12.4.9   Definitions of stock status

ICES uses a set of pictograms to represent the status of the stocks and their exploitation relative to management objectives as defined by ICES MSY, by precautionary approach reference points, and by agreed management plans. When reference points are missing, ICES presents a qualitative evaluation if the available information is sufficient to conduct such an evaluation. The pictograms used and their overall definition are presented in Table 12.4.9.1.

Table 12.4.9.1   Pictograms used by ICES to represent the evaluation of the stock status.

Status relative to reference points	Qualitative evaluation	Description
✔	✔	Desirable situation, e.g. fishing pressure is below the relevant reference point or stock size is above the relevant reference point.
O		Status lies between the precautionary (PA) and limit (lim) reference points.
✘	✘	Undesirable situation, e.g. fishing pressure is above the relevant reference point or stock size is below the relevant reference point.
?		Status of the stock is either **Unknown** when neither quantitative assessment nor proxy calculation exist, or **Undefined** when there is an analytical assessment but reference points are undefined.
	↗	Absolute level unknown, but increasing.
	→	Absolute level unknown, but unchanged.
	↘	Absolute level unknown, but decreasing.

Fishing pressure (F, F_{proxy}, F/F_{MSY}, or harvest rate)

Fishing pressure	Explanation	Sign	Text
MSY reference (F_{MSY}, $F_{MSY_{proxy}}$)	$F \leq F_{MSY}$	✅	At (if $F = F_{MSY}$) Below (if $F < F_{MSY}$)
	$F <<< F_{MSY}$ ($F \sim 0$), $F <<< F_{MSY_{proxy}}$[1]	✅	Below / Below proxy
	$F > F_{MSY,}$ $F > F_{MSY_{proxy}}$[1]	❌	Above / Above proxy
	No reference point	❓	Undefined
	Stock status unknown	❓	Unknown
Precautionary approach (F_{PA}, F_{lim})	$F \leq F_{PA}$	✅	Harvested sustainably
	$F_{lim} > F > F_{PA}$	🟠	Increased risk
	$F \geq F_{lim}$	❌	Harvested unsustainably
	No reference point [2]	❓	Undefined
	Stock status unknown (even if reference point is defined)	❓	Unknown
Management plan (F_{MGT})	$F < F_{MGT}$ target *or* $F < F_{MGT}$ limit	✅	Below
	F within X% of target or within defined range	✅	At target *or* within the range
	$F > F_{MGT}$ target $F > F_{MGT}$ limit	❌	Above
	No (agreed) management plan	-	Not applicable
Qualitative evaluation *[Not applicable for category 1 and 2 stocks]*	If the exploitation of the stock can be conceptualized in relation to any possible reference points, a qualification is given:		
	When the fishing pressure indicator is very high (higher than expected to be safe for the stock), e.g. F > any safe limit	⊗	*[Short qualification]*
	When the fishing pressure indicator is very low, e.g. F < possible ref. points	⊘	*[Short qualification]*
	If the stock exploitation cannot be conceptualized in relation to any possible reference points, trends are shown by arrows only:		
	When the fishing pressure indicator increases	↗	Increasing
	When the fishing pressure indicator decreases	↘	Decreasing
	When the fishing pressure indicator is stable	→	Stable

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[1] The evaluation of the proxies should only concern the year of the evaluation, i.e. when the estimation of MSY proxies uses data up to year Y the tick marks (❌/✅) are only included in the year Y. In the remaining years a ❓ is used, except when information is conclusive that the stock status will remain the same for the other years.

[2] For stocks with defined MSY reference point(s) or MSY proxies, but NO defined PA reference point(s):
- if a ✅ is used for the MSY reference point, a ✅ should also be used for the PA reference point.
- if a ❌ is used for the MSY reference point, a ❓ should be used for the PA reference point.

However, the text should be adapted to specify that PA reference point values are not defined (i.e. "above/below candidate reference points"). In such cases, the terms "Harvested sustainably" and "Full reproductive capacity", provided for cases when PA reference points are defined, should not be used.

Stock size (SSB, total biomass, B/B_{MSY}, or abundance/biomass indices)

Stock size	Explanation	Sign	Text
MSY ($B_{trigger}$)	$SSB \geq MSY\ B_{trigger}$ $SSB \geq MSY\ B_{trigger_{proxy}}$[1]	✅	At trigger / Above trigger /At proxy / Above proxy
	$SSB \geq MSY\ B_{escapement}$ *[applicable for short-lived stocks with an MSY $B_{escapement}$]*	✅	Above escapement
	$SSB < MSY\ B_{trigger}$ $SSB < MSY\ B_{trigger_{proxy}}$[1]	❌	Below trigger / Below proxy
	$SSB < MSY\ B_{escapement}$	❌	Below escapement
	No reference point	❓	Undefined
	Stock status unknown	❓	Unknown
Precautionary approach (B_{PA}, B_{lim})	$SSB \geq B_{PA}$`	✅	Full reproductive capacity
	$B_{lim} < SSB < B_{PA}$	🟠	Increased risk
	$SSB \leq B_{lim}$	❌	Reduced reproductive capacity
	No reference point[2]	❓	Undefined
	Stock status unknown (even if no reference point is defined)	❓	Unknown
Management plan (SSB_{MGT})	$SSB \geq B_{MGT}$ plan target, limit or trigger biomass	✅	Above or At target
	SSB within X% of target or within defined range	✅	within the range
	$SSB < B_{MGT}$ plan target, limit or trigger biomass	❌	Below
	No (agreed) management plan	-	Not applicable
Qualitative evaluation	If the state of the stock can be conceptualized in relation to any possible reference points, a qualification is given:		
	When the stock size indicator is very low (lower than expected to be safe for the stock), e.g. SSB < any safe limit	⊗	*[Short qualification]*
	When the stock size indicator is very high, e.g. SSB > possible reference points	✓	*[Short qualification]*
	If the state of the stock cannot be conceptualized in relation to any possible reference points, trends are shown by arrows only:		
	When the stock size indicator increases	↗	Increasing
	When the stock size indicator decreases	↘	Decreasing
	When the stock size indicator is stable	→	Stable