ICES Technical Service
Baltic Sea and Greater North Sea ecoregions
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EU standing request on catch scenarios for zero TAC stocks 2021; western Baltic spring-spawning herring (*Clupea harengus*)

Service summary

ICES has provided estimated catches of western Baltic spring-spawning herring (*Clupea harengus*), under the assumption that only the fleets that target other species or stocks will be fishing in 2022.

For herring in subdivisions 20–24, ICES estimates that 5437 tonnes of spring spawners (Skagerrak, Kattegat, and western Baltic) will be caught, assuming the same catch as in the intermediate year 2021 for the human-consumption fleet in the North Sea (fleet A), which targets North Sea autumn-spawning herring, and for fleet D, which targets sprat.

Request

EU DGMARE has requested ICES to evaluate the following:

For by-catch and for target stocks where ICES is advising zero TACs, but the stock is caught in demersal mixed-fisheries with other species where non-zero catches are advised, where possible ICES will provide the EU with illustrative catch scenarios that are consistent with the advice for the main target species in the fishery. This may involve carrying out mixed fisheries forecast or providing F-multipliers consistent with the advice for the target stocks or where forecasts are not possible the catch scenario should be based the best available scientific information.

Where the zero TAC advice is given for a target stock subject to a MAP the catch scenarios for the zero TAC stock should include scenarios consistent the F_{MSY} range in the target stock (e.g. F_{MSY}, $F_{MSY\ Lower}$ and intermediate values) and quantify the corresponding changes in biomass. Where possible, F scenarios that give, a stable biomass and increasing biomass (if F_{MSY} ranges do not) should also be provided.

Where possible ICES should provide catch scenarios which include changes in fishing pattern if they considered likely by ICES.

For stocks which are typically not caught in mixed fisheries (e.g. herring) but where ICES is advising zero TACs and where a monitoring fishery would be useful to monitor stock development, where possible ICES will provide catch scenarios for a monitoring TAC. This should be the minimum level of catches needed to provide sufficient data for ICES to continue providing scientific advice on the state of this stock.

Basis of the advice

Given the current zero catch advice for western Baltic spring-spawning (WBSS) herring, the first request was fulfilled by running a forecast scenario, where only those fleets that catch WBSS herring, but target other stocks, were allowed to fish in 2022 (Table 1). The human-consumption fleet in the North Sea (fleet A), which targets North Sea autumn-spawning (NSAS) herring, is assumed to catch 5241 tonnes of the WBSS herring stock, based on the average catch in 2018–2020. The fleet that targets sprat in Division 3.a (fleet D) is assumed to catch 196 tonnes, based on a 8.20% utilization of the 2021 TAC (average utilization 2018–2020) and 35.83% of WBSS in the catch (average split in Division 3.a in 2018–2020).

It hasn't been possible to calculate a scenario where the spawning–stock biomass (SSB) is estimated to remain stable between 2022 and 2023. The catch scenarios (Table 1) show that when fishing at F_{2021} is expected to result in a 2% increase in SSB in 2023, and the scenarios for the Baltic Sea management plan (MAP) all result in SSB increases in 2023 (3%–10%).

Results

Table 1 Herring (*Clupea harengus*) in subdivisions 20–24, spring spawners (Skagerrak, Kattegat, and western Baltic). Additional catch scenarios. All weights are in tonnes.

Basis	Total catch (2022)	$F_{3–6}$ (2022)	SSB* (2022)	SSB* (2023)	% SSB change **	% advice change ***
Catch for bycatch fleets only ^	5437	0.036	68464	79423	16	0
$F = F_{MSY}$	26098	0.310	66384	59264	-11	
$F = F_{2021}$	15811	0.174	67476	68733	2	
MAP: $F = F_{MSY} \times SSB_{y-1}/MSY\ B_{trigger}$	12499	0.134	67797	71788	6	
MAP: $F = F_{MSY\ lower} \times (SSB_{y-1}/MSY\ B_{trigger})$	8922	0.094	68130	75182	10	
MAP: $F = F_{MSY\ upper} \times (SSB_{y-1}/MSY\ B_{trigger})$	15017	0.164	67554	69420	3	

* For spring-spawning stocks, the SSB is determined at spawning time and is influenced by fisheries and natural mortality between 1 January and spawning time (April).
** SSB (2023) relative to SSB (2022).
*** The advised catch in 2021 was 0 tonnes.
^ Only the A-fleet that targets NSAS herring and the D-fleet that targets sprat are allowed to fish, assuming the same catch as in the intermediate year 2021 (C- and F-fleets have zero catch).

Issue relevant to the advice

This stock is caught across three different management units and rebuilding SSB above B_{lim} will be delayed if catches of this stock are not minimized in all units. It is estimated that around 27% of the 2021 total catches from the stock are taken in Division 4.a. For the other two areas, catch shares in 2021 are estimated to be around 64% for subdivisions 20–21, and 8% for subdivisions 22–24.

The stock projections are particularly uncertain this year. As a consequence of Brexit agreements, changes to fishing grounds and subsequently the exploitation pattern in the North Sea herring fisheries are possible for 2021–2022. Given the mixing of the WBSS and NSAS throughout part of the North Sea, and the large differences in the size and quotas of the two stocks, changes in the distribution of the fisheries may result in unexpected catches of WBSS for which a zero catch advice is issued.

For a number of years the Pelagic Advisory Council has provided an estimate on the expected transfer of herring catches from Division 3.a to the North Sea to be assumed during the intermediate year. This information is highly uncertain for this year and is estimated to be limited to 3000 tonnes (16% of EU quotas compared to approximately 50% used in recent years, [ICES, 2021]). Sensitivity analysis assuming the usual 50% transfer showed marginal differences on the recovery in SSB and no effect on the catch advice for 2022.

Sources and references

ICES. 2021. Herring Assessment Working Group for the Area South of 62° N (HAWG). ICES Scientific Reports. 779 pp. 3:12. https://doi.org/10.17895/ices.pub.8214.

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