

# A series of short courses in data analysis for conservation biologists

*This series of courses is designed to build an understanding of analytical techniques. Each course can stand alone – yet builds on the knowledge of the previous course(s). Most courses start with lunch – so please aim to arrive for about 12:30am (except D202) and all finish the following afternoon.*

	<b>D101</b> Data analyses in conservation biology	<b>D201</b> Advanced data analyses in conservation biology	<b>D202</b> Diversity and community analyses in conservation biology	<b>R101</b> Using R for analyses in conservation - an introduction	<b>R201</b> Advanced analyses in conservation using R	<b>R202</b> Community analyses using R
<b>Course Length</b>	1 ½ days	1 ½ days	1 ¾ days	1 ½ days	1 ½ days	1 ½ days
<b>Cost</b>	£185	£205	£225	£185	£205	£205
<b>Date</b>	10-11 <sup>th</sup> August 2009	12 <sup>th</sup> -13 <sup>th</sup> August 2009	15 <sup>th</sup> -16 <sup>th</sup> September 2009	19 <sup>th</sup> -20 <sup>th</sup> October 2009	21 <sup>st</sup> -22 <sup>nd</sup> October 2009	30 <sup>th</sup> November -1 <sup>st</sup> December 2009
Software	Don't Panic – a spreadsheet programme to analyse your data will be provided with the course	Don't Panic – a spreadsheet programme to analyse your data will be provided with the course	Bespoke spreadsheet packages will be provided with the course as will instruction on the use of the free TWINSPAN software.	R is free and Open Source software. Copies of the program, from the R Foundation for Statistical Computing, will be provided along with additional analysis packages as required.  <i>R Development Core Team (2007). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <a href="http://www.R-project.org">http://www.R-project.org</a>.</i>		
<b>DAY ONE</b>			Arrive in time for Coffee at 10:30			
11:00 – 13:00			Introduction. Species Richness: simple tests to compare e.g. t/U, Chi Squared tests			
	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
14:00-15:00	Data handling: layout of data in spreadsheet, pivot tables	A review of basic statistical techniques and data types	Site lists: similarity; Jaccard and Sorensen indices	Install R, basic syntax	Install R, Basic R review	Install R, Basic R review
15:00 – 16:00	Summary statistics: centrality, variability, distribution	Analysis of variance (ANOVA); an introduction	Diversity: Simpson's and Shannon indices	Data input, summary statistics	ANOVA: 1-way, 2-way	Chi Squared tests as a foundation for community analyses
16:00	TEA BREAK	TEA BREAK	TEA BREAK	TEA BREAK	TEA BREAK	TEA BREAK
16:30-18.30	Hypothesis testing, differences tests: t-test and U-test	More ANOVA, Post-Hoc testing	Comparing diversity (using Hucheson t-test), Distance measures	t/U/paired tests, Correlation, Chi Squared	Kruskal Wallis, Post-Hoc testing	Diversity, distance measures, cluster analysis
19:00	SUPPER	SUPPER	SUPPER	SUPPER	SUPPER	SUPPER
20:00 – 21:00	Practice data	Practice data	Practice data	Graphs, Practice data	Graphs, Practice data	Species tables, indicator species
<b>DAY TWO</b>						
09:30 – 10:00	Differences: Paired Tests	Kruskal Wallis (non-parametric ANOVA)	Cluster dendrograms	ANOVA	Linear regression: introduction	Multivariate introduction
10.00-11.00	Correlation: Spearman Rank	2-way ANOVA	Introduction to multivariate analyses	Multiple Regression	Multiple regression	Principal component analysis (PCA)
11.00	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE	COFFEE
11:30-13:30	Pearson Correlation	Linear regression: introduction	Polar Ordination	Distance measures and cluster analysis	Stepwise analyses in multiple regression	Correspondence analysis (CA), creating graphical output
13:30	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH	LUNCH
13:30-15:00	Chi Squared test for association	Multiple Regression	Indicator species analysis using TWINSPAN	Multivariate analyses	Generalized linear modelling (GLM)	Canonical and detrended correspondence analyses (CCA, DCA)
15:00 – 16:00	Review and depart	Review and depart	Review and depart	Review and depart	Review and depart	Review and depart

All courses are run at Preston Montford Field Centre, Montford Bridge, Shrewsbury, Shropshire, SY4 1DX .

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Further information on each course and booking forms can be obtained by from Karen Harvey at this address.

The Course Tutor will be Dr Mark Gardener - ideas on what Mark does can be found at his website:

<http://www.gardenersown.co.uk/Education/index.htm>

ST/MG Jan 2009