



## Rejerådgivning 2014

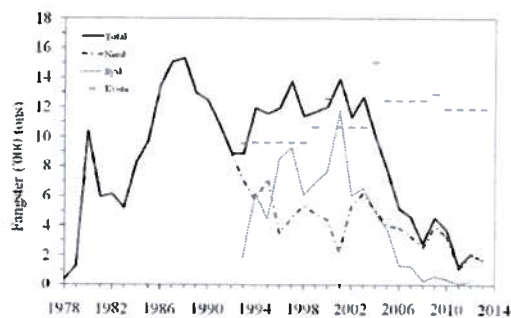
Nuuk 31. september 2013

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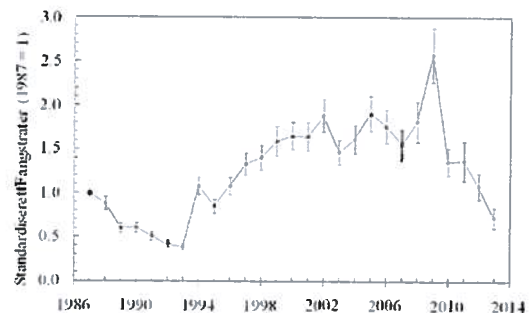
### Orientering vedrørende den biologiske rådgivning for fiskeri på rejebestandene ved Vest- og Østgrønland for 2014

Rådgifningen for fiskeri efter rejer ved **Vestgrønland** for 2014 er uændret på 80.000 tons (se kort resume på side 2 og bilag 1).

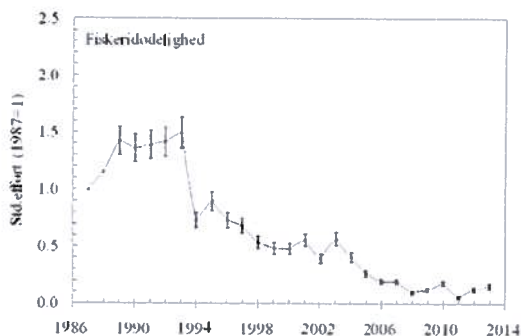
**Rådgifningen for fiskeri efter rejer i Østgrønland for 2014** er at fangsterne ikke bør overstige nuværende fangstniveau på 2.000 tons. I en årrække lå rådgivning på 12.400 tons, men data fra både fiskeri og biologiske undersøgelser har de senere år vist en nedgang i bestanden og nuværende fangstniveau på 2.000 tons vurderes ikke at være bæredygtigt på længere sigt. Bestandsvurderingen i det sydlige område (syd for 65°N) er usikker som følge af et lavt fiskeritryk siden midten af 2000 tallet. Nedgangen i bestanden er sammenfaldende med en stigning i forekomsten af torsk (torsk spiser rejer).



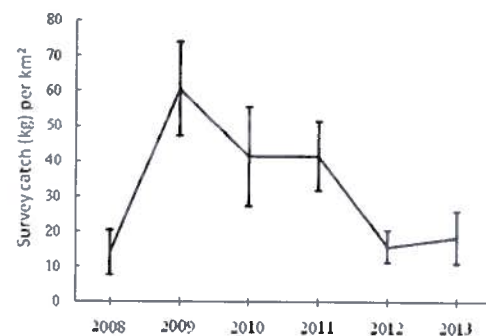
Figur 1. Fangster i Østgrønland



Figur 2. Biomasse fra logbøger (fangstrater)



Figur 3. Fiskeridødelighed (indeks)



Figur 4. Biomasse fra survey

**Rådgivningen for fiskeri efter rejer ved Vestgrønland for 2014** er uændret på 80.000 tons. Der er ikke betydende forandringer i bestanden og med fangster på 80.000 tons i 2014 er risikoen for at overskride den bæredygtige dødelighed ( $Z_{msy}$ ) på 32 %, hvilket er samme risiko niveau som sidste års rådgivning.

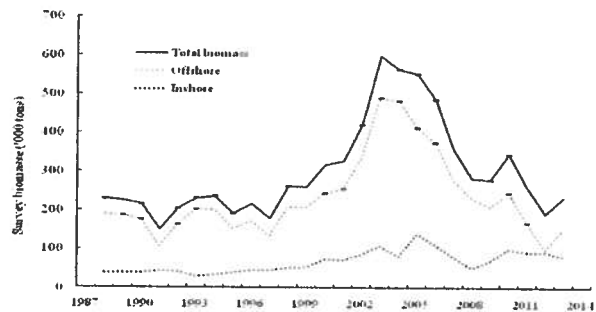
Den matematiske model, der benyttes i rådgivningen inddrager fangsterne (det samlede udtag af bestanden), fangstrater (CPUE fra logbøger) og biologiske undersøgelser (surveys på biomasse), samt et mål for biomassen af torsk (fordi torsk spiser af rejer). Modellen viser ikke betydende ændringer i forhold til sidste år (Figur 7).

De biologiske undersøgelser fra 2013 har registreret en stigning i bestanden i forhold til 2012, men sammenlignet med de seneste 20 år er bestanden fortsat på et lavt niveau (Figur 6). Der er endvidere fortsat lav rekruttering af små rejer til det kommende fiskeri (figur 8) og bestanden består af rekord mange hunner, hvorved fiskeriet vil reducere den gydende del af bestanden. Biomassen af torsk i rejeområderne er steget i 2012 og 2013 og dødeligheden forårsaget af torsk er derfor steget.

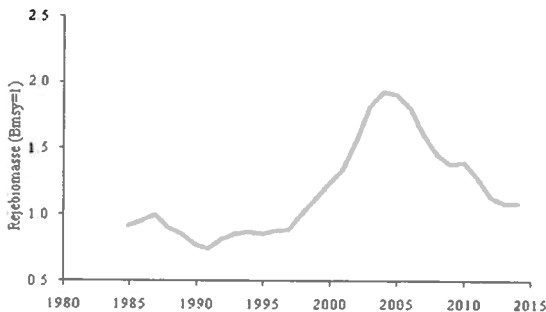
De samlede fangster steg fra 80.000 tons i 1998 til ca. 150.000 tons/år i perioden 2004-2008 (figur 5). Siden 2009 faldt fangsterne som følge af lavere kvotefastsættelse i Grønland. Fangsterne i 2013 forventes at være på 100.000 tons. Biomasse indikatoren fra fiskeriet (fangstrater kg/time) viser en nedgang siden 2008. Fiskeriet har i flere år koncentreret indsatsen til stadig mindre områder og fiskeriet foregår i dag, i området nord for Store Hellefiskebanke og i Diskobugten.



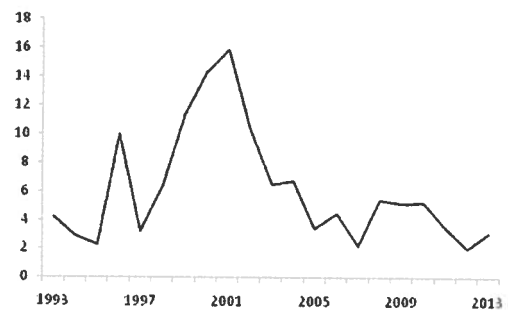
Figur 5 Totale fangster ('000 tons)



Figur 6 Biomasse (biologiske undersøgelser) indenskærs og udenskærs



Figur 7. Biomasseudvikling fra model



Figur 8. Antal af 2 årige rejer fra 1993 til 2013.

I bilag 1 og 2 er de engelske sammendrag af rådgivningen fra NAFO for henholdsvis Vest- og Østgrønland. Status for andre rejebestande i Nordatlanten blev endvidere vurderet på samme møde og den samlede rapport indeholder status og rådgivning for rejer på Flemish Cap og Grand Bank, samt status for bestandene af rejer i Barentshavet og Skagerak.

GN har skrevet og fremlagt i alt 7 dokumenter, der tilsammen danner baggrunden for rådgivningen for Vest- og Østgrønland. Rådgivningen for rejer er formuleret på det seneste møde under NAFO/ICES, som blev afholdt 09–19 september 2013. På mødet deltog i alt 16 forskere fra Canada, EU, Norge, Rusland og fra Grønland (GN) deltog seniorforsker Michael Kingsley, forsker Nanette Hammeken Arboe, forsker AnnDorte Burmeister og afdelingschef Helle Siegstad. Den officielle rådgivning findes på NAFOs ([www.NAFO.int](http://www.NAFO.int)) hjemmeside. Den engelske rapport over rådgivningen fra NAFO består af mere end 100 sider A4, som Departement og Styrelsen for Fiskeri modtager en kopi af.

Bemærk at NAFO/ICES møde til vurdering af rejebestandene i Nordatlanten afholdes i Nuuk i 2014.

GN vil snarest invitere forvalterne og rejefiskerne til en grundig gennemgang af baggrunden for rådgivningen, herunder besvare spørgsmål og udveksle viden.

Med venlig hilsen

  
Helle Siegstad, Afdelingschef

## Bilag 1: Northern Shrimp in Subarea 1 and Div. 0A

### Advice for 2014

Scientific Council advises that catches in 2014 should not exceed 80 000 t. Scientific Council observed no significant changes in the state of the stock. A catch of 80 000 t in 2014 would entail an estimated mortality risk of 32% and would not, in the medium term, entail a high risk of driving the stock below  $B_{msy}$ .

### Management objectives

Scientific Council is aware of the Greenland management plan for shrimp and of general management objectives specified in the Greenland Fisheries Act; however the contents of these have not been conveyed to the Council. Canada requested Scientific Council to provide advice on this stock within the context of the NAFO Precautionary Approach Framework (SCS Doc. 13/04).

Advice is based on risk analysis coming from a quantitative model, and on qualitative evaluation of biomass and stock-composition indices.

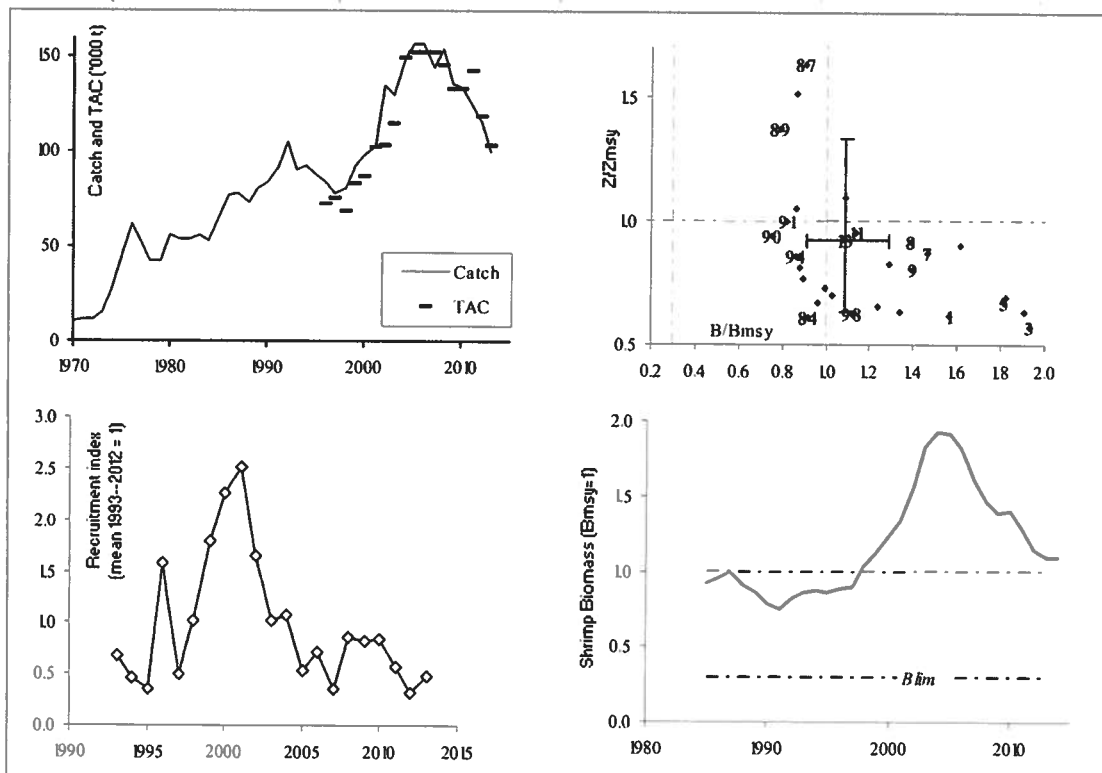
Objective	Status	Comment/consideration
Apply Precautionary Approach	●	Stock status is both estimated and forecast relative to precautionary reference points <span style="float: right;">● OK</span>

### Management unit

The stock, considered distinct from all others, is distributed throughout Subarea 1, extends into Div. 0A east of 60°30'W, and is assessed as a single stock.

### Stock status

Biomass is estimated to have been declining since 2004, but at the end of 2013 is projected to be about 10% above  $B_{msy}$ . Total mortality in 2013 is not projected to exceed  $Z_{msy}$ . But the stock comprises a high proportion of females, so fishing will risk removing much of the spawning-stock biomass, and recruitment to both the fishable and the spawning stocks in both short and medium terms are all expected to remain low.



**Reference points**

$B_{lim}$  is 30% of  $B_{MSY}$  and the limit reference point for mortality is  $Z_{MSY}$  (FC Doc. 04/18).

**Projections**

Projections for 2014 and 2016 were made with catch levels ranging from 50 to 110 Kt/yr and a cod stock biomass at 40 Kt.

2014				2016			
Catch (Kt/yr)	Probability (%) of transgressing:			Catch (Kt/yr)	Probability (%) of transgressing:		
	$B_{msy}$	$B_{lim}$	$Z_{lim}$		$B_{msy}$	$B_{lim}$	$Z_{lim}$
50	34.3	1.8	18.3	50	30.1	3.1	19.3
60	35.2	1.7	21.4	60	31.3	3.1	23.2
70	36.2	1.8	26.5	70	34.4	3.2	28.1
75	36.4	1.7	29.0	75	35.4	3.5	30.9
80	37.5	2.0	32.3	80	37.6	3.6	34.2
85	37.6	1.8	36.3	85	38.6	3.4	37.3
90	38.3	1.9	39.2	90	39.7	3.7	40.7
100	39.3	1.7	45.9	100	42.4	3.6	47.3
110	40.1	1.8	52.1	110	44.5	3.9	54.0

**Assessment**

The analytical assessment was run with the same methods as in 2011–12 and with updated data series; the cod-stock estimate for 2012 was 2½ times that used in the 2012 assessment. The model converged with no pathologies and most of the error CVs had similar values to those of previous years. The CV of the term for cod predation was larger than in 2012 (SCR Doc. 13/054).

*Human impact*

Mortality in the directed fishery has been well documented. Other human impacts, including bycatch in other fisheries prosecuted on the same grounds, have not.

*Biological and Environmental Interactions*

Cod is an important predator on shrimps. This assessment incorporates this interaction.

**Fishery**

Shrimps are caught in a directed trawl fishery. Bycatch of fish in the shrimp fishery is around 1% by weight. The fishery is regulated by TAC, and bycatch reduction measures include moving rules and Nordmøre grates.

Recent catches and TACs (t) have been as follows:

	2006	2007	2008	2009	2010	2011	2012	2013
NIPAG	157 315	144 190	152 749	135 458	133 990	123 985	115 975	100 000 <sup>1</sup>
STATLANT 21	156 976	144 123	148 550	133 990	129 179	123 195	115 080	—
Enacted TAC <sup>2</sup>	152 380	152 417	145 717	132 987	132 987	142 597	118 596	102 767

<sup>1</sup> provisional—projected to year end; <sup>2</sup> sum of TACs autonomously set by Canada and Greenland.

**Effects of the fishery on the ecosystem**

Measures to reduce effects of the fishery on the ecosystem include area closures and moving rules to protect sponges and cold-water corals, and gear modifications to reduce damage to benthic communities.

**Special comments**

The future trajectory of the stock is likely to depend on the evolution of the stock of cod, which has recently been erratic and is difficult to predict.

**Source of Information**

SCR Docs 04/75, 04/76, 08/6, 11/053, 11/057, 11/058, 12/44, 13/54, 13/56, 13/57, 13/58, 13/59, SCS Doc. 04/12.

## Bilag 2: Northern Shrimp in Denmark Strait and off East Greenland

### Recommendation for 2014

Stock size indicators have declined over the most recent 5 years. Although the exploitation index has been low, average catches for that period appear not to be sustainable. Scientific Council advises that catches should not exceed the current catch level of 2 000 t.

### Management objectives

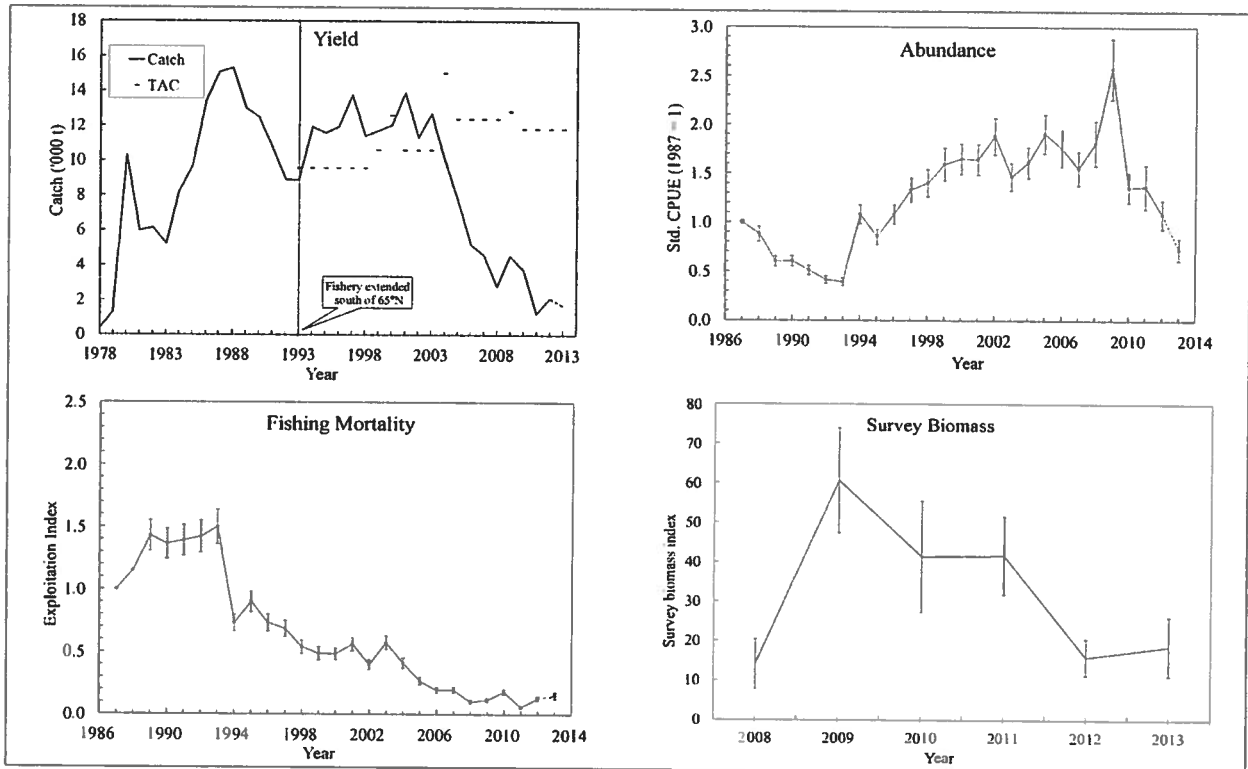
Scientific Council is aware of general management objectives specified in the Greenland Fisheries Act; however the contents of these have not been conveyed to the Council.

Advice is based on qualitative evaluation of biomass indices in relation to historic levels.

### Management unit

The shrimp stock is distributed off East Greenland in ICES Div. XIVb and Va and is assessed as a single population.

### Stock status



The decrease in stock size continued in 2013 despite several years of very low exploitation rates.

### Reference points

No reference points have been established for this stock

### Projections

Quantitative assessment of risk at various catch options is not possible for this stock at this time.

### Assessment

No analytical assessment is available. Evaluation of stock status is based upon interpretation of commercial fishery and research survey data.

#### *Human impact*

Mortality in the directed fishery has been well documented. Other human impacts, including bycatch in other fisheries prosecuted on the same grounds, have not.

#### *Biological and Environmental Interactions*

Cod is an important predator on shrimp. The cod stock has been increasing in East Greenland waters in recent years.

#### **Fishery**

Shrimp is caught in a directed trawl fishery. The fishery is regulated by TAC and bycatch reduction measure include move on rules and Nordmøre grates.

Recent catches were as follows:

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013 <sup>1</sup>
NIPAG	10016	7753	5189	4600	2794	4555	3735	1235	2109	1702
Enacted TAC	15043	12400	12400	12400	12400	12835	11835	12400	12400	12400

<sup>1</sup> To July 2013

#### **Effects of the fishery on the ecosystem**

Measures to reduce effects of the fishery on the ecosystem include move-on rules to protect sponges and cold-water corals, and gear modifications to reduce damage to benthic communities.

#### **Special comments**

The southern area (South of 65°N) is currently lightly fished and the state of the stock in this area is uncertain.

#### **Source of Information**

SCR Doc. 13/062, 13/067

**c) Harvest Control Rules and  $B_{msy}$**

Scientific Council was requested by Denmark on behalf of Greenland and the Faroe Islands to: *report on whether the pending harvest control rules will be able to keep the stock at or above  $B_{msy}$ .*

The Scientific Council responded:

Scientific Council has been informed of the harvest control rules (HCR) included in the shrimp management plan promulgated in 2010.

Scientific Council considered a report of a simple simulation that, within its limitations, confirmed Scientific Council's initial evaluation that the mortality-risk limits included in the management plan were conservative and would be highly likely to keep the stock at or above  $B_{msy}$ , but would also be likely to entail a high cost in forgone catches. Scientific Council has noted that the biomass-risk criteria that are included in this HCR cannot be met in the short term by catch controls, so in that respect the HCR is difficult to implement.

However, Scientific Council was not clear whether this HCR is the 'pending harvest control rule' referred to in the request or whether alternatives are already being considered, and therefore encourages the Greenland Government to make further progress in refining its proposals with respect to formulating, testing and implementing a possibly revised HCR.

Scientific Council draws attention to its earlier caution that thorough testing of an HCR is likely to be a lengthy and complex task, and to require the participation of all parties concerned in the fishery (SCS Doc. 11/21).