

Northern shrimp in Subarea 1 and Div. 0A

Advice October 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 Z_{msy} . 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

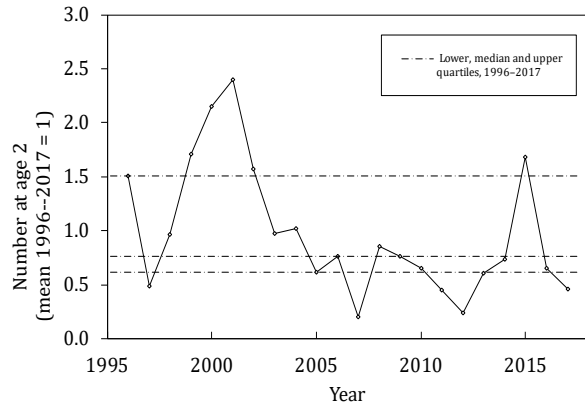
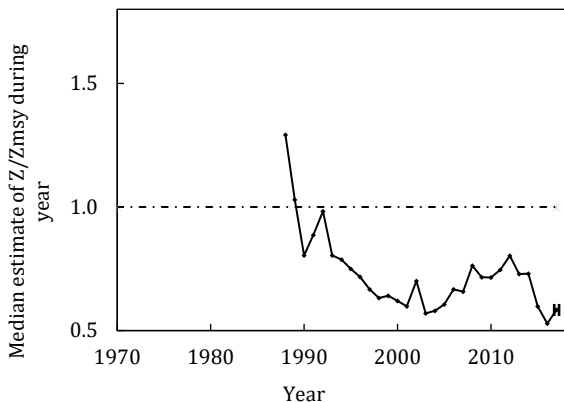
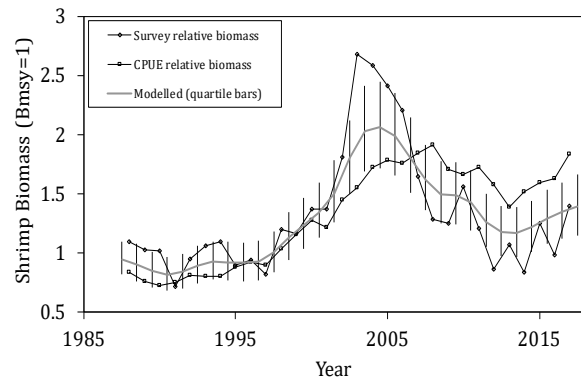
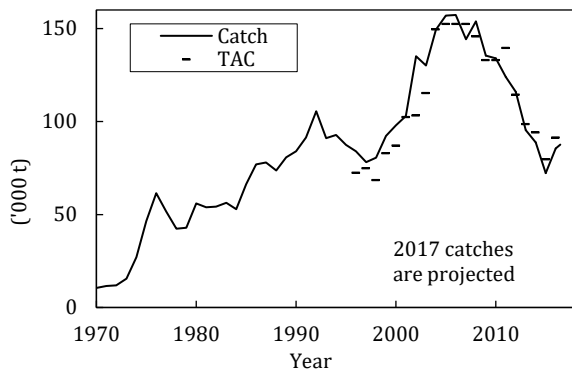
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Management unit

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 Risk of:	Catch option ('000 tons)							
	100	105	110	115	120	125	130	135
falling below B_{msy} end 2018 (%)	13.3	14.7	14.6	15.0	15.0	15.4	16.3	16.5
falling below B_{msy} end 2019 (%)	14.6	16.0	16.8	17.3	17.8	18.7	19.5	19.2
falling below B_{msy} end 2020 (%)	16.0	17.6	18.5	19.2	20.3	21.6	22.4	22.6
falling below B_{lim} end 2018 (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
falling below B_{lim} end 2019 (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
falling below B_{lim} end 2020 (%)	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
exceeding Z_{msy} in 2018 (%)	18.0	20.5	22.7	25.0	27.6	30.5	32.9	34.9
exceeding Z_{msy} in 2019 (%)	19.0	21.2	23.8	26.8	29.3	31.8	34.5	37.0
exceeding Z_{msy} 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
STATLAN T 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.