

Food Provision: Fisheries

x_{fis} is the status of the wild-caught fisheries, fisheries food provision sub-goal

$$x_{fis} = \prod_{i=1}^n SS_i^{\left(\frac{C_i}{\Sigma C_i}\right)}$$

$$SS = \begin{cases} B/B_{MSY}, & \text{if } B/B_{MSY} < 0.95 \\ 1, & \text{if } 0.95 \leq B/B_{MSY} \leq 1.05 \\ \max\{1 - \alpha(B/B_{MSY} - 1.05), \beta\}, & \text{if } B/B_{MSY} > 1.05 \end{cases}$$

SS are stock status scores

B/B_{MSY} is maximum sustainable yield for a stock

$C_i / \Sigma C_i$ is the relative contribution of a stock i to overall catch

C is the average catch since the first non null record, for each taxon within each region

i is an individual taxon

n is the total number of taxa in the reported catch for each region throughout the time-series

α is set to be 0.5, status decline rate, to endure penalty for under-harvested stocks is half of that for over-harvested stocks

β is the minimum score a stock can get, set to 0.25