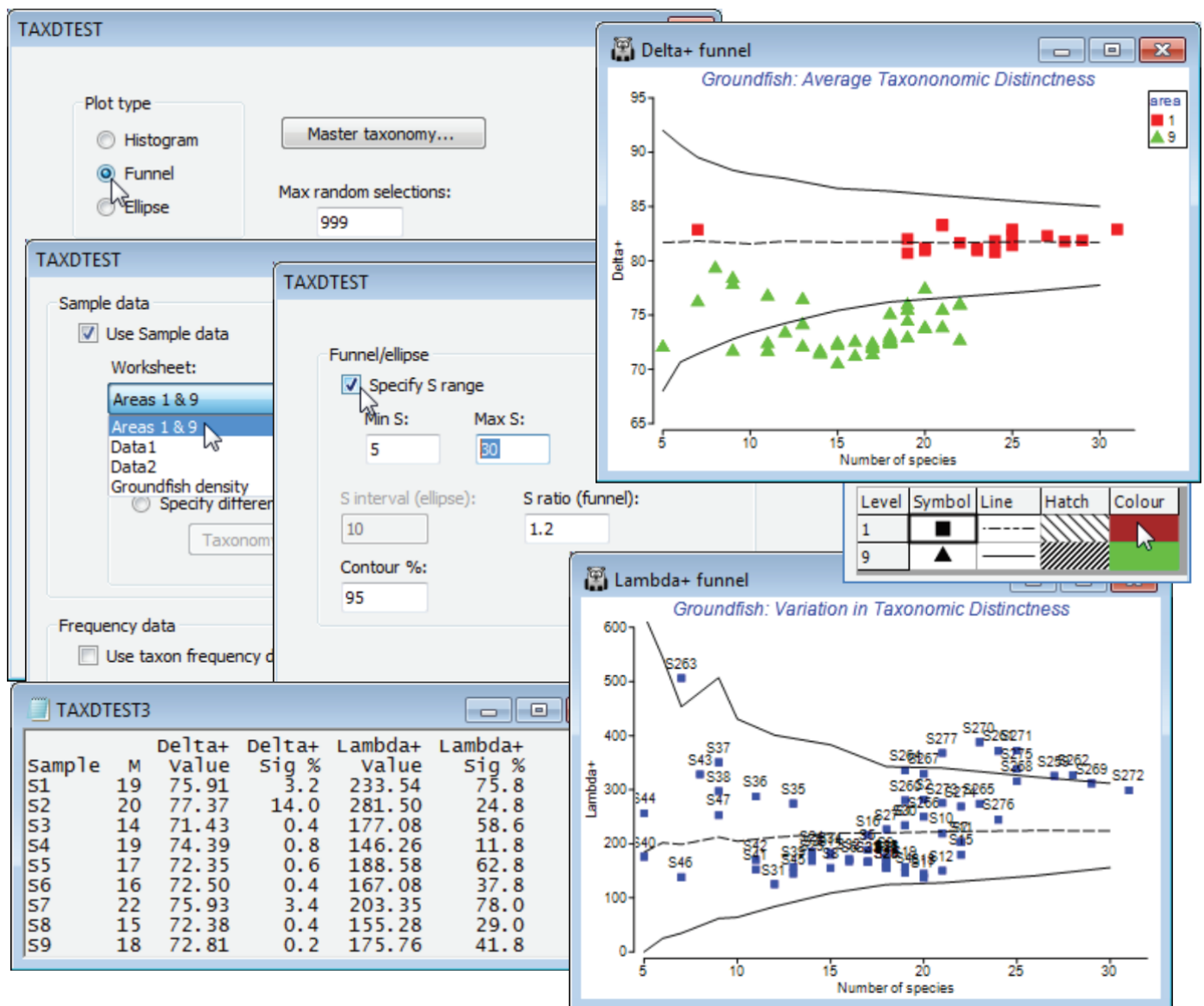


# Funnels for a range of sublist sizes

It is impractical to produce detailed histograms, such as those above, for each of the 277 samples, so a preferable option is just to view the 95% lower and upper limits for a range of sample sizes  $S$ , using a funnel plot so that a set of samples can be plotted on this. So, first select all sea area 9 (E Central N Sea) and sea area 1 (Bristol Channel) samples from **Groundfish density**, with **Select>Samples>(•Factor levels)>Factor name: area>Levels**, leaving only 1 and 9 in the Include box, and **Tools>Duplicate** this, renaming it **Areas 1 & 9** (and remove the selection on the original sheet with **Select>All**, for later use). Then run **Analyse>TAXDTEST** again, on **Groundfish taxonomy**, with (Plot type•Funnel) & (Max. random selections: 999) and **Next>(✓Use Sample data>Worksheet: Areas 1 & 9)**. Now, **Next>(Funnel/ellipse✓Specify S range)>(Min S: 5) & (Max S: 30)**, to span the spread of  $S$  values on the display. The (S ratio (funnel): 1.2) option determines how many  $S$  values are calculated in the range 5 to 30, the  $S$  values stepping up by multiples of 1.2 by default (then rounded), thus  $S = 5$ , then 6 ( $=5 \times 1.2$ ) etc. The final box on this screen gives 95% intervals if the default is taken (2.5% of simulations fall above the upper limit and 2.5% below the lower limit).

The results and funnel plots for  $\Delta^{\{\scriptscriptstyle +\}}$  and  $\Lambda^{\{\scriptscriptstyle +\}}$  are shown below and indicate that, whilst area 1 samples are within expected ranges for average taxonomic distinctness, based on the 93 species master list, area 9 samples have reduced diversity (AvTD is the more easily interpretable of the two indices, since it measures the average breadth of the assemblage). Rogers *et al* 1999 (reference in Section 5) discuss possible reasons for this. Note that these plots have been tidied up, with **Graph>Sample Labels & Symbols**, by removing the labels and adding symbols for factor **area**, changing symbol size/colour etc., as for any other plot. The probability limits could be further smoothed by running with (Max random selections: 9999) but will still show kinks for small  $S$ , because  $S$  is discrete.



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