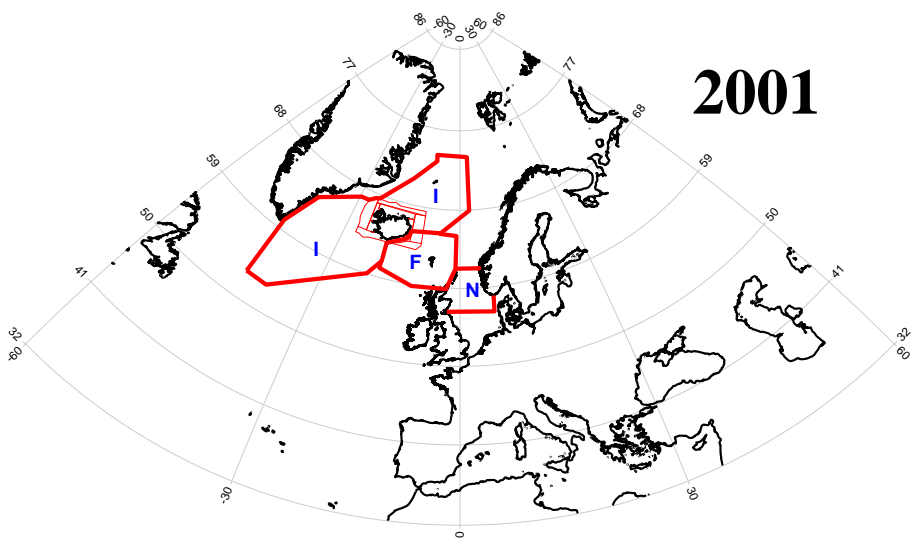
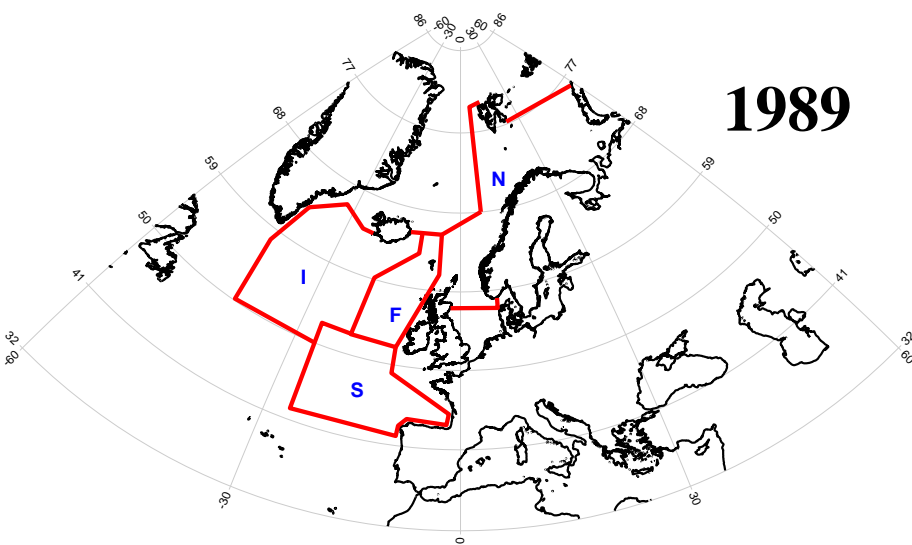
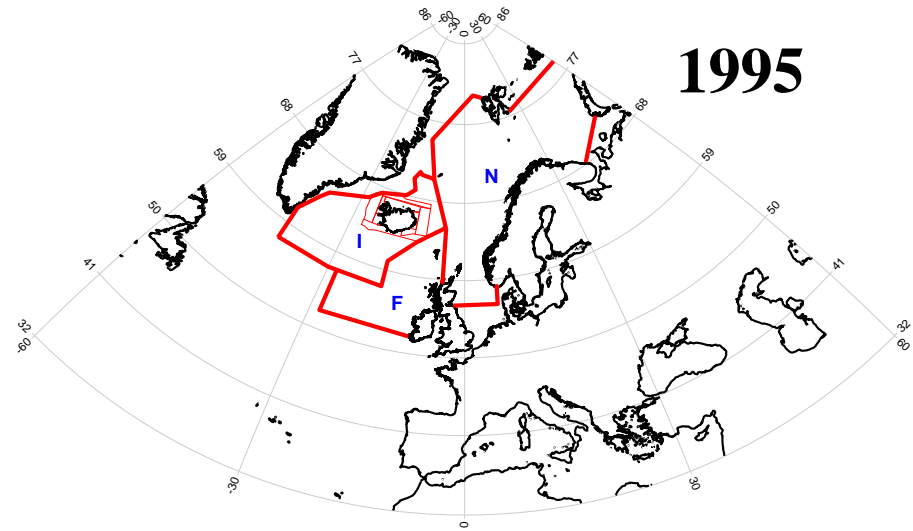
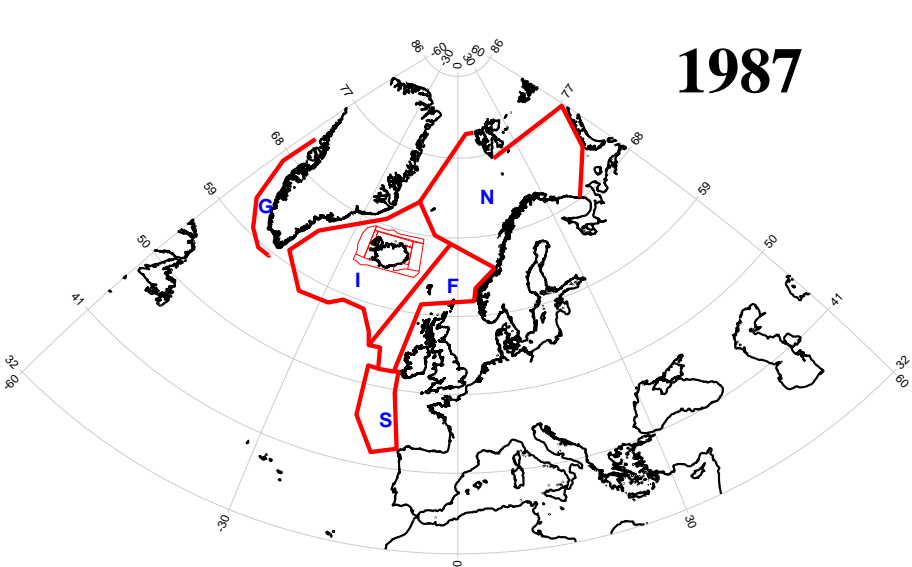


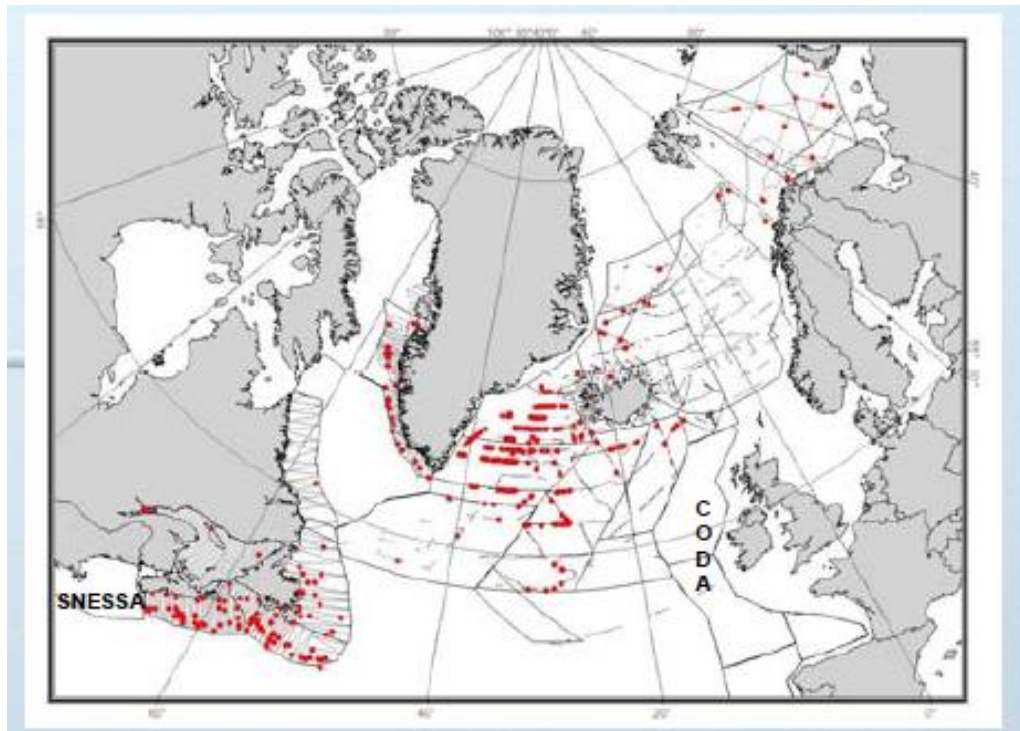
Nýlegar breytingar á útbreiðslu og stofnstærðum hvala við Ísland

Gísli A. Víkingsson
Hafrannsóknastofnun

Hvalatalningar á Norður Atlantshafi 1987-2007



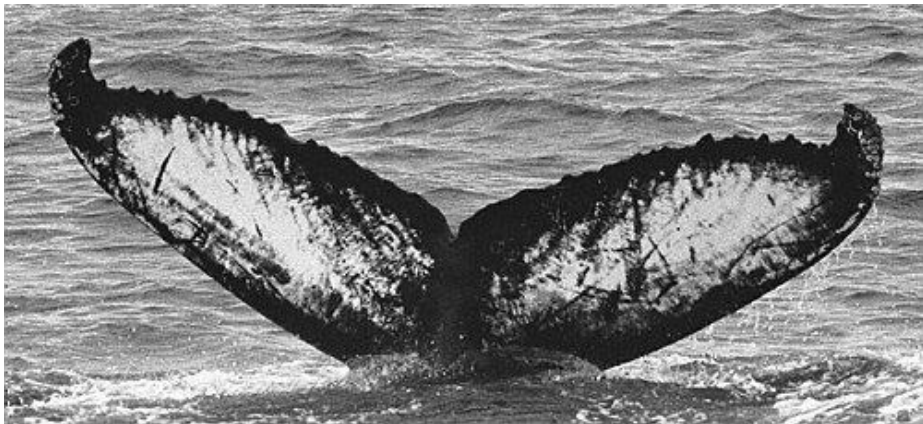
TNASS 2007



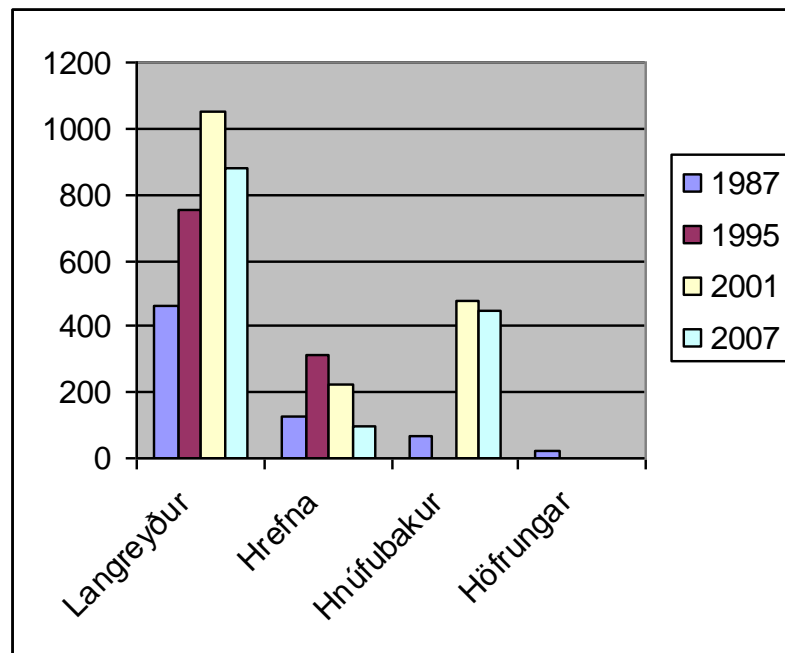
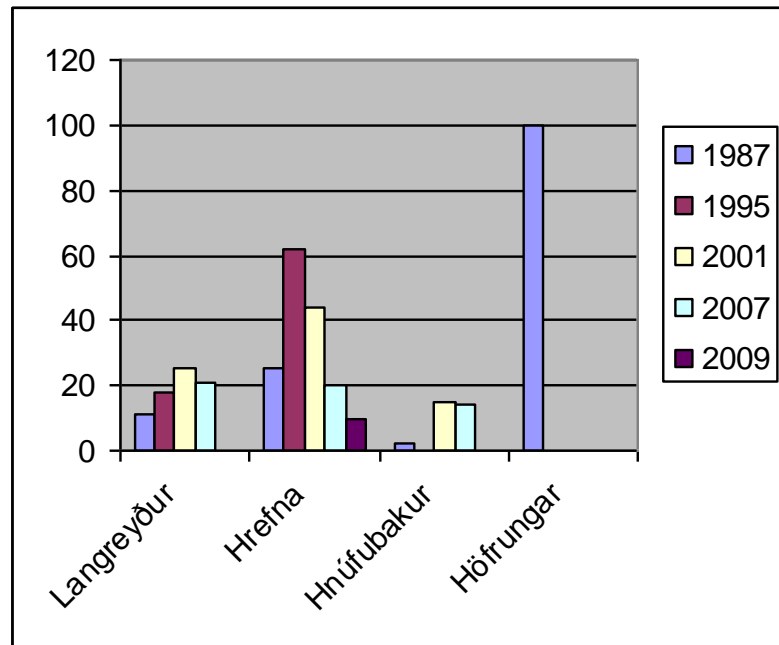
Stofnstærðir

1987-2007

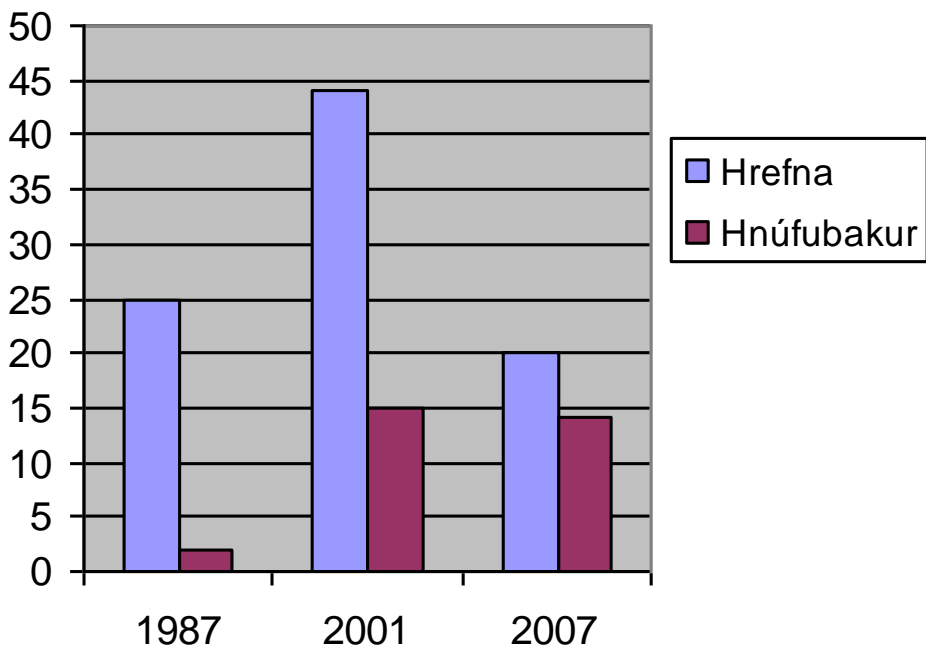
Fjöldi
(þús. dýra)



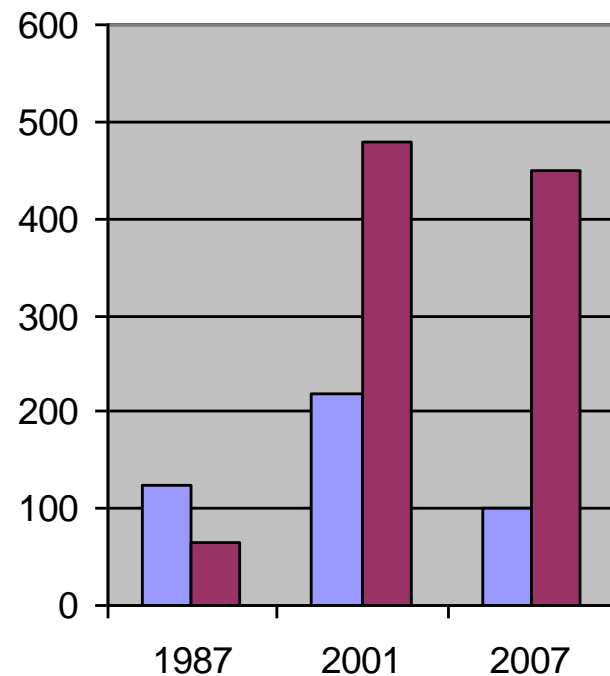
Lífmassi
(þús.) tonna



Breytingar í tegundasamsetningu á landgrunninu

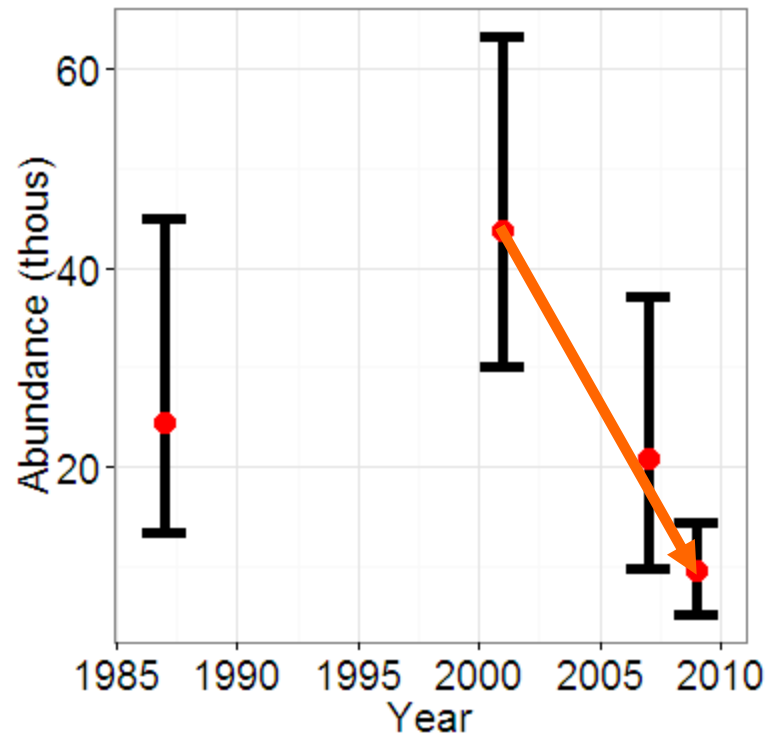


Fjöldi

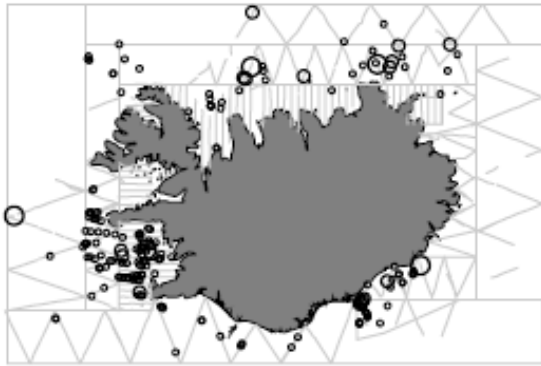


Lífmassi

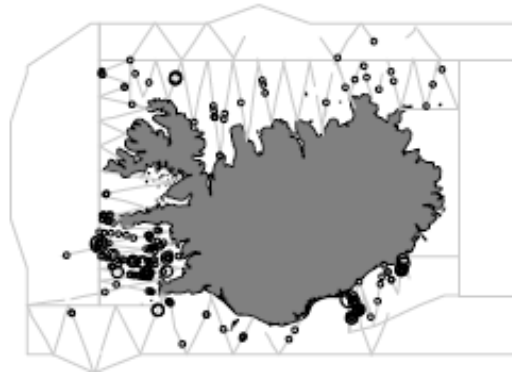
Fjöldi hrefna á landgrunni Íslands 1987-2009



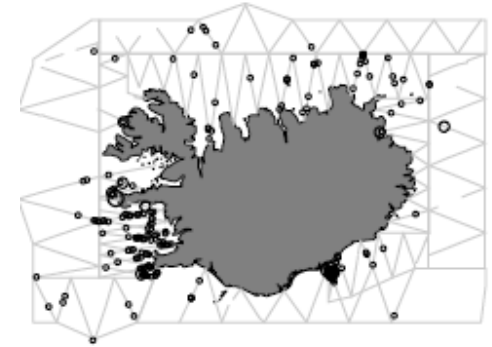
Hrefna – Flugtalningar 1986-2009



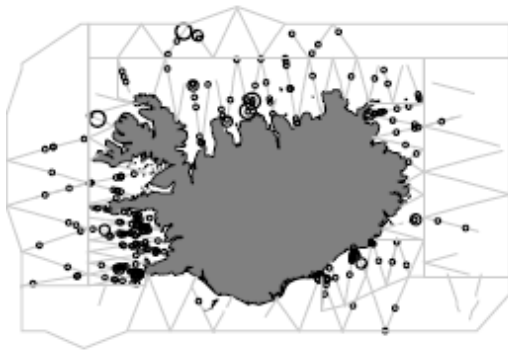
1986



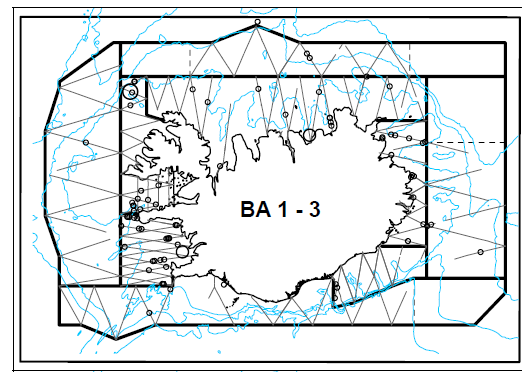
1987



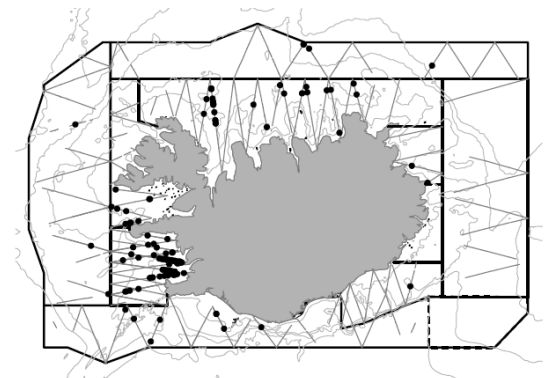
1995



2001

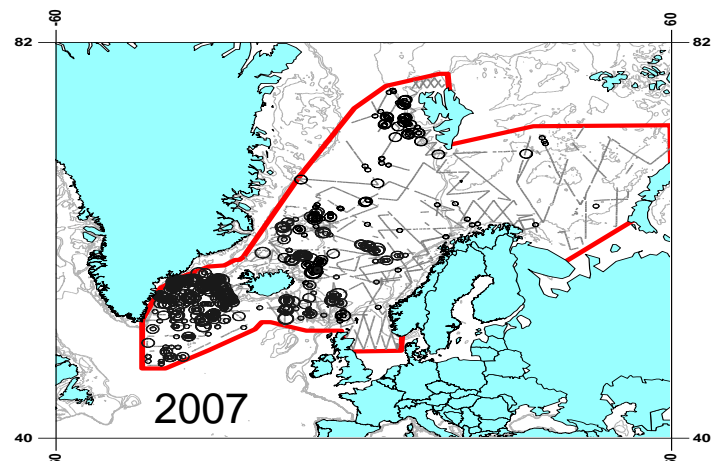
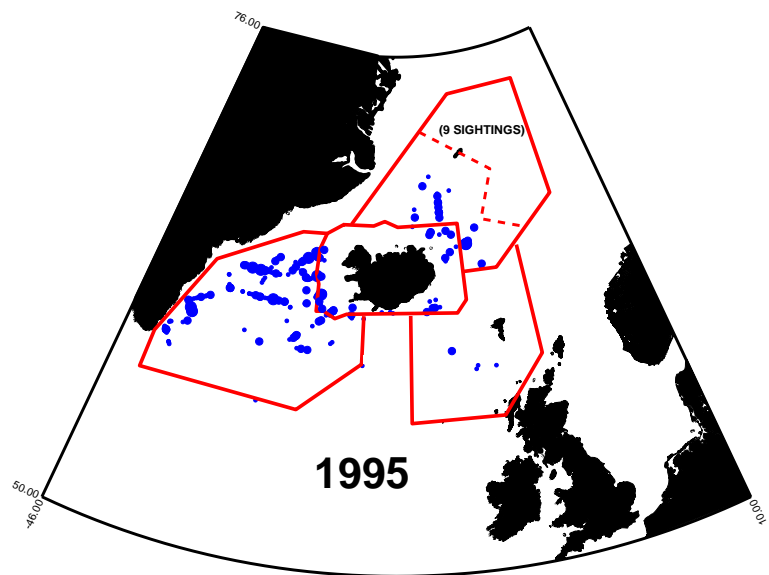
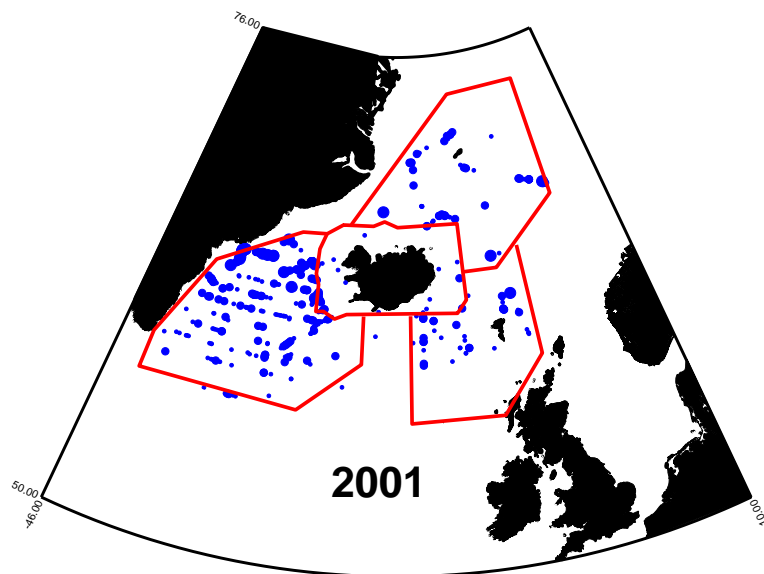
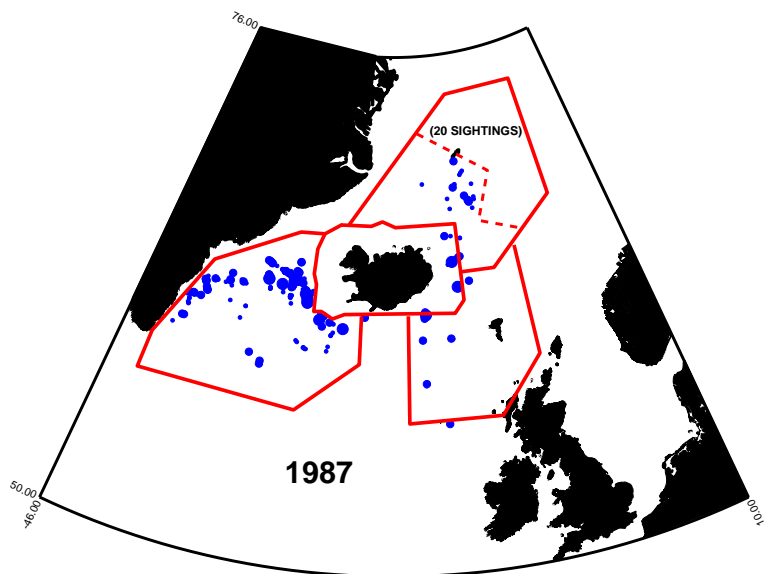


2007

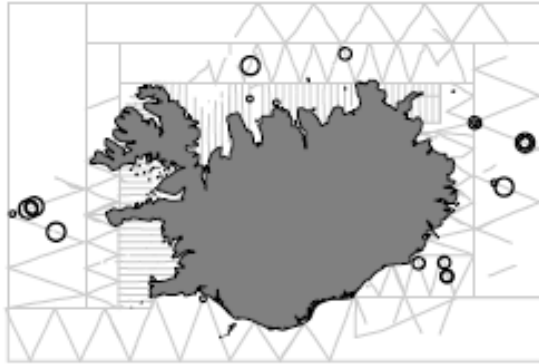


2009

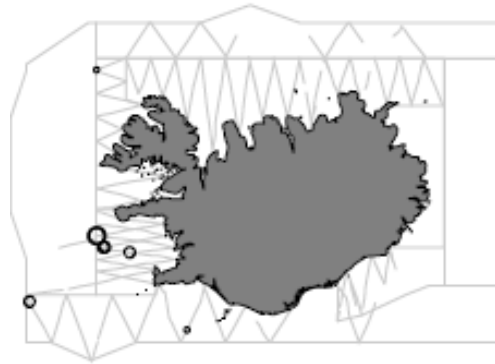
Langreyður



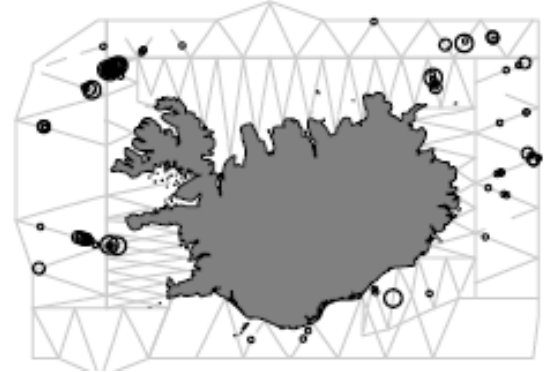
Hnúfubakur – Útbreiðsla á landgrunninu 1986-2009.



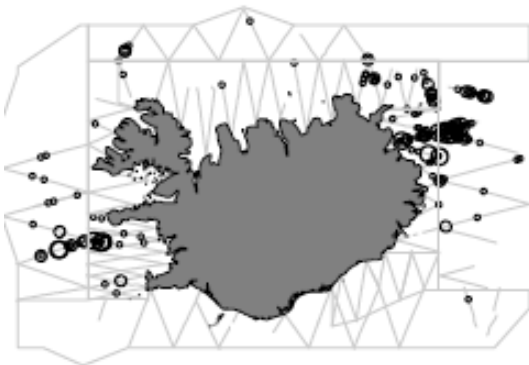
1986



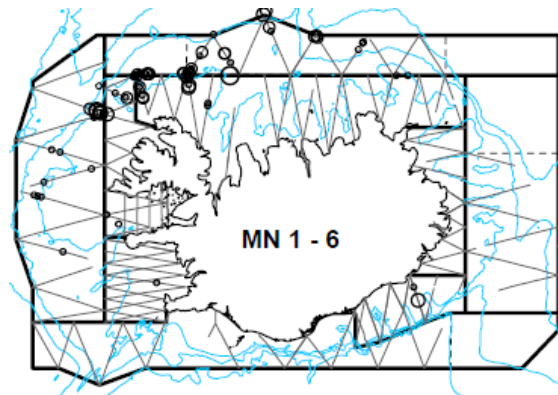
1987



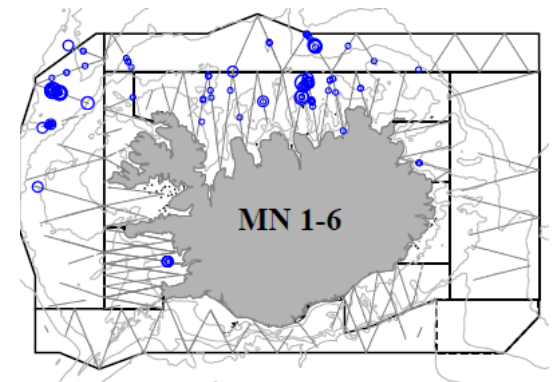
1995



2001



2007

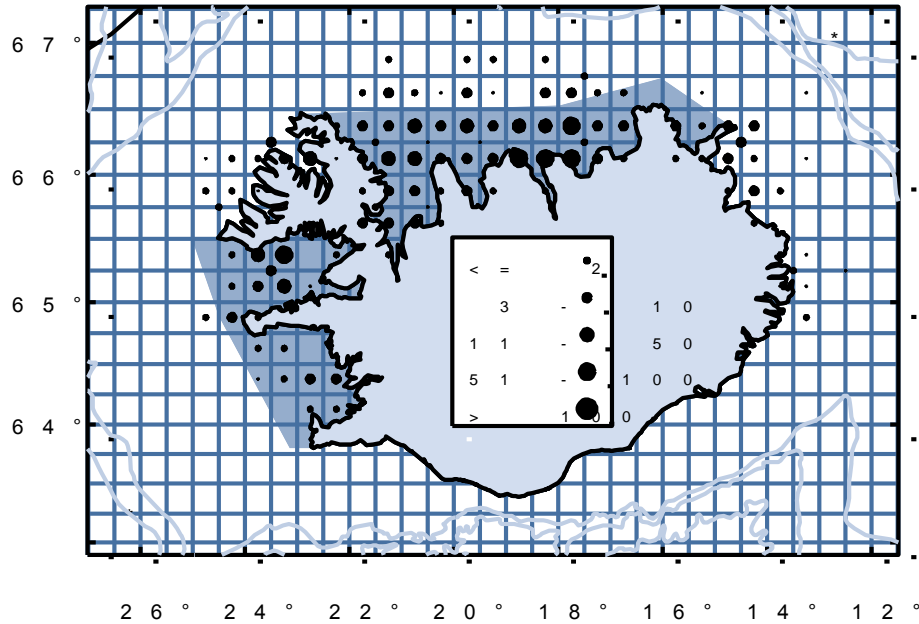


2009

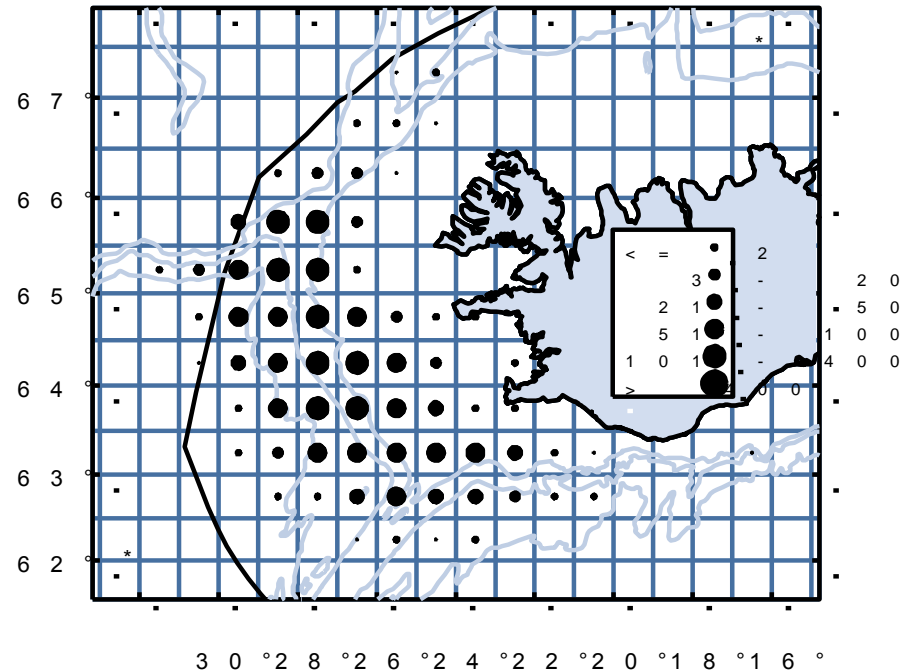
Ástæður breytinganna

- Hvalveiðar
- Hvalaskoðun
- Sjúkdómar
- Umhverfisbreytingar

Dreifing hrefnu- og langreyðarveiða

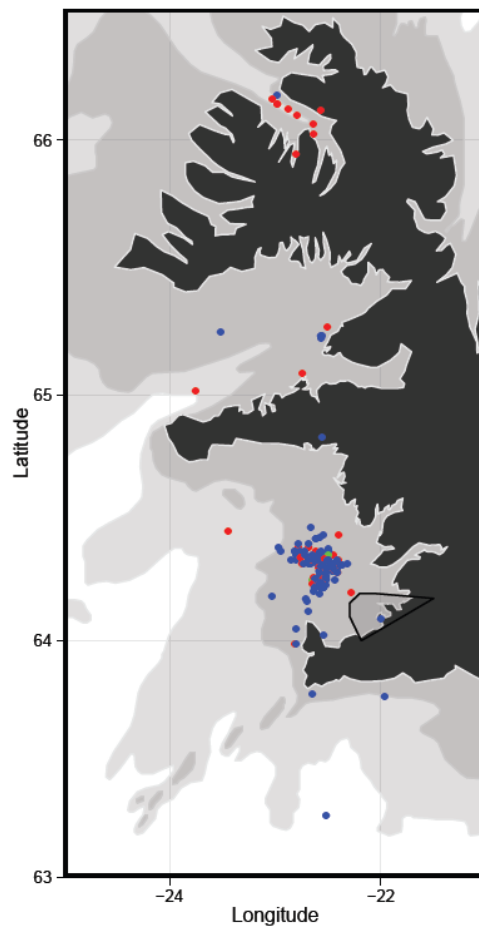


Hrefnuveiðar 1974-1985 og 2008

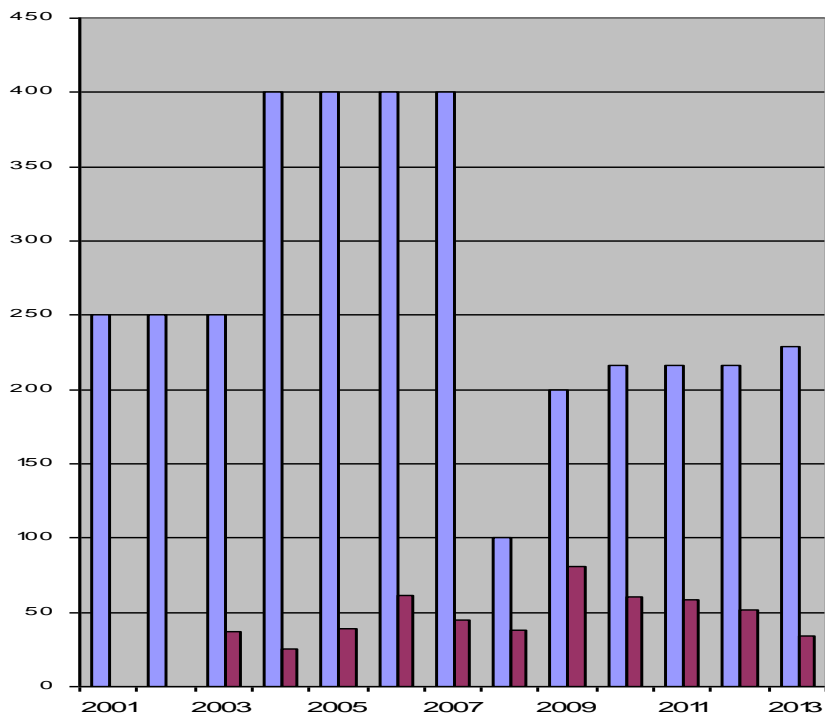


Langreyðarveiðar 1951-1989

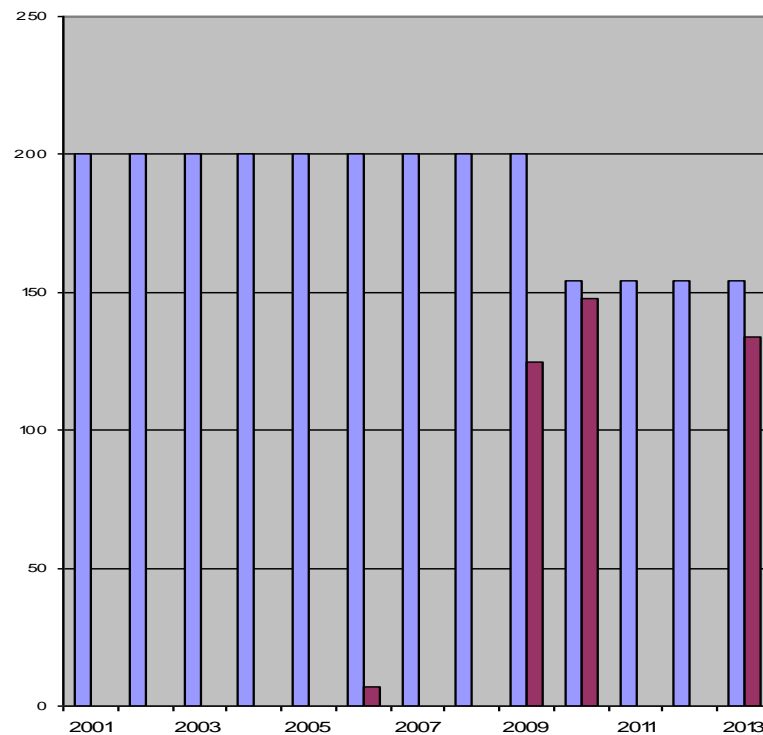
Hrefnuveiðar í atvinnuskyni 2006-2012



Hvalveiðar 2001-2013



Hrefna



Langreyður

Áhrif hvalaskoðunar

- The observed approach distances are closer, and the approach speeds greater, than those advocated by the guidelines specific to Skjálfandi Bay, and are inconsistent with approach distances and speeds advocated in other whale watching areas where guidelines and regulations have been adopted. Future management efforts might, therefore, consider the utility of guidelines and stronger enforcement to reduce the potential disturbance caused by approaching whale watching boats.

Master's Thesis



Whale Watching in Iceland:
An Assessment of Whale Watching Activities on
Skjálfandi Bay

Sara M. Martin

Advisor: Professor Brad Barr

University of Akureyri
Faculty of Business and Science
University Centre of the Westfjords
Master of Resource Management: Coastal and Marine Management
Ísafjörður, June 2012

Whalewatching boats disrupt the foraging activities of Minke whales in Faxaflói bay, Iceland

Fredrik Christiansen¹, Marianne Rasmussen², David Lusseau¹

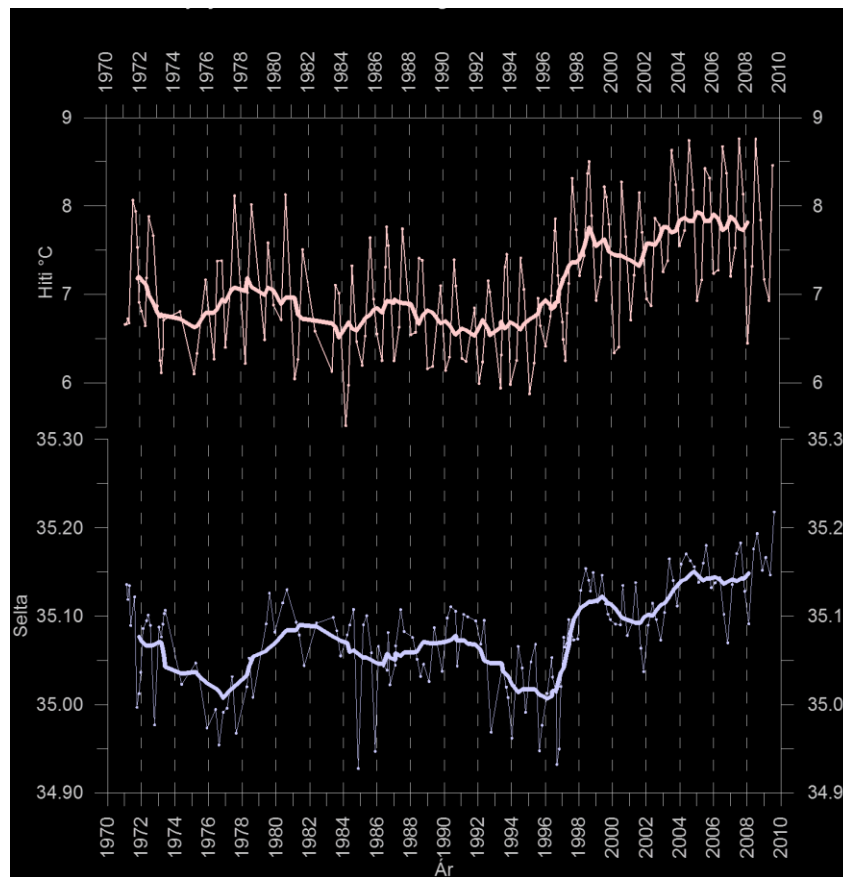
¹Institute of Biological and Environmental Sciences, University of Aberdeen, Aberdeen, AB24 2TZ, UK

²Húsavík Research Center, University of Iceland, Hafnarstett 3, 640 Húsavík, Iceland

E-mail: f.christiansen@abdn.ac.uk

- The presence of boats influenced the interaction between dive interval and directness index. Minke whales avoided whalewatching boats by decreasing their inter-breath intervals (performing shorter dives) and decreasing their directness index (increasing circular movement). An increase in respiration rate in the presence of whalewatching boats could reflect an increase in metabolic rate caused by avoidance behaviour. This could lead to an increase in energy expenditure of Minke whale during interactions with whalewatching boats. In addition, the long and relatively sinuous dives observed during foraging behaviour were absent during interactions with whalewatching boats. This indicates that whalewatching boats disrupt the foraging behaviour of Minke whales. Foraging is a biologically important activity for Minke whales in the feeding grounds, as the energy acquired in the feeding ground will set the limit to the amount of energy available for reproduction and lactation in the breeding ground. Thus the foraging disruption observed in this study could be of biological importance.

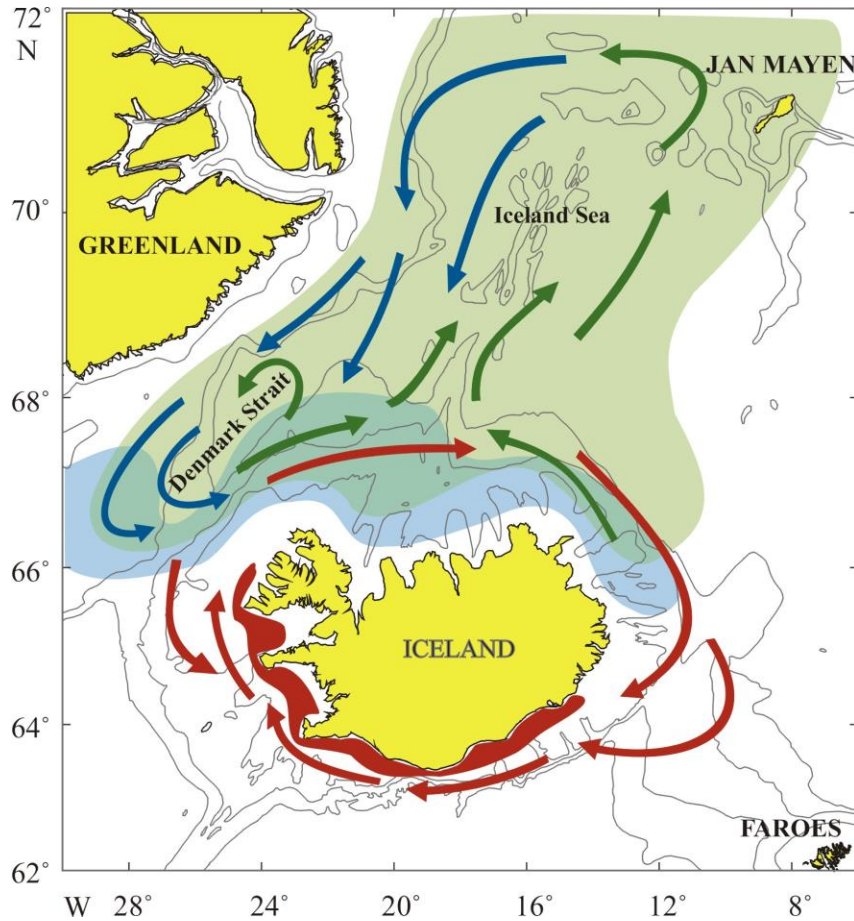
Sjávarhiti og selta 1970-2010



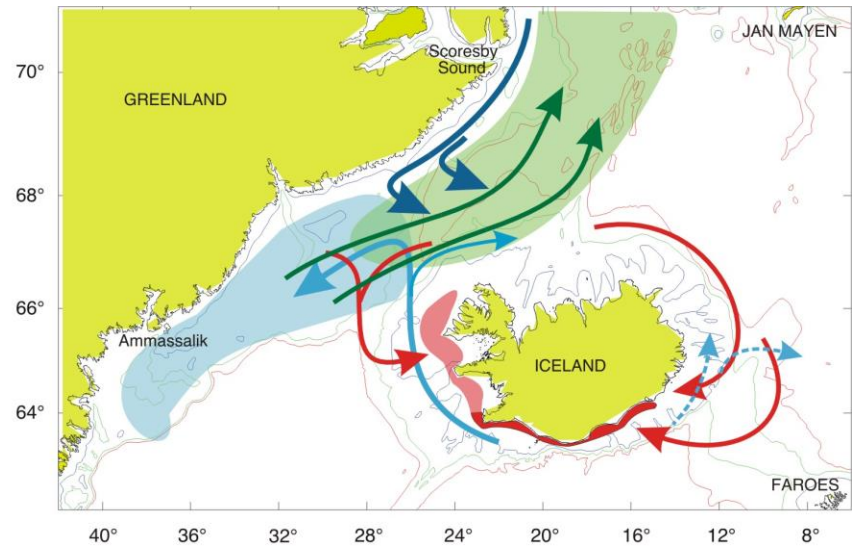
Hitastig

Selta

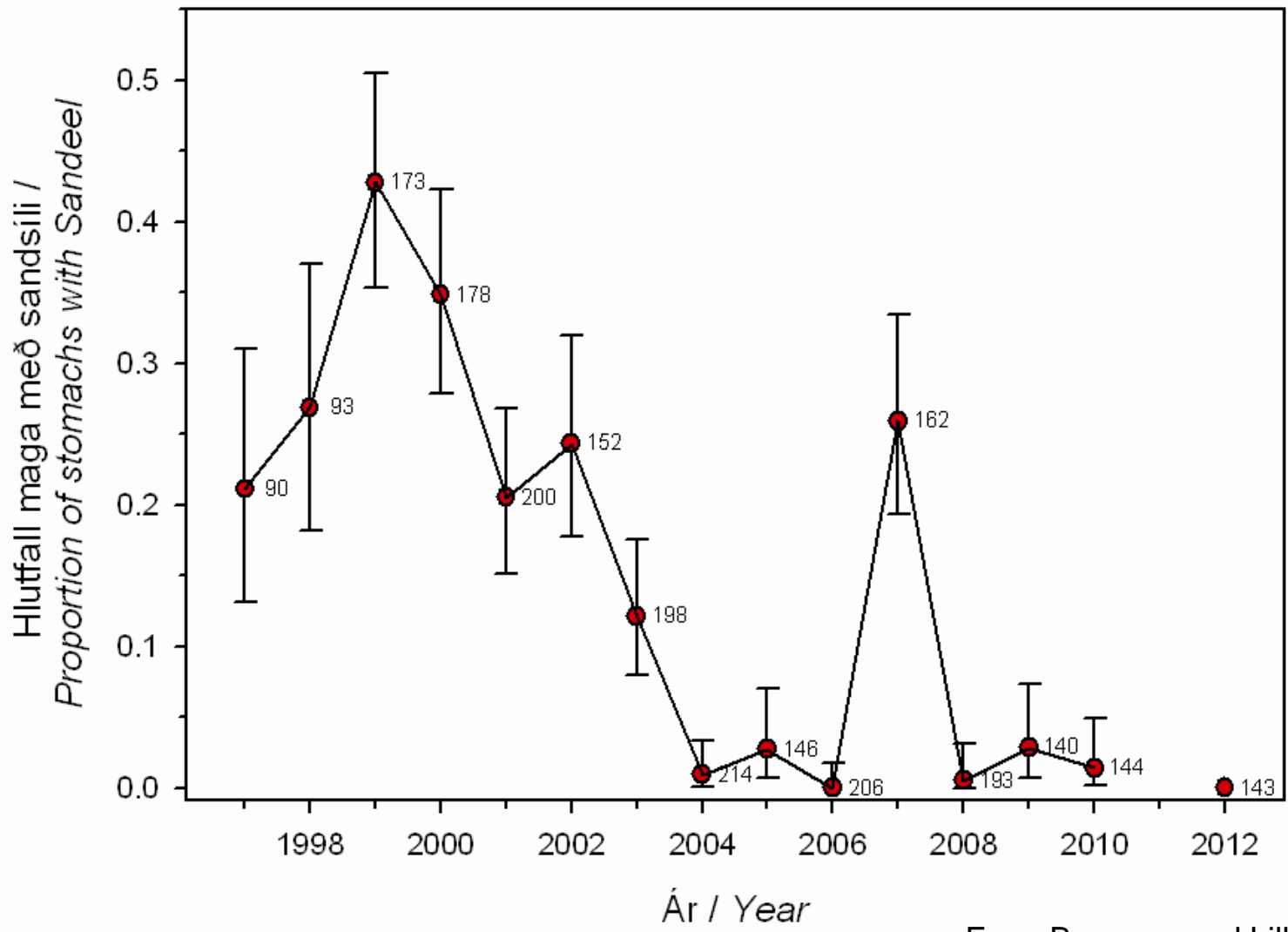
Útbreiðsla loðnu



Fyrir 2000

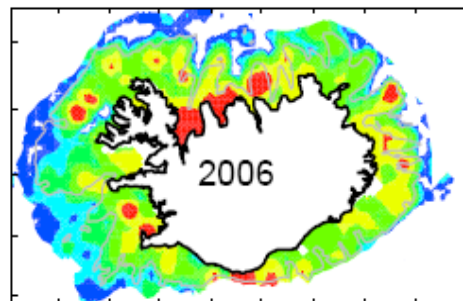
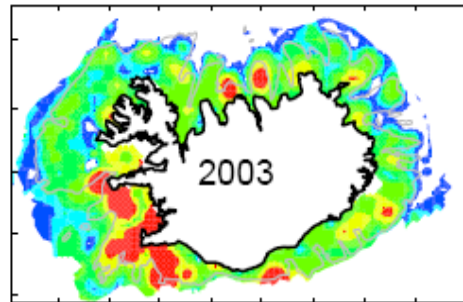
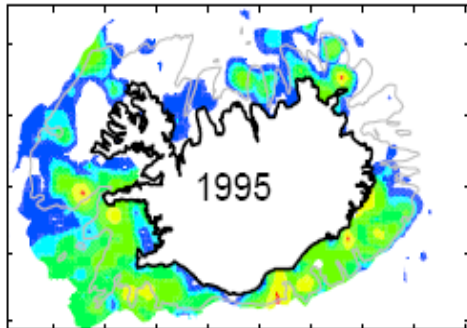


Eftir 2005



From Bogason and Lilliendahl 2013.

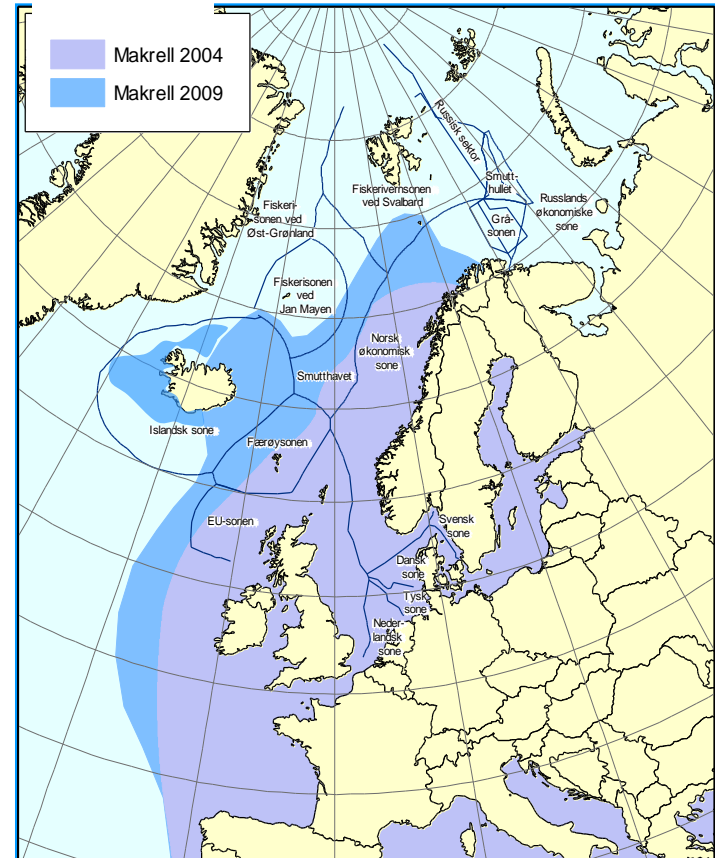
Haddock and Mackerel distribution



Haddock

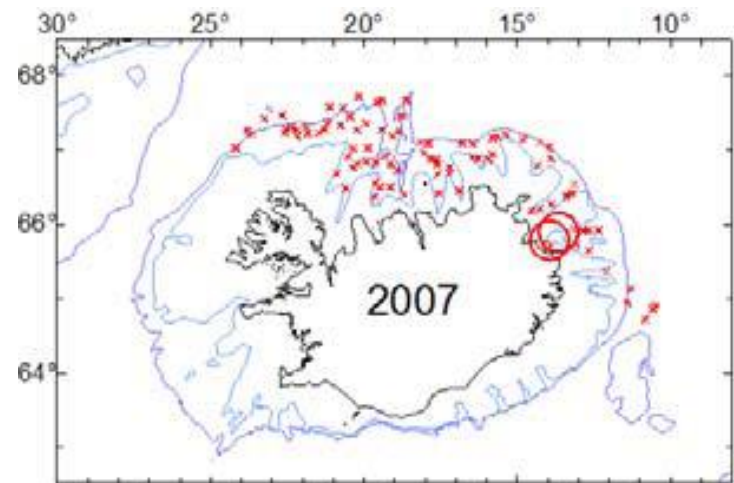
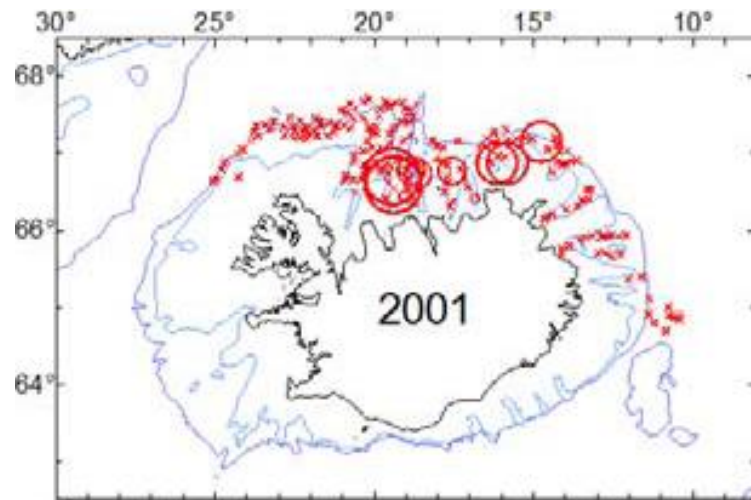
2004

2011

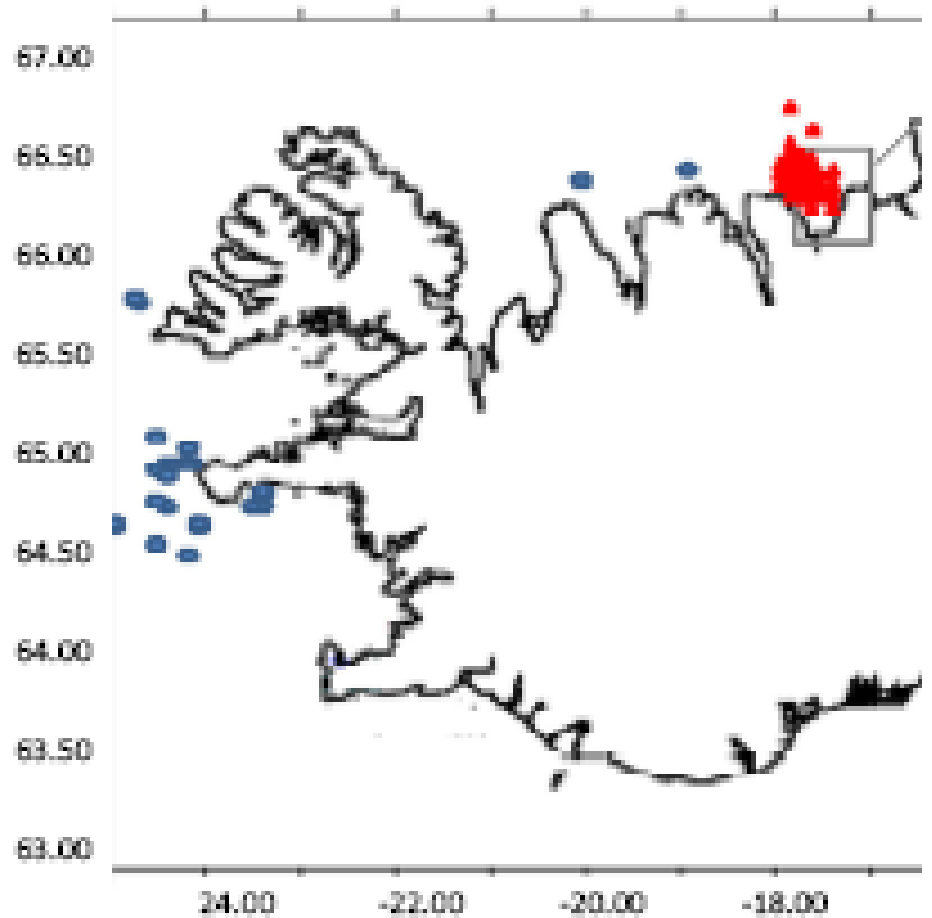


Mackerel

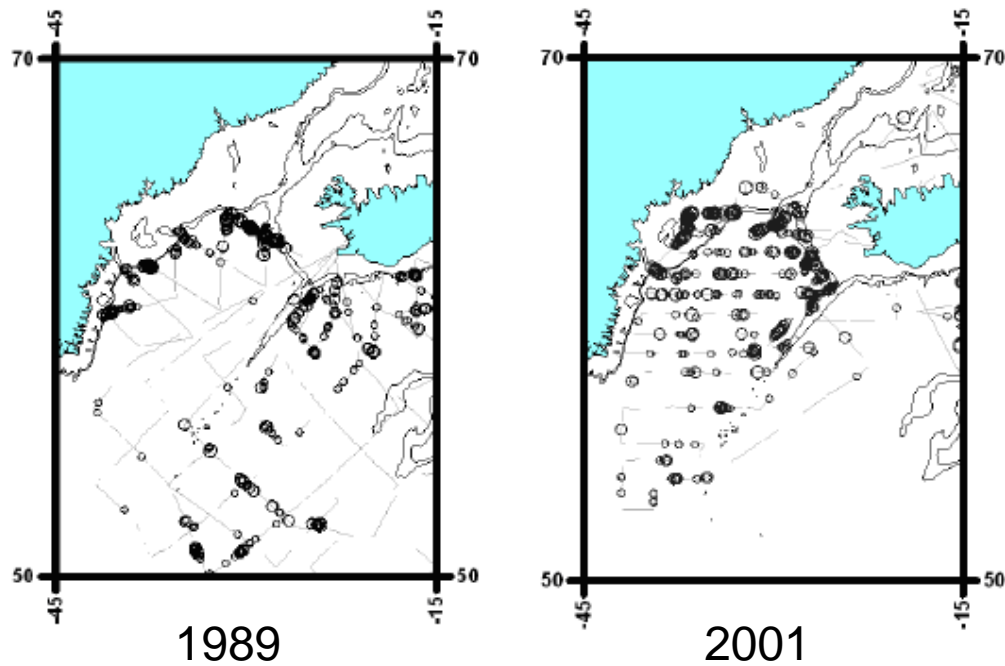
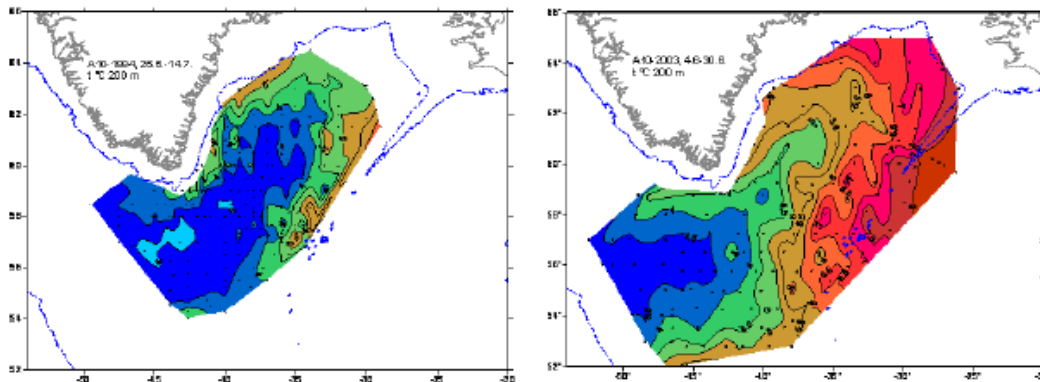
Ljósáta



Steypireyður



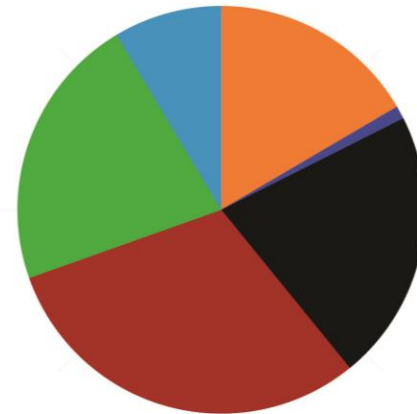
Útbreiðsla langreyðar



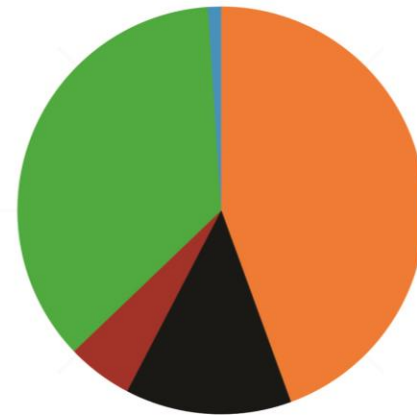
Fæða hrefnu 1977-1984 og 2003-2007



Weighted freq. of occurrence (WFO)
2003-2007



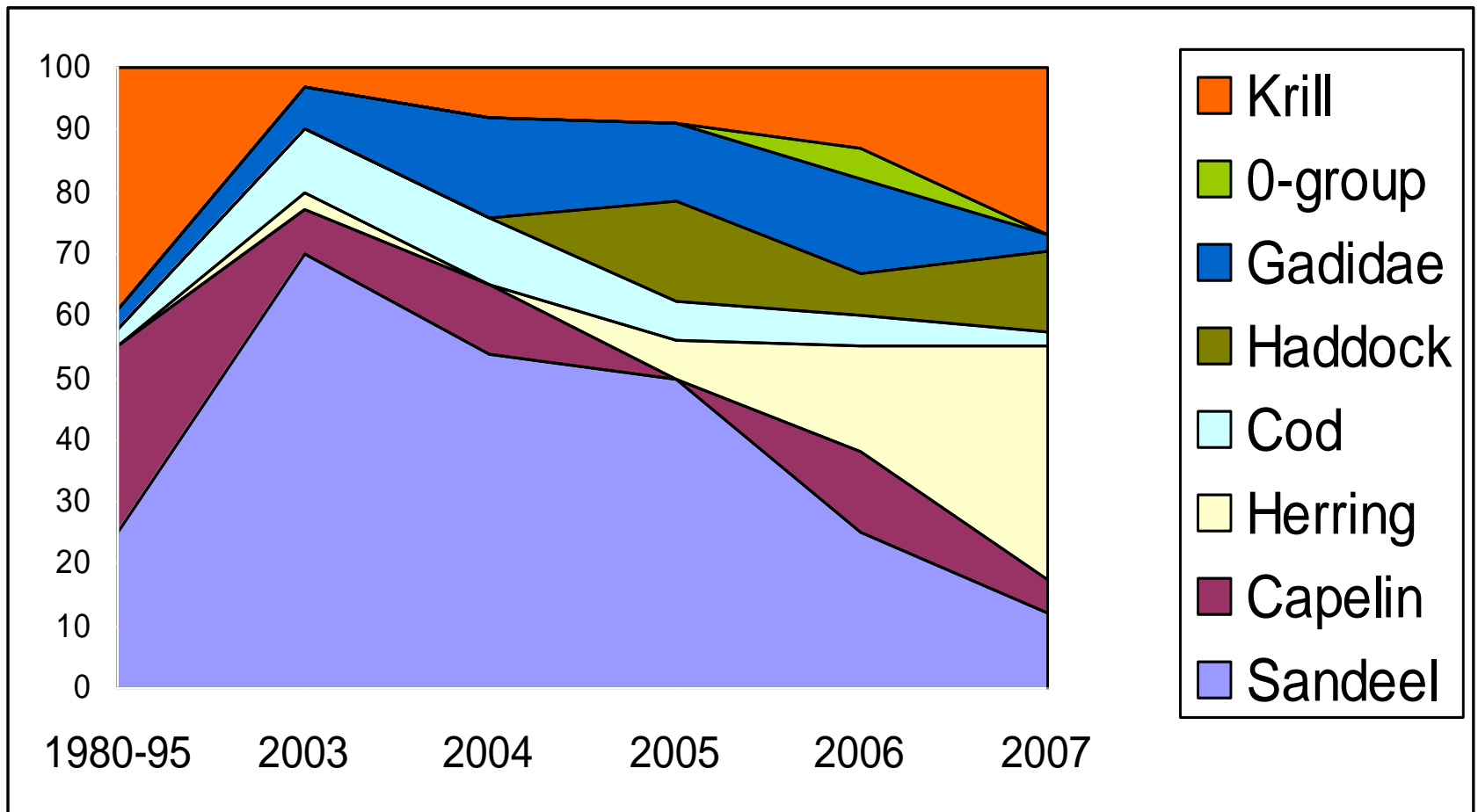
Weighted freq. of occurrence (WFO)
1977-1984



Food category

- Krill
- Other Invertebrates
- Sandeel
- Large fish (gadoids)
- Capelin
- Herring

Fæða hrefnu 2003-2007



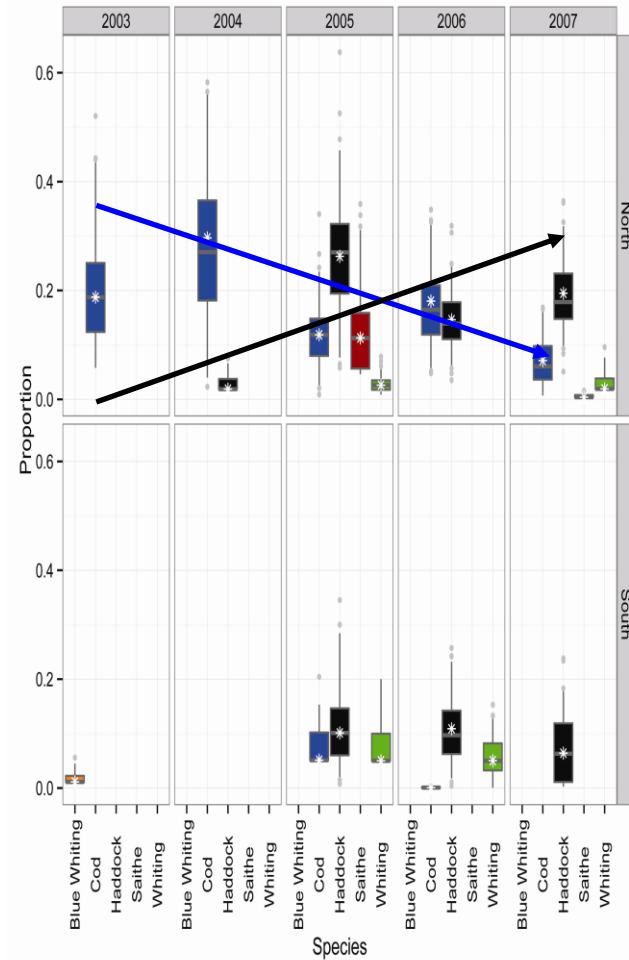
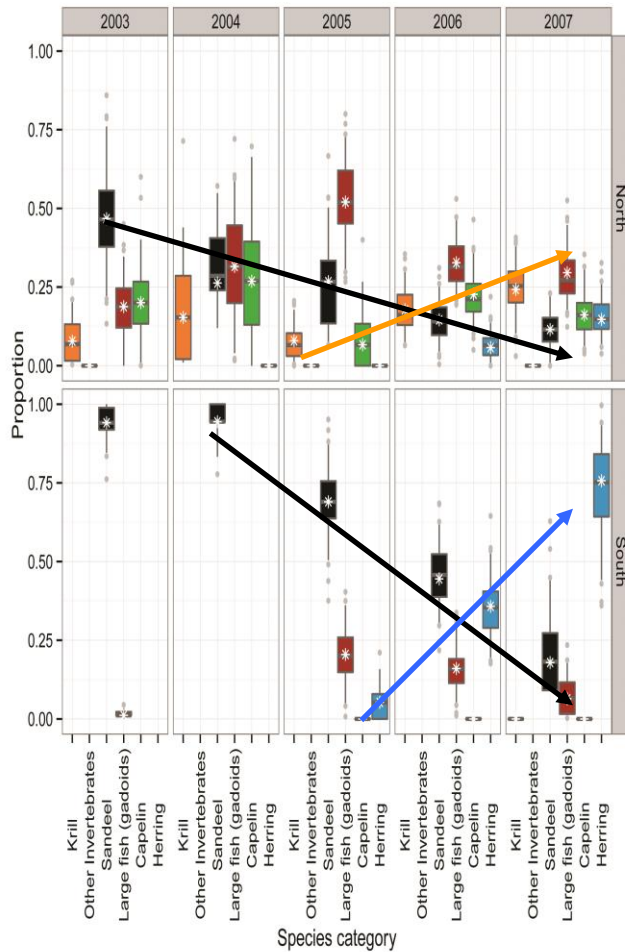
Samantekt

- Hrefna hefur aðlagð sig breyttu fæðuframboði, en einnig “flúið landgrunnið”
- Hnúfubak hefur fjölgað mikið síðan 1980.
- Langreyði fjölgar í Irmingerhafi
- Steypireyður hefur fært sig norðar
- Umhverfisbreytingar líklegasta orsök breytinga á útbreiðslu og atferli hvala við Ísland

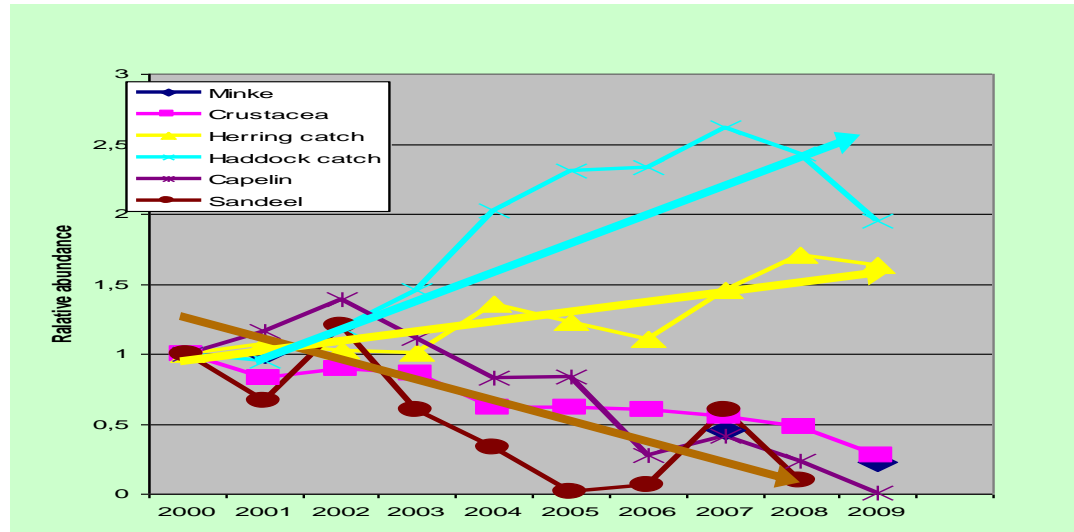
Þökk fyrir áheyrnina



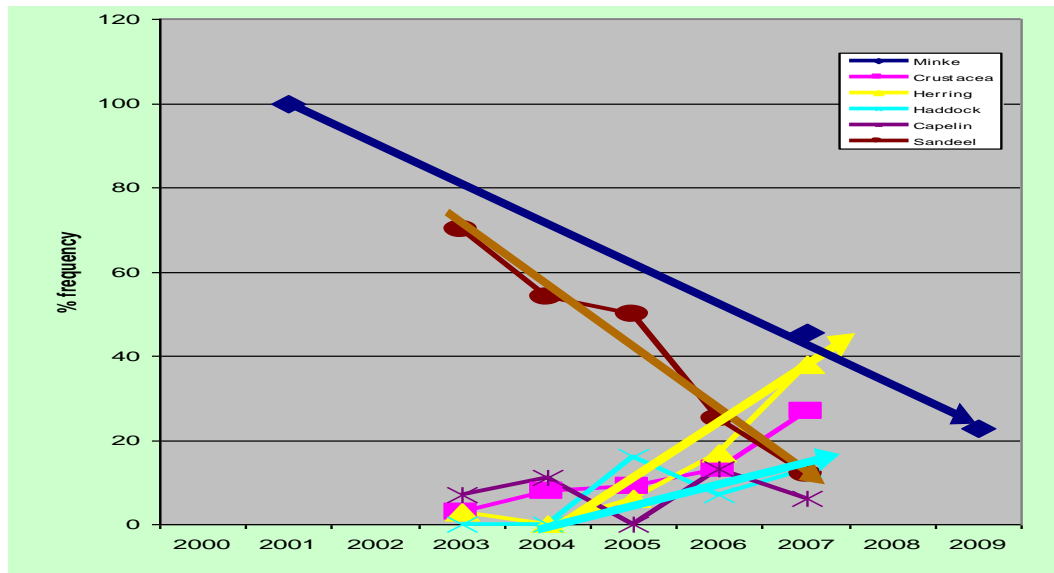
Temporal and spatial variation in the diet of minke whales



Prey availability



Stomach contents



Óbein áhrif veiða

- Dýr fælast burt af svæðum og/eða verða erfiðari að nálgast – útrýming “skoðara”
- Söguleg gögn
- Samanburður milli svæða

Áhrif hvalaskoðunar

- Erlendar rannsóknir um fælingarmátt
- Vísindanefnd IWC
- Reglur um umgengni hvalaskoðunarskipa við hvali (fjarlægðir, hraði, fjöldi skipa, tímamörk o.fl.)
- Engar rannsóknir á Íslandi