

b) Northern shrimp in Subarea 1 and Div. 0A

Advice September 2023 for 2024




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 5%), Scientific Council advises that catches in 2024 should not exceed 95 000 t.

With regard to the Canadian harvest strategy, Scientific Council notes that catches of 95 000 t in 2024 would result in a 35% risk of exceeding Z_{msy} in 2024, and a 34% risk of exceeding Z_{msy} in 2025 and 2026, assuming catches at the same level as in 2024.

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 5%). Canada has a harvest strategy with the objective to maintain the stock in the Healthy Zone (>80% of B_{msy}); when the biomass is above 80% of B_{msy} , the risk of being above Z_{msy} should not exceed 35%, based on the 3-year projections. Advice was also drafted to be consistent with the NAFO precautionary approach (FC Doc. 04-12).

<i>Objective</i>	<i>Status</i>	<i>Comment/consideration</i>
Maintain risk of being above Z_{msy} not exceeding 35%		The TAC set for 2023 equates to a risk of being above Z_{msy} by the end of 2023 of 50%
Maintain the stock in the Healthy Zone (>80% of B_{msy})		The stock is above B_{msy} in 2023
Maintain risk of biomass being below B_{lim} of less than 1%		The risk of biomass in 2023 being below B_{lim} is less than 1%



OK



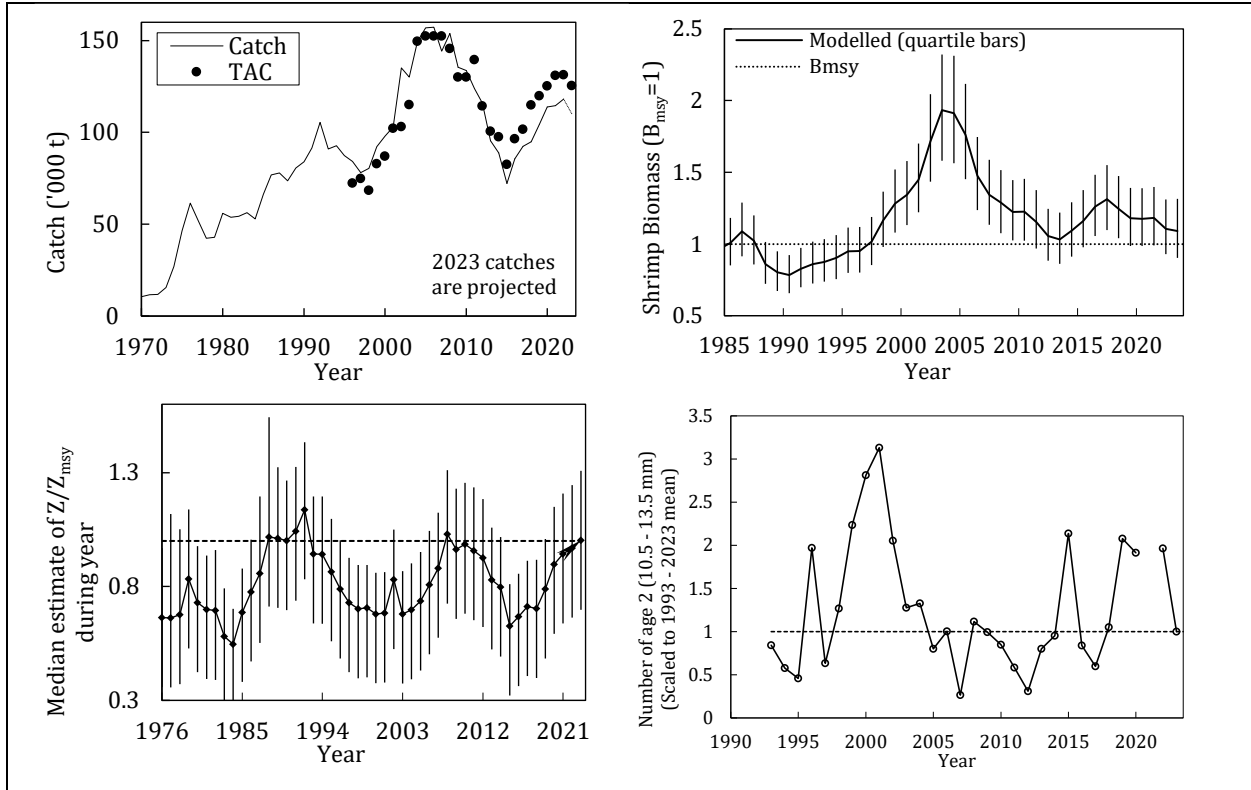
Intermediate

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. In 2022, more than 99% of the landings were from Greenland.

Stock status

Biomass in 2023 is above B_{msy} and the probability of being below B_{lim} is very low (<1%). The probability of mortality in 2023 being above Z_{msy} is 50%. Recruitment (number of age-2 shrimp) in 2023 was near the time-series average.



Reference points

B_{lim} has been established as 30% B_{msy} , and Z_{msy} has been set as the mortality reference point. B_{msy} and Z_{msy} are estimated directly from the assessment model.

Projections

Predicted probabilities of transgressing precautionary reference points in 2024 – 2026 under eight catch options and subject to predation by a cod stock with an effective biomass of 17 Kt.

17 000 t cod	Risk of:	Catch option ('000 tons)							
		85	90	95	100	105	110	115	120
	falling below B_{msy} end 2024 (%)	38	38	38	39	39	40	41	42
	falling below B_{msy} y end 2025 (%)	36	37	38	40	40	42	43	44
	falling below B_{msy} end 2026 (%)	36	37	37	41	42	43	45	46
	falling below B_{lim} end 2024 (%)	0	0	0	0	0	0	0	0
	falling below B_{lim} end 2025 (%)	0	0	0	0	0	0	0	0
	falling below B_{lim} end 2026 (%)	0	0	0	0	0	0	0	0
	exceeding Z_{msy} in 2024 (%)	26	30	35	39	44	47	51	54
	exceeding Z_{msy} in 2025 (%)	26	31	34	40	44	47	51	55
	exceeding Z_{msy} in 2026 (%)	26	30	34	40	44	48	52	56
	falling below B_{msy} 80% end 2024 (%)	15	15	16	16	16	16	17	18
	falling below B_{msy} 80% end 2025 (%)	15	16	17	19	18	19	21	22
	falling below B_{msy} 80% end 2026 (%)	16	17	18	20	21	22	24	25



Assessment

A Schaefer surplus-production model was used for the assessment of this stock.

The next assessment is scheduled for 2024.

Human impact

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

Biological and Environmental Interactions

There is no integrated summary information available on the structure, status and trends of the marine ecosystem for the area inhabited by this stock.

Cod is an important predator on shrimp. 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.

Ecosystem sustainability of catches

Shrimp is included in the benthivore guild. There are currently no Ecosystem Production Units defined nor Total Catch Index (TCI) information for the distribution area of this stock.

Fishery

Shrimps are caught in a directed trawl fishery. The fishery is regulated by TAC.

Recent catches and TACs ('000 t) were as follows:

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Enacted TAC ¹	97.6	82.6	96.4	101.7	114.9	119.9	125.2	130.9	131.3	125.6
STATLANT 21	88.8	71.8	84.3	91.7	91.9	102.7	110.3	107.6	115.8	0.0
NIPAG	88.8	72.3	85.5	92.6	94.9	104.3	113.8	114.6	118.1	110.0 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

The advice is subject to some uncertainty due to abnormal spatial distribution of sea ice north of 66°N in Greenland EEZ in 2023, which prevented trawling at many of the planned stations during the survey. Due to poor survey coverage in the northern survey area, it is uncertain if this year's survey results reflect the stock trajectory and status.

SC recommends that the projection table should be given in projected catch increments of no less than 5 Kt due to uncertainty in calculating risk levels.

Source of Information

SCS Doc 13/04, FC Docs 04-18, SCR Docs. 20/053, 20/057, 22/045, 23/046, 23/047, 23/048.