Species analyses

The final step in the Basic MVA wizard is to break down the dissimilarities (or distances) between pairs of creeks into their contributions from each of the species (or abiotic variables), in the tables of *SIMPER1* (or *SIMPER2*), see at the end of Section 10. This is equivalent to running **Analyse> SIMPER** on the transformed data matrix for biota (or normalised data matrix for abiotic variables). There are, however, several other ways in which PRIMER examines variable relationships to each other, or species relationships to the sample patterns (Section 10). We have already seen the power shade plots potentially have for interpretation. Another possibility is Bubble plots of individual species values on the sample *n*MDS ordination: the larger the bubble the greater the abundance of that species at that site – or abundances, because PRIMER does multiple (segmented) bubbles of different colours and circle sectors for different species. For the Fal *n*MDS, try this with **Graph> Special>**(✓Bubble plot) & (Worksheet: Fal nematode abundance) & (Variables>**Change**), moving *Metachromadora vivipara*, *Tripyloides gracilis* and *Leptolaimus limicolus* to the Include box and all other species in the Available box, and ticking (✓3D effect) & (Saturation: 75).

Calculating similarities (index of association) among species – not samples – or correlations among environmental variables, in their pattern of response across the samples, opens up another field of analyses, which we have already seen used to cluster species in the shade plot. Adapting SIMPROF tests to operate on variable clusters (Type 3) rather than sample clusters (Type 1) permits definition of *coherent variable sets*, which within the sets are not statistically distinguishable but across sets have significantly different response patterns over the samples. Run **Wizards>Coherence plots** on Fal environment, the heavy metal levels (and silt/clay ratio) at these 27 sites, with significance set at 0.5%, and strikingly similar metal concentration profiles are seen in the resulting **Line Plot sets**.

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