**Supplemented Data in RAM Legacy Database**

**Data Labels:**

The RAM Legacy Stock Assessment Database uses data labels to indicate where data is supplemented or differentiated. These labels get appended to the typical time series ID to distinguish the supplemented data from data that are imported directly from the assessment. The list below covers the data labels used for reference points.

* **-extr-** (e.g., ERmsy-extr):  
  This label indicates the reference point was extracted from a X and X/Xmsy time series, where X is the time series data type (e.g., ERmsy-extr extracted from ER and ER/ERmsy).
* **-pr-** (e.g., SSBmsy-pr):  
  This label indicates the reference point is a proxy for a maximum sustainable yield-based reference point.
* **-calc-** (e.g., MSY-calc, TBmsy-calc):  
  A basic calculation took place in generating this supplemented reference point. This calculation always involves the equation: ERmsy=MSY/TBmsy.
* **-conv-** (e.g., MSY-conv, TBmsy-conv):  
  A conversion took place in generating this supplemented reference point. The two conversions possible are SSB converted to TB, and TB0 converted to TBmsy. This data label is also present if a basic calculation occurs with converted data; the ‘conv’ label is inherited.
* **-mvo-** (e.g., MSY-mvo, ERmsy-mvo):  
  This data label indicates that while the data came from the assessment, it is used only in the model fits version of the database at the request of assessors or regional experts.
* **-est-** (e.g., MSY-est, TBmsy-est):  
  A surplus production model fit was performed to generate this supplemented reference point. This data label is also present if a basic calculation occurred with model-estimated data; the ‘est’ label is inherited.

Time series data use a similar procedure in generating its data labels.

* **-calc-** (ie ER-calc, TBdivTBmsy-calc):  
  A basic calculation was performed to generate these data. If the data is of the form X-calc where X is the time series type, then the equation (ER=TC/TB) was used in the calculation. If the data is of the form XdivXmsy-calc where X is the time series type, then the calculation performed was X/Xmsy.
* **-conv-** (ie ERdivERmsy-conv):  
  For a time series of the form XdivXmsy-conv, where X is the time series type, the calculation X/Xmsy has a converted value in the Xmsy component (ie Xmsy-conv).
* **-dvma-** (ie TBdivTBmsy-dvma):  
  For a time series of the form XdivXmsy-dvma, where X is the time series type, the time series was derived through Method A (See Appendix A).
* **-est-** (ie TBdivTBmsy-est):  
  For a time series of the form XdivXmsy-est, where X is the time series type, the calculation X/Xmsy has a surplus production model estimated value in the Xmsy component (ie Xmsy-est).

**Summarized Data Hierarchies:**

The RAM database also generates summarized data to make it easier to find commonly used data types without having to deal with several different data IDs, choose among them when more than one are available, or risk drawing values from different assessments when they should be drawn together.

Some of these summarized data types are a generalized B status or U status time series, some of which prefer MSY-based reference points if available (otherwise defaulting to mgt reference points) and others that prefer management targets as reference points if available (otherwise defaulting to MSY-based reference points). Lists 1-12 below show the default preference hierarchies used to generate the various summarized data types.

**Note: *these default preferences can be changed on a stock-by-stock basis to reflect the preferred variables that are actually used in management or portrayal of stock status***. For example, in (1) below, if both SSB/SSBmsy and TB/TBmsy are available from an assessment, the default preference is to use SSB/SSBmsy, but this can be overridden wherever necessary. To change the default preferences, contact us using the issue tracker site below and let us know which stock(s) should have preferences changed.

<https://github.com/ramadmin/RLSADB/issues>

1. **Generalized B status time series, preferring MSY-based reference points:**

|  |  |
| --- | --- |
| **Order** | **BdivBmsypref-dimensionless** |
| 1 | SSBdivSSBmsy-dimensionless |
| 2 | SSBdivSSBmsy-calc-dimensionless |
| 3 | TBdivTBmsy-dimensionless |
| 4 | TBdivTBmsy-calc-dimensionless |
| 5 | TNdivTNmsy-calc-dimensionless |
| 6 | SSBdivSSBmgt-dimensionless |
| 7 | SSBdivSSBmgt-calc-dimensionless |
| 8 | TBdivTBmgt-dimensionless |
| 9 | TBdivTBmgt-calc-dimensionless |
| 10 | SSBdivSSBmsy-conv-dimensionless |
| 11 | TBdivTBmsy-conv-dimensionless |
| 12 | TBdivTBmsy-dvma-dimensionless |
| 13 | SSBdivSSBmsy-est-dimensionless |
| 14 | TBdivTBmsy-est-dimensionless |

1. **Generalized U status time series, preferring MSY-based reference points:**

|  |  |
| --- | --- |
| **Order** | **UdivUmsypref-dimensionless** |
| 1 | ERdivERmsy-dimensionless |
| 2 | ERdivERmsy-calc-dimensionless |
| 3 | FdivFmsy-dimensionless |
| 4 | FdivFmsy-calc-dimensionless |
| 5 | ERdivERmgt-dimensionless |
| 6 | ERdivERmgt-calc-dimensionless |
| 7 | FdivFmgt-dimensionless |
| 8 | FdivFmgt-calc-dimensionless |
| 9 | ERdivERmsy-conv-dimensionless |
| 10 | FdivFmsy-conv-dimensionless |
| 11 | ERdivERmsy-dvma-dimensionless |
| 12 | ERdivERmsy-est-dimensionless |

1. **Generalized B status time series, preferring management targets as reference points:**

|  |  |
| --- | --- |
| **Order** | **BdivBmgtpref-dimensionless** |
| 1 | SSBdivSSBmgt-dimensionless |
| 2 | SSBdivSSBmgt-calc-dimensionless |
| 3 | TBdivTBmgt-dimensionless |
| 4 | TBdivTBmgt-calc-dimensionless |
| 5 | SSBdivSSBmsy-dimensionless |
| 6 | SSBdivSSBmsy-calc-dimensionless |
| 7 | TBdivTBmsy-dimensionless |
| 8 | TBdivTBmsy-calc-dimensionless |
| 9 | TNdivTNmsy-calc-dimensionless |
| 10 | SSBdivSSBmsy-conv-dimensionless |
| 11 | TBdivTBmsy-conv-dimensionless |
| 12 | TBdivTBmsy-dvma-dimensionless |
| 13 | SSBdivSSBmsy-est-dimensionless |
| 14 | TBdivTBmsy-est-dimensionless |

1. **Generalized U status time series, preferring management targets as reference points:**

|  |  |
| --- | --- |
| **Order** | **UdivUmgtpref-dimensionless** |
| 1 | ERdivERmgt-dimensionless |
| 2 | ERdivERmgt-calc-dimensionless |
| 3 | FdivFmgt-dimensionless |
| 4 | FdivFmgt-calc-dimensionless |
| 5 | ERdivERmsy-dimensionless |
| 6 | ERdivERmsy-calc-dimensionless |
| 7 | FdivFmsy-dimensionless |
| 8 | FdivFmsy-calc-dimensionless |
| 9 | ERdivERmsy-conv-dimensionless |
| 10 | FdivFmsy-conv-dimensionless |
| 11 | ERdivERmsy-dvma-dimensionless |
| 12 | ERdivERmsy-est-dimensionless |

1. **best representation of TB:**

|  |  |
| --- | --- |
| **Order** | **TBbest-MT** |
| 1 | TB-MT |
| 2 | SSB-MT (converted) |

1. **best representation of TC:**

|  |  |
| --- | --- |
| **Order** | **TCbest-MT** |
| 1 | TC-MT |
| 2 | TL-MT |

1. **best representation of ER:**

|  |  |
| --- | --- |
| **Order** | **ERbest-ratio** |
| 1 | ER-ratio |
| 2 | ER-calc-ratio |

1. **best representation of TBmsy:**

|  |  |
| --- | --- |
| **Order** | **TBmsybest-MT** |
| 1 | TBmsy-MT |
| 2 | TBmsy-pr-MT |
| 3 | TBmsy-extr-MT |
| 4 | TBmsy-calc-MT |
| 5 | SSBmsy-MT (converted) |
| 6 | SSBmsy-pr-MT (converted) |
| 7 | SSBmsy-extr-MT (converted) |
| 8 | SSBmsy-calc-MT (converted) |
| 9 | TB0-MT (converted) |
| 10 | SSB0-MT (converted) |
| 11 | TBmsy-conv-MT |
| 12 | SSBmsy-conv-MT (converted) |
| 13 | TBmsy-est-MT |
| 14 | SSBmsy-est-MT (converted) |

1. **“best” representation of ERmsy:**

|  |  |
| --- | --- |
| **Order** | **ERmsybest-ratio** |
| 1 | ERmsy-ratio |
| 2 | ERmsy-pr-ratio |
| 3 | ERmsy-extr-ratio |
| 4 | ERmsy-calc-ratio |
| 5 | ERmsy-mvo-ratio |
| 6 | ERmsy-conv-ratio |
| 7 | ERmsy-est-ratio |

1. **“best” representation of MSY:**

|  |  |
| --- | --- |
| **Order** | **MSYbest-MT** |
| 1 | MSY-MT |
| 2 | MSY-calc-MT |
| 3 | MSY-mvo-MT |
| 4 | MSY-conv-MT |
| 5 | MSY-est-MT |

1. **“best” representation of TBmgt:**

|  |  |
| --- | --- |
| **Order** | **TBmgtbest-MT** |
| 1 | TBmgt-MT |
| 2 | SSBmgt-MT (converted) |

1. **“best” representation of ERmgt:**

|  |  |
| --- | --- |
| **Order** | **ERmgtbest-ratio** |
| 1 | ERmgt-ratio |

**Views Table Assessment Hierarchy:**

Another way RAM summarizes data is in the generation of its views tables. These tables present the most commonly used data types, and for each stock, fills them in according to a hierarchy based on assessment year and data source. Views tables generally give preference to less-manipulated assessment data over heavily-modified supplemented data.

The most recent assessment year (say year T) is checked for assessment data or data that was generated through only basic calculations. If no data are found, then the next-most recent assessment year (year T-1) is checked for assessment data or data that was generated through only basic calculations. This is repeated until all assessment years have been checked in decreasing order (years T-2, T-3, and so on). If no data was found to fill that field, then the most recent assessment year (year T) is checked for data generated from more involved supplementation methods such as converted data or model-estimated data. If no data are found then the next-most recent year (year T-1) is checked, and so on for prior assessment years (year T-2, T-3, etc.).

|  |  |  |
| --- | --- | --- |
| **Order** | **Assessment Year** | **Data Source** |
| 1 | Year T | Assessment data or uses calculated values |
| 2 | Year T-1 | Assessment data or uses calculated values |
| 3 | Year T-2 | Assessment data or uses calculated values |
| x | … | Assessment data or uses calculated values |
| x+1 | Year T | Uses converted or model-estimated data |
| x+2 | Year T-1 | Uses converted or model-estimated data |
| x+3 | Year T-2 | Uses converted or model-estimated data |
| x+x | … | Uses converted or model-estimated data |

**Database Version Differences:**

Two versions of RAM get generated with each new release with differing levels of data supplementation. The “Assessment Data Only” version only supplements data with basic calculations. The “Model Fits Included” version further supplements with conversions and model-estimated data.

|  |  |  |
| --- | --- | --- |
| **Data Comparisons** | **Assessment Data Only Version [“asmt”]** | **Model Fits Included Version [“mdl”]** |
| 1 | Includes data from assessment | Includes data from assessment |
| 2 | Includes basic combined data (e.g. TB and TBmsy to generate TB/TBmsy) | Includes basic combined data (e.g. TB and TBmsy to generate TB/TBmsy) |
| 3 | Includes basic calculated data (e.g. using ER=TC/TB) | Includes basic calculated data (e.g. using ER=TC/TB) |
| 4 |  | Includes converted data (e.g. SSBmsy converted to a TBmsy) |
| 5 |  | Includes model fit data (reference points generated from a Pella-Tomlinson model) |

**Appendix A: Derived Method A**

This method was derived to generate full time series of TB/TBmsy and ER/ERmsy from a data scenario encountered with West African FAO stocks where the stock in an assessment had:

* One year (current) of TB/TBmsy and/or ER/ERmsy
* A time series of survey data
* A time series of catch data

Treating the survey data as a proxy for TB, a “TBmsy” is calculated in the current year, and then used to back calculate the remaining TB/TBmsy time series in years shared with the survey time series. A similar process is used for ER/ERmsy, where the survey is again used as a proxy for TB to calculate ER from ER=TB/TC.