The scripts built the Individual-based model of Antillogorgia elisabethae for modelling population dynamics and harvest impacts

1. *1\_VBCurve\_estimates.R* fits the growth curve based on empirical age-height relationship and define the parameters to predict height at age and growth rate in the model. Outputs saved in "VB\_CHparams.RData"
2. *2\_Initial\_Population.R* uses the parameters estimated above ("VB\_CHparams.RData") to create the initial age, density and size-frequency conditions for each simulated population. Outputs saved in “Initialization.RData"
3. *Set\_parameters.R* adds partial and total mortality probabilities from field data and gathers all parameters (i.e. from steps 1 & 2). Outputs saved in "Set\_parameters.RData" which is called for implementing the model
4. *Create\_metapopulations.R* describe the functions to create the neighbouring populations and estimate the number of recruits arriving to the focal population following density-dependent recruitment as a function of colony size of reproductive adults. Functions saved in "Metapopulations.Rdata"
5. *Recruitment.R* describes the function to add the total number of recruits that successfully settled (local + external) to the population
6. *Run\_Main.R* Sets the default conditions to run the model, such as number of simulations, years, scenarios and harvest conditions.
7. *IBModel.R* The IBM model function (AEmod). The function and all parameters needed to run the default model are saved in "model\_data.Rdata"
8. *Mod\_Paralell.R* Runs the model recruitment scenarios in paralell
9. *Plot\_Outputs.R* summarises model outputs and creates figures for paper
10. *Set\_sensitivity.R* Selects the parameter of interest to run sensitivity
11. *Run\_Sensitivity.R*  Runs model for sensitivity
12. Plot\_Sensitivity.R Gathers all outputs and creates figure