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11. november 2019
J.nr. 20.00-11

Kitaata Tunullu imartaanni raajarniarnerit pillugit biologit 2020-imut siunnersuinerisa eqikkarnerat

Eqikkaanermi matumani NAFO-p siorna siunnersuinerani allannguutaasimasut naatsumik allaaserineqarput, kiisalu raajartassiissutigineqarsinnaasutut innersuussutigineqartut saqqummiunneqarlutik. Innersuussutigineqartut ilanngussami itisilerlugit nassuiarneqarput.

Kalaallit Nunaata kitaata imartaani raajartassiissutigineqarsinnaasutut innersuussutigineqartut 2020-imi 110.000 tonsiupput. Raajartassiissutit 2019-imut sanilliullugit 5.000 tonsinik amerlanerupput. Nunatta Kangiani raajartassat allannguuteqaratik 2.000 tonsiuinnassapput.

2020-imut siunnersuineq

Raajat

Kalaallit Nunaata kitaata imartaani	110.000 tonsit. 2019-imut siunnersuineq: 105.000 tons. 2019-imi pisarineqartussatut naatsorsuutigisat tamakkerlugit: 102.000 tonsit missaat.

Raajat

Kalaallit Nunaata Kangiata imartaani	2.000 tons. 2019-imut siunnersuineertulli: 2.000 tons. 2019-imi pisarineqartussatut naatsorsuutigisat tamakkerlugit: < 1.600 tons.

Siunnersuineq pisortatigoortoq Aalisarnermut Naalakkersuisoqarfimmuttaaq nassiunneqartoq NAFO`p nittartagaani (www.nafo.int) atuarneqarsinnaalissaaq 2019-ip naajartornerani. Pinngortitaleriffimmeersut siunnersuiniarnermi atugassanik allakkianik tunuliaquttatut atorneqartussanik aamma suliaqarput. Uppernarsaataasunik suli amerlanerusunik piumasaqartoqassappat Pinngortitaleriffik tunniussaqarnissamut soorunalimi piareersimavoq.

Siunnersuinermut tunuliaqutaasut itinerusumik nassuiaateqarfigineqarnissaat, apeqqutinut akissutissaasinnaasut aammalu ilisimasanik immersoqatigiinnissaq periarfissiissutiginiarlugit Pinngortitaleriffimmeersut oqartussaasut inuussutissarsiortullu sinniisaannik piaartumik aggersaanialersaarput.

Inussiarnersumik inuulluaqqusillunga

Helle Siegstad, afdelingschef

Ilanngussaq

Siunnersuineq tuluttut allaqqaarneqarpoq, allakkiallu matuma naajartornerani oqaasertaliunneqarsimasut atuarneqarsinnaapput.

Kalaallit Nunaata kitaata imartaani raajat

NAFO´mit innersuussutigineqarpoq 2020-imi raajartassiissutigineqarsinnaasut 110.000 tonsiussasut.

Siunnersuinermut tunngassuteqartut

Kalaallit Nunaata kitaata imartaani pisassiissutigineqarsinnaasutut innersuussutigineqartunik annertussusiliinermi misissuinerit naliliiffigineqarnerat aallaavigallugu aalaakkaasumik peqassuseqarpoq.

Raajaqassutsip nikerarnera missiliorniarlugu naatsorsuusiornermi paasissutissat, soorlu aamma ukiuni siuliini taamaaliortarsimasugut, raajarniat pisarisartagaannit kisitsisinik (Takussutissiaq 1), biologit misissuisarnerinit naatsorsuusiat naapertorlugit raajaqassutsinik missiliuussinerni kisitsisinik, aammalu raajarniartartut kalinnermi ataatsimi pisarisartagaasa annertussusiat kiisalu saarulliit raajatortarnermikkut raajaqassutsimut ilanngartuutissaattut naatsorsuutigisat oqimaassusinngorlugit missiliorneqarnerinit kisitsisinik aallaaveqartarpoq.

Qarasaasiaq atorlugu naatsorsuinerit takutippaat raajaqassuseq oqimaassusinngorlugu 2004-mi qaffasinnerpaamiissimasoq tamatumalu kingorna 2013-ip tungaanut appariartuinnavissimalluni. Kingornali raajaqassuseq oqimaassusinngorlugu 2017-imiilli alaakkaasumik amerlassuseqarsimavoq, 2019-illu naajartornerani naatsorsuusiani takuneqarsinnaavoq raajaqassutsip tamakkiisumik piujuartitsiniarnerpaamillu iluaqutigineqarsinnaanerata killinga qaangerlugu qaffassimasoq (Takussutissiaq 2). Raajaqassuseq oqimaassusinngorlugu Qeqertarsuup Tunuani 2019-imi malunnaatilimmik apparsimavoq, avataanili peqarnerulersimalluni, taakkualu aatsaatsimoortikkaanni raajaqassuseq aalaakkaasutut nalilerneqarsinnaavoq.

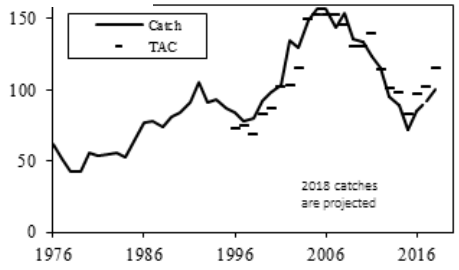
Raajaaqqat ukiunik marlunnik utoqqaassusillit ukiullu tulliuttut pingasut, sisamat qaangiuppata raajarniarnermi akuulerumaartussat amerlassusiat agguaqatigiissillugu amerlassusaat qaangerlugu inissisimavoq taamaalillunilu 2015-imi qaffasissusaatut inissisimalluni (Takussutissiaq 4).

2008-miit 2014-imut raajaqassutsimit tamakkiisumik annaasaqaataasartut piujuartitsisumik iluaqutigininnissamik qulakkeerinninnissap naligingajalluinnarpaa (Z_{msy}). 2014-ip kingorna raajaqassutsimit annaasaqaataasartut piffissami sivikitsuinnarmi appariaraluarput, 2019-imili qaffaqqilluni Z_{msy} missaaniilerpoq (Takussutissaq 3).

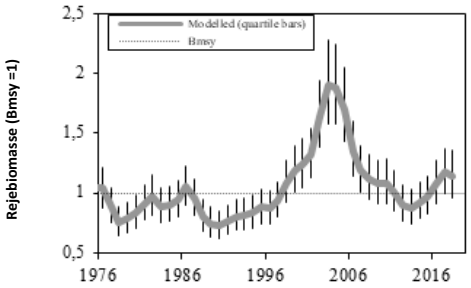
Takussutissiaq 1. Kalaallit Nunaata kitaani Canadamilu raajat (tonsinngorlugit) 2012-miit 2019-imut tulaanneqartartut tamakker-lugit

Ukioq	2012	2013	2014	2015	2016	2017	2018	2019
Kalaallit Nunaat	115.965	95.379	88.765	72.254	84.356	89.396	93.189	*100.000*[1]
Canada	12	2	0	2	1.171	3.215	1.689	2.000[1]

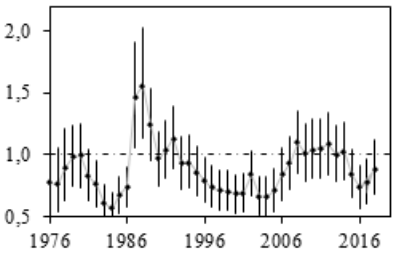
[1] naatsorsuutigisat



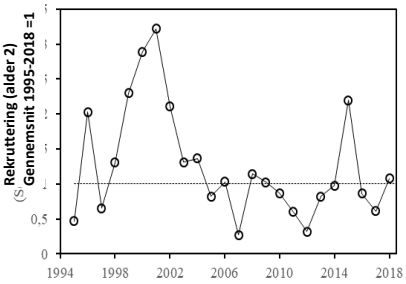
Takussutissiaq 1. Pisat tamakkiisut 1970-2019



Takussutissiaq 2. Raajaqassuseq oqimaassusinngorlugu (qarasaasiamik naatsorsuut atorlugu)



Takussutissiaq 3. Aalisagaqassutsimik annaasaqaataasut tamakkerlugit (aalisarneq uumasoqatiminillu nerineqarneri)



Takussutissiaq 4. Raajaaqqat aalisarneqarsinnaalerumaartut takkussuunnerat (ukiunik marlunnik utoqqaassusillit)

Ilisimatuussutsikkut Siunnersuisoqatigiit Naalakkersuisut aqutsinikkut piumasaqaatigisaat aallaavigalugit Nunatta Kitaani raajarniarneq naliliiffigaat isumaqarlutillu 2020-imi 110.000 tonsinik raajarniartitsinissaq piujuartitsiniarnermik tunngaveqassasoq . Imaappoq raajaqassutsimit tamakkiisumik annaasaqaataasartut ($Z_{msy:}$ pisarineqartartut toquinnartartullu katillugit) piujuartitsiniarnermik tunngaveqarunnaarnissaanut periarfissaq 35 %-iuvoq aammalu taamaalilluni raajaqassutsip appasinnerpaaffissaatut killissarititaamit appasinnerusumiilernissaata angunissaanut periarfissaq appasilluni (B_{lim}).

Kalaallit Nunaata Kangiata imartaani raajat

Kangiata imartaani 2020-imut raajartassiissuteqarnissami 2.000 tonsit sipporneqartariaqanngikkaluartut NAFO innerssuussuteqarpoq. Siunnersuineq 2019-imut siunnersuisimanermit allannguuteqarfiunngilaq.

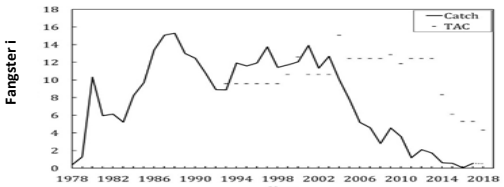
Siunnersuinermut tunngasut

Kangiata imartaani kalinnermi ataatsimi pisaasartut annertusisimapput 2019-illu ukiuata affaani siullermi aatsaat taamak qaffasitsisigisimallutik. Kilisannerit ukiuni kingullerni sumiiffinni aalajangersimasuni annikinnerusunilu pisarsimammata NAFO'p ilisimatuussutsikkut ataatsimiititaliaanit naliliisoqarpoq kalinnerni ataatsiakkaani pisarineqartut amerlassussaasa peqassuseq tamakkiisoq takussutissaqartinnavianngikkaat. Sumulluunniillu attaveqanngitsumik misissuisoqannginnera pissutaatillugu NAFO'p ukiuni kingullerni tallimani naliliinini siunnersuininilu allanngortissinnaanagit nalunaaruteqarpoq. Taamaammallu NAFO'p innersuussutigaa kangiani pisarineqartussat 2.000 tonsit qaangissanngikkaat. NAFO'miit aamma piumasarineqarpoq siunissami innersussuteqarnissamut atorneqartussanik peqassuseq misissuiffigineqartariaqartoq.

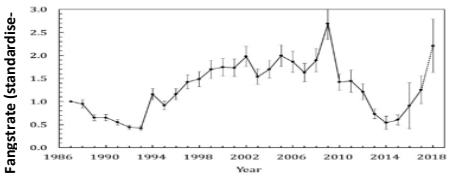
Tabel 2. Kangiata imartaani raajat pisaasartut tulaanneqartartullu tamakkerlugit 2012-miit 2019-imut

Ukioq	2012	2013	2014	2015	2016	2017	2018	2019
Kalaallit Nunaat	2.109	1.717	622	576	49	561	547	1.579[1]

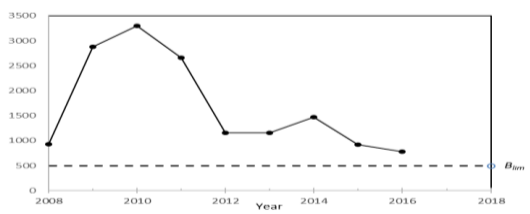
[1] forventet



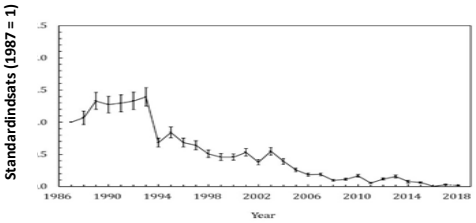
Takussutissiaq 5. Pisaasartut tamakkerlugit 1978-2019



Takussutissiaq 6. Kalinnermi ataatsimi pisaasartut (1986-2019)



Takussutissiaq 7. Raajaqassuseq oqimaassusinngorlugu (arnavissat) (2008 – 2016)



Takussutissiaq 8. Raajarniarnerup "sakkortussusia"(1986 – 2019)

Northern shrimp in Subarea 1 and Div. 0A

Advice November 2019 for 2020

Recommendation

In line with Greenland's stated management objective of maintaining a mortality risk of no more than 35% (subject to a risk of biomass being below B_{lim} of less than 1%), Scientific Council advises that catches in 2019 should not exceed 110 000 t.

Management Objectives

A management plan and management objectives have been defined by the Government of Greenland in 2018. The objective is to maintain a mortality risk of no more than 35% (subject to a risk of biomass being below B_{lim} of less than 1%). Canada has a harvest strategy with the objective to maintain a mortality risk less than 35%, based on three year projections. Advice was also drafted to be consistent with the NAFO precautionary approach (FC Doc. 04-12).

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

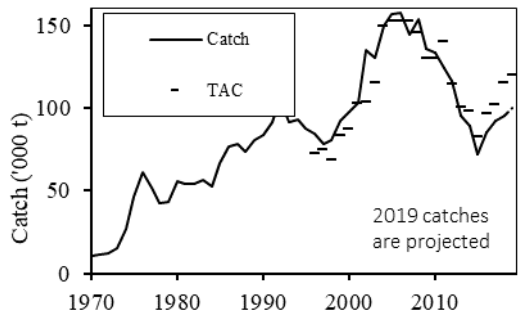
 OK

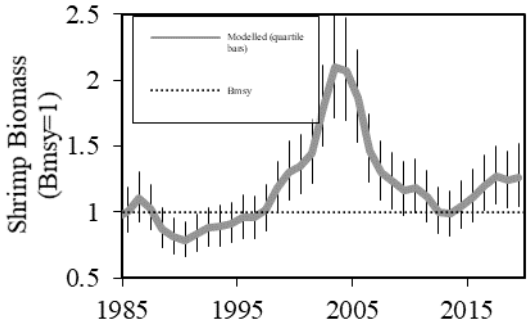
Management unit

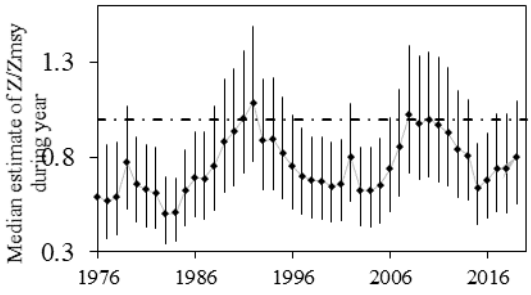
The stock, considered distinct from all others, is distributed throughout Subarea 1, extends into Div. 0A east of 60°30'W, and is assessed as a single stock. 97% of the landings in 2018 were from Greenland.

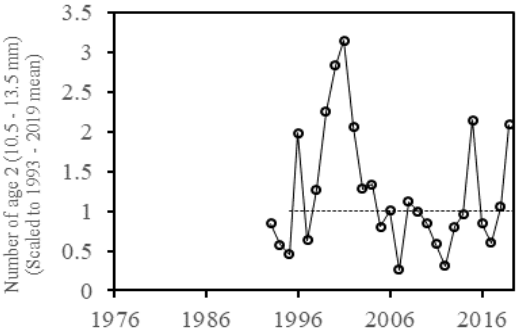
Stock status

Biomass at the end of 2019 is above B_{msy} and the probability of being below B_{lim} is very low (<1%). The probability of mortality in 2019 being above Z_{msy} is 32%. Recruitment (numbers of age-2 shrimps) are above average.









Reference points

B_{lim} has been established as 30% B_{msy}, and Z_{msy} (fishery and cod predation) has been set as the mortality reference point (FC Doc. 04-18). B_{msy} and Z_{msy} are estimated directly from the assessment model.

Projections

Predicted probabilities of transgressing precautionary reference points in 2020 – 2022 under eight catch options and subject to predation by a cod stock with an effective biomass of 21 Kt.

21 000 t cod	Catch option ('000 tonnes)							
Risk of:	85	90	95	100	105	110	115	120
falling below Bmsy end 2020 (%)	23	23	23	24	24	24	24	25
falling below Bmsy end 2021 (%)	24	24	25	25	26	27	27	27
falling below Bmsy end 2022 (%)	24	25	26	27	29	29	30	31
falling below Blim end 2020 (%)	0	0	0	0	0	0	0	0
falling below Blim end 2021 (%)	0	0	0	0	0	0	0	0
falling below Blim end 2022 (%)	0	0	0	0	0	0	0	0
exceeding Zmsy in 2020 (%)	17	20	24	27	30	34	37	40
exceeding Zmsy in 2021 (%)	18	21	25	28	32	35	38	41
exceeding Zmsy in 2022 (%)	19	22	26	29	33	36	39	43

Assessment

Advice is based on risk analysis coming from a quantitative model. The analytical assessment was run in 2019 with revised treatment of the input data (SCR Doc.19-46, 19-48) and with updated data series.

The next assessment is scheduled for 2020.

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:

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Enacted TAC[1]	130 153	139 583	114 425	100 596[1]	97 649[1]	82 561[1]	96 426[1]	101 706[1]	114 876[1]	119 875[1]
STATLANT 21	129 179	123 195	114 970	91 802	88 834	71 779	84 303	91 725	91 869	
NIPAG	133 991	123 989	115 977	95 381	88 765	72 256	85 527	92 584	94 878	*102 000*[2]

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

[2] Projected to year end

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 comment

From 1993 to 2010 the Greenlandic survey in the Canadian area (SFA1) was conducted annually. In this period average biomass, in that area, was 2% of the total biomass estimated in Subarea 1 and Div. 0A. From 2011, due to ice cover, there has only been sporadic information from the Greenlandic survey in the Canadian area (SFA1). The area was surveyed only in 2013 and 2017. In 2013, the biomass in that area (SFA1) was less than 1% of the total estimated biomass in in Subarea 1 and Div. 0A and about 2% in 2017.

Source of Information SCS Doc 13/04, FC Docs 04-18, SCR Docs 19-43, 44, 45, 46, 48, 49.

Northern shrimp in Denmark Strait and off East Greenland

Advice October 2019 for 2020

Recommendation

In 2016 the stock remained at a low level, comparable to previous years. CPUE has increased in recent years and in the first half of 2019 was at a record high level. However, fishing in recent years has been carried out in a localized area and the effort has been relatively low. Given the limited amount of current information, SC is not able to provide advice on the sustainable exploitation of this stock. Therefore SC has no information to change the advice from the last five years that catches should not exceed 2 000 t. SC advises that a survey should be carried out in future years.

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

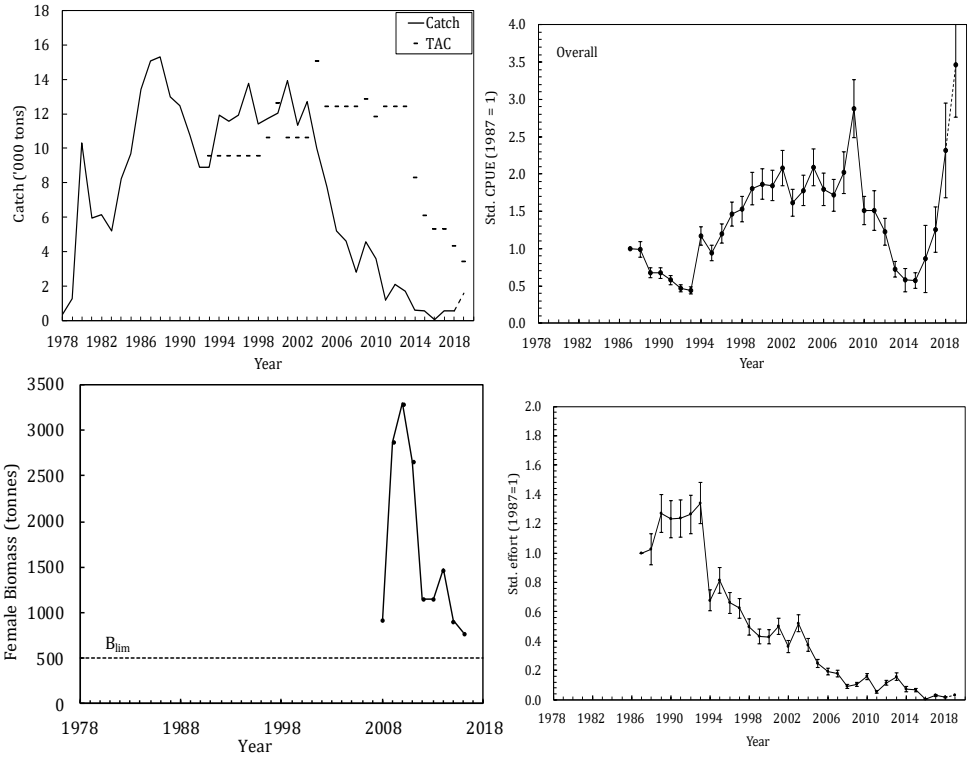
 Intermediate

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 fishery independent 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).

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, the last year for which there are survey data available. Recent increasing CPUE values may indicate an improvement of the shrimp density in the northern area, however this may not reflect overall stock status as the fishery occurs in a localized area and includes only a small number of hauls. No survey was carried out in the period 2017 to 2019.

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 generally been decreasing in East Greenland waters since 2012.

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 (tonnes) were as follows:

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Enacted TAC	11835	12400	12400	12400	8300	6100	5300	5300	4300	3384
SC Recommended TAC	12400	12400	12400	12400	2000	2000	2000	2000	2000	2000
NIPAG	3602	1199	2109	1717	622	576	49	561	547	1579[1]

[1] To July 2019

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. 19-059