1.1.1 Advice on fishing opportunities

ICES approach to advice on fishing opportunities

The ICES approach to advice on fishing opportunities integrates the precautionary approach with the objective of achieving maximum sustainable yield (MSY), unless otherwise requested. The aim is, in accordance with the aggregate of international guidelines, to inform policies for high, long-term yields while maintaining productive fish stocks in marine ecosystems that meet expected environmental standards (e.g. good environmental status [GES] in the EU).

Annex 2 of the UN Fish Stocks Agreement (UN, 1995) contains guidelines for applying a precautionary approach within an MSY framework. In accordance with a precautionary approach, populations need to be maintained within safe biological limits to make MSY possible. Within safe biological limits, however, an MSY approach is necessary to maximize long-term yields. All ICES advice is consistent with the precautionary approach, which is a necessary but not a sufficient condition for MSY.

MSY is a broad conceptual objective aimed at achieving the highest yield over the long term. It is non-specific with respect to: (a) the biological unit to which it is applied; (b) the models used to provide scientific advice; (c) the definition of yields; and (d) the management methods used to achieve MSY. ICES interpretation of MSY is maximizing the average long-term yield from a given fish stock while maintaining the stock as productive. ICES considers the yield to be maximized as the part of the catch that is landed, measured in weight. Depending on regulations for the individual stock, this may be calculated relative to the landed catch above a prescribed minimum size.

Many of the models (mathematical and conceptual) used to estimate MSY and associated parameters typically assume that factors not explicitly included either remain constant or vary around a historical long-term mean. Marine ecosystems are dynamic, however, and fish stocks will change not only in response to fishing patterns and fishing pressures but also to changes in their prey or their predators as well as to changes in the climate. ICES therefore considers MSY reference points to be valid only in the short and medium term (generally up to 5–10 years). MSY reference points should be subject to regular reviews and modified according to new information or process understanding.

To support the stock-by-stock management system, ICES provides advice on fishing opportunities and stock status for individual stocks. For some stocks ICES is only requested to advise on its status and not on fishing opportunities. In addition to the single-stock advice, ICES also provides mixed-fisheries considerations, fisheries overviews, and ecosystem overviews. These encapsulate the technical and biological interactions between stocks at an ecoregion scale.

For the purposes of identifying the advice rule to be applied when giving advice on fishing opportunities, ICES classifies stocks into six main categories on the basis of available knowledge:

Category 1 – *Stocks with quantitative assessments*; includes stocks with full analytical assessments and forecasts that are either age-/length-structured or based on production models.

Category 2 – *Stocks with analytical assessments and forecasts that are only treated qualitatively as well as stocks with surplus production models, e.g. SPiCT, JABBA, without an MSE*; includes stocks with quantitative assessments and forecasts which, for a variety of reasons, are considered indicative of trends in fishing mortality, recruitment, and biomass.

Category 3 – *Stocks for which survey-based assessments or exploratory assessments indicate trends*; includes stocks for which survey, trends-based assessment, or other indices and life history information are available that provide reliable indications of trends in stock metrics such as total mortality, recruitment, and biomass.

Category 4 – *Nephrops stocks where information on possible abundance can be inferred* and stocks for which a reliable time-series of catch can be used to approximate MSY. This is where there are reasonable scientific grounds to use life-history and density information from functional units to provide advice.

Category 5 – *Stocks for which either only data on landings or a short time-series of catch are available.*

Category 6 – *Stocks for which there are negligible landings and stocks caught in minor amounts as bycatch*; includes stocks where landings are negligible in comparison to discards as well as stocks that are primarily caught as bycatch species in other targeted fisheries.

For category 1 and 2 stocks, ICES provides advice when requested in accordance with agreed management plans or strategies evaluated to be consistent with the precautionary approach (Figure 1). If such plans or strategies are not agreed upon by the relevant management bodies (as indicated by a registered disagreement in advance from a relevant management body, to the use of the plan as the basis of advice) or have been evaluated by ICES as not being precautionary, ICES will give advice on the basis of its MSY approach.

ICES considers category 3, 4, 5, and 6 stocks to be data-limited. ICES provides advice for category 4, 5, and 6 stocks according to the precautionary approach presented in ICES (2012). In 2021 ICES began transitioning to new methods to provide advice for stocks in category 2 and 3 (see ICES 2020 Annex 3; 2022). As such, ICES is providing advice according to the new methods for some, but not all relevant stocks at this time. As this approach is further implemented moving forward, this document will be updated to reflect this change in the ICES advisory framework. And until fully implemented, there will be two approaches to providing advice for category 3 stocks.

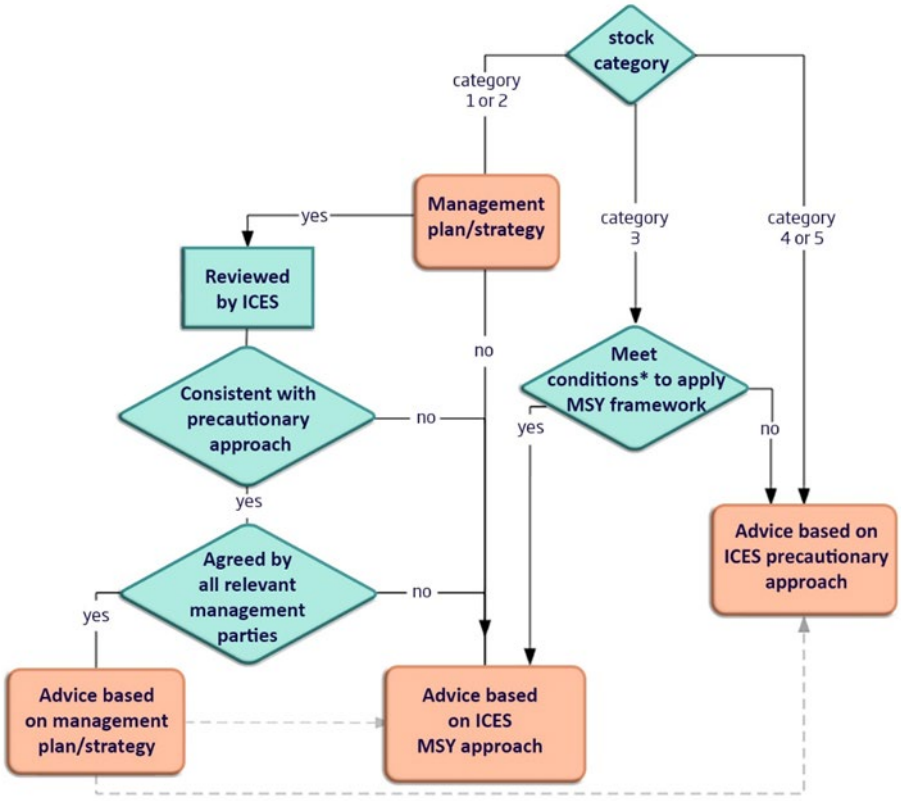

Figure 1 Flow diagram showing the basis of ICES advice. The broken grey lines indicate that the advice in management plans is consistent with ICES MSY approach or the precautionary approach. * Category 3 methods are available for different life-history types, including short-lived stocks; MSEs may be required before use in the advice (see ICES, 2022 for further details).

Most of the fish and shellfish fisheries advised on by ICES are managed by total allowable catches (TACs) and are increasingly subject to discard bans or landing obligation (LO) regulations. Different regulations are in place within the ICES area, and different regulations may relate to different management areas. For EU waters, an LO was introduced in 2015 and was fully in place by 2020. Following the introduction of the LO, catches may be split into three categories: reported landings at or above minimum conservation reference size (MCRS), reported landings below MCRS, and discards. Discards may also be split into dead discards and live discards, based on information on survival rates. ICES discard estimates are normally based on data from observer schemes and may include individuals which, in accordance with the landing obligations/discard bans, should be landed. Estimates of discarding not observed are often imputed based on observations from similar métiers, seasons, or areas.

Generally, ICES assumes that the current fishing pattern and discarding practices are likely to remain unchanged over the forecast period. ICES may split the advised catch and other catch scenarios into the three categories above (or four categories if a fraction of discards is assumed to survive).

In the forecast period, ICES does not distinguish between landings below MCRS/catching size and discards in the catch scenarios. Those two components are instead combined into one category: projected discards. Landings above MCRS/catching size may, in these cases, be termed 'projected landings' as illustrated in Figure 2

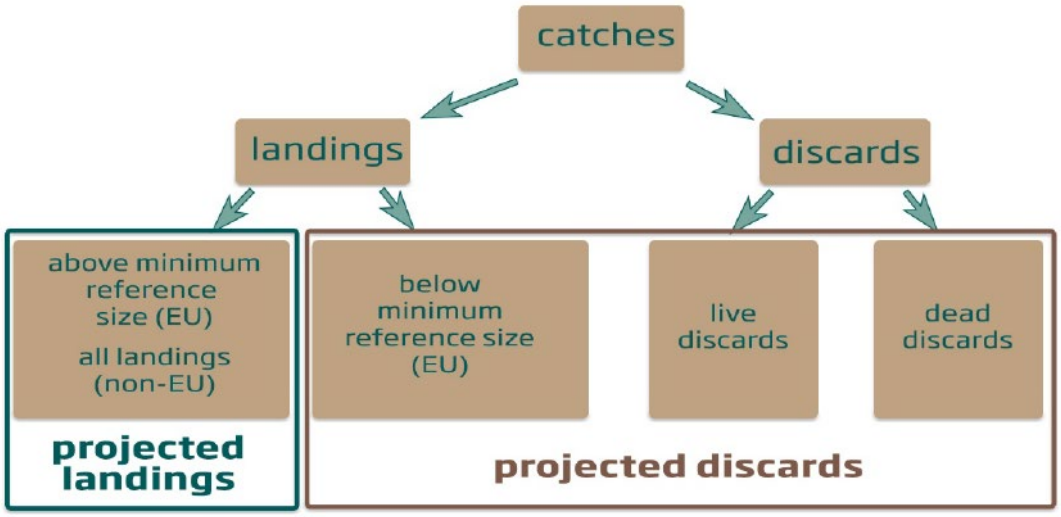

Figure 2 Catch categories used by ICES in stock assessments and forecasts. For an explanation of these categories, see the text above.

General approach

Fisheries directly affect fish stocks through catches. Fishing mortality (F) is a measure of fishing pressure; it is the instantaneous rate derived from the proportion of fish in an age or size class taken by fisheries during one year. The fishing mortality referred to in ICES advice is estimated as the average F over those ages or sizes which dominate in the catches. For some stocks, such as Icelandic cod, saithe, and most *Nephrops* stocks, ICES uses harvest rates (HRs) instead of fishing mortality. The harvest rate is defined as the fraction of a reference biomass or abundance that is caught by the fishery during a year.

The production in a fish stock can be highly variable. It is related to recruitment, stock size (often expressed as spawning-stock biomass [SSB]), and the size structure in the stock; these in turn also depend on the fishing mortality and fishing patterns.

Surplus production of a stock is the biomass that is generated by the stock at any given population size, that in the absence of fishing, would be in excess of that required to maintain that given population size. For a given fishing pattern there is a level of population abundance that, in the long term, will generate the highest surplus production. This peak of surplus production (above minimum conservation/reference size) is the MSY, and the fishing mortality generating this peak is F_{MSY}.

Fishing mortality is the only variable that can be directly controlled by fisheries management. Fisheries management cannot directly control the stock size only influence it through overall fishing mortality. Stock size is also subject to natural variability that on a year-to-year basis can exceed the influence of fishing. MSY refers to a long-term average. A management strategy that harvests variable yields in response to the natural variability in stock size will, on average, give yields closer to the long-term MSY than a strategy operating with the maximum constant yield that could be taken sustainably.

Due to the variability in stock size, there may be situations where the spawning stock is so low that reproduction is at significant risk of being impaired. A precautionary approach implies that fisheries management in such situations should be more cautious. For stocks where quantitative information is available, the reference point B_{lim} may be identified as the stock size below which there is a high risk of reduced recruitment (Figure 3). A precautionary safety margin incorporating the uncertainty in ICES stock estimates leads to the precautionary reference point B_{pa}, which is a biomass reference point designed to have a low probability of being below B_{lim}. When the spawning-stock size is estimated to be above B_{pa}, the probability of impaired recruitment is expected to be low.

For short-lived species, for which recruitment is highly variable, the biomass can fluctuate widely between years. A precautionary approach in this situation implies that a minimum stock size, $B_{escapement}$, should remain in the sea every year after fishing to ensure future recruitment.

F_{lim} is the fishing mortality which in the long term will result in an average stock size at B_{lim}. Fishing at levels above F_{lim} will result in a decline in the stock to levels below B_{lim}. ICES also defines $F_{p0.5}$ ($=F_{pa}$), which is the fishing mortality that results in no more than 5% probability of bringing the spawning stock to below B_{lim} in the long term.

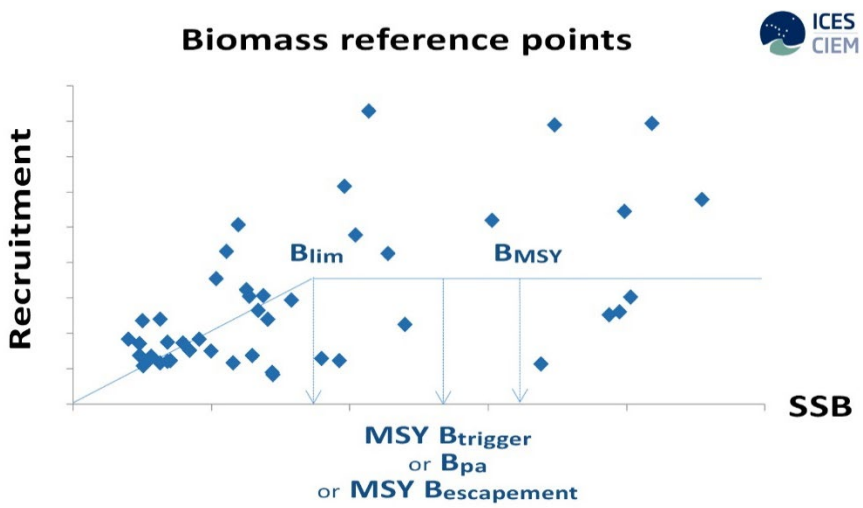

Figure 3 Illustration of biomass-based biological reference points. B_{lim} and B_{pa} are precautionary reference points related to the risk of impaired reproductive capacity, while MSY $B_{escapement}$ (often equal to B_{pa}) is used in the advice framework for short-lived species. MSY $B_{trigger}$ is the parameter in ICES MSY framework which triggers advice on reduced fishing mortality relative to F_{MSY}. B_{MSY} is the expected average biomass if the stock is exploited at F_{MSY}. The diamond shapes in the plot show the variable values of recruitment versus SSB that have been observed over the years. Recruitment can be seen to be generally lower when SSB is below B_{lim}.

Some fish eat other fish, which means growth in numbers for the predator and mortality for the prey; fish populations also compete for food or habitat. Thus, the size and productivity of a fish stock may depend on the state of other stocks, as well as on its own abundance. It also means that as a population of fish increases, growth and mortality for that species cannot be expected to remain constant, as there will be increasing competition for food and habitat within that population.

ICES incorporates such multispecies interaction considerations into the single-species framework in the Baltic Sea, the Barents Sea, and the North Sea. This is done by applying natural mortality and growth rates derived from models of species interactions, using size, age, and stomach data for several species. ICES routinely incorporates short-term changes in growth and maturation into short-term projections to account for competition and food supply. ICES also expects to periodically update MSY reference points (typically as part of the benchmark process) to ensure they reflect current biological parameters, dynamics and selection pattern.

Long-lived category 1 and 2 stocks

For long-lived category 1 and 2 stocks, ICES bases its MSY approach on attaining a fishing mortality rate of no more than F_{MSY} while maintaining the stock above B_{lim} with at least 95% probability.

Under this approach, ICES uses the fishing mortality and biomass reference points F_{MSY} and MSY $B_{trigger}$. F_{MSY} is estimated as the fishing mortality with a given selection pattern and current environmental conditions that gives the long-term maximum yield. To ensure that fishing at F_{MSY} is sustainable, F_{MSY} must not be above $F_{p0.5}$. This is appropriate, since a precautionary approach is a necessary boundary to ensure sustainability, even though it is in itself not a sufficient condition for achieving the MSY implied by the MSY framework.

MSY $B_{trigger}$ is considered the lower bound of SSB fluctuation (fifth percentile of B_{MSY}) when fished at F_{MSY} and is used in ICES advice rule to trigger a cautious response. The cautious response, in cases where the spawning stock falls below MSY $B_{trigger}$, is to reduce fishing mortality in order to allow a stock to rebuild to levels capable of producing MSY. The reduction in fishing mortality is proportional to the ratio between the size of the spawning stock and MSY $B_{trigger}$ (SSB is estimated at spawning time [in the first year of the forecast).

The advice rule leads to catch advice corresponding to a fishing mortality of:

1) F = F_{MSY} when SSB is at or above MSY $B_{trigger}$
2) F = F_{MSY} × SSB/MSY $B_{trigger}$ when the stock is below MSY $B_{trigger}$ and above B_{lim}
3) If the F following from applying rule 2 is insufficient to bring the stock above B_{lim} in the short term, ICES advice will be based on bringing the stock above B_{lim} at the end of the projection year with a 50% probability. If there is no F that will bring the stock above B_{lim} at the end of the projection year or when the forecast is highly sensitive to assumptions (e.g. incoming recruitment), ICES will advise zero catch based on precautionary considerations until the SSB is above B_{lim} with high probability.

Conceptually, SSB in the advice rule is the estimated spawning-stock size at the beginning of the year to which the advice applies (advice year), or at spawning time in the year before the advice year. For example, for an assessment performed in 2020 using data through 2019, the reference spawning-stock size for most stocks will be the projected size at the beginning of 2021.

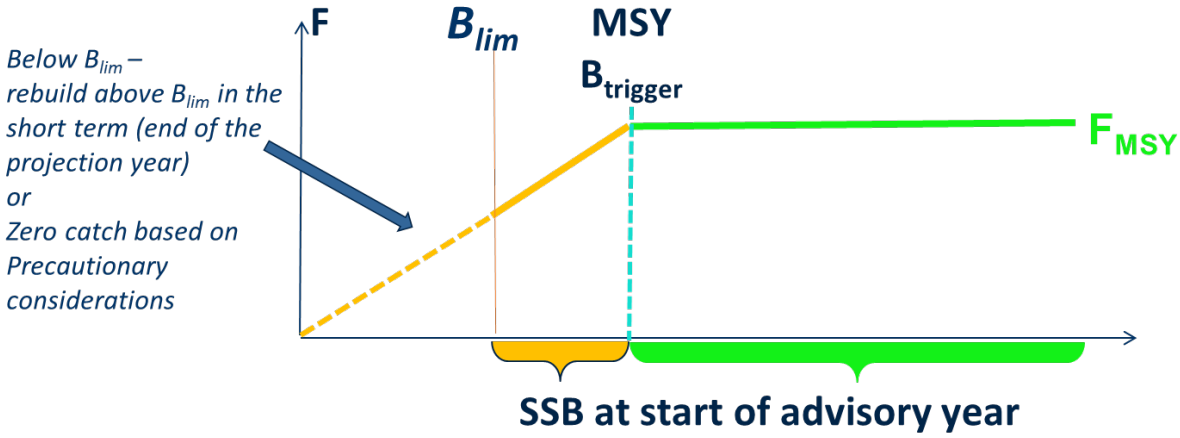

Figure 4 ICES advice rule for category 1–2 stocks.

The MSY approach does not use a B_{MSY} estimate. B_{MSY} is a notional value around which stock size fluctuates when fishing at F_{MSY}. B_{MSY} strongly depends on the interactions between the fish stock and the environment it lives in, including biological interactions between different species. Historical stock size trends may not be informative about B_{MSY} (e.g. when F has exceeded F_{MSY} for many years or when current ecosystem conditions and spatial stock structure are, or could be, substantially different from those in the past). Estimates of B_{MSY} are very sensitive to the assumption that all future factors that influence fisheries productivity remain unchanged in the future.

Determination of MSY $B_{trigger}$ requires contemporary data that identify the normal range of fluctuations in biomass when stocks are fished at F_{MSY}. If the observation on fluctuation in biomass is insufficient to estimate MSY $B_{trigger}$, the reference point is normally set at B_{pa} (if this reference point is available). If sufficient observations of SSB fluctuations associated with fishing around F_{MSY} are available, the MSY $B_{trigger}$ should be re-estimated to correspond to the fifth percentile of B_{MSY} when fishing at F_{MSY}.

ICES has provided advice on plausible values around F_{MSY} (F_{MSY} range) for a number of stocks in response to a request by the EU. The F_{MSY} ranges [$F_{MSY\ lower}$, $F_{MSY\ upper}$] are derived to deliver no more than a 5% reduction in long-term yield, compared with the MSY obtained by fishing at F_{MSY} in the long term. To be consistent with ICES precautionary approach, F_{MSY} or $F_{MSY\ upper}$ is capped so that the probability of SSB < B_{lim} is no more than 5% in any single year (based on long-term simulations when the stock is in equilibrium)[*].

Most fisheries catch a mixture of species; it is not entirely possible to control either which species those are or how much of each species is caught. For stocks exploited by mixed-species fisheries, it may not be possible to achieve the single-stock MSY catch advice for all the stocks simultaneously. Either the advised catches for some stocks will be exceeded in trying to

[*] Version 2: Paragraph updated.

catch the TACs of other stocks, or the TACs for some stocks will not be caught in order to prevent overshooting the TACs of other stocks. ICES has developed a mixed-species fisheries forecast to address this; for the main demersal stocks in the North Sea, Bay of Biscay, Iberian waters and Celtic Sea, ICES provides a range of mixed fisheries scenarios to the trade-offs between the single stock catch advice.

Short-lived category 1 and 2 stocks

The future size of a stock of short-lived species is very sensitive to recruitment because of the small number of age groups present in the natural population. Incoming recruitment is often the main, or only, component of the fishable stock. Care must therefore be taken to ensure that the spawning-stock size is above levels where recruitment is not impaired, as the future of the stock is highly dependent on annual recruitment.

For most stocks of short-lived species, similarly to the long-lived species, ICES MSY approach is aimed at providing MSY while ensuring that the probability of the stock being below B_{lim} in any single year is no more than 5%. For some stocks, advice is given based on agreed management plans that have been shown to be precautionary. For some other stocks, ICES uses two reference points: MSY $B_{escapement}$ (see Figure 3) and F_{cap}. MSY $B_{escapement}$ is estimated to be robust against low SSB and includes a biomass buffer to account for uncertainty in both the assessment and catch advice. In some cases, however, defining MSY $B_{escapement}$ is not necessary; this is because the escapement strategy uses a 95% probability of being above B_{lim} directly.

For many of these stocks of short-lived species, F_{cap} is defined to limit exploitation rates when biomass is high. A large stock is usually estimated with greater uncertainty; when the catch is taken, for example, the uncertainty in the escapement biomass is greater. By capping the F, the escapement biomass is increased in proportion to stock size, maintaining a high probability of achieving the minimum amount of biomass left to spawn. In some cases (such as following high recruitment), this will result in a median SSB above MSY $B_{escapement}$ in the long term.

The advised yearly catches correspond to the estimated stock biomass in excess of the MSY $B_{escapement}$ but are constrained to allow a fishing mortality no higher than F_{cap}. In the absence of agreed management plans or a defined F_{cap}, the advice is based on the MSY or precautionary approaches.

For some short-lived species, assessments are so sensitive to incoming recruitment that the amount of biomass in excess of the target escapement cannot be reliably estimated until data on the incoming year class are available. For most of the stocks concerned, such data are obtained just before the fishery starts (or during the fishing year). The advice on fishing opportunities may therefore only be given either directly prior to the start of the fishing season or after the fisheries has started.

Category 2-6 methods and advice rules

ICES developed a data-limited stock (DLS) framework for providing stock status and catch advice for stocks without traditional analytical assessments, reference points, and short-term forecasts. The framework was first implemented in 2012, and some category 3 and all category 4, 5, and 6 stocks continue to use these 2012 advice rules (ICES, 2012). However, in 2021 ICES adopted new methods for use in the advice for category 2 and 3 stocks, which are in the process of being implemented over the next few years in the ICES advice. Expert groups are strongly encouraged to implement these new methods for advice produced in 2023. When category 3 stocks apply the new methods, first, the Surplus Production in Continuous Time (SPiCT) (or other similar model platform such as JABBA) should be attempted. If SPiCT is agreed by ICES, advice will be provided with category 2 MSY approach advice (note if the HCR is tested for a specific stock with an MSE on a SPiCT assessment, this assessment will be considered a category 1). If SPiCT is not found to be appropriate, empirical approaches based on life-history traits, biomass indices, catch, and length data are available to provide MSY approach or Precautionary advice for stocks in category 3 (ICES, 2020; 2022). Methods and data requirements are summarized in Table 1.

Table 1 Available advice rules, methods, and data requirements for stocks in categories 2-6. The origin of the method (ICES 2012, 2018, 2020 or 2022) is given in a footnote for each.

Advice rules & methods		**Details**	**Data requirements**						
			Biomass time series	Catch time series	Catch length data	k, L_∞; von Bertalanffy growth coefficients	Recent advised catch or recent average catch	Current biomass estimate	MSY harvest rate proxy from MSE
Methods* with short-term forecast, biomass and F reference points -- category 2 MSY approach advice									
SPiCT	Short-term forecasts utilizing a surplus production model (SPiCT) annual advice recommended Some biological information on the specific stock or a similar stock/species is needed to evaluate the estimates of intrinsic natural growth rate (r) *for short- & non-short-lived stocks*	.35 fractile on the short-term forecast	x	x					
Empirical approaches* based on life-history traits -- category 3 MSY approach advice									
rfb rule	Biomass ratio, fishing proxy, and biomass safeguard $A_{y+1} = A_y \times r \times f \times b \times m$ biennial advice interval	r: rate of change in the biomass index (I) A_y: recent advised catch f: fishing proxy (length data, target) b: biomass safeguard m: multiplier; tuning parameter Stability clause (-30%: +20% cap)	x		x	x	x		
chr rule	Constant harvest rate $A_{y+1} = I_{y-1} \times F_{proxy,MSY} \times b \times m$ annual advice *not for short-lived stocks*	I_{y-1}: most recent biomass index value $F_{proxy,MSY}$: target harvest rate b: biomass safeguard m: multiplier; tuning parameter Stability clause (-30%: +20% cap)	x	x	x	x			
chr – MSE rule	Constant harvest rate with MSE $A_{y+1} = I_{current} \times HR_{msy.proxy}$ *for short-lived stocks*	$I_{current}$: abundance indicator of the stock $HR_{msy.proxy}$: sustainable harvest rate						x	x

Advice rules & methods		**Details**	**Data requirements**						
			Biomass time series	Catch time series	Catch length data	k, L_∞; von Bertalanffy growth coefficients	Recent advised catch or recent average catch	Current biomass estimate	MSY harvest rate proxy from MSE
Empirical approaches* based on life-history traits -- category 3 Precautionary approach advice									
rb rule	Biomass ratio and biomass safeguard	r: rate of change in the biomass index (*I*)							
	$A_{y+1} = A_y \times r \times b \times m$	b: biomass safeguard	x				x		
	biennial advice interval	m: multiplier; tuning parameter							
		A_y: recent advised catch							
not for short-lived stocks		Stability clause (-30%: +20% cap)							
Empirical approaches* based on life-history traits -- category 3 Precautionary approach advice									
1-over-2 rule	Rate of change in biomass indicator	I_{y-1}:I_{y-2}: recent average biomass indicator							
	$A_{y+1} = A_y$ x (I_y / (mean I_{y-1}:I_{y-2}))	A_y: recent advised catch	x				x		
		I_y : recent biomass indicator							
for short-lived stocks		Stability clause (±80% cap)							
Advice rules** using abundance/biomass indices and catch over time -- category 3 Precautionary approach advice									
2-over-3 rule	$A_{y+1} = A_y$ x (I_{y-2}:I_{y-3} × uncertainty cap) × precautionary buffer	A_y: recent advised catch							
	MSY proxy reference points can be derived***	I_{y-2}/I_{y-3}: recent average biomass ratio	x				x		
		Stability clause (-20%: +20% cap)							
		Precautionary buffer (-20%)							
Advice rules** using abundance/biomass indices and catch over time -- category 3 Precautionary approach advice									
Data borrowing	$A_{y+1} = A_{y-10}$ x precautionary buffer	A_{y-10} : medium term (10 year) average catch from area with similar environmental conditions							
	MSY proxy reference points can be derived***	Precautionary buffer (-20%)		x					
	the area/stock loaning the data and information needs F_{MSY} and $MSY_{Btrigger}$ estimates								

Advice rules & methods		**Details**	**Data requirements**						
			Biomass time series	Catch time series	Catch length data	k, L_∞; von Bertalanffy growth coefficients	Recent advised catch or recent average catch	Current biomass estimate	MSY harvest rate proxy from MSE
Advice rules** using abundance/biomass indices and landings or catch over time -- category 3, 5 & 6 Precautionary approach zero catch †									
Zero Catch	Very low biomass	If biomass indicators, landings or catches have declined significantly over a period of time, this is considered to be representative of a substantial reduction in biomass and it is not possible to identify a catch compatible with stock rebuilding then zero catch is advised.	x Cat. 3 only	catch/ landings					
Advice rules** using catch over time -- category 5 Precautionary approach advice									
Catch only	$A_{y+1} = A_y$ x precautionary buffer	A_y = recent average catch or advice Precautionary buffer (-20%)		x					
Advice rules** using limited landings only data over time -- category 6 Precautionary approach advice									
Landings only	$A_{y+1} = A_y$ x precautionary buffer	A_y = recent average landings or advice Precautionary buffer (-20%)		landings					

* ICES, 2020; 2022, ** ICES, 2012, *** ICES, 2018

† Version 2: Advice rule added.

Table 2 illustrates the application of the precautionary buffer, a tool used to ensure that the advice is precautionary for stocks using many methods from the framework developed in 2012 (ICES, 2012).

Table 2 Framework for application of the precautionary approach for ICES category 3–6 stocks using methods from ICES (2012).

		Stock size status or qualitative evaluation^		
		✗ or ✗	✓ or ✓	?
Fishing pressure status or qualitative evaluation^	✗ or ✗	**1** Apply PA buffer	**4** Apply PA buffer	**7** Apply PA buffer
	✓ or ✓	**2** Apply PA buffer	**5** Do not apply PA buffer	**8** Consider applying PA buffer Apply Do not apply if: a) consistent* increase in stock size index or b) significant increase in stock size index ratio** (> 1.5)
	?	**3** Apply PA buffer	**6** Consider applying PA buffer: Apply Do not apply if: effort consistently* decreases or has remained stable	**9** Consider applying PA buffer: Apply Do not apply if: a) consistent increase in stock size index or b) significant increase in stock size index ratio** (> 1.5) **AND** effort consistently* decreases or has remained stable

^ The qualitative evaluation (e.g. ✗ or ✓) refers to the stock status.
* Consistent increase/decrease should be determined on the basis of a significant Mann-Kendall test using the last ten years of the stock index or effort data; the term 'consistent' replaces the term 'continuous', which allows for some year-to-year declines.
** "Index ratio" means the x latest index values compared with the y preceding values. Most often this will be the "2 over 3" stock size indicator ratio.

This framework, applied to ICES (2012) methods, with an uncertainty cap and application of the PA buffer was simulation tested for a range of stocks and in general was found to be appropriate (ICES, 2017). When stock trends are taken into account and combined with the considerations above, the resulting advice when using the same index of stock change may show a maximum decrease of 36% and a maximum increase of 20% over the previous advice. The advice is applicable to a time-frame that is compatible with a measurable response in the metrics used as the basis for the advice. In cases where the least amount of information is available, including cases where the 20% PA buffer has been applied, ICES considers the advice valid for a fixed and determined period. As an example, that period could be two years, unless important new knowledge emerges regarding a stock that justifies an interim revision of the advice.

The advice rule used to provide quantitative advice on fishing possibilities depends on the information available, and ICES has developed separate advice rules for each of the stock categories listed in this section and the sections above.

As ICES has been developing, testing, and adopting new methods to provide advice on the stock status and sustainable exploitation of data-limited stocks for more than a decade, the category system may need revisions as we move forward. The framework is expected to evolve over time, as the methods are further developed and validated.

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