

# Ecography

E5041\_2

Raes, N. and ter Steege, H. 2007. A null-model for significance testing of presence-only species distribution models. – *Ecography* 30: 727–736.

## How to create null-model data

1. Create an XLS file with identifier, long, lat for all the grid cells in your study area.

In the following example it is worked out how to create a Maxent file for a null-model with 11 records.

2. Create a series of 999 times 11 points which is done with the macro RandomOrder() below (Fig. 1 column A and B). If you need 12 points replace 11 by 12. If you need a series starting at 500, replace 'For i = 1 ...' by 'For i = 500 ...'.

*An easy way to do this is to just record a macro → select the macro in the View macros menu → Step Into → replace the code by the code below.*

```
Sub RandomOrder()
For Each sh In Sheets
sh.Visible = True
Next sh
rw = 1
For i = 1 To 999
For j = 1 To 11
Cells(rw, 1) = i: Cells(rw, 2) = j
rw = rw + 1
Next
Next
End Sub
```

3. Go to cell E1 and create a string with as many numbers as you have grid cell identifiers (Fig. 1).
4. Type '=RAND()' in cell F1 and paste down until the last identifier in column E.
5. Type '=INDEX(E\$1:E\$1837, RANK(F1,F\$1:F\$1837))' in cell G1 and past down to G11 (in the case of 11 random records). In this example I have 1837 identifier cells.
6. Create a macro to automate Paste Special → Values which we need later on, which is very practical anyway, and lock it under CTRL+q.

```
Sub PasteSpecialValues()
'
' PasteSpecialValues Macro
' Macro recorded 01/03/2006 by SpaceLab07
'
' Keyboard Shortcut: Ctrl+q
'
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone, SkipBlanks _
:=False, Transpose:=False
End Sub
```

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	A	B	C	D	E	F	G	H	I	J	K
1	1	1				1 0.608928	713				
2	1	2				2 0.000377	1837				
3	1	3				3 0.11029	1638				
4	1	4				4 0.956246	93				
5	1	5				5 0.743479	469				
6	1	6				6 0.184024	1491				
7	1	7				7 0.828065	329				
8	1	8				8 0.054268	1750				
9	1	9				9 0.798923	382				
10	1	10				10 0.681007	574				
11	1	11				11 0.254311	1359				
12	2	1				12 0.338161					
13	2	2				13 0.152299					
14	2	3				14 0.627242					
15	2	4				15 0.361262					
16	2	5				16 0.08564					
17	2	6				17 0.138533					
18	2	7				18 0.613635					
19	2	8				19 0.675858					
20	2	9				20 0.341361					
21	2	10				21 0.884983					
22	2	11				22 0.094215					
23	3	1				23 0.835155					
24	3	2				24 0.8177					
25	3	3				25 0.962569					
26	3	4				26 0.991306					
27	3	5				27 0.346784					

**SpaceLab07:**  
1. Select the correct range 80 --> G1:G80  
2. copy first series to C1  
3. Go to A1  
4. CTRL+D activates macro PasteSeries|

Fig. 1.

- Copy G1:G11 → go to C1 → CTRL+q. This will paste the first series of random points.
- Create a new macro which will paste all the other strings down until the end of the file.

Sub PasteSeries()  
,

```
' PasteSeries Macro
' Macro recorded 20/04/2007 by SpaceLab07
'
' Keyboard Shortcut: Ctrl+d
'
ActiveCell.Offset(0, 6).Range("A1").Select
Range(Selection, Selection.End(xlDown)).Select
Selection.Copy
ActiveCell.Offset(0, -4).Range("A1").Select
Selection.End(xlDown).Select
ActiveCell.Offset(1, 0).Range("A1").Select
Application.Run "PERSONAL.XLS!PasteSpecialValues"
Range("A1").Select
End Sub
```

- Go to cell A1 had hold down CRTLD until you reach the end the file.
- Use the Lookup function of Excel to lookup your random number in the column of identifiers (step 1) and return the long and lat values.