ABSTRACT. POLPAL may be described as an CAs – type system, namely: CAP = Computer Added Palynology. It serves not only as simple data – base but provides extended facility for data input. The idea of counting pollen (microfossils) directly to the computer is completely materialised in the program. The min output of the system is the MS Windows – type bitmaps with diagram. Variety of plotting conventions is applied. Almost every graphical element is parametrized. The resulting figure is nice, readable and keeps all the informations carried by the data. In addition to diagram the numerical analysis may be performed, like PCA, ConSLink, Rarefaction Analysis and Samples Similarity Matrix. The first result in the numerical methods which are still not in common use, may be obtained as simply as three mouse clicks.

KEY WORDS: Pollen, software, counting microfossils, data base, plotting diagrams, numerical analysis

The Windows version of the old polish palynological program (Ralska-Jasiewiczowa & Walanus 1991, Walanus 1994, 1995, Walanus & Nalepka 1996) is now released (Walanus & Nalepka 1997). It offers capability of small data base, rather advanced and highly specialised graphics, also numerical analysis and special routine for data input, namely for individuals counting. Program is designed for pollen tables, however, equally well diatoms, Cladocera, macrofossils and other data, of similar type may be stored. Principally, the integer numbers of counts are to be stored.

The problem of taxa assignment to the data is resolved on the basis of the list of taxa, which should be as universal as possible. Taxa, despite names (up to 255 characters long) are characterised by one letter of plant groups “life form”, and two to four letter long code (Fig. 1).

Sets of taxa easily created and edited are useful in plotting large diagrams.

The special module for counting pollen grains is very useful while the keyboard is close to the microscope. Coding taxa by function keys (the most frequent ones), by two letter code or by three or four letter codes makes counts registration fast and reliable. Also sound may be involved (previously recorded by the user taxa names may be recorded on every individual count). At the figure the case of registration of the 28th Alnus grain is visible (Fig. 2).
The main application of the POLPAL is diagram producing (Fig. 3).

Program offers many options of diagram organisation. There are twelve options for taxa arrangement. The list layout options is given below, as an example. Chosen options are demonstrate on the figures 4 and 5.

Scale % = horizontal scale, in [pixels/%]
Scale depth = vertical scale, in [pixels/cm]
Top = samples, topmost and bottom to be printed
Bottom = samples, topmost and bottom to be printed
Colour for all = that colour will be assigned to every taxon
Sample numbers = the numbers in front of curves to be printed or not
Sum, numbers = the numbers after the last curve
Round % = if the width of curves is to be equal to 5% or 10% or 15%
AP/NAP = if the diagram AP/NAP is to be plotted
Macro = if the macrofossils-type diagram is to be plotted
Histogram = the thickness of histogram bars, for macro-diagram should be no number
Enlarge curve = if exaggerations have to be added
Horiz. lines in AP/NAP = if horizontal lines in AP/NAP diagram are to be plotted
Horiz. lines while no enl. = if horizontal lines are to be plotted while no exaggerated curve is plotted
Additional space = additional horizontal space between curves [pixels]
Max. width = maximal width (horizontal) of curves, will be cut if larger
Sum up close samples = if the width between samples (PW file) are 0, the samples could be summed up
Smoothing = curves may be smoothed (gaussian smoothing), type here range of smoothing [pixels], for example: =50
CirclesPB = diameter of circles [pixels] for p or b curves
Cyclogram = diameter of circle [pixels]
Pinus sylvestris
Betula undiff.

Fig. 3. Diagram construction

Fig. 4. Diagram AP/NAP

Fig. 5. Example of cyclogram from the S-2 profile, spectrum 55 cm depth
nr 20=dh
nr 30=
nr 40= .... after click Taxa arrangement / according to life forms
that numbers will be attached as sequential, to given life forms
(plant groups)
pt 10=l
pt 20=3
pt 30=l
pt 40=c
pt 50=: .... if Colour for all= i.e. empty (no space), that colours
will be used after clicking Layout / assign colour to all
PS=
PW=
P1=
PZ=no.... if versions of files are to be used (ex. PS=a), also for PZ,
if PZ=no that file (despite of version) will not be used (PAP
lines will not be drawn)
Font tax, name=
Font tax, size=
Font nr, name=
Font nr, size= fonts for taxa names and sample numbers, ex.
=Times New Roman =28
Draw line=(Right, Left, Up, Down, Vertical, Horizontal) type a
letter here if to draw lines on the diagram (try it).

There are four modules for numerical data analysis, namely:
– CONSLINK,
– PCA,
– rarefaction analysis,
– samples similarity matrix.

As may be estimated from the screen of CONSLINK
(Fig. 7) programs are extremely easy in operation. Three
mouse clicks are enough to get analysis. Of course many
parameters may be adjusted by more mouse and key-
board operations, if necessary.

Fig. 6. Example of different silhouettes of Pinus sylvestris curve. The last one is obtained using capabilities of MS Paint

Fig. 7. Example of numerical methods: Constrained Single Link
(CONSLINK)

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