

MULTIDIMENSIONAL SCALING EXERCISES

1. These exercises relate to a study of **water voles** (genus *Arvicola*) with the aim to compare British populations of these animals with those in Europe in order to investigate whether more than one species might be present in Britain. The original data consisted of observations of the presence or absence of 13 characteristics (hint: $k=13$) in about 300 water vole skulls arising from six British populations and eight populations from the rest of Europe.
2. Use the distance matrix data “watervoles” provided in the HSAUR2 package. Find the classical scaling solution and compute the two criteria for assessing the required number of dimensions as described above. Note that the two criteria are not in agreement. Proceed according to the second fit index and plot a two-dimensional solution by extracting the coordinates from the points elements of the **voles_mds** object.
3. Interpret the plotted two-dimensional solution from classical multidimensional scaling of the distance matrix for water vole populations.