

Release notes for Stock Synthesis 3.30.23

Oct 31, 2024

Greetings Stock Synthesis Users,

[Release 3.30.23 of Stock Synthesis](#) is now available. Although 3.30.23 is light on new features, there has been much work on upgrading the [SS3 Manual](#), the [SS3 Website](#), and [r4ss](#). We also have created a [SS3 User Forum](#) for users to post SS3-related questions and to facilitate communication. We encourage you to join it to stay up-to-date, contribute to discussions about features, and ask questions. We're already at 81 members. In the Forum, you will see notices for the approximately bimonthly webinars we have been conducting on various SS3 topics.

All the notable changes and bug fixes can be found in the [Change Log](#). We would like to highlight the following changes:

- Further development of F_method 4 occurred with Issue [#581](#). F_Method 4 is a superset of F_methods 2 and 3 because it provides fleet-specific control of the use of hybrid F vs. F as a parameter and provides fleet-specific control of the phase in which estimation can change from hybrid to parameter.
- Creation of a new Catchability (Q) option with Issue [#595](#). This is designed for use with indexes being related to dev vectors. It adds a parameter that acts as an offset added to the model devs. The available Q options are shown below as clipped from control.ss_new. Note the terminology between the scale parameter which adjusts the Q value when mirroring, and the offset parameter that is added to the devs.

```
#_2: link type: 1=simple q; 2=mirror; 3=power (+1 parm); 4=mirror with scale (+1p);  
5=offset (+1p); 6=offset & power (+2p)  
#_ where power is applied as  $y = q * x ^ (1 + power)$ ; so a power value of 0 has  
null effect  
#_ and with the offset included it is  $y = q * (x + offset) ^ (1 + power)$ 
```
- Revise the syntax for invoking multi-year averaging of F_std and log(ratio) to allow for users to request averaging over more than 10 years. See Issue [#586](#). If you are already using this feature, be sure to check the new syntax.
- Numerous small improvements in the text of warnings and control.ss_new labels to help users understand the usage of model features.
- SS3 is now compiled with ADMB 13.2. We highly recommend that you study the features of recent versions of ADMB (listed [here](#)) so you can use its advanced command line features. In particular, the -hess_step command lets ADMB use the inverse Hessian to make additional iterations to achieve exact convergence, and the -nuts command enables more efficient MCMC sampling.

- Jason Cope has made great strides with his [Stock Assessment Continuum Tool](#) which provides a Shiny app to access most common SS3 and r4ss features. He, Elizabeth Perl, and Mauricio Mardones used it for the ICES-sponsored SS3 course held in September 2024.

There are no mandatory model file input changes in 3.30.23. As always, we recommend that you update to the latest version of Stock Synthesis to take advantage of augmentations and bug fixes. Updating to the newest version, even if no new features pertain to your model, ensures that you will see new tips and warnings and the *.ss_new files created whenever you do a run contain updated notes on what we consider to be good practices with respect to SS3.

Looking forward, much of our energy has recently gone into developing and testing revisions in how time-varying biology is handled in the benchmark and forecast sections. We plan to have a pre-release of just this feature soon. After we get your feedback, then we will include it with the 3.30.24 release early in 2025.

ss3sim updates: See the [ss3sim vignettes](#) for information on getting started.

r4ss updates: r4ss has been updated to maintain compatibility with Stock Synthesis 3.30.23.

- A change that may impact all users of the r4ss functions for reading and writing SS3 input files is a cleanup of the column names. These changes have been applied in r4ss (see r4ss issue [#512](#)) and are matched by changes in the .ss_new files written by SS3 (see [#608](#)). For running SS3, the headers don't matter because, with few exceptions, ADMB only reads the numeric inputs. However, having consistent column names will make using R-based workflows to modify the input files easier.

SS3 User Manual: Most documentation for Stock Synthesis can be accessed from the [SS3 website](#). The website includes the [html version of the user manual, getting started tutorials, model feature vignettes, and presentations from past webinars.](#)

SS3 Workshop: We are in the early stages of planning a CAPAM-style SS3 Workshop in Seattle, WA for either August 2025 or March – April 2026. We hope to gather SS3 practitioners from around the world to discuss what we have learned from 40, yes truly 40, years of Stock Synthesis, and to discuss how we use that knowledge to help transition to the next generation generalized assessment approach - NMFS' [Fisheries Integrated Assessment System](#). Stay tuned on the SS3 User Forum for additional information on the workshop..

Contact us: Please do not hesitate to report bugs, ask a question about SS3, or request a feature. Contact the SS3 development team by opening an [issue](#) (for those with GitHub accounts), posting on the [SS3 user forum](#), or emailing nmfs.stock.synthesis@noaa.gov. We strongly encourage use of github issues and forum posts so that every SS3 user can benefit directly from the conversation and help contribute to the response.