

# Summary of the PERMANOVA analysis

A summary of the essential commands associated with performing this PERMANOVA analysis of the holdfast data according to the 3-factor hierarchical experimental design is given in the table below:

Step	To implement in PRIMER:
1. Select <b>variable subset</b>	<i>From the original data sheet:</i> click <b>Select &gt; Variables...</b> > (\$\bullet\$Indicator levels > Indicator name: <b>Phylum</b> ), click <b>Levels...</b> > (Selection > Include: <b>Mollusca</b> ), click <b>OK</b> .
2. Jaccard <b>resemblance</b>	<i>From the subset-selected data sheet:</i> click <b>Analyse &gt; Resemblance</b> > (Measure \$\bullet\$Other > <b>S7 Jaccard</b> ) & (Analyse between \$\bullet\$Samples), click <b>OK</b> .
3. Specify the <b>design</b>	<ul style="list-style-type: none"><li>• <i>From the resemblance matrix:</i> click <b>PERMANOVA+ &gt; Create PERMANOVA design...</b> &gt; (Title: <b>Three-way nested design</b>) &amp; (Number of factors: <b>3</b>), click <b>OK</b>.</li><li>• <i>Fill in the appropriate details of the design in the design file.</i></li></ul>
4. Run <b>PERMANOVA</b>	<i>From the resemblance matrix:</i> click <b>PERMANOVA+ &gt; PERMANOVA...</b> > (Design Worksheet: <b>Design1</b> ) & (Num. permutations: <b>9999</b> ) & (default settings for the rest), click <b>OK</b> .
5. Ordination of <b>centroids</b>	<ul style="list-style-type: none"><li>• <i>From the resemblance matrix:</i> click <b>PERMANOVA+ &gt; Distance Among Centroids...</b> &gt; Centroids &gt; (Grouping factor: <b>Area</b>).</li><li>• <i>From the resulting resemblance matrix among area centroids:</i> click <b>Analyse &gt; MDS &gt; Non-metric MDS...</b>, take all the defaults and click <b>OK</b>.</li><li>• <i>To specify labels and symbols:</i> click <b>Graph &gt; Sample Labels &amp; Symbols...</b></li></ul>