

Random – a FORTRAN program for generating random matrices Version 1.0

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1. Introduction

Random is a small program that generates ecological randomized presence—absence or abundance matrices to be used in EcoSim (Gotelli and Entsminger 2002) and in the Nestedness calculator (Atmar and Patterson 1995).

The idea of *Random* is simple. You have an input matrix. This matrix might be a presence absence or an abundance matrix. This matrix is randomized in such a way that the output is a file that conforms to the EcoSim or to the Nestedness Calculator standards.

2. Data structure

Random needs one main input file of the following structure. The first line must be a comment line. Next the data matrix columns are sites, the lines species. Hence the following file contains seven species distributed over five sites. The data file has to be a

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0      0.081    0.011    0.004    0.033
0      0.025    0.042    0.002    0.002
0      0.004    0.006    0.03     0.015
0      0.011    0.002    0.01     0.002
0.009    0      0.022    0.021    0.005
0.027    0.013    0.001    0         0
0      0.002    0         0.003    0
    
```

simple ASCII file with data delimited by spaces.

3. Program run

First, *Random* asks how many runs. Choose the number of data matrices you want to generate. For Ecosim this number should be at least 1000. Note that the program generates a zero file which is identical with the original input matrix!

Next *Random* asks what to do? First, you can choose options either to randomize according to the sequential swap algorithm.

You can also place the individuals of the species (if your input matrix contains individual numbers) at random into the new matrices.

An additional option refers to differences in site quality. The program asks whether individuals have to be placed according to predefined site frequencies. In this case you have to provide a second file containing these frequencies. This file has to have as many entries as you have sites.

4. Citing *Random*

Random is freeware but nevertheless if you use *Random* in scientific work you should cite *Ran-*

dom as follows:

Ulrich W. 2005 - Random – a FORTRAN program for generating random matrices www.uni.torun.pl/~ulrichw

5. Acknowledgements

The development of this program was supported by a grant of the Polish Science Committee (KBN, 3 F04F 03422).

6. References

Atmar W., Patterson B. D. 1995 - The nestedness temperature calculator: a visual basic program, including 294 presence absence matrices. AICS Research Incorporate and The Field Museum.

Gotelli, N.J. and Entsminger, G.L. 2002. EcoSim: Null models software for ecology. Version 7. - Acquired Intelligence Inc. & Kesey-Bear. Burlington, VT 05465.