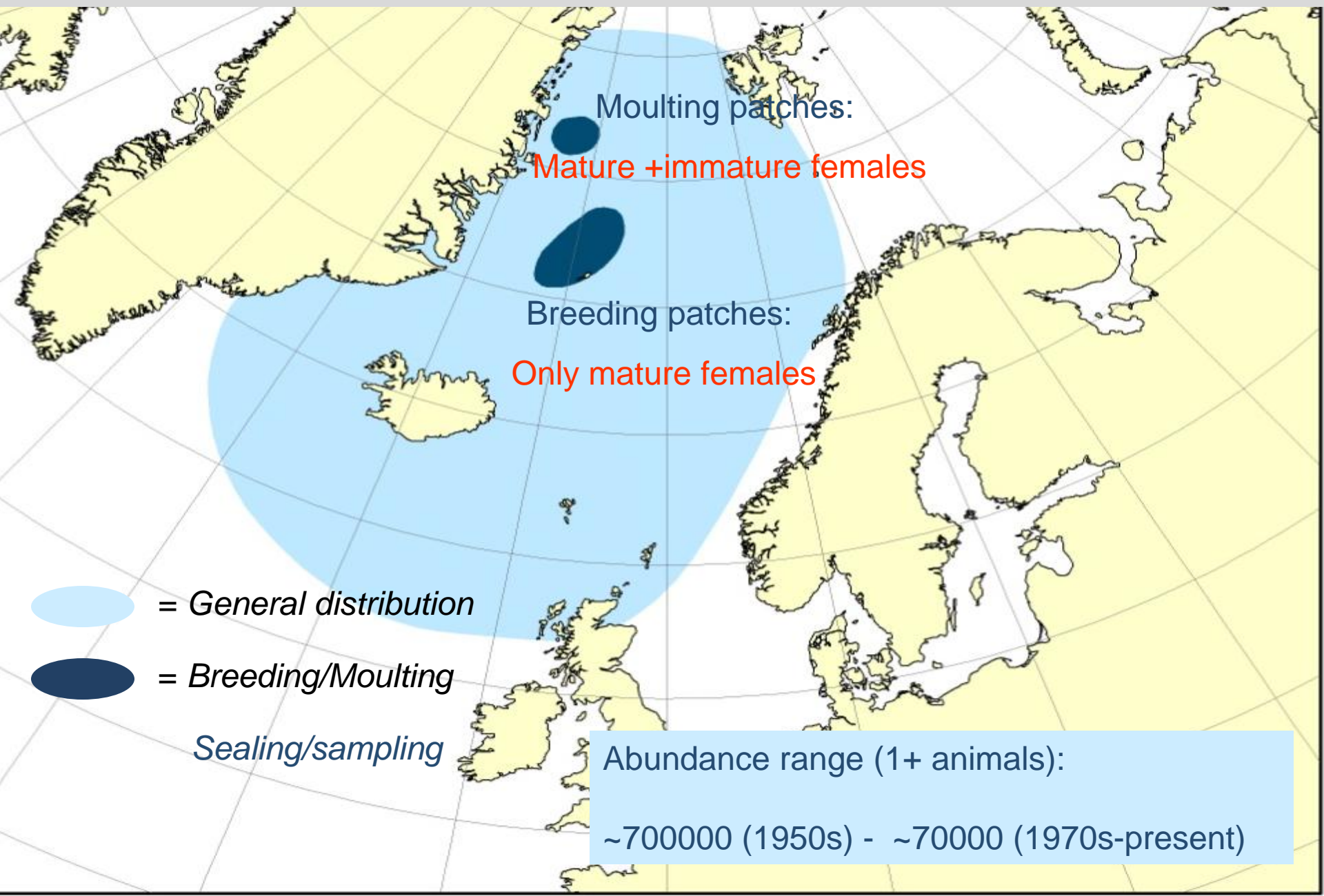
- For conversion of pup counts into total abundance estimates
- Dynamic parameters -time series may be used as ecosystem indicators



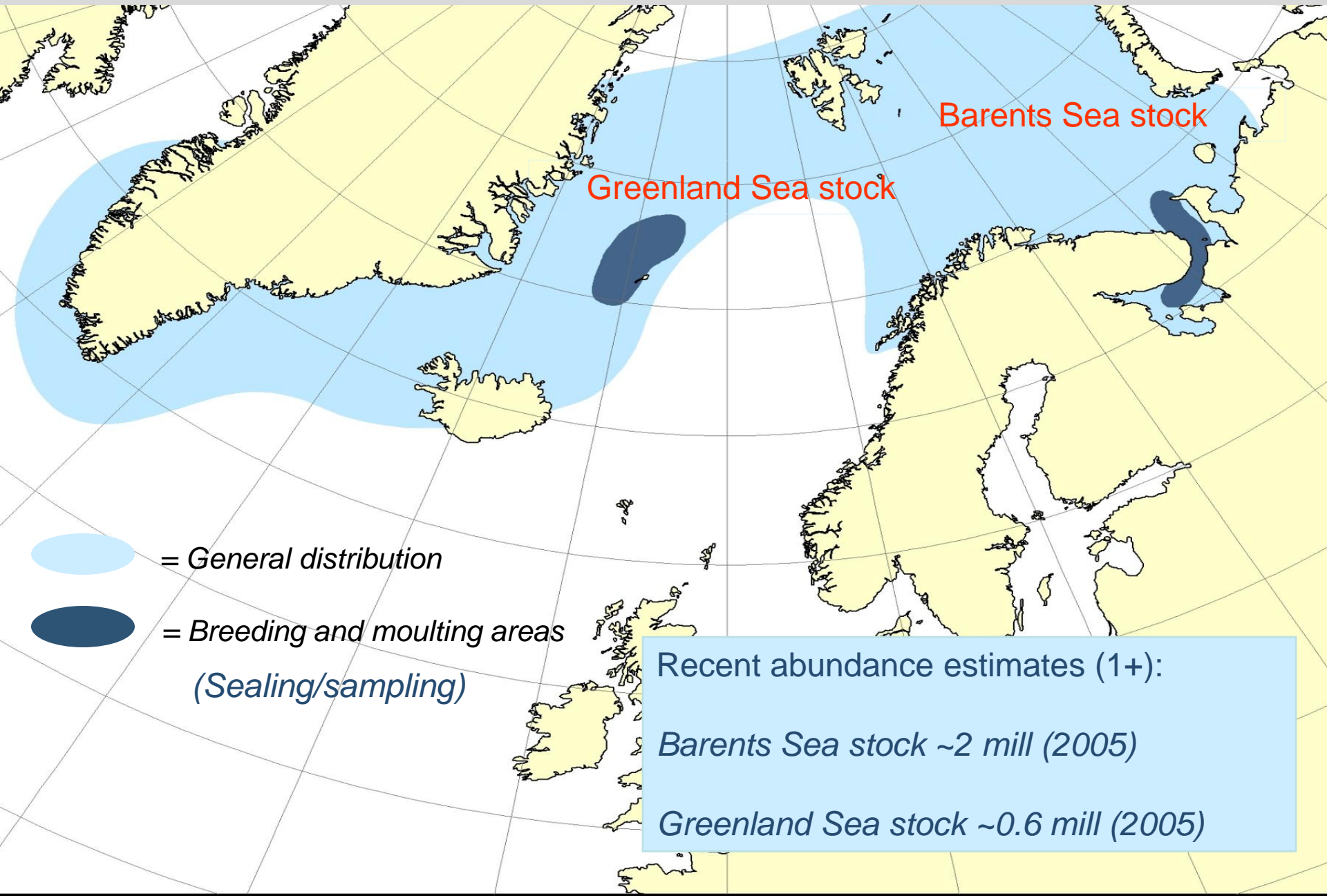
As sealing nations, Norway and Russia have collected data on female reproductive parameters for harvest modelling since the late 1950s.

Recent management regime requires updates every 5-8th year (Joint ICES-NAFO WGHARP)

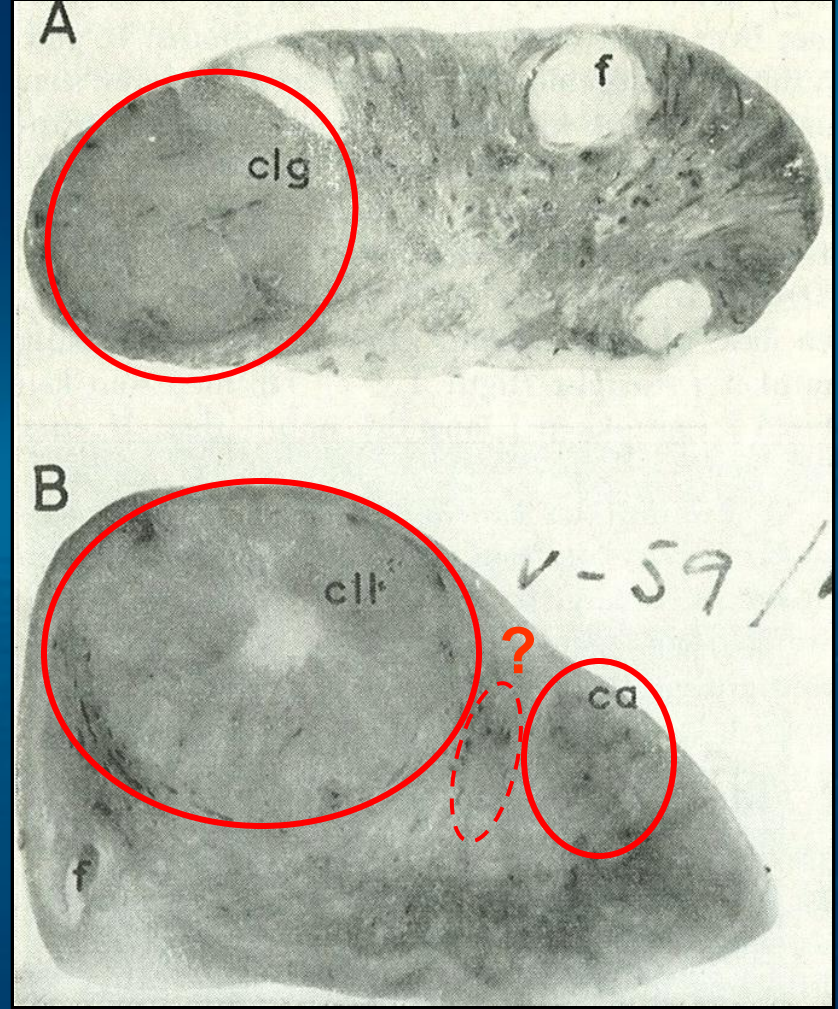
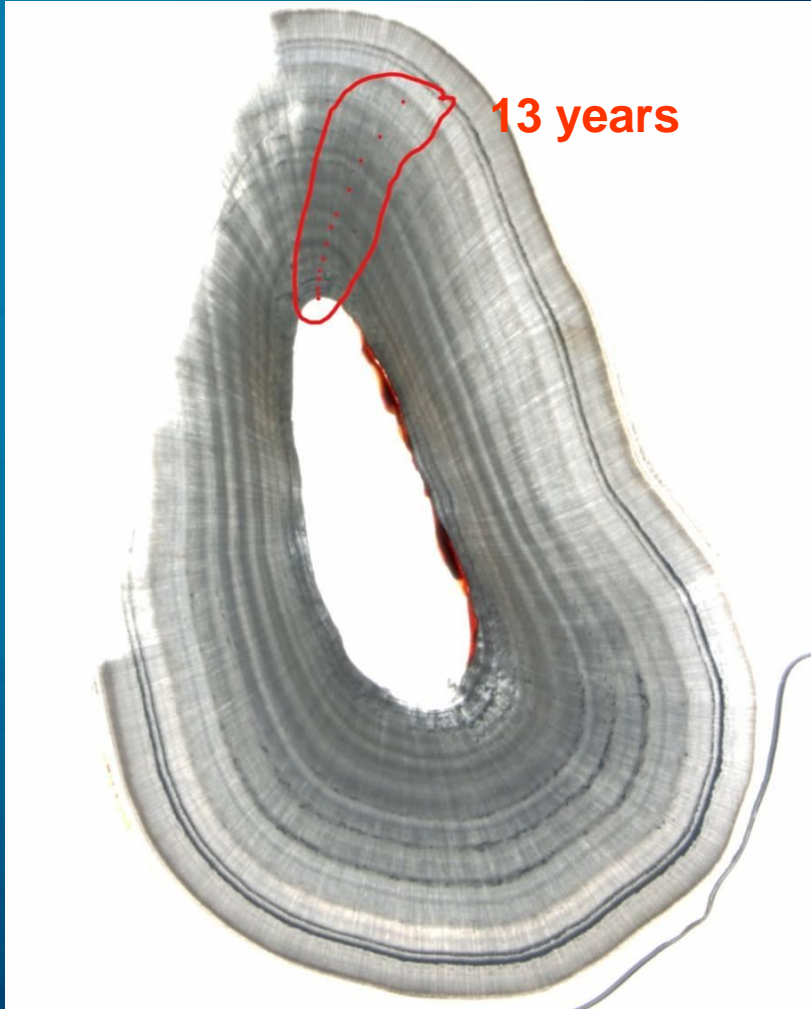
Distribution and sampling of Greenland Sea hooded seals



Distribution and sampling of Northeast Atlantic harp seals



Reading life histories in teeth and ovaries:



Data Analysis

-Traditionally separate analyses and publications from each lab

-"Laboratory specific" analysis methods have complicated merging of data sets

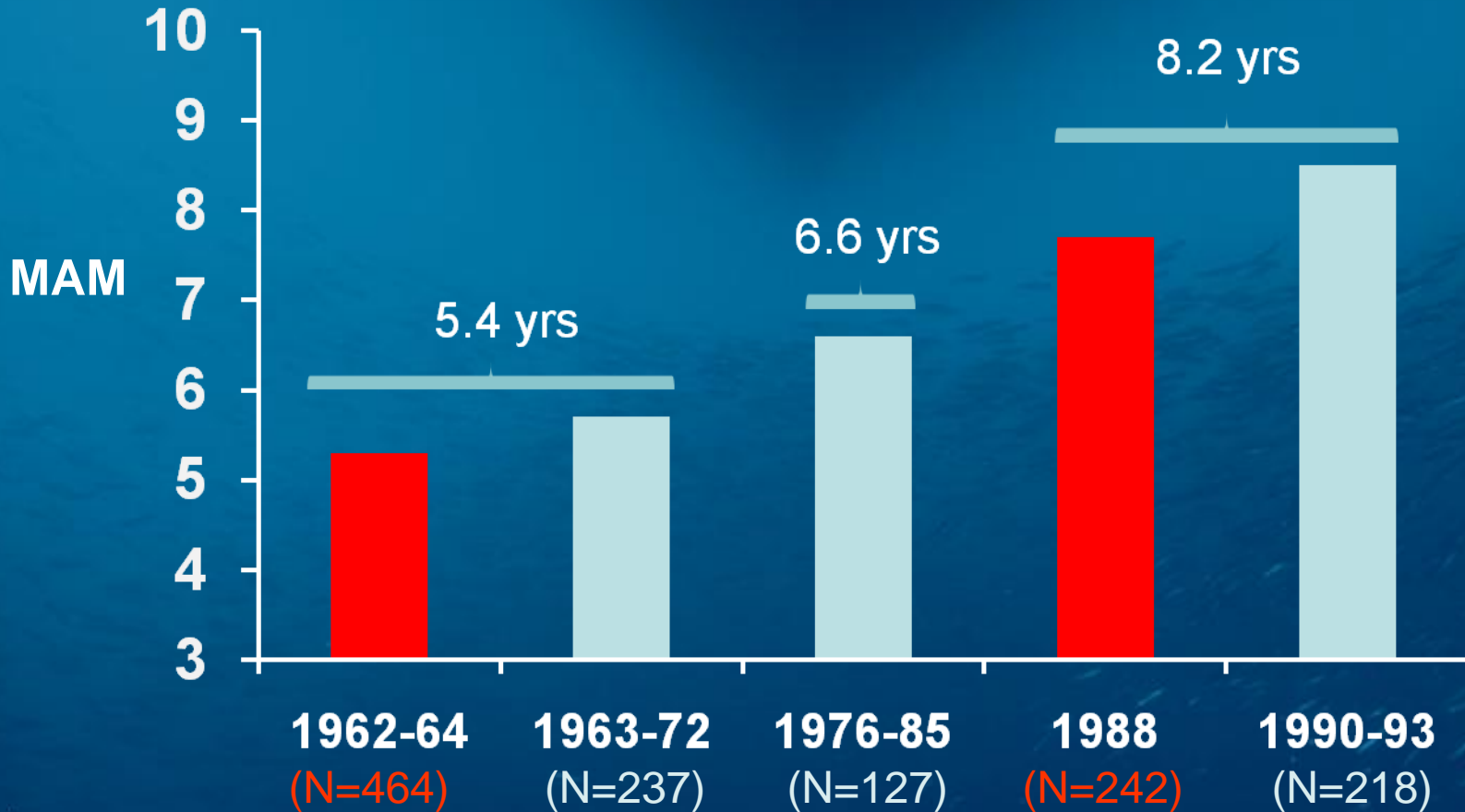
-Closer Norwegian Russian cooperation on data analysis from the 1990s, incl. student exchange

-2003: Joint comprehensive study of all available moulting patch data from Northeast Atlantic harp seals



Mean Age at Maturity (MAM) of Barents Sea harp seals

(Frøe, Potelov, Kingsley and Haug, 2003)



Mean age at Maturity of Greenland Sea harp seals

(Frøe, Potelov, Kingsley and Haug, 2003)



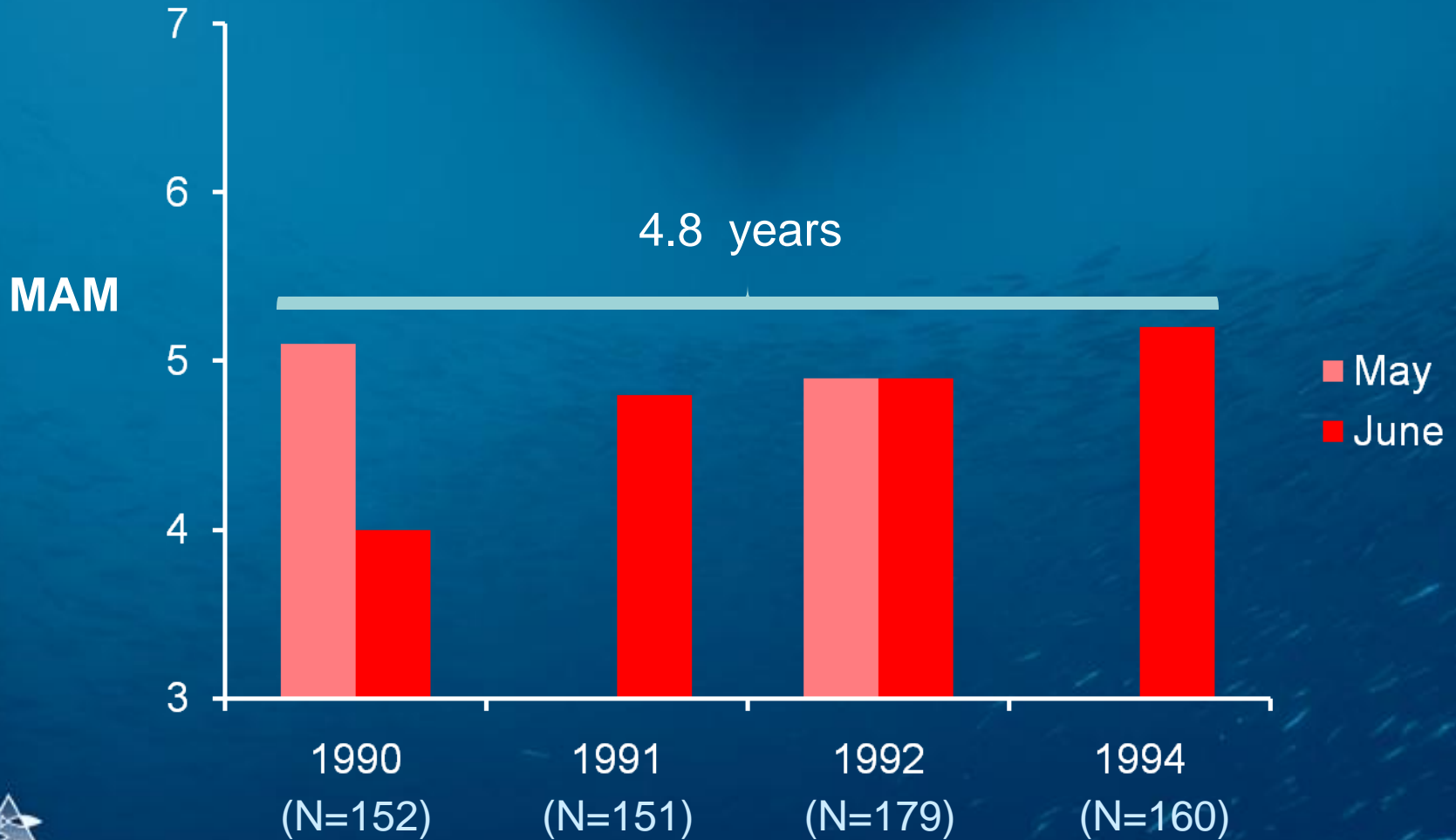
Conclusions from harp seal studies

- Norwegian and Russian moulting patch data appear consistent over time for Barents Sea harps based on simple ovary characteristics
- Joint analyses confirm extreme values of MAM in 1980s and 1990s compared to other stocks (max MAM in NW Atlantic 6 years)- the relevant range of MAM for population modelling is larger than was previously thought – updates are important!
- Greenland Sea data from 1990 and 1991 illustrate the need for large samples- inclusion of breeding patch data is desirable for historical analyses but require validation/calibration of ovary analyses



Mean age at maturity of Greenland Sea hooded seals

(Russian moulting patch samples)



Conclusions from hooded seal studies:

Russian moulting patch data 1990-94: Highest MAM on record for the species (4.8 years vs 3.1 years for NW – Atlantic stock) at historical population low



Large breeding patch material covering the period 1958-1999 may be used to reveal trends in MAM and pregnancy rates over time but validation and calibration of ovary readings and age readings are needed before further statistical analyses

Future research and cooperation

Research proposal submitted for interdisciplinary project on harp and hooded seal health parameters including:

- New research into extraction and validation of age specific reproductive parameters from harp and hooded seals
- Close cooperation between several institutes from Norway, Russia, Canada and Greenland
- Transatlantic calibrations of age and ovary readings of historical samples between labs



A good start:

The harp and grey seal age determination workshop

Bergen 2006

