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Nota di contenuto	Front Cover; Numerical Ecology; Copyright; Contents; Preface; Chapter 1: Complex ecological data sets; 1.0 Numerical analysis of ecological data; 1.1 Spatial structure, spatial dependence, spatial correlation; 1.2 Statistical testing by permutation; 1.3 Computer programs and packages; 1.4 Ecological descriptors; 1.5 Coding; 1.6 Missing data; 1.7 Software; Chapter 2: Matrix algebra: a summary; 2.0 Matrix algebra; 2.1 The ecological data matrix; 2.2 Association matrices; 2.3 Special matrices; 2.4 Vectors and scaling; 2.5 Matrix addition and multiplication; 2.6 Determinant; 2.7 Rank of a matrix 2.8 Matrix inversion2.9 Eigenvalues and eigenvectors; 2.10 Some properties of eigenvalues and eigenvectors; 2.11 Singular value decomposition; 2.12 Software; Chapter 3: Dimensional analysis in ecology; 3.0 Dimensional analysis; 3.1 Dimensions; 3.2 Fundamental principles and the Pi theorem; 3.3 The complete set of dimensionless products; 3.4 Scale factors and models; Chapter 4: Multidimensional quantitative data; 4.0 Multidimensional statistics; 4.1 Multidimensional variables and dispersion matrix; 4.2 Correlation matrix; 4.3 Multinormal distribution; 4.4 Principal axes 4.5 Multiple and partial correlations4.6 Tests of normality and multinormality; 4.7 Software; Chapter 5: Multidimensional semiquantitative data; 5.0 Nonparametric statistics; 5.1 Quantitative,

semiquantitative, and qualitative multivariates; 5.2 One-dimensional nonparametric statistics; 5.3 Rank correlations; 5.4 Coefficient of concordance; 5.5 Software; Chapter 6: Multidimensional qualitative data; 6.0 General principles; 6.1 Information and entropy; 6.2 Two-way contingency tables; 6.3 Multiway contingency tables; 6.4 Contingency tables: correspondence; 6.5 Species diversity; 6.6 Software
Chapter 7: Ecological resemblance
7.0 The basis for clustering and ordination; 7.1 Q and R analyses; 7.2 Association coefficients; 7.3 Q mode: similarity coefficients; 7.4 Q mode: distance coefficients; 7.5 R mode: coefficients of dependence; 7.6 Choice of a coefficient; 7.7 Transformations for community composition data; 7.8 Software;
Chapter 8: Cluster analysis; 8.0 A search for discontinuities; 8.1 Definitions; 8.2 The basic model: single linkage clustering; 8.3 Cophenetic matrix and ultrametric property; 8.4 The panoply of methods; 8.5 Hierarchical agglomerative clustering; 8.6 Reversals
8.7 Hierarchical divisive clustering
8.8 Partitioning by K-means; 8.9 Species clustering: biological associations; 8.10 Seriation; 8.11 Multivariate regression trees (MRT); 8.12 Clustering statistics; 8.13 Cluster validation; 8.14 Cluster representation and choice of a method; 8.15 Software; Chapter 9: Ordination in reduced space; 9.0 Projecting data sets in a few dimensions; 9.1 Principal component analysis (PCA); 9.2 Correspondence analysis (CA); 9.3 Principal coordinate analysis (PCoA); 9.4 Nonmetric multidimensional scaling (nMDS); 9.5 Software
Chapter 10: Interpretation of ecological structures

Sommario/riassunto

The book describes and discusses the numerical methods which are successfully being used for analysing ecological data, using a clear and comprehensive approach. These methods are derived from the fields of mathematical physics, parametric and nonparametric statistics, information theory, numerical taxonomy, archaeology, psychometry, sociometry, econometry and others. An updated, 3rd English edition of the most widely cited book on quantitative analysis of multivariate ecological data. Relates ecological questions to methods of statistical analysis, with a clear descripti
