PINNGORTITALERIFFIK
GRØNLANDS NATURINSTITUT

Postboks 570
3900 Nuuk
Grønland

Tlf. 36 12 00
Fax 36 12 12
www.natur.gl

5. oktober 2017
J.nr. 20.00-11

Sammendrag af rådgivning for 2018 om fiskeri på rejebestandene ved Vest- og Østgrønland

Dette sammendrag beskriver kort ændringer i forhold til sidste års rådgivning og præsenterer de anbefalede fangstmængder fra NAFO. Anbefalingerne uddybes i Appendiks.

Betydende ændringer i forhold til 2017-rådgivningen

Den anbefalede fangstmængde for rejer ved Vestgrønland stiger til 105.000 tons i 2018 fra tidligere 90.000 tons.

Rådgivning for 2018

Rejer

Vestgrønland	105.000 tons. Rådgivning for 2017: 90.000 tons. Total fangst forventet i 2017: ca. 90.000 tons.

Rejer

Østgrønland	2.000 tons. Rådgivning for 2017: 2.000 tons. Total fangst forventet i 2017: < 1.000 tons.

Den officielle rådgivning, som Departementet for Fiskeri modtager en kopi af, findes på NAFOs hjemmeside (www.nafo.int). Grønlands Naturinstitut har udarbejdet baggrundsdokumenter med relevante informationer i forbindelse med rådgivningsprocessen. Hvis der ønskes yderligere dokumentation, står Naturinstituttet naturligvis til rådighed.

Grønlands Naturinstitut vil snarest invitere repræsentanter fra forvaltningen og erhvervet til en grundig gennemgang af baggrunden for rådgivningen, herunder besvarelse af spørgsmål og udveksling af viden.

Med venlig hilsen

Helle Siegstad, afdelingschef

Appendiks

Rådgivningens engelske originaltekst findes sidst i dokumentet.

Rejer i Vestgrønland

NAFO rådgiver, at fangsterne i 2018 ikke bør overstige 105.000 tons. Det er en stigning på 17 % fra 90.000 tons i 2017.

Om rådgivningen

Fangstniveauet ved *Vestgrønland* er fastsat med udgangspunkt i, at rejebestanden viser fremgang i biomassen både fra de biologiske undersøgelser og fra fiskeridata samt i modelberegninger.

Modellen, der beregner udviklingen i bestanden, anvender som i tidligere år rejefiskeriets fangster (Figur 1), rejebiomassen beregnet ud fra de biologiske undersøgelser og fra fiskeriets fangstrater, samt biomassen af de torsk, der spiser rejer.

Modellen har beregnet en maksimal biomasse i 2004 og herefter et fald frem til 2013. Biomassen er siden øget en anelse og er i slutningen af 2017 beregnet til at være 39 % over den biomasse, der kan sikre et optimalt bæredygtigt udbytte af rejebestanden (Figur 2).

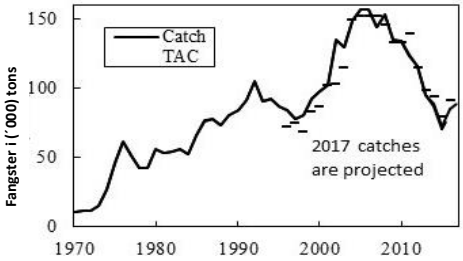
Antallet af 2-årige rejer, der forventes at komme ind i fiskeriet inden for de næste fire år, er under gennemsnittet og har generelt været på et lavt niveau de sidste 12 år – dog med undtagelse af 2015 (Figur 4).

Den totale dødelighed (fiskeri og naturlig dødelighed) har i de seneste 25 år ligget lavt, og dødeligheden er i 2016 og -17 den laveste i tidsserien (Figur 3).

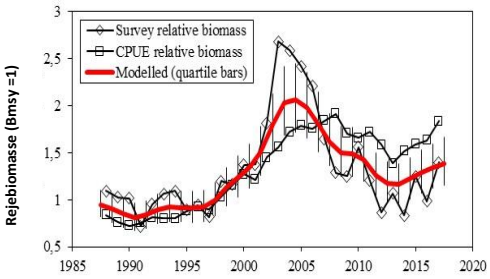
Tabel 1. Totale landinger (tons) af rejer i Vestgrønland og Canada fra 2011 til 2017

År	2011	2012	2013	2014	2015	2016	2017
Grønland	122.659	115.965	95.379	88.765	72.254	84.356	89.0001
Canada	1.330	12	2	0	2	1.171	1.0001

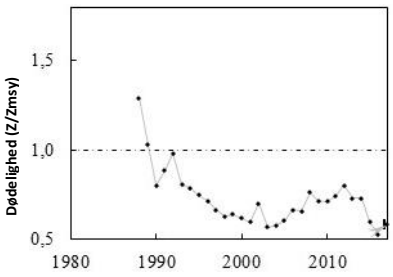
[1] forventet



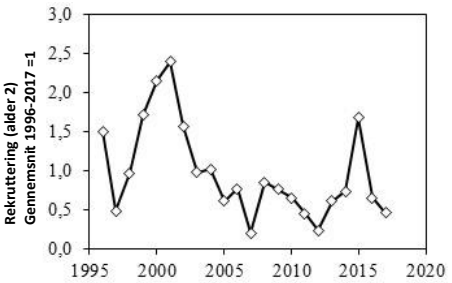
Figur 1. Samlede fangster fra 1970-2017



Figur 2. Biomasse af rejer (fra model)



Figur 3. Total dødelighed (fiskeri og naturlig dødelighed)



Figur 4. Rekruttering (alder 2)

Det videnskabelige råd bemærker, at rådgivningen tidligere har accepteret en 35 % risiko for at overskride den dødelighed (Z_{msy}), hvor fiskeriet medfører det maksimale bæredygtige udbytte.

Beregninger fra i år viser dog, at modellen i de senere år ikke fuldt ud afspejler udviklingen i bestanden. Det videnskabelige råd vurderer derfor, at risikoen for at overskride den optimale dødelighed bør sænkes til 20 %, fordi dette niveau vurderes at kunne holde bestanden omkring sin nuværende størrelse. Rådet anbefaler på den baggrund en fangst på 105.000 tons for 2018, svarende til dette risikoniveau.

I lyset af ovenstående vil Naturinstituttet i 2018 arbejde intenst på at udvikle og forbedre modellen, således at beregningerne bedre afspejler udviklingen i bestanden. Især skal modellens følsomhed for inputdata (biomassetidsserier og forekomsten af torsk) undersøges nærmere.

På baggrund af følsomheden i modellen har erhvervet fastholdt, at kvoten bør reguleres med maksimalt ±12½ % pr. år.

Rejer i Østgrønland

NAFO rådgiver, at fangsterne i 2018 ikke bør overstige 2.000 tons. Dette er samme rådgivning som i 2017.

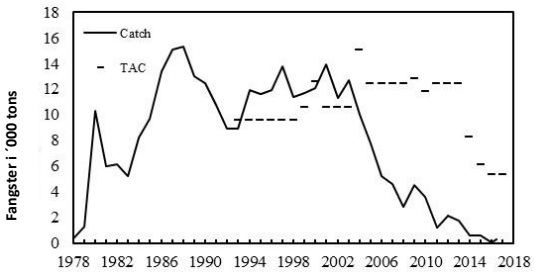
Om rådgivningen

Rådgivningen om rejer ved Østgrønland har siden 2014 været på 2.000 tons.

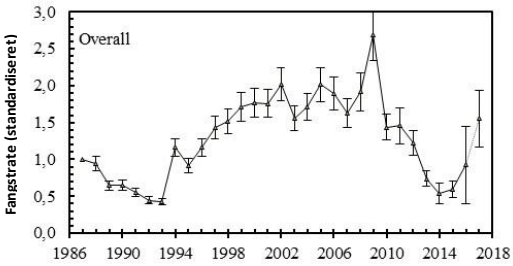
På grund af tekniske problemer med undersøgelsesfartøjet "Pâmiut" blev der ikke gennemført biologiske undersøgelser i 2017. De senere år har fiskeriet efter rejer ved Østgrønland været sporadisk, og NAFOs videnskabelige råd vurderer, at fangstraterne ikke nødvendigvis afspejler bestandens tilstand. Bestanden er forblevet på et lavt niveau på trods af flere år med en lav udnyttelse (Figur 8), og det videnskabelige råd fastholder derfor rådgivningen på 2.000 tons i 2018.

Tabel 2. Totale landinger (tons) af rejer i Østgrønland fra 2011 til 2017

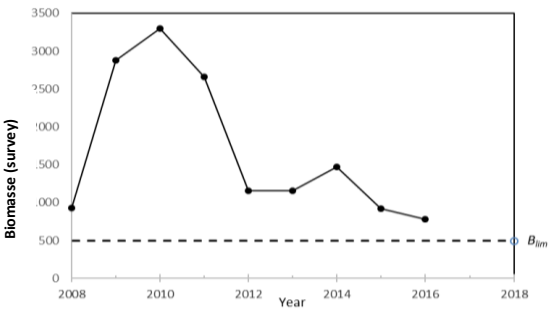
År	2011	2012	2013	2014	2015	2016	2017
Grønland	1.199	2.109	1.717	622	576	49	557



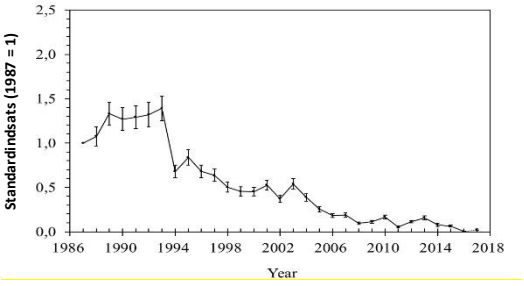
Figur 5. Samlede fangster fra 1978-2017



Figur 6. Fangstrater (1986-2017)



Figur 7. Biomasse (hunner) fra survey (2008 – 2016)



Figur 8. Fiskeriindsats (1986 – 2016)

Northern Shrimp in Subarea 1 and Div. 0A

Advice September 2017 for 2018

Recommendation

Scientific Council advises that catches in 2018 should not exceed 105 000 t.

The TAC advice for this stock has until recently been set according to an accepted risk level of 35% of exceeding Zmsy. However, there is concern that the model in the most recent years does not fully reflect the uncertainty associated with stock status. SC therefore considers that a lower risk tolerance of around 20% is warranted equaling a TAC of approximately 105 000 t in 2018. SC notes that catches at this level is likely to maintain the stock at the current level.

Management Objectives

No explicit management plan or management objectives have been defined by the Government of Greenland and Canada.

Canada requested Scientific Council to provide advice on this stock within the context of the NAFO Precautionary Approach Framework (SCS Doc. 13/04).

Objective	*Status*	*Comment/consideration*
Apply Precautionary Approach		Stock status is both estimated and forecast relative to precautionary reference points

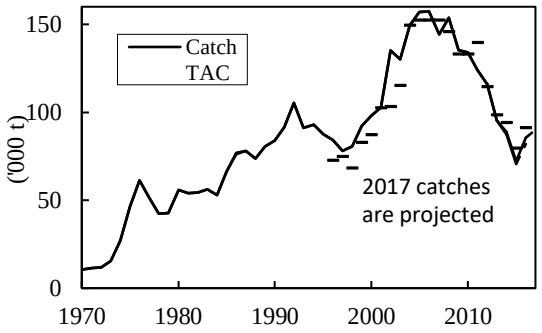
 OK

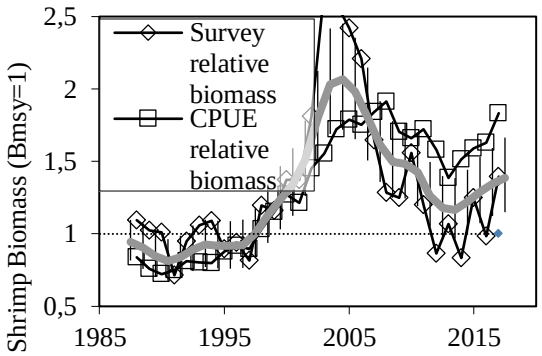
Management unit

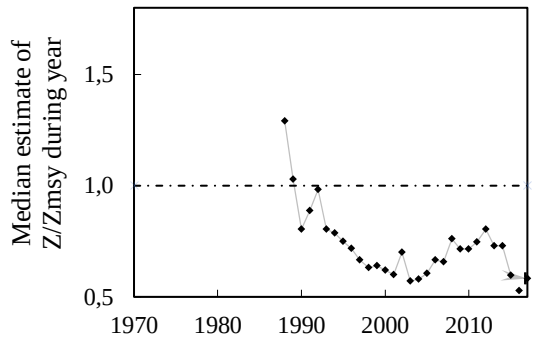
The stock, considered distinct from all others, is distributed throughout Subarea 1, extends into Div. 0A east of 60°30'W, and is assessed as a single stock.

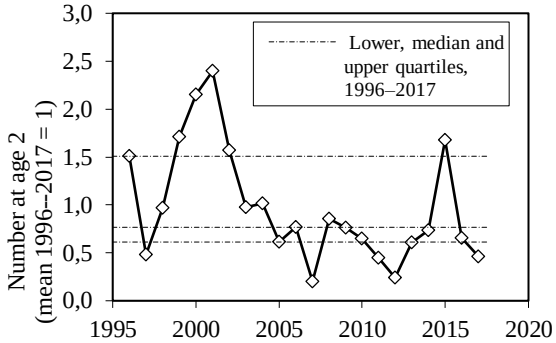
Stock status

The stock is estimated to be 39% above B_{msy} and the risk of being below B_{lim} in 2017 is very low (<1%). The number at age 2 in 2017, expected to contribute significantly to the fishable biomass within four years, is 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

Predicted probabilities of transgressing precautionary reference points in 2018 – 2020 under eight catch options and subject to predation by a cod stock with an effective biomass of 25 Kt.

25 000 t cod	Catch option ('000 tons)							
Risk of:	100	105	110	115	120	125	130	135
falling below Bmsy end 2018 (%)	13.3	14.7	14.6	15.0	15.0	15.4	16.3	16.5
falling below Bmsy end 2019 (%)	14.6	16.0	16.8	17.3	17.8	18.7	19.5	19.2
falling below Bmsy end 2020 (%)	16.0	17.6	18.5	19.2	20.3	21.6	22.4	22.6
falling below Blim end 2018 (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
falling below Blim end 2019 (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
falling below Blim end 2020 (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
exceeding Zmsy in 2018 (%)	18.0	20.5	22.7	25.0	27.6	30.5	32.9	34.9
exceeding Zmsy in 2019 (%)	19.0	21.2	23.8	26.8	29.3	31.8	34.5	37.0
exceeding Zmsy in 2020 (%)	19.8	22.9	25.0	27.4	30.3	33.9	36.5	38.5

Assessment

Advice is based on risk analysis coming from a quantitative model, and on qualitative evaluation of biomass and stock-composition indices. The analytical assessment was run with the same configuration of the model as in 2016 (SCR Doc.17/52) and with updated data series.

The next assessment is scheduled for 2018.

Human impact

Mortality related to the fishery has been documented. Other human sources (e.g. pollution, shipping, oil-industry) are considered minor.

Biological and Environmental Interactions

Cod is an important predator on shrimps. This assessment incorporates this interaction. Other predation is likely but not explicitly considered. Shrimps might be important predators on, for example, fish eggs and larvae.

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.

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

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Enacted TAC[1]	130 153	130 153	139 583	114 425	100 596[3]	97 649[3]	82 561[3]	96 426[3]	101 706
STATLANT 21	133 990	129 179	123 195	114 970	91 802	88 834	71 779	80 802	-
NIPAG	135 458[3]	133 991[3]	123 989[3]	115 977[3]	95 381[3]	88 765[3]	72 256[3]	85 527[3]	*90 000*[2]

[1] Sum of TACs autonomously set by Canada and Greenland;

[2] Expected to year end.

[3] This table has been updated to include the area North of 73°30.

Effects of the fishery on the ecosystem

Measures to reduce effects of the fishery on the ecosystem include area closures, moving rules and gear modifications to reduce damage to benthic communities and reduce bycatch.

Special comments

SC is concerned that the 2017 parameter estimate of MSY was quite different than that estimated in 2016 suggesting some degree of instability of the model. This was further demonstrated by changes in perception of stock trajectory in recent years based on a 5-year retrospective analysis. The assessment model may now not fully reflect the uncertainty associated with stock status.

Source of Information SCS Doc 13/04, FC Docs 04/18, SCR Docs 17/51, 52, 55, 56.

Northern Shrimp in Denmark Strait and off East Greenland

Advice September 2017 for 2018

Recommendation

In 2016 the stock remained at a low level, comparable to previous years, and there is no new information to indicate a change in stock status. SC therefore reiterates its advice that catches should not exceed 2 000 t.

Management objectives

No explicit management plan or management objectives have been defined by the Government of Greenland.

Objective	*Status*	*Comment/consideration*
Apply Precautionary Approach		B_{lim} is defined. No fishing mortality reference point defined

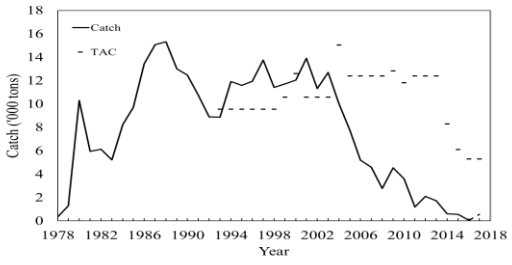
 Intermediate

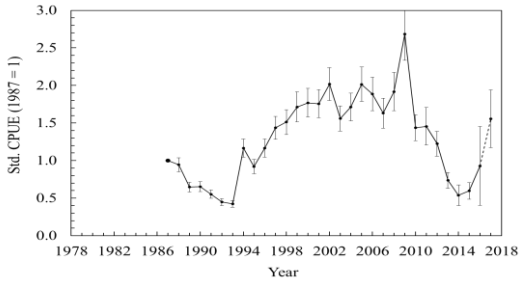
Management unit

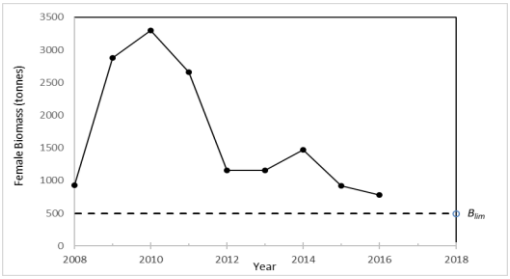
The shrimp stock is distributed off East Greenland in ICES Div. XIVb and Va and is assessed as a single population.

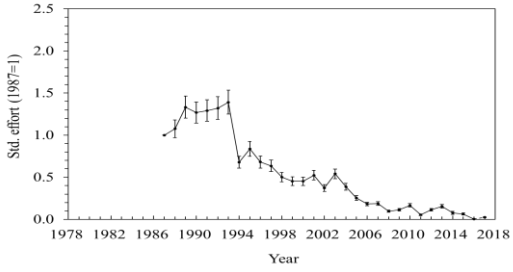
Stock status

The stock size remained at a very low level (relatively close to B_{lim}) in 2016 despite several years of very low exploitation rates. There is no new information to indicate a change in stock status.









Reference points

Scientific Council considers that a female survey biomass index of 15% of its maximum observed level provides a proxy for B_{lim} (SCS Doc. 04/12). This corresponds to an index value of 495 t.

Projections

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

Assessment

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

Evaluation of stock status is based upon interpretation of commercial fishery and research survey data. The trends in the survey and the standardized CPUE have been similar since the start of the survey, however they diverged in 2016. Since 2015, this has been an opportunistic fishery with vessels stopping off on

route between other fishing grounds. This may indicate that the CPUE may no longer be a reliable indicator of the stock status. No survey was carried out in 2017.

Human impact

Mainly fishery related mortality has been documented. Other sources (e.g. pollution, shipping, oil-industry) are considered minor.

Biological and Environmental Interactions

Cod is an important predator on shrimp. The cod stock has been increasing in East Greenland waters until recently, but decreased in 2016.

Fishery

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

Recent catches were as follows:

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Enacted TAC	12835	11835	12400	12400	12400	8300	6100	5300	5300
SC Recommended TAC	12400	12400	12400	12400	12400	2000	2000	2000	2000
NIPAG	4555	3602	1199	2109	1717	622	576	49	557[1]

[1] To July 2017

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 corals.

Source of Information

SCR Doc. 16/045, 17/057