

MEASURES OF SPECIES

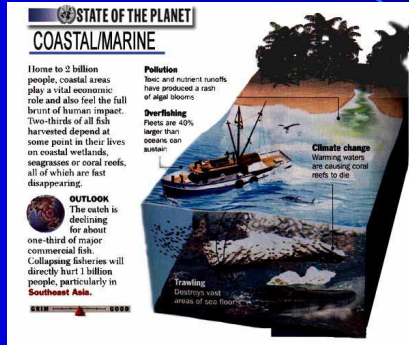
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Measures of Species Diversity



Mangrove ecosystem



Marine ecosystem



Grassland ecosystem



Forest ecosystem



Freshwater ecosystem



Coral ecosystem

Concepts of Species Diversity

A. Species Richness:

Number of species in the community

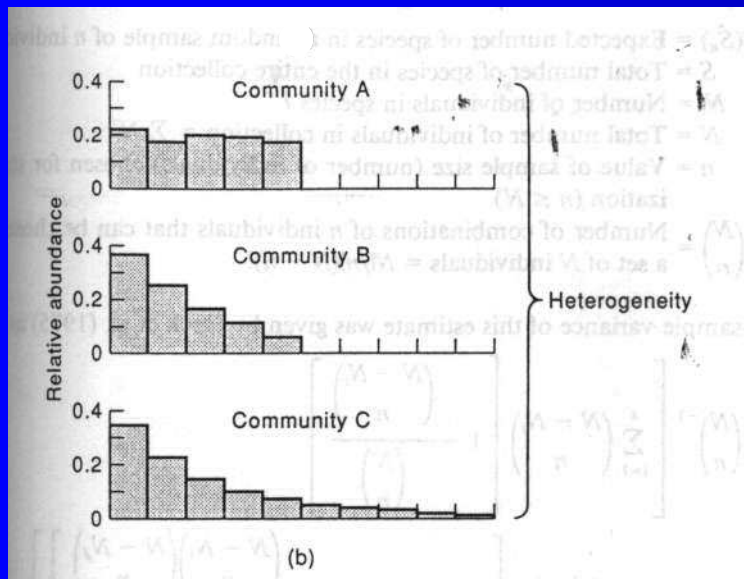
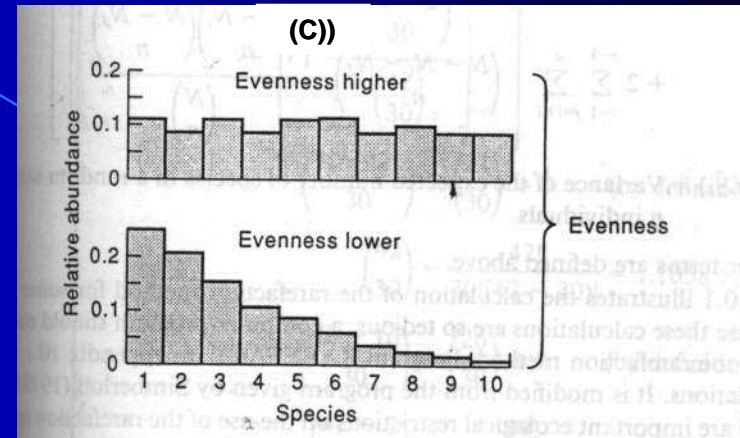
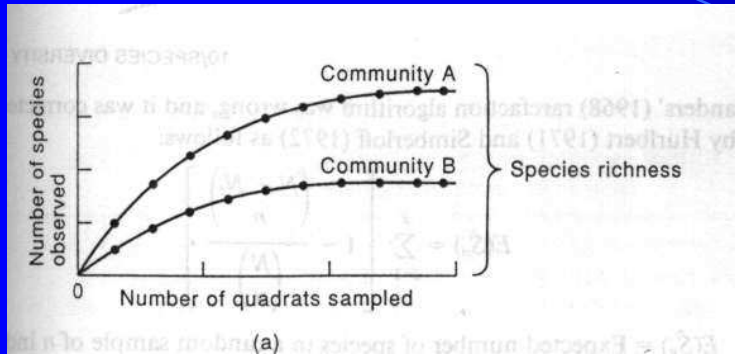
B. Heterogeneity:

Probability to find the same species picked randomly

C. Evenness:

Similarity in relative abundance





Concepts of species diversity. (a) Species richness: community A has more species than community B and thus higher species richness. (b) Heterogeneity: community A has the same number of species as community B but the relative abundances are more even, so by a heterogeneity measure A is more diverse than B. (c) Evenness: when all species have equal abundance in the community, evenness is maximal.



Species Diversity Measures

A. Measures of Species Richness

1. Rarefaction Method
2. Jackknife Estimate
3. Bootstrap Procedure

B. Measures of Heterogeneity

1. Logarithmic Series
2. Lognormal Distribution
3. Simpson's Index
4. Shannon-Wiener Function
5. Brillouin Index

C. Evenness Measures



Measures of Similarity

A. Binary Similarity Coefficients

1. Coefficient of Jaccard
2. Coefficient of Sorensen
3. Simple Matching Coefficient
4. Baroni-Urbani and Buser Coefficient

B. Distance Coefficients

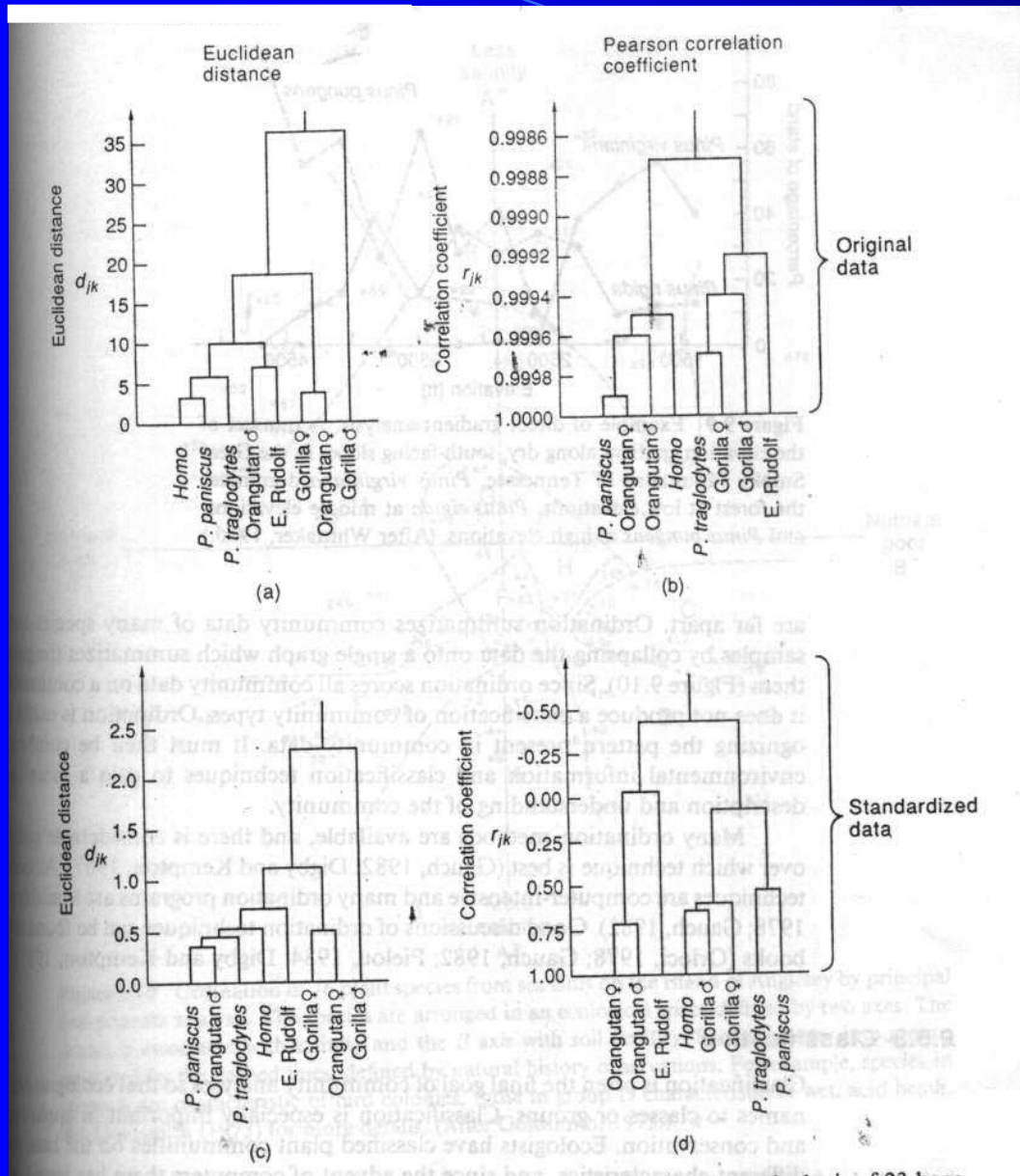
1. Euclidean Distance
Bray-Curtis Measure
2. Canberra Metric

C. Correlation Coefficients

D. Other Similarity Measure

1. Percentage Similarity Measure
2. Morisita's Index of Similarity
3. Horn's Index of Similarity





Cluster analyses of eight populations of higher primates on the basis of 23 bone measurements. The UPGMA clustering method was used on all four trees. Euclidean distance was used to measure similarity for trees (a) and (c), and the correlation coefficient was used for trees (b) and (d). Only a standardized trees from the correlation coefficient produces a clustering that agrees with independent taxonomic relationship.

Ordination of 76 plant species from sea cliffs on the island of Anglesey by principal component analysis. The species are arranged in an ecological space defined by two axes. The A axis is associated with salinity and the B axis with soil fertility. Species cluster into groups separated by the dashed lines, defined by natural history observations. For example, species in group A are characteristic of bird colonies, those in group D characteristic of wet, acid heat.

