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| **Code** | **Name** | **Type** | **Description** |
| INPUT CONTROLS | | | |
| curE | Current effort | Effort | A reference input control that maintains current effort (subject to fishing efficiency changes) |
| curE75 | 75% of Current effort | Effort | A reference input control that maintains 75% of current effort |
| DDe | Delay-Difference- effort control | Effort | Effort control version of DD - Delay - Difference Stock Assessment with UMSY and MSY leading |
| DDe75 | Delay-Difference- effort control 75% | Effort | Effort control version of DD - Delay - Difference Stock Assessment with UMSY and MSY leading that fishes at 75 per cent of FMSY |
| DDess | Delay-Difference- effort control 75% effort searching | Effort | Effort searching version of DD - Delay - Difference Stock Assessment with UMSY and MSY leading that fishes at 75 per cent of FMSY |
| ItargetE1 | Effort adjusted target CPUE | Effort | Both of these management procedure incrementally adjusts the effort to reach a target CPUE / relative abundance index. |
| ItargetE4 | Effort adjusted target CPUE | Effort |
| LstepCE1 | Effort adjusted to recent mean length version 1 | Effort | Management procedures that incrementally adjusts the effort according to the mean length of recent catches. |
| LstepCE2 | Effort adjusted to recent mean length version 2 | Effort |
| Ltarget1 | Effort adjusted to mean length version 1 | Effort | A management procedure that incrementally adjusts the TAC to reach a target mean length in catches. |
| Ltarget1 | Effort adjusted to mean length version 2 | Effort |
| matlenlim | Length selectivity equal to maturity | Sel. | Fishing selectivity is set according to the maturity curve |
| matlenlim2 | Length selectivity higher than maturity | Sel. | fishing selectivity is set slightly higher than the maturity curve |
| matagelim | Age selectivity matches the maturity curve | Sel. | Fishing selectivity at age is the same as fraction mature at age |
| MRreal | Area 1 Marine Reserve with reallocation | MPA | Sets a marine reserve in Area 1 and reallocates fishing effort to area 2 |
| MRnoreal | Area 1 Marine Reserve with no reallocation | MPA | Sets a marine reserve in Area 1 with no reallocation of fishing effort to area 2 |
| slotlim | Slot limit | Sel. | Sets a slot limit to control effort. |
| OUTPUT CONTROLS | | | |
| AvC | Average Catch | Catch | Sets TAC as average historical catch |
| BK | Beddington and Kirkwood life-history | LH | Sets an OFL according to current abundance and an approximation of FMSY based on length at first capture. |
| BK\_CC | BK linked to a catch curve | LH | Catch-curve analysis is used to estimate current abundance that is linked to BK FMSY estimate to give the OFL |
| BK\_ML | BK linked to a mean length | LH | Mean length estimate of current F (abundance) is linked to BK FMSY estimate to provide the OFL |
| CC1 | Constant catch linked to average catches | Catch | TAC is a average historical catches |
| CC4 | Constant catch linked to average catches | Catch | TAC is 70% of average historical catches |
| CompSRA | Age Composition - Stock Reduction Analysis | F | What constant F creates the current composition, what is FMSY? OFL = FMSY x F / C |
| CompSRA4010 | CompSRA linked to a 40-10 rule | F | A 40-10 harvest control rule is added to the CompSRA MP |
| DAAC | Depletion Adjusted Average Catch | Catch | DCAC multiplied by 2\*depletion and divided by BMSY/B0 (Bpeak) |
| HDAAC | Hybrid Depletion Adjusted Average Catch | Catch | DCAC multiplied by 2\*depletion and divided by BMSY/B0 (Bpeak) when below BMSY, and DCAC above BMSY. |
| DBSRA | Depletion-Based Stock Reduction Analysis | Catch | The OFL is M x (FMSY/M) x depletion x unfished biomass (the first three factors are user defined, the fourth is determined by historical catches and stock reduction analysis) |
| DBSRA\_40 | DBSRA assuming current depletion is 40% | Catch | DBSRA where stock depletion is fixed at 40% |
| DBSRA\_ML | DBSRA using mean length to estimate depletion | Catch | Mean length estimate of depletion is used to inform DBSRA depletion |
| DBSRA4010 | DBSRA linked to a 40-10 rule | Catch | A 40-10 harvest control rule is added to the DBSRA MP |
| DCAC | Depletion-Corrected Average Catch | Catch | An MSY proxy that accounts for catches occuring whilst dropping to productive stock sizes |
| DCAC\_ML | DCAC using mean length to estimate depletion | Catch | Mean length estimate of depletion is used to inform DCAC depletion |
| DCAC40 | DCAC assuming depletion is 40% | Catch | DCAC where stock depletion is fixed at 40% |
| DCAC4010 | DCAC linked to a 40-10 rule | Catch | A 40-10 harvest control rule is added to the DCAC MP |
| EDCAC | Extra DCAC | Catch | DCAC \* 2 \* depletion \* B0 / BMSY |
| DD | Delay-Difference assessment | Pop.D | A delay difference model is fitted to historical abundance indices and catches. The model does not estimate process error. |
| DD4010 | DD linked to a 40-10 rule | Pop.D | A 40-10 harvest control rule is added to the DD MP |
| DepF | Fratio linked to a production curve control rule | EmInd | Below BMSY, the OFL is multiplied by a production curve ie. dep x (1-dep) x 4 |
| DynF | Dynamic Fratio MP | PopDy | Inferred derivative of surplus production with biomass is used to adjust F in relation to M |
| Fadapt | Adaptive F MP | PopDy | Inferred derivative of surplus production with biomass is used to adjust F between bounds FMSY/2 and 2FMSY |
| Fdem | Demographic FMSY method | LH | FMSY is calculated as r/2 where r is calculated from a demographic approach (including steepness). Coupled with an estimate of current abundance that gives you the OFL. |
| Fdem\_CC | Fdem linked to a catch curve | LH | Current abundance estimates from a catch curve are linked to Fdem estimate of FMSY |
| Fdem\_ML | Fdem using mean length to estimate depletion | LH | Mean length estimate of current abundance is lined to Fdem estimate of FMSY |
| FMSYref | FMSY ref | LH | A reference FMSY method (uses perfect information about FMSY) |
| FMSYref50 | Half of FMSY ref | LH | 50% of true simulated OFL |
| FMSYref75 | 75% of FMSY ref | LH | 75% of true simulated OFL |
| Fratio | Fixed FMSY to M ratio | LH | FMSY is a fixed fraction of natural mortality rate |
| Fratio4010 | Fratio with 40-10 rule | LH | Calculates the OFL based on a fixed FMSY/M multiplied by a current estimate of abundance. In this method DBSRA is paired with the 40-10 rule; OFL = 0 at B10%. |
| Fratio\_CC | Fratio linked to a catch curve | LH | Current abundance estimates from a catch curve are linked to the Fratio MP |
| Fratio\_ML | Fratio using mean length to estimate depletion | Length | Mean length estimate of depletion is used to inform Fratio abundance |
| Fratio4010 | Fratio linked to a 40-10 rule | LH | A 40-10 harvest control rule is added to the Fratio MP |
| GB\_CC | Geromont and Butterworth constant catch | Catch | MSY seeking rule that uses average historical catch as a proxy for MSY |
| GB\_slope | Geromont and Butterworth CPUE slope | EmInd | TAC recommendations to stabilize CPUE |
| GB\_target | Geromont and Butterworth target CPUE and catch | EmInd | TAC recommendations to achieve target CPUE and target catch |
| Gcontrol | G-control MP | PopDy | Inferred derivative of surplus production with biomass is used to alter the TAC |
| Islope1 | CPUE slope MP | EmInd | TAC is adjusted to maintain constant CPUE |
| Islope4 | CPUE slope MP (more biologically precautionary) | EmInd | TAC is adjusted to maintain constant CPUE |
| Itarget1 | CPUE target MP | EmInd | TAC is adjusted to achieve a target CPUE |
| Itarget4 | CPUE target MP (more biologically precautionary) | EmInd | TAC is adjusted to achieve a target CPUE |
| LstepCC1 | Mean length MP | Length | Mean length relative to historical levels is used to alter the TAC |
| LstepCC4 | Mean length MP (more biologically precautionary) | Length | Mean length relative to historical levels is used to alter the TAC |
| Ltarget1 | Length target MP | Length | TAC is adjusted to reach a target mean length |
| Ltarget4 | Length target MP (more biologically precautionary) | Length | TAC is adjusted to reach a target mean length |
| MCD | Mean Catch Depletion MP | Catch | MP to demonstrate high information content of depletion OFL = mean catches x 2 x dep |
| MCD4010 | MCD linked to a 40-10 rule | Catch | A 40-10 harvest control rule is added to the MCD MP |
| Nref | No reference point | Catch | Sets catch = 0. |
| Rcontrol | R-control MP | LH | A demographic prior for intrinsic rate of increase is used to firm up surplus production calculation of G-control |
| Rcontrol2 | R-control with quadratic SP-B relationship | LH | As R-control but fits a quadratic relationship to the derivative of SP with stock biomass |
| SBT1 | Southern Bluefin Tuna 1 | EmInd | An MP that adjusts TACs according to apparent trend in CPUE |
| SBT2 | Southern Bluefin Tuna 2 | EmInd | An MP that adjusts TACs according to achieve target CPUE and catch |
| SPmod | Surplus production based TAC modifier | PopDy | Inferred derivative of surplus production with biomass is used to adjust the TAC |
| SPMSY | Catch-trend MSY MP | Catch | Catch trends reflect depletion and combined with catches can be used to find viable r-K pairs. The OFL is dep x (1-dep) x 2 x r x K |
| SPslope | Slope in surplus production MP | PopDy | Inferred derivative of surplus production with biomass is used to adjust the TAC |
| SPSRA | Surplus Production Stock Reduction Analysis | PopDy | Like DBSRA but uses a surplus production model and a prior for intrinsic rate of increase |
| SPSRA\_ML | SPSRA using mean length to estimate depletion | Length | mean length estimate of depletion is used to inform SPSRA depletion |
| YPR | Yield Per Recruit | LH | Yield Per Recruit estimate of F0.1 (FMSY proxy) multiplied by estimate of current stock biomass |
| YPR\_CC | YPR linked to a catch-curve | LH | Current abundance estimates of a catch curve analysis is linked to the YPR MP |
| YPR\_ML | YPR using mean length to estimate current abundance | LH;Lt | Mean length estimate of current abundance is used to inform YPR abundance |