

# Science-based management of fish resources in Iceland

Jóhann Sigurjónsson, Director General  
Marine Research Institute, Reykjavik, Iceland

Conference on New partnerships between Iceland and  
the Caribbean Small Island Developing States  
Bridgetown, Barbados, 25-27 March 2008





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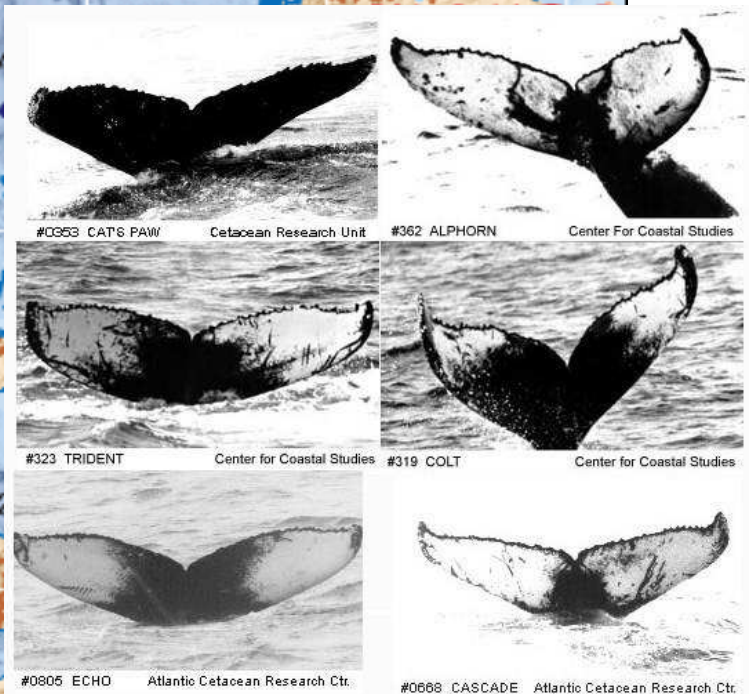


# Humpback whale migration from Iceland to the Caribbean

Summer feeding grounds



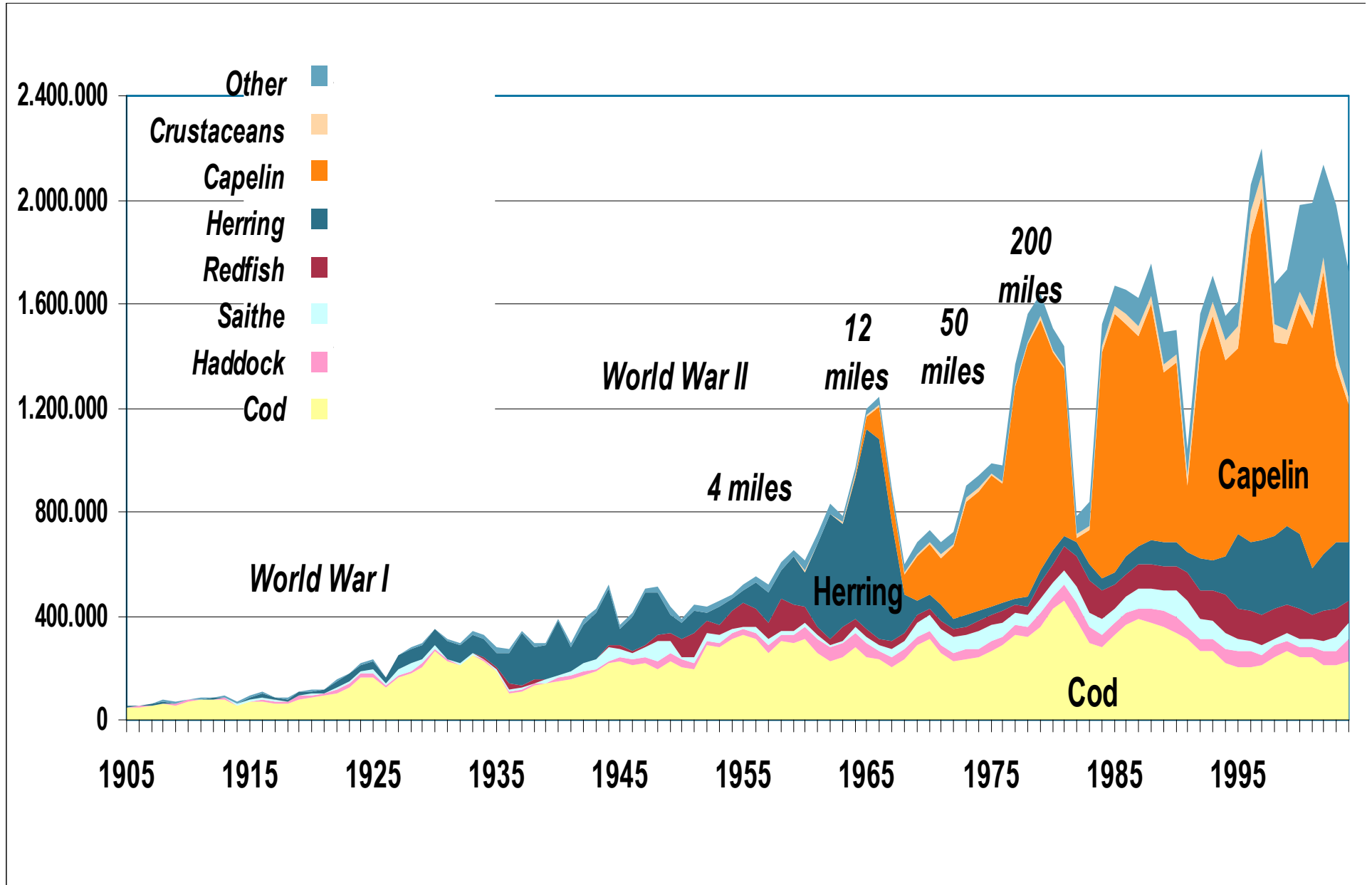
Winter breeding grounds



Photographed off Iceland and in the Caribbean  
Tracked by individually identifiable "fingerprints"



# Iceland: Total catches 1905-2004



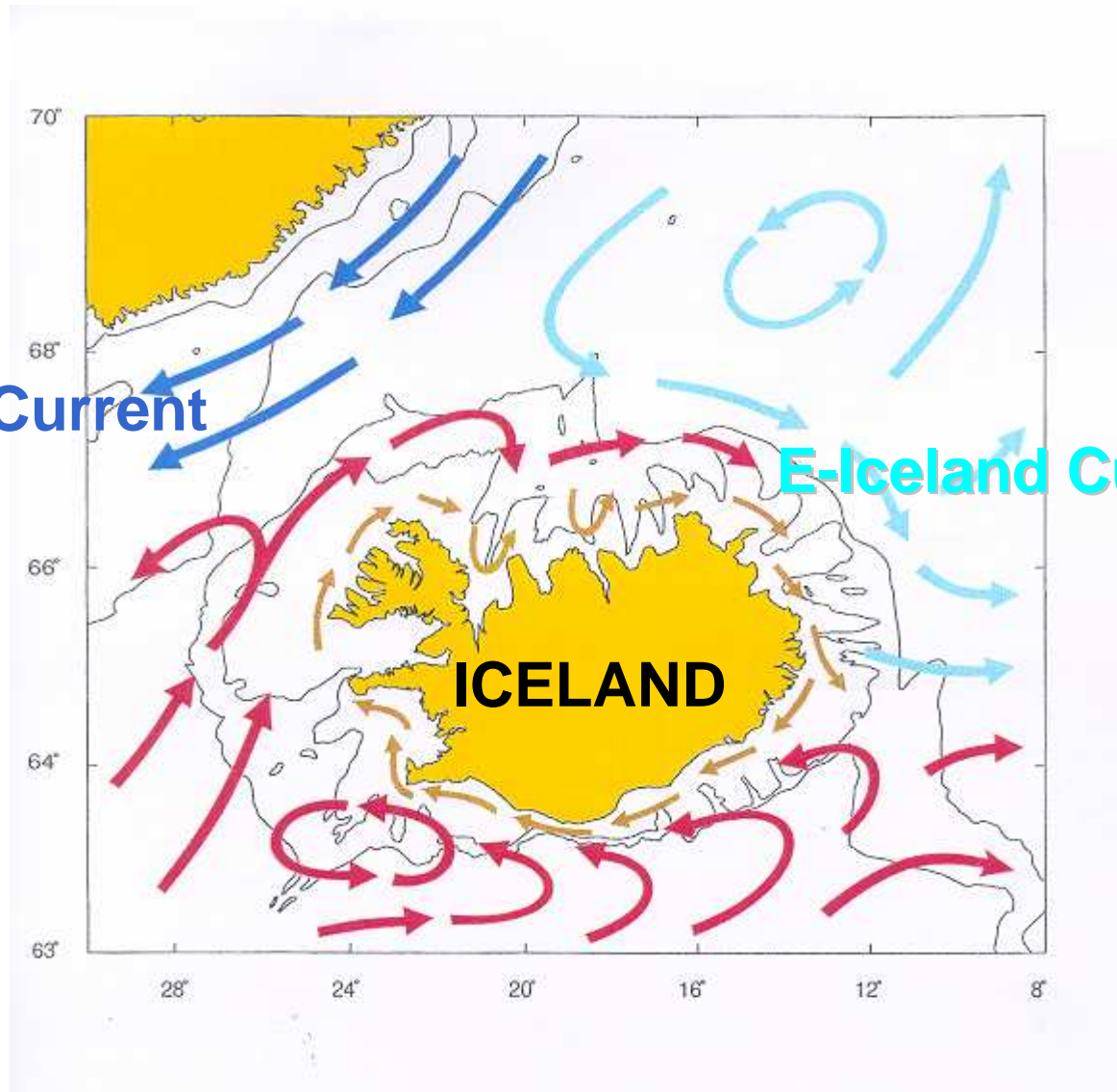


# OCEAN CURRENTS

**E-Greenland Current  
(cold)**

**E-Iceland Current  
(cold)**

**Gulf-Stream  
(warm)**



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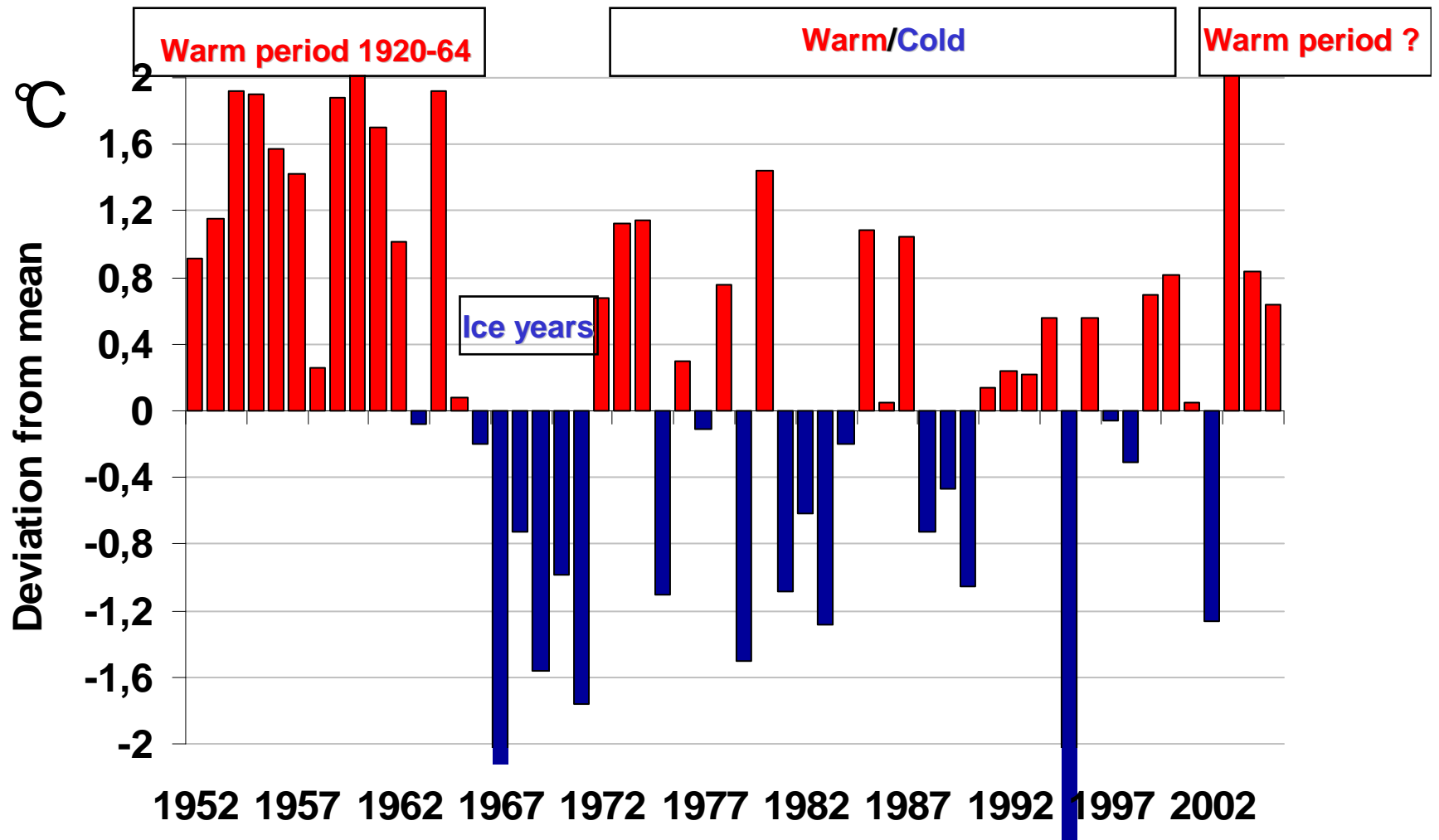
# THE INFRASTRUCTURE

- Research/Advice
  - Environmental factors affecting stock development
  - Stock structure and productivity
  - Advice on TACs
    - > Marine Research Institute
    - > International Council for the Exploration of the Sea (ICES)
  - > Stakeholder involvement
- Management framework
  - ITQ's introduced in 1984, later further developed
  - Effective monitoring and enforcement of regulations
    - > Ministry of Fisheries and Agriculture
    - > Fisheries Directorate
    - > Icelandic Coast Guard
  - > Transparency



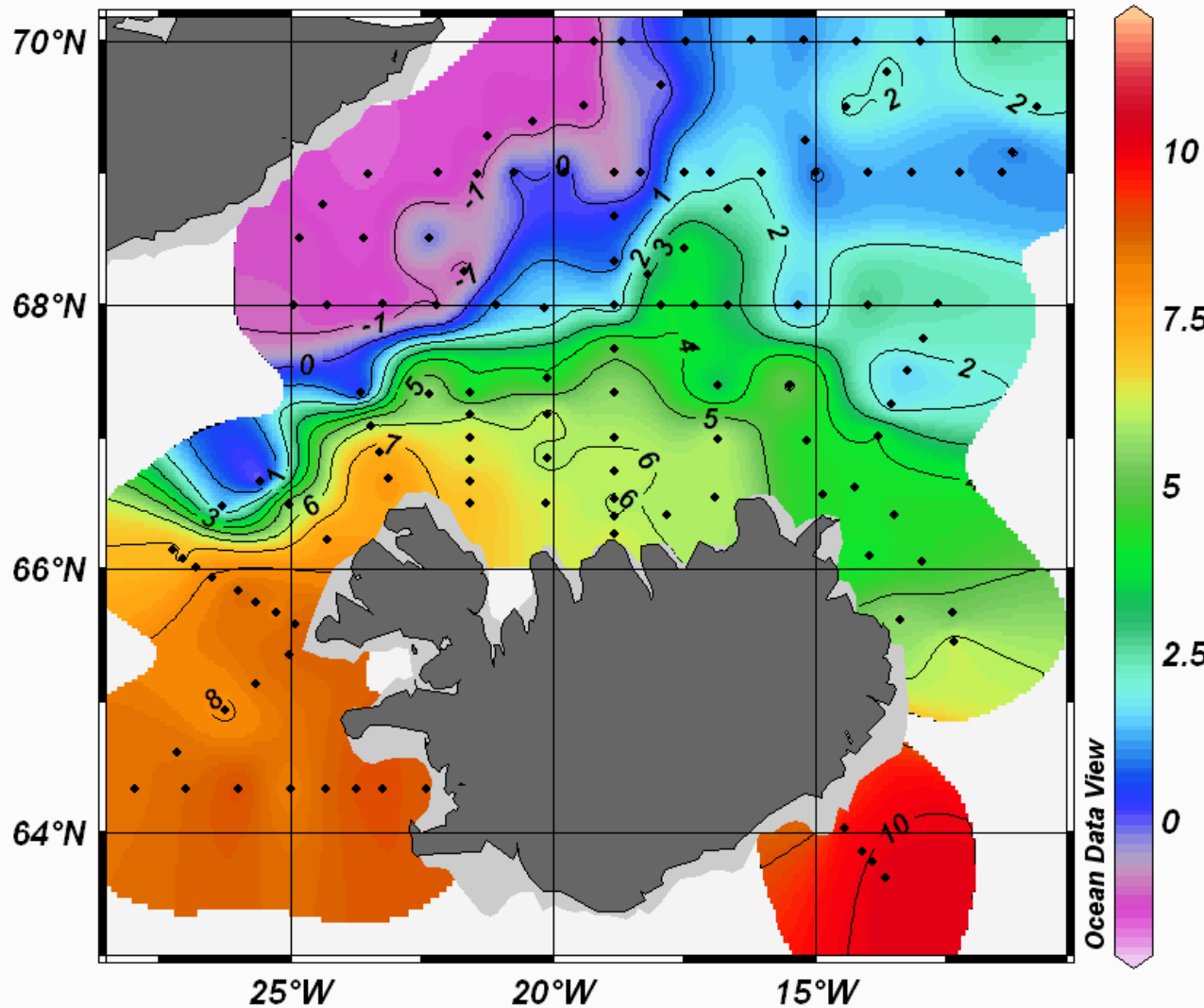
# Temperature variations north of Iceland 1952-2005

4-5 °C deviations from warmest and coldest years



# Iceland Seas - August 2007

Sea temperature at 50m depth

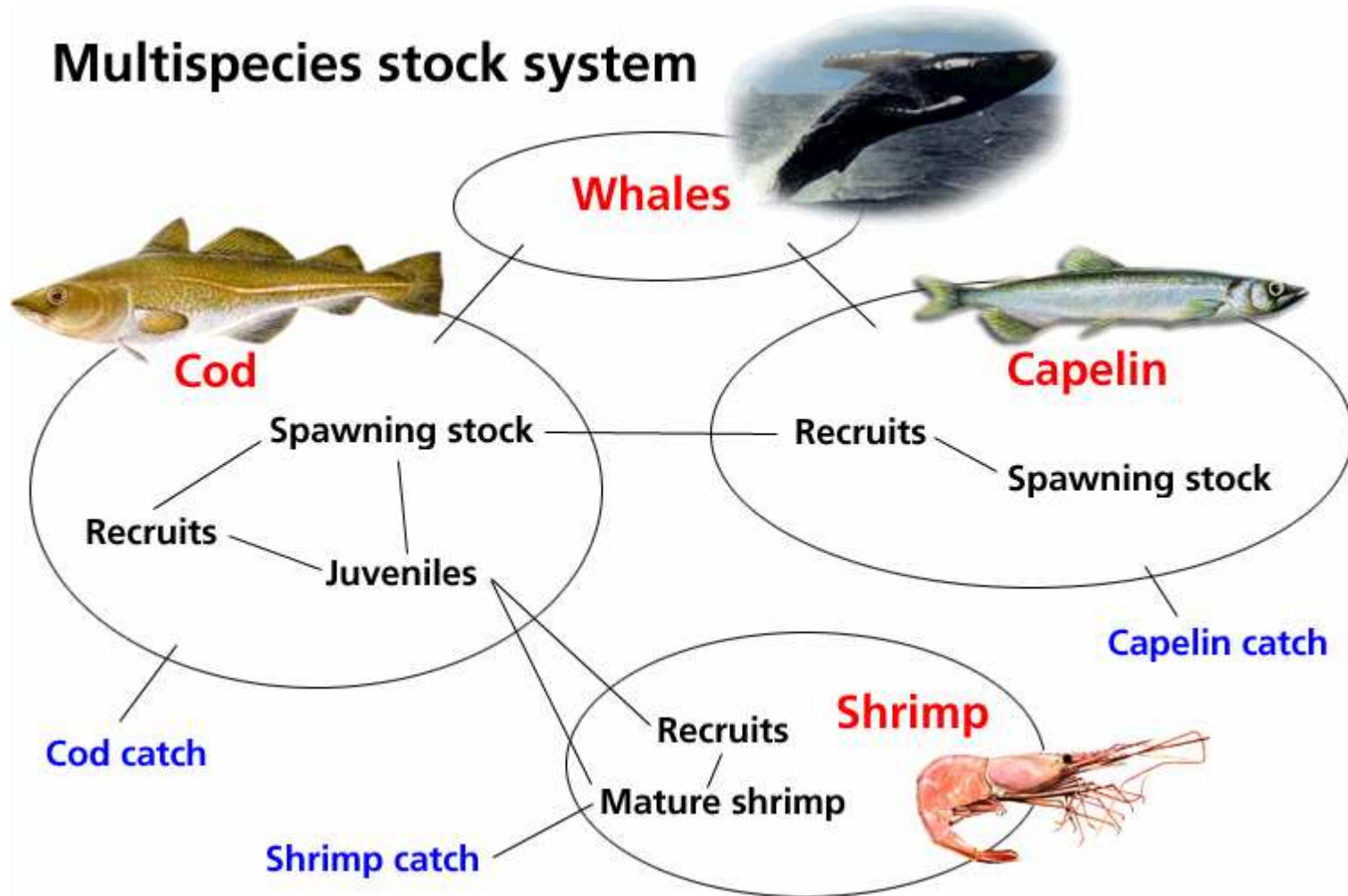


Temperature at  
the coast of Iceland  
in summer:  
-1-10+°C

Great variability in  
temperature range

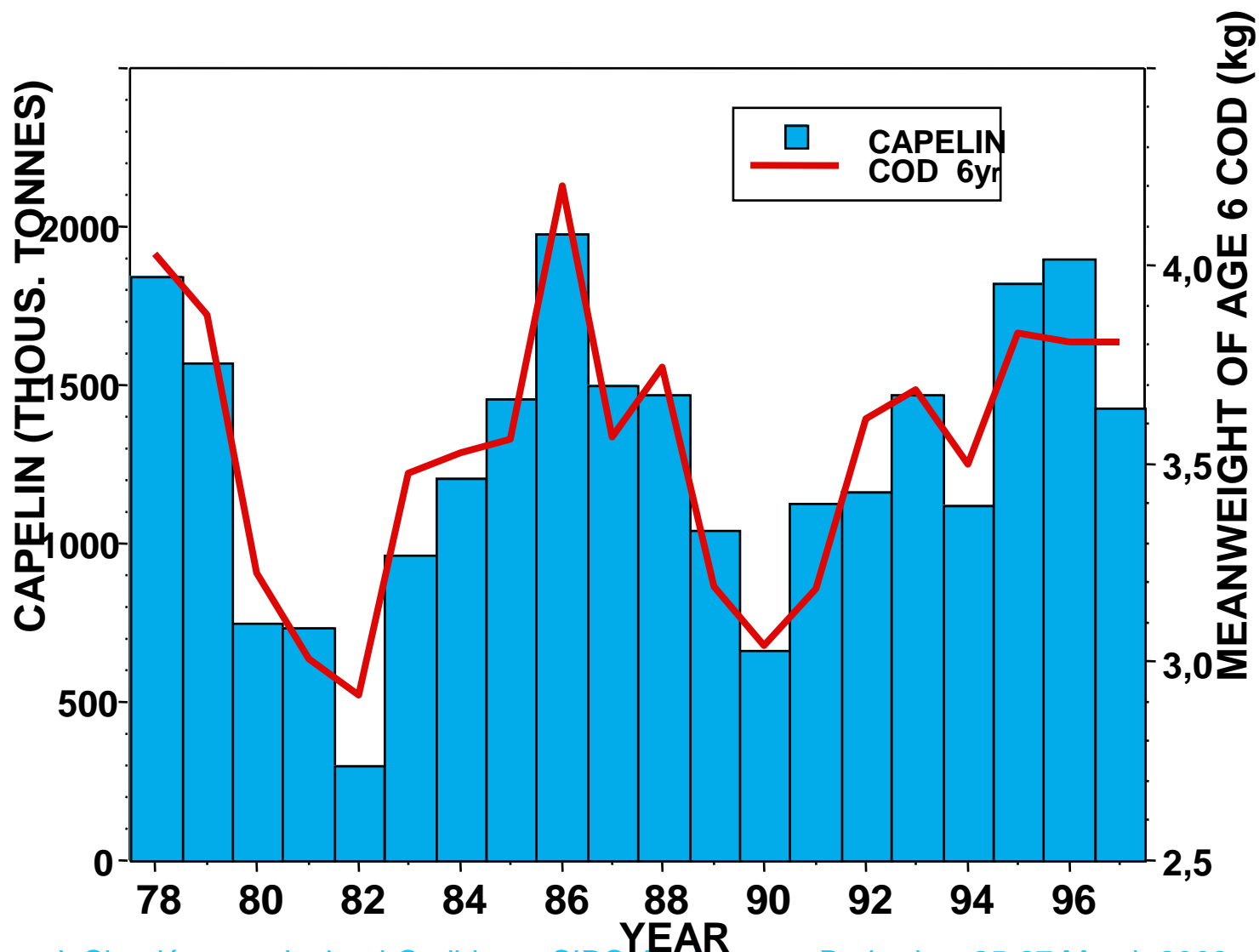


## Multispecies stock system





# CAPELIN STOCK SIZE AND WEIGHT OF COD THE FOLLOWING YEAR



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Who shall eat the capelin, man, cod, the humpback whale ? And how much ?



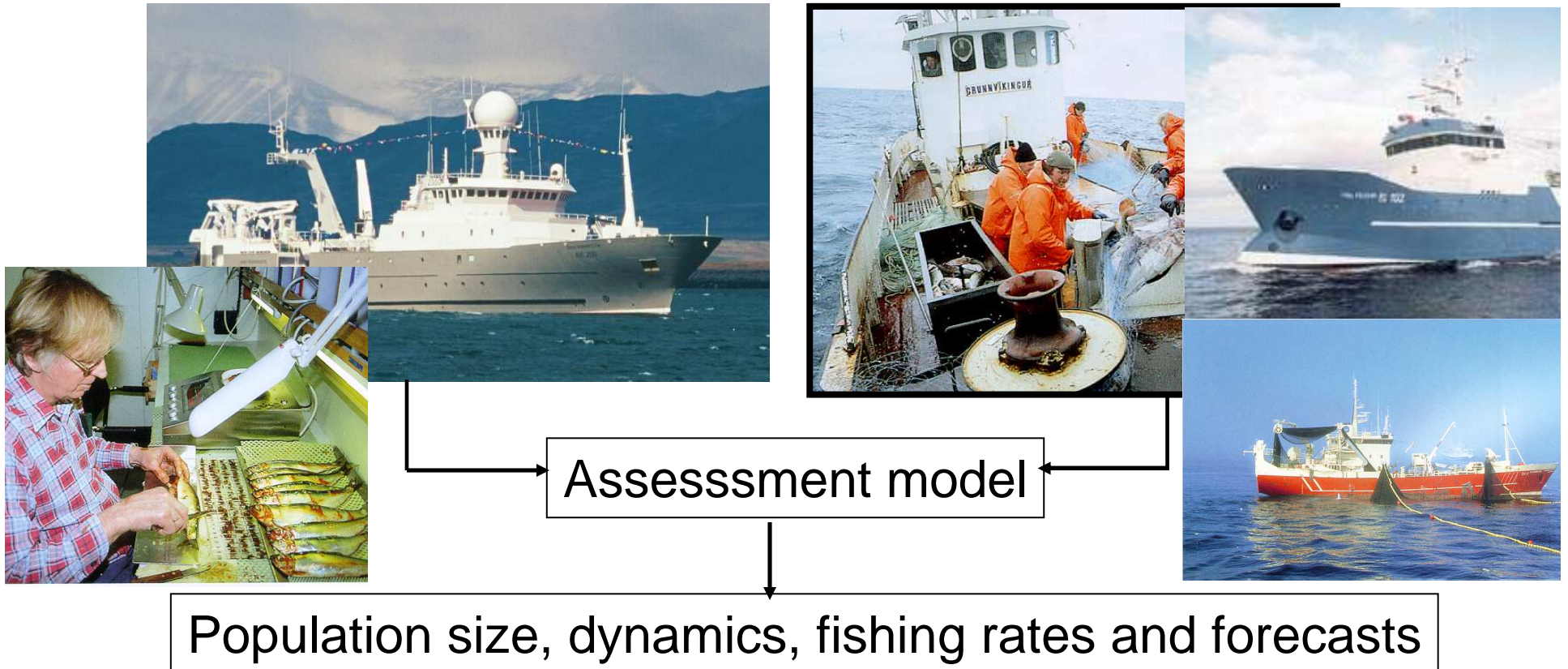
Capelin vessel

Diving humpback whale



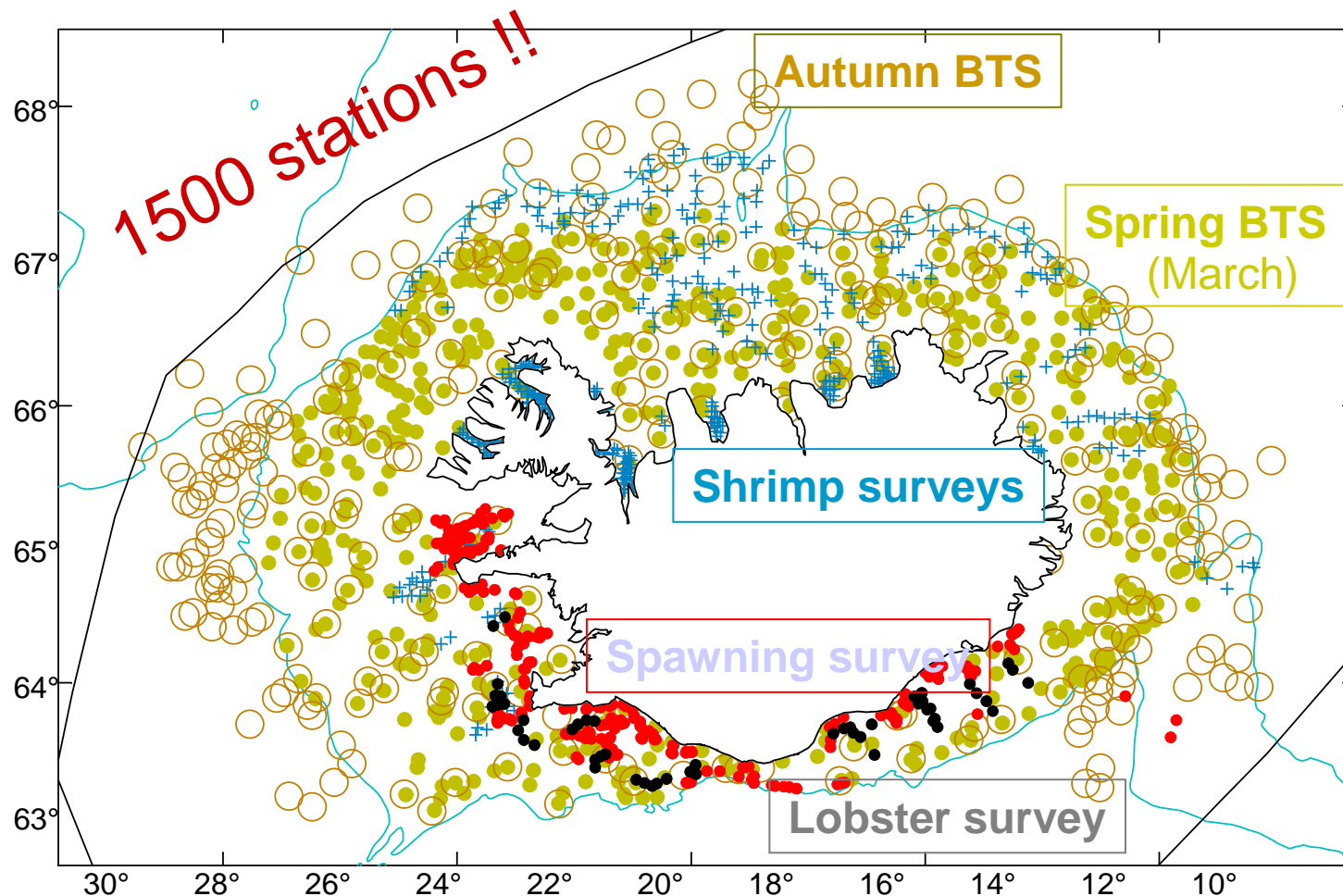
# FISH STOCK ASSESSMENT AND ANNUAL ADVICE

- **Fishery-independent** methods
  - Surveys
- **Fishery-dependent** methods
  - Sample catches or landings





# ANNUAL STOCK MONITORING SURVEYS



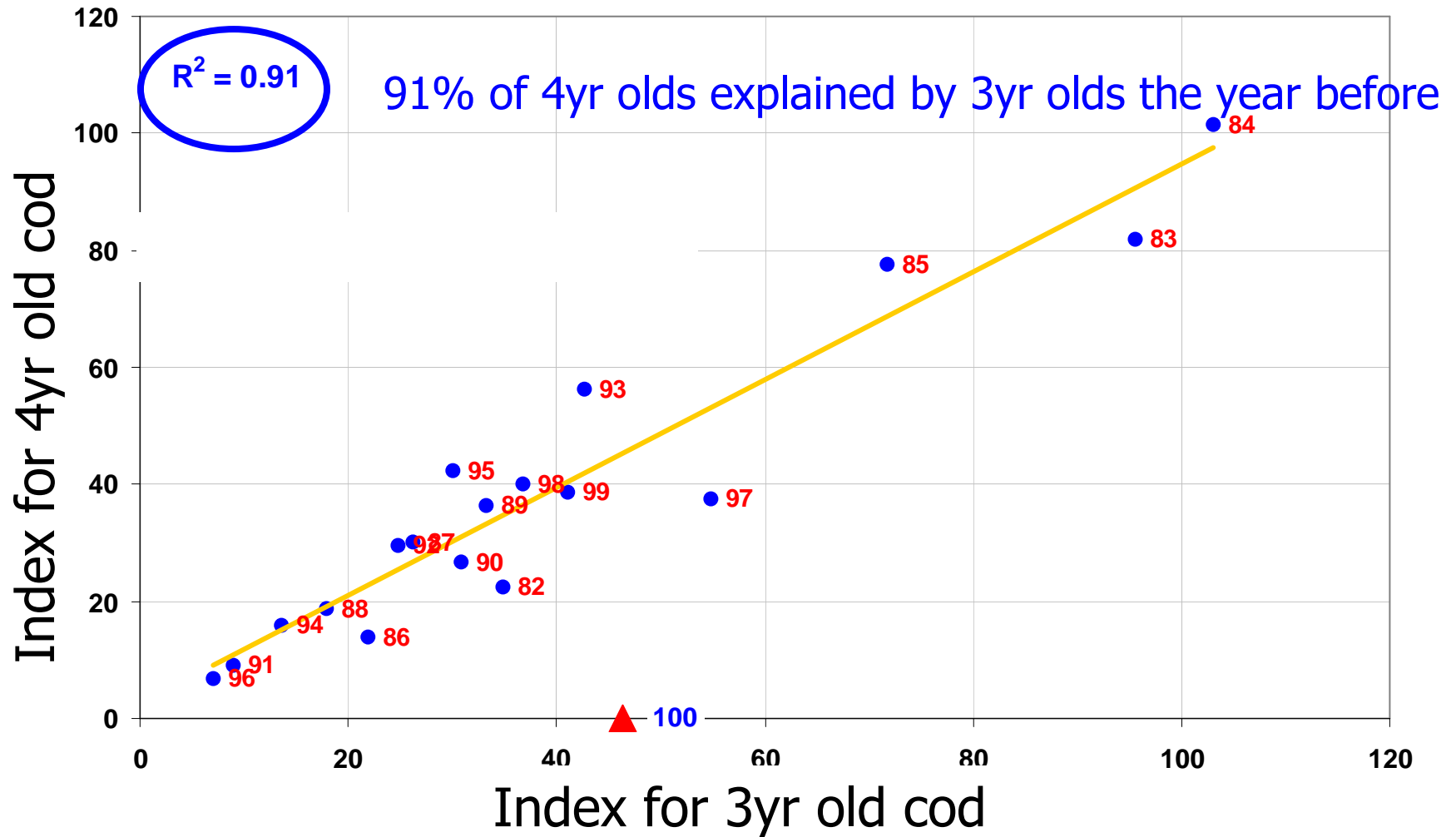
Measured = 720 thous. fish

Age determined = 113 thous. fish

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# GROUND FISH SURVEY: 3 YEAR OLD COD AND 4 YEAR OLD FOLLOWING YEAR





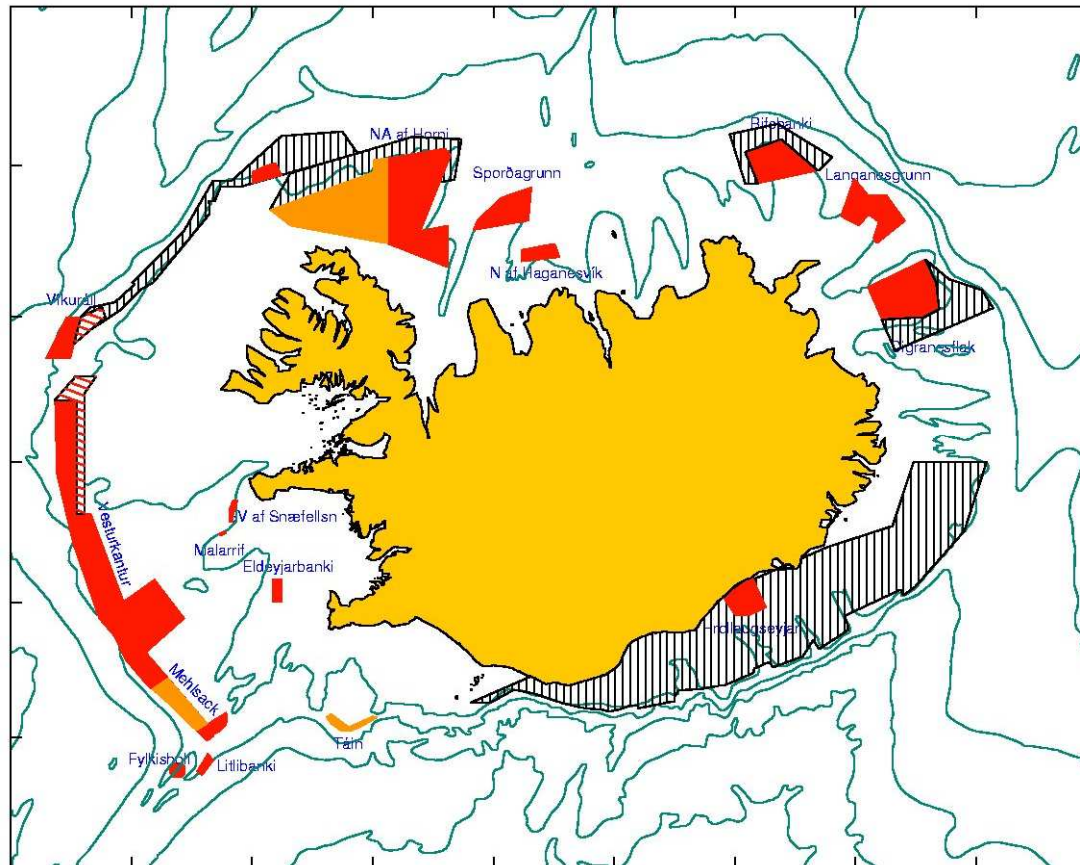
## MAIN MANAGEMENT MEASURES

- TAC's, setting catch limits
- Mesh size, gear type
- Season length and timing
- Closed areas



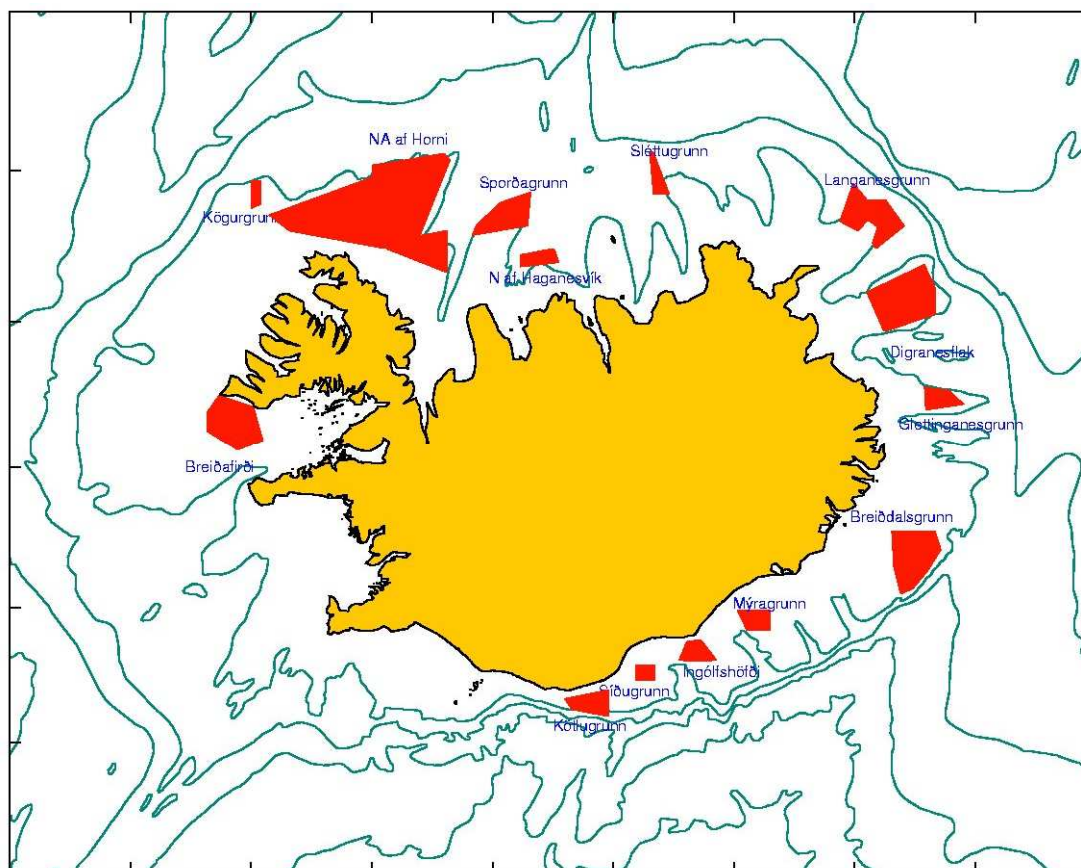
# CLOSED AREAS: BOTTOM TRAWL

For protection of juvenile fish  
And unwanted bi-catches





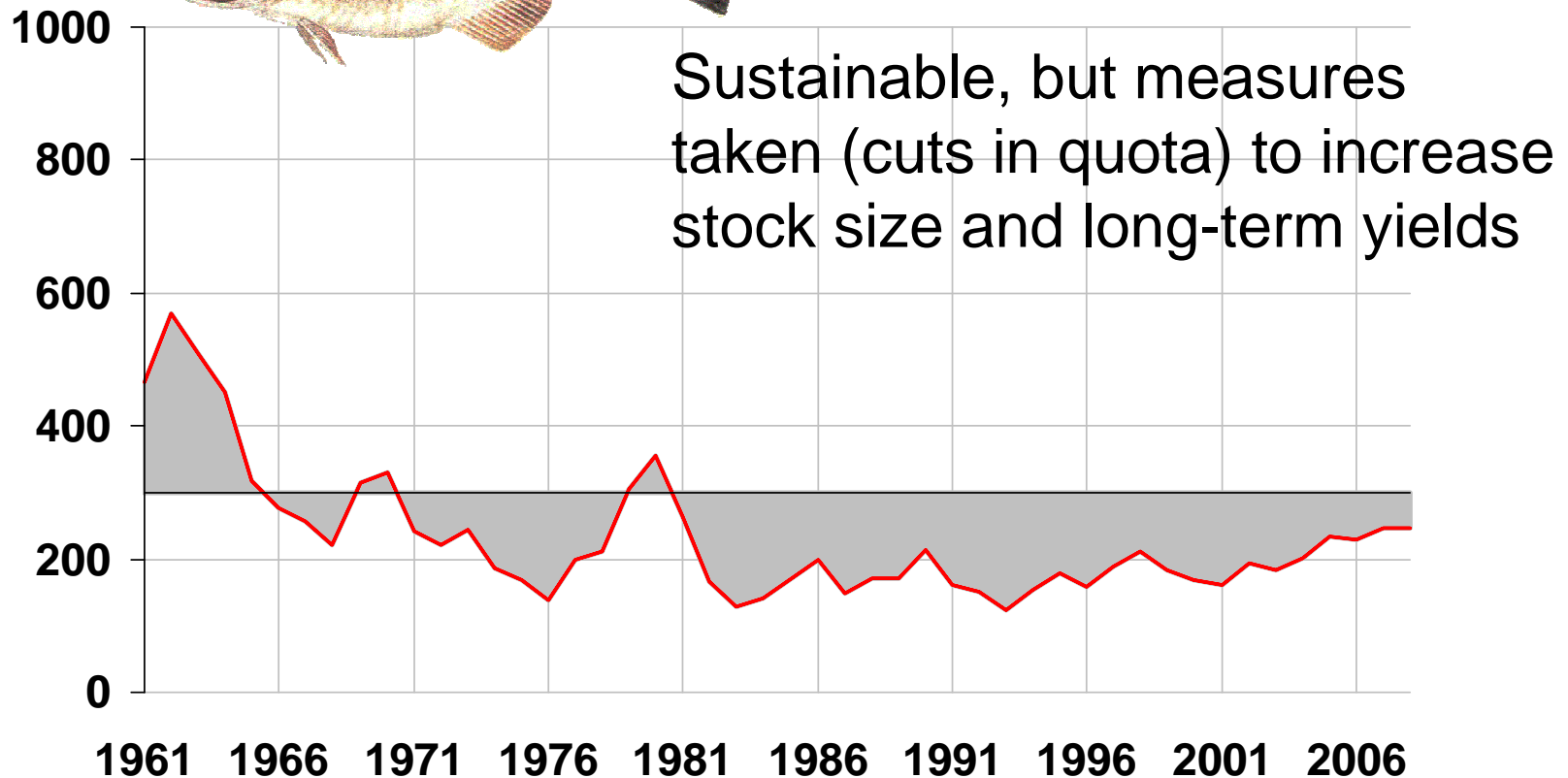
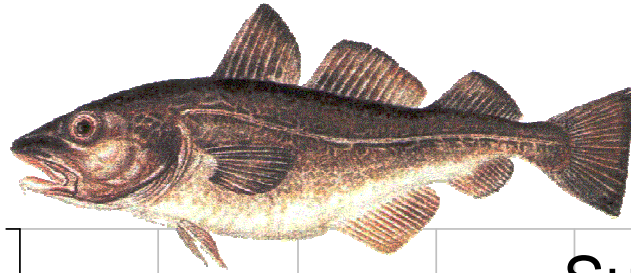
# CLOSED AREAS: LONG-LINING



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# Cod: Development of Spawning Stock Biomass 1961-2007





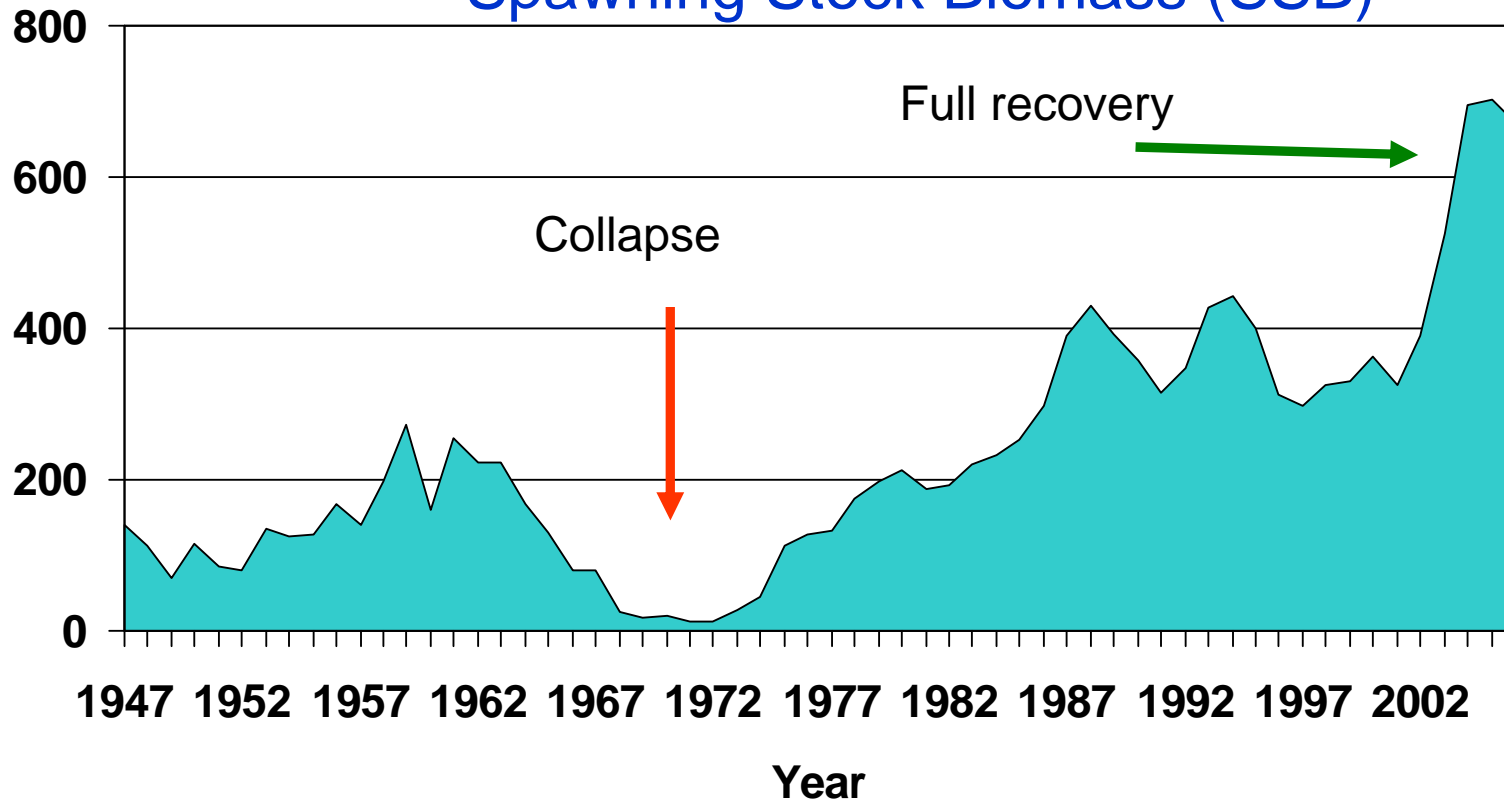
# Icelandic Summer-Spawning herring

Harvested at optimal harvest strategy since early 1970's



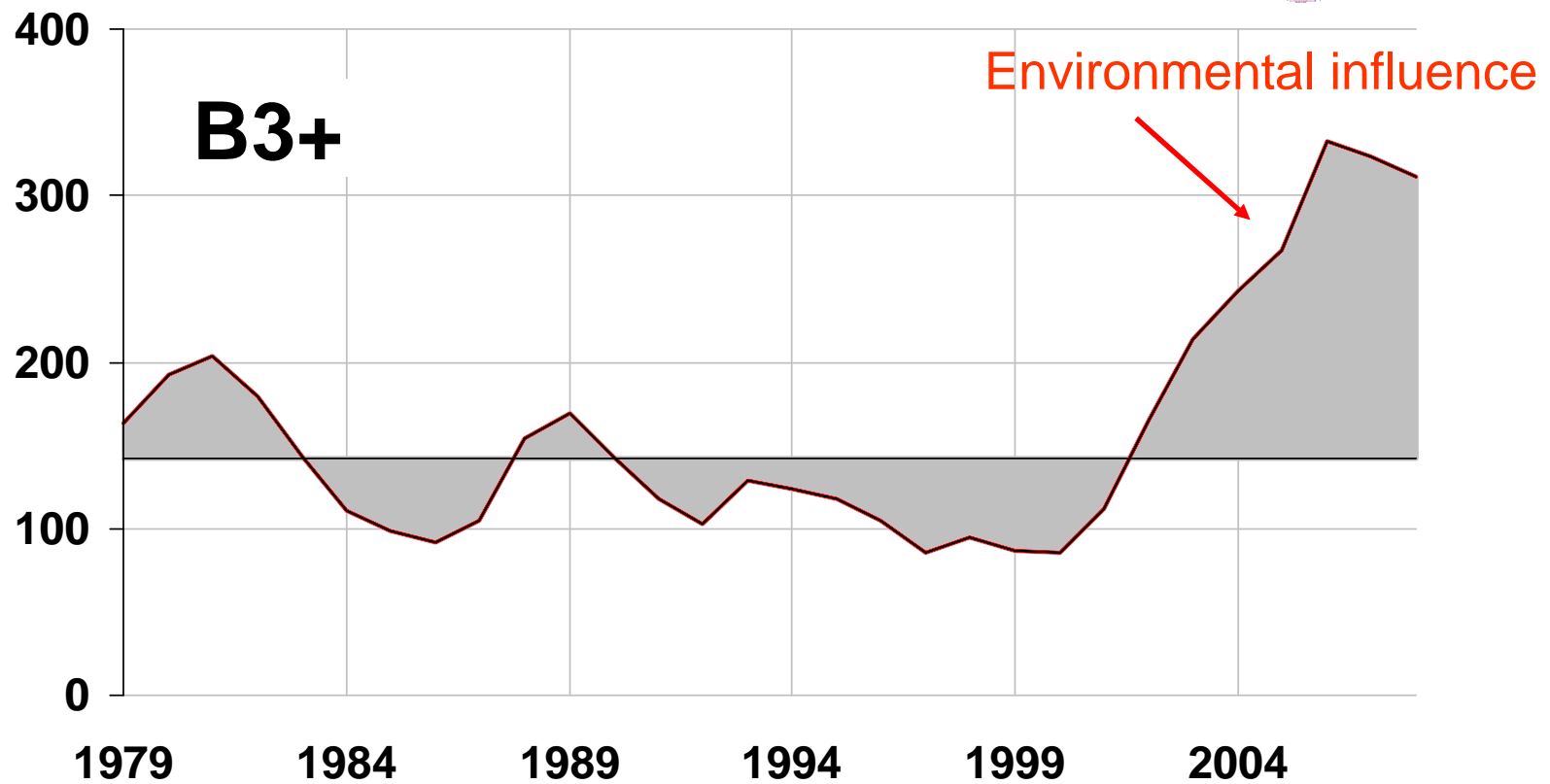
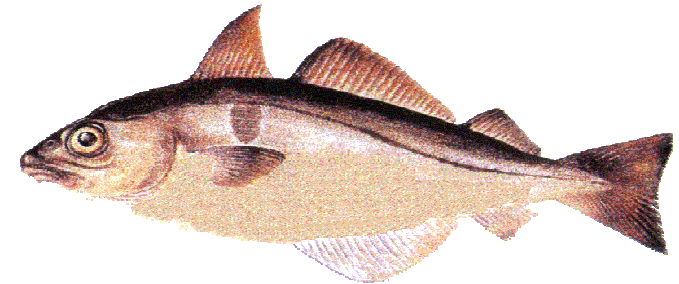
Thous. tons

## Spawning Stock Biomass (SSB)





# Iceland Haddock: Fishable biomass





## IN CONCLUSION

- World is not perfect - progress still made
- The concept of science-based management is widely accepted in Iceland, although practical details are always debated
- Communication is the key element to obtain sufficient involvement and participation of all stakeholders
- Such an approach requires wide ranging research and monitoring
  - this needs to be understood by all stakeholders, including authorities



## IN CONCLUSION

- The potential lies in better utilisation of our fish resources
- E.g. lesser fishing effort can:
  - Easily yield 10-20% more cod in Iceland
  - Much higher cpue, lower cost
- Regard needs to be taken to multispecies aspects - even marine mammals are part of the ecosystem!
- Important to establish long-term sustainable harvest strategies with a wider ecosystem view



THANK YOU !!