**Summary Tables and Figures by Stock**

Stock summary tables and figures are grouped by eitherregion or taxGroup. Each stock in the grouping has available data shown on 4 pages (1 page of tables and 3 pages of figures). Filenames contain the grouping category name, whether the data are contained in the assessment-only (asmt) or model-fit supplemented (mdl) version, and the version number of the database. For example: ‘CanadaWestCoastSummaryFile[asmt][v4.48].pdf’

A summary table on the first few page(s) of each file lists the stocks included in the grouping and the availability of four main types of time series for each stock: B/Bmsy, U/Umsy, B/Bmgt, and U/Umgt. B data types may include TB (total biomass) and/or SSB (spawning stock biomass). U data types may include ER (annual exploitation rate) and/or F (instantaneous fishing mortality rate). For each of the resulting 8 possible time series types, color coding is used to indicate presence of the time series in RAM as well as default preferences:

* red = the time series type is not available in any assessments contained in RAM for this stock
* green = the time series type is available in one or more assessment contained in RAM for this stock, and by default is considered the preferred variable for data summaries of stock stuatus (generally the variable used for management purposes). For example, if assessments provide estimates of both TB/TBmsy and SSB/SSBmsy, one of these is preferred by default as the best representation of B/Bmsy
* blue = the time series type is also available for this stock but is not preferred by default

**NOTE: *these default preferences can be changed for each stock*.** To do so contact us using the issue tracker site below and let us know which stock(s) should have their preferences changed.

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

**Summary Table**

For each individual stock, the first page lists tables for metadata, reference point availability, and time series availability.

* The Metadata table’s field ‘Asmts in RAM’ lists the assessments contained in RAM for the stock (the value reflects the last year of available time series data in the assessment).
* For the most commonly-used reference point types, the Reference Points table lists the ID (a code reflecting the units and origin of the reference point), the assessment year from which the most-preferred reference point originated (usually the most recent estimate available, but see ‘Supplemental Data Info\_\_.xlsx’ for the hierarchies used to determine preference), and the value of this most-preferred reference point.
* The Time Series table similarly lists, for the most common types of time series, the ID, assessment year, and current value of the most-preferred time series of each type. For some time series types, the age groups and sex categories associated with the time series are listed if known ***(this information is missing for many stocks and we will add it if available; if you wish to provide this information, please let us know via the issue tracker site listed above).***

**Summary Plot Guide Page 1**

**Page layout:**

|  |  |
| --- | --- |
| 1. Kobe plot (MSY-preferred) | 1. Kobe plot (MGT-preferred) |
| 1. Spawner-recruitment Plot | 1. Surplus production plot |

1. Kobe plot (MSY-preferred)

Plots U/Umsy vs. B/Bmsy from the most recent assessment that includes both time series. Axis labels show the specific variables of U/Umsy and B/Bmsy plotted. MSY-based ratios are preferred, but if not available, MGT-based ratios (involving explicit management targets) are used instead. Dot coloring corresponds to time, with blue denoting older data and red newer data. Dashed horizontal and vertical lines show ratios of 1.

1. Kobe plot (MGT-preferred)

Plots U/Umgt vs. B/Bmgt (where Bmgt and Umgt are the management target reference points) from the most recent assessment that includes both time series. Axis labels show the specific variables of U/Umgt and B/Bmgt plotted. MGT-based ratios are preferred, but if not available, MSY-based ratios are used instead. Dot coloring corresponds to time, with blue denoting older data and red newer data. Dashed horizontal and vertical lines show target ratios of 1.

1. Spawner-Recruitment plot

Plots recruits vs. SSB from the most recent assessment that includes both time series. Dot coloring corresponds to time, with blue denoting older data and red newer data.

1. Surplus production plot

Plots calculated annual surplus production vs. total biomass from the most recent assessment that includes all time series involved (including catch, to calculate SP values). See ‘RAM SP Fit Guide\_\_.docx’ for details on the calculation of annual SP values. Dot coloring corresponds to time, with blue denoting older data and red newer data. Dashed horizontal line is zero production.

**Summary Plot Guide Page 2**

**Page layout:**

|  |  |
| --- | --- |
| 1. Total biomass | 1. Spawning stock biomass |
| 1. Total abundance | 1. Fishing mortality |
| 1. Exploitation rate | 1. Recruits |

1. Total biomass

Preferably plots the most recent TB time series (blue) from an assessment also containing reference points, plotted as horizontal dashed lines, including MSY (purple, dash), explicit management target (coral, two-dash), or management limit (aquamarine, dot-dash). If reference point values are not available, plots most recent TB time series.

1. Spawning stock biomass

Preferably plots the most recent SSB time series (blue) from an assessment also containing reference points, plotted as horizontal dashed lines, including MSY (purple, dash), explicit management target (coral, two-dash), or management limit (aquamarine, dot-dash). If reference point values are not available, plots most recent SSB time series.

1. Total abundance

Preferably plots the most recent TN time series (blue) from an assessment also containing reference points, plotted as horizontal dashed lines, including MSY (purple, dash), explicit management target (coral, two-dash), or management limit (aquamarine, dot-dash). If reference point values are not available, plots most recent TN time series.

1. Fishing mortality

Preferably plots the most recent F time series (blue) from an assessment also containing reference points, plotted as horizontal dashed lines, including MSY (purple, dash), explicit management target (coral, two-dash), or limit (aquamarine, dot-dash). If reference point values are not available, plots most recent F time series.

1. Exploitation rate

Preferably plots the most recent ER time series (blue) from an assessment also containing reference points, plotted as horizontal dashed lines, including MSY (purple, dash), explicit management target (coral, two-dash), or limit (aquamarine, dot-dash). If reference point values are not available, plots most recent ER time series.

1. Recruits

Plots the most recent recruitment time series (blue). The year range in which annual recruitment deviates were estimated from data is shaded (grey).

**Summary Plot Guide Page 3**

**Page layout:**

|  |  |
| --- | --- |
| 1. TC, TL, RecC | 1. TAC, Cpair, Cadv |
| 1. survB | 1. CPUE |
| 1. Effort | 1. CdivMSY, CdivmeanC |

1. TC, TL, RecC

Plots most recent total catch and/or total landings, as well as recreational catch (green) and MSY (purple horizontal dashed line) if these are also available from the same assessment. If total catch is available, it is shown in blue and landings is shown in red if available; otherwise if only total landings is available it is shown in blue. The year range during which a moratorium was in place is shaded (grey) if applicable and known.

1. TAC, Cpair, Cadv

Plots TAC (blue), as well as the corresponding catch (Cpair, in red) and the scientifically-advised catch (Cadv, in green) if these are also available from the same assessment.

1. survB

Plots the most recent fishery-independent survey biomass index time series (blue).

1. CPUE

Plots the most recent fishery-dependent CPUE index time series (blue).

1. Effort

Plots the most recent fishing effort time series (blue).

1. CdivMSY, CdivmeanC

Plots the most recent calculated ratios of Catch/MSY (blue) and Catch/(mean catch) (red), and displays in the margin the MSY parameter ID used in the ratio Catch/MSY.