**per\_jags.r**

**Purpose**  This function is used to make the prediction evaluation plots. There are 2 main things this function does for us; 1: Using all available data we get predictions that compare what occurred to what we predicted would occur, and 2: this is also used to compare the impact of having to use predicted growth parameters instead of the realized growth parameters on our projections. This function has to run the model numerous times so can be very slow, once it is run once the results are saved and the function can be used to just produce the plots which takes no time.

**Version Control**  Likely several versions of this exist, but this one is the best there was, the best there is, and the best there ever will be.

**Required packages** None

**Locally Derived Functions**

1. projections.r

**Section 1**

The function loads in the necessary data then runs the model for each year that you specify in the function call (it uses both years and pe, note that pe should be specified in reverse order, if pe covers 20 years the model has to run 20 times, once for each year). Also, if g2/gR2 are specified then the model uses these in the most recent year for the projection, this is how you compare between models where growth is predicited (you use g/gR) vs models where growth is known (g2/gR2). Of course using g2/gR2 you can’t evaluate the most recent years model prediction since you don’t yet know what growth is next year! The model is then run, you can run in parallel using the number of processors specified by nchains, or more slowly you can run on one processor. If g2 is supplied the model is saved with a g2 in the name, if it isn’t supplied the model results are saved with a mod in the name.

The next part of the code makes the plots. If you have already run the models and are happy with results you can set run to be false and it will call in the data, to plot the g2 data you still need to specify g2 in the function call to pull in the right data. There are 3 different possible plots, my favourite is a time series of the boxplots (plot == “box”) which gives the prediction and orginal data compared as box plots. The other plots are point value time series, the “ts\_all” option is a really busy plot that I don’t find all that helpful. Plots can be saved as pdf’s or just sent to your monitor. You can optionally output some fairly interesting summary information that puts numbers on the predictions made.

***Argument(s)***

1. input The input used for the model run. Default is missing, should be a list

(same list as used to run the main model)

1. priors The priors used for the model run. Default is missing, should be a list

(same list as used to run the main model)

1. years The years for the model runs. Default is missing, should be the same as

you used to run the main model

1. model The JAGS model. Default is missing, should be the same model as you

used for the main model run.

1. pe The years to evalulate, note this should be specified in reverse order with

the most recent year first. Missing by default

1. niter Number of iterations to run. Default = 60000
2. nburn The burnin for the model. Default = 40000
3. nthin Thinning rate for the model output. Deafult = 20
4. nchains The number of chains Default = 8. If running in parallel increasing this will

return more replicates with no computing time cost.

1. graphic What to do if making a figure. Print to "screen" by default, optionally

save as a "pdf".

1. run Do you need to run the model? (T/F), Default = T, if you run this

once the results are saved and you can set to F forevermore.

1. plot The plot to produce the various potential figures. There are 3 options:
   * + - 1. default = NULL, no plot is produced
         2. "box", this produces the nice box plot of the predicted vs modeled results for each year of interest
         3. "ts", this produces a point summary of the time series of the differences.
         4. "ts\_all", produces a very busy plot of the predictive vs. modelled estimates.
2. lab If you want to add a specific label to the output figure (only useful if

graphics = "pdf")

1. g2 If specified the growth term for FR's used in the prediction evals is the

current year condition \* expected SH next year

1. gR2 If specified the growth term for recruits used in the prediction evals is the

current year condition \* expected SH next year

1. path The path to put the pdf, will default to whatever is specified (dirt is not

used here)

1. dirt The path to put the output results (not including the figures). Default =

Y:/Offshore scallop/Assessment

1. bank The bank to run the prediction evaluations on. Default = "GBa" ("BBn" is

only other option that should work currently)

1. parallel If running the prediction evaluations do you want to run in parallel?

Number of clusters used set by nchains.

1. j.seed If running in parallel you can specify a seed (for initial values) so the

results are reproducible. Default = 123

1. parameters The parameters from the original model output. Default is

DD.out[[bnk]]$parameters

1. wd The width of the figure. Default =11
2. ht The height of the figure. Default = 8.5