

Uppgjör loðnuvertíðar og horfur á næstu vertíð

Þorsteinn Sigurðsson



HAFRANNSÓKNASTOFNUN

Rannsókn- og ráðgjafarstofnun hafs og vatna

MARINE & FRESHWATER RESEARCH INSTITUTE

Vorráðsstefna félags fiskmjölsframleiðenda 31. mars 2017

... en fyrst smá um makríl



Makrílmerkingar og endurheimtur frá 2011-2017



Rafeindamerki – sjálfvirkur skanni
Merkingar á 2 stöðum:

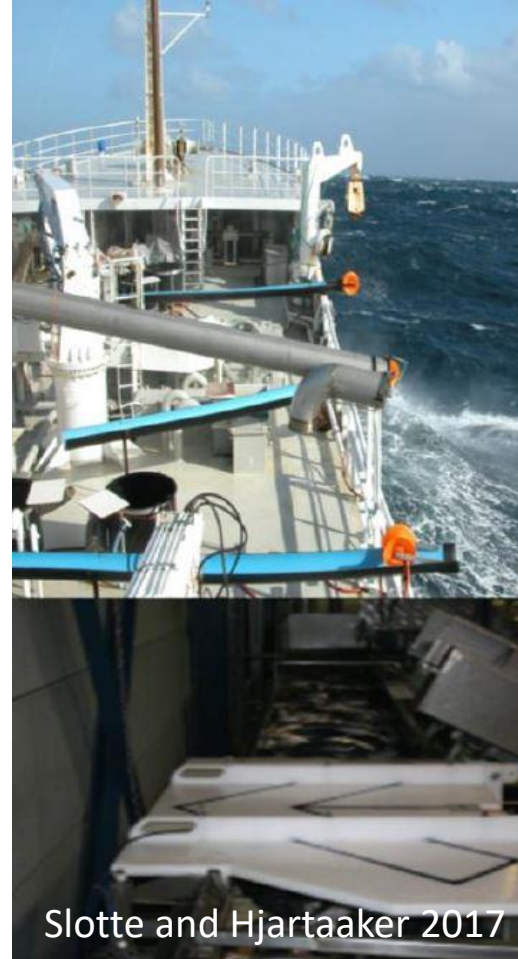
- vestan við Írland á vorin,
Norðmenn: ~240 þús fiskar
- Snæfellsnes í ágúst,
Hafró: ~6 þús fiskar

17 verksmiðjur með skanna

Lönd: NO, FO, IS, GB, DK

~30% makrílafla skannað

Alls 2342 fiskar endurheimtir



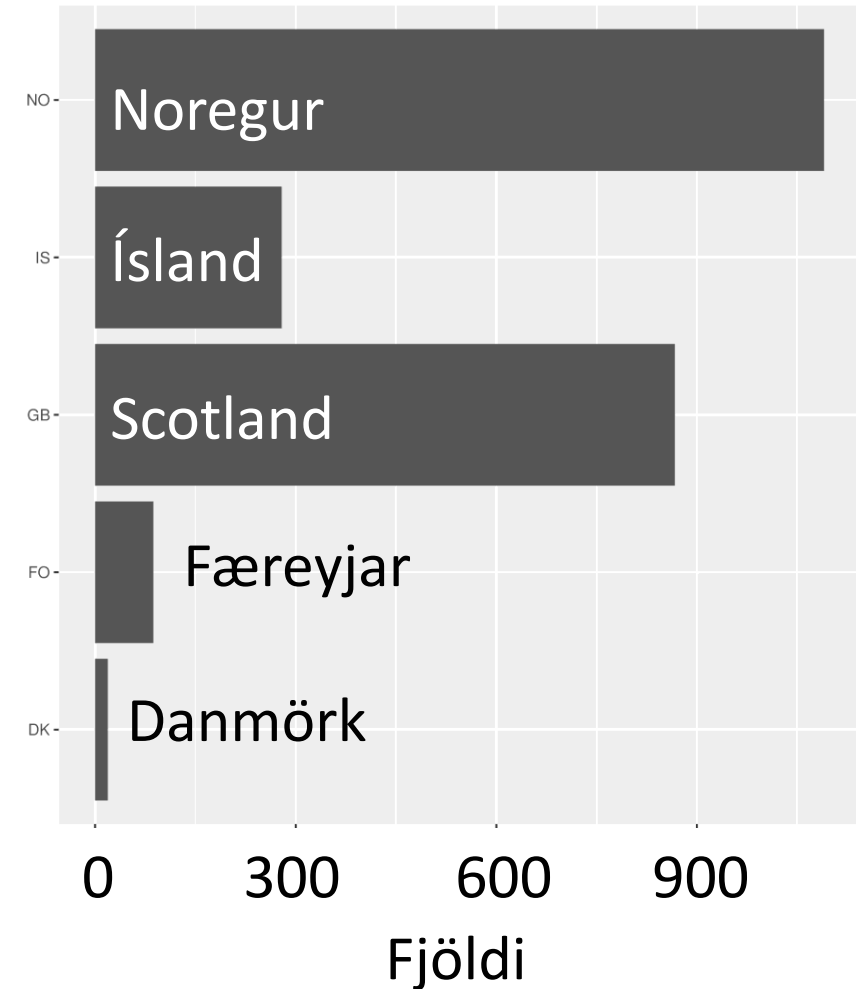
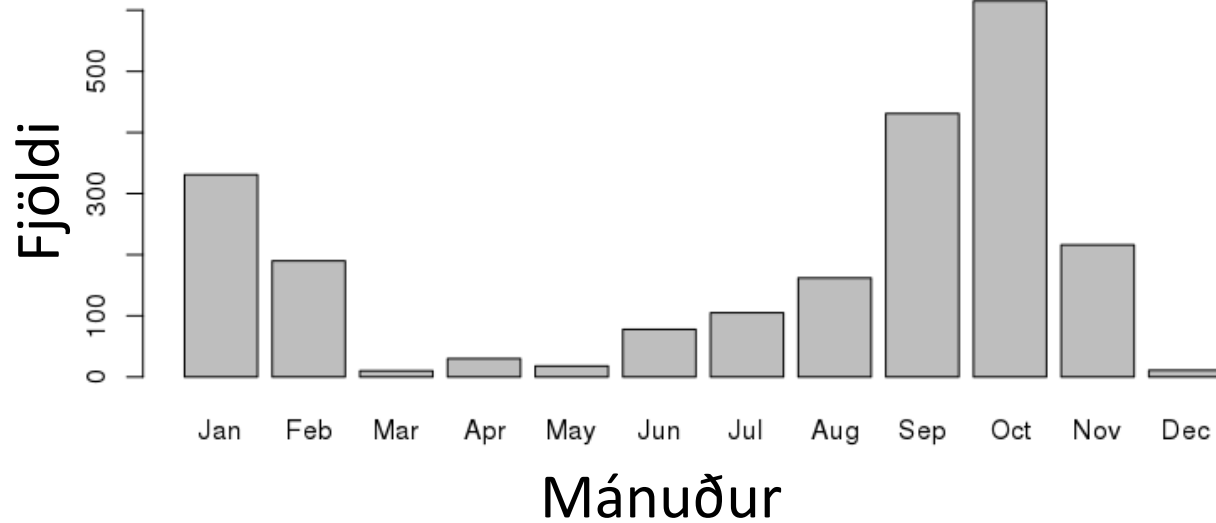
Slotte and Hjartaaker 2017



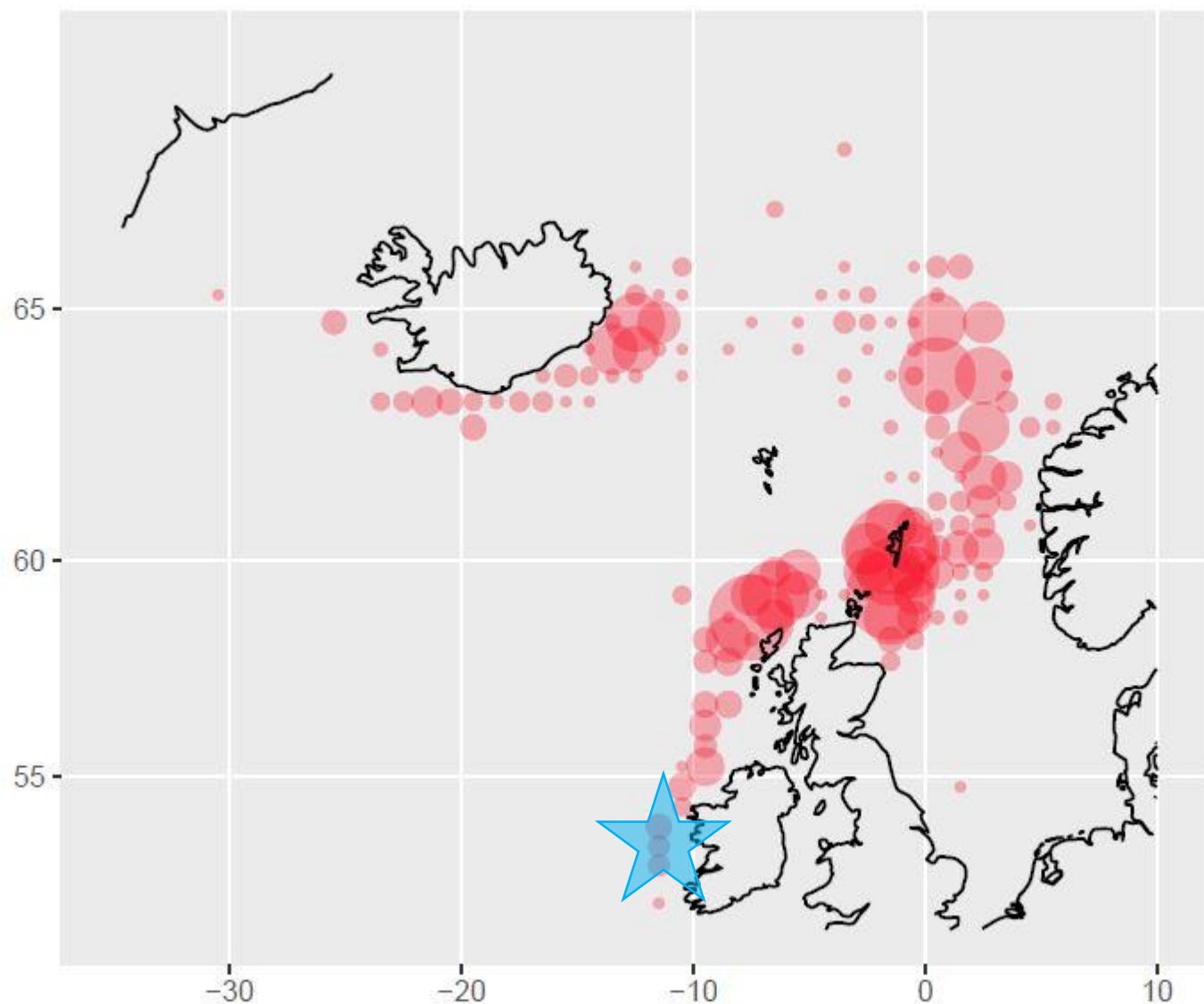
Hafró merkti við Snæfellsnes 2015 og 2016



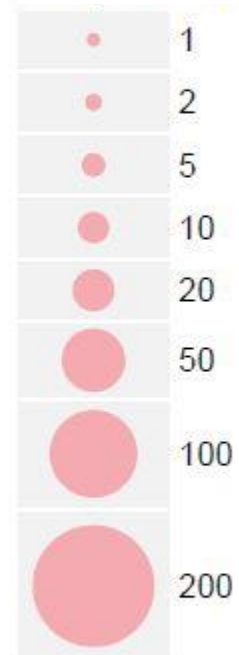
Endurheimtur öll ár, 2012-2017, eftir mánuði og landi



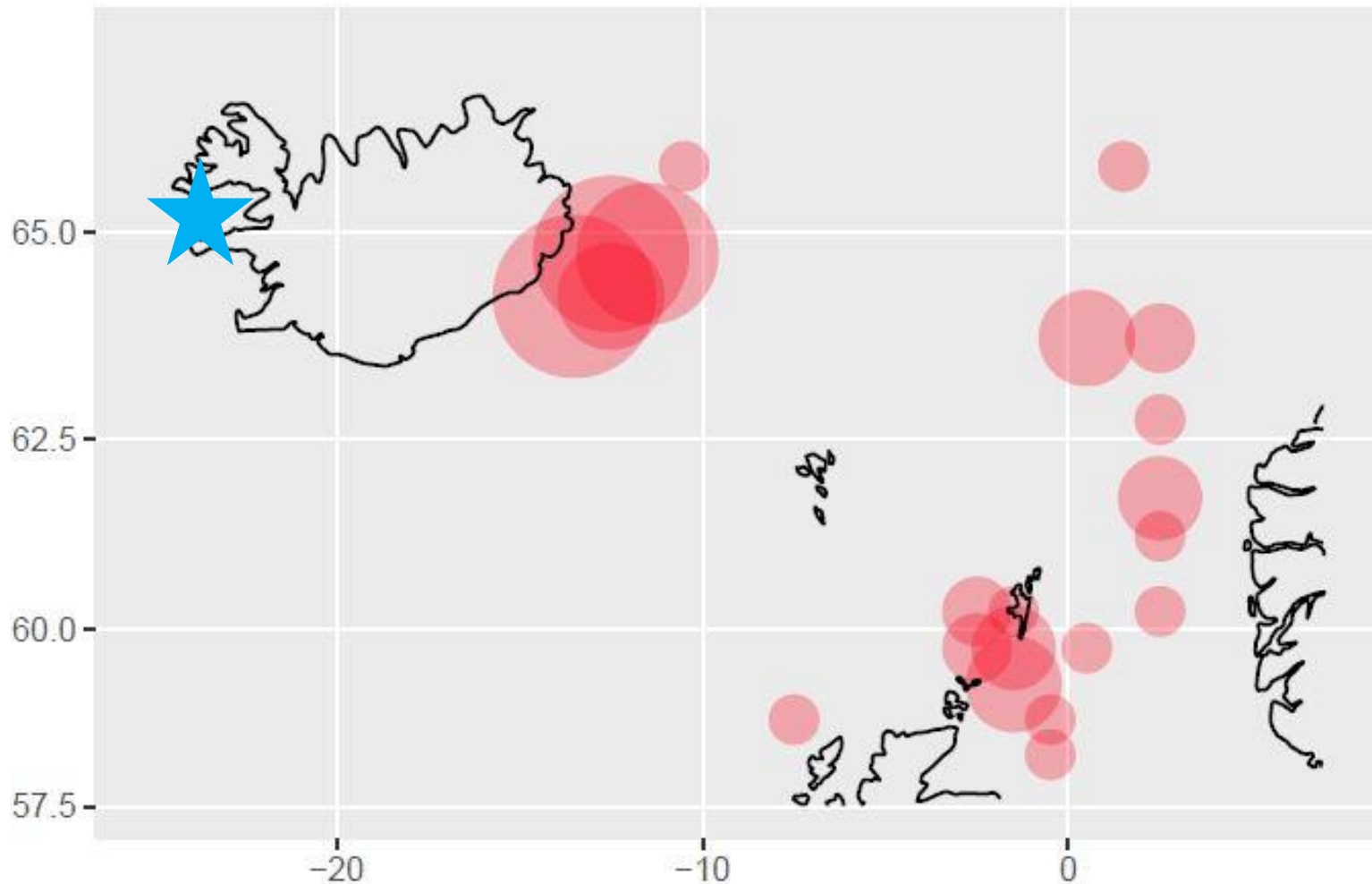
Endurheimtusvæði fyrir öll ár: 2012-2016



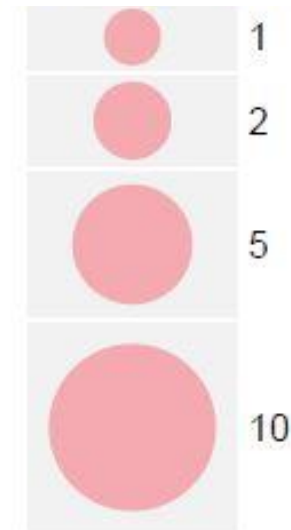
Fjöldi endurheimta per reit



Endurheimtur á fiskum merktum við Snæfellsnes: 77 merki (39 IS)



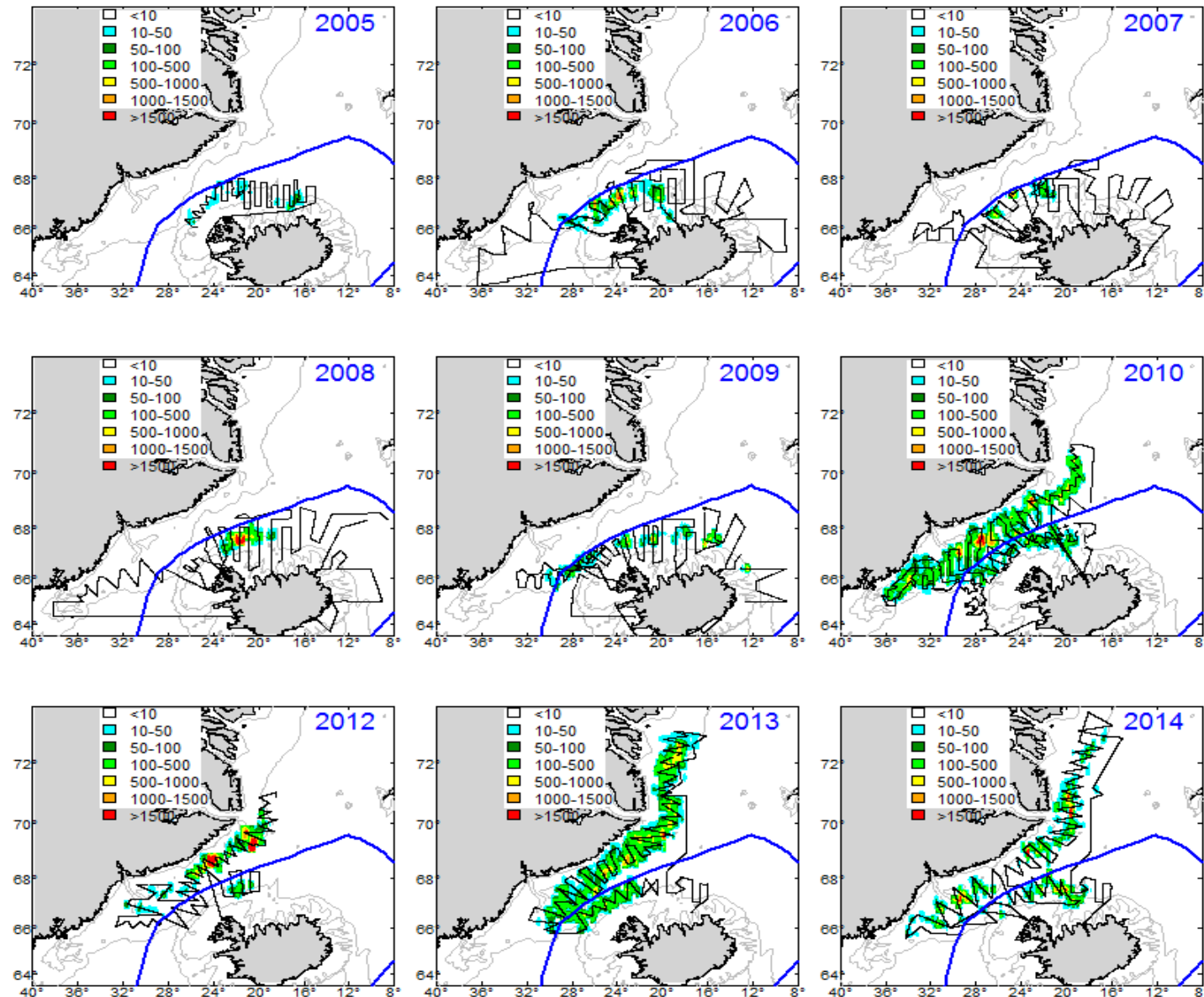
Fjöldi endurheimta



... en pá að loðnunni



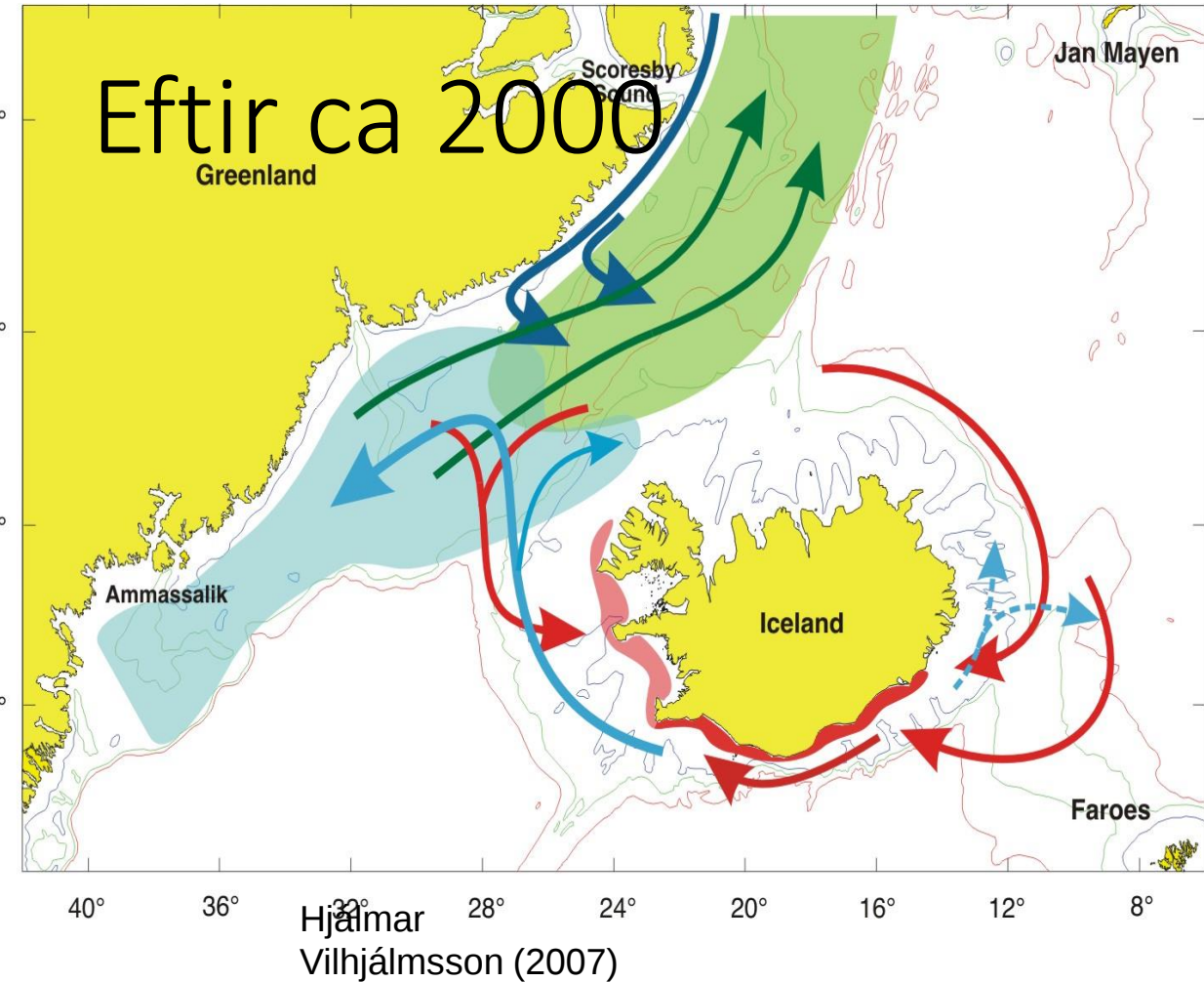
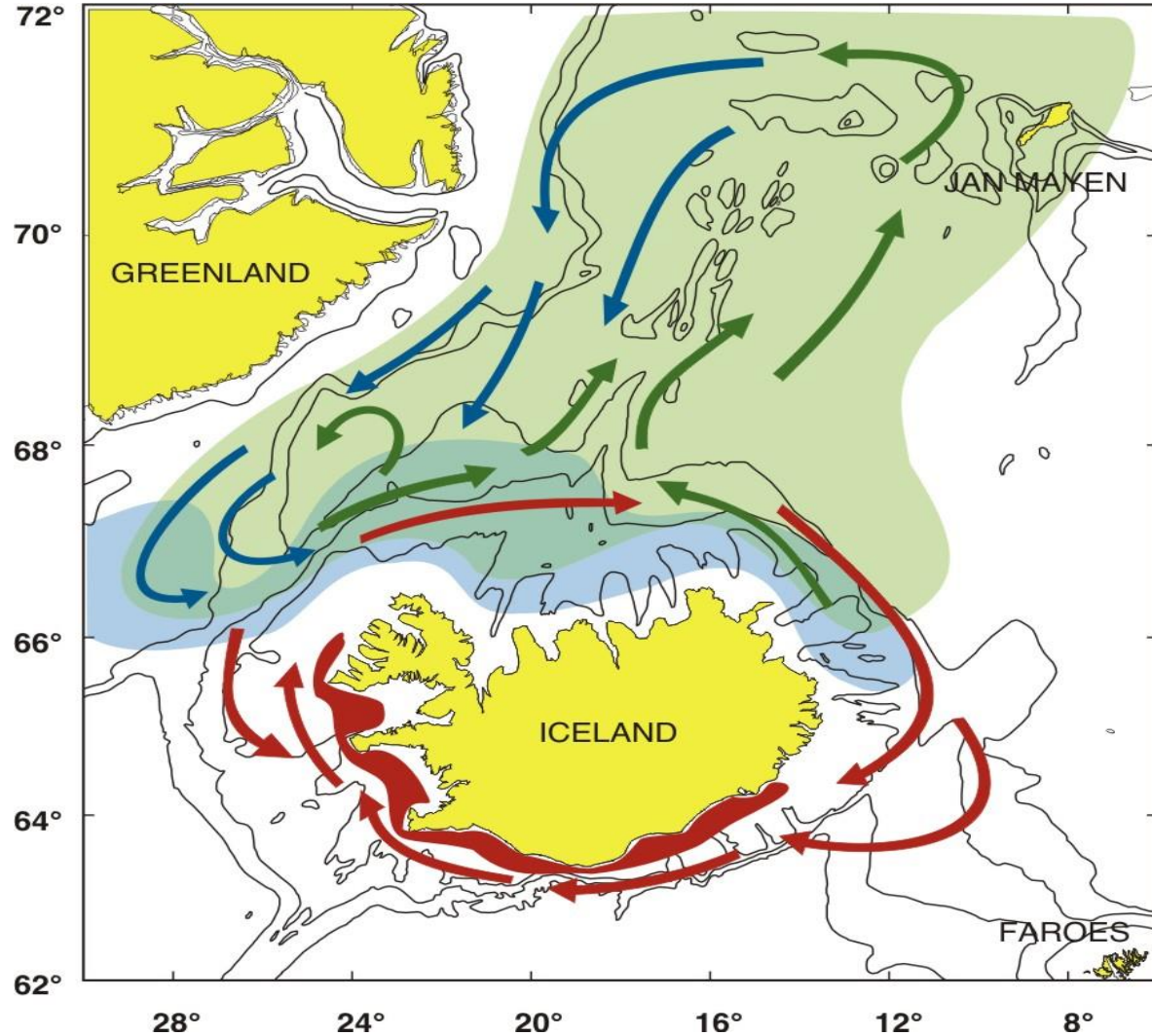
Haustleiðangrar 2005-2014





Green shade: Feeding area of adults
Blue shade: Distribution of juveniles
Green arrows: Feeding migrations
Blue arrows: Return migrations
Red arrows: Spawning migrations

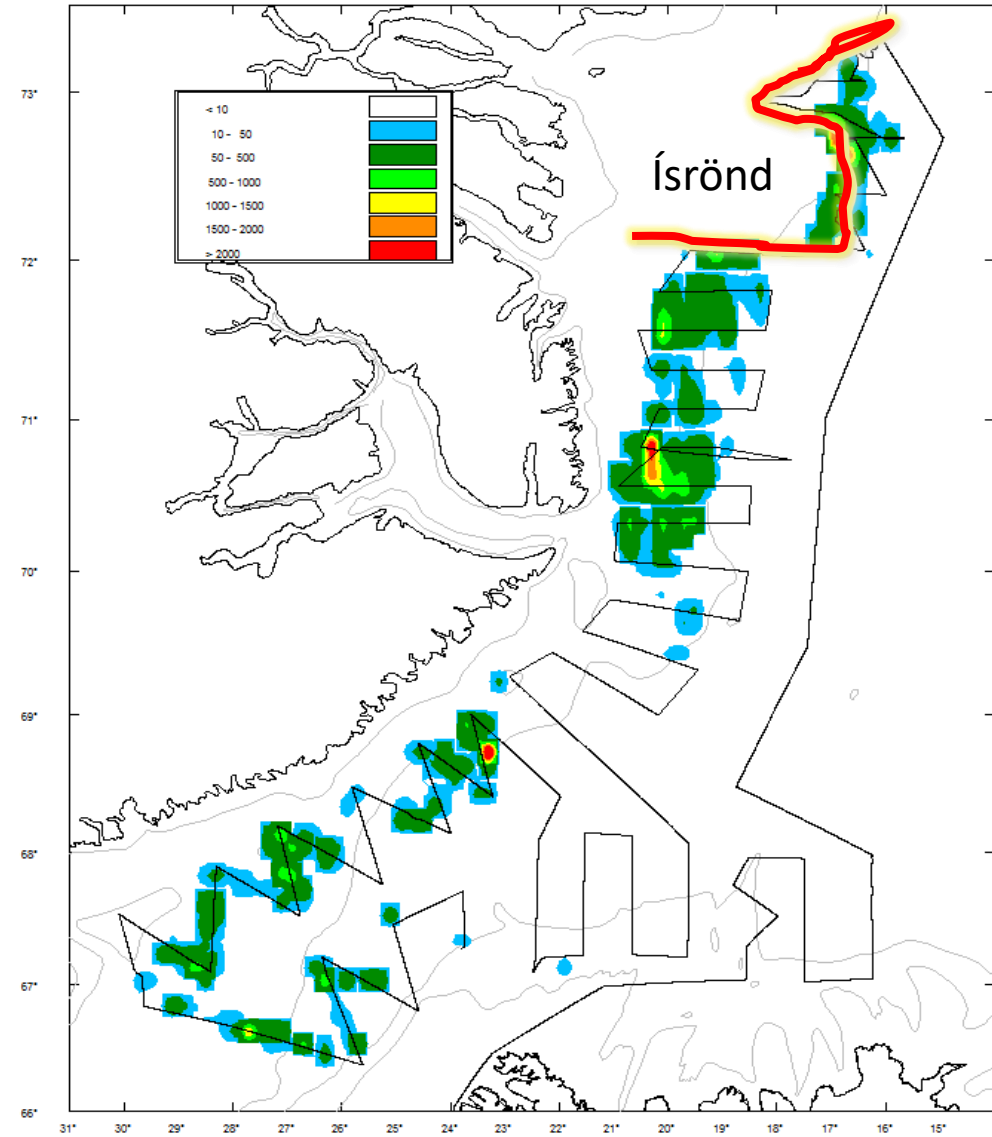
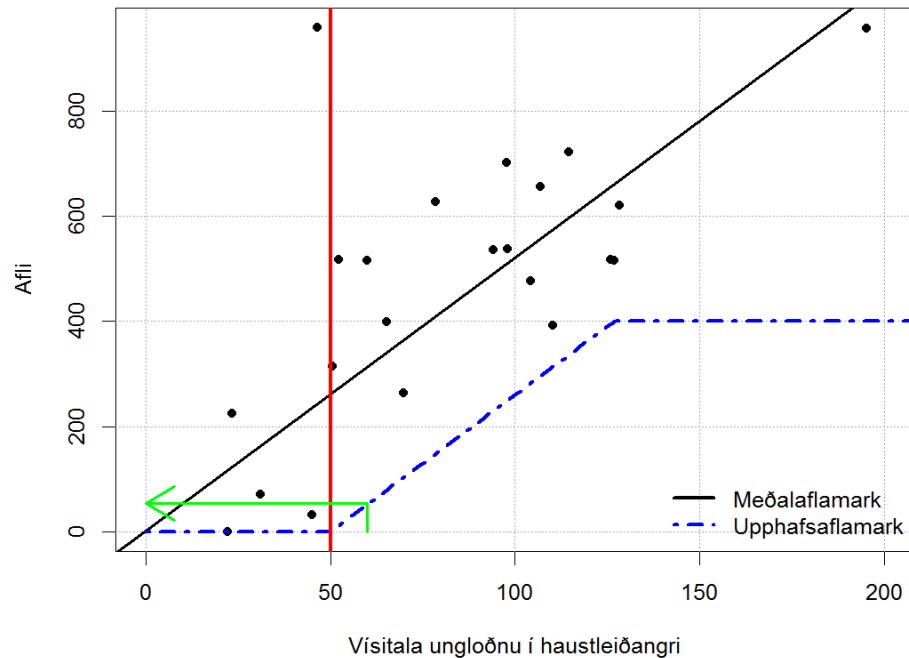
FYRIR 2000



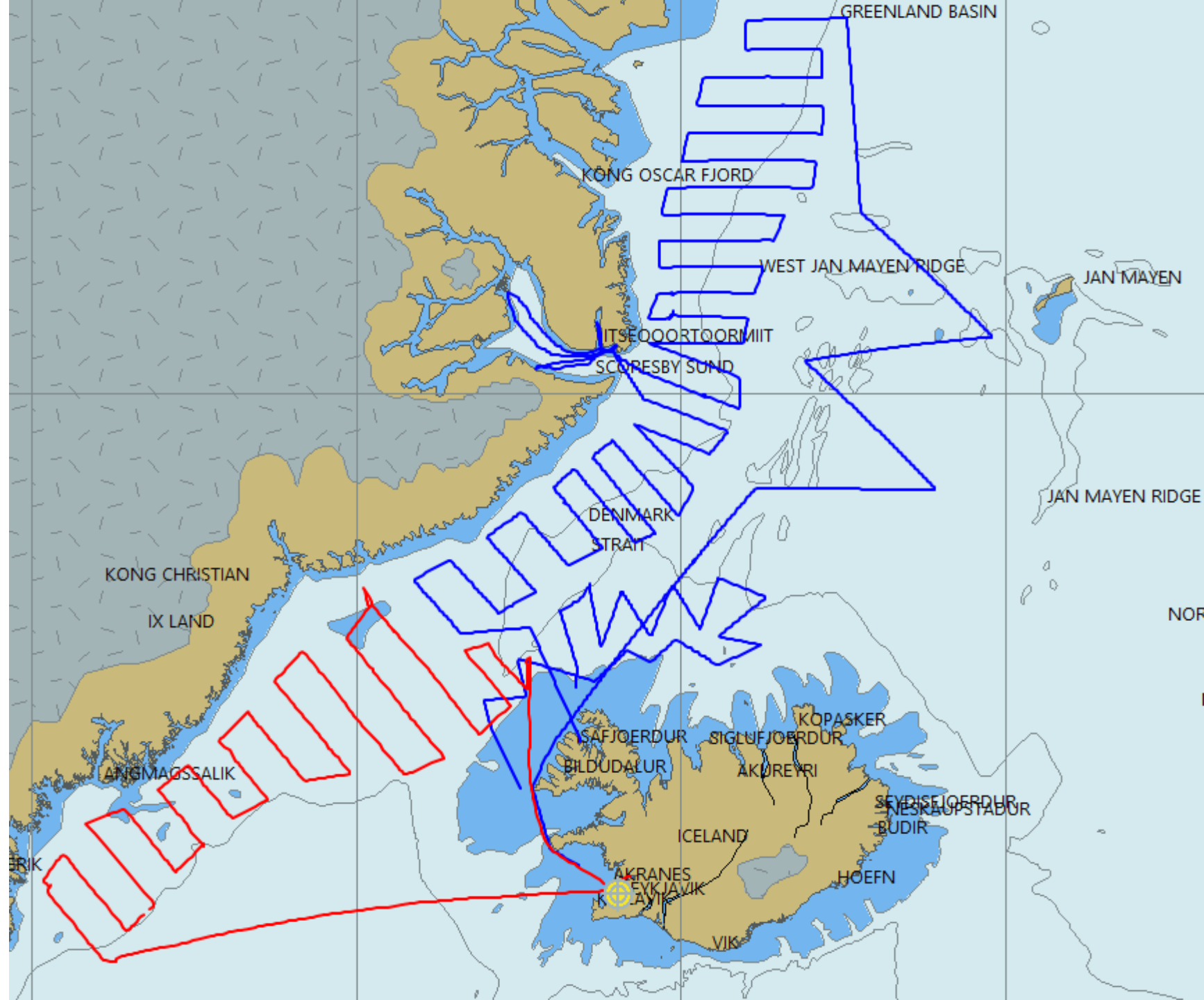
September 2015



- Líðið af ungloðnu
- 6.2 milljarðar
 - Aflaregla: $< 50 = 0$

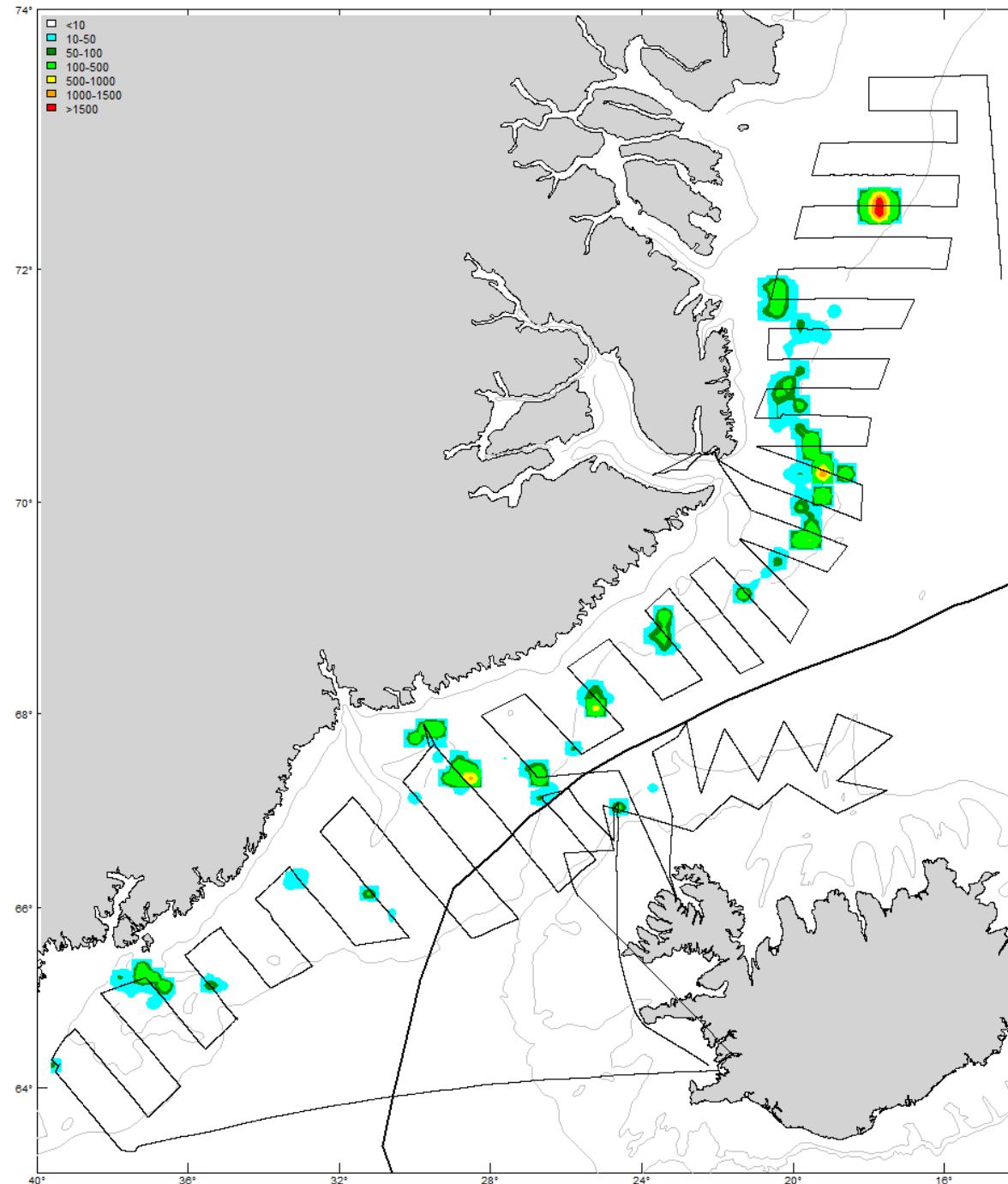


Leiðarlínur September 2016

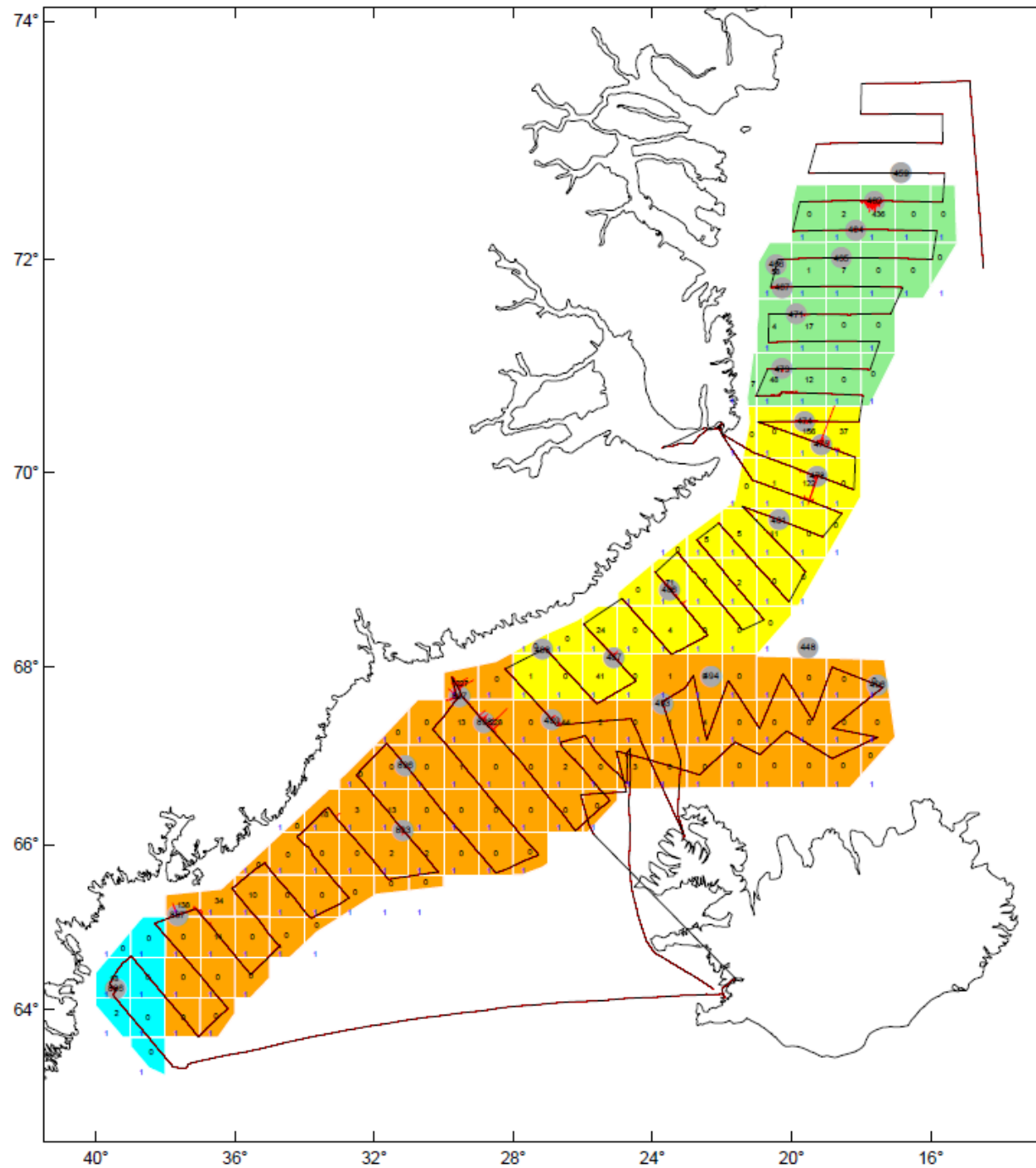


Dreifing loðnu sept 2016

- Engin loðna fannst fyrir norðurlandi. NÍ-síld og kolmunni þar.
- Kynþroskahlutinn vestarlega og norðarlega, líkt og undanfarin ár.
- Rekís ekki til vandræða.
- Mjög lítið af ungloðnu.
- Langvarandi bræla í Grænlandssundi => Bjarni þurfti frá að hverfa og Árni var stopp í 4 sólarhringa samfleitt.
- SSB = **137 000 tonn**
- Ókynþroska = **9.4 milljarðar**



Svæðaskipting



Óvissumat

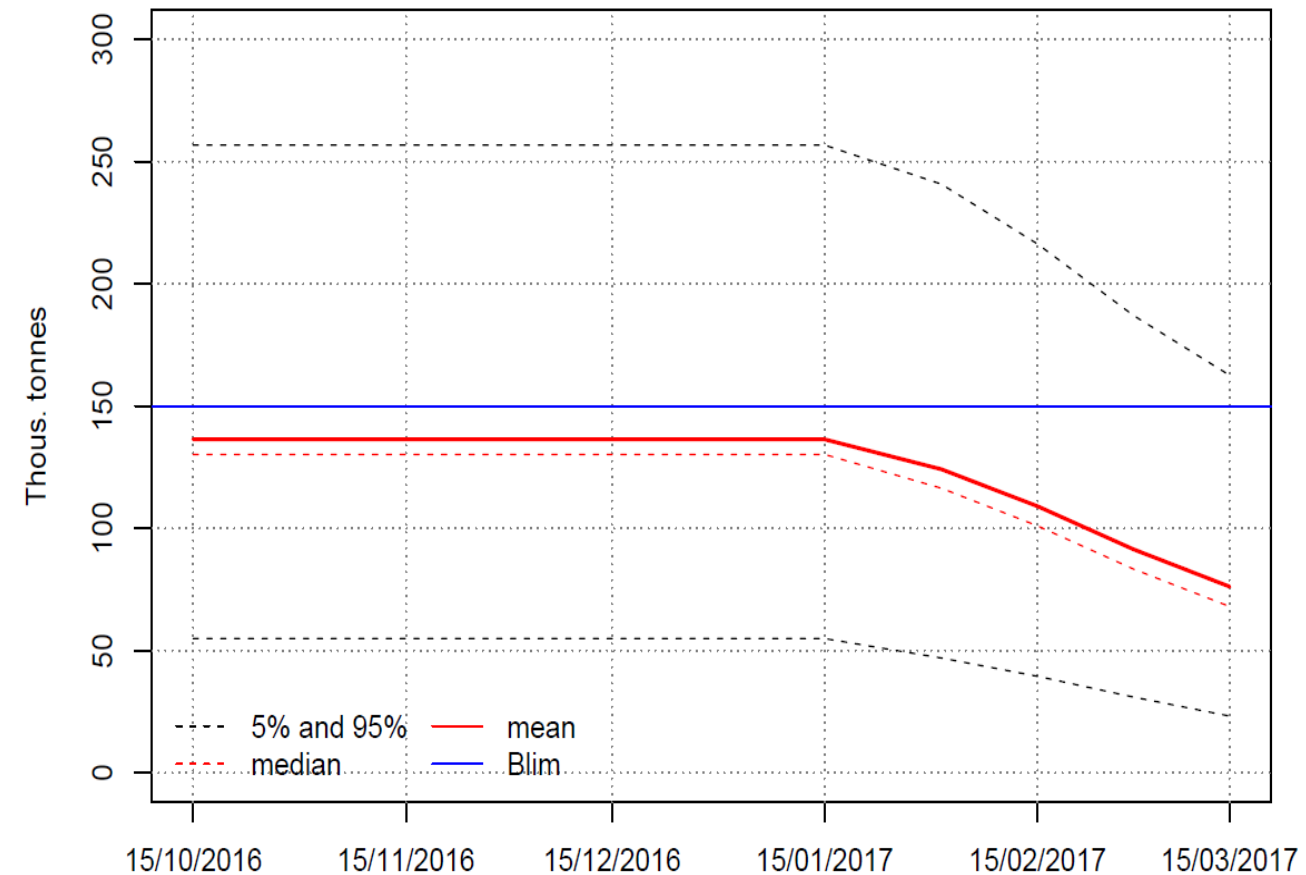


	Mean	CV	5%	25%	50%	75%	95%
Lífmassi	223.94	0.33	118.26	169.40	216.89	268.79	357.37
Lífmassi SSB	136.36	0.46	54.91	82.34	130.20	176.26	256.68
Fjöldi ókynþroska	9.42	0.32	4.93	7.25	9.16	11.34	14.75
ImmB	87.58	0.31	46.40	68.18	85.27	104.99	135.70
Prop. N3 in SSB	0.15	0.21	0.10	0.13	0.16	0.18	0.20
Prop. B3 in SSB	0.19	0.18	0.13	0.17	0.19	0.21	0.24

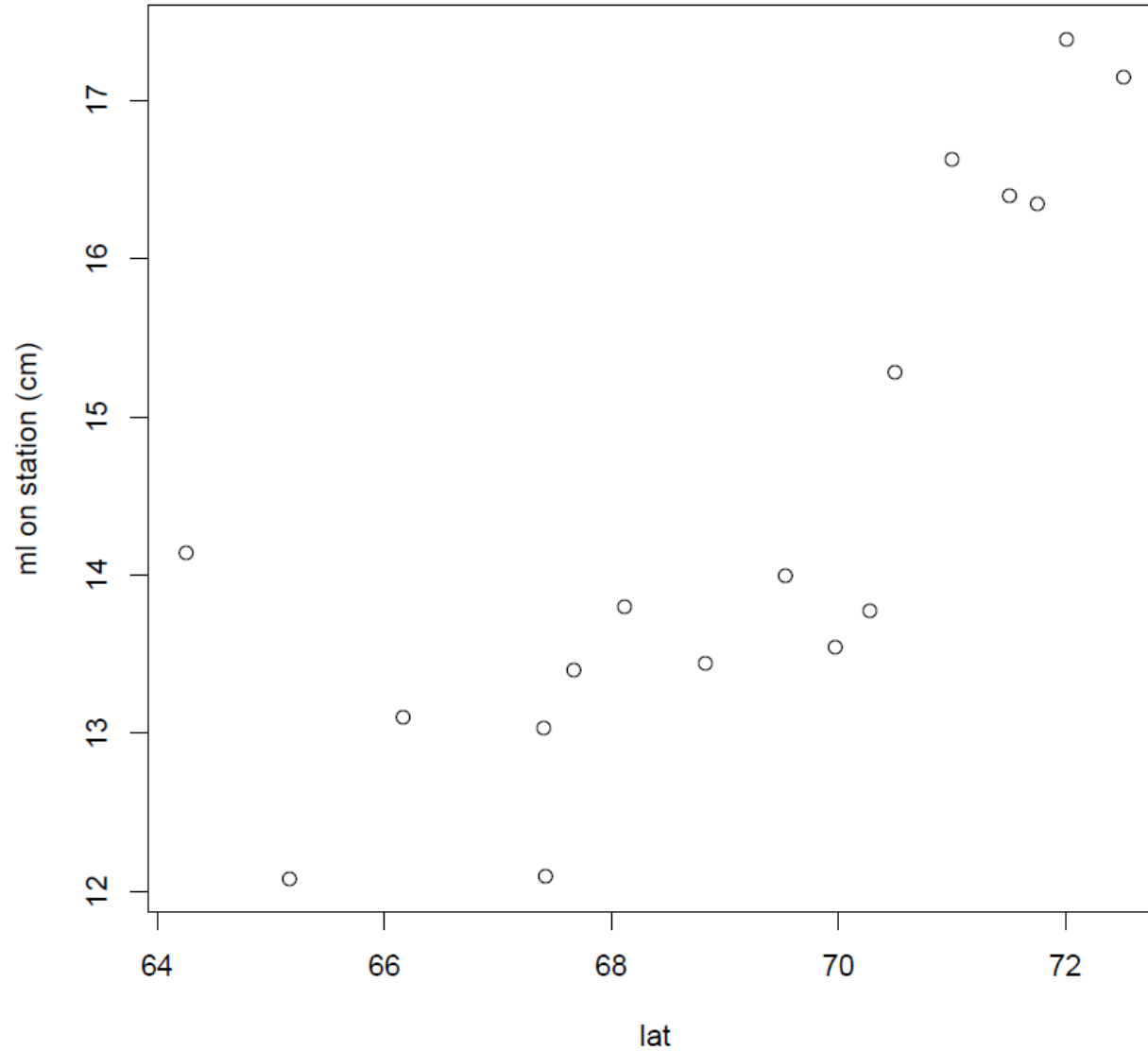


Framreikningar miðað við niðurstöðuna

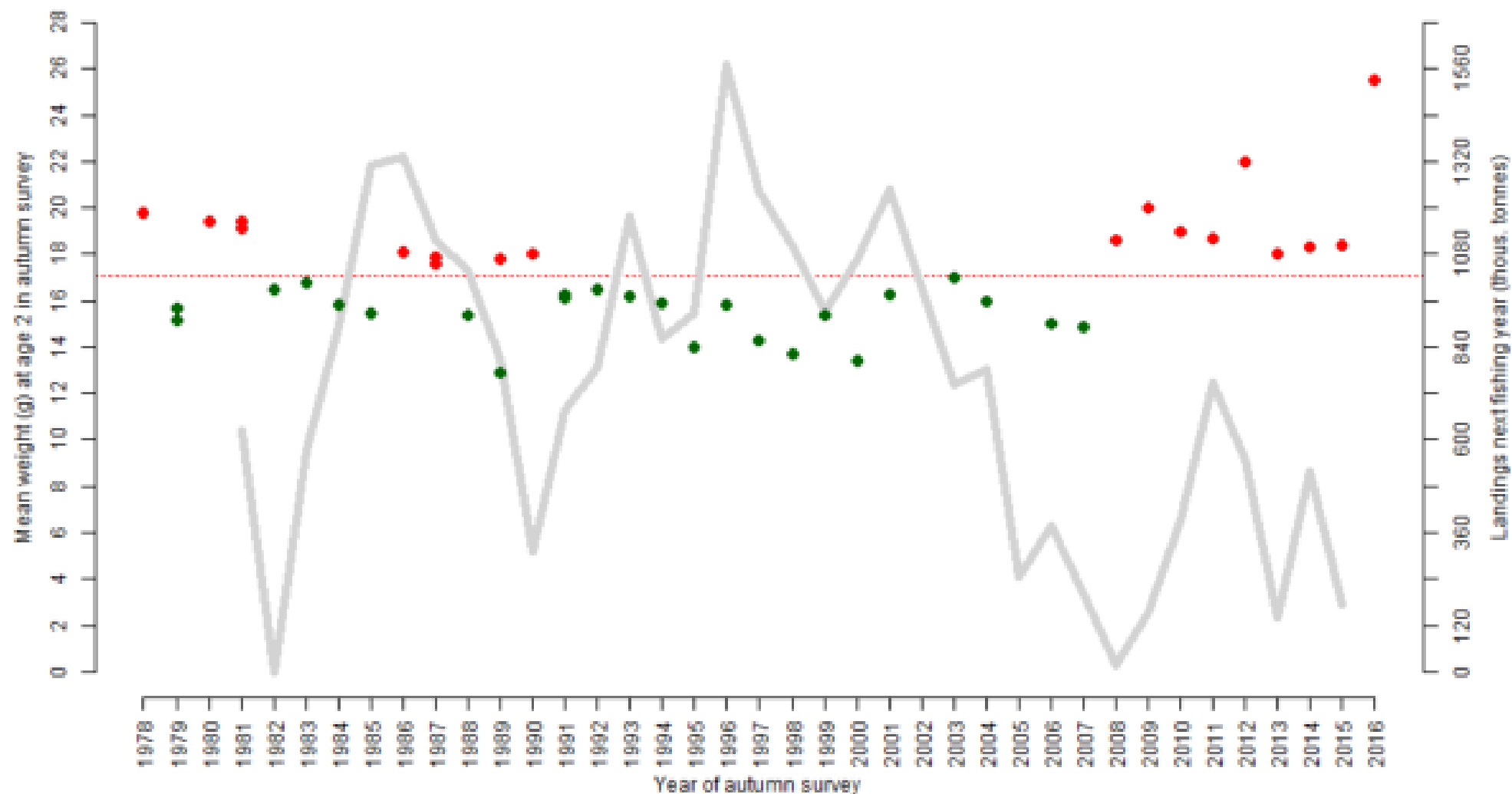
- Engin veiði gefur 76 000 tonna SSB(mean) 15. mars.
- 95% líkur á minna en 150 000 tonnum (Blim).
- $p(\text{SSB} < \text{Blim} = 150\text{kt}) < 0.05$
- Ráðgjöf: **Engin veiði**



Stærð loðnu eftir breiddargráðum 2016

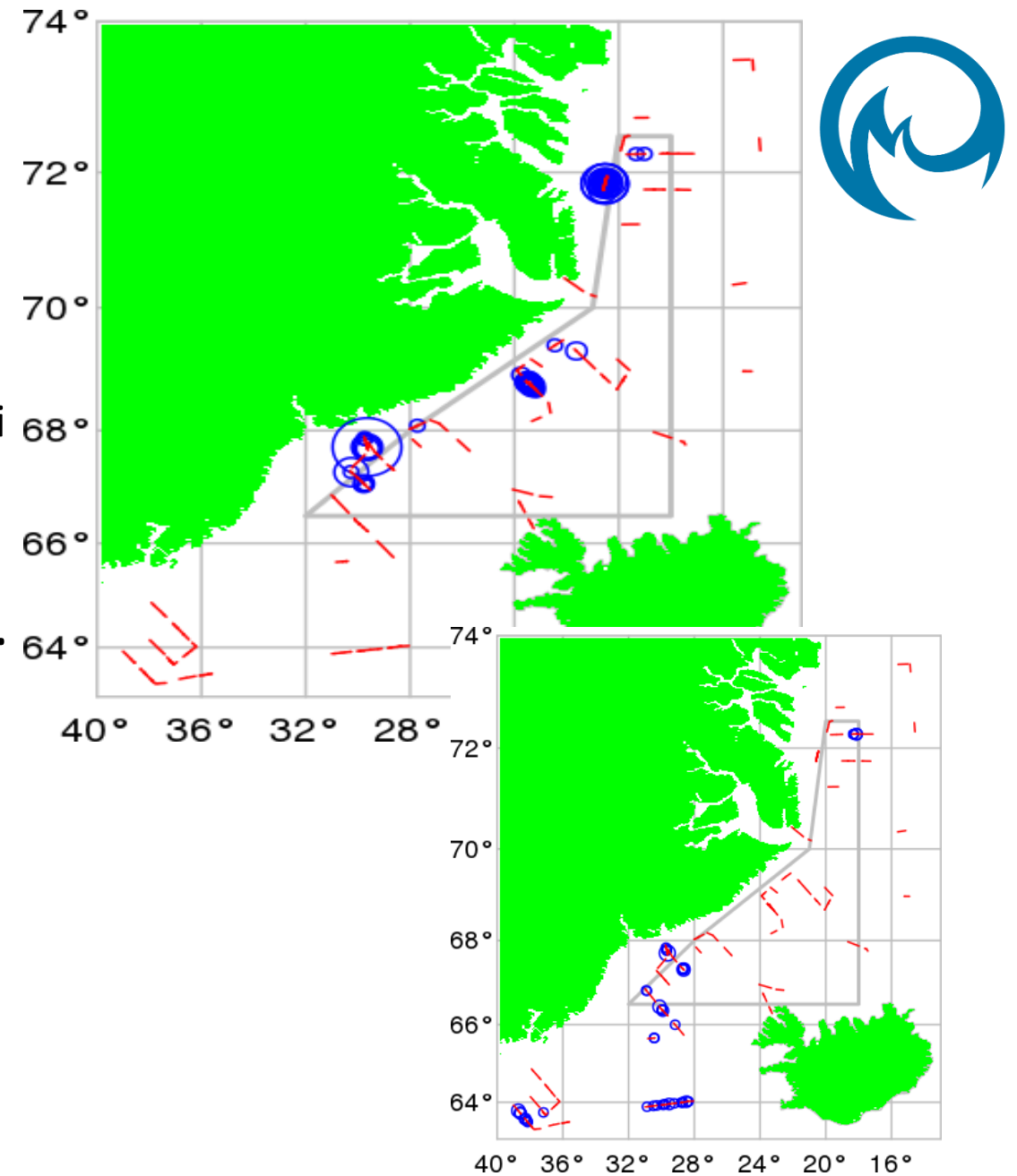


Þróun í meðalþyngd 2ja ára kynþroska loðnu



Hvalatalning samhliða mælingum

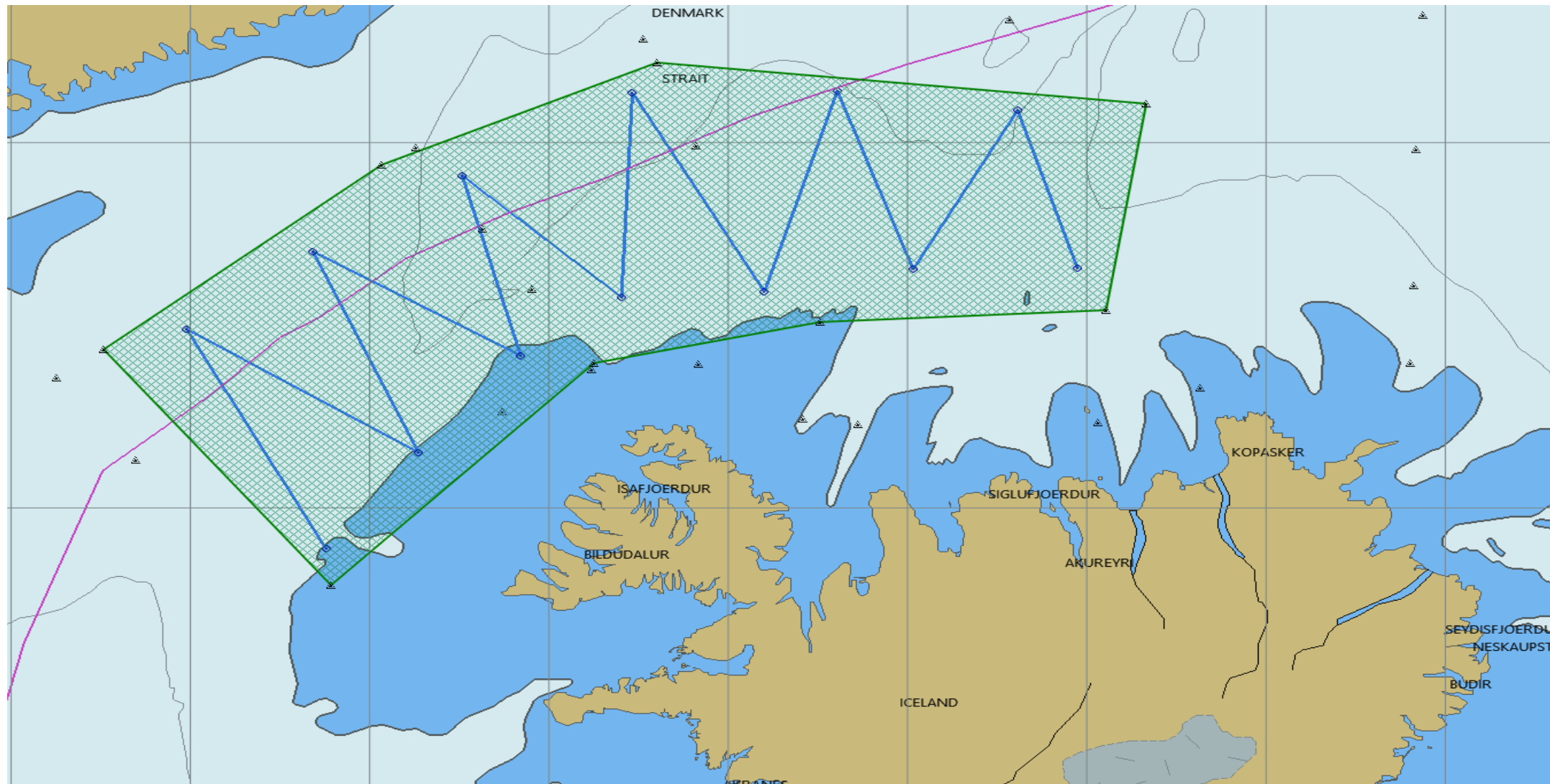
- Séðar langreyðar (bláir hringir) 67 í 47 hópum, hópastærð 1-5, (neðri mynd)
- Séðir hnúfubakar 365 í 133 hópum, hópastærð 1-50 (efri mynd)
- Bæði skipin voru útbúin með tvo leitarpalla, hvor með tvo talningamenn
- 2015 voru langreyðar metnar 4923 og **hnúfubakar 7083**.
- Niðurstöður 2016 svipaðar og 2015 ~ 7-8000 Hnúfub.
- Hnúfubakahópar voru fleiri og í enn þéttari hópum hvar sem loðnu var að finna, sem gerði mjög erfitt að meta fjölda í hóp.
- Einnig sáust nokkrar hrefnur og búrhvalir, og á suður hluta svæðisins grindhvalir, höfrungar og sandreyðar en andanefjur norðar.



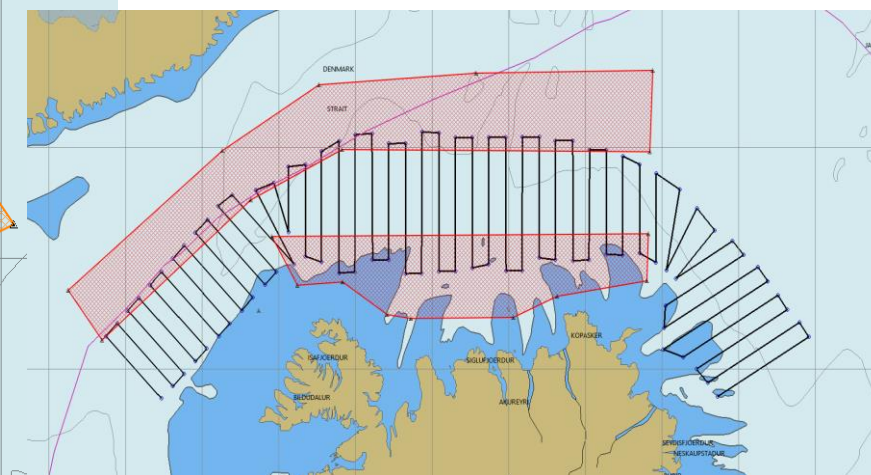
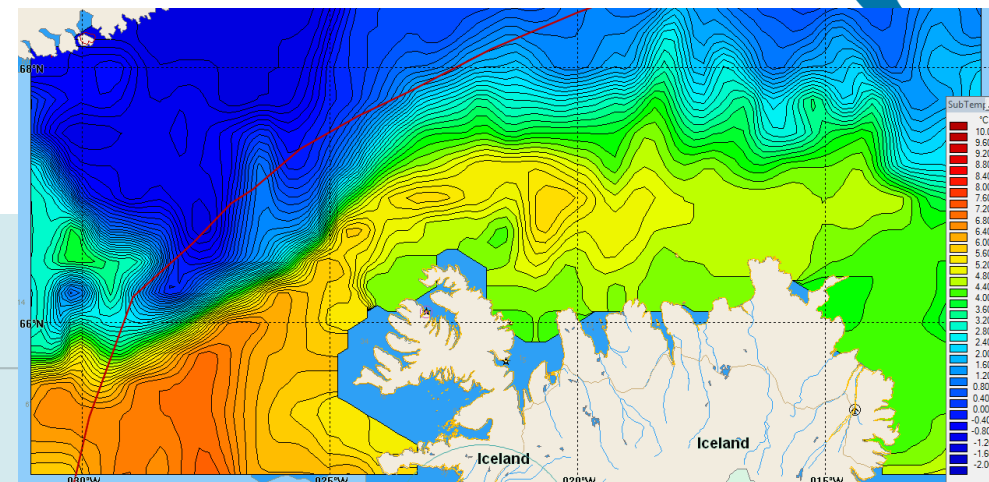
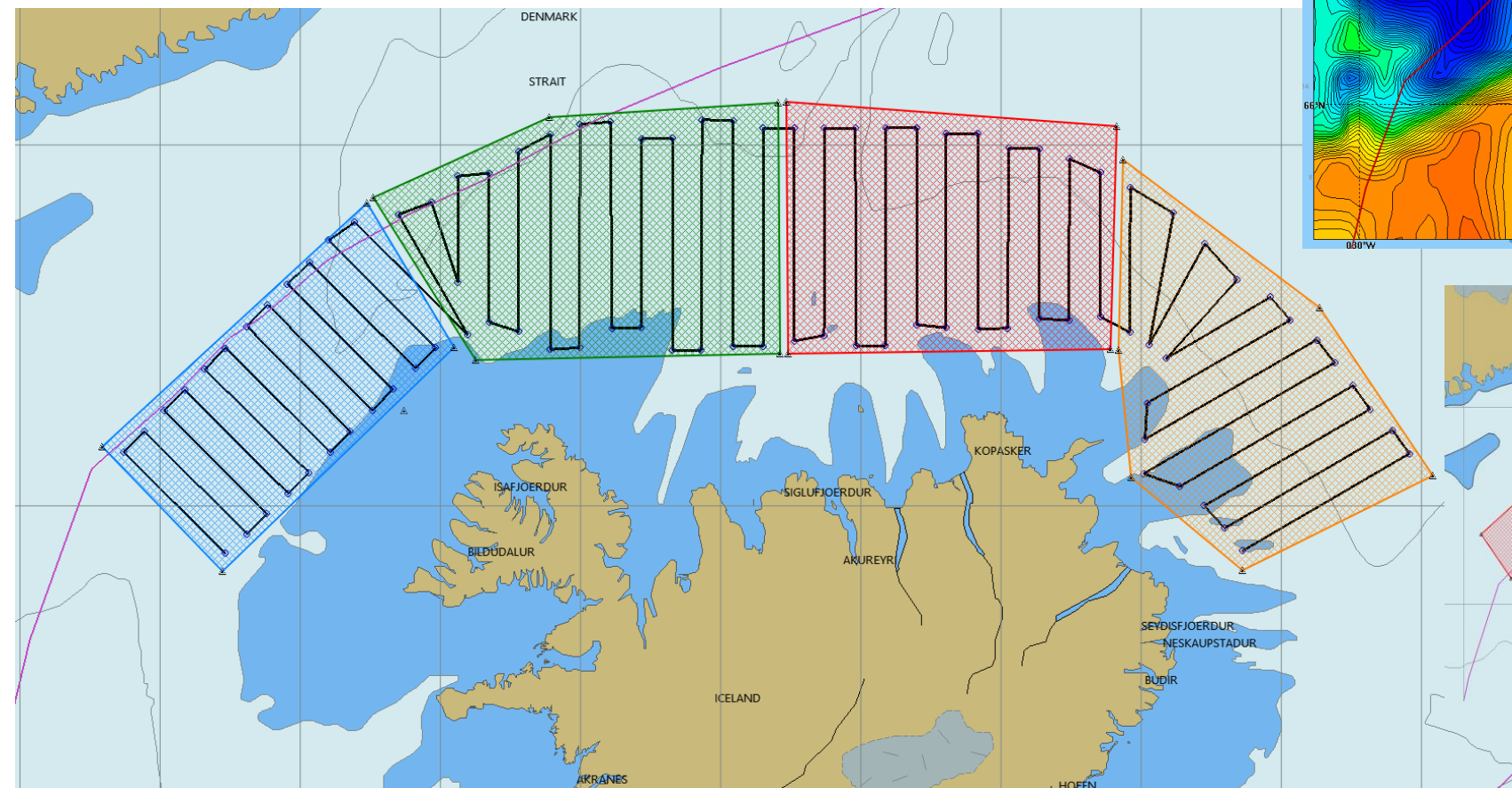


Vetrarmælingar

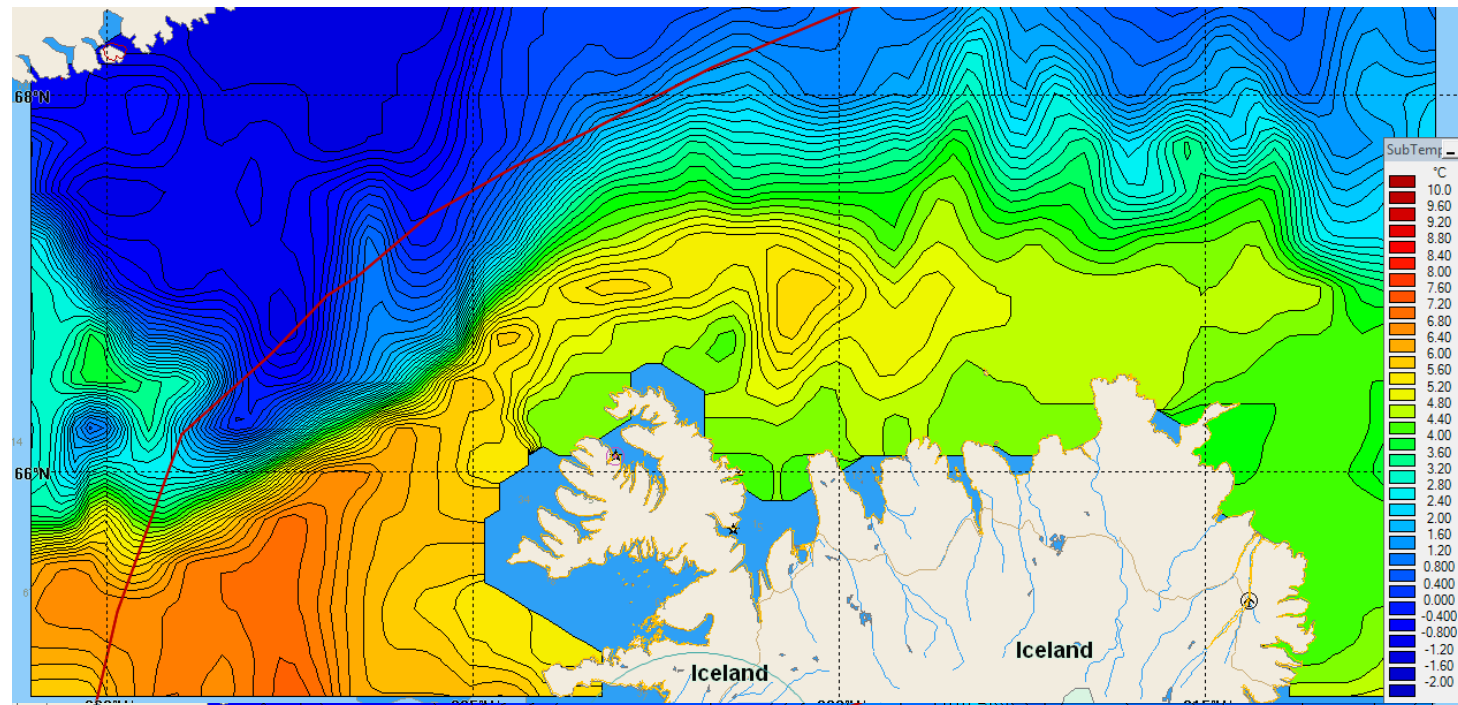
Fyrirhuguð skönnun strax í byrjun janúar



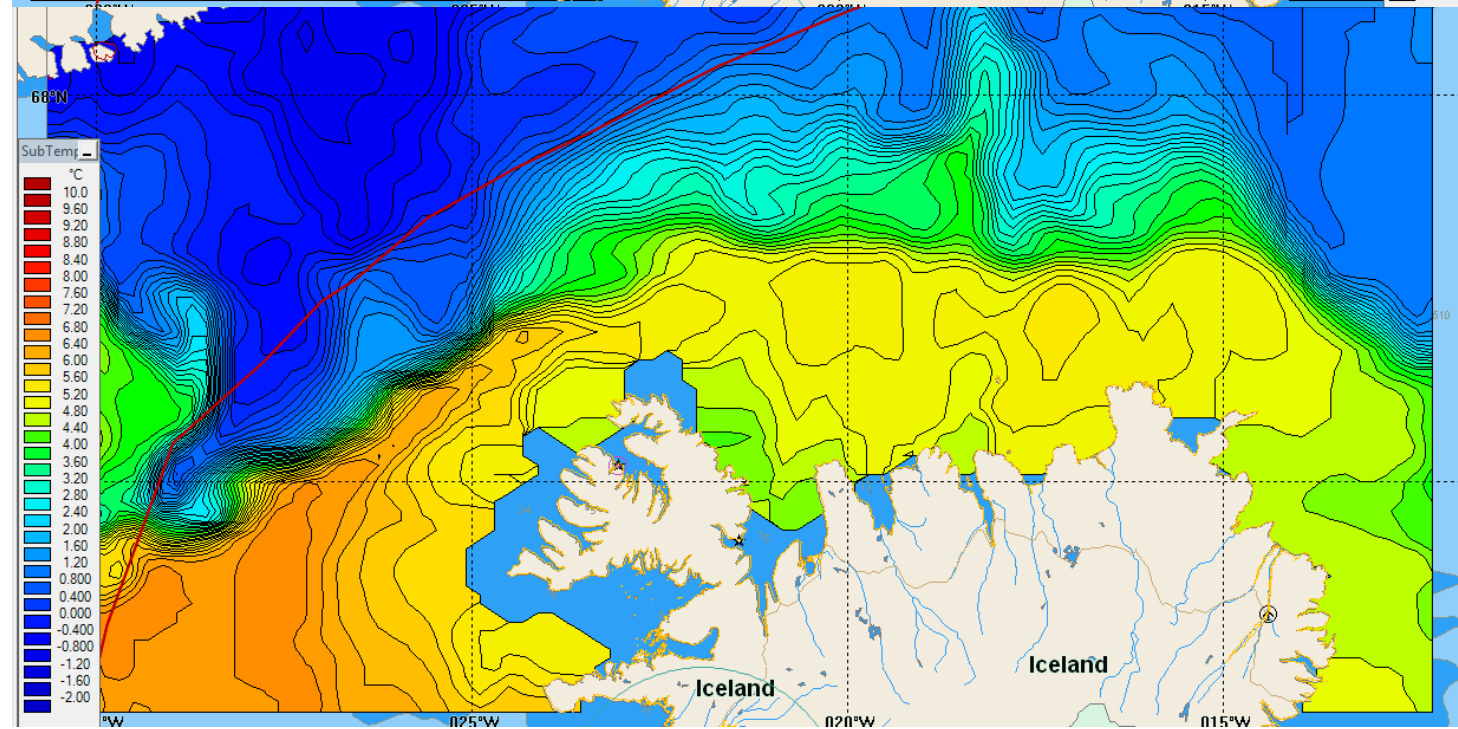
Fyrirhuguð leit í janúar með 4 skipum



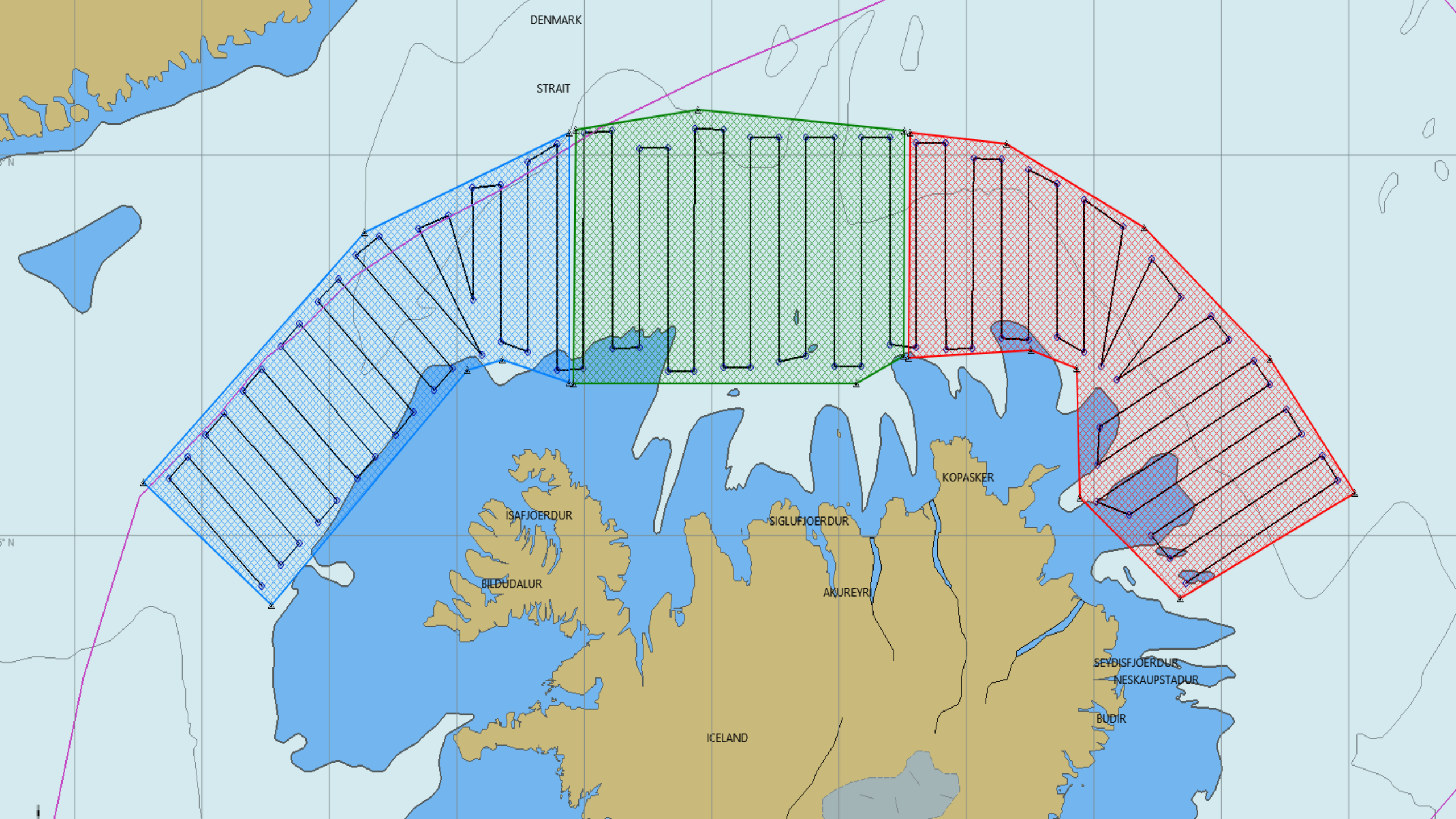
5. Jan2016



5. Jan 2017



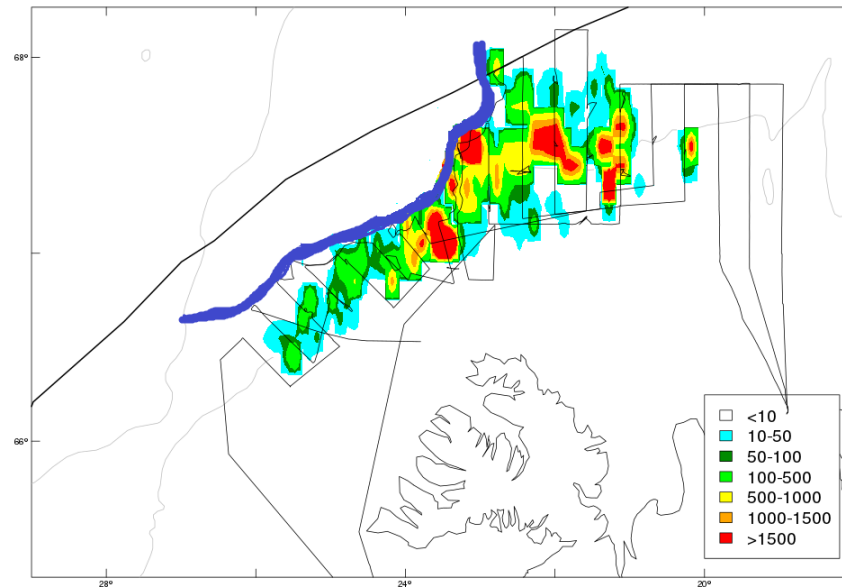
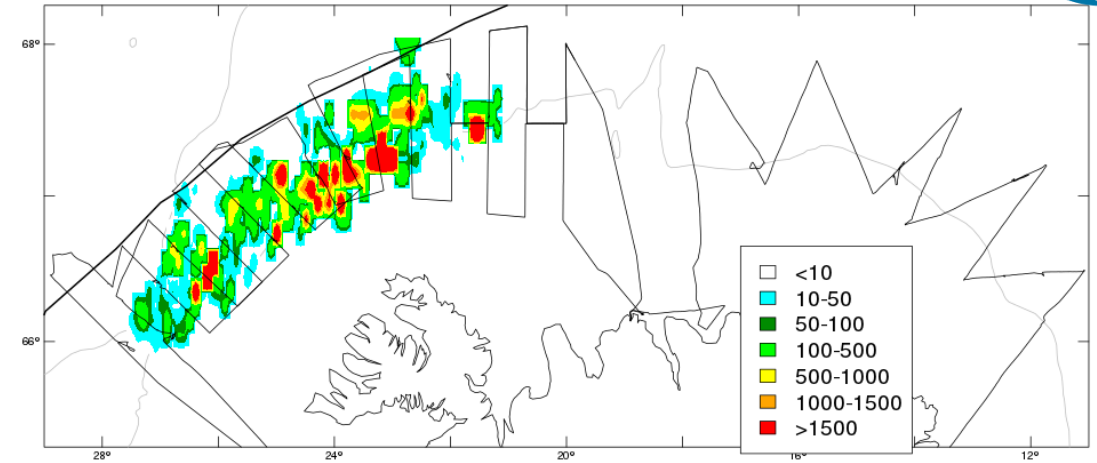
Hiti á 100m



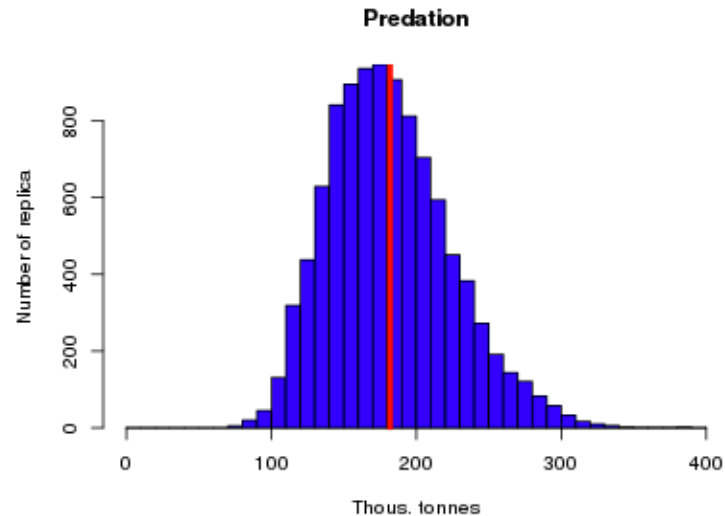
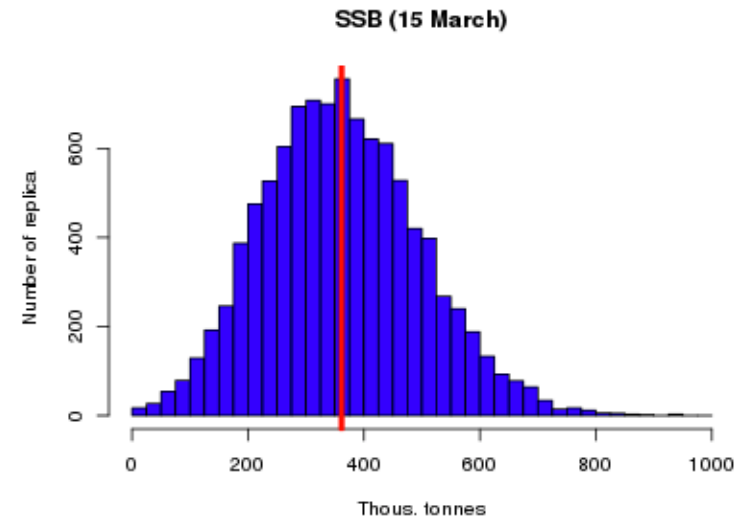
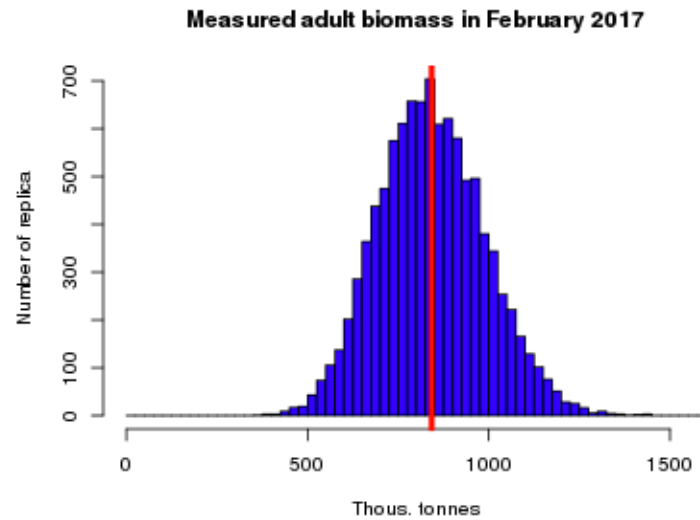
Leiðangrar í janúar 2017



- Bjarna Sæmundssyni, Árna Friðrikssyni og Polar Amaroq 11. – 20. janúar 2017.
- 2 mælingar á veiðistofninum.
- 12. - 15. og 17. - 20. Ís hafði færst yfir hluta mælingasvæðisins í seinni yfirferðinni.
- Um 398 þúsund tonn af kynþroska loðnu mældust í fyrri yfirferðinni og mæliskekkja (CV) var metin 0.2. Í síðari yfirferðinni mældust um 493 þúsund tonn og mæliskekkjan metin 0.23.
- Í samræmi við aflareglu var heildaraflamark á vertíðinni 2016/2017 sett 57 þúsund tonn.

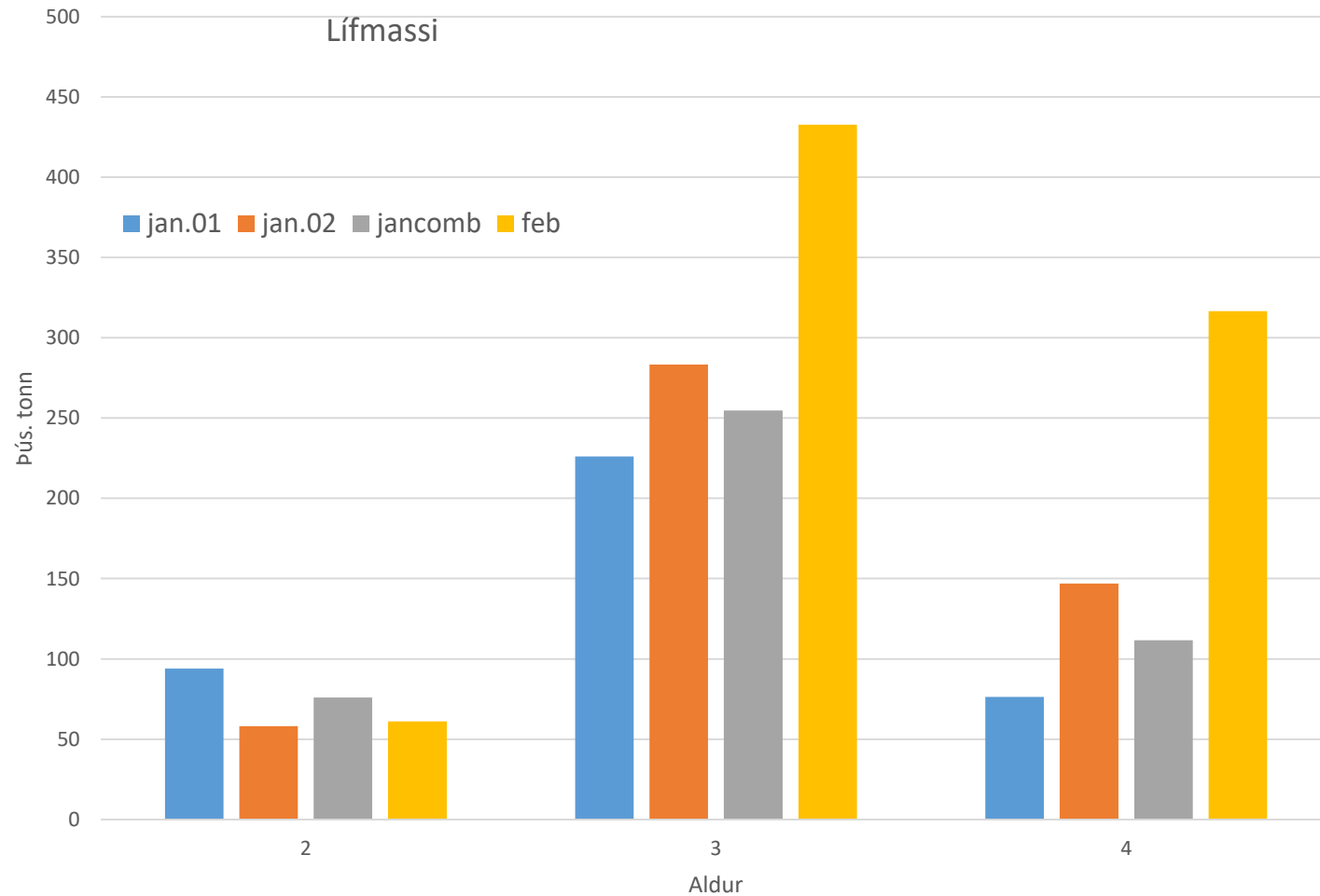


Niðurstöður mælinganna (febrúar)





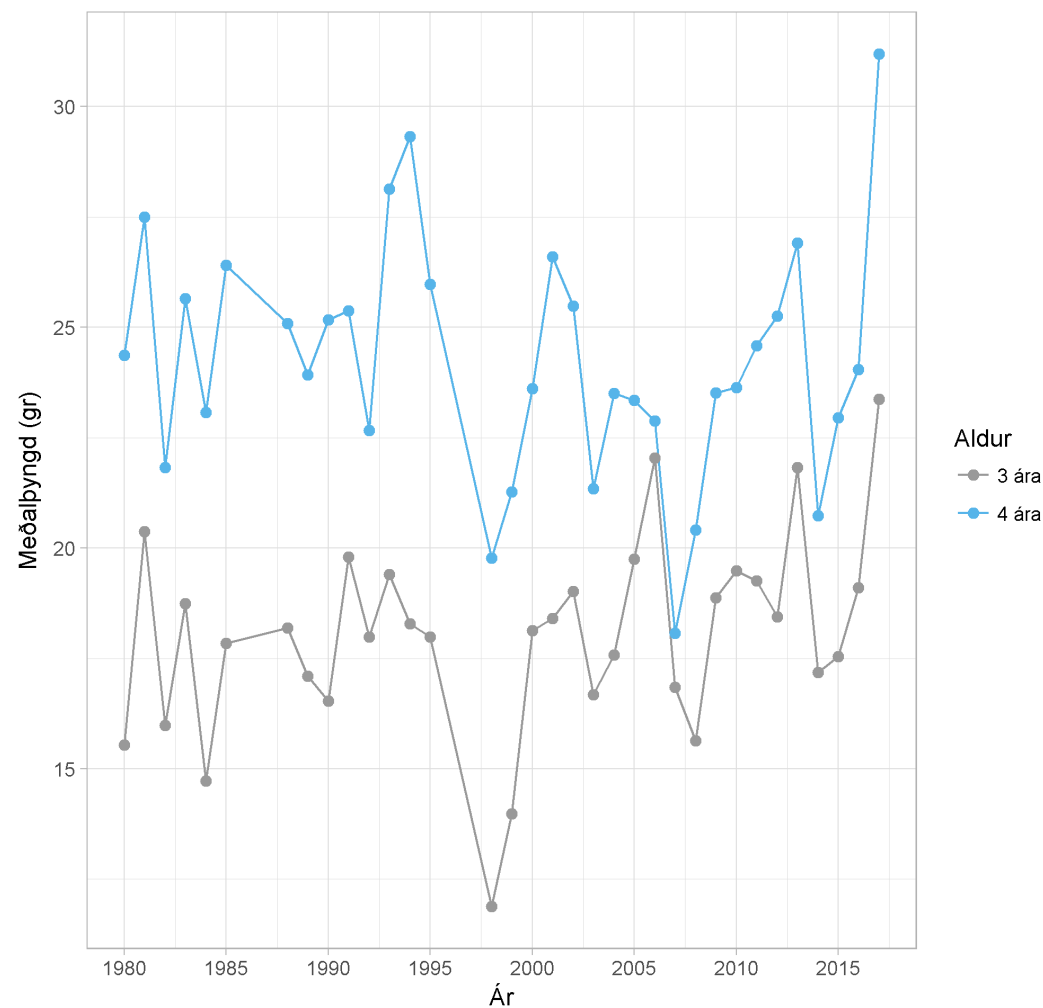
Lífmassi áraganga í mælingum 2017



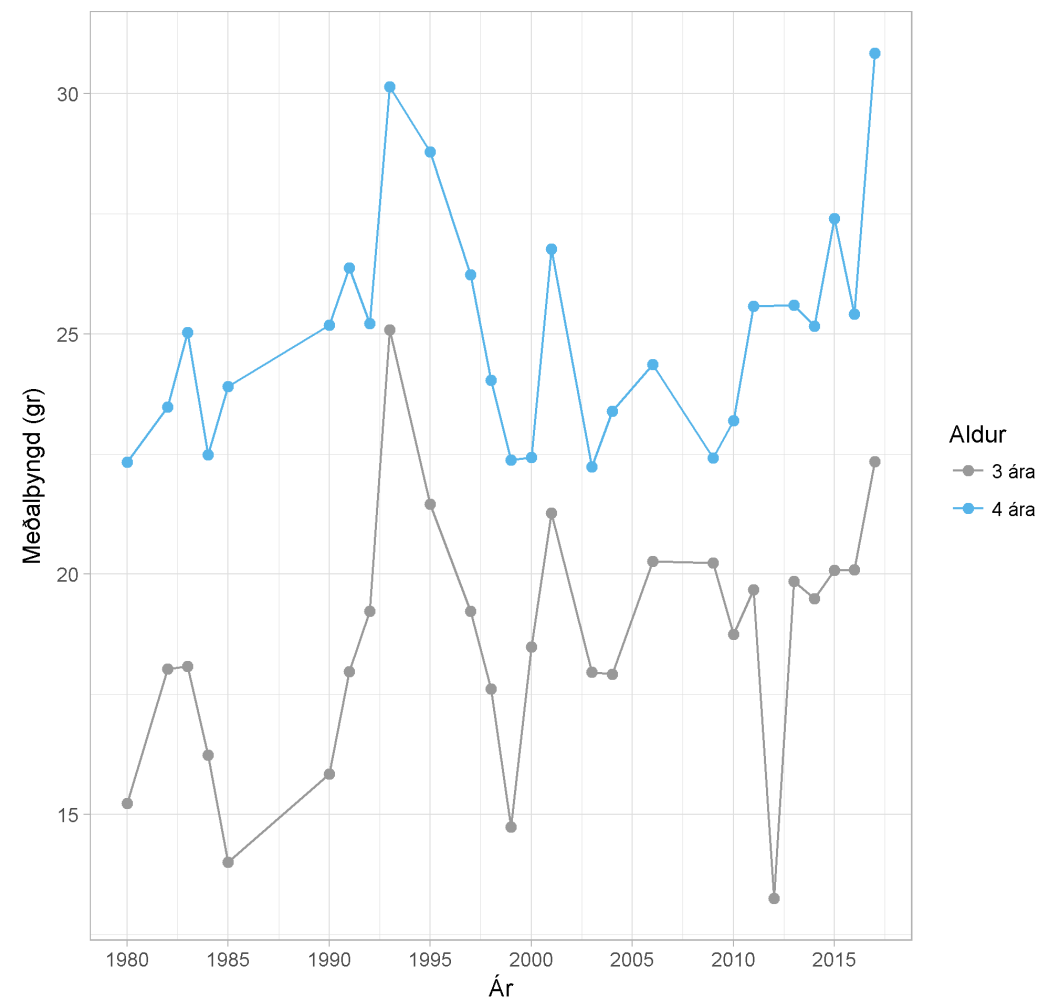
Meðalþyngd loðnu í leiðöngrum í jan og feb



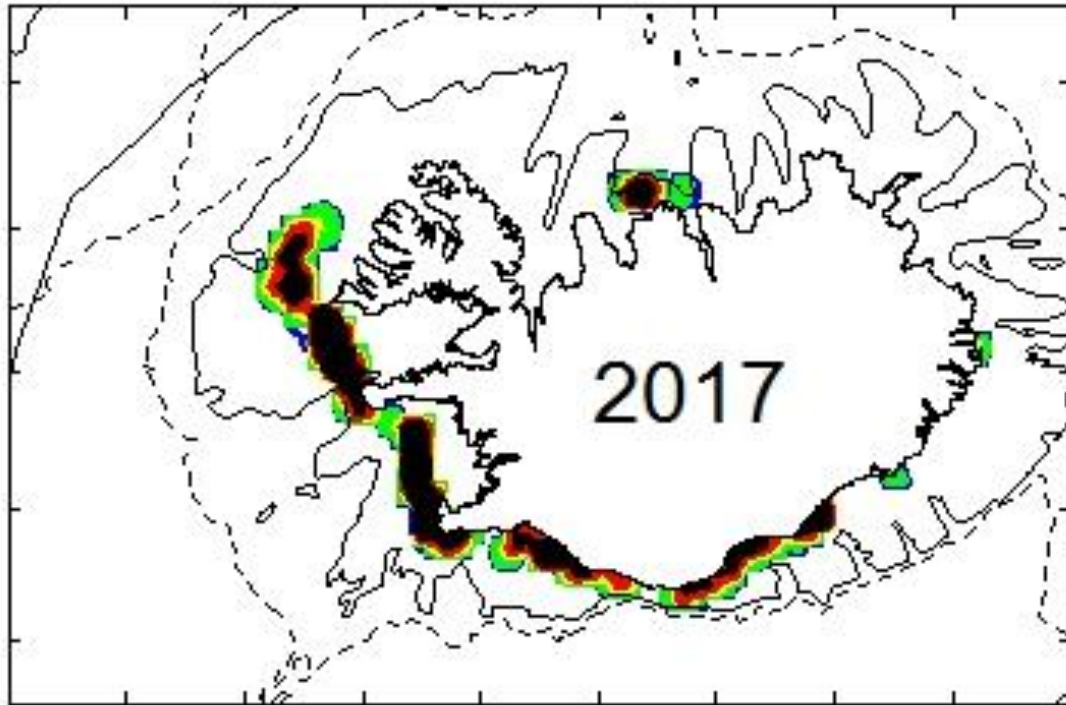
Breyting á meðalþyngd loðnu - leiðangursgögn - Janúar



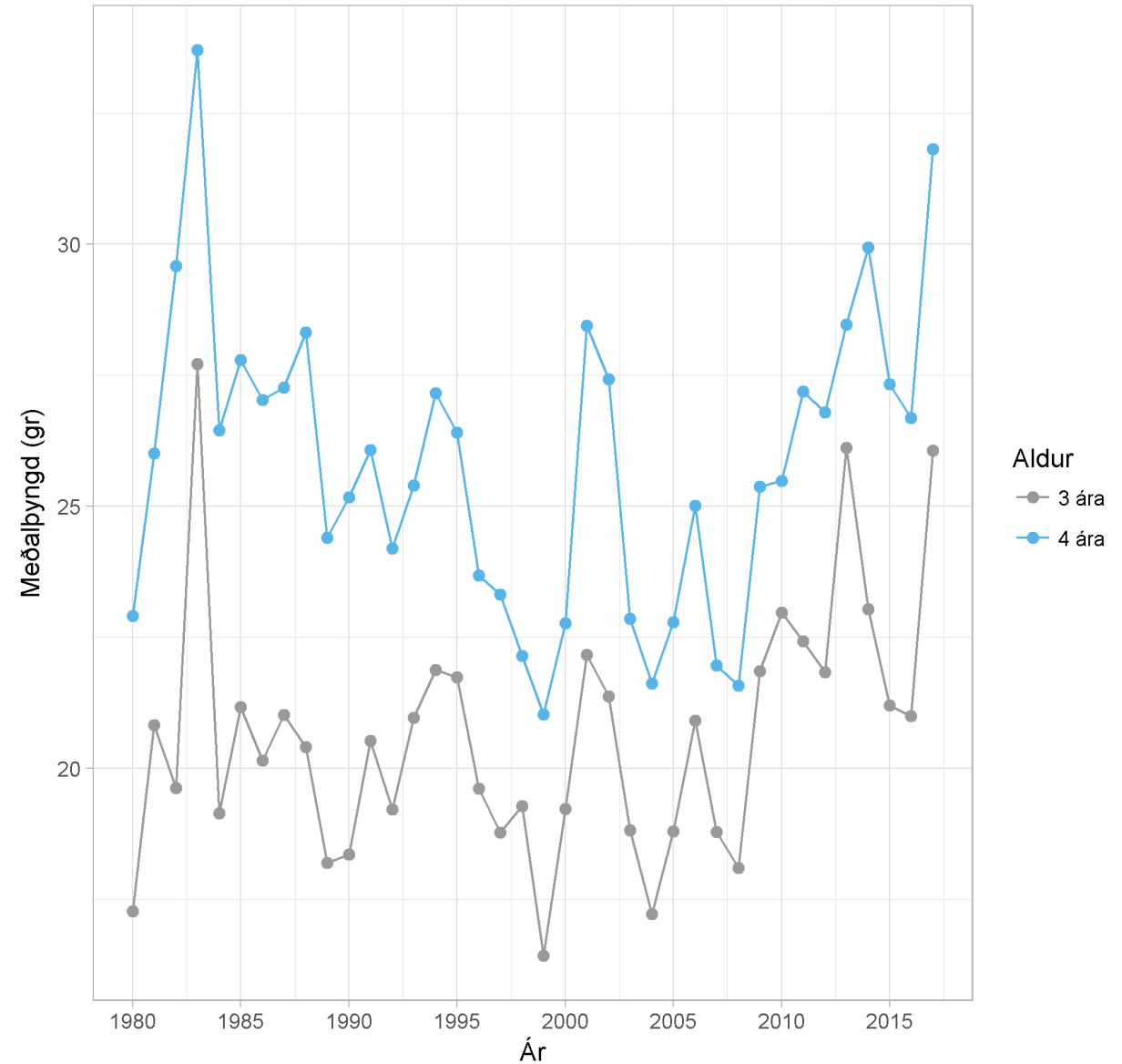
Breyting á meðalþyngd loðnu - leiðangursgögn - Febrúar



Dreifing afla 2017 og meðallengd frá 1980



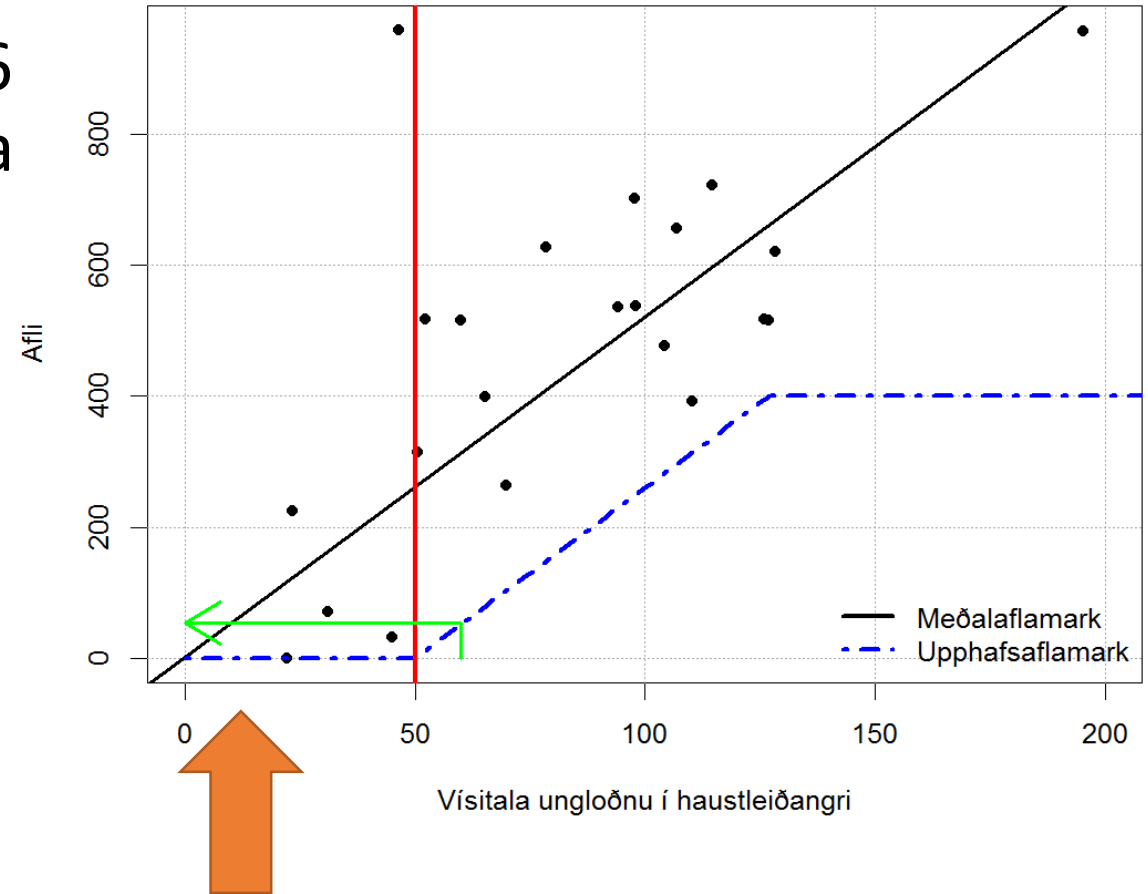
Breyting á meðalþyngd loðnu - afli - Febrúar





Horfurnar á vertíðinni 2017/2018

- Ungloðnumælingar haustið 2016 benda til að vertíðin verði í besta falli mjög léleg
- Hver trúir þessu eftir síðustu vertíð?

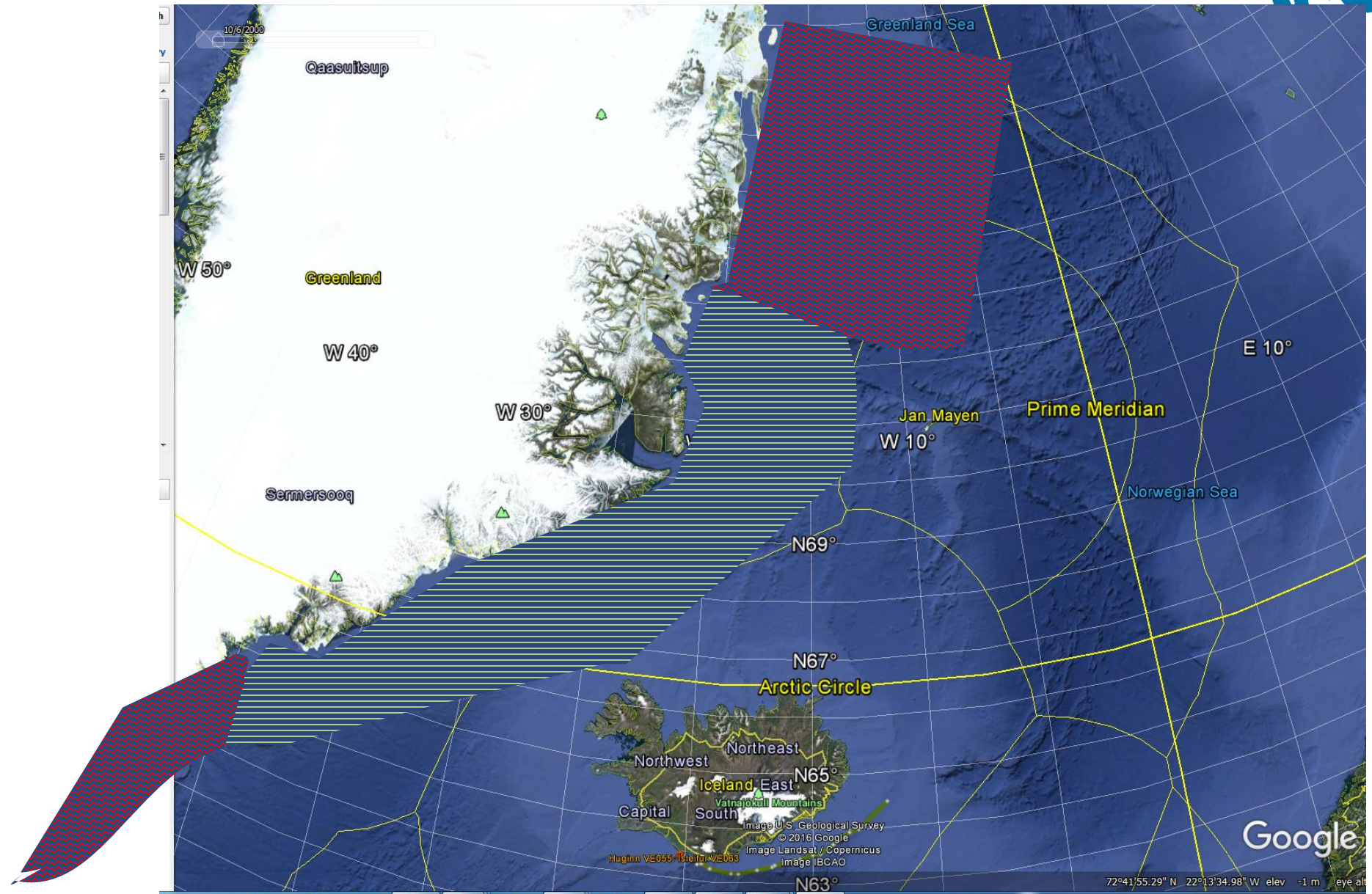




Hellstu gloppur í þekkingu

- Hvað gerist fyrstu 18 mánuði í lífsferlinum?
- Umfang afráns?
- Fæða loðnu?
- Útbreiðsla óljós.
- Hvert er umfang og dreifing hrygningar?
- Áhrif umhverfibreytinga undanfarin ár á afdrif loðnu?
- Litlar grunnrannsóknir – verkefnin hafa beinst að stofnmati

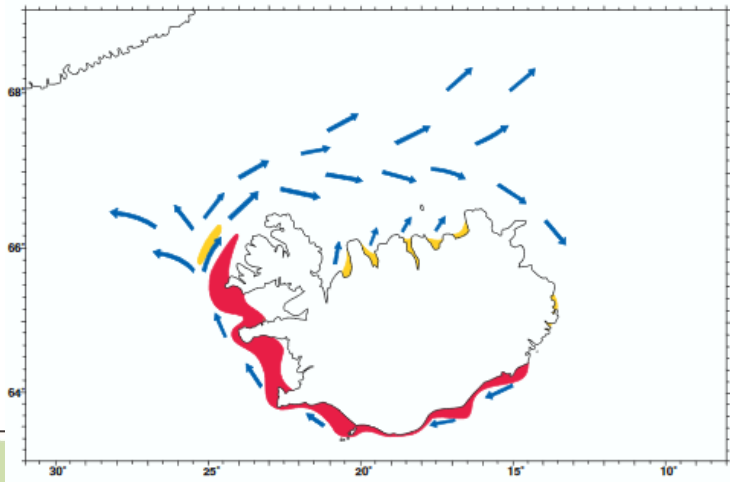
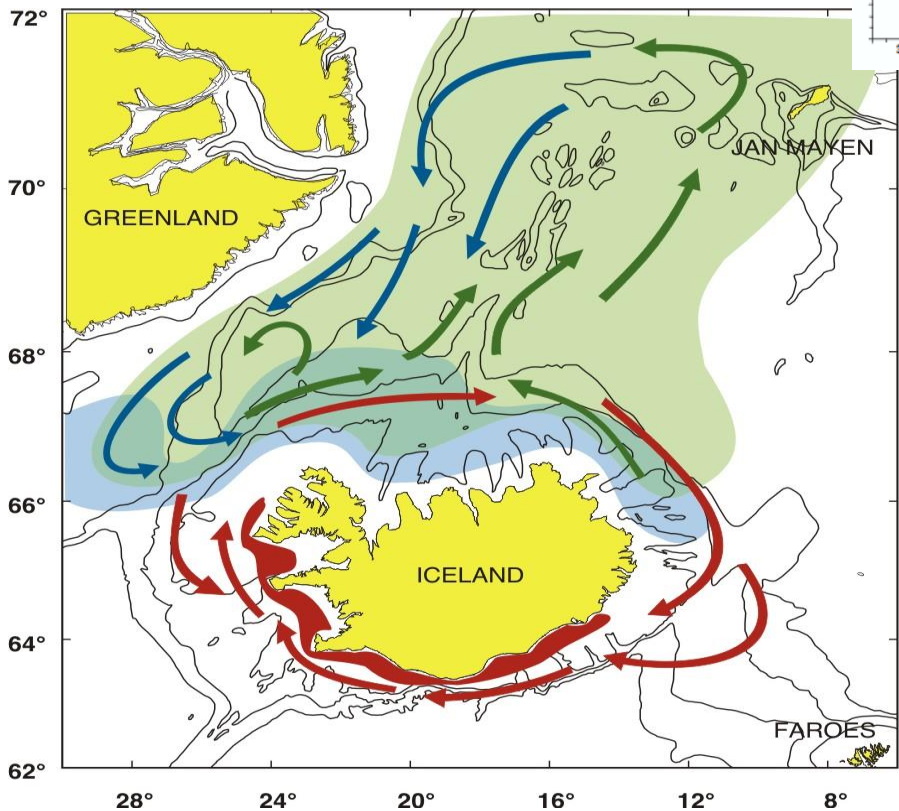
Rannsóknna er þörf. Skref 1. Hvar er loðnan að hausti



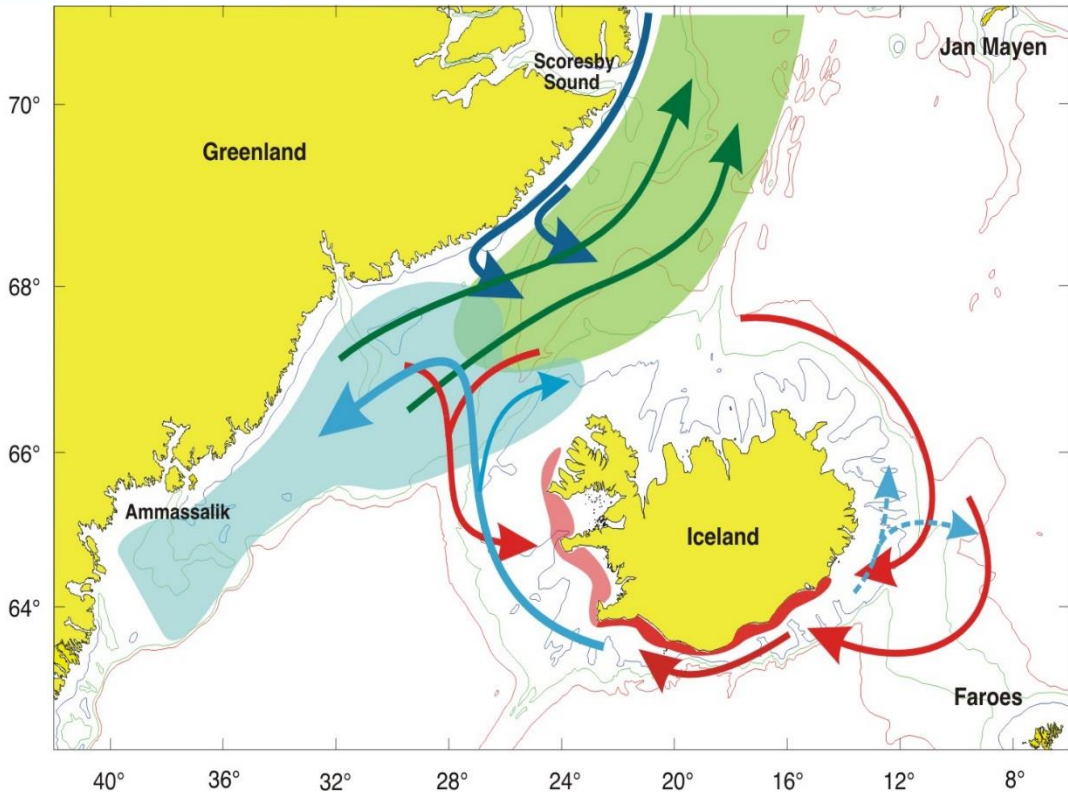
gönguhegðun



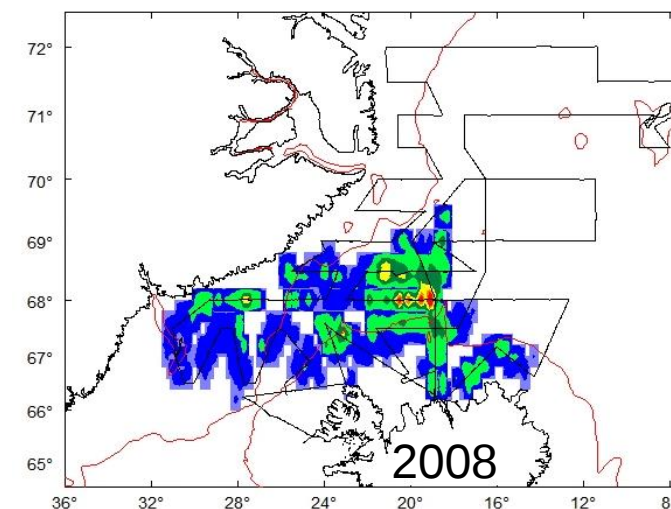
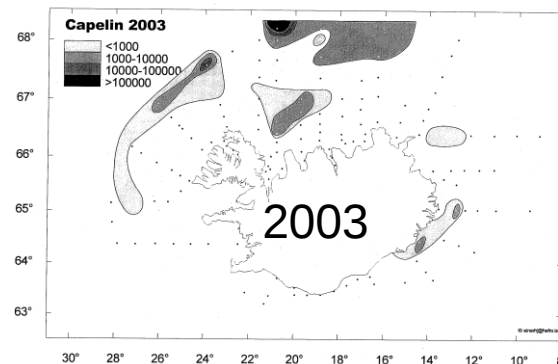
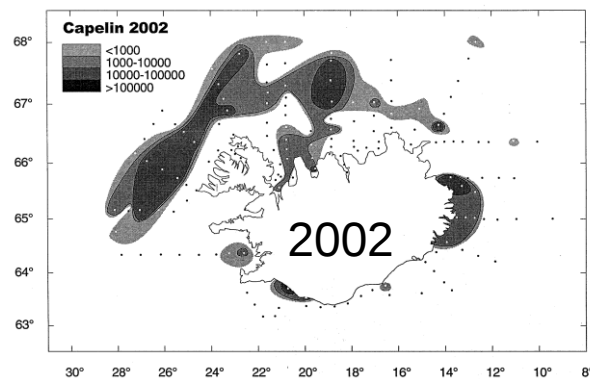
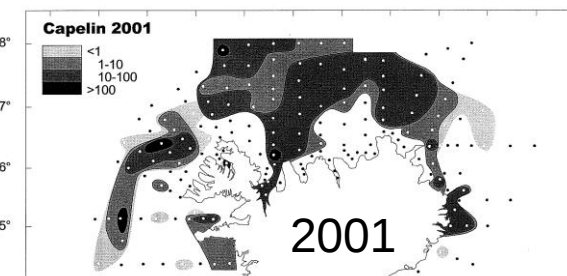
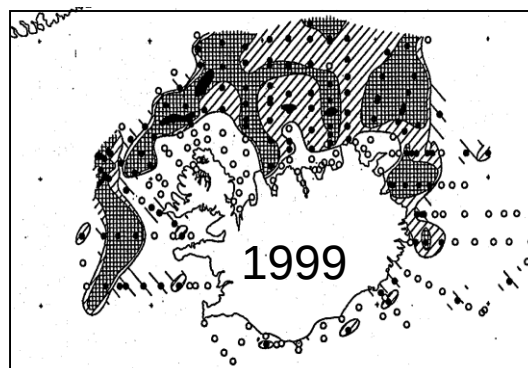
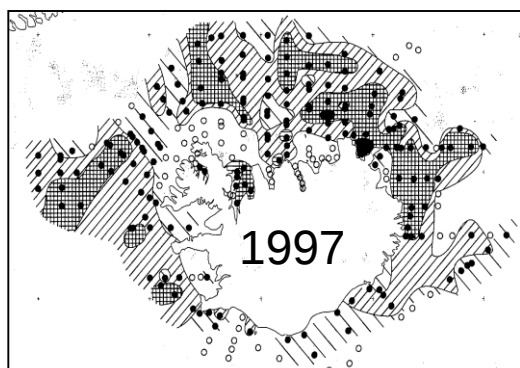
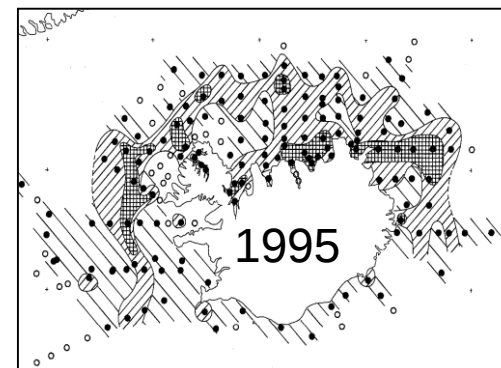
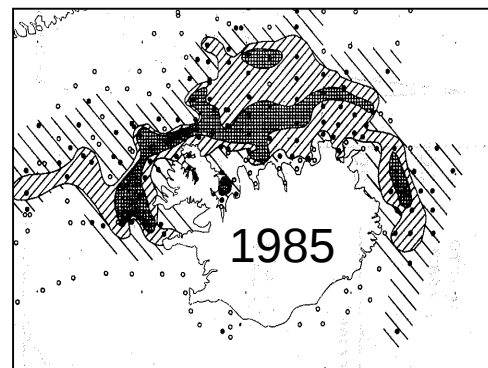
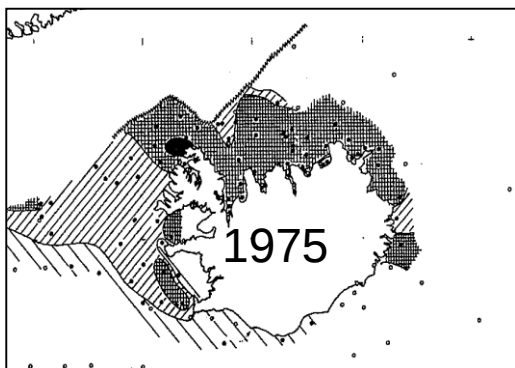
Fyrir 2000



Eftir 2000



Loðnuseiði ágúst 1975-2003 og 2008



Afrán á mismunandi ævistigum



Hrogn Ýsa og fleiri botnfiskar, botndýr

Lirfur Síld, Makrill, loðna?, Skíðishvalir?, seiði botnfiska

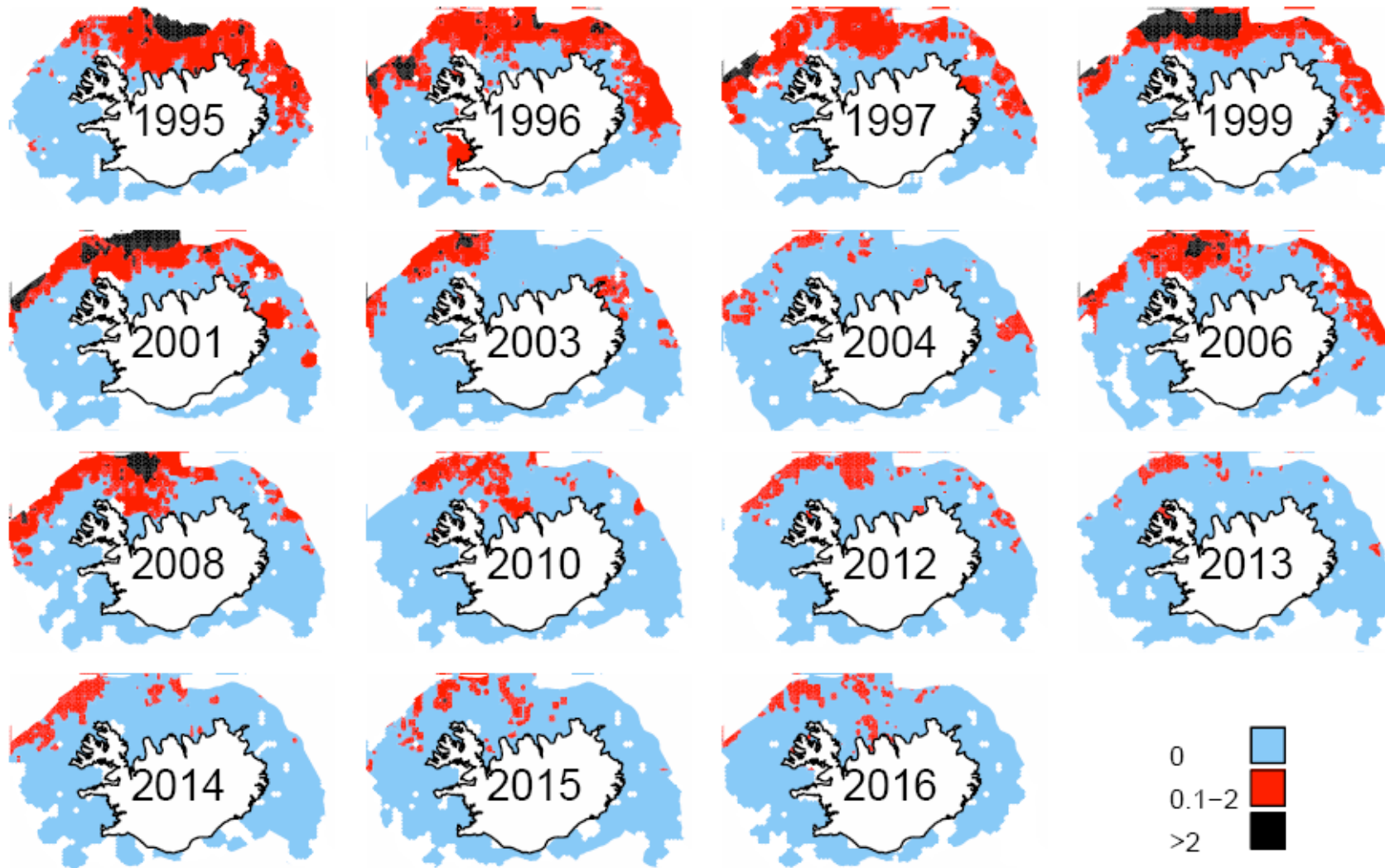
Seiði 0-1 ár Makrill, síld?, skíðishvalir, botnfiskar

Ókynproska loðna Botnfiskar, hvalir, selir

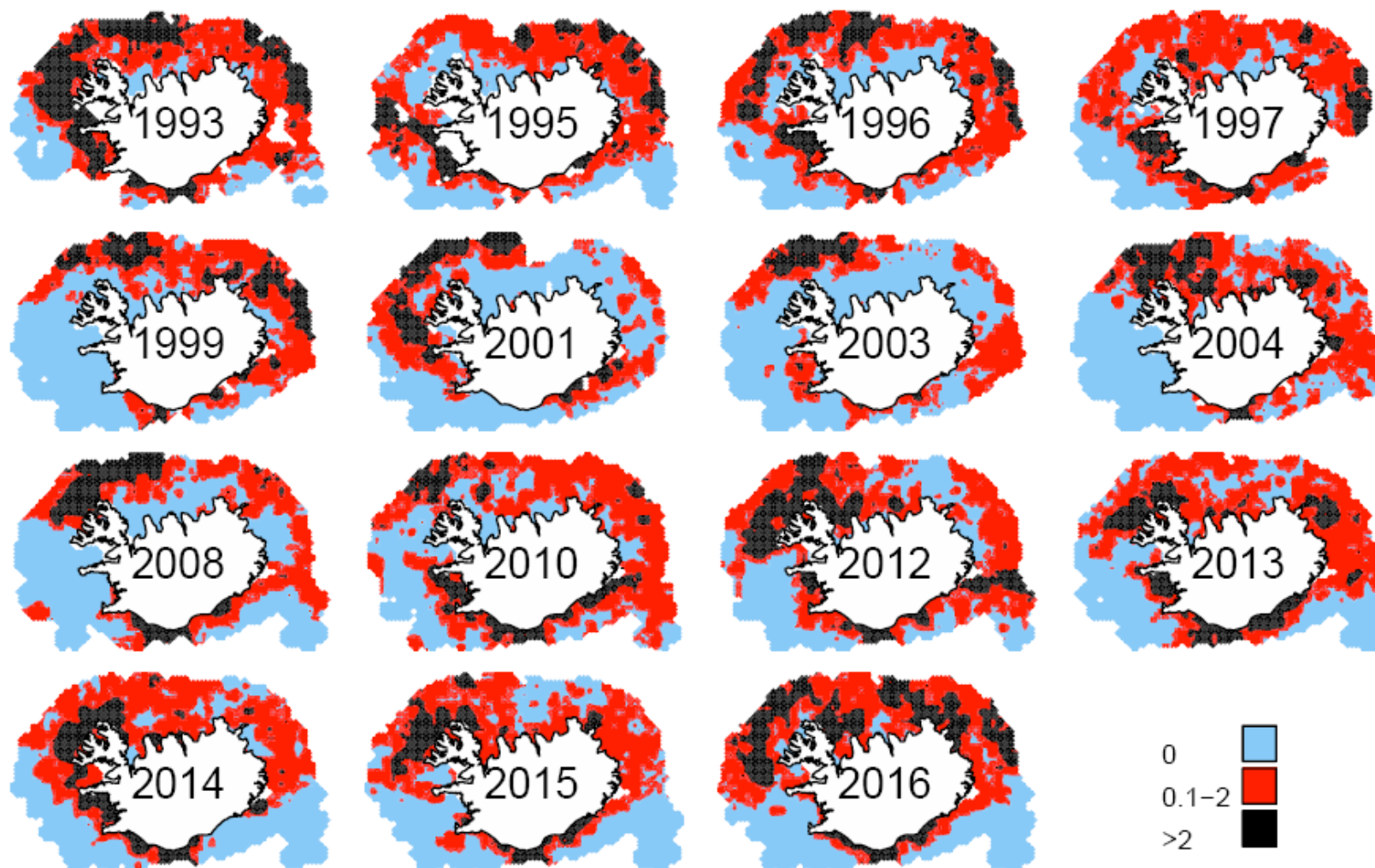
Kynproska loðna Botnfiskar, hvalir, selir



Magn loðnu í þorskmögum í október prósent af þyngd



Magn loðnu í þorskmögum í mars prósent af þyngd





Skref 2. Hrygning og útbreiðsla lirfa



Útbreiðsla ungviðis
Kortlagning hrygningarsvæða
(samstarf við HÍ)
Útbreiðsla seiða

