PINNGORTITALERIFFIK
NATURINSTITUT
GREENLAND INSTITUTE OF NATURAL RESOURCES

Raajat pillugit siunnersuineq 2016

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Kitaani Tunumilu raajaqarfinni aalisarneq pillugu biologit siunnersuinerat 2016

Kalaallit Nunaata kitaata imartaani raajaqassuseq 2004-miilli appariartuinnavissimavoq, 2014-imi appasittupilussuarmiilerluni. Pinngortitaleriffimmeersulli 2015-imi misissuinerisa paasinarsisippaat taama ingerlasoqarunnaarsimasoq. Misissuinerit aamma takutippaat raajaararpassuit perortussat aalisarneqarumaalersussallu takkussuulluartut, taamaattumillu qallorneqarsinnaalersussat ukiuni aggersuni amerlinissaat naatsorsuutigineqarpoq.

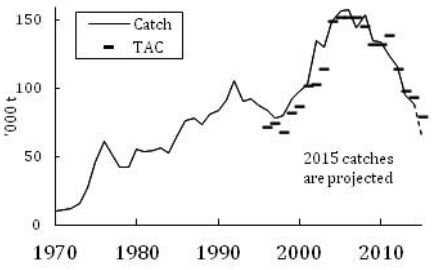
Taamaattumik NAFO-mit ICES-imillu siunnersuutigineqarpoq 2016-imi 90.000 tonsit sippornagit pisaqartoqarsinnaasoq. 2013-imi 2014-imilu kitaata sineriaani 80.000 tonsinik raajartassiisoqarsinnaanera siunnersuutigineqartarsimavoq, 2015-imilu 60.000 tonsit pisarineqarsinnaanerat innersuussutigineqarluni.

Kitaani 2016-imi pisassiissutigineqarsinnaasut annertussusilerneqarneranni makku aallaavigineqarput:

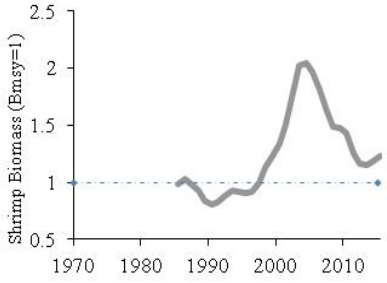
- raajaqassutsip sivitsortumik ammuinnaq ingerlasimagaluarnerata 2015-imi allannguuteqarnera
- mikisut perortussat (takkussuuttut) aalisarneqarsinnaalersussat amerliartormata, ukiuni kingullerni qulini amerlanerpaaffigisimasamittungajak amerlassuseqarlutik
- raajat mikisut (marlunnik ukiullit) ukiuni 20-ni kingullerni agguaqatigiissillugu amerlassuserisarsimasaminniit amerlanerummata
- saarulliit ukiuni siuliani pingasunituullu raajartortiginissaat naatsorsuutigineqarmat
- pisarineqartartut 2008-imiilli ikiliartortuaarsimapput 2015-imi 65 tonsiunissaat ilimagineqarluni.

Ukiuni kingullerni pisassiissutigineqartartut kittaartumik ikiliartortinneqarsimapput (-12,5 %, raajat pillugit aqutsinikkut pilersaarut mallillugu), qaffakkiartortitsinissarlu aamma taamaattariaqaraluartoq innersuussutigineqarluni.

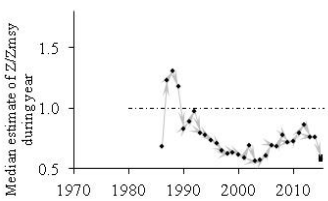
Tunumi raajarniarnermut tunngatillugu 2016-imi 2.000 tonsinik pisaqartoqarsinnaanera innersuussutigineqarpoq, tassa 2015-imiit allannguuteqartoqarani.



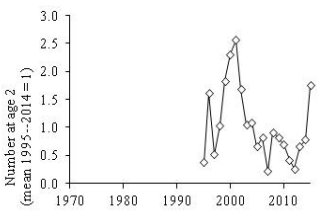
Titartagaq 1. Kitaa. Pisat tamarmiusut (´000 tons)



Titartagaq 2. Kitaa. Qarasaasiami naatsorsuut



Titartagaq 3. Kitaa. Raajat peqassutsimit ilanngaataasut tamakkerlugit



Titartagaq 4. Kitaa. Biologit misissuisarnerini 1994-imiit 2015-imut raajat marlunnik ukiullit amerlassusiat

Kalaallit Nunaata Kitaata imartaani raajarniarneq pillugu SIUNNERSUINEQ (siunnersuinerup oqaasertai tuluttoortut ilanngussami ataatungaaniittumiipput)

Pinngortitaleriffimmeersut ilisimatuussutsikkut siunnersuiniarnerminni qarasaasiaq atorlugu naatsorsueriaaseq (matematikkersornerusoq) tunngavigalugu peqassutsimik missingersuisarput, kiisalu pisassiissutigineqarsinnaasut assigiinngitsunik annertussusilerneqarnerini taakkua peqassutsimut kingunerisinnaasaat takussutissiorniartarlugit. Naatsorsuusiornerni aallaavigineqartarput pisat tamarmiusut annertussusiat, raajarniat kalinnermi ataatsimi pisarisartagaat (CPUE, kilisaatit pisanik nalunaarsuutaanneersut), saarulleqassuseq tonsinngorlugu kiisalu paasissutissat Pinngortitaleriffimmeersut ukiumoortumik misissuineranneersut atorneqartarlutik.

Pisat tamarmiusut 1998-imi 80.000 tonsiniit 2008-mi 150.000 tonsinut qaffakkiartorsimapput, peqatigitillugulu taamanerniit aamma pisaassiissutaasartut appariartorsimapput. 2015-imi pisarineqartut 65.000 tonsiunissaat ilimagineqarpoq (Titartagaq 1).

Kilisaatit nalunaaquttap akunneranut pisarisartagaasa agguaqatigiissinnerisa (piffissami aalajangersimasumi pisat amerlassusiat aamma CPUE) raajaqassutsip qanoq issusia takutittarpaa, tassuuna toqqaannanngikkaluartumik raajat akullarsimassusiat takuneqarsinnaasarmat. Pisarineqartartut annerusutigut 2008-miit 2013-imut ikiliartorsimapput, 2014-imiilli 2015-imut amerleriaqqissimallutik. Raajarniutit ukiuni arlalinni sumiiffimmut mikinerusunut katersuukkiartuuaarujoorput suli, ullumikkullu Store Hellefiskebankip avannaatungaa Qeqertarsuullu Tunua raajarniarfiginerusarpaat.

Pinngortitaleriffiup 2015-imi misissuisarnerisa ersersippaat ukiunut siuliinut sanilliullugu peqarnerulersimasoq (Titartagaq 2). Pingaartumik sinerissap avataani peqarnerulersimalluni. Qeqertarsuup Tunuani peqassuseq ukiuni qaangiuttuni misissuisarnerit agguaqatigiissinnerattut ipajaaginnarnissaa naatsorsuutit takutippaat.
Raajat mikisut ukiuni aggersuni aalisarneqarsinnaalersussat, ukiuni kingullerni qulini amerlanerpaaffigisimasamittut issangatinneqarput. Raajat marlunnik ukiullit aamma amerlapput ukiunilu 20-ni kingullerni agguaqatigiissitsilluni amarlassusaasartut qaangerlugit amerlassuseqarput. Taamaattumik peqassutsip ukiuni aggersuni qanittuni ajunngitsumik inissisimanissaanut isumallualersitsillutik.
Saarulliit ukiuni siuliinisuulli 2015-imi kujasinnerusumiinnerupput, raajaqarfiorpianngitsumi, ataatsimullu isigalugu raajat saarullinnit nerineqartartut ukiuni kingullerni pingasuni pisarnertut amerlassuseqassangatinneqarput.

Qarasaasiamik naatsorsuutip takutippaa raajaqassuseq 2015-ip naanerani peqassutsimiit tamakkiisumik pissarsiffimmiit (peqassuseq oqimaassusinngorlugu, B_{msy}) qaffasinnerusumiissasoq, taamaattumillu 2016-imi 90.000 tonsinik pisaqarsinnaanissaq attassinnaassallugu, soorunalimi saarulleqassuseq 2015-imisullu inissisimassappat aatsaat. Tamakkuninnga peqquteqartumik 2016-imi ilisimatuussutsikkut tunngavilersukkamik raajartassiissutigineqarsinnaasut 90.000 tonsit[1] sipportariaqanngikkaat innersuussutaavoq (siunnersuinerup tuluttoortaa ilanngussaq 1-imi takuneqarsinnaavoq).

Qarasaasiakkut naatsorsuut suli pitsanngorsarniarneqarluni ineriartortinneqarpoq. Naatsorsueriaaseq 2015-imi pitsanngoriartinneqarsimavoq, taamaalillunilu peqassutsip ajunngitsumik inissisimaneranik isiginninnermut ikorfartuilluni, naak tamanna peqarnerulerneranik aammalu siunissami aalisarneqarsinnaalerumaartunik takkussuuttoqarluarneranik annerusutigut tunngaveqaraluartoq.

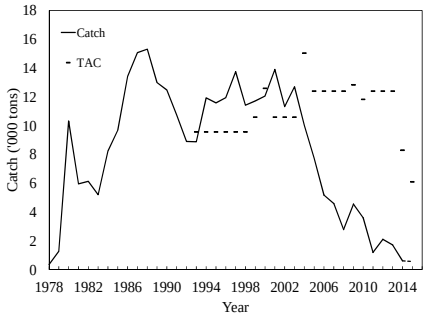
[1] 90.000 tonsinik pisaqarnikkut peqassutsip tamakkiisumik tunniussinnaata (B_{msy}) sunnersinnaaneranut 35 % ataallugu aarleqqutissaqartoqarsinnaavoq, sipporaannili aarleqquteqarnissamut %-i qaffakkiartortussaalluni.

Pissutsit allat aamma peqassutsip nikerarneranut sunneeqataasarput. Raajarniarneq 2008-miilli pisassiissutaasartut appariartorsimanerisa kingunerisaanik appariartorsimavoq 2015-imi 65.000 tonsinik pisaqartoqarnissaanik naatsorsuuteqarnermut appasitsigilertussaagunarluni. Taamaattoqarnerata aammalu arnavissat amerlanerujussuisa kingunerisaanik – taamaalillunilu piaqqiorluartoqarnerata – peqassuseq oqimaassusinngorlugu qaffariartissimassavaa aammalu raajaaqqat amerlanerulersissimassallugit.

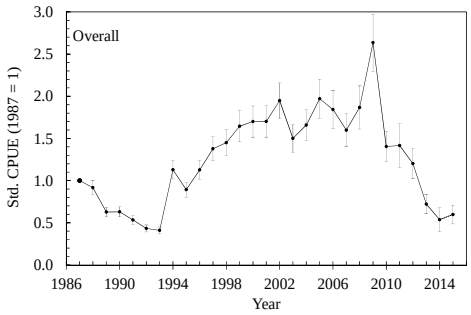
Pinngortitaleriffilli periarfissaqanngilaq avatangiisini aammalu uumassuseqassutsip ataqatigiinneranut tunngasssuteqartut pissutsit ilisimanngisat peqassutsip qaffariaateqarneranut tassungalu iluaqusersuutaasimasinnaasunik nassuiaateqassalluni. Uumasut nerisareqatigiinnerannut tunngassutillit imailiallaannaq paasisassaaneq ajorput, tassami saarulliit raajartortarnerat peqqutit ilaminiinnannguarivaat allalli uumasuunerannut aammalu avatangiiserisat sanarfisaassutsimikkut pissuserisaat – soorlu assersuutigalugu immap nillissusiata kissassusiatalu peqassutsimut sunniutigisinnaasaat – sunneeqataasinnaasartut aamma ilagivaat. Tamakkua pissutsit suli annertunerusumik paasisaqarfiginiarlugit Pinngortitaleriffimmi biologit ilungersortuarput, paasisat siunissami ilisimatuussutsikkut siunnersuisarnissani atorneqarlutik pitsanngorsaataasarniassammata.

Tunumi raajarniarneq pillugu SIUNNERSUINEQ (siunnersuinerup tuluttoortaa ataani ilanngussaq 2-miippoq)

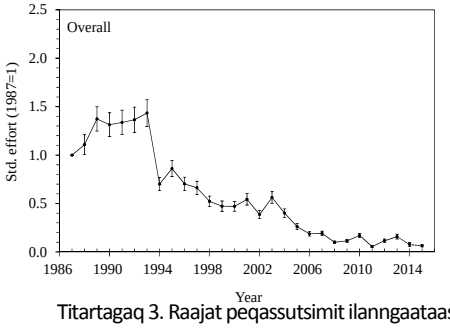
Tunumi raajarniarneq pillugu innersuussutigineqarpoq 2016-imi pisassiissutigineqarsinnaasut allanngoratik 2.000 tonsiussasut. Pinngortitaleriffimmeersut misissuisarnerisigut raajarniarnermiillu paasisatigut erserpoq, naak pisaasartut ukiuni kingullerni appariartortinneqaraluartut taamaattoq tamaani raajaqassuseq suli appasissumiittuarsinnarpoq. Ikiliartornerat saarulleqaleriartorneranut naapertuuppoq (saarulliimmi raajatortuummata).



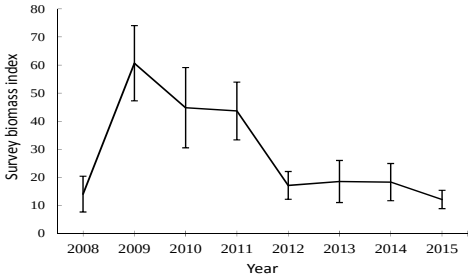
Titartagaq 1. Tunumi pisat



Titartagaq 2. Tunumi piffissami aalajangersimasumi pisat nikerarnerat



Titartagaq 3. Raajat peqassutsimit ilanngaataasut tamakkerlugit



Titartagaq 4. Biologit misissuinerini peqassutsip nikerarnera

Siunnersuinermut tunngasut

Raajat pillugit siunnersuineq NAFO-meersut ICES-imeersullu ataatsimiinneranni kingullermi 09.-16. september-imi St. Johns-imi ingerlanneqartumi oqaasertalersorneqarpoq. Pinngoritaleriffik allakkianik uppernarsaataasunik arfineq pingasunik suliaqarpoq, taakkulu ataatsimut katillutik siunnersuinermi tunulequtaapput. Atlantikup avannaani imartani allani rajaqassutsit aamma ataatsimiinnermi tassani nalilersuiffigineqarput, ataatsimoortumillu nalunaarusiap imarai Flemish Cap-imi Grand Bank-imilu raajanik naliliineq siunnersuinerillu kiisalu Barentshav-imi Skagerrak-imilu raajaqassutsinik naliliineq. Ataatsimiinnermi peqataapput ilisimatusartartut 17-it Canadameersut, EU-meersut, Norge-meersut, Rusland-imeersut Kalaallit Nunaanneersullu. Kalaallit Nunaanniit peqataapput ilisimatusartartoq AnnDorte Burmeister, ilisimatusartartoq Nanette Hammeken Arboe seniorforskerilu Michael Kingsley. Pisortatigoortumik siunnersuineq NAFO-p nittartagaani (www.NAFO.int)-imi takuneqarsinnaavoq. NAFO-p siunnersuinera pillugu tuluttut nalunaarusiaq 100-t sinnerlugit qupperneqarpoq, taassumalu assilinera Aalisarnermut Naalakkersuisoqarfiup pinikuuaa.

Pinngortitaleriffiup oqartussaasut raajarniartartullu siunnersuinerup peqqissaartumik oqaluuserinissaanut piaartumik aggersarniarpai, tassanilu aamma apeqqutinik akisisoqartarlunilu ilisimasanik paarlaasseqatigiittoqartarumaarpoq.

Inussiarnersumik inuulluaritsi

Helle Siegstad, Immikkoortoqarfimmi pisortaq

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

Advice September 2015 for 2016

Recommendation

Previous work has shown that a maintained mortality risk of 35% is low enough to keep stock levels safely at or above B_{msy}. A catch of 90 000 t in 2016 would entail an estimated mortality risk below 35%. Scientific Council therefore advises that catches in 2016 should not exceed 90 000 t.

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

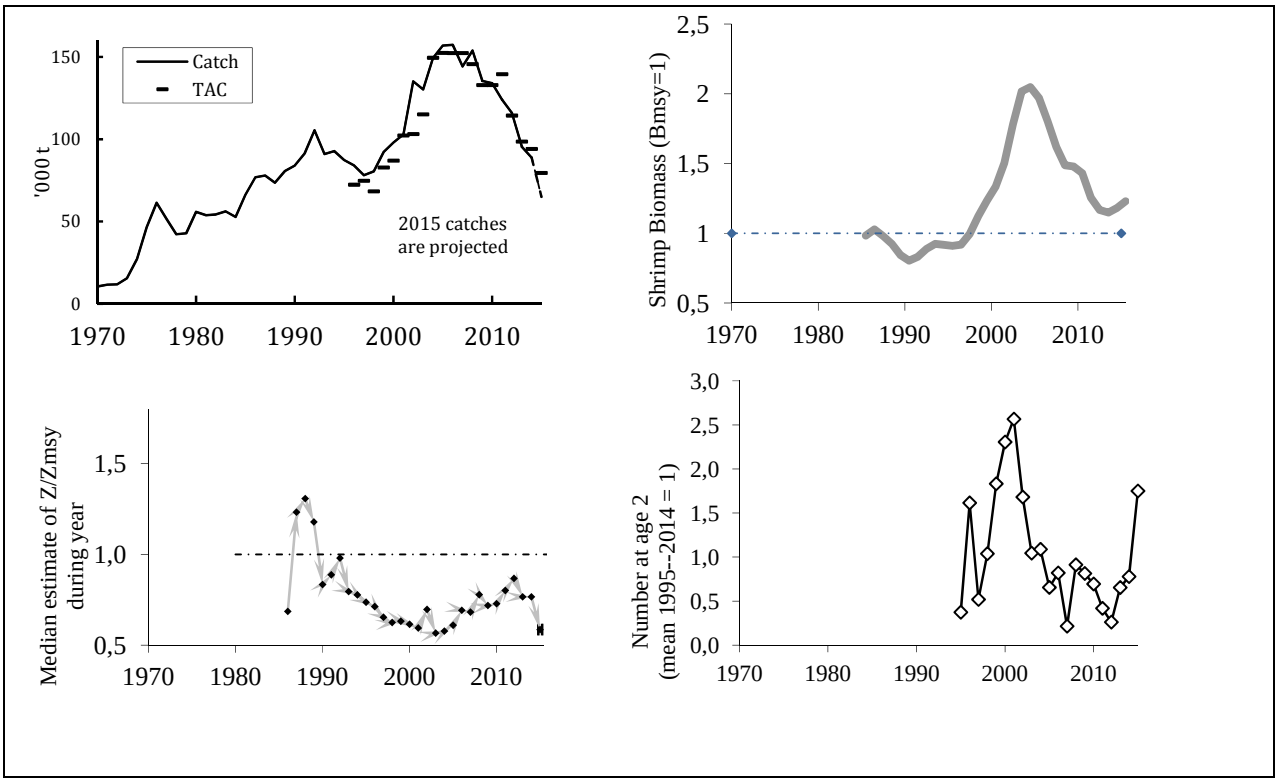
 OK

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

A protracted decline in stock size since 2004 appears to have paused, and large numbers of small shrimps in the 2015 survey show good prospects for recruitment. At end 2015 the stock is expected to be 23% above B_{msy} and the risk of being below B_{lim} (30% of B_{msy}) is very low (<1%).



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 2016 – 2018 under seven catch options and subject to predation by a cod stock with an effective biomass of 55 Kt (the value for 2015 being 56Kt.).

55 000 t cod	Catch option ('000 tons)							
Risk of:	60	70	75	80	85	90	95	100
falling below B_{msy} end 2016 (%)	25	25	25	26	27	27	27	27
falling below B_{msy} end 2017 (%)	25	26	27	27	28	28	29	30
falling below B_{msy} end 2018 (%)	26	28	29	30	31	31	32	33
falling below B_{lim} end 2016 (%)	<5	<5	<5	<5	<5	<5	<5	<5
falling below B_{lim} end 2017 (%)	<5	<5	<5	<5	<5	<5	<5	<5
falling below B_{lim} end 2018 (%)	<5	<5	<5	<5	<5	<5	<5	<5
exceeding Z_{msy} in 2016 (%)	22	25	27	28	31	32	35	37
exceeding Z_{msy} in 2017 (%)	23	26	28	29	32	33	37	39
exceeding Z_{msy} in 2018 (%)	24	27	29	31.0	33	35	38	40.0

Assessment

The analytical assessment was run with the same basic model as in 2011–2014; minor changes in the coding (estimation of parameters of a functional relationship for cod predation; calculation of future mortalities) are described in SCR Doc. 15/49; and with updated data series.The next assessment is scheduled for 2016.

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:

	2008	2009	2010	2011	2012	2013	2014	2015
Enacted TAC[1]	145 717	132 987	132 987	142 597	118 596	102 767	94 140	79 561
STATLANT 21	148 550	133 990	129 179	123 195	115 080	91 802	88 834	-
NIPAG	153 889	135 458	133 990	123 985	115 975	95 380	88 765	65 000[2]

[1] sum of TACs autonomously set by Canada and Greenland; [2] provisional—projected to year end.

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 to reduce bycatch, and gear modifications to reduce damage to benthic communities, and, again, to reduce bycatch.

Special comments

The number of large pre-recruits (14 – 16.5mm, expected to recruit to next year's fishable biomass) is close to its ten-year maximum, so prospects for short-term recruitment are good; this is true both in Disko bay and offshore as well. The number at age 2 in 2015 is well above its 20-year upper quartile.

In the recent past, TAC reductions have been implemented in steps of limited size. Increases should follow a similar method.

Source of Information SCS Doc 13/04, FC Docs 04/18 , SCR Docs 15/42, 43, 44, 48, 49

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

Advice September 2015 for 2016

Recommendation

In 2015 it is assessed that the stock remains at a comparable low level to previous years and catches should not exceed 2 000 t.

Management objectives

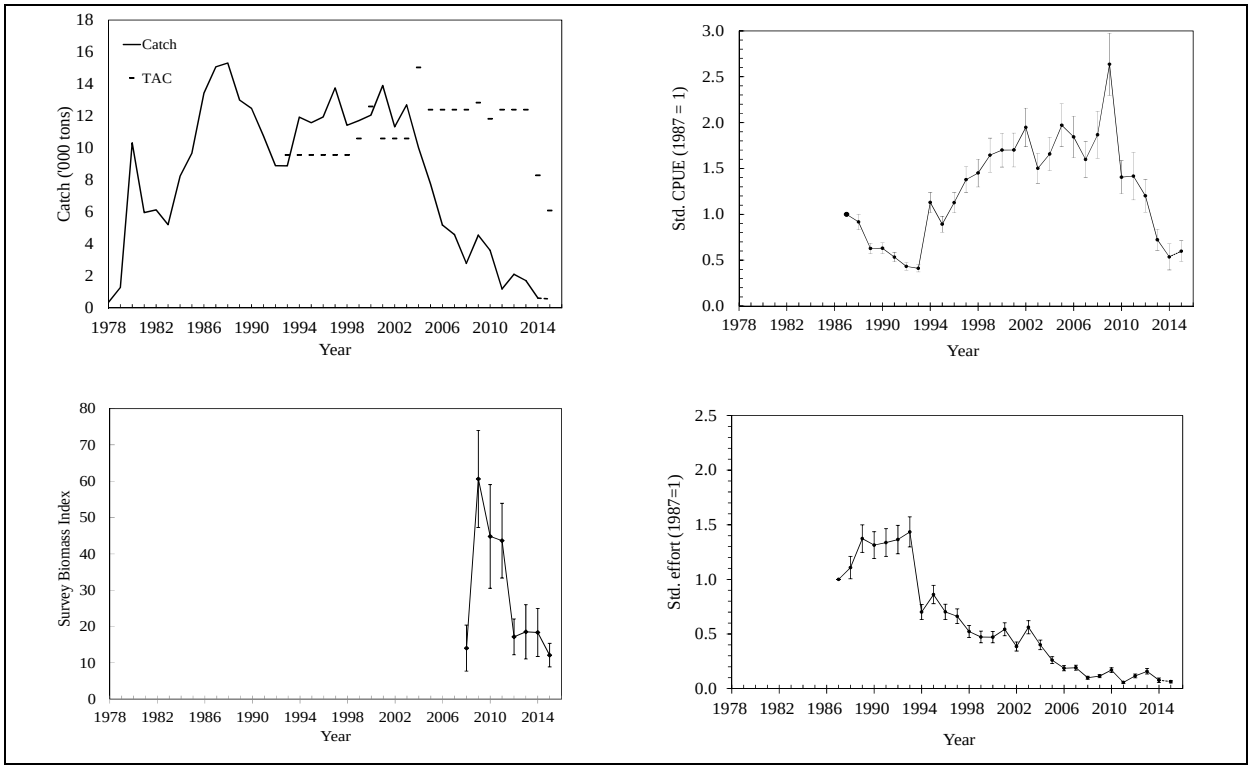
Scientific Council is aware of general management objectives specified in the Greenland Fisheries Act; however the contents of these have not been conveyed to the Council. Advice is based on qualitative evaluation of biomass indices in relation to historic levels.

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 stock size remained at a very low level in 2016 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

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 in recent years.

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:

	2008	2009	2010	2011	2012	2013	2014	2015[1]
NIPAG	2794	4555	3735	1235	2109	1717	622	572
SC Recommended TAC	12400	12400	12400	12400	12400	12400	2000	2000
Enacted TAC	12400	12835	11835	12400	12400	9700	8300	6100

[1] To June 2015

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.

Source of Information

SCR Doc. 15/045, 15/050