a) Northern shrimp in Division 3M

Advice September 2024 for 2025 and 2026

Recommendation

The stock remains below B_{lim}.

To be consistent with the NAFO Precautionary Approach Framework, Scientific Council advises that no directed fishery should occur in 2025 and 2026.

Management objectives

No explicit management plan or management objectives defined by the Commission. General principles from the *Convention on Cooperation in the Northwest Atlantic Fisheries* are applied.

Convention Principle	Status	Comment
Restore to or maintain at Bmsy	🔴	B < Blim
Eliminate Overfishing (Stock)	🟡	Flim undefined, F level is not a concern
Eliminate Overfishing (Ecosystem)	🟢	Total EPU catches < 2TCI
Apply Precautionary Approach	🟡	Blim defined, Flim undefined
Minimize harmful impacts on living marine resources and ecosystems	🟢	No directed fishing
Preserve marine biodiversity	⚪	Cannot be evaluated

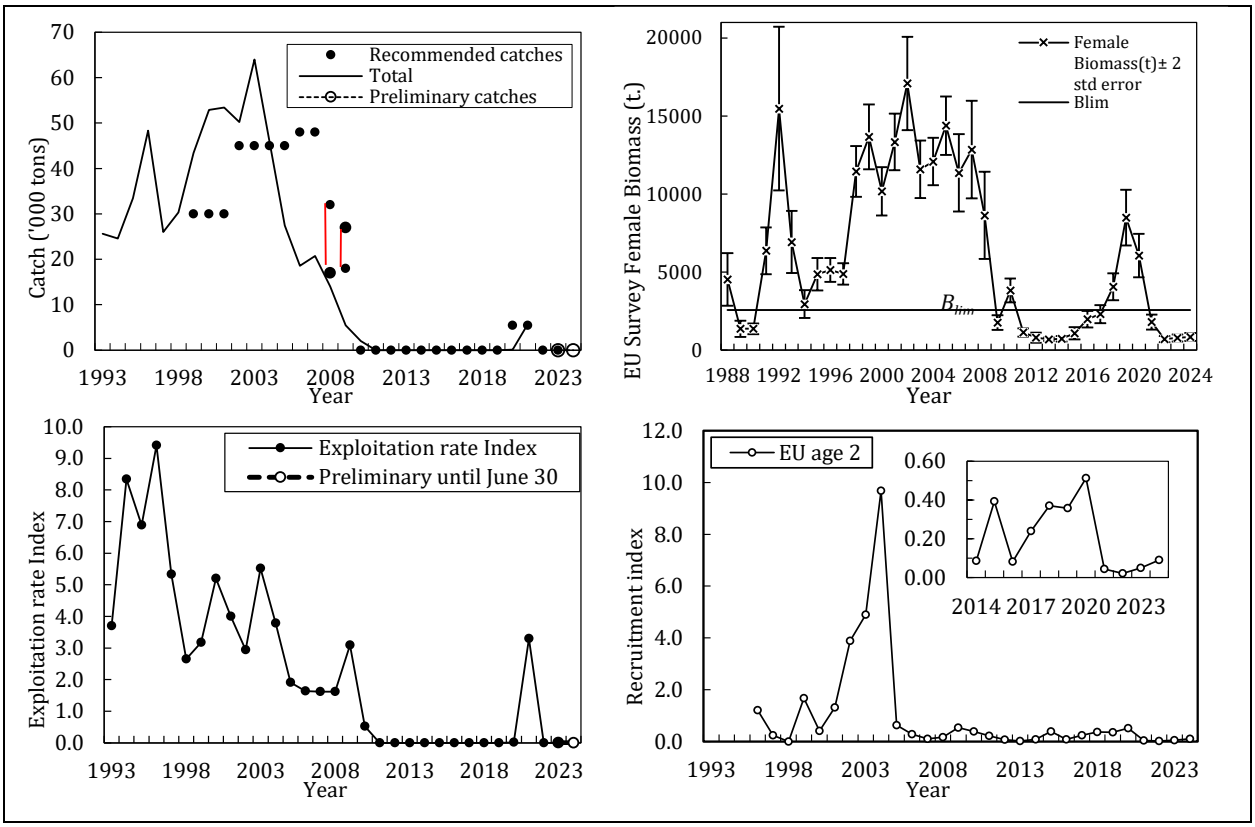
🟢 OK
🟡 Intermediate
🔴 Not accomplished
⚪ Unknown

Management unit

The northern shrimp stock on Flemish Cap is considered to be a separate population.

Stock status

Since 2021 the biomass has been below B_{lim}. Recruitment since 2021 has been the lowest of the historical series. The exploitation rate in 2022 and 2023 was zero and is expected to be at the same level in 2024.



Reference points

Scientific Council considers a proxy for B_{lim} to be 15% of the maximum observed female survey biomass. This corresponds to an index value of 2 564 t. A limit reference point for fishing mortality has not been defined.

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 fishery and research survey data.

The next assessment will take place prior the NAFO Annual Meeting in September 2026.

Human impact

Mainly fishery related mortality and low bycatch in other fisheries. Other sources (*e.g.,* pollution, shipping, oil-industry) are un-documented.

Biological and Environmental Interactions

Multispecies models suggest that predation by Atlantic cod (*Gadus morhua*) and redfish (*Sebastes* spp.), together with fishing, were the main factors driving the shrimp stock to the collapse after 2007.

Results of modelling suggest that, in unexploited conditions, cod and redfish would be expected to be a highly dominant component of the system, and large shrimp stock sizes like the ones observed in the 1998 – 2007 period would not be a stable feature in the Flemish Cap. Potential changes in environmental conditions may add uncertainty in the ecosystem modelling.

The Flemish Cap (3M) Ecosystem Production Unit (EPU), with the exception of a short-lived increase in 2005-2009, has shown a fairly stable total biomass over time despite the changes in individual stocks. This indicates no major changes in overall ecosystem productivity.

Ecosystem sustainability of catches

The impact of bottom fishing activities on Vulnerable Marine Ecosystems (VMEs) in the NRA was last assessed in 2021. The risk of Significant Adverse Impacts (SAIs) on sponge and large gorgonian VMEs was assessed to be low, while this risk for sea pen VMEs has been assessed as intermediate. The risks of SAIs on small gorgonian, black coral, bryozoan and sea squirt VMEs were assessed as high. A number of areas in the Flemish Cap (3M) EPU have been closed to bottom fishing to protect VMEs.

Division 3M shrimp is included in the benthivores guild of the Flemish Cap (3M) EPU. American plaice is the only other NAFO managed stock in this guild and the Division 3M EPU. The 3M Benthivore Catch/TCI (Total Catch Index) in 2023 was below the 2TCI ecosystem reference point (Catch 2023/TCI=0.01).

Fishery

This fishery is effort-regulated. A moratorium was imposed in 2011. The fishery was reopened in 2020. Fishing effort and catches were very low in 2020 but increased in 2021. With the new moratorium established in 2022, the catch in 2022-2023 was zero and is expected to be at the same level in 2024.

Recent catches (tonnes) and agreed effort by the NAFO Commission were as follows (ndf= no directed fishery):

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
STACFIS	0	0	0	0	0	79	5703[3]	0	0	0[1]
STATLANT 21	0	0	0	0	0	0	5905	NA[4]	NA[4]	
Effort[2] (Agreed Days)	ndf	ndf	ndf	ndf	ndf	2 640	2 640	ndf	ndf	ndf
Effort days used	0	0	0	0	0	19	479	0	0	0

[1] Preliminary catches until June 30
[2] Effort regulated
[3] CESAG method
[4] NA - In 2022-2023, STATLANT 21 information is incomplete.

Effects of the fishery on the ecosystem

The fishery was closed to directed fishing from 2011 to 2019 and since 2022.

Special comments

Scientific Council **recommends** that *the management of 3M shrimp be converted from the existing "effort regulation" to "catch regulation" in line with all other stocks in the NAFO Regulatory Area.*

Source of Information

SCR Docs. 16/035; 18/024; 24/059, 060; SCS Doc. 04/12