A NEW TECHNIQUE FOR CONSTRUCTING CAMERA-READY RANGE CHARTS USING A MACINTOSH COMPUTER

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Nearly every micropaleontologist needs to construct distribution charts of fossil taxa from time to time. Unfortunately, preparing camera-ready range charts (required by most journals) has been quite difficult or costly, because there has not been a computer program that can do the entire job. The popular Checklist II or spread sheet programs, such as Lotus 1-2-3 or Microsoft Excel, can easily be used to present abundance data but cannot deal with zonal names and boundaries, let alone show hiatuses, lithology, etc. This is probably the major reason that Ocean Drilling Program has required its contributors to submit all figures in camera-ready form except for range charts, which are believed to be too difficult for contributors to prepare in finished form.

I have recently developed a new technique to construct camera-ready range charts with ease using a Macintosh computer (Macintosh Plus or later models). It takes advantage of Microsoft Excel[*] for entering abundance data and MacDraw II[**] for drawing zonal boundaries, lithology, magnetostratigraphy, etc. It is quick, extremely versatile, and can produce more sophisticated range charts than one might expect from a personal computer. A specimen range charts prepared using this new technique is included. The procedure is as follows.

1. Turn off the Multifinder (if it is on) unless your computer has a very large memory. This is done by going to the special menu to select set startup, followed by clicking finder. Then restart the machine.
2. Open Microsoft Excel.
3. Highlight the first column, then go to the Format menu to execute change column width to make the column wide enough to accommodate your sample names. Repeat this step for the second column if you wish to enter sample depth data. Highlight enough columns on the right to accommodate the number of species. Change the widths to "1" to allow for the entry of species abundance data.
4. Enter sample numbers and species abundance data as you would fill in a form (you will enter the species names later in MacDraw II). Remember that you can move columns around to order them by first occurrence, last occurrence, taxonomic groups etc. as you desire.
5. Turn off print row and column headings and print gridlines, followed by click on OK.
6. Go to the File menu and save the document.
7. Highlight (press the mouse and drag) the area of the chart that you want to include in your final range chart (exclude column number and row number).
8. While holding down the Shift key, go to the Edit menu and execute copy picture.
9. Click as shown when printed followed by OK.
10. Go to the File menu and exit and Excel program.
11. Double-click the MacDraw II icon to open this program.
12. Select Turn autogrid off from the Edit menu, and chose the Times or Helvetica font from the Font menu.
13. Go to the Edit menu and execute paste to transfer your chart to MacDraw II.
14. Select Group from the Arrange menu, and then chose the Times or Helvetica font.
15. Drag the pasted chart to the proper position so that you have room for adding species and zonal names, litho-, magneto-stratigraphy, etc.
16. Click a blank area to unselect the pasted picture, and then select italic from the Style menu.
17. Double-click the text tool (A), and type the species names in column but remember to click the next line to start typing next species (Do not worry about alignment or even line spacing but try to achieve a small line spacing). Click the pointer tool (arrow on the left upper screen) when finished typing all the species names.
18. Select all the species names by pressing and dragging the mouse to enclose the names, group them from the Arrange menu, then select rotate.
19. Grab a corner, rotate it counterclockwise 90°, and then drag it to its intended position so that the first species name lines up with its corresponding data column.
20. Execute Ungroup from the Arrange menu, then click on the pointer tool.

21. Drag the last species name so that it lines up with the last data column.

22. Press and drag the mouse to enclose all the species names and select alignment from the Arrange menu. Click align and bottom on the right side, distribute on the bottom, followed by OK. This will align the names with their respective columns.

23. Use the text, line, and other tools to complete the range chart the way you like it. Refer to the MacDraw II manual if you wish to perform more complicated tasks. You can be assured that the MacDraw II program will allow you to draw virtually anything you need.

I recommend using a 0.2 size pen for lines and printing the range charts at ~75% of the original size. This not only saves page space, but also makes the range charts more eye appealing.

If you have a DOS Mounter program on your Macintosh computer, you can open a spreadsheet file (such as Lotus 1-2-3 for IBM computers) directly from the Excel program, edit it if necessary, and save it in Excel. This is very useful if you have already entered or prefer to enter your data in an IBM (or compatible computer, and you only use a Macintosh computer to do the final touch on the range chart that cannot be done using a IBM computer.

The disclosure of this new technique is intended as a service to the community. You are welcome to contact me (my electronic mail address is: Wei@FSU.Bitnet) if you have any questions, but please know that I may not be able to provide detailed answers to every question.

* Microsoft Excel is a program for Macintosh computers and can be purchased from its producer: Microsoft Corporation, 16011 NE 36th Way, Box 97017, Redmond, WA 98073-9717, USA.

** MacDraw II is a program for Macintosh computers and can be purchased from its producer: Claris Corp., 440 Clyde Avenue, Mountain View, CA 94043, USA.
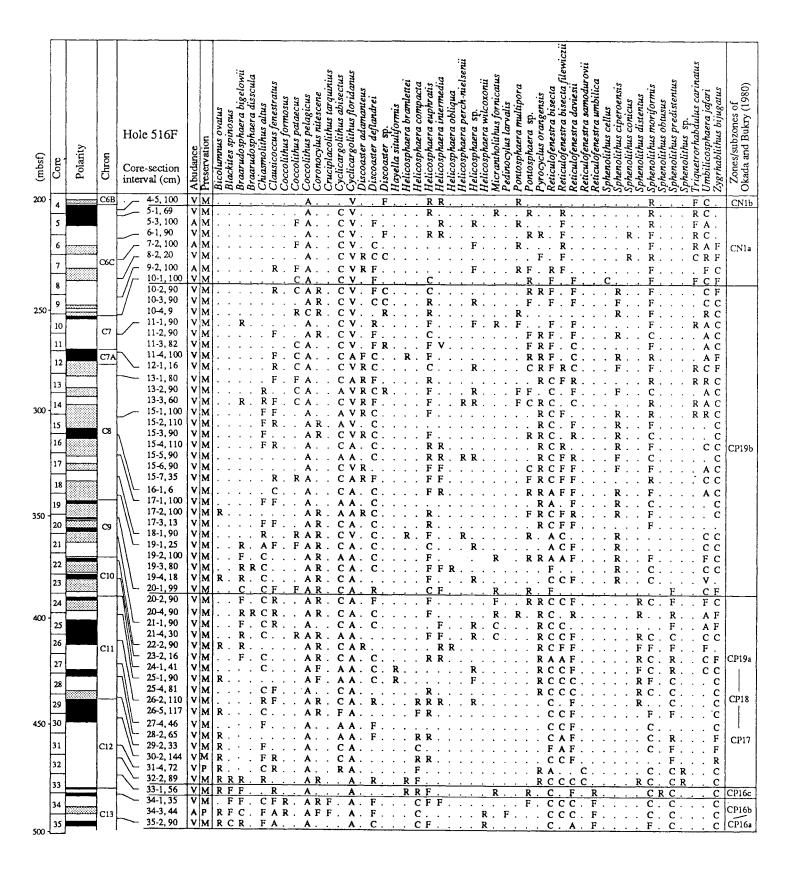
Fig. 1. Stratigraphic distribution of Paleogene calcareous nannofossil species and its correlation with the magnetostratigraphy of Berggren et al. (1984) for DSDP Hole 516F. Black interval indicates normal polarity; white interval indicates reversed polarity; and shaded interval denotes no paleomagnetic data. For nannofossil abundance, V=very abundant; A=abundant; C=common; F=few; and R=rare. For preservation of nannofossil assemblages, M=moderate; and P=poor.