Greenland halibut in the waters of East Greenland, Iceland and Faroe Islands

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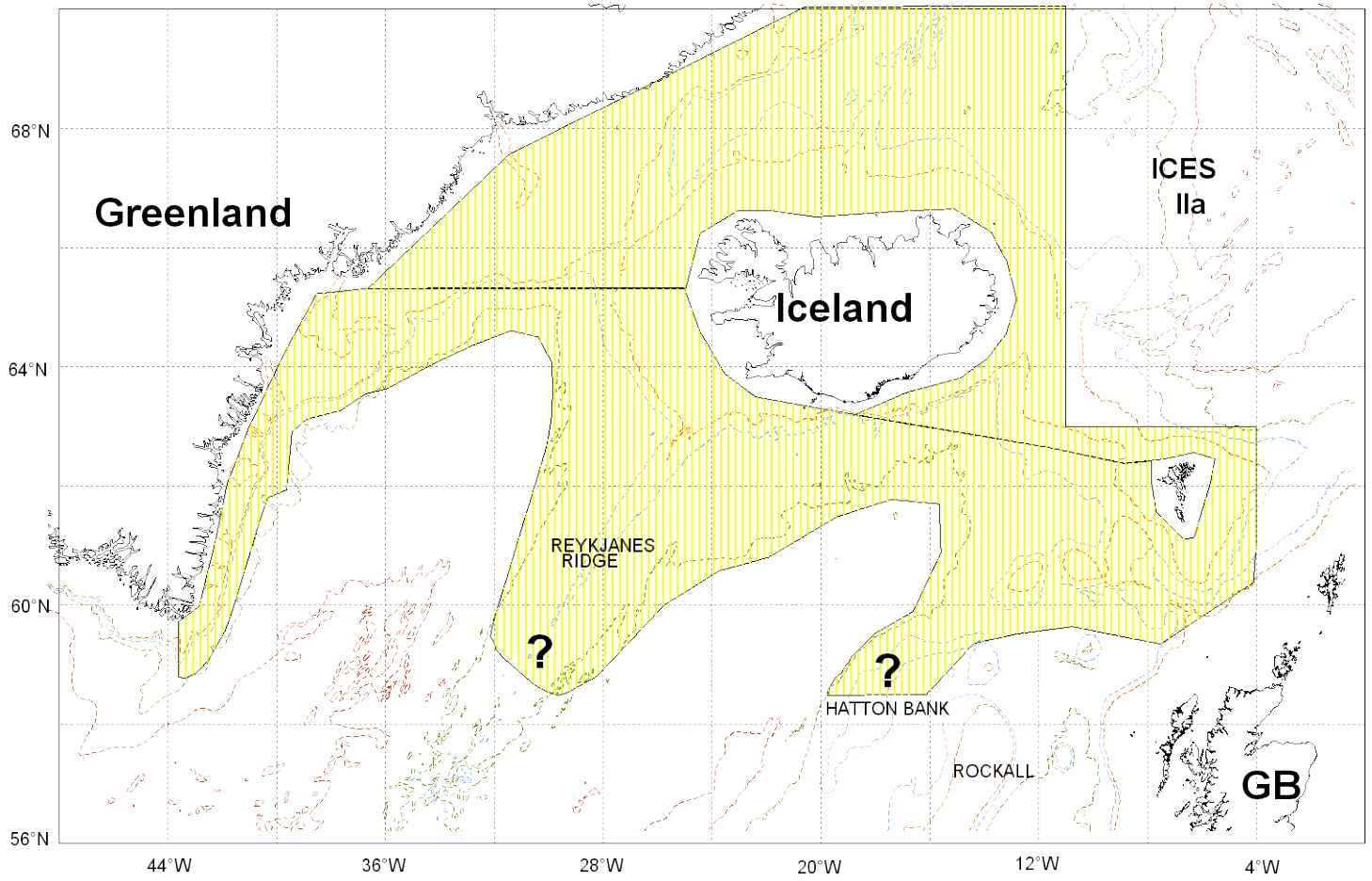
West-Nordic Greenland halibut

- 1976: ICES defined the Greenland halibut in these waters as one stock.

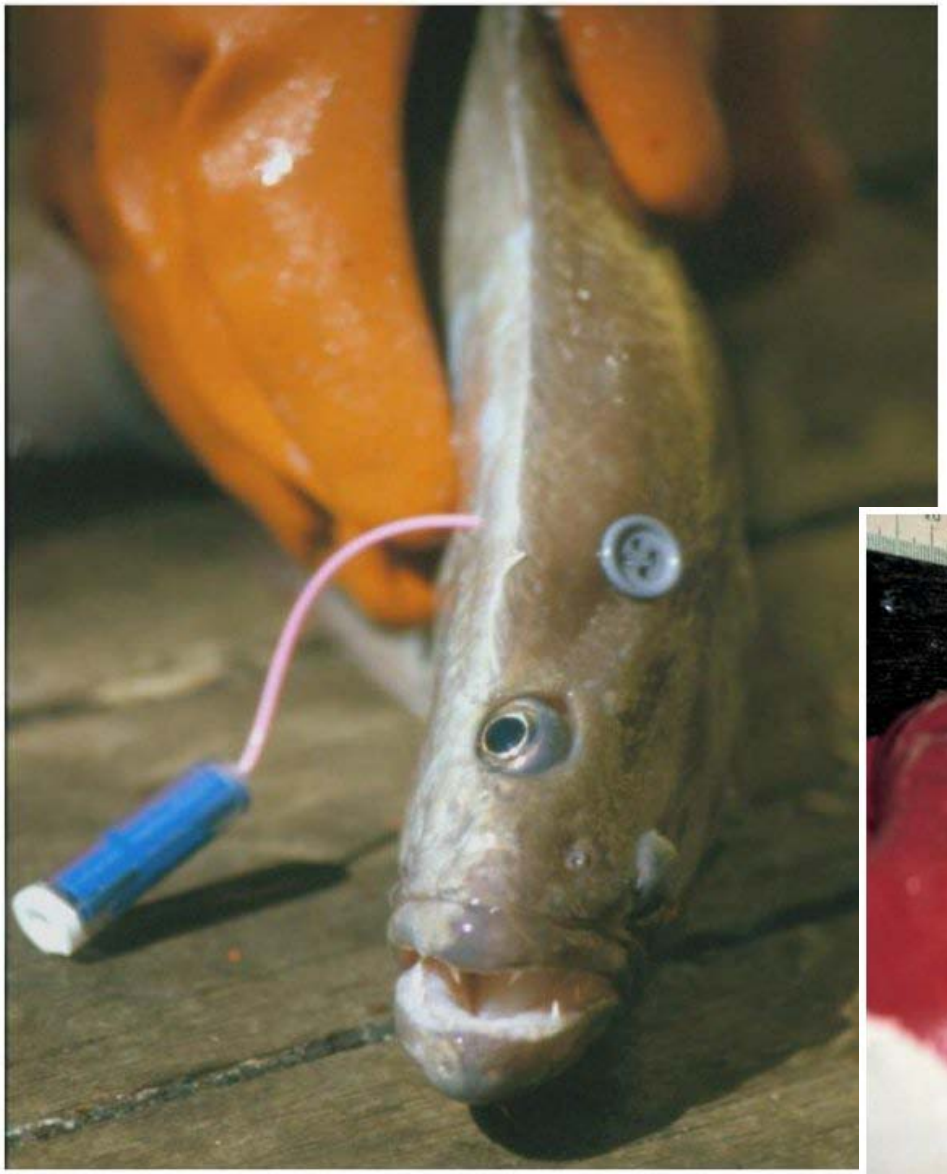
- "... based on a strong probability that the spawning grounds [for Greenland halibut in these waters] are the same“.

Distribution



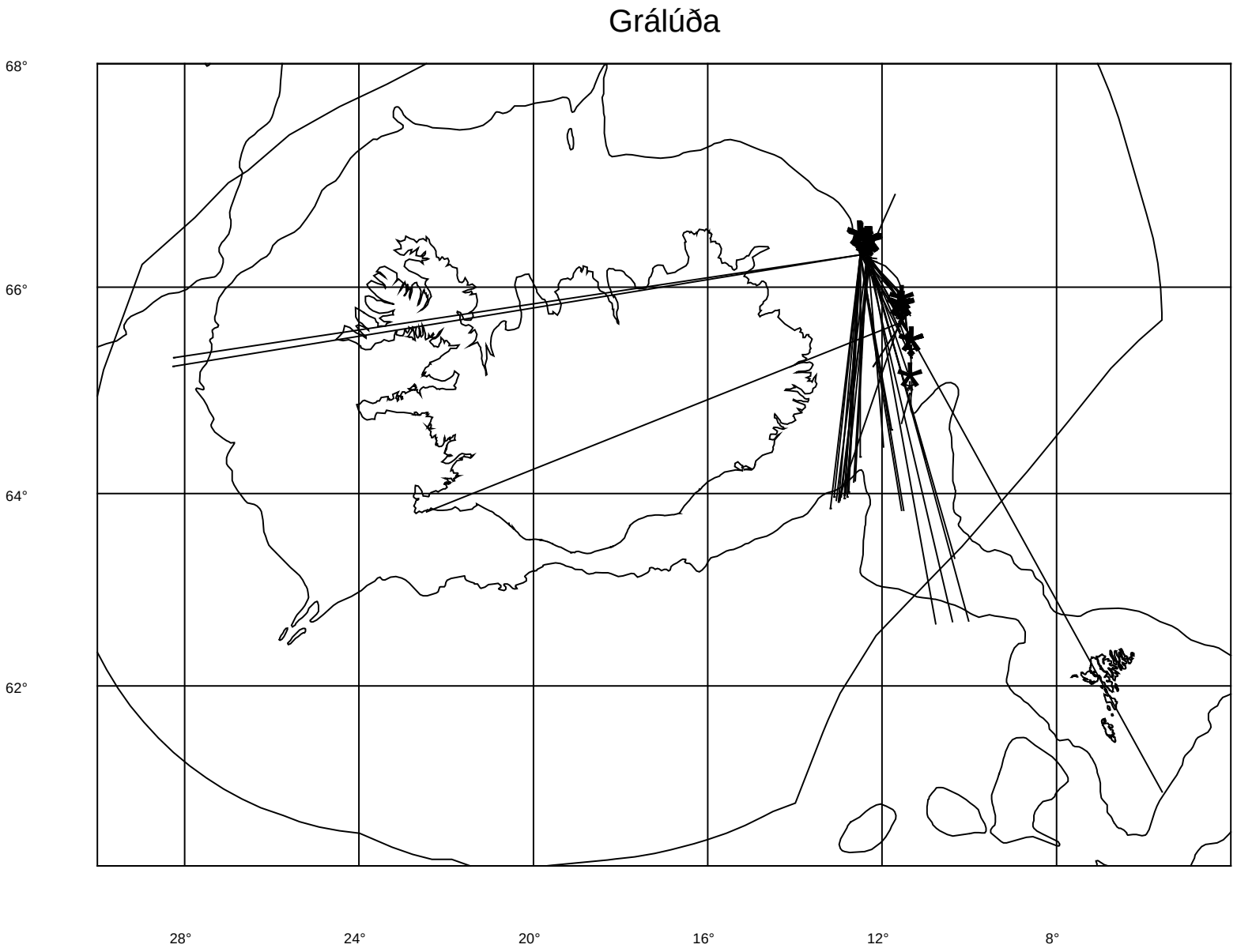
ICES XIV b, ICES Va, ICES Vb

Tagging experiments for migratory studies

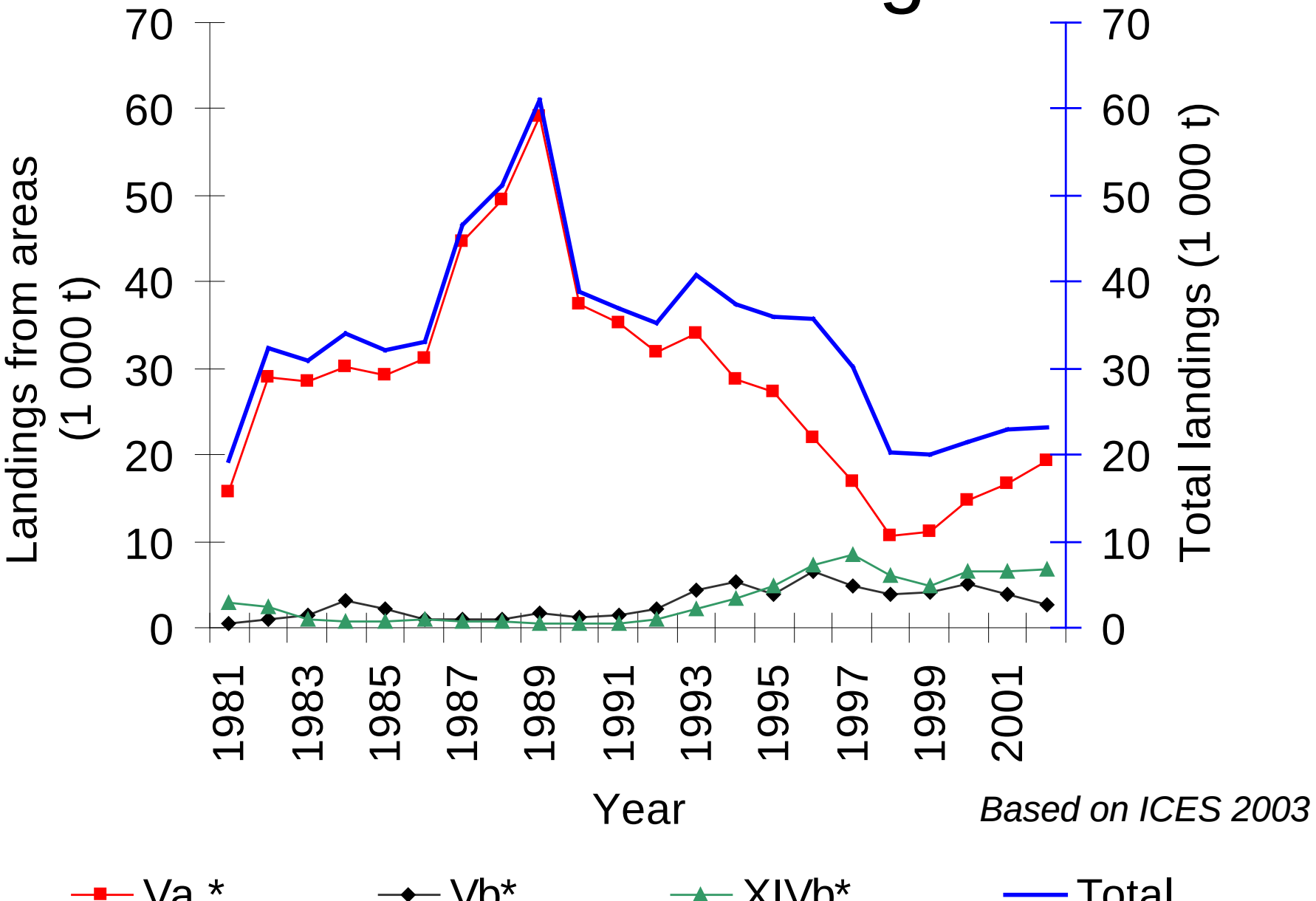


Greenlandic tagging experimetns

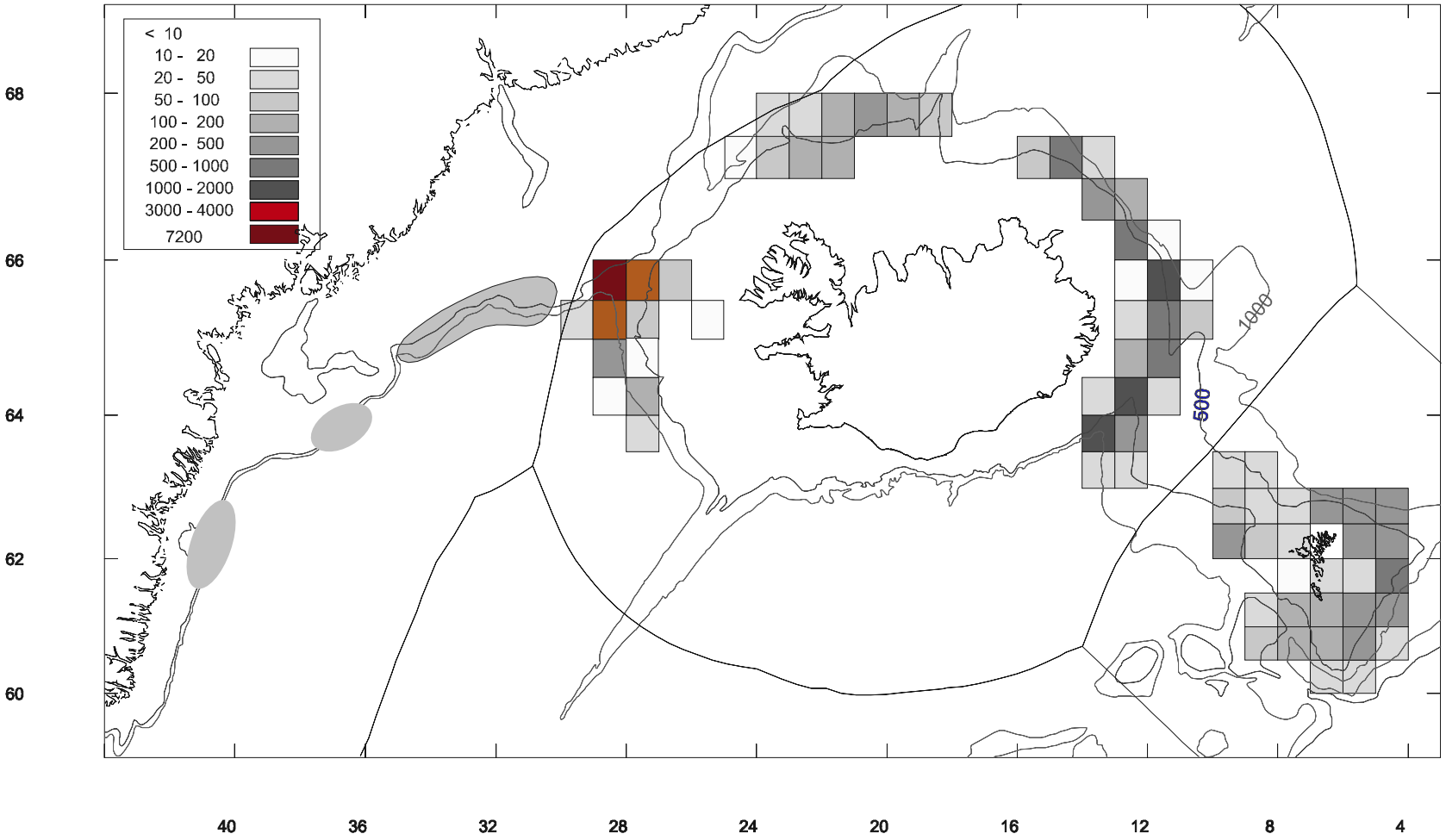
Icelandic taggings and recaptures



Trends in landings



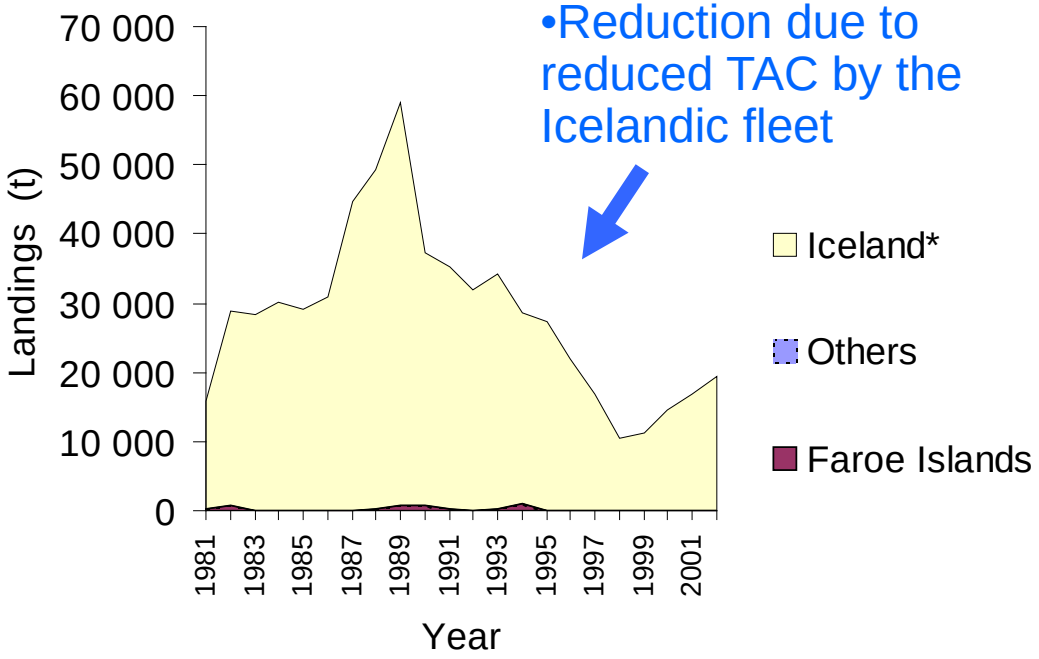
Exploitation of the stock



Va, Icelandic waters

- Catches mainly taken at the western corner of the Icelandic EEC
- Fishery:

  500 – 1 000m depth
- Trawl



Based on ICES 2003

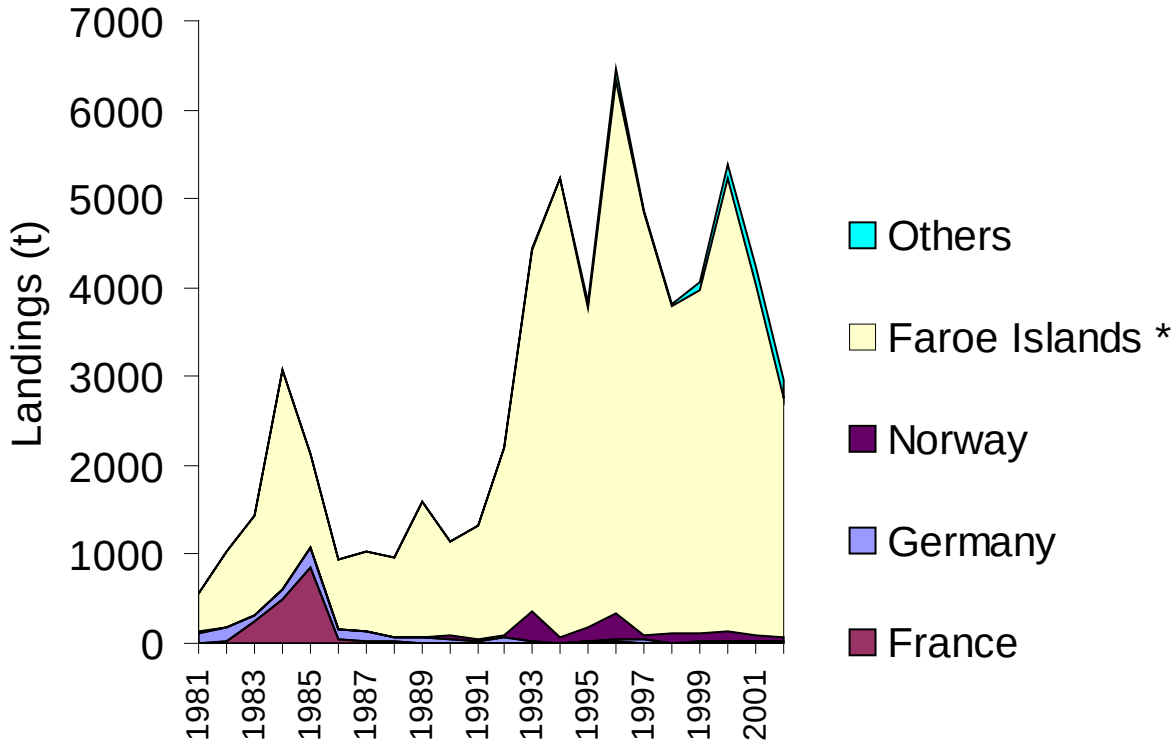
Vb, Faroe Islands

Main fishing grounds are located east and west of the Islands.

Relatively new fishery

Moved from east to west in 2000

Fishing depth: 400-700m



Based on ICES 2003

Apart fr Faroe Islands:

1980-ies: Majority taken by France (< 800 t)

1990-ies: Majority taken by Norway (< 250 t)

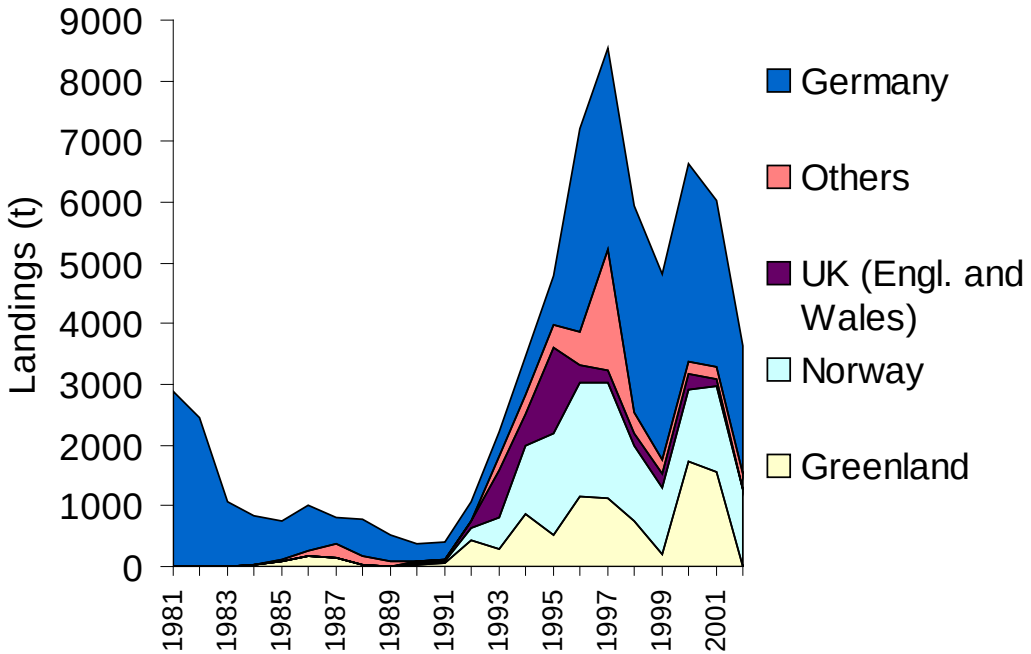
XIVb, East Greenland

Main fishing grounds along the slope 63 N - 65°N and around 62 °N

Depth: 800-1 500m

Relatively new fishery

Increase in 1990ies: increased fishing activity
→Agreements:
-Greenland-Norway
-Europe



Based on ICES 2003

Assessment

- Traditionally VPA and XSA

- Since 2000 XSA has been discarded by ACFM
  - Poor diagnostics

  - Poor and variable input data
  - Lack of input some years / some areas
  - No pattern in incoming year-classes
  - Ageing problems
  - Inconsistent maturity data
  - Lack in general biological knowledge
    - *e.g.* maturation, spawning frequency, spawning area(s), recruitment

At present: ASPIC (BETA vers. 4.45)…

- Requirements:
  - series of catch data
  - indices of stock biomass, either corresponding effort, CPUE, or survey catch rates.
    - see report of the Northwestern Working Group 2003 (ICES 2003).

- Used:
  - Icelandic CPUE series (1985 onwards)
  - Icelandic groundfish survey (1996 onwards)

Management

- Suggested: $F \sim F_{pa} = 2/3 * F_{msy} \sim 20\,000$ t
- No management objective for the stock
- At present: no common agreements in how to share TAC between coastal nations

=> TAC is more like quota in each sub-area…

Leading to overfishing TAC each year

ASPIC 2003

- MSY ~ 35 000 t
- Bmsy ~ 114 000 t.

Total biomass 2003 22% below Bmsy,
F 2002 ~ 10% above Fmsy.

Biomass was at a record low in 1998.
Increased by about 25% till 2003.

Before 1998: F occasionally 60% above Fmsy.
Since 1998: F at the level close to or above Fmsy.

Medium term projections

- F~ F_{PA} (20 000 tons)
  - biomass is likely to increase.
  - The probability of reaching B_{MSY} by 2005 is 50%.

- F ~ F_{sq} (33 000 tons) a risk that the
  - stock will remain low or
  - even collapse

Improving management

Provide input data (stablility from one year to the next).

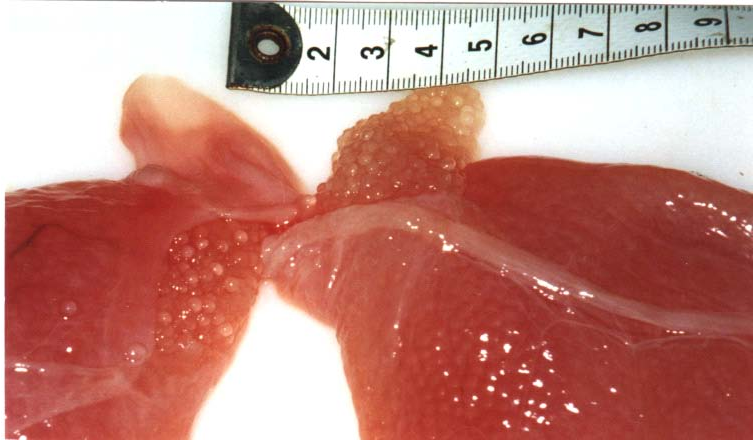
-Length compositions from fishing fleet
Norwegian fishery in Greenland waters: length measurements is a part of the licens for operating in the waters. Provides us with consistent length data every year from all vessels.

-Sex composition

-Maturity data, spawning behaviour, peak spawning

-Age

Maturity



- Visual determinations are inconsistent
- Lack maturity data in several years

- Problem: estimating Spawning Stock Biomass

- Recently focus has been on this issue
  - Maturation, atresia, egg production
  - Still need ”calibrated” personnel when it comes to maturity determinations.

Spawning entities?

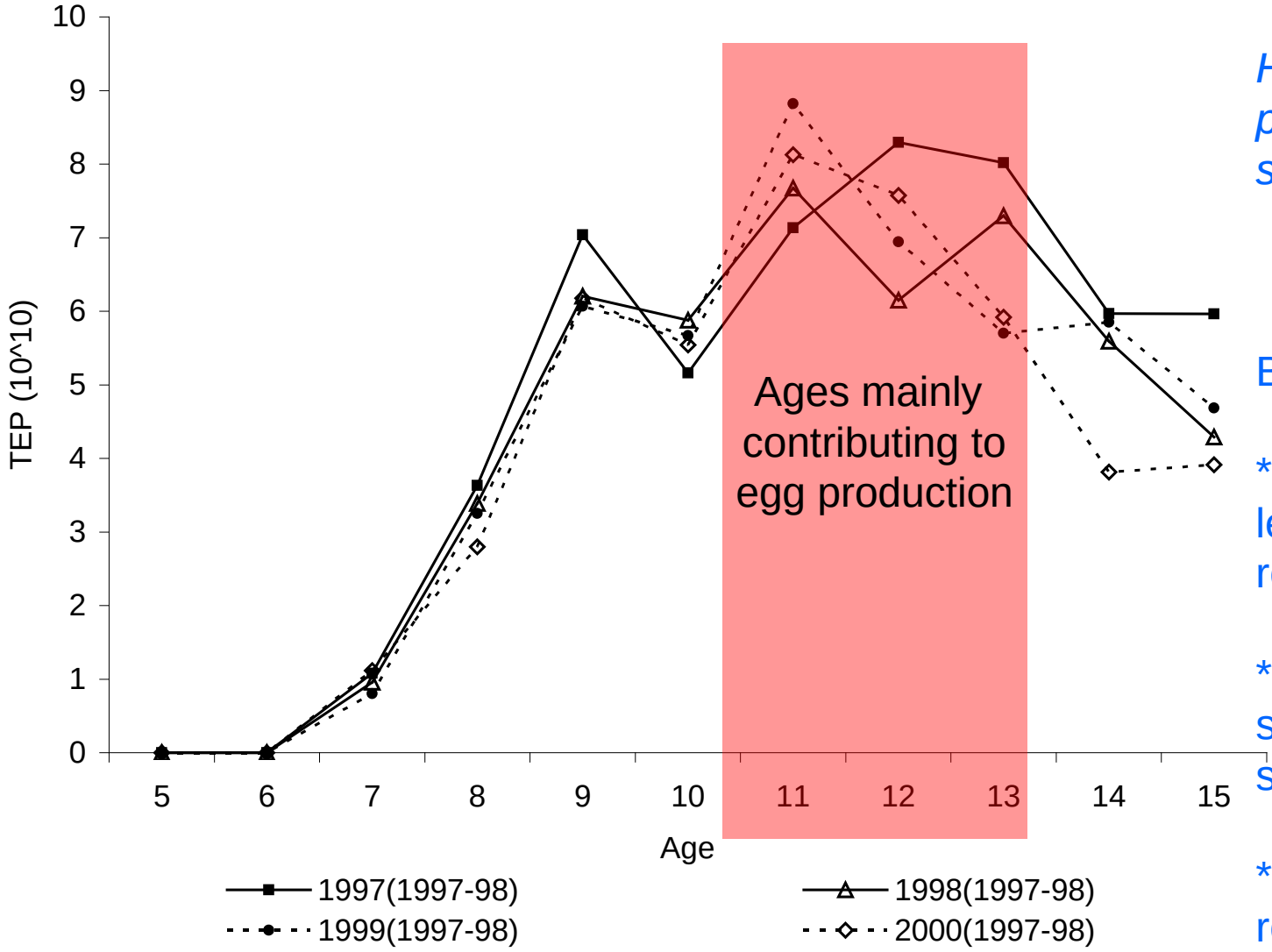
-West of Iceland
(Magnusson, 1977)
(Sigurdsson and Magnusson, 1980)

-East Greenland
(Gundersen *et al*. 2002)

-Faroe Islands
Observed late maturing females in gillnet catches

Need further information on extent and timing

Stock's potential egg production



HIGH production scenario

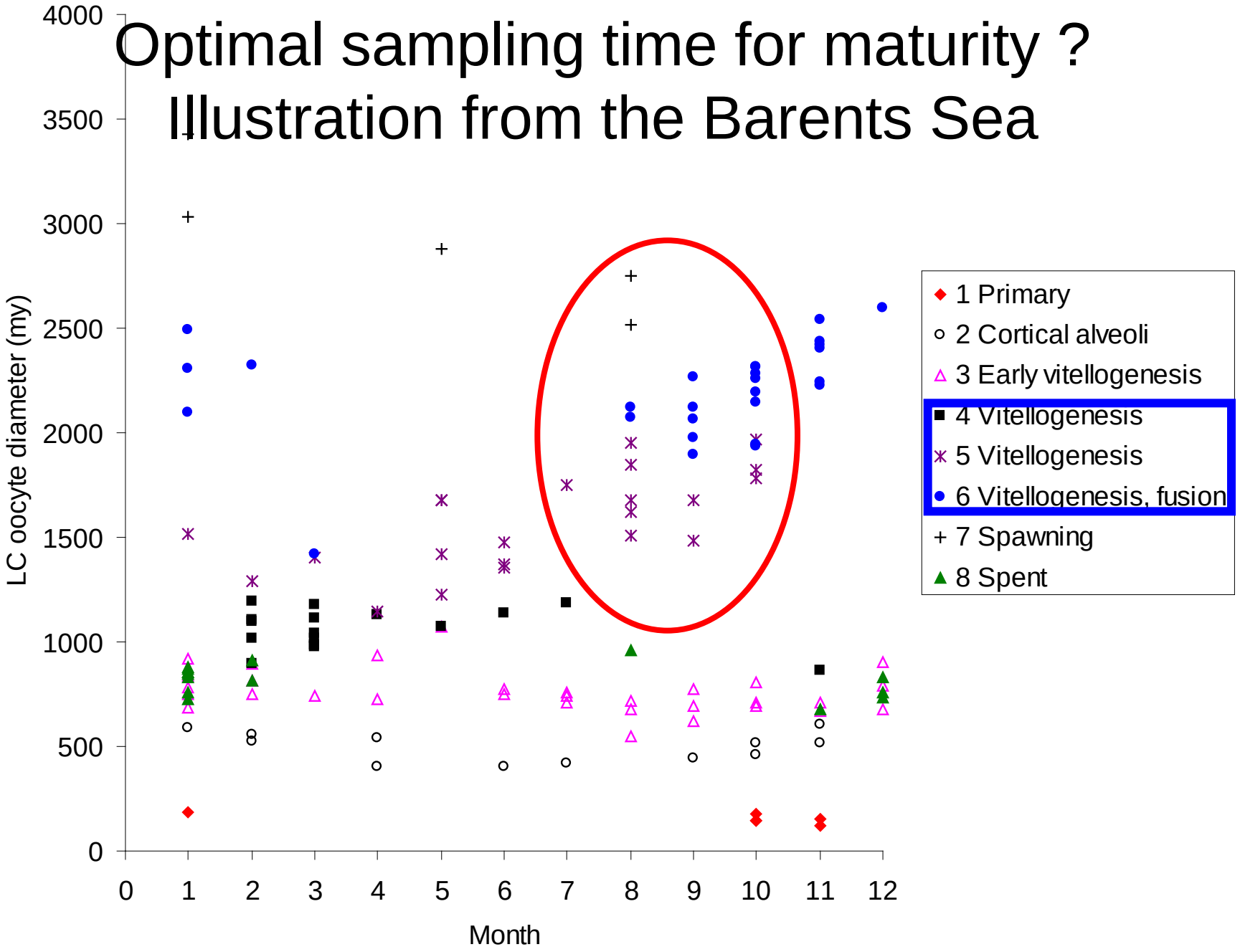
Based on

* fecundity – length for the respective years

*re-estimated spawning stock size

* Age-length-relationships

Optimal sampling time for maturity ?
Illustration from the Barents Sea



...the end...

Thank You for Your attention