

(1)

(2)

(3)

$$\bar{I}_t = rI_t + (1 - r)\bar{I}_{t+1} \quad (4)$$

$$\bar{S} = \begin{cases} 0 & \bar{I} < i_t \\ m\hat{S} & \bar{I} > i_t \\ \frac{m\hat{S}}{i_t - i_l}(\bar{I} - i_l) & \text{otherwise} \end{cases} \quad (5)$$

$$\bar{C} = \min(\bar{S}\bar{I}, u) \quad (6)$$

$$C_{t+1} = \bar{C}_\phi \quad (7)$$

$$\phi \sim LN(1, ) \quad (8)$$

Table 1: iRate tunable parameters

Parameter	Symbol	Description	Example
Reference years	$r$	Years used when computing reference values	0.5
Responsiveness	$m$	Target harvest rate relative to historic levels Target harvest i.e 0.9 = 90% of historic average	0.9
Threshold index	$i_t$	Index at which the harvest rate is reduced relative to historic levels i.e. 0.7 = reduce harvest rate when the biomass index is at 70% of historic levels	0.7
Limit index	$i_l$	Index at which harvest rate is zero relative to historic levels i.e. 0.2 = close the fishery when the biomass index is at 20% historic levels	0.2
Maximum change	$f$	Maximum allowable percentage change in effort	0.4
Maximum TAC	$u$	Maximum total allowable catch	1000