

# Hvussu kunnu DNA-leivdir í sjógvi brúkast til at kannast fiskastovnar?



Dr. Ian Salter

# Hvat er umhvørvis DNA?

mikroskopiskar lívverur



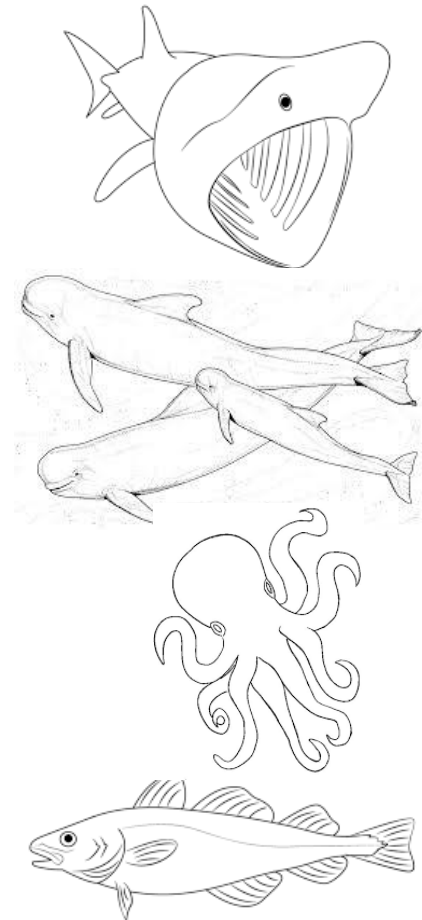
# Hvat er umhvørvis DNA?



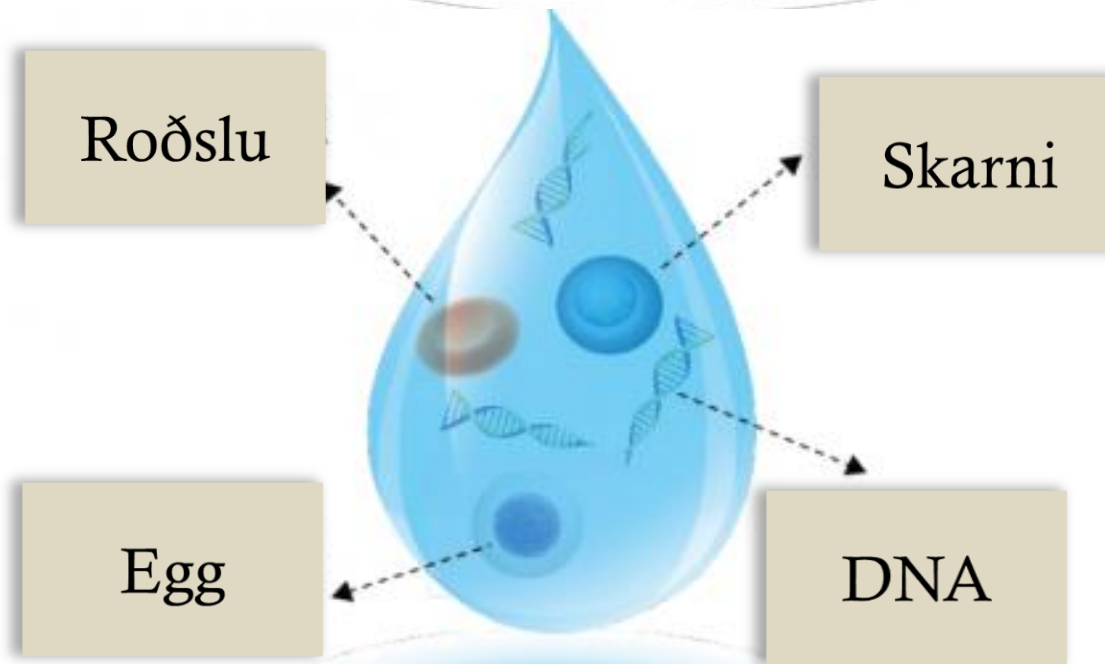
mikroskopiskar lívverur



DNA petti



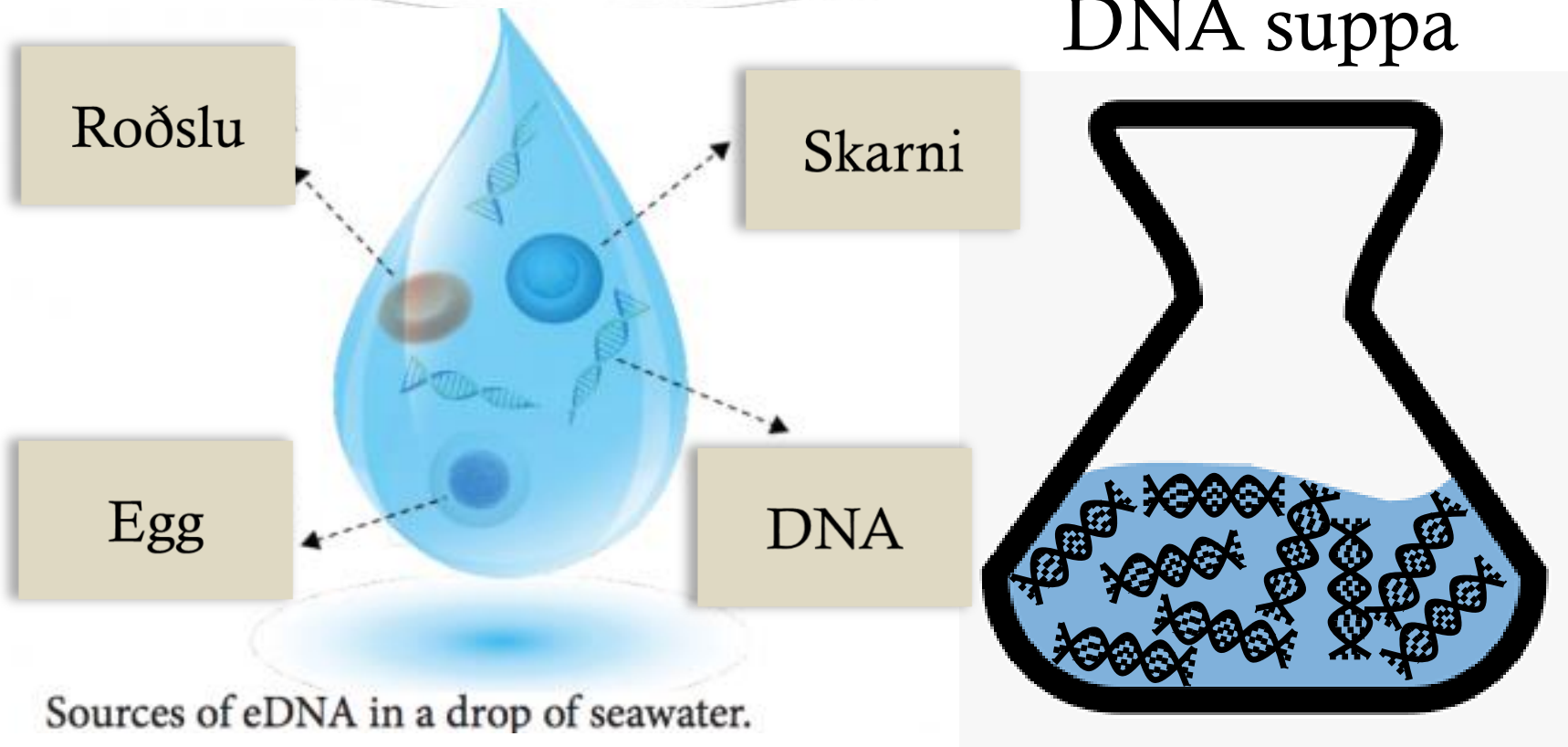
# Hvar kemur umhvørvis DNA frá?



Sources of eDNA in a drop of seawater.



# Hvar kemur umhvørvis DNA frá?



# Hvussu kunnu vit brúka umhvørvis DNA?

## DNA Strukturin

### Key:



Thymine (T)



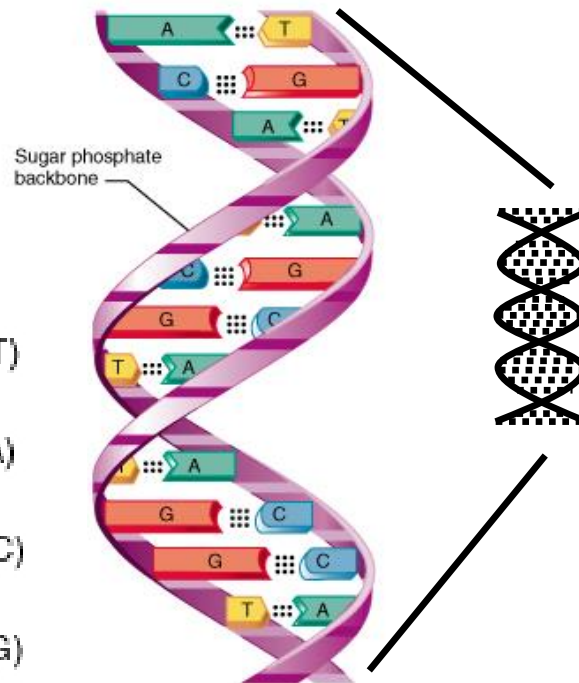
Adenine (A)



Cytosine (C)



Guanine (G)



(b)

# Hvussu kunnu vit brúka umhvørvis DNA?

## DNA Strukturin

### Key:



Thymine (T)



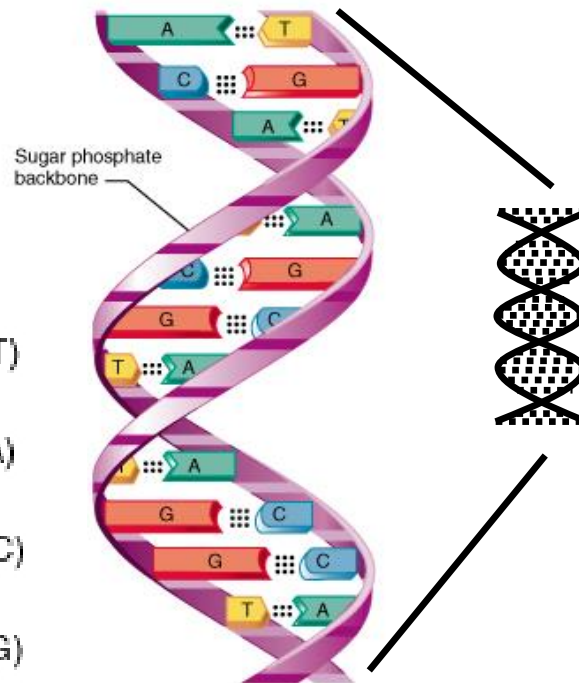
Adenine (A)



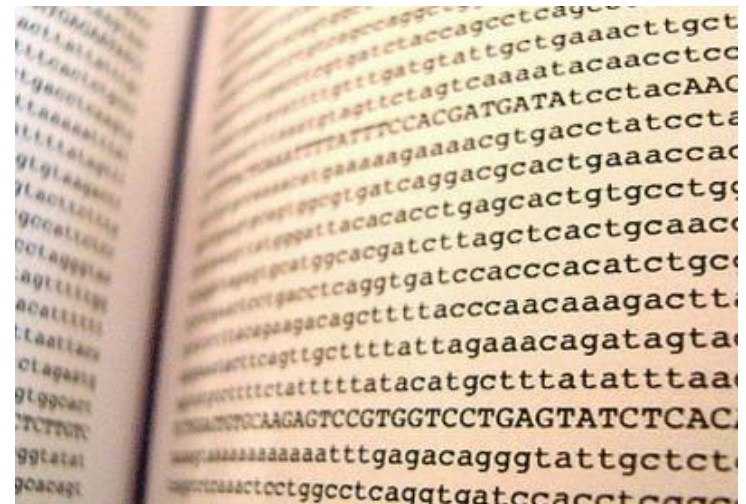
Cytosine (C)



Guanine (G)

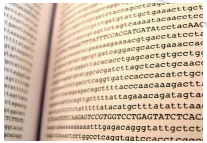


DNA: Ein mál av fyra bókstavum og long orð



(b)

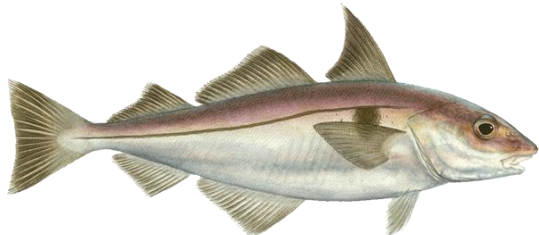
# Hvussu kunnu vit brúka umhvørvis DNA?



Toskur



GAC**GT**TAGCCGTA



Hýsa



GAC**CATT**GCCGTA



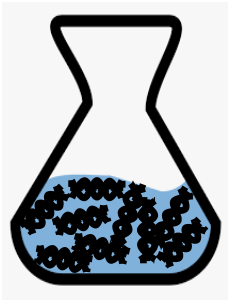
Upsi



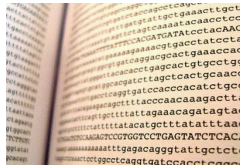
GAC**AAGC**GCCGTA



# Hvussu kunnu vit brúka umhvørvis DNA?



Havið er fult av  
DNA leivdum



DNA er ein mál sum hevur  
fyra bókstavar og long orð



nøkrar “orð” í DNA málinum eru  
serstøk fyri fiskaslagið



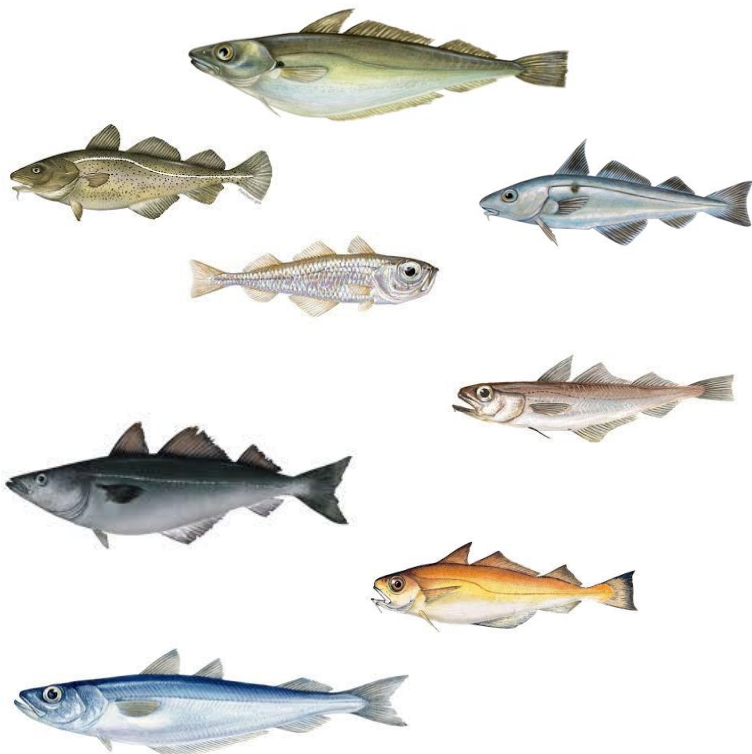
**Vit kunnu brúka  
sjógvprøvar at kanna  
fiskarstovnar**

# Hvussu kunnu vit brúka umhvørvis DNA?

## Passive

Hvørji sløg eru her?

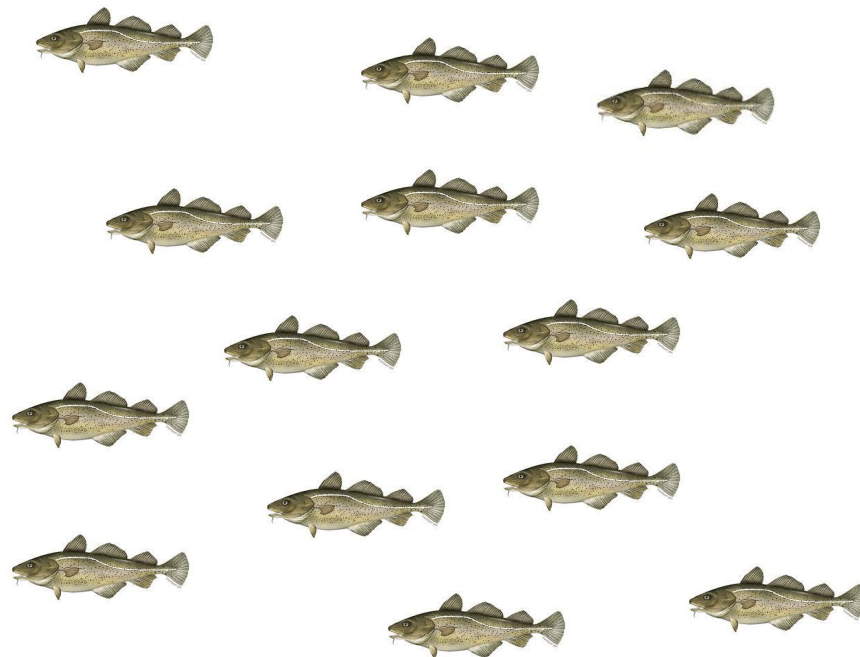
Metabarcoding



## Targeted

Hvussu nógv er av hvørjum slagi?

Quantitative PCR

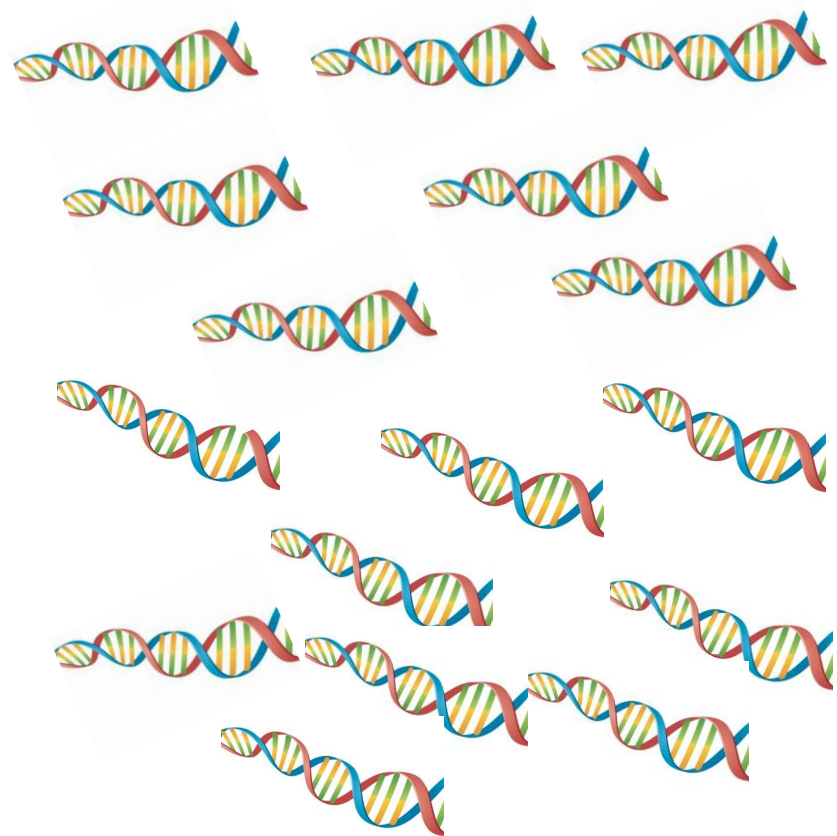
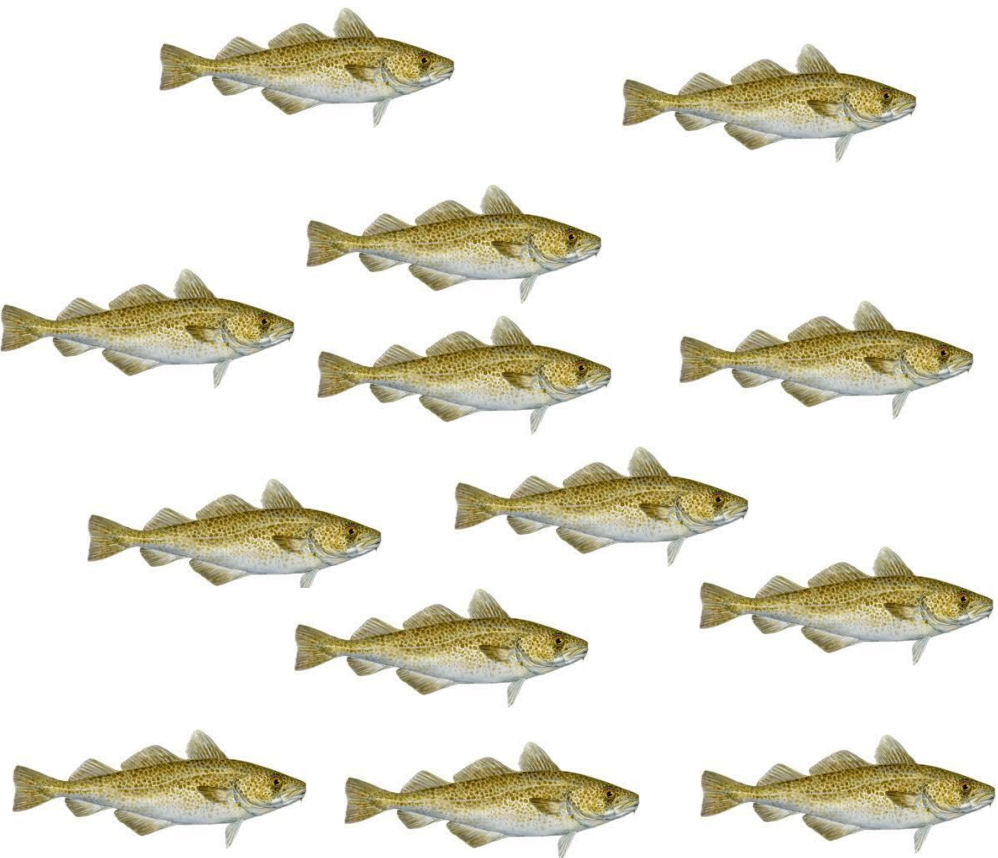


# Hvussu kann umhvørvis DNA siga frá um biomass?

**Targeted**

**Hvussu nógv er hvørjum slagi?**

Quantitative PCR



# Hvussu virkar qPCR?



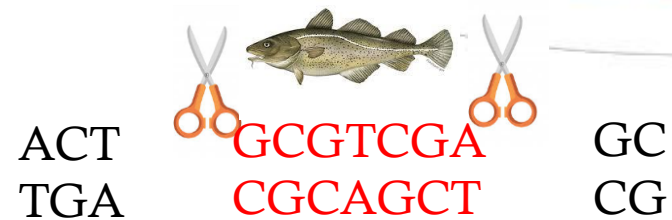
ACTGCGTCGAGC  
TGACGCAGCTCG



mýla-saksar  
(primers)



# Hvussu virkar qPCR?



mýla-saksar  
(primers)



# Hvussu virkar qPCR?



GCGTCGA  
CGCAGCT



qPCR  
mýla-  
fotokopimaskina

# Hvussu virkar qPCR?

GCGTCGA  
CGCAGCT

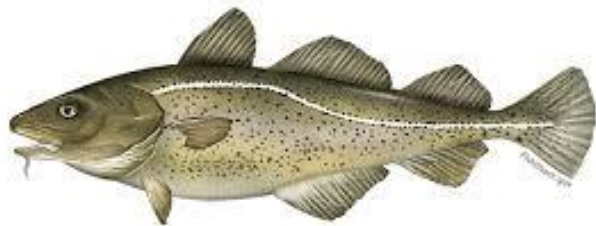
GCGTCGA  
CGCAGCT



qPCR  
mýla-  
fotokopimaskina

# COD-eDNA: Endamál

1. Seta upp eina mannagongd at máta toska DNA í sjógvi
2. Máta toska DNA í sjógvi kring Føroyar
3. Samanbera toska DNA nøgd við biomassa frá yvirlitstrolingum



**Fiskivinnugransking**  
Fisheries Research Fund of the Faroe Islands



# COD-eDNA: Endamál

1. Seta upp eina mannagongd at máta toska DNA í sjógvi
2. Máta toska DNA í sjógvi kring Føroya
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# Seta upp eina mannagongd at máta toska DNA í sjógvi



**Toskur**  
(*Gadus morhua*)



**Hýsa**  
(*Melanogrammus aeglefinus*)



**Upsi**  
(*Pollachius virens*)



**Hvítingur**  
(*Merlangius merlangus*)



**Hvítingsbróðir**  
(*Trisopterus esmarki*)



**Svartkjaftur**  
(*Micromesistius poutassou*)

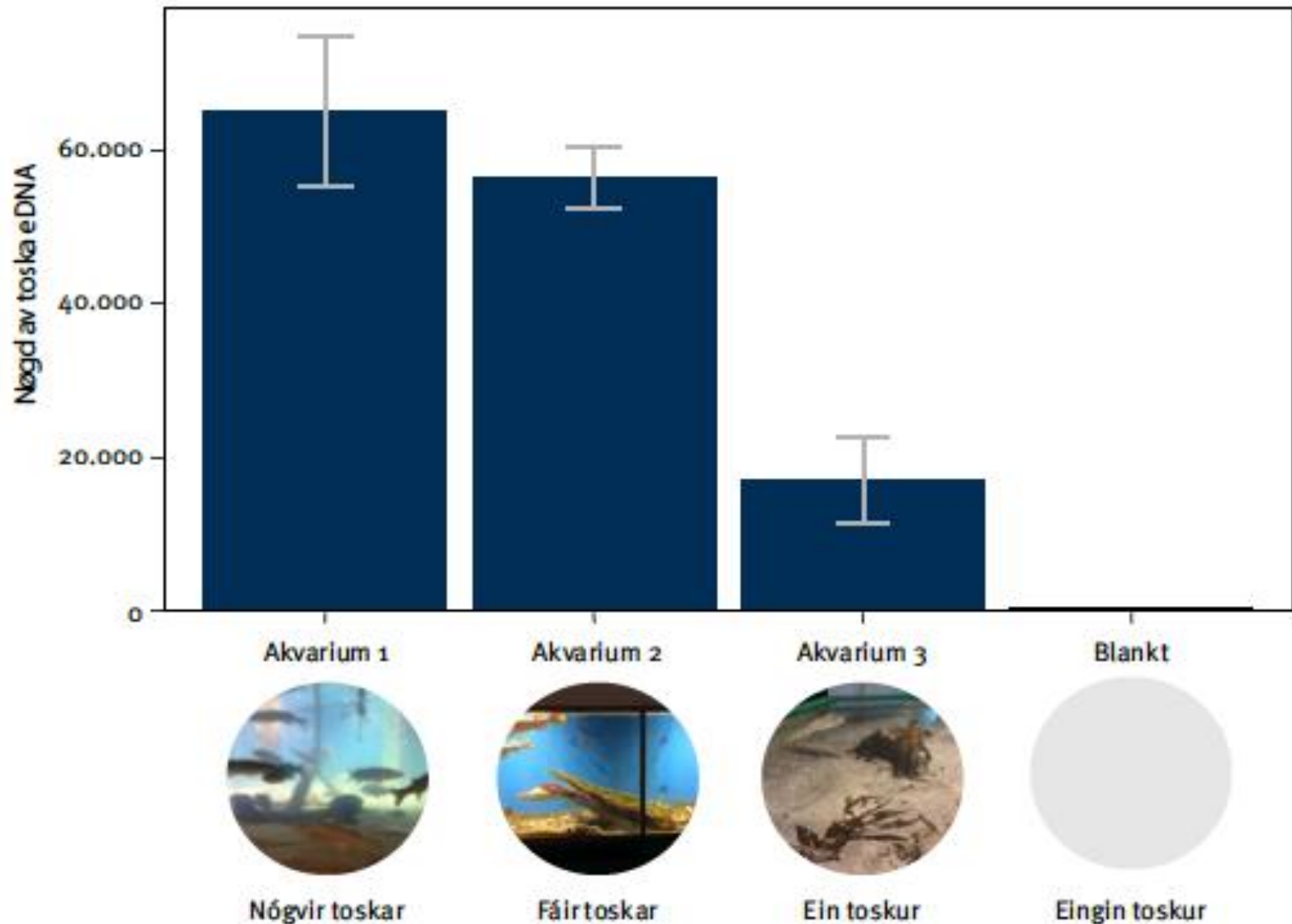


**Silvurmurtur**  
(*Gadiculus argenteus thori*)



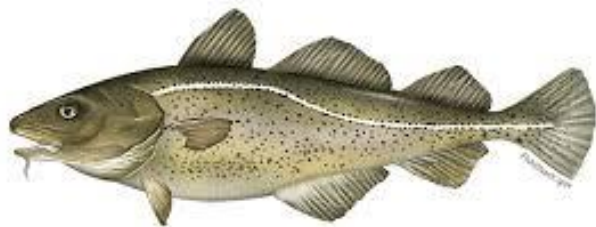
**Glýsa**  
(*Trisopterus minutus*)

# Seta upp eina mannagöngu til að mæla toska DNA í sjógví



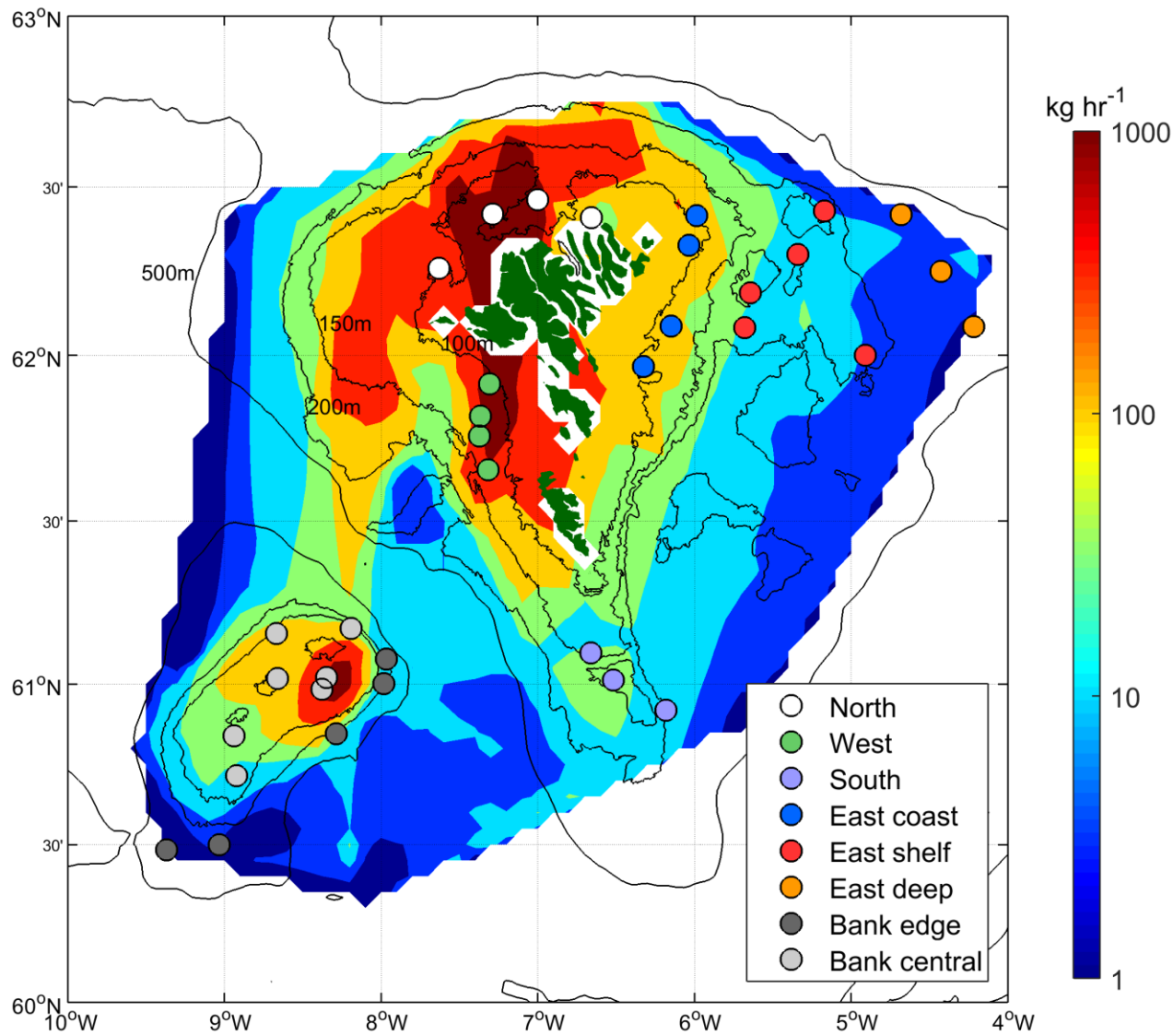
# COD-eDNA: Endamál

1. Seta upp eina mannagongd at máta toska DNA í sjógvi
2. Máta toska DNA í sjógvi kring Føroya
3. Samanbera tosk DNA nøgd við biomassa frá yvirlitstrolingum

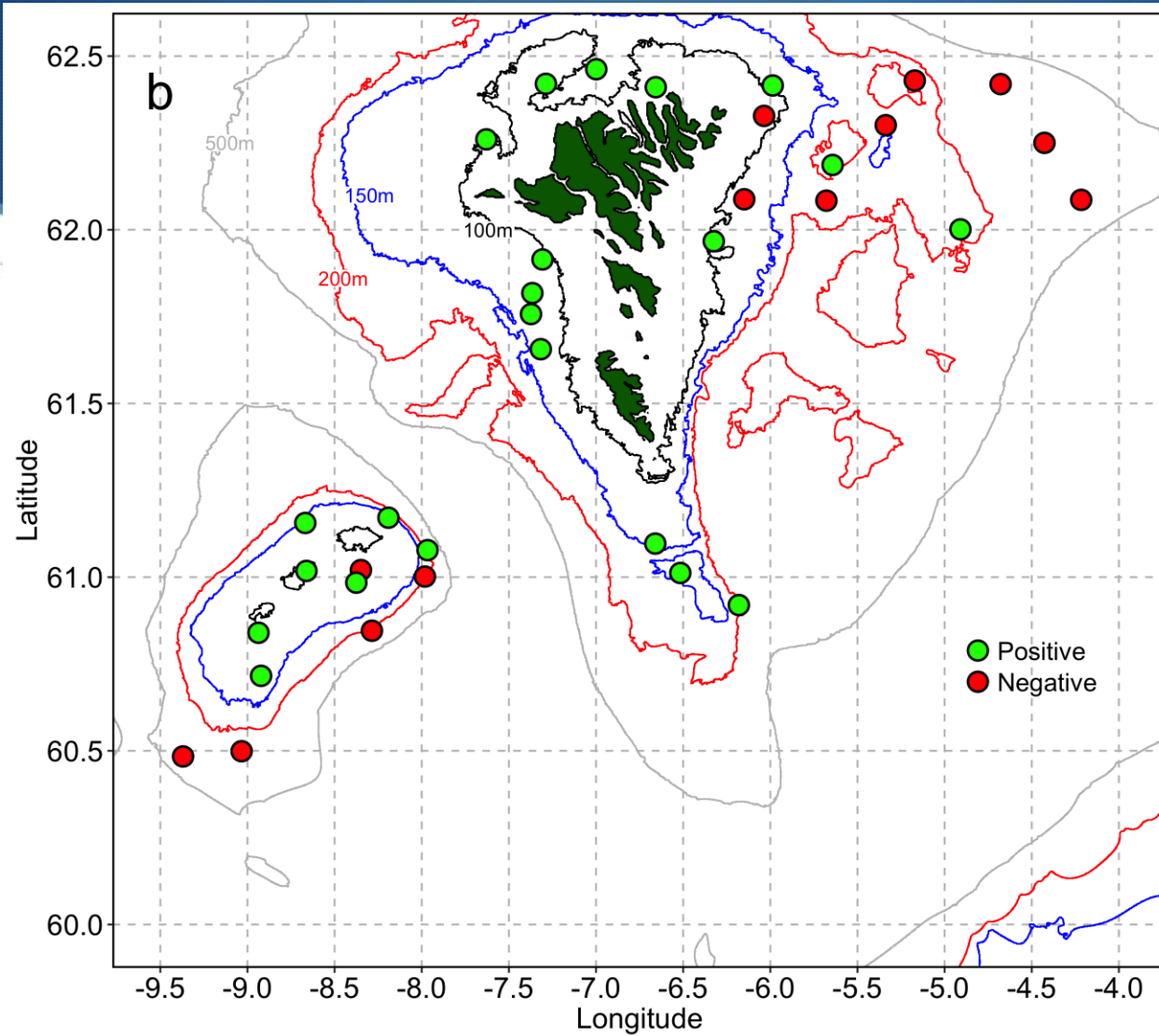


**Fiskivinnugransking**  
Fisheries Research Fund of the Faroe Islands

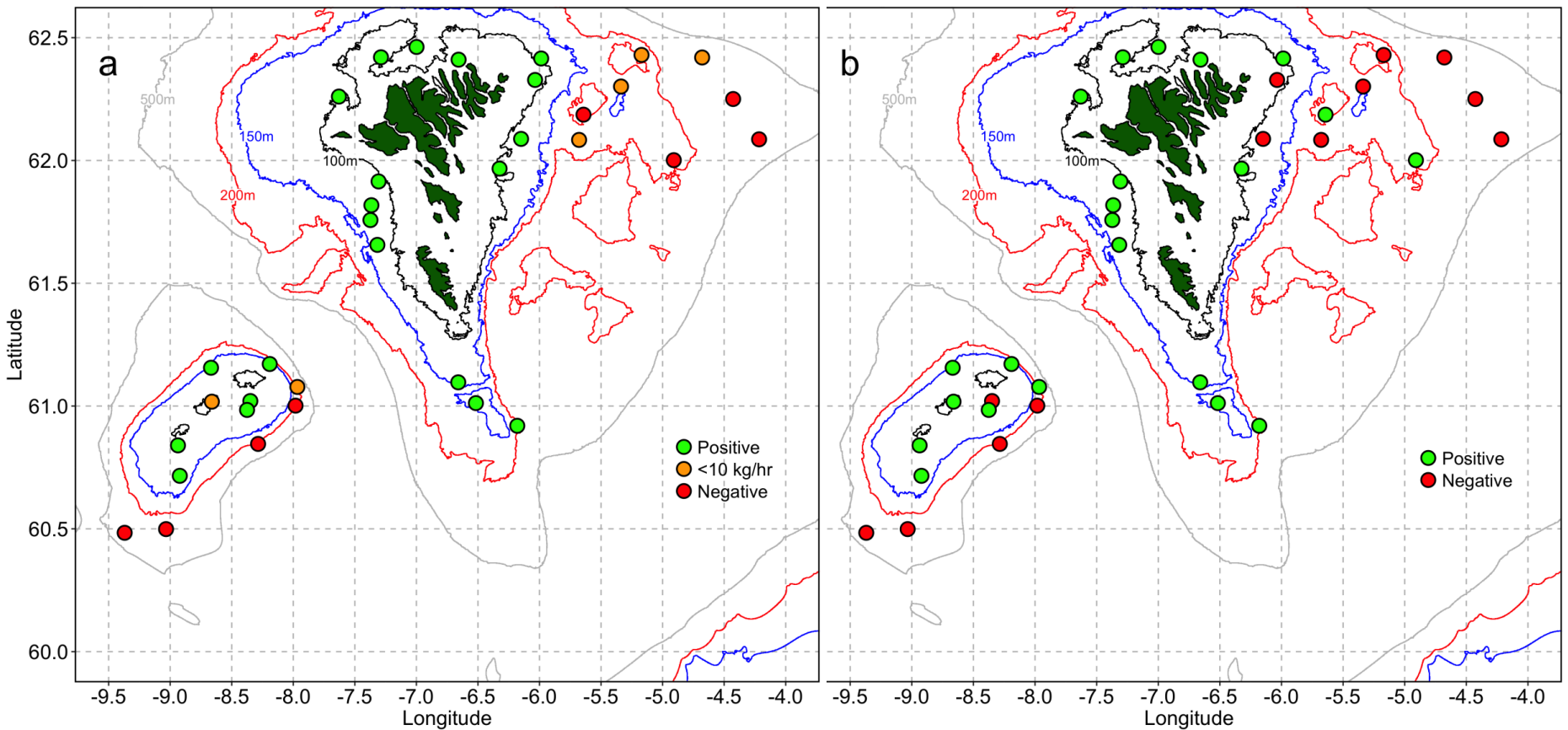




# Yárnátsjónng



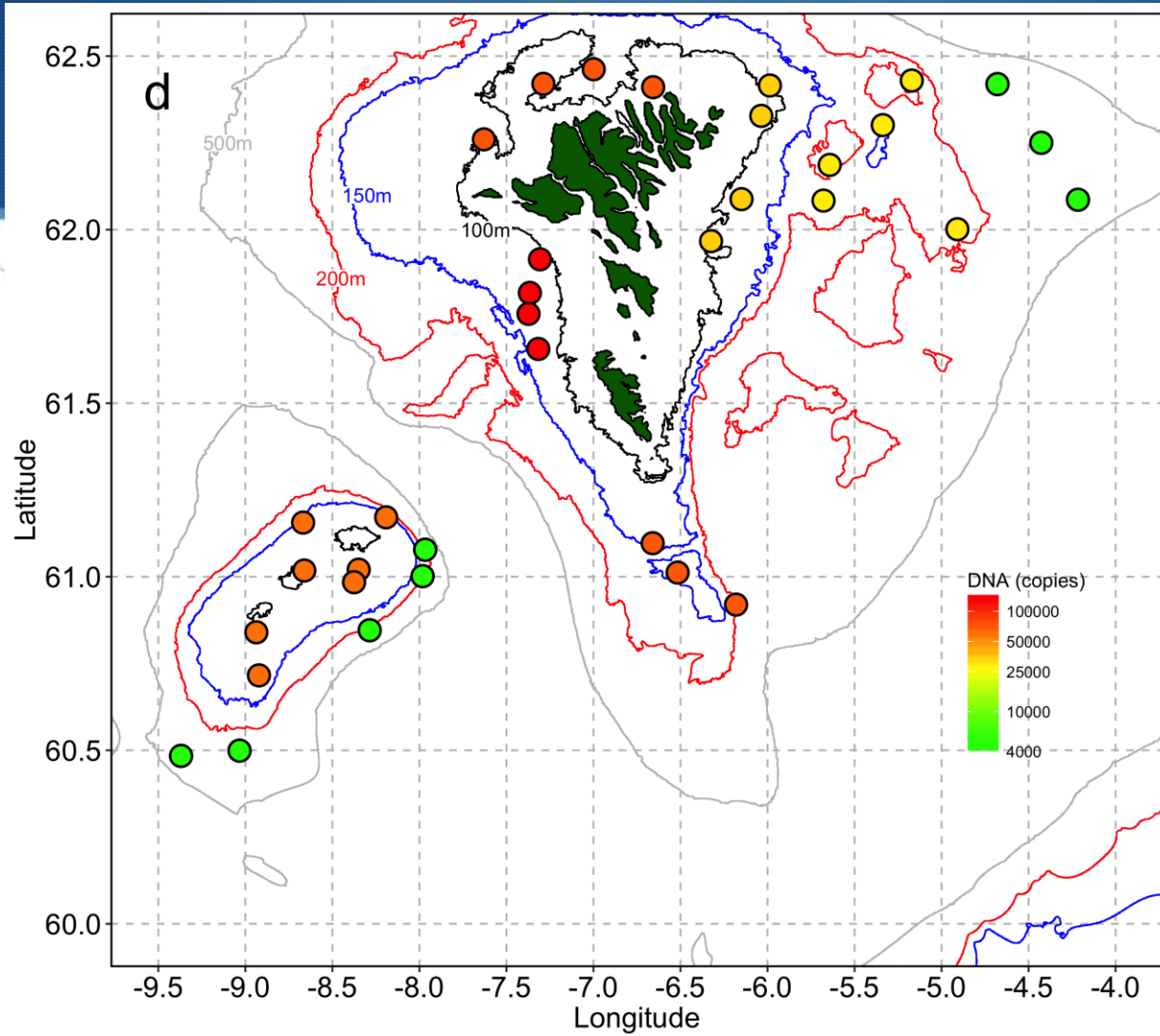
# Samsvar ímillum troling og DNA í sjógv



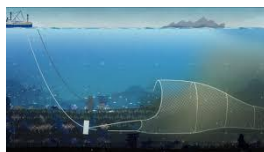
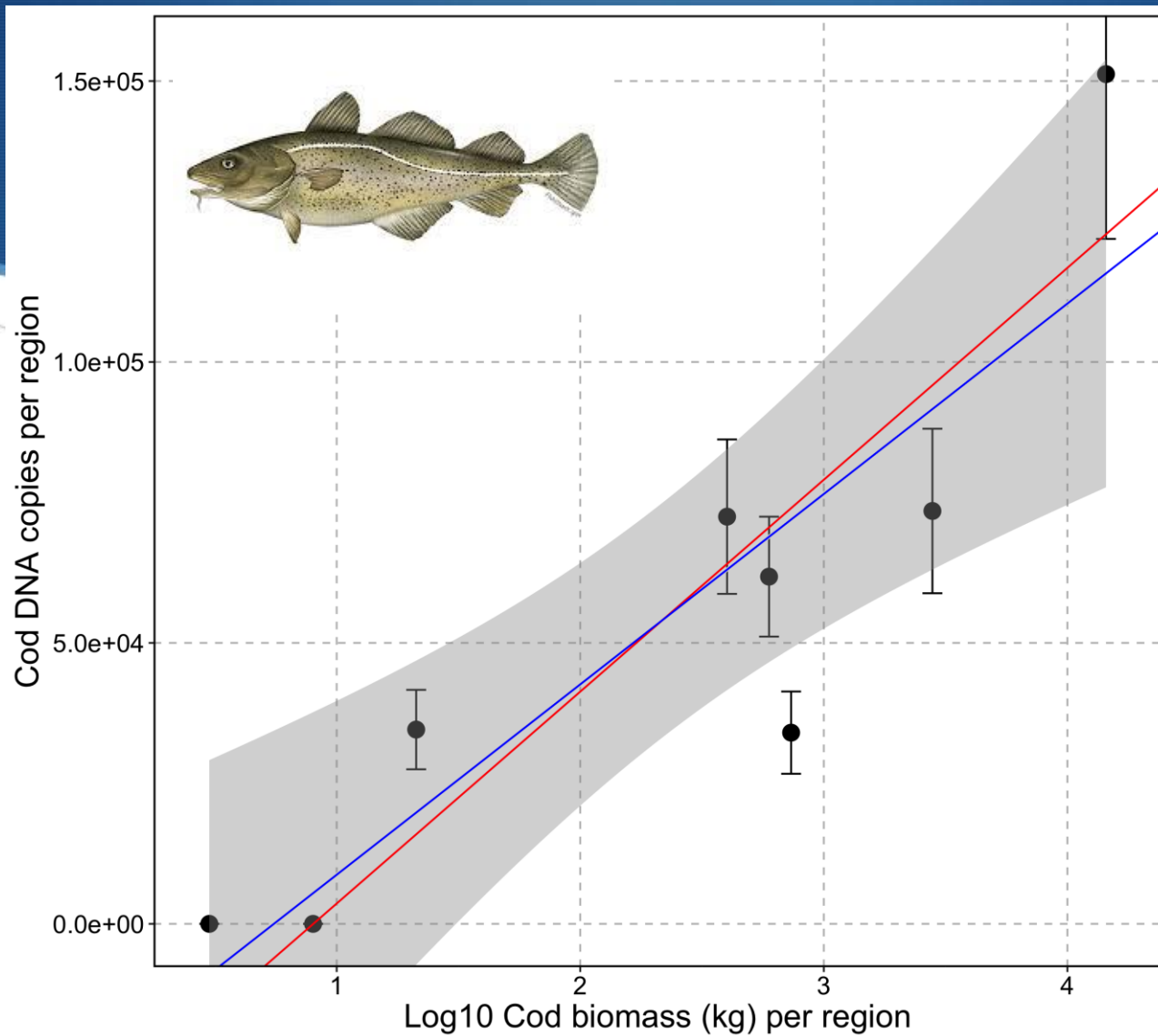
$\geq 80\%$



# Y-DNA Atstæðing – nógð DNA





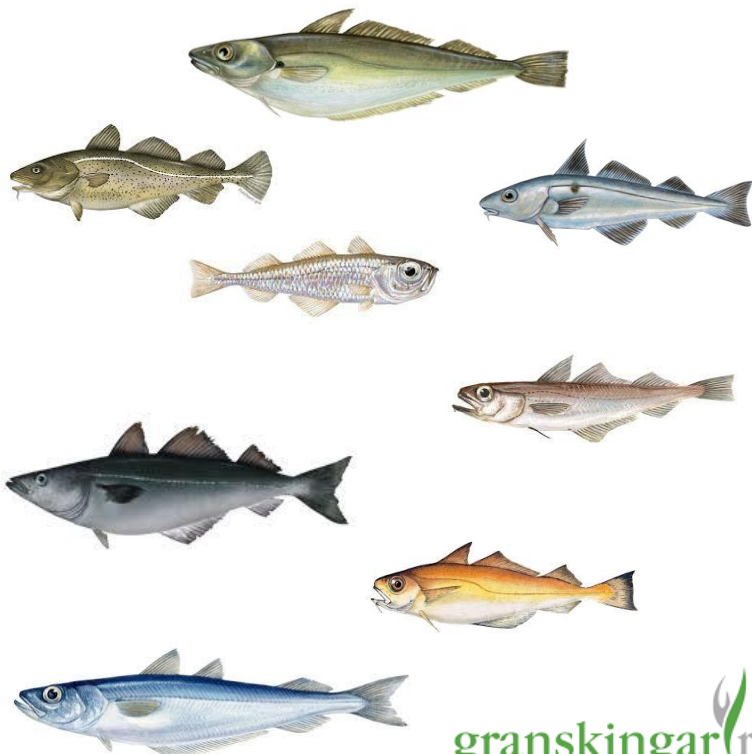


# Hvussu kunnu vit brúka umhvørvis DNA?

## Passive

Hvat er her? / Hvar er hvat?

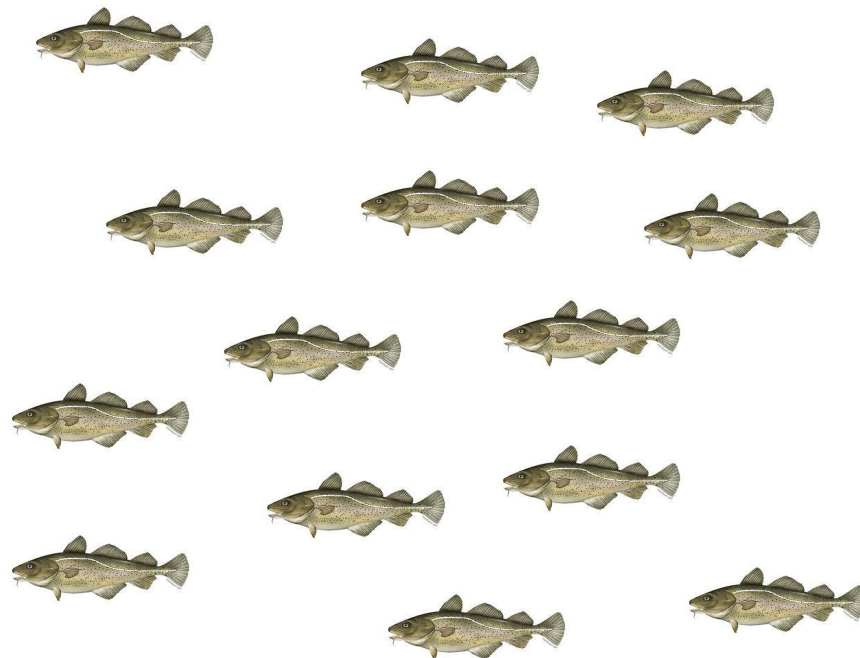
Metabarcoding



## Targeted

Hvussu nógv er her?

Quantitative PCR



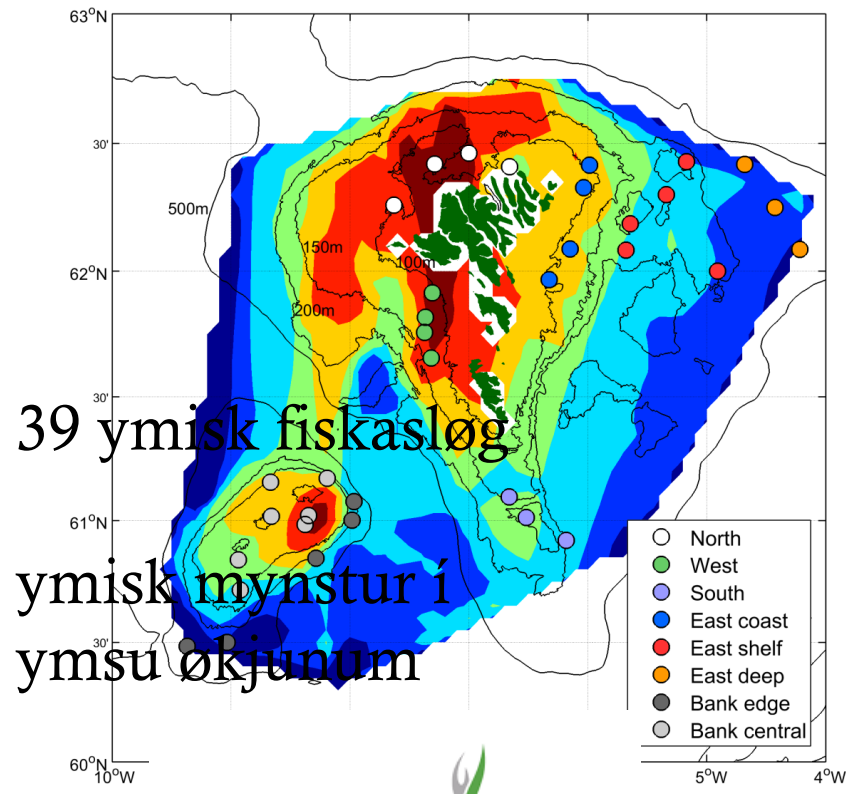
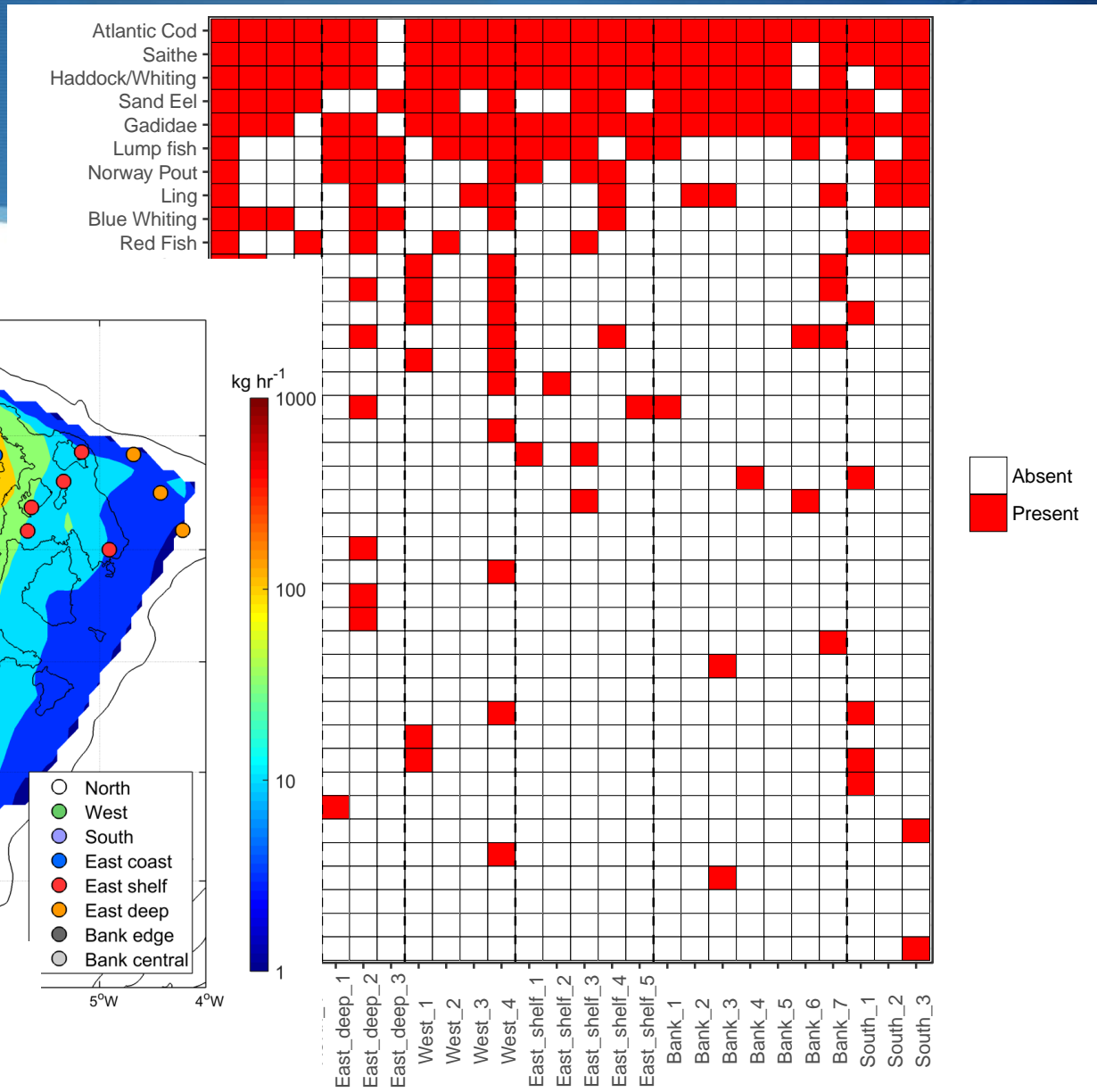
# Listi av fiskaslögum frá eDNA



AGCCCGAATGCCAG  
TCGGGCTTACGGTC

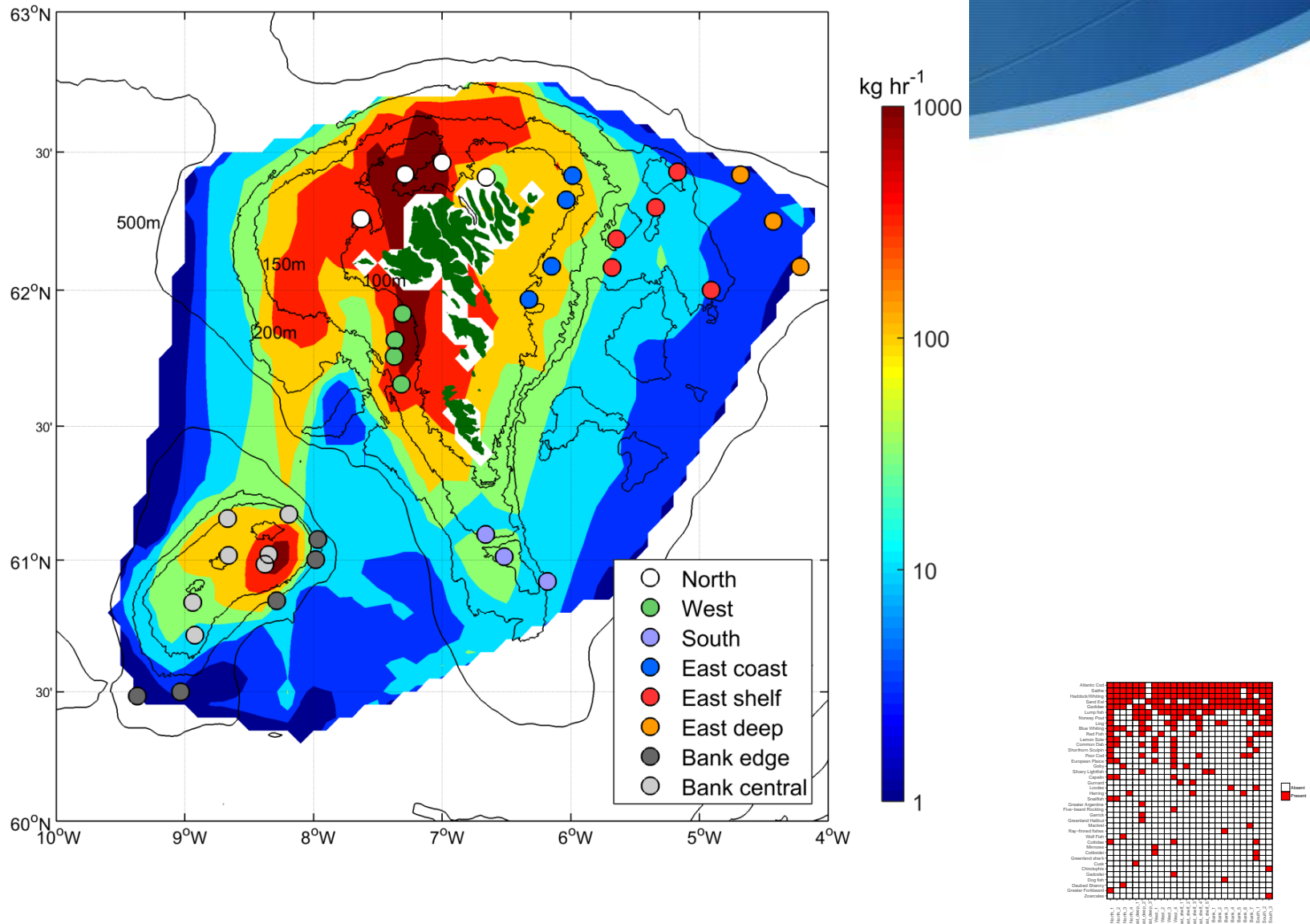


# Listi av fiskasløgum frá eDNA



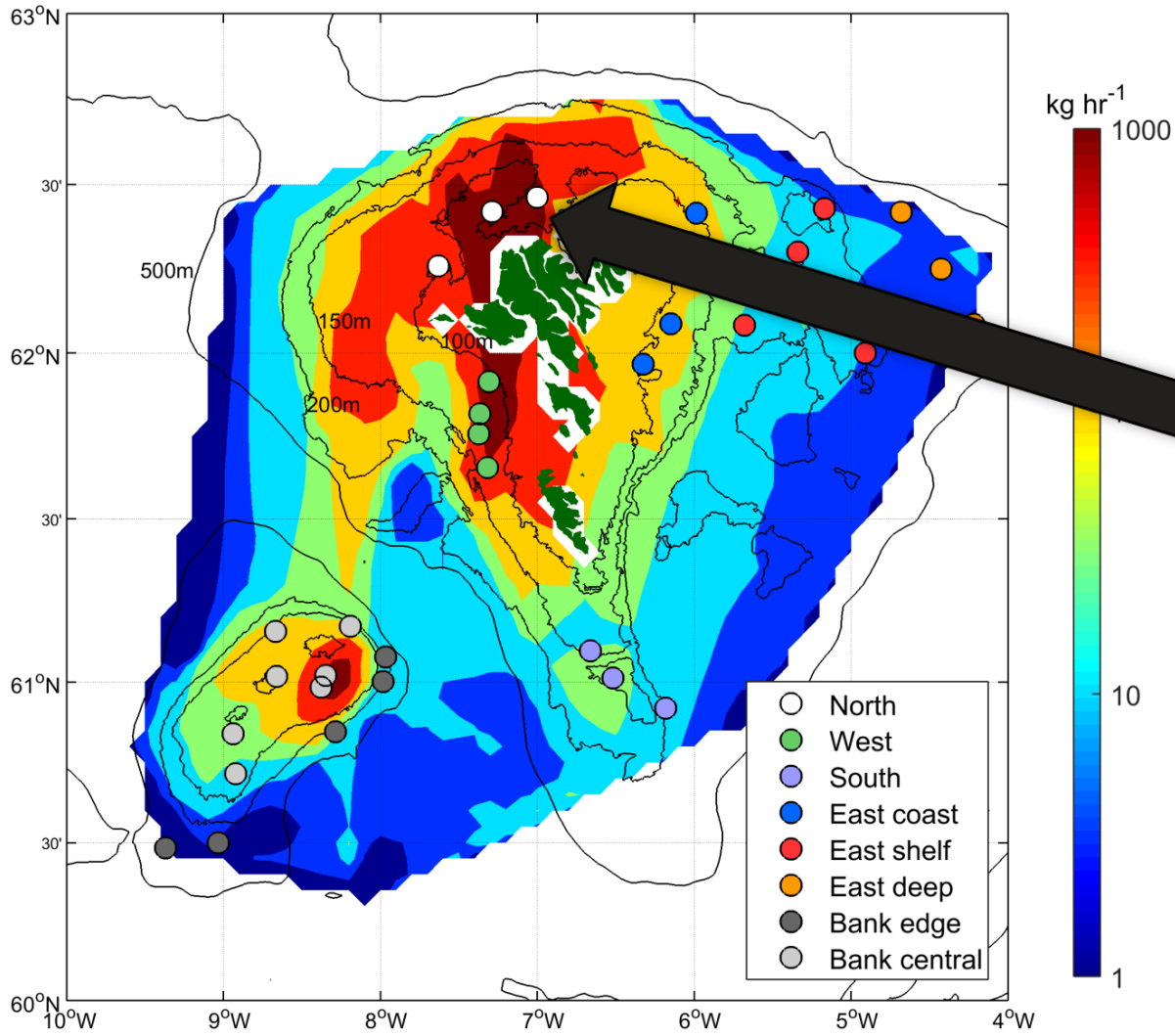
39 ymisk fiskasløg  
 ymisk mynstur í  
 ymsu økjunum

# Listi av fiskaslögum frá eDNA

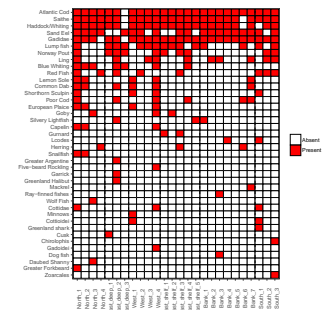
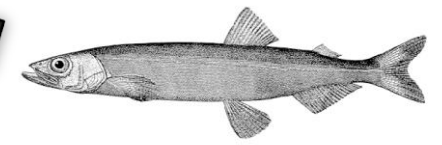




# Listi av fiskaslögum frá eDNA

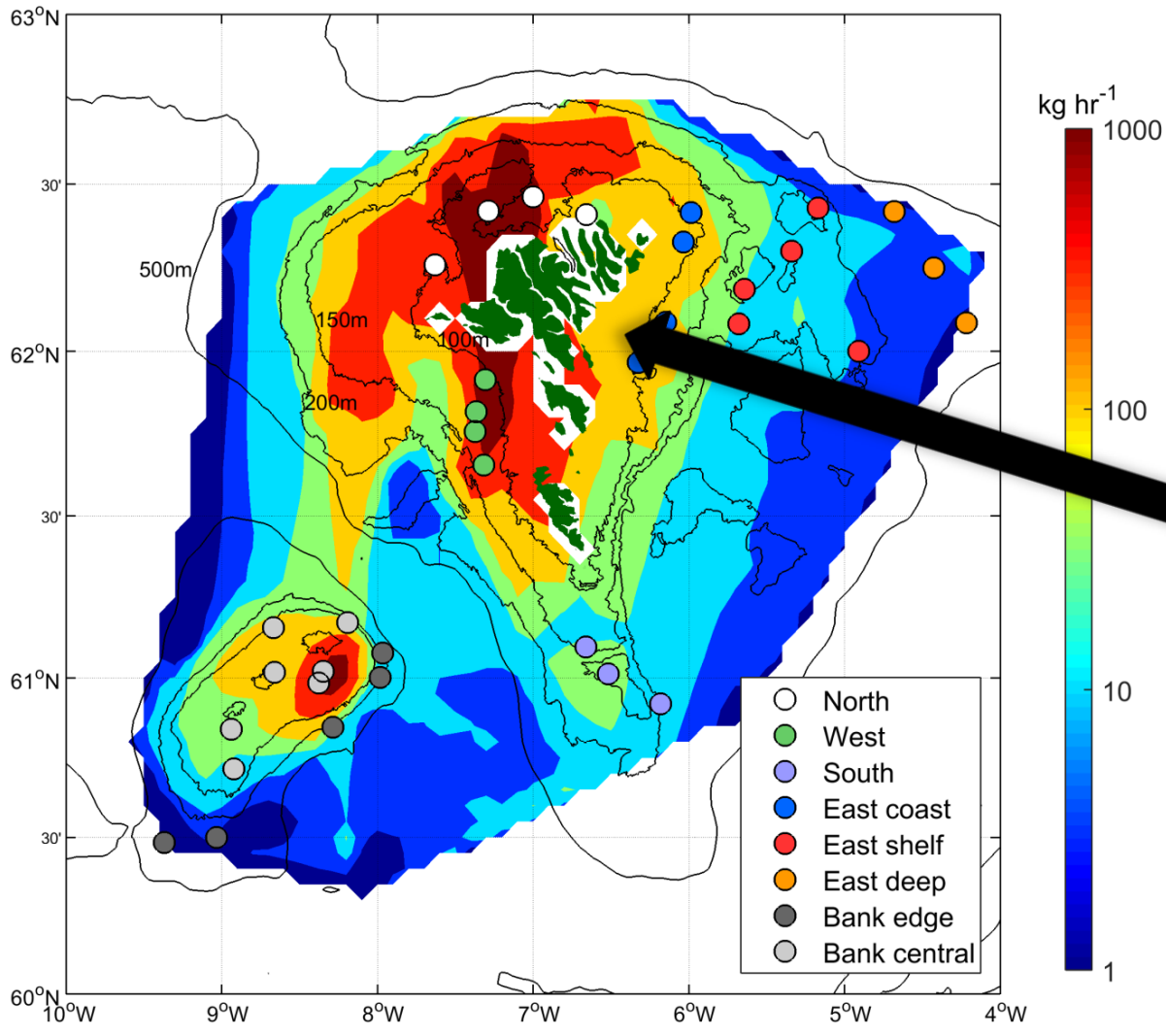


*Lodna* :  
norðanfyrri





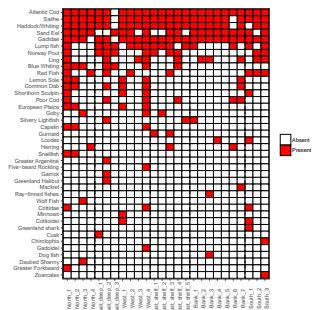
# Listi av fiskaslögum frá eDNA



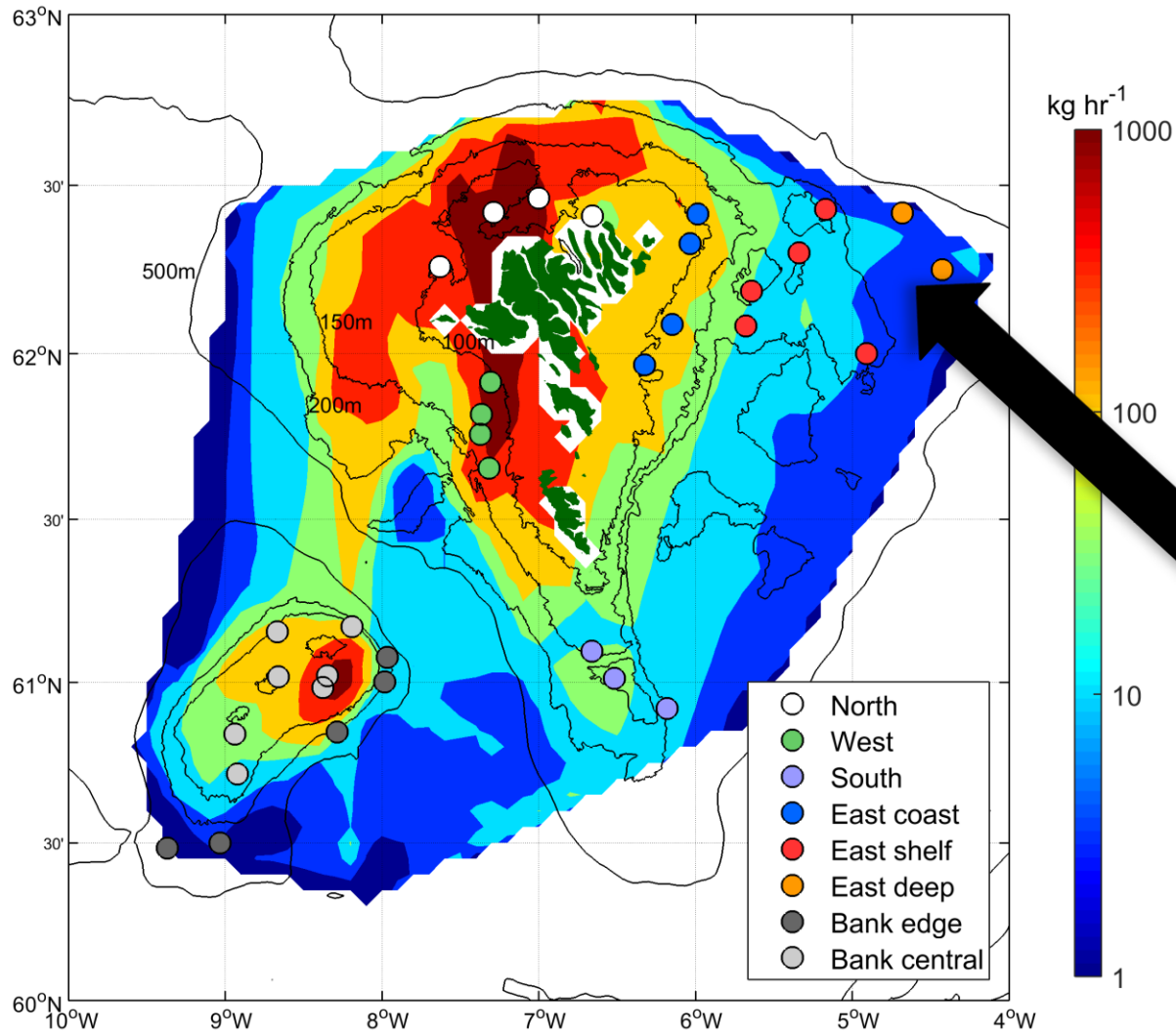
Hvítingsbróður:  
Landgrunnurinn,  
eystanfyri



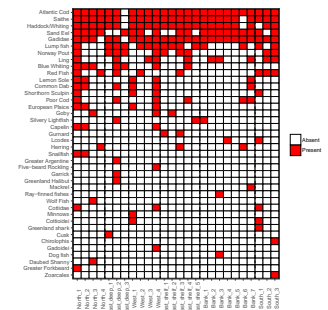
- North
- West
- South
- East coast
- East shelf
- East deep
- Bank edge
- Bank central



# Listi av fiskaslögum frá eDNA



Svartkalvi :  
djúpum vatni  
eystanfyri



# Niðurstøða

- ◆ DNA í sjógvprøvum kann nýtast til at kanna fiskastovnar
- ◆ Kortleggja ymisk fiskasløg við eDNA
- ◆ Meta um nøgd og broytingar av vinnuligum fiskaslögum við eDNA



# Hví DNA prøvar?

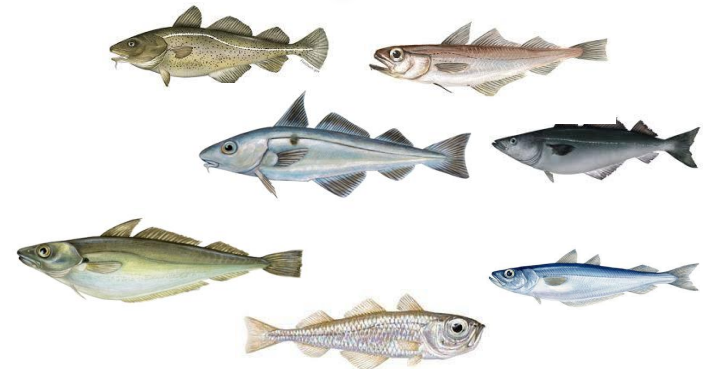
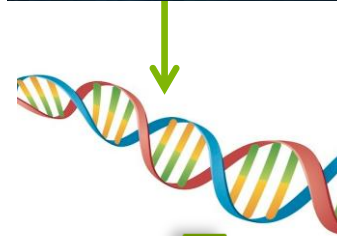
- ◆ **Ikki í staðanfyri yvirlitstroling**
- ◆ **Vitan frá havøki, har vit ikki kunnu ella ikki áttu at trola**
- ◆ *grunnum økjum*
- ◆ *vard øki*
- ◆ *har viðbreknar vistskipanir eru, t.d. koral riv*
- ◆ **Vatnprøvarnir kunnu verða tiknir við robottum**

# Framtíðin fyri hav-observatióinir

vatnprøvar automatisk



Vatnprøvar frá automatiskum undirvatnaskavbátum



# Takk



Takk fyri, at tit komu at lýða á

granskingar ráðið  
RESEARCH COUNCIL FAROE ISLANDS



Fiskivinnugransking  
Fisheries Research Fund of the Faroe Islands

RESEARCH PARK  
**INOVA**



**HAVSTOVAN**  
FAROE MARINE RESEARCH INSTITUTE