

Ordination, Correspondence analysis

Quiz

The goal of quizzes is to help you learn.

Compare your answers to the list of correct answers at the end of the quiz.

Correspondence analysis (PCA) – computation

1. Correspondence analysis (CA) can be used with variables of any mathematical types: quantitative, qualitative, or a mixture of these types. – True, False.
2. Correspondence analysis (CA) can be applied to multivariate frequency (or frequency-like) data. – True, False.
3. Presence-absence data can be used as input to CA. – True, False.
3. The sum of the CA eigenvalues is equal to the total inertia of the analysis. – True, False.
5. For community composition data, the Hellinger and chord transformations, used in PCA, can also be applied to the data before CA. – True, False.

CA biplots

6. CA biplots are graphs in which sites and species are represented together. – True, False.
7. In CA, scaling type 1 biplots preserve the chi-square distance among the sites. – True, False.
8. In CA, scaling type 1, the chi-square distance among the sites can be obtained by computing the Euclidean distance among the rows of matrix \mathbf{F} (positions of the sites in the CA scaling 1 biplot). – True, False.
9. In CA, scaling type 2 biplots also preserve the chi-square distance among the sites. – True, False.
10. In CA scaling type 2 biplots, the sites are located around the species. – True, False.
11. A CA scaling type 2 biplot is most appropriate if one is primarily interested in examining the distance relationships among the species. – True, False.

Effect of rare species on CA

12. In scaling type 1 biplots, rare species with few occurrences may be located far from the origin. – True, False.
13. Rare species have a small influence on the first few eigenvalues and axes in CA. – True, False.

Arch effect, detrending

14. A coenocline is a sequence of communities changing along an environmental gradient. – True, False.

15. An arch effect in a biplot is the result of a bug in the program. – True, False.

16. Correspondence analysis of a coenocline can cause the appearance of an arch in the ordination plot of the sites. – True, False.

17. Detrending by segments is routinely used and is a recommended method to remove the arch effect found in biplots. – True, False.

Meaningful components, algorithms

18. The most meaningful and interpretable axes in correspondence analysis are those that have the largest eigenvalues. – True, False.

19. Eigen decomposition, singular value decomposition (SVD) and iterative search of eigenvalues and eigenvectors are three different ways of computing CA. They produce the same results. – True, False.

20. Use correspondence analysis (CA) if you want to give high importance to the rare species in the ordination of community composition data. – True, False.

21. To obtain an ordination that gives the same importance to the abundant and rare species, apply the Hellinger or chord transformation to the community data and use PCA. – True, False.

Correct answers to the questions about CA –

1. False
2. True
3. True
4. True
5. False

6. True
7. True
8. True
9. False
10. True
11. True

12. True
13. True

14. True
15. False
16. True
17. False

18. True
19. True
20. True
21. True