

EU standing request on catch scenarios for zero TAC stocks 2021; herring (*Clupea harengus*) in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k (Irish Sea, Celtic Sea, and southwest of Ireland)

Service summary

ICES has provided forecasts on the development of herring (*Clupea harengus*) in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k (Irish Sea, Celtic Sea, and southwest of Ireland). All scenarios assumed full uptake of the monitoring TAC in the intermediate year (2021), although the 2021 TAC has not yet been agreed and the full monitoring TAC was not taken in 2020. There are no catch scenarios that will rebuild the stock above B_{lim} by 2023. ICES, therefore, advises zero catch in 2022. ICES has also provided a catch scenario consistent with the monitoring TAC (869 tonnes [t]) in the single-stock advice sheet.

Request

EU DGMARE has requested that ICES 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

As the 2021 TAC for herring in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k has not yet been agreed, forecasts were carried out assuming full uptake of a 869 t monitoring TAC in the intermediate year (2021). Full uptake of this monitoring TAC did not occur in 2020.

Under a zero catch option for 2022, a 10% increase in SSB is forecasted for 2023. Full uptake of the monitoring TAC (869 t) would lead to a 7% increase in SSB in 2023, while fishing at F_{MSY} in 2020 will result in an SSB decrease of 6% in 2023. Catch scenarios for SSB reaching B_{lim} , B_{pa} and $MSY\ B_{trigger}$ in 2023 were not presented because the stated SSB cannot be achieved, even with $F = 0$. Other scenarios considered are included in Table 2.

There are no catch scenarios that will rebuild the stock above B_{lim} by 2023, therefore ICES advises zero catch. ICES has also provided a catch scenario consistent with a monitoring TAC of 869 t.

Results

Table 1 Herring in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k. Assumptions made for the interim year and in the forecast.

Variable	Value	Notes
$F_{\text{ages (wr) 2-5}} (2021)$	0.062	The F that corresponds to the monitoring TAC.
$R_{\text{age (wr) 1}} (2021-2022)$	164 568	Stock–recruitment relationship based on the SSB_{2019} from the assessment output; in thousands.
$SSB (2021)$	19 278	Fishing at $F = 0.062$; in tonnes.
Total catch (2021)	869	Monitoring TAC; in tonnes.

Table 2 Herring in divisions 7.a South of 52°30'N, 7.g–h, and 7.j–k. Annual catch scenarios. All weights are in tonnes.

Basis	Total catch (2022)	F_{2-5} (2022)	SSB^* (2022)	% SSB change **	SSB^* (2023) #	% TAC change ***	% advice change ^
ICES advice basis							
MSY approach: zero catch	0	0	21902	10	24171	–100	–
Other scenarios							
F_{MSY}	4214	0.26	19639	–6	18507	385	–
$F_{MSY} \times SSB_{2021} / MSY B_{\text{trigger}}$	1620	0.093	21061	4	21909	86	–
$F = 0$	0	0	21902	10	24171	–100	–
F_{pa}	4214	0.26	19639	–6	18507	385	–
F_{lim}	6724	0.45	18159	–15	15483	674	–
$SSB_{2022} = B_{lim}^{^^}$	–	–	–	–	–	–	–
$SSB_{2022} = B_{pa}^{^^}$	–	–	–	–	–	–	–
$SSB_{2022} = MSY B_{\text{trigger}}^{^^}$	–	–	–	–	–	–	–
$F = F_{2021}$	1090	0.062	21340	6	22637	25	–
TAC = Monitoring TAC	869	0.049	21455	7	22982	0	–

* For this autumn-spawning stock, the SSB is determined at spawning time and is influenced by fisheries between 1 April and spawning (October).

** SSB 2023 relative to SSB 2022.

*** Total catch in 2022 relative to the Monitoring TAC in 2021 (869 tonnes).

^ Advice value for 2022 relative to the advice value for 2021 (0 tonnes).

^^ These catch scenarios are left blank because the stated SSB cannot be achieved, even with $F = 0$.

Assuming same catch scenario in 2023 as in 2022.

Sources and references

ICES. 2020. Herring Assessment Working Group for the Area South of 62°N (HAWG). ICES Scientific Reports, 2:60. 1054 pp.
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