**Latest SS News: March 13, 2019**

**Greetings Stock Synthesis (SS) Users,**

In this release of Stock Synthesis 3.30.13.00 we have included some fixes, augmentations and new features. Thanks to some users who were pushing the envelope on time-varying parameters for finding some needed fixes to the code. You can find all the changes listed in the Change Log and below. The fixes were minor and mostly in the output, but there is one big fix affecting the calculation of the log likelihood for the parameter deviations. We will put out a fuller report on that later and encourage you to contact us if you need info on this change sooner.

Please remember to check the change log frequently so you are aware of anything relevant for your SS project. It also is a good idea to look over the \*.ss\_new files created by the newest version of SS so you can see listed all available input options. Of course, the user manual, r4ss, and graphical Stock Synthesis Interface (SSI) have been updated. The SSI now provides previews for the shape of most selectivity functions.

We have a new SS team member, Kathryn Doering. She will be involved with VLAB maintenance, creation of an example library, and developing more R-based routines to enhance SS. Welcome Kathryn.

If you have any SS usage questions or issues please post in the FORUM.

Problems using the SS VLAB site can be addressed to nmfs.stock.synthesis@noaa.gov

Please contact VLAB administrators at vlab.admin@noaa.gov to change your username or password.

**ADMB 12.0**

SS is now being compiled exclusively with ADMB 12.0 (except the 32 bit versions). An important new feature in ADMB 12.0 improves the MCMC algorithm. See below from the admb-project.org website:

* Dr. Cole Monnahan has developed a new MCMC functionality into ADMB. The current Metropolis algorithm was updated to have more meaningful console output and not require an sdreport object. The old method remains, and the new one is accessible with argument ‘-rwm’. A new algorithm, the no-U-turn sampler (a self-tuning extension of the existing ‘hybrid’ method was also added, and available with ‘-nuts’. The functionality matches the software platform Stan closely. The user can specify whether to use the MLE covariance, an arbitrary matrix, or adapt one during the warmup phase (recommended). Both these additions work much with the R package adnuts, which streamlines workflow, including parallel chains, diagnostic checking, and inference. See adnuts package vignette for more information.

**Future big features on the wish list:**

* Option to replace input of growth parameters with input of empirical length-at-age
* Change input of tagging parameters to use a much more concise design matrix approach
* Adding otolith weight as a proxy for fish age as a new data type
* Area-specific spawner-recruitment
* Area-specific growth in addition to morph specific growth

**SS VLAB Release 3.30.13.00 changes:**

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| **Type** | **Category** | **Description** |  **Input\_Change?** |
| fix | tag | fix formatting problem for tag output in compreport.sso |  |
| fix | survey | fix issue with float Q that may have been source of some poor convergences |  |
| fix | controls | fix implementation of seasons as pseudo-years |  |
| fix | survey | fix ss\_trans to handle mirror q better |  |
| fix | output | fix reporting when using seasonal MGparms |  |
| fix | output | fix output of Dirichlet parameters |  |
| fix | input | fix reading of sizecomp obs before styr |  |
| fix | output | fix output of equilibrium F when using F\_reporting=5 |  |
| fix | output | fix issues with F\_reporting=4 and 5 for multiseason models |  |
| fix | statistics | Important: corrected the -logL calculation for parameter deviations. This affects only a constant (N\*log(s) is corrected to be N\*log(1)) in the logL of the devs, it does not affect how the devs are used. |  |
| new | survey | create new Q option so that mirror Q uses an offset to ln(Q) | Yes, if used |
| new | growth | add growth cessation model per Maunder et al (2018) | Yes, if used |
| new | time\_vary | add dev vector options so last dev can persist to end of time series (codes 21, 22, 23, 24) | Yes, if used |
| new | recruitment | add new recdev approach based on dev being relative to R0, not SRR; add column to spawn\_recr in report.sso | Yes, if used |
| new | forecast | add new forecast feature: year-specific ABC buffer | Yes, if used |
| new | output | add table for F in report.sso |  |
| revise | input | revise warning for recrdist options |  |
| revise | tag | move tag recapture code into a separate file for ease in future updating: SS\_tagrep.tpl |  |
| revise | output | re-order and organize the list of tables appearing at top of report.sso |  |
| revise | output | small fix to posteriors.sso for Q parms |  |

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