AlaskaHerring Folder Organization

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Model naming conventions:

Time block parameterization = # survival time blocks, # maturity time blocks, # selectivity time blocks E.g. HER_123 = 1 survival time block, 2 maturity blocks, 3 survival blocks

The model number for model selection is shown before the time block parameterization. E.g. HER 10_123 = Model 10 with 1 survival time block, 2 maturity blocks, 3 survival blocks

HER_bestLS_### = HER model with best-fitting parameterization of LS model by AICc

HER_best_condCatch.#_### = HER model with best-fitting parameterization of HER by AIC when conditioned on catch

HER_best_condEffort.#_### = HER model with best-fitting parameterization of HER by AIC when conditioned on effort

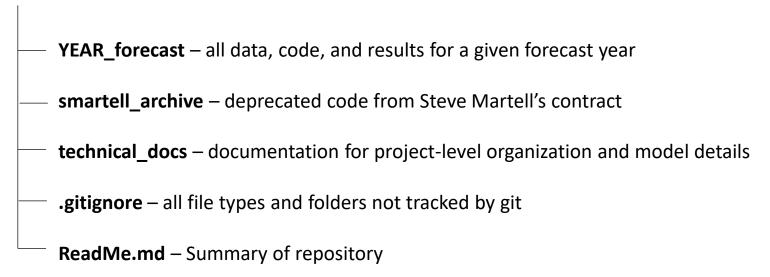
HER_condEffort_fixedmat.4_3 = HER model conditioned on effort with a50 fixed at 3.67 (form FishLife) and a95 = 4.48 from regression provided by SD. One time block for selectivity, 3 blocks estimated for survial

HER_confEffort_1929 = HER model conditioned on effort with data file going back to 1929. Still exploratory, not running well

HER_mature_catch = NEW EXPLORATORY MODEL that estimates selectivity from mature not total population. Assumes catch comps come from mature population (catch = 100% mature)

Folder directory (part 1): General overview

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Folder directory (part 2): Forecast folders

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2019_forecast

admb - all relevant admb files for final models including HER_bestLS,
HER_best_conditionCatch, HER_best_conditionEffort

data – currently only includes LS model results for comparison with HER and historical data tables

r – all R scripts for running HER, generating figures, doing Bayesian analysis, running model selection, retrospective analysis, and sensitivity analysis

results – figures, csv output, and archive of all models run in model selection, retrospective, and sensitivity analyses

Folder directory (part 3): 2019 R scripts

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r – all R code

helper.R- libraries, ggplot2 themes, and user-defined functions (sourced by all other script files)

her.R— Run any version/tpl of HER (MLE or Bayesian) and compare with LS. Saves output to sudirectory in results/ named after the HER version/tpl

model_selection.R— recreates model selection "loop code". Examines all permutations of time-varying parameters given user-defined time blocks. Saves output to subdirectory of results/model_selection/named after the HER version/tpl

model_selection_natmat.R – same as model_selection.R, except only examines survival/natural mortality. Also saves output to subdirectory of results/model_selection/ named after the HER version/tpl.

retrospective.R – run retrospective analysis (peel years of data from assessment to compare current results with past results assuming the same model structure. Results in retrospective/ for given HER tpl versions.

pdo_breaks.R – get PDO breaks using STARS algorithm, which is sourced in **stars.R**. Results stored in results/stars_pdo

sensitivity_sigmaM.R – sensitivity analysis for sigmaM, parameter controlling variability in natural mortality deviations by block. Uses **create_ctl.R**. Results in results/sensitivity_sigmaM. sigmaM = 0.09 had best convergence diagnostics.

sensitivity_maturity.R – compare a range of fixed to estimated maturities. Results in results/sensitivity_maturity

presentation_figs.R - creates presentation-quality figs in presentation/ subdirectory of results/ under various model versions Folder directory (part 3): 2019 results folder

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2019_forecast

results –
figures, csv
output, and
archive of all
models run in
model
selection,
retrospective,
and sensitivity
analyses

HER_bestLS_321 – includes comparison figures of this model's results with LS best, HER-specific figures, diagnostics for the Bayesian analysis, and csv files of all the posterior sample summaries

HER_best_condCatch.12_322 – same as above

HER_best_condEffort.12_322 – same as above

model_selection – includes model selection results for HER conditioned on catch and effort

retrospective – results for the retrospective analysis for HER_bestLS_321, HER_best_condCatch.12_322, and HER_best_condCatch.12_322

sensitivity_sigmaM – results for sensitivity analysis examining convergence diagnostics and model output for sigmaM from 0.05-0.10. sigmaM = 0.09 had best convergence diagnostics

reference_points – currently only includes saved biological reference point output from posterior samples. This is still under development. Some reference pt results also in results/sensitivity_maturity/figures that show how maturity assumptions affect reference point assumptions

sensitivity_maturity – results from sensitivity analysis on maturity comparing a range of a50 and rate of maturation

Steps to run a new assessment

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- 1. Create new 2020_forecast or 2021_forecast folder
- 2. Create folders for data, r, results, text in forecast folder
- 3. Copy appropriate tpl, ctl, and dat files into correctly named subdirectory of admb/
- 4. Copy correctly formatted LS results into data/ subdirectory
- 5. Use her.R to run base model (the tpl copied into admb/ subdirectory). Be sure to update relevant user inputs in her.R.
- 6. If you want to run the traditional loop code, first run pdo breaks.R then model selection.R
- 7. If you want to examine a range of maturity values, use sensitivity_maturity.R this code (as well as sensitivity_sigmaM) could be adapted to evaluate other model parameters and assumptions.
- 8. Any time you want to run her.R on a model (e.g. the results of a maturity analysis or model selection), you'll need to copy the resultant tpl, ctl, and dat files over to a subdirectory of admb/
- 9. Take best model and run it through her.R again to get final results.
- 10. Run a retrospective analysis on final model using retrospective.R
- 11. Use presentation_figs.R to get presentation quality figures.