b) Northern shrimp in Subarea 0 and Subarea 1

Advice September 2024 for 2025

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 2025 should not exceed 80 000 t.

With regard to the Canadian harvest strategy, Scientific Council notes that catches of 80 000 t in 2025 would result in a 33% risk of exceeding Z_{msy} in 2025, and a 32% and 31% risk of exceeding Z_{msy} in 2026 and 2027, respectively, assuming catches and the stock biomass at the same level as in 2025.

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 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. General principles from the *Convention on Cooperation in the Northwest Atlantic Fisheries* are applied.

Objective	***Status***	***Comment/consideration***
Maintain risk of being above Z_{msy} not exceeding 35%	🔴	The projected catches for 2024 equates to a risk of being above Z_{msy} by the end of 2024 of 53%. Scientific Council noted that the mortality is higher than the risk level of 35%
Maintain the stock in the Healthy Zone (>80% of B_{msy})	🟢	The stock is close to B_{msy} in 2024
Maintain risk of biomass being below B_{lim} of less than 1%	🟢	The risk of biomass in 2024 being below B_{lim} is less than 1%

🟢 OK

🟡 Intermediate

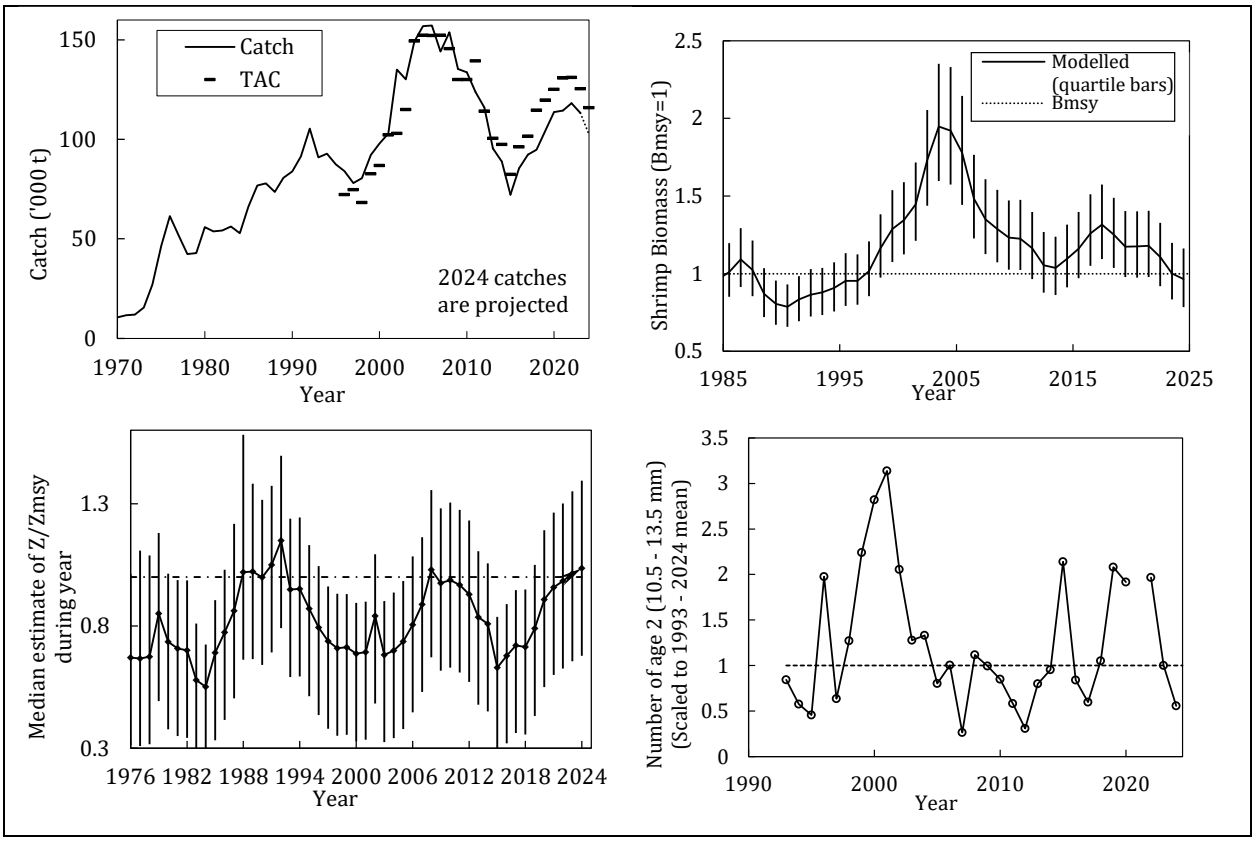
🔴 Not accomplished

Management unit

The stock is distributed throughout Subarea 1, extends into Div. 0A east of 60°30'W, and is assessed as a single stock. In 2023, more than 99% of the biomass and landings were from Greenland.

Stock status

Biomass in 2024 is close to B_{msy} and the probability of being below B_{lim} is very low (<1%). The probability of mortality in 2024 being above Z_{msy} is 53%. Recruitment (number of age-2 shrimp) in 2024 was below 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 reference points in 2025 – 2027 under eight catch options and subject to predation by a cod stock with an effective biomass of 17 Kt.

17 000 t cod	**Catch option ('000 tons)**							
Risk of:	**65**	**70**	**75**	**80**	**85**	**90**	**95**	**100**
falling below Bmsy end 2025 (%)	51	52	52	52	53	54	54	55
falling below Bmsy end 2026 (%)	47	48	49	50	52	53	53	54
falling below Bmsy end 2027 (%)	44	44	47	48	50	52	52	54
falling below Blim end 2025 (%)	0	0	0	0	0	0	0	0
falling below Blim end 2026 (%)	0	0	0	0	0	0	0	0
falling below Blim end 2027 (%)	0	0	0	0	0	0	1	1
exceeding Zmsy in 2025 (%)	18	23	28	33	38	42	47	50
exceeding Zmsy in 2026 (%)	18	22	27	32	37	42	46	50
exceeding Zmsy in 2027 (%)	17	21	26	31	36	41	46	50
falling below Bmsy 80% end 2025 (%)	25	25	26	26	27	28	29	29
falling below Bmsy 80% end 2026 (%)	23	24	26	27	27	28	30	30
falling below Bmsy 80% end 2027 (%)	23	23	25	27	27	29	31	31

Assessment

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

The next assessment is scheduled for 2025.

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. Atlantic cod is an important predator on shrimp and this assessment incorporates this interaction. Other predation is likely but not explicitly considered. Shrimp 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 neither Ecosystem Production Units (EPUs) defined nor Total Catch Index (TCI) estimated for the distribution area of this stock.

Fishery

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

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

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
TAC										
SC Advised	60	90	90	105	105	110	115	115	110	95
Enacted GRL	71.1	82.8	87.9	99.9	103.4	108.3	113.7	113.8	109.1	101.7
Greenland set aside to Canada	1.9	2.2	1	1.3	1.6	1.6	1.2	1.2	0.9	0.8
Enacted CAN	8.5	10.6	12.7	14.9	14.9	15.2	15.9	16.2	15.6	13.5
Enacted total	81.5	95.6	101.7	116.1	119.9	125.1	130.8	131.3	125.6	116
Catches (STACFIS)										
SA 1	72.3	84.4	89.4	93.2	102	113.1	114.3	118.1	113	102.5[1]
Division 0A	0	1.2	3.2	1.7	2.5	0.6	0.2	0	0	0[1]
TOTAL	72.3	85.5	92.6	94.9	104.4	113.8	114.6	118.1	113.2	
STATLANT 21										
SA 1	71.8	82.9	88.9	90.5	98.2	110.1	107.4	117.8	110.2	
Division 0A	1.4	2.8	1.4	1.3	0.2	0.2	0	0	-	

[1] Projected total catch for the year.

Effects of the fishery on the ecosystem

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

Special comment

Scientific Council **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, 24/052, 24/053, 24/054, 24/055.