This document outlines the running of a new version of the Model Using Length Transition (MULT) model.

Things to add.

Estimate selectivity (by area??)

Vary migration northwards between year (one par over two logistic curves) 0-1 and 1-2

Re-add tagging data

All models (various spatial, temporal and age structures) are controlled from a single model control file (ModelControl.R). This file handles the compiling of the .cpp file, choosing the model, fitting and diagnostics. All models have to be firstly built and stored in a unique folder

**Building a new model is:**

1. Build folder structure as illustrated below with folders “include”, “MakeFiles” and “ R files” all in the same folder with the r-files “ModelControl” and “Projection” as well as the cpp. file “Model1” and excel file “Phases-parameters”.

Graphical user interface, text, application

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1. Open MakeFiles folder. Firstly modify “fleetcode” and Migrate to match your desired structure.
2. Open “AA Build all files” and set parameters to match new model structure. This code will make a new folder to store the run in “adjacent to the folders you just added (e.g. include, R files and MakeFiles).
3. Set the structure of the model (line 10-24) and then build the files needed for the model run by running lines 26-32. The code will make new folders if this model structure has not been run before (areas, ages and start and end years). The new nomenclature for the folders is #area#ageRunstartyear. For example a 1 area, 1 age model starting in 1965 would be titled “1A1ARun65”. Within this folder a second folder (Output) is required to contain all the outputs from the model run including the diagnostics and projections.

Building data.

Fill out ModelStructure.xls

Catch and Effort:

"M:/Fisheries Research/Invertebrates Fisheries/Rock Lobster/FishCube/FishCubeCE4OzLob.R"

**Running a model:**

1. Open ModelControl and run lines 1 : 26. This will load the required libraries, compile and load the model and then list (in a pop up – see below) all model builds that can be run. Enter the model number and enter.

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1. R will then set the working directory into he folder and all workings will subsequently work within this folder. The files expected to be in this model folder as shown below:

Table

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1. R will load all files and then run a check on two aspects, 1. Was there anything unusual about the data loaded (was something missing) and 2. Were any of the parameters loaded NAs (have you stuffed up your structure). Note: code used for loading the data also has a number of checks for NAs and extra numbers to help ensure the data being loaded is appropriate. The output below shows that numbers data was all NA – this is expected as no numbers data was provided. It also shows parameters were all numerics which is good😊

Text

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1. On line 136 EvalMax allows the user to set the maximum iterations for each phase – change if you want to stop the iterations earlier. Can be very useful initially.
2. Final lines of this code are for building the diagnostics report, which will be stored in OutPut folder.