

Performance indicators for North Atlantic Albacore

<i>PERFORMANCE INDICATORS AND ASSOCIATED STATISTICS</i>	<i>UNIT OF MEASUREMENT</i>	<i>TYPE OF METRICS</i>
Status		
1.1 Minimum spawner biomass relative to B_{MSY}	B/ B_{MSY}	Minimum over [x] years
1.2 Mean spawner biomass relative to B_{MSY} ¹	B/ B_{MSY}	Geometric mean over [x] years
1.3 Mean fishing mortality relative to F_{MSY}	F/ F_{MSY}	Geometric mean over [x] years
1.4 Probability of being in the Kobe green quadrant	B, F	Proportion of years that $B \geq B_{MSY}$ & $F \leq F_{MSY}$
1.5 Probability of being in the Kobe red quadrant ²	B, F	Proportion of years that $B \leq B_{MSY}$ & $F \geq F_{MSY}$
2 Safety		
2.1 Probability that spawner biomass is above B_{lim} ($0.4B_{MSY}$) ³	B/ B_{MSY}	Proportion of years that $B > B_{lim}$
2.2 Probability of $B_{lim} < B < B_{thresh}$	B/ B_{MSY}	Proportion of years that $B_{lim} < B < B_{thresh}$
3 Yield		
3.1 Mean catch – short term	Catch	Mean over 1-3 years
3.2 Mean catch – medium term	Catch	Mean over 5-10 years
3.3 Mean catch – long term	Catch	Mean in 15 and 30 years
4 Stability		
4.1 Mean absolute proportional change in catch	Catch (C)	Mean over [x] years of $ (C_n - C_{n-1}) / C_{n-1} $
4.2 Variance in catch	Catch (C)	Variance over [x] years
4.3 Probability of shutdown	TAC	Proportion of years that TAC=0
4.4 Probability of TAC change over a certain level ⁴	TAC	Proportion of management cycles when the ratio of change ⁵ $(TAC_n - TAC_{n-1}) / TAC_{n-1} > X\%$
4.5 Maximum amount of TAC change between management periods	TAC	Maximum ratio of change ⁶

¹ This indicator provides an indication of the expected CPUE of adult fish because CPUE is assumed to track biomass.

² This indicator is only useful to distinguish the performance of strategies which fulfil the objective represented by 1.4

³ This differs slightly from being equal to 1- Probability of a shutdown (4.3), because of the choice of having a management cycle of 3 years. In the next management cycle after B has been determined to be less than B_{lim} the TAC is fixed during three years to the level corresponding to F_{lim} , and the catch will stay at such minimum level for three years. The biomass, however, may react quickly to the lowering of F and increase rapidly so that one or more of the three years of the cycle will have $B > B_{lim}$.

⁴ Useful in the absence of TAC-related constraints in the harvest control rule.

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