Management Strategy Evaluator = *User notes (alpha ver. 6.0.6.1112)*

Video Tutorial

A video tutorial has been created to demo the alpha version of the MSE. This video can be found ?here.

How the model runs

Still to do.

Inputs

Input uncertainty Sets inputs use for the perturbation of variables.

Groups

- **CV** Coefficient of variation used for perturbation of biomass.
- **Kalman weight** Kalman weight used for perturbation of biomass.

Fleets

- **CV** Coefficient of variation used for perturbation of effort.
- **Annual increase in catchability** Amount catchability will increase each year.

Input reference levels Sets reference levels for performance evaluation and target fishing mortalities.

- **MSY** Uses the results a Maximum Sustainable Yield search to set Biomass limit, Biomass base and F max. for the target fishing mortalities.

  Group Evaluation of model runs has not been implemented yet so setting of reference levels has no effect.
  - **Biomass lower** Lower biomass limit.
  - **Biomass upper** Upper biomass limit
  - **Catch lower** Lower catch limit on a group.
  - **Catch upper** Upper catch limit on a group.

  Fleet
  - **Lower** Lower catch limit by a fleet.
  - **Upper** Upper catch limit by a fleet.

Input regulatory Sets inputs used for the fisheries regulations.

Regulatory option Sets how the effort of a fleet will be regulated.

- **Max effort** *Not implemented at this time.* Caps the effort of a fleet no matter what regulatory option has been chosen.
- **Not used** No regulation will be used for this fleet.
- **Effort** *Warning has not been tested or validated.* Target fishing mortality is computed using a perturbed biomass. If target fishing mortality exceeds achieved fishing mortality then fishing effort is scaled back.
- **Weakest Stock quota** Quota for the year is computed from the target fishing mortalities using a perturbed biomass. Effort is regulated if any catch (landings + discards) on a group exceeds its quota.
- **Strongest stock + discards quota** Quota for the year is computed from the target fishing mortality using a perturbed biomass. Effort is regulated if landings on the strongest stock exceed the quota. Catches that exceed the quota are discarded.
- **Selective fishing quota** Quota for the year is computed from the target fishing mortality using varied biomass. Effort is regulated if landings on the strongest stock exceed the quota.

- **Fleet Quotas** Quota by group and fleet used to compute fleet share of quota on a group.
- **Target fishing mortality** Sets parameters for target fishing mortality. Biomass limit, Biomass base and F max.
- **Fixed escapement** Sets fixed escapement biomass of a group. If this value is non zero the quota for the year is computed as [estimated biomass] - [fix escapement] instead of using the target fishing mortality parameters.

Input effort tracking Sets weights used when evaluating current Ecosim scenario.

- **Objectives weights**
- **Ecological weights**
- **Fleet weights**

Outputs

Run MSE Run the Management Strategy Evaluation.

Effort and regulatory options Options used to set how or if the fishery is regulated during the current evaluation.

- **Predict effort(fleet size dynamics) regulate using quotas** Fishing effort for the year is predicted using the Ecosim Fleet/effort dynamics model. The fishing quota for each year is then set via the target fishing mortality. The fishing effort is then regulated according to the options selected in the **Regulatory options** dialogue.
- **Ecosim effort regulate using quotas** Ecosim is run using effort from the current scenario. The fishing effort is then regulated according to the target fishing mortality and the options selected in the **Regulatory options** dialogue.
- **No regulations evaluate current Ecosim scenario** Ecosim is run using effort from the current scenario. No attempt is made to regulate the fishing effort. This option is used to evaluate the current Ecosim scenario.

Model run options

- **Save output** Saves output for biomass, catch by group, catch by fleet and effort by fleet to a csv file in a sub directory of the current EwE6.exe called MSE.

Ecosim scenario options Option on how perturbations are implemented when the **No regulations evaluate current Ecosim scenario** option is in effect.

- **Catch/estimated biomass** Fishing mortality is estimated using a perturbed biomass then effort is updated using the varied fishing mortality.
- **Direct exploitation** Fishing mortality is computed directly from the predicted Ecosim catch and biomass then perturbed and used to update effort.
- **Exact biomass known** Fishing mortality is computed directly from the predicted Ecosim catch and biomass. Effort is then update with the predicted fishing mortalities and perturbed before use.

- **Plots** Not implemented yet.
- **Results** Not implemented yet.