

15.7 Output group-level stats from dispersion (or variability) weighting

In PRIMER 8, you can now output more detailed statistical information from either dispersion-weighting or variability weighting to a worksheet. You can see this additional option in the comparison of the 'Dispersion Weighting' dialog in PRIMER 8, compared to that in PRIMER 7 (Fig. 15.7).

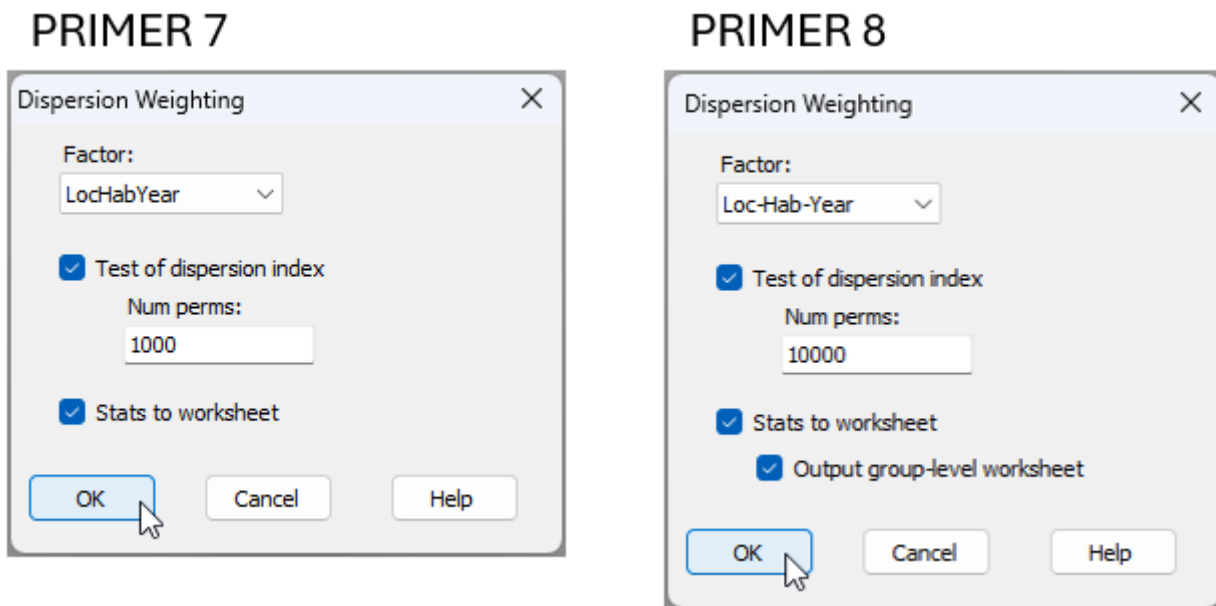


Fig. 15.7 Comparison of the Pre-treatment > Dispersion Weighting... dialog window in PRIMER 7 (at left) vs PRIMER 8 (at right).

In essence, whenever we calculate the average *index of dispersion* ($\bar{D}$) for the dispersion weighting pre-treatment, it is drawn from individual indices of dispersion (variance-to-mean ratios, D_i) for each of several ($i = 1, \dots, g$) groups (identified by a factor). It would be helpful, in some situations, to be able to see those original individual indices of dispersion across all of the groups for each variable. The extra tickbox ('☒ Output group-level worksheet') available in the PRIMER 8 dispersion weighting dialog allows you to produce and examine this underlying statistical information in a worksheet directly.

For example, we can re-visit the data we saw in [section 10.4](#) above, located in the file 'NE_NZ_fish_counts.pri', found in the 'Example_P8' > 'NE_NZ_fish' folder. We can begin by following steps 1, 2 and 3 from [section 10.4](#) on these data; i.e., get the data into PRIMER 8, then:

- Obtain a subset of the data based on the factor of 'Year', from 2010-2015 inclusive (**Select > Samples...**), with the resulting subset being called 'Data1'.
- Create a combined factor consisting of all combinations of the factors: 'Loc', 'Hab' and 'Year' (**Edit > Factors... > Combine...**)

Next, we can apply the dispersion weighting pre-treatment on the basis of this combined factor by clicking **Pre-treatment > Dispersion Weighting...** and in the resulting dialog, choose Factor: **Loc-Hab-Year**. This time, however, we shall also choose to get (\$\checkmark\$Stats to worksheet) & (\$\checkmark\$Output group-level worksheet), then click '**OK**'.

This will produce the following three worksheets (assuming '**Data1**' contains the subset-selected data):

- '**Data2**' contains the dispersion-weighted data.
- '**Data3**' contains the statistics associated with the *average* index of dispersion ($\bar{D}$) for each variable.
- '**Data4**' contains the *individual* indices of dispersion (D_i) for each group (columns) and for each variable (rows).

These three data sheets are shown below for the present example.

NE New Zealand Fish Visual Surveys								
Abundance								
	Variables							No
	Parika.scaber	Cheilodactyl	Trachurus.no	Scorpiis.lineo	Upeneichthys	Optivus.elong	Pempheris.ad	
10.BP.b1	1.1094	5.1123	0.0050135	0.17317	3.3214	0	0.069656	
10.BP.b2	1.7751	8.5204	0	0.29222	2.2835	0	6.5477	
10.BP.b3	1.1094	6.8163	0	0.87666	1.4531	0	0	
10.BP.b4	0.66565	5.5383	0.0083558	0.36798	2.2835	0	0	
10.BP.k1	6.1018	3.8342	0	0	0.41518	0.59613	0.27862	
10.BP.k2	6.7674	2.9821	0.91914	0	0.20759	0	0.069656	
10.BP.k3	3.3282	0.42602	0	0	0.41518	0.59613	0	
10.BP.k4	3.5501	2.9821	0	0.054115	1.4531	2.9807	1.8111	
10.Ha.b1	1.3313	9.3725	0	0.53033	3.3214	0	0.069656	
10.Ha.b2	2.6626	11.077	1.4171	0.72514	2.4911	0	0.069656	
10.Ha.b3	1.4422	6.3903	0.46793	1.223	2.4911	0	0	
10.Ha.b4	0.44376	4.2602	0	0.99572	0.41518	0	0	
10.Ha.k1	7.9878	0	0.34426	0.043292	0.20759	0	0.069656	
10.Ha.k2	4.2158	0.42602	0.076874	0.27058	0.41518	0	1.3931	
10.Ha.k3	9.0972	1.7041	0.16545	0.021646	0.41518	0	0	
10.Ha.k4	12.425	2.1301	0.0066847	0.84419	1.6607	0	0.13931	
10.HP.b1	2.5516	11.503	0.0050135	1.4611	1.4531	0	0	
10.HP.b2	1.9969	11.929	0	0.44374	1.4531	0	0	
10.HP.b3	0.99847	8.9464	0	0.75761	1.6607	0	0.069656	

Index of Dispersion (D) Coefficients - Loc-Hab-Year

Other

Samples

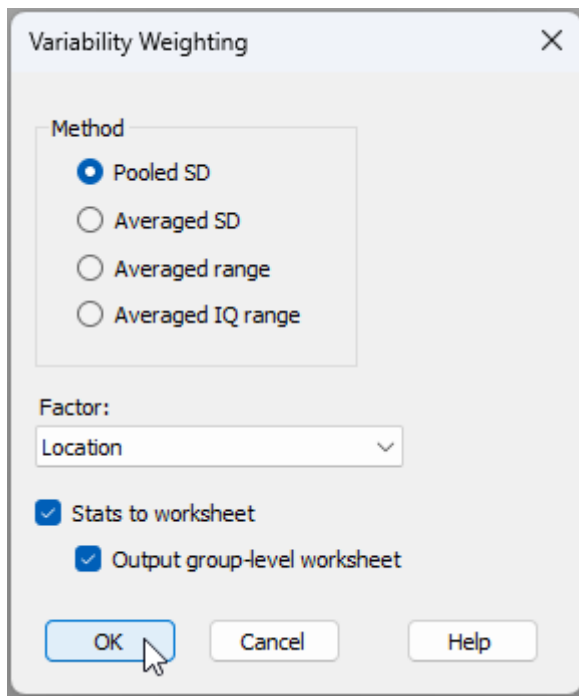
Variables

	D	Sig%	P-Value	Divisor
Parika.scaber	9.0138	1.5835E-181	1.5835E-183	9.0138
Cheilodactylus.spectabilis	2.3473	1.5682E-15	1.5682E-17	2.3473
Trachurus.novaezealandiae	598.39	0	0	598.39
Scorpius.lineolatus	92.396	0	0	92.396
Upeneichthys.lineatus	4.8172	2.3859E-70	2.3859E-72	4.8172
Optivus.elongatus	10.065	0	0	10.065
Pempheris.adspersus	14.356	2.1293E-284	2.1293E-286	14.356
Notolabrus.celidotus	5.9996	2.3007E-100	2.3007E-102	5.9996
Zeus.faber	0.93333	100	1	1
Chromis.dispilis	151.16	0	0	151.16
Chironemus.marmoratus	1.8168	0	0	1.8168
Chrysophrys.auratus	8.2934	1.0567E-161	1.0567E-163	8.2934
Aldrichetta.forsteri	1	100	1	1
Caesioperca.lepidoptera	17.514	0	0	17.514
Nemadactylus.douglasii	1.4472	0.03	0.0003	1.4472
Myliobatis.tenuicaudatus	1	49.83	0.4983	1
Odax.pullus	3.1285	0	0	3.1285
Scorpius.violaceus	32.499	0	0	32.499
Coris.sandageri	4.7521	0	0	4.7521
Girella.tricuspidata	33.29	0	0	33.29
Pseudolabrus.luculentus	1.6	1.65	0.0165	1.6
Pseudolabrus.miles	1.6952	0	0	1.6952

Data4								
Indices of Dispersion (D) per Loc-Hab-Year Group								
Other								
	Samples							
	BP-b-2010	BP-k-2010	Ha-b-2010	Ha-k-2010	HP-b-2010	HP-k-2010	Le-b-2010	Le
Pariaka.scaber	1.619	5.6105	5.1006	12.246	2.9778	4.381	1.3111	
Cheilodactylus.spec	0.84699	2	2.79	2.2667	2.8008	1.619	4.9333	
Trachurus.novaezel	3	550	566.68	85.869	3	1186.9	Missing!	
Scorpius.lineolatus	20.768	5	9.8141	45.979	19.189	9.6173	187.49	
Upeneichthys.lineat	1.2074	2.4444	3.3968	3.1538	0.43434	6.2	9.0364	
Optivus.elongatus	Missing!	16.857	Missing!	Missing!	Missing!	5	Missing!	
Pempheris.adpersu	92.361	19.473	0.66667	15.812	13.5	1	19.961	
Notolabrus.celidotus	0.27451	0.52941	18.304	0.18095	4.7566	2.6	4.0241	
Zeus.faber	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	
Chromis.dispilus	159.41	219.8	106.92	346.27	482.19	476.59	7.2105	
Chironemus.marmo	1.6923	Missing!	4.6889	1	0.066667	1	2	
Chrysophrys.auratus	2.7576	9.7778	8	15.72	8.2444	0.48718	3.4737	
Aldrichetta.forsteri	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	
Caesioperca.lepidop	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	Missing!	
Nemadactylus.doug	2	0.73333	Missing!	Missing!	2.5556	0.52381	1	
Myliobatis.tenuicau	Missing!	Missing!	1	1	1	2	Missing!	
Odax.pullus	21	1.0606	5	0.61404	Missing!	3.1905	Missing!	
Scorpius.violaceus	48.524	12.588	81.872	8	52.692	56.723	Missing!	
Coris.sandageri	7.4035	0.33333	2	4	0.68627	6.381	Missing!	

Note in the above sheet ('Data4', containing individual indices, D_i) that there are many missing values. This is simply a consequence of there being zero fish of that species in that particular group of samples; hence, the mean and the variance will both be equal to zero, so no value of D_i can be calculated for that particular cell (or group). Average $\bar{D}$ values for each species are naturally calculated only from those cells (groups of samples) where at least some individuals of that species were recorded (i.e., the non-missing entries).

Finally, note that this '\$\checkmark\$Output group-level worksheet' option is also available for **Pre-treatment > Variability Weighting...**, viz.:



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