

PUBLICACIONES OCASIONALES No. 3
Estación Regional del Noroeste, Instituto de Geología
Universidad Nacional Autónoma de México

PaleoTax

Database management system to record, process, analyse
and output taxonomic, geographic and stratigraphic data
in palaeontology

Version 2.1 • Manual

by Hannes Löser

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1. Introduction

1.1. *What is PaleoTax, what can it do?*

PaleoTax is a universal information system for taxonomic investigation of fossil and recent organisms. It gives a complete overview of the literature and the taxa described therein. PaleoTax helps beginners to cope with the huge amounts of taxonomic, geographic, stratigraphic and literary data. It is an information system primarily designed for palaeontologists who work mainly in the field of taxonomy and need a tool to organize and analyse their data. Data can, for example, be analysed according to

- the stratigraphic and geographic distribution of taxa,
- their numerical distribution,
- their stratigraphical importance.

PaleoTax cannot be used to maintain a palaeontological collection but with its help it is possible to record collections as well as specimens (but a structural extension to maintain collections is under preparation). It may also be useful for biologists who just have to ignore the fourth dimension of stratigraphy. PaleoTax was designed to run under the operating system Microsoft Windows and should work with the current versions.

1.2. *Conditions of use*

PaleoTax is released as freeware. You may use the software without paying any fee, but you bear the risks involved: the author will not be responsible for the loss of data, for their correctness, for agreement of the results of analysis with your expectations, for an annoyed partner or problems arising from addiction.

Although it cannot be ruled out that updated versions will be sold or service contracts concluded. You will always have the right to work with the free version.

At present you cannot advance any claims for support, for the elimination of faults, the improvement of the program, or training, but the author will endeavour to improve the program, to speedily remove faults and to advise its users.

PaleoTax is not just a by-product of an informatics student's practical training at a geological institute but software used and designed by practising palaeontologists over the past ten years. And it is yours free of charge. Reciprocate and send information about your project to the author if you agree to be cited on the PaleoTax web site along with other PaleoTax users. In Appendix 10 you will find a small questionnaire (p. 151).

1.3. *The program*

The basic structure of PaleoTax 2.x derives from the (DOS) version 1.x as a part of the DBMS HDB 1.x, which was created using Turbo-Pascal. The new version for the Windows operating system is an application of DBMS Hdb2Win (= HDB 2.x), compiled with Borland's Delphi.

The PaleoTax design has been kept plain and simple. You will rarely see two windows at the same time; there are generally only few forms. I have tried to offer a maximum of opportunities without presenting them all together.

PaleoTax is extremely flexible. The process of entering, analysing and outputting data is controlled by an in-built Interpreter. PaleoTax does not "know" which data it processes, it has "no idea" about taxa, locality and ages. It just processes data according to the parameters provided with the data as ACT, DB2, DEF, FRM, PRF files. That means that the program can be adapted to the user's needs without

modifying the program, just by adapting the parameter files. PaleoTax can be adapted to every user, every problem. The questions in palaeontology vary widely, and PaleoTax does not aim to adapt the user's demands to the program but the other way round.

Therefore do not hesitate to contact the author and to ask for improvement or adaptation to your problem. There are certainly limits, but my experience with version 1.x of the program shows that most problems can be solved just by extending the data structure or parameter files.

1.4. The manual - what you should read and what you may possibly skip

This manual focuses on working with the program. The data structure is not explained at length (cf. the literature, [Appendix 9](#), p. 150) as this is not very important for the user.

The structure is briefly explained in [Appendix 2](#) (p. 116). The data structure is only of a certain importance if it has been modified or if the data has been pooled (see [8.1. Data pooling](#); p. 59). What is most important for the user is to know where to enter which data. This is explained in the detailed description of the edit forms in [Appendix 1](#) (p. 62).

Although the manual itself is short, the user may not be inclined to read it all the way through. The following parts of the manual are generally recommended for reading:

- [2. Installation and de-installation](#) (p. 7)
- [3. Advice for beginners](#) (p. 9)
- [4. The first steps](#) (p. 15)
- [5. Working with the database](#) (p. 18)

With the exception of [Appendix 1](#) (p. 62), the appendices do not have to be studied when only recording data.

The following effects are used to indicate the items below:

- NAMES OF TABLES (data banks) – small capitals
- *Names of data fields* in a table – italics
- NAMES of files – capitals
- **Buttons** – Arial Rounded
- [References](#) to chapters in this manual – underlined

1.5. Hardware requirements

The following are the minimum hardware requirements for PaleoTax:

Parameter / Size	> 0	> S	> M	> L
Processor speed	133 MHz	266 MHz	500 MHz	1 GHz
Main memory	32 MB	64 MB	128 MB	256 MB
Free hard disk space (for the program and data)	10 MB	20 MB	40 MB	80 MB

The size of the database is displayed (a database has to be opened) in the PaleoTax main menu:



To obtain regular backup copies of your database, any external drive (such as ZIP, CD-RW or a USB hard disk) is needed. Floppy disks cannot be used.

1.6. Advice for PaleoTax 2.0 users

There are practically no great changes in the program, only improvements or extensions (for example the data analysis or the TreeView for registered users). To assign more than one illustration to genera, species, etc., the concept was completely changed. References, graph files and documents (PDF, DOC, RTF) can now be assigned to any record in any table (see p. 27). Graph files that were previously attached to records of the tables GENERA, SPECIES, and SPECIMENS are automatically transferred by SR5.

There are practically no modifications in the data structure, except for some new tables in higher taxonomic categories (up to phylum). But many forms have been modified. The change from service level four to five (i.e. the change from version 2.0 to 2.1) is therefore most important. There are some minor problems for users who started with PaleoTax 1.x or who subsequently added personal fields. As long as the fields are all below the "END OF STANDARD" line, PaleoTax can merge the new forms and personal fields. If not, PaleoTax is at present unable to distinguish between public and personal data fields. Also, fields added to your structure which have become part of the standard structure may appear twice in the form. Other fields seem to be disappeared. If any of these problems occur or if you have other problems in carrying out SR5, please contact the author.

- ▶ After applying SR5, you should not modify the name of your data directory. Otherwise PaleoTax will not be able to assign references, documents and graphs properly to your tables. You may have the impression that references on localities or graphs of species "disappeared".

1.7. Future program extensions

For Version 2.2 (August 2005) the following program improvements are envisaged:

- providing RTF as an optional format for editing texts
- printing directly from PaleoTax
- more data formats ("date", "colour", "diary")
- structural extension for a better collection management (PalCol extension)
- providing an improved chart module with export of graphs in the WMF format (PaleoTax/Graph)
- providing a map system (PaleoTax/Map)

In the mean time updates will be offered for downloading, if required. In addition, service releases (without program modifications) will be offered as usual so as to improve forms and Interpreter programs. Check the web page regularly or register for the list server (which is free and does not require you to provide additional information, stating your postal address, yearly income, names of family members and pets, etc.).

2. Installation and de-installation

2.1. Installation

PaleoTax 2.1 as an application of DBMS Hdb2Win (HDB, Version 2 for Windows) is available as a download from the PaleoTax web page or as a disk version (on a 3" mini compact disk). Copy the content of the disks or the downloaded ZIP archive into a temporary directory on your hard disc and unpack the ZIP archive. It contains five archives (INFOD.HDA, INFOE.HDA, HDB2WIN.HDA, PALEOTAX.HDA, SR5.HDA) and an installation program INSTALL.EXE. Start it. Click on the British flag to choose the English language.



The installation program should normally find the four archives (*.HDA), if not, select the path by clicking on "..." to the right of the "Source path" field.

An already installed older version will normally be detected by the installation program, which assumes that you want to update your old program files and overwrites only the program files and the basic data structure (see below). If the older version is not detected by the program, you have to tell it where Hdb2Win is installed on your hard disk by clicking

on "..." to the right of the "Target path" field. In case you don't want to remove the old version, change the directory name in the "Target path" field (for example to "Hdb2Win21").

If both directories are available, click on **Install**. You are required to agree with the conditions of use. Then Hdb2Win will be installed on your hard disk (occupying nearly 2 MB). Finally you will be informed that the installation has been successfully completed:



If you do not modify the proposed target path, Hdb2Win will be installed on your hard disk in the directory \PROGRAM FILES\HDB2WIN. The program name is HDB2WIN.EXE.

To move the Hdb2Win icon to your desktop, click on the file HDB2WIN.EXE, press the right mouse button, choose "Send to" and then "Desktop (create shortcut)".

Name	Ext	Size	Date	Time	Attr
..			5/31/2003	6:43:43 PM	
SR5			5/31/2003	6:43:43 PM	
Struktur			5/31/2003	6:43:44 PM	
ANALY1_E	.PDF	74,393	5/31/2003	6:43:43 PM	A
AUSW1_D	.PDF	78,916	5/31/2003	6:43:43 PM	A
CFX32	.OCX	307,200	5/31/2003	6:43:43 PM	A
DB2COM	.ERR	2,227	5/31/2003	6:43:43 PM	A
DB2PTX	.ERR	2,876	5/31/2003	6:43:43 PM	A
HDB2WIN	.ERR	41,551	5/31/2003	6:43:43 PM	A
HDB2WIN	.EXE	1,891,648	5/31/2003	6:43:43 PM	A
HDB2WIN2	.MSG	85,002	5/31/2003	6:43:43 PM	A
HSYSTEM	.ERR	5,768	5/31/2003	6:43:43 PM	A
PARSER	.ERR	3,869	5/31/2003	6:43:43 PM	A
TCV	.ERR	4,615	5/31/2003	6:43:43 PM	A
USD2EURO	.PRF	836	5/31/2003	6:43:43 PM	A

2.2. De-Installation

For de-installation just delete the directory HDB2WIN with all subdirectories. The installation program does not modify the Windows registry.

3. Advice for beginners

If you have downloaded and installed the program, browsed through the information on the PaleoTax web pages and decided that the program could be useful for your work, stop and think about a few points before starting. The database program may be solely used for the literature, for taxa, for localities, or it may be used for all these data together, including citations, samples and occurrences in localities. There are many options open to you and it is best to decide beforehand which you want to use and which not.

Working with PaleoTax is not easy. However, this is not due to the program but to the complex field of palaeontology. Unless you are experienced in taxonomy, in reading taxonomic literature, in understanding and applying the nomenclatory rules, you will probably have some problems getting started. I know from experience that palaeontologists who have worked (and published) in their field for several years have less problems to work with PaleoTax than beginners. If you are a professor in palaeontology, do not think that you can dump your literature on an undergraduate student's desk and that she/he will be able to enter the data. This may work for references, perhaps for genera or localities, but for nothing else. For a more experienced person, on the other hand, program handling will be easy as it reflects the sophisticated structure of palaeontological data.

3.1. *A brief look at the data structure*

PaleoTax focuses on the "objective" or "published" data in the literature. As palaeontologists have to pay attention to the nomenclatory rules (which refer to the literature and to taxa, citations, etc. therein described), literary references play an important part in the whole system. PaleoTax is generally used to record data obtained from the literature (mainly citations and subsequent data) and to serve as an information system. A citation is the description, depiction or mention (in a published paper or book) of a (fossil) specimen of an animal or plant assigned by the author to a (mostly) valid species. A citation therefore comprises a source (a literary reference), a taxon (a species), and (in most cases) a locality, which belongs to a region, a country, and (in palaeontology) to a lithostratigraphic unit, and an age as well. The age is a time span, not a point in time. It is limited by an upper and a lower boundary. Both have absolute values. A locality may belong to a complex (a province, a palaeogeographical region).

A citation may be subsequently assigned to another species. A species may be assigned to another species (= synonymy). Each species has an original genus (which does not change) and a current genus (which may change). A species as well as a genus can be a nomen novum, it can be emended (intentional change of an incorrect original spelling, IRZN Glossary), and have authors (which always refers to a literary reference). A species may be used in a different sense from that of the original author (which is not good practice, but it happens time and again). And it may have one or more type specimen(s), which are held in a collection. A collection is an institution situated in a town. A genus has a type species.

As can easily be seen, the data are interrelated, they do not exist independently of each other. This may seem confusing, but the user is not required to go into any great detail. The study of the edit forms and the accompanying explanations is sufficient to understand the interconnections and relations between the data ([Appendix 1](#); p. 62).

3.2. *Think before you set to work*

PaleoTax is an information system. The data on your organism group are recorded step by step with the help of PaleoTax, which can quickly find previously entered data. An example: the time-consuming process of compiling synonymy lists, reference lists, or lists showing in which region a species occurs

can be reduced to a few minutes if the data have been properly recorded with PaleoTax. The user does not have to use the whole PaleoTax system but only to enter literary references, or taxa, or localities with their stratigraphy. There are, however, certain rules to be observed as the tables depend on each other. Six data complexes are distinguished in PaleoTax:

- (A) Literature (PUBLICATIONS, JOURNALS, BOOKS, AUTHORS, PUBLISHING HOUSES)
- (B) Stratigraphic data (AGES, AGE BOUNDARIES, LITHOSTRATIGRAPHY)
- (C) Taxa (FAMILIES, GENERA, SPECIES, TYPE SPECIES, TYPES)
- (D) Geographic data (LOCALITIES, REGIONS)
- (E) Samples (SPECIMENS, COLLECTIONS, PREPARATIONS, PHOTOGRAPHS)
- (F) Citations (CITATIONS and OCCURRENCES)

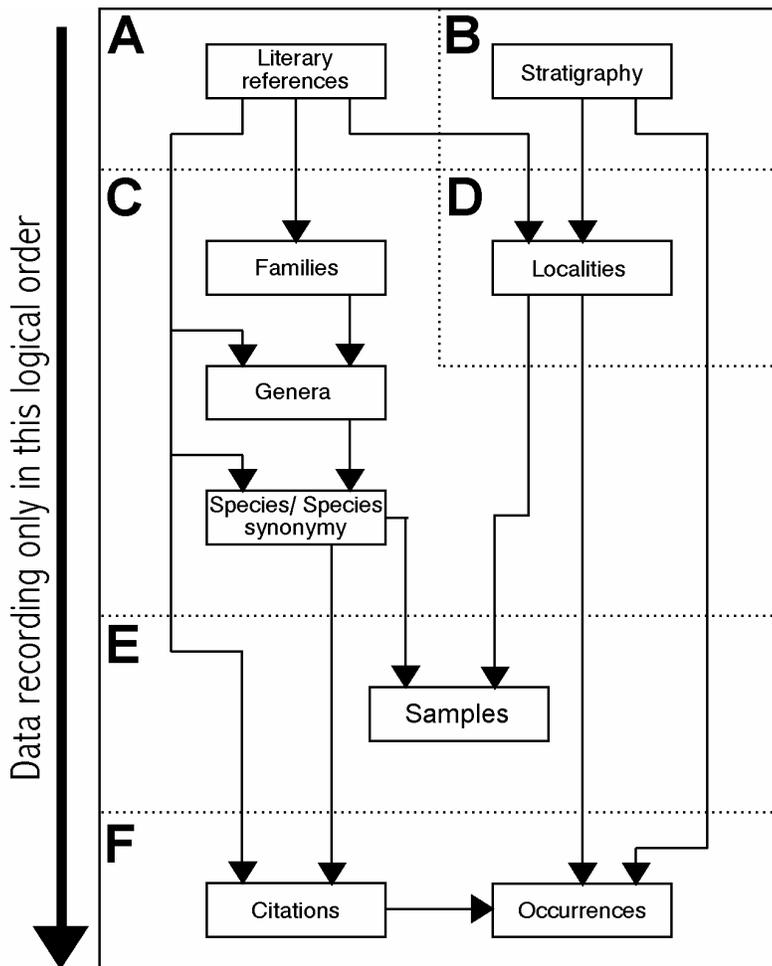
Each complex comprises various tables (or data banks, above, in small capitals) which are interconnected. In addition to these tables, there are others which are not assigned to any complex (such as COUNTRIES or TOWNS). Data may only be recorded in a certain logical order, which becomes apparent from the figure below.

It is not possible to record taxa without recording literature, or localities without a correct stratigraphy (it is actually possible but it would not make sense). So the **first point** is to decide which data should be recorded. Working with two databases in parallel is no problem; one of them may be used, for example, for recording palaeontological data and the other for literary references relating to some other field of non-palaeontological research. Some tables may be used by both databases. But for discussing the next

steps it will be assumed that data of all complexes are to be recorded.

As the **second point** you have to decide which data exactly you want to record. An order, a family, a genus? In which sense? What time span do you want to record? Since the species concept and the methods of determination in many groups have changed, literature older than 100 years is often only of historical but not of scientific value and may be skipped. For a long time organisms were determined by their outer form and size (brachiopods, gastropods, orbitolinids) but today they are examined by (serial) sections or other methods. Thus, the **third point** is specifying time limits.

For some groups only depicted or described specimens are of interest, while others are also interested in taxa that have been merely mentioned. **Point four:** decide beforehand whether or not you also want to record taxa that have just been mentioned.



Brief summary:

1	Which data should be recorded ?	All
2	Which order, family or genus?	Family Turritellidae, Cretaceous
3	Time limit	All papers with depicted sections
4	Also lists?	No, only descriptions with illustrations

Point five: try to obtain all the literature you need before starting to record data. **Point six:** check whether data are already available to you as computer files (any database system, Excel, or even text files). Check whether there are bibliographies and contact the authors. Ask them for their files. There are various methods of importing data (see [3.3. How to import data](#) - p. 11 - and ask the author). Data can only be imported into a completely new and empty database.

At the beginning the database is completely empty. No data have as yet been recorded. The normal procedure would be to start recording citations and then to collect all other data. My experience shows that this is indeed the right way, but it is completely confusing as no data are available and every moment you are faced with a new table and a new edit form. Therefore - **point seven** - best start by recording your publications (PUBLICATIONS table; see [Step-by-Step description](#), p. 19). This is easy and may provide a bit of training for the more difficult parts.

Point eight: look for a stratigraphical framework suitable for your group. The framework should contain radiometric data. Values of age boundaries are important, mainly for data analysis. The order of stages, zones and subzones is much more important than the first occurrence of an index fossil determined with a hundred years' exactness. Record these data in the AGES table and then in the AGE BOUNDARIES table.

Point nine: even if you have recorded your literature and age with boundaries, do not immediately start with citations. Append some genera and then species to see how the system works. Regular backup copies are important to have to be prepared for a situation in which you think you have made irreparable errors (which is indeed difficult).

Point ten: start now to record citations and occurrences (working only with the CITATIONS table!). Start with the oldest literature you have and proceed chronologically. If you decide to record not citations but samples, use the EXAMINATIONS table instead of CITATIONS.

If you want to use PaleoTax mainly to analyse the evolution and diversity of changes in an organism group or to prove their suitability as index fossils, the completeness of the literature and the exactness of the citations are less important than the locality and stratigraphy data, which should be absolutely exact.

3.3. How to import data

Data can be generally imported from text files. Since every format (dBase, Access, Excel, Word) can be finally exported as plain text, you need not worry about technical details. But for import the data have to be prepared. PaleoTax is a system with a relational structure. That means that the data are distributed in various interrelated tables. Importing data into such a system is difficult and requires sophisticated preparation.

An example of how to prepare the import of literary references is given in the following.

Preparation of the text file

First step - list of references

- KULLMANN, J. & LÖSER, H. 1993. Die Datenbanken PaleoTax und GONIAT - Vorstufen eines paläontologischen Informationssystems. -- Paläontologische Zeitschrift 67, 3/4: 397-405, 2 figs.; Stuttgart.
- LÖSER, H. (1996). Database applications in coral research. -- Paleontological Society Papers, 1: 207-247; Denver.
- LÖSER, H. (1996). Erfassung und Auswertung paläontologischer Daten mit Personalcomputern. -- Mitteilung der Abteilung für Geologie, Paläontologie und Bergbau am Landesmuseum „Joanneum,, Graz, 54: 189-214; Graz.
- LÖSER, H. & BEAUVAIS, L. (1996). SCLERACT - eine Datenbank zur Erfassung morphologischer Daten der Post-Paläozoischen Korallen (Scleractinia). -- Mathematische Geologie 1; Dresden.
- LÖSER, C. & H. (1997). Relationales Datenbanksystem zur Arbeit mit paläontologischen Sammlungen - Erfahrungen mit der Applikation PalCol. [In:] ZWANZIG, M. & LÖSER, H. (ed.) Berliner Beiträge zur Geschiebeforschung. -- p. 135-149; Dresden (CPress).

Second step - inserting tabs (Tab)

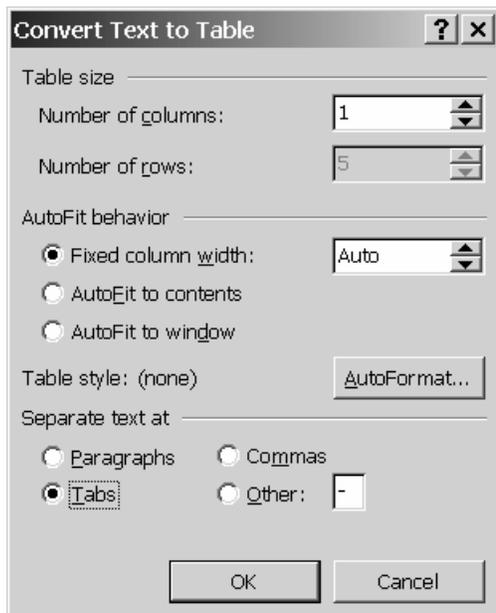
Insert a comma (,) between the author's name and first name. Insert a semicolon (;) or the et sign (&) between individual authors if more than one author is involved. Set tabs (Tab), in the text below indicated by ⇨) between the units author, year, title, book, journal, reference, town and publishing house. Leave blanks if an item is lacking. If there is no book, for example, do not forget to set a tabulator. Parentheses, dots or dashes in the year, book, journal, publishing house or town do not have to be removed.

To mark the end of a reference for the importing program add to each line a 'Tab* (which can be done automatically by replacing the paragraph - '^p' in Word – by a tabulator, the asterisk and the paragraph - '^t^p' in Word).

- KULLMANN, J.; LÖSER, H. ⇨1993. ⇨ Die Datenbanken PaleoTax und GONIAT - Vorstufen eines paläontologischen Informationssystems. ⇨-- Paläontologische Zeitschrift⇨ 67, 3/4: 397-405, 2 figs.; ⇨Stuttgart. ⇨*
- LÖSER, H. ⇨ (1996). ⇨Database applications in coral research. ⇨⇨-- Paleontological Society Papers⇨, 1: 207-247; ⇨Denver. ⇨*
- LÖSER, H. ⇨(1996). ⇨ Erfassung und Auswertung paläontologischer Daten mit Personalcomputern. ⇨⇨ -- Mitteilung der Abteilung für Geologie, Paläontologie und Bergbau am Landesmuseum Joanneum, Graz, ⇨54: 189-214; ⇨Graz. ⇨*
- LÖSER, H.; BEAUVAIS, L.⇨ (1996). ⇨ SCLERACT - eine Datenbank zur Erfassung morphologischer Daten der Post-Paläozoischen Korallen (Scleractinia). ⇨-- Mathematische Geologie ⇨1; ⇨Dresden. ⇨*

LÖSER, C.; Löser, H. ⇨(1997). ⇨ Relationales Datenbanksystem zur Arbeit mit paläontologischen Sammlungen - Erfahrungen mit der Applikation PalCol. ⇨[In:] ZWANZIG, M. & LÖSER, H. (ed.) Berliner Beiträge zur Geschiebeforschung. ⇨⇨-- p. 135-149; ⇨Dresden ⇨(CPress). ⇨*

Editor(s) and book title in the book section should be separated by '(ed.)' or '(eds.)'.



Third step - converting text into a table

Start your text processor. Convert your text into a table. For WinWord, for example, choose the menu "Table", then select "Convert Text to Table" (see left).

Fourth step - admiring the result

KULLMANN, J.; LÖSER, H.	1993.	Die Datenbanken PaleoTax und GONIAT – Vorstufen eines paläontologischen Informationssystems.		-- Paläontologische Zeitschrift	67, 3/4: 397-405, 2 figs.;	Stuttgart.	*	
LÖSER, H.	(1996).	Database applications in coral research.		-- Paleontological Society Papers	, 1: 207-247;	Denver.	*	
LÖSER, H.	(1996).	Erfassung und Auswertung paläontologischer Daten mit Personalcomputern.		-- Mitteilung der Abteilung für Geologie, Paläontologie und Bergbau am Landesmuseum „Joanneum“, Graz	, 54: 189-214;	Graz.	*	
LÖSER, H.; BEAUVAIS, L.	(1996).	SCLERACT – eine Datenbank zur Erfassung morphologischer Daten der Post-Paläozoischen Korallen (Scleractinia).		-- Mathematische Geologie	1;	Dresden.	*	
LÖSER, C.; LÖSER, H.	(1997).	Relationales Datenbanksystem zur Arbeit mit paläontologischen Sammlungen – Erfahrungen mit der Applikation PalCol.	[In:] Zwanzig, M. & Löser, H. (ed.) Berliner Beiträge zur Geschiebeforschung		-- p. 135-149;	Dresden	(CPress).	*

Fifth step - checking authors and journals

Authors and journals should be spelt the same way if they are the same. "Mathem. Geology" and "Mathematical Geology" have been imported as the names of two different journals. You can sort the table according to any column you like as well as checking on towns, books and authors. Capital and small letters are treated as identical.

Sixth step - reconverting to text

Mark the table. Convert it back to text, using paragraphs (¶) to separate fields:

<p>Kullmann, J.; Löser, H. 1993. Die Datenbanken PaleoTax und GONIAT - Vorstufen eines paläontologischen Informationssystems.</p> <p>-- Paläontologische Zeitschrift 67, 3/4: 397-405, 2 figs.;</p> <p>Stuttgart. *</p> <p>LÖSER, H. (1996). Database applications in coral research.</p> <p>-- Paleontological Society Papers , 1: 207-247;</p> <p>Denver.</p>

Seventh step – saving the file as an MS-DOS text file

Save the file as an MS-DOS plain text file. Copy this file into a specially created empty database directory.

Converting, pass 1

Further processing will be by a PaleoTax program. For that purpose open the **Interpreter** application, click on **Load** and load the "Import of references, pass 1" program (IMP_REF1.PRF) from the Hdb2Win directory. Then click on **Run**. Select the text file for import. The program will import your data and terminate Hdb2Win when you leave the application to guarantee data integrity. The conversion program creates a log file (IMP_REF1.LOG) which can be opened by any text processor:

```

      15 : Hobbs, M.Y. & Reardon, E.J. (1999)
      16 : Leeman, W.P., Vocke, R.D. & Beary, E.S. (1991)
<R>   17 : Nakano, T. & Nakamura, E. (1998)
<YTi> 18 : Palmer, M.R. & Helvacı, C. (???)
      19 : Palmer, M.R. & Helvacı, C. (1997)

```

Probable import errors are indicated in the left-hand margin of the list of imported references. The abbreviations refer to the section:

A = Author or Editor	J = Journal
Y = Year	R = Reference
Ti = Title	To = Town
B = Book	P = Publishing house

Most errors are caused by too many or too few tabulators (if you forget to set a tabulator between author[s] and year, the year plus the title are too long to fit into the field for the year and cause an error; or if you set two tabulators between the year and the title, the field for the title is skipped and remains empty, while the title is treated as a book, the book as a reference, etc.) or by data that are too large to fit into the predefined structure.

An error is also indicated if the first character of a year or reference is not a figure. In the case of the reference this may not even be an error. Records containing probable errors are additionally marked as deleted.

The conversion program creates a table IMP_REF1, which can be edited and modified. Start the application CommandLine, via

```
CD
```

select your data directory (for example CD FORAM), open the table, using

```
USE imp_ref1
```

and edit records by

```
EDIT
```

or by

```
EDIT 23
```

which signifies editing the record with the number 23, or by

```
EDIT FOR DELETED
```

which means that only the records that may have caused errors will be edited.

To terminate, type

```
QUIT
```

It is generally much better to modify the text file and to repeat the first pass of conversion before proceeding to the second pass.

Converting, pass 2

Having successfully converted your text file into a table, you can now convert it into a PaleoTax database. The database has to be empty.

To convert the data, start the Interpreter application as described above, load the "Import of references, pass 2" program (IMP_REF2.PRF) and run it. Errors will be reported in IMP_REF2.LOG. Hdb2Win will be closed after the conversion.

Tips

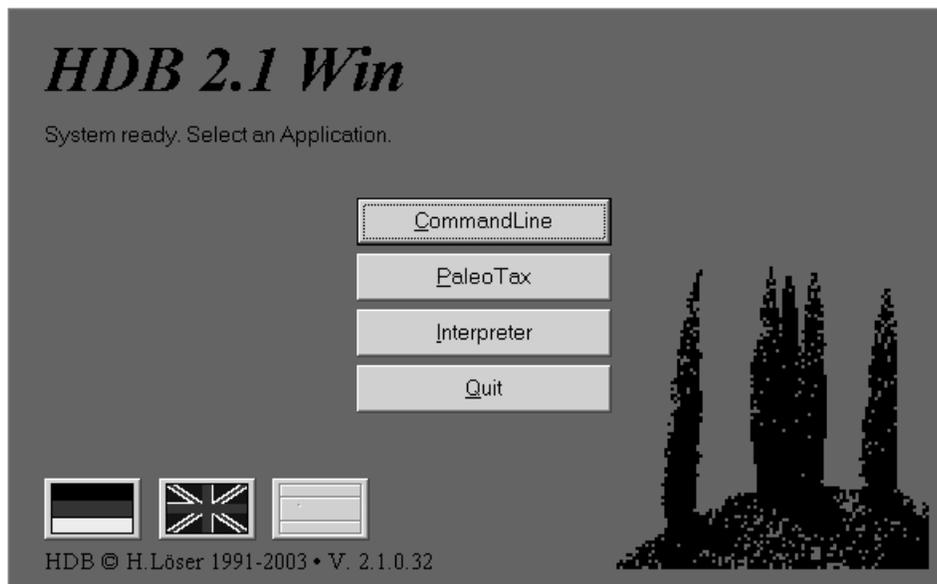
- Up to five authors are imported, the rest will be added to the title.
- Up to three editors (of books) are admitted.
- The title should not comprise more than 250 characters, the book title and journal not more than 200.
- After setting another tabulator behind the publishing house, up to five keywords, separated by commas, may be added. Do not forget to set two tabulators if there is no publishing house.
- Key words may be indicated by inserting a separate line
###KW key word, key word, ...
into the text file. The key words are valid for the following references until a new key word is defined. The two types indicating key words should not be mixed up.
- All lines starting with '###' are treated as comments.
- Files of species and genera are prepared in the same way. Ask for details.

4. The first steps

- ▶ Most forms and menus, list boxes and edit forms are illustrated as in Hdb2Win 2.1.0.18 of early 2003. The development of the package was practically finished at that time. That does not rule out minor changes after the manual's deadline. Forms and menus in the program may therefore slightly differ from the manual.

4.1. Starting PaleoTax

Start Hdb2Win and click on the British flag.

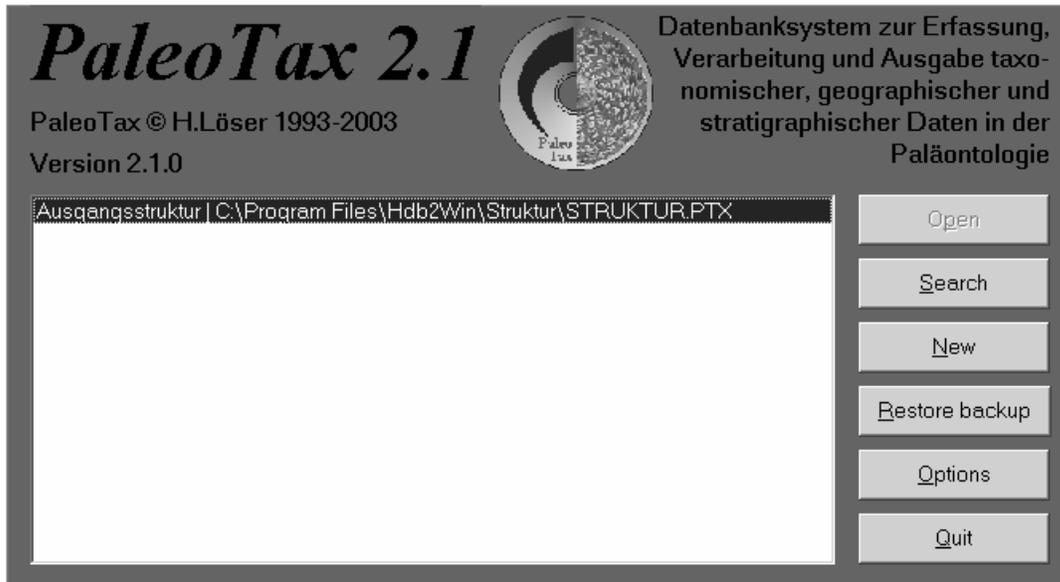


PaleoTax works in German and English.

- ▶ A Spanish version is under preparation and will be released soon. Where there is no Spanish text in forms, menus or messages, it will be preliminarily replaced by the English text.

Hdb2Win comes in three applications: the CommandLine (which is more a tool for developers), PaleoTax (which you will mainly use) and the Interpreter (which you have to use sometimes).

Click on **PaleoTax** to start this application.



The PaleoTax database menu appears. In the large window on the left you can see the available databases. After installation only the standard structure ("Ausgangsstruktur") is available. This database is locked (the **Open** button is not enabled); it is not intended to be used by you. You have to create your own database from this one (**New**; see below under [4.2. Creating a database](#)).

Search helps you to find databases which have not been found by PaleoTax: always choose files with the extension PTX. They include all the information you need to open the database. The name of the directory is identical with that of the PTX file.

Restore backup will restore a backup copy of your data (see [6.1. Restoring backup copies](#); p. 47). Under **Options** you can adapt PaleoTax to your needs, modifying the data structure or edit forms (see [6.2. PaleoTax options](#); p. 48).

4.2. Creating a database

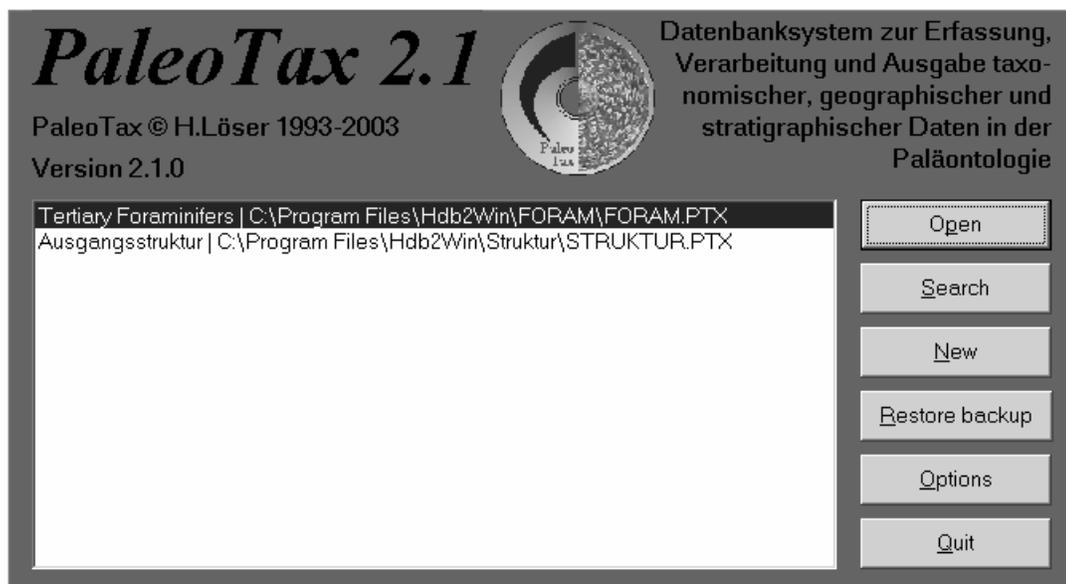
When you start PaleoTax for the first time, you will find only one database - the standard structure which cannot be opened to record data. This directory contains a copy of the original structure delivered with the program. First of all create your own directory with your own data structure, which is normally only a copy of the standard structure.

(1) Mark the "Standard Structure" entry (normally it is already marked) and click on **New**. PaleoTax will then ask you for the name of the directory:

(2) Enter the name of the directory, which should not have more than 8 characters and should only consist of letters or numbers:

(3) PaleoTax creates a new directory and a copy of the database. Enter a clear and understandable name as a description of the newly created database:

This name may comprise more than eight characters and it may also contain blanks. Your database will now be included in the list of databases ready to be worked with:



With the **[Del]**-key you can delete the entry from the list; the database is not removed. It can only be removed by deleting the complete directory of the database.

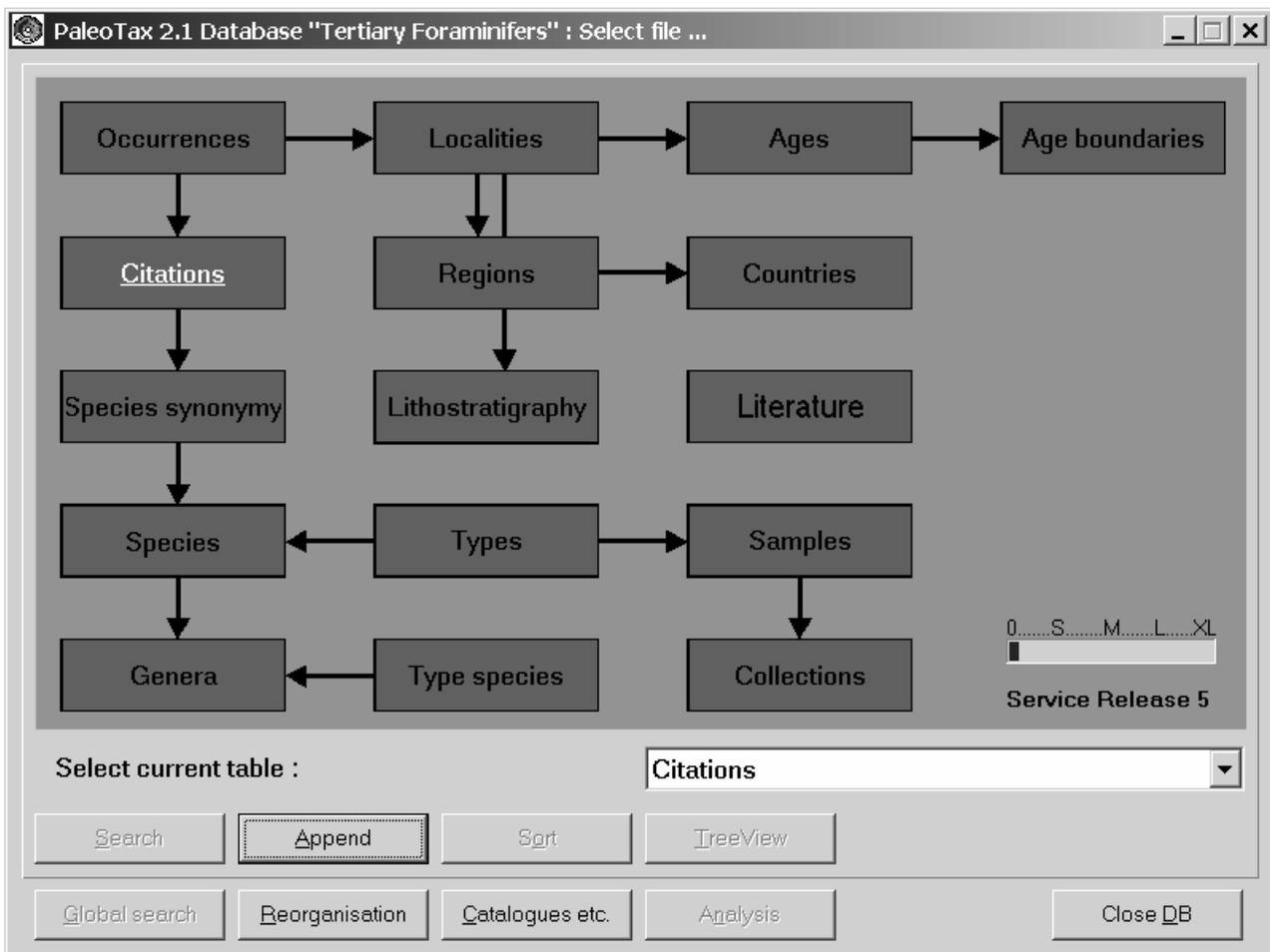
- ▶ Do not modify afterwards the name of your data directory. Otherwise PaleoTax will not be able to assign references, documents and graphs properly to your tables.

4.3. Opening a database

After a database has been created, it can be opened. Mark a database and click on **Open**, just double click on the name of the database or press **[Enter]** when the database is marked. PaleoTax starts a small program (the *.PTX file in your database directory) to open the database. The database can then be worked with. This is described in the following chapter.

5. Working with the database

After opening the files, reading the configuration files and checking the relational consistency, the main menu is displayed:



Each box represents a table. Lines between the boxes indicate relationships. The table of interest can be selected by clicking on one of the boxes or choosing an entry from the list box below. Only the most important tables are displayed as boxes (but all tables can be selected, using the list box). There are, for instance, no boxes for **AUTHORS** and **JOURNALS**. These tables are not normally worked with; their records are appended and modified from the **PUBLICATIONS** table, as we will see below. If you do not

intend to work with the database as a whole, choose the table of interest to you. The arrows on the lines may be read as "refers to" or "uses": the table SPECIES refers to or uses the table GENERA (because each species has an original and a current genus).

A table that has been selected is the current table. It is displayed in white and underlined. Clicking on one of the buttons within the frame (**Search, Append, Sort, TreeView**) only relates to the currently selected table. As long as the database is empty, only the **Append** button is enabled. The other two are enabled by the recording of data. Sorting or searching in an empty table is pointless. The function of appending new records is described in detail in the next chapter, for information about searching and sorting please refer to [5.1.2. Searching a table](#) (p. 31) and [5.1.3. Sorting a table](#) (p. 33).

The buttons outside the frame with the boxes (**Global search, Reorganization, Catalogues etc., Analysis, Close DB**) are not restricted to the currently selected file. Their functions are described in detail in [5.2. Other functions](#) (p. 34).

We first describe in detail how data are appended, then how they are searched and sorted, and finally the other operations.

5.1. Handling a table

5.1.1. Appending records

PaleoTax is a conglomerate of 40 tables, each of which is dedicated to one type of data, such as authors, species, genera or localities. Talking about localities above, we mentioned regions and countries. Data referring to countries are not included in localities but form separate tables. The localities table comprises only regions, the other table only countries. Or the collections relate to a town which in turn relates to a country. This shows that the tables are interrelated and form a database. How the data are interrelated is dictated by the logic of reality, as you will soon understand.

We then consider the PUBLICATIONS table, which actually stores only the year, title, pages and plates. Authors and journals are stored in separate tables to which the PUBLICATIONS table refers. Data recording is explained step by step in the following chapter. Try to follow these explanations with a specially created database.

Step-by-Step description

In the first form click on **Literature** and then on the **Append** button.

An empty form appears.

Append new records - Publications : 1

Standard | Citations

Publications © HLK 2003

Author : Year : Ref.letter :

2nd Author : 4th

3rd Author : 5th

Title :

Original :

Font

Book :

Journal :

Reference :

Serial : Volume: Issue :

Pages : Plates : Figs. :

No.Cit. : Mark

Note Keywords Documents

Save Close (ESC) Forward

All edit forms are more or less identical: they have at least one "file card" (here you can see two of them - "Standard" and "Citations"), a **Save** and **Close (ESC)** button on the left-hand side and a **Forward** button on the right-hand side. The **Save** button becomes active when the form is modified (then **Close** turns into **Cancel**). **Forward** saves the current record and cleans the edit form. Within the mask you may move from one field to the next, using the cursor keys or **Tab** going forward and **Shift + Tab** moving backward, or click on the field that you want to modify. Click on the top of the file cards to move from one card to another, or use **Ctrl + Tab**.

In the edit form each data field consists of descriptive text and a white or green box:

- black text for explanations
- a white box for entering data
- a green box (in the picture grey) for referring to another table

In the references table white boxes contain the year of publication, the title and detailed data concerning the publication, such as volume, number, pages, plates etc. Green boxes are for the authors, the journals, the book in which an article could be published. The green boxes indicate that the data are not stored in the current but in another table. It is therefore not possible to simply record data in green boxes.

If you first want to record the year, click on the white box behind "Year" and type in the year:

Append new records - Publications : 1

Standard Citations

Publications © HLK

Author : Year : 1969 Ref.letter :

2nd Author : 4th

3rd Author : 5th

Title :

You will notice that the **Save** button is now active and the **Close** button has changed to **Cancel**. Data recording in the green boxes (fields referring to other tables) is different. What happens if you type, for instance, a 'c' into the "Author" field?

Append new records - Publications : 1

Standard Citations

Publications © HLK 2003

Author : c Year : 1969 Ref.letter :

2nd Author : 4th

3rd Author : 5th

Title :

Original :

Font

Book :

Journal :

Request

No item found. Would you like to enter a new one ?

Yes No

As the AUTHORS table is empty, no author can be assigned to this reference. The program assumes that you want to enter a new item into the AUTHORS table. So click on **Yes** and you will be automatically forwarded to the AUTHORS table to append the new record:

Append new records - Authors : 1

Standard

Authors © HLK 2003

Family name :

First name :

Add (de/von) : Before vowel (d')

Original :

Font :

Note

You therefore record the author ...

Append new records - Authors : 1

Standard

Authors © HLK 2003

Family name : Cheetham

First name : A.H.

Add (de/von) : Before vowel (d')

Original :

Font :

Note

... and press **Save** (or **PgDn**). Two things happen: a first record is appended to the AUTHORS table and a reference is made from the record in the PUBLICATIONS table to this first record in the AUTHORS table.

Append new records - Publications : 1

Standard Citations

Publications © HLK 2003

Author : Cheetham, A.H. Year : 1969 Ref.letter :

2nd Author : 4th

3rd Author : 5th

Title :

This is accomplished without returning to the main form with all those little boxes, selecting the AUTHORS table, appending a record, returning to the record in PUBLICATIONS, etc. If you now move the cursor backwards and press the **Del** button, the author in the AUTHORS table is not deleted, only the connection between the data field and the record in AUTHORS is broken.

To enter the next author, whose name starts with an 'h', go to the field marked "2nd Author" and enter 'h':

Append new records - Publications

Standard Citations

Publications

Author : Cheetha

2nd Author : h

3rd Author :

Title :

Original :

Font

Book :

Journal :

Reference :

Serial :

Pages :

No.Cit. :

Note Key

Save Cancel

Data field Second author in File Publications = selection from table Authors

H

Search text :

Cheetham, A.H.

Select New Cancel

Instead of asking whether you would like to append a new item, PaleoTax shows you a list from which to select an author. If there are many authors, you may enter more characters or even start a full text search in the whole list by typing the search text into the "Search text" box and press **Tab**. The author is selected by clicking on his / her name and then on **Select** or by double clicking on the author. In our case the only person available for selection was the author 'Cheetham', but as we wanted to enter a new author, we clicked on **New** (or pressed the **Ins** key). We recorded the author 'Hazel, J.E.', who then appeared as our second author:

Append new records - Publications : 1

Standard Citations

Publications

© HLK 2003

Author : Cheetham, A.H. Year : 1969 Ref.letter :

2nd Author : Hazel, J. 4th

3rd Author : 5th

Title :

- ▶ The size of the window for selection can be modified. Move the mouse to the left-hand margin and draw the windows to the left so as to see more details (a frequent requirement in localities, for example).

On reflection we found that we had forgotten to enter the second author's middle name. We therefore went back to the second author's field, double clicked or pressed the **[Ins]** button. The `AUTHORS` table popped up and the record in question was displayed for modification. With **Save** or **[PgDn]** we returned to the currently edited reference.

That's the whole secret. If you want to remove a second author, just move to the field and press **[Del]** to delete his/her name. Why there are white and green boxes can be explained by the rules of database design. Different data types have to be stored in separate tables, and any particular data unit (such as an author, a species or a country) has to be kept in the same place in the database. Double data recording is forbidden. If, for instance, an author's name is misspelt, it has to be corrected only once in the `AUTHORS` table and not in all the records in the `PUBLICATIONS` table referring to that single record in `AUTHORS`. You will soon appreciate this feature since every author, every journal, every locality, every species, every genus, etc. has to be recorded only once and not more often. You will find that the most time-consuming part of working with PaleoTax is not data recording but organizing and copying the literature, reading it, understanding it and finally keeping track of new publications so as to keep the database up to date.

What each field in the tables means and what you have to record there is described in detail in [Appendix 1 - Explanation of the edit forms](#) (p. 62). A brief indication can be obtained by moving the mouse over the fields:

You do not have to fill in all the fields. In which fields data have to be entered depends on the data. Always compare [Appendix 1](#).

Commands in the edit forms

The following keys or combinations of keys are important in editing data in the edit forms:

1. **[F10]** saves the current record and returns to the main menu or search form. **Save, Forward** (**[PgDn]**) and **Backward** (**[PgUp]**) also saves the current record. With **[Esc]** the current action is cancelled; no record is saved.

- The key **+** on the numerical keyboard (or **Alt+Y** for laptop users) copies the last edited record in this field (also works in the browse mode).
- The key **F2** displays a table of characters of the currently used font:



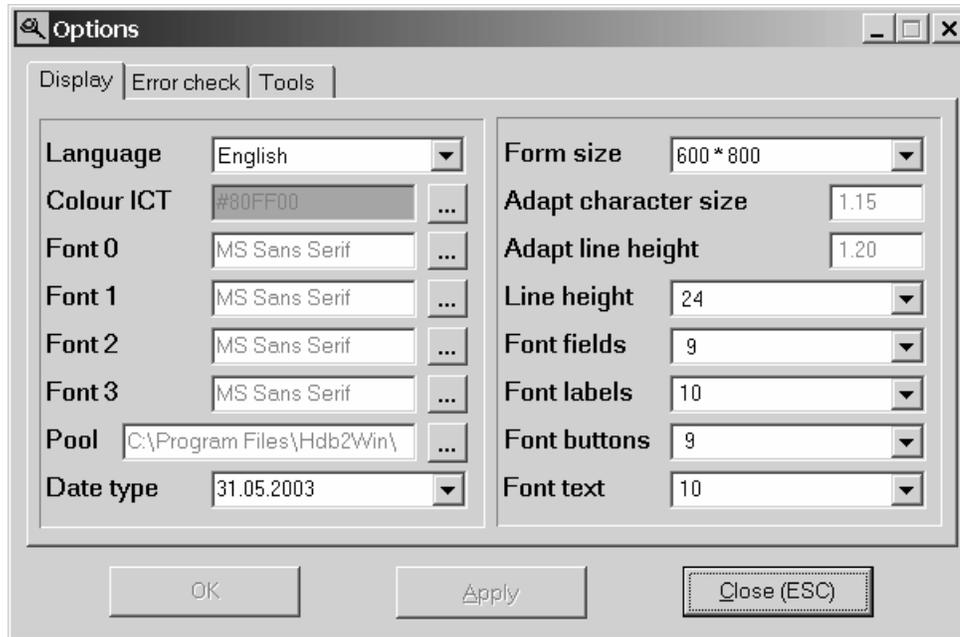
Select a character; it will be inserted in the current field left of the cursor.

- The key **F7** replaces the current field with a defined expression. Look for an indication or compare [Appendix 1](#).
- The key **F8** marks the current record as deleted. This function has only historical reasons. No action is taken to delete records. There is no function for the removal of records. It is practically impossible to delete your data.
- The key **Del** removes the connection in green fields; the fields are emptied. The content of text fields ("Memo" fields) is also deleted by pressing this key.
- The key **Ins** (or double click) in green fields causes PaleoTax to move to the record in the related table.

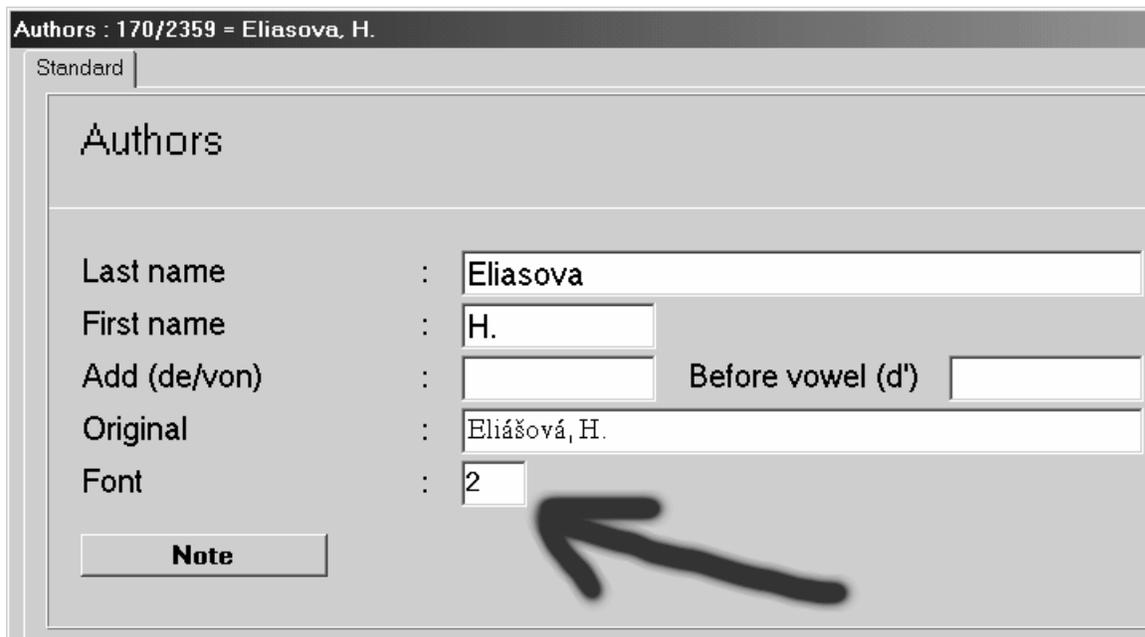
Besides the two field types described above, an edit form may also comprise other elements which are explained in the following chapters.

Special fonts

In some cases an author's name or a locality cannot be correctly spelt with the standard fonts. Various other fonts (e.g. East European, Symbol, Arabian) are therefore available. To use this option, two things have to be done. First, you have to edit the fonts table (PaleoTax database menu, options; see 6.2.1. Display; p. 49). Better not to modify font 0. Select fonts 1 to 3 (More fonts can be chosen in HDB2WIN.INI).



Second, use a selector to tell you which font to use. This may vary from record to record. Choose the font in the appropriate field *Font* :



The font is chosen for the field in question in accordance with the number.

Text fields

Text ("Memo") fields are used to record any text up to 32 KB (a paragraph should not exceed 1,024 characters for reasons that are only known to Borland). The text is automatically wrapped at the line end. Paragraphs should therefore be marked by pressing **[Enter↵]**. The editor knows a number of commands:

Ctrl+Y - Delete line

Ctrl+T - Delete word to the right

Ctrl+Qy - Delete line to the right

Ctrl+Qr - Go to the text beginning

Ctrl+Qc - Go to the text end

Ctrl+Qt - Insert date and time

Ctrl+N - Insert blank line

Texts may be formatted within a certain limit. Codes have to be directly inserted into the text. A code (always after the formatted text) starts with a vertical line ("|") and is followed by a two-digit number:

01 Standard

02 *Italics*

03 SMALL CAPITALS

04 **Bold**

05 Underlined

A valid text would be:

As already reported in|01 Smith|03 (1850), the ammonite |01Acanthodiscus radiatus|02 does |01not|04 occur in the late Hauterivian.

This text exported into an RTF file would appear as follows:

As already reported in SMITH (1850), the ammonite *Acanthodiscus radiatus* does **not** occur in the late Hauterivian.

Do not forget to set the code |01 before the formatted text to assign the standard format to the preceding text.

Lists

Lists providing additional information about recorded data are integrated into some edit forms. The edit form of genera comprises a list of currently assigned species, the edit form of species a synonymy list and a list of localities, etc.

In some forms you may modify the list or select items. Compare [Appendix 1](#) for details.

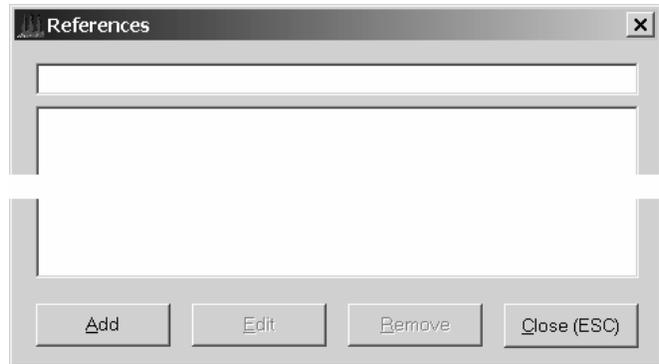
Illustrations, Literature and Documents



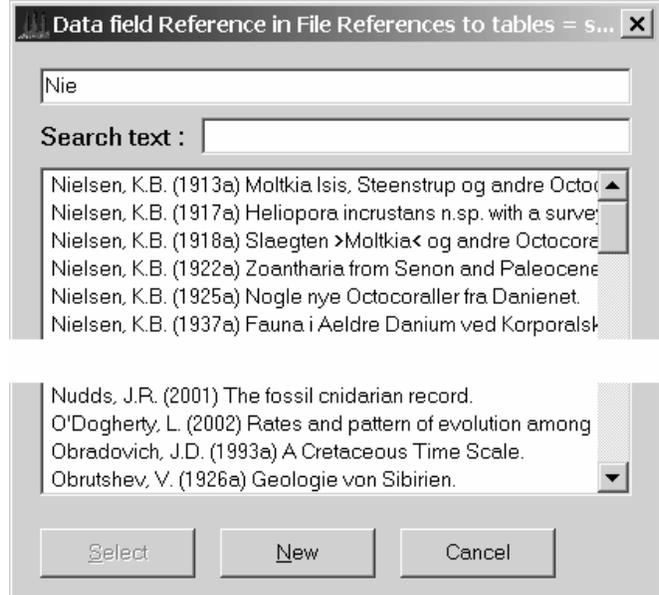
Illustrations, literature and documents can be part of each table without being integrated into the data structure of the table concerned. References to these three data types are stored in separate auxiliary tables. The number of illustrations, etc. belonging to each record is not restricted.

References

Clicking on the button **References** allows you to select a literary reference from your PUBLICATIONS table:



Type the first letters of the name of the author of the publication concerned in the field above ...



... and choose a reference (or append a new one).

The reference appended will be included in the list of references for the particular locality (species, genus, ...):

You may edit or remove this item.

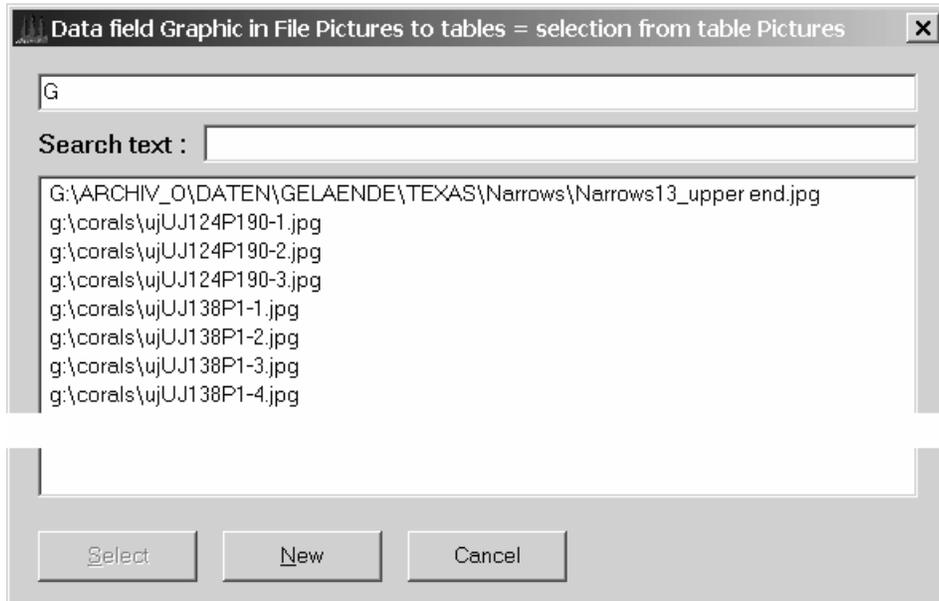


Illustrations

Illustrations are selected the same way as described above for references. Click on **Illustrations** to call the same form as for references:



However, the form is larger than the one for references in order to accommodate all illustrations from the list. The list above is empty, but if you type a letter, a list of graphic files will be displayed.

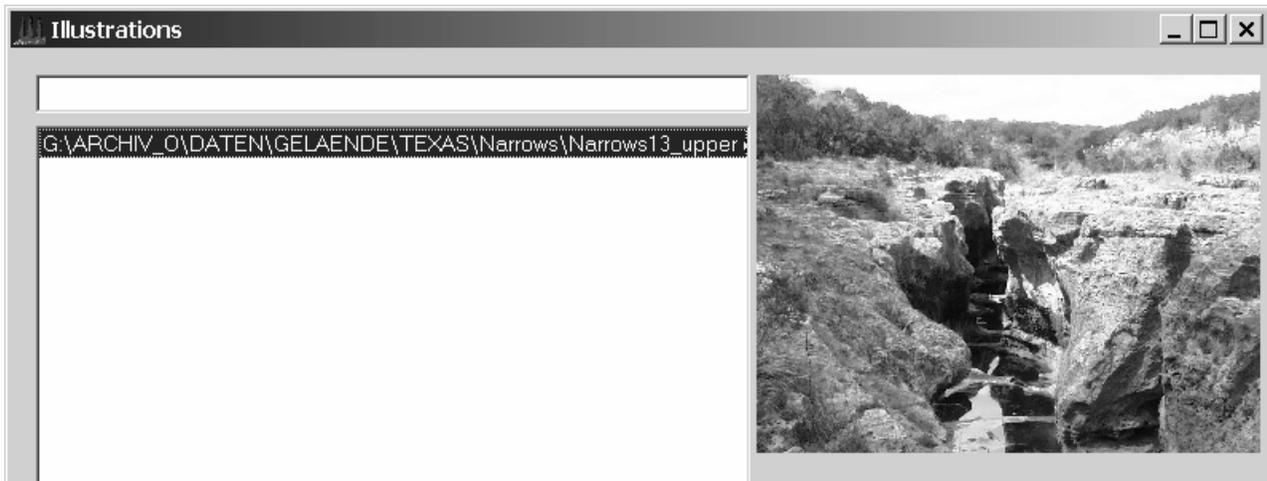


You may select a file or enter a new one. If a new one is entered, another form will be opened:



Illustrations are stored in the PICTURES table in the form of references to file names, not as graph files. Any illustrations to which you wish to refer have first to be recorded in this table. You can select a file by clicking on the **Search** button in accordance with the Windows standard file opening routine. The graph size is adapted to the area available. You may also load your graph files into this table, using the SEARCHP.PRF program ("Search graph files and import their names into the picture table"). Start the Interpreter, select the program from your PaleoTax data directory (**Load**) and start it (**Run**). You may select the graph type and the file path; PaleoTax will automatically read the file names and append records to PICTURES. Three types of graphs can be displayed in PaleoTax: BMP, JPG and WMF. No other formats are at present possible.

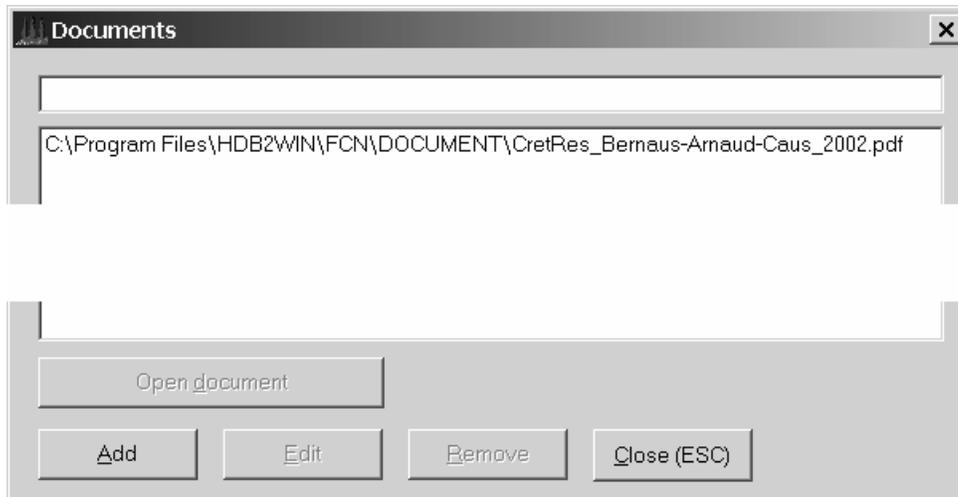
On leaving this form, you will see that your list is no more empty:



Moreover, if you click on the file name, the graph will be displayed on the right.

You can remove items from this list or add new pictures.

Documents

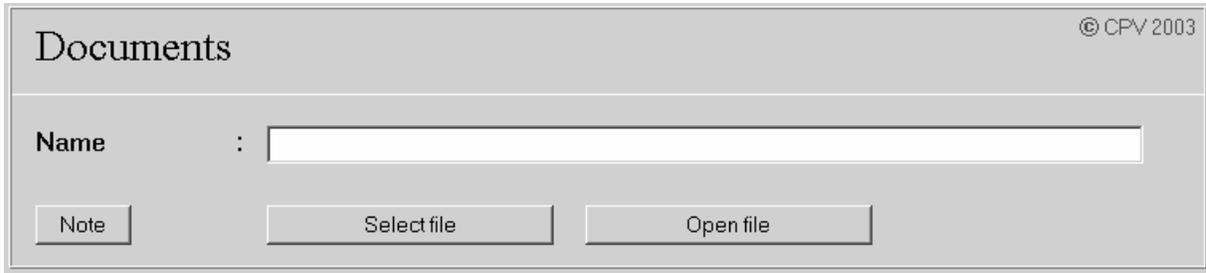


Any document can be included in your data. A document may be a PDF file, a text file, a spread sheet or any other document you wish. If the extension of the document name is registered in Windows, the appropriate program will be executed and the indicated file loaded. To modify the assignment of file extensions to programs, click on "My Computer" (on your computer screen), select "Tools", "Folder options ...", and look at the card "File Types".

Clicking on this button will open a list and show the documents of the current record. You may select an item.

You can directly open the document by clicking on **Open document** (if the item is marked). **Add** will guide you to a new (empty) record, **Edit** modify the selected entry, **Remove** delete the entry and **Close** close the form.

If there is no document available, try to select a document from the document file by typing the first letters of the file name into the small box. If no file is available in the document list, click on **New** and append a record in the DOCUMENTS table.



Comparable to illustrations, file names are stored in a DOCUMENTS table. You may select a document by clicking on **Select file** to select a file from your hard disk. It is also possible to enter a web address as the field name. If you click on **Open file**, the appropriate application will be opened (as Acrobat Reader, any text processor or spread sheet program) or the web page of the entered address will be displayed.

You can also load your document files into this table, using the SEARCHD.PRF program ("Search any document files and import their names into the document table"). Start the Interpreter, select the program from your data directory and start it. You may select the document type and file path; PaleoTax will automatically read the file names and append records in DOCUMENTS.

5.1.2. Searching a table

Searching data is the most important and the most frequently performed function in PaleoTax. Searching and processing data is subdivided into three steps:

1. How to search?
2. How to output the records found or what to do with them?
3. Where to output the records found?

Searching and outputting data are two different things. You can search for data, view them in a table and finally output them into a text file. The three steps also become obvious from the form opened by clicking on **Search** in the main menu.

The search options are placed on the left-hand side, the output options at the top of the right-hand side, and the possible target at the bottom. **Search** in this form only applies to records, the number of records found is displayed in the small box at bottom left. **Output** searches and outputs the data.

New records may also be appended to this form: the button at bottom left corresponds to the **Append** button in the main menu.

Search mode

There are five search modes, the fifth of which is not always provided:

1. Query by example – Fill in an empty edit form. The system will search for items that match the completed fields. If you fill in more than one field, you will be asked whether all conditions should be complied with, i.e. whether the fields should be connected by "and":

If you say **No**, all items in which at least one of the completed fields is identical will be found.

2. Enter condition – Enter a condition with DBMS syntax. Requests of this nature normally refer to data fields. You therefore need to know the names of data fields ([Appendix 2 - Data structure](#); p. 116) The names of fields relating to other tables can be connected with the names of fields from this table (c_genus.sauthor.year refers to the year of publication in which the current genus of a species was described). Characters or strings should be put in apostrophes (').
3. Full text search – Enter any word or phrase. The whole table (except text fields) will be searched. Capitalization or small initial letters make no difference.
4. Output all – This comprises all records of the table.
5. Proposal: search for – Queries have been prepared for some of the tables. Select an item from the list and click on **Search** or **Output**. In most cases you need to enter or select a search value.

Process

Five opportunities are available

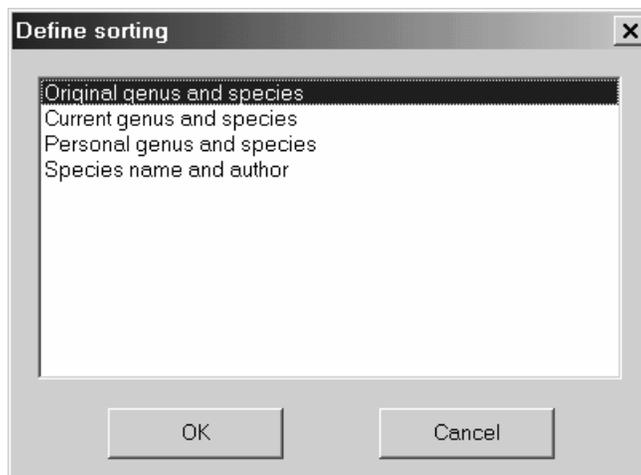
1. Edit – The items found are shown in the edit form for modification.
2. List – The records are listed. You may decide to separate the fields by tabulators or to select a list of data fields for output.
3. Browse - The records are shown in a table. You may define a list of data fields. Double click on records in the table to see and/or modify them in the edit mask.
4. Report – A report on the records found is written. Various more or less informative reports on the subject concerned are offered by many tables. Reports may be exported as RTF or HTML.
5. Action – An action to set or reset the value of a data field is carried out.

Outputting data

If the "List" or "Report" process is chosen, the data can be exported as a text file, RTF file or HTML file. They can be displayed on the screen or transferred to the clipboard. If the data are transformed into a file and no file name is entered, PaleoTax uses a temporary file name.

5.1.3. Sorting a table

Sorting is interesting if you want to review or output a large amount of data. Click on **Sort**, and a list of possible orders will be produced (here for the SPECIES table):



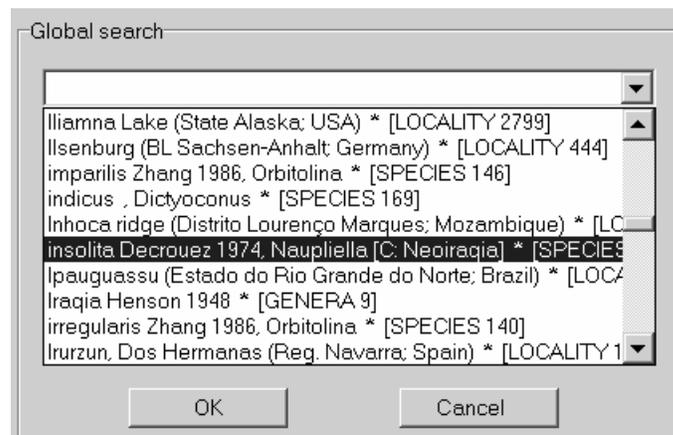
Choose one. The caption of the box for the file in the main menu is now in *italics* and the caption of the **Sort** button is changed to **Without sorting**. Sorting terminates when you click on this button again or close the database. Changing to another table does not terminate sorting.

5.2. Other functions

Buttons which are outside the table-selecting area do not depend on the currently selected table. These functions are more general and apply to the whole database.

5.2.1. Global search

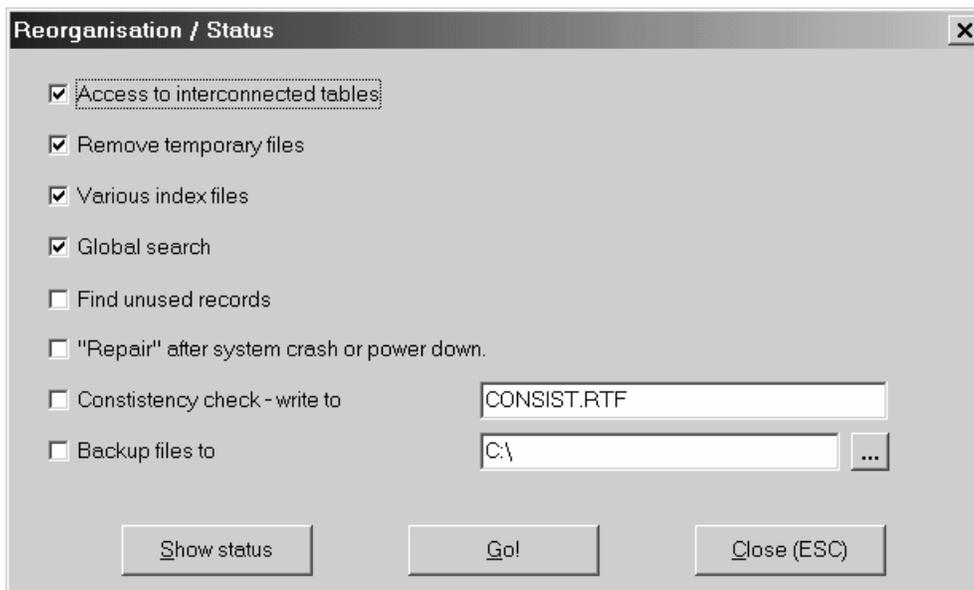
When you click on this button, an alphabetically sorted list of species, genera, families and localities is displayed:



Select an item from this list. When you click on **OK**, the record is shown in the edit form.

5.2.2. Reorganization

Reorganization informs you about the status of your database, removes temporary files, builds up various files you need for your work, helps you to find data errors or semantic errors in your database, and generates the backup archives. It comprises various functions:



Show status informs you about the condition of your database. You do not normally need these data but they could be helpful if you have problems working with PaleoTax or if errors occur. **Go!** executes the tasks you have selected (see below), and **Close (ESC)** closes the window.

Access to interconnected tables

This action creates the index files which you need for access to interconnected tables. It is useful from time to time (as it speeds up selection).

Removing temporary files

It removes all index files for catalogues, list boxes and access to interconnected tables as well as all temporary text files. Temporary files are files beginning with '\$' or '~' or having the extension ASC, BAK, FIX, SFX or SIK or whose extension starts with '~'.

Index files are, of course, newly created after their deletion.

Various index files

This task creates index files which are used in some edit forms to sort items into list boxes. Run it from time to time as these files are not updated by appending new items.

Global search

This task creates the table you need for access to global search. Run it from time to time as this file is not updated by appending new items.

Finding unused records

This task isolates unused records from interconnected files. Imagine that you have (for example) erroneously entered an author twice and wish to remove this double entry. First mark the double entry (for instance with '~' in his family name). Then search the publications, books, species and genera tables (which are interconnected to AUTHORS) for this author and replace his name by the correct entry. In the subsequent task of finding unused records, this author's name should be marked with an asterisk (*), which indicates that it is not used any more. This function does not work for all tables, as publications that are not used in any other table may have been entered.

"Repairs" after system crash or power down

If you had a system crash or power down during work with PaleoTax, the data could be damaged. To find this out, check the database consistency immediately afterwards. Start PaleoTax again, choose this task (no other!) and click on **Go!**. If the program is executed without errors, mark the first four tasks and start reorganization again.

If you have problems opening your database, start the Interpreter, open (**Load**) the program entitled "To be used if the database fails to open" from your data directory and start it (**Run**). After opening the database, mark the first four tasks and start reorganization.

Consistency check

This task examines the logical consistency of your database. The result is written into an RTF file. All necessary explanations are found in this file. The reported "errors" actually have the status of a piece of advice or information. You are not required to take any immediate action.

Where to send backup files

Backup copies are useful when your hard disk breaks, when your PC has been stolen or you want to transfer data from one computer to another (or send them via the Internet to another user). The program archives all files, including temporary and index files. It is therefore advisable to mark also "Remove temporary files". Only the data (not the program) and only the currently opened database are copied. Backup copies can be stored in any directory or drive you choose. The data format is an internal format. The name is derived from the directory name of the database, the date and a serial number. Backup copies can be easily restored from the PaleoTax database menu (before opening a database).

General remarks

The various options in the reorganization menu have the disadvantage of being carelessly or inconveniently combined. It does not make sense to remove temporary files but not to create access files for interconnected files. This does not cause an error or malfunctioning of the program, but if these files are lacking and are created when needed, you are interrupted in your work. Nor is it useful to mark the backup copy function but leave all the others unmarked. In this case you may fill your archives with a lot of useless files. The best choice is to mark the first four tasks and only to use the others if they are really needed.

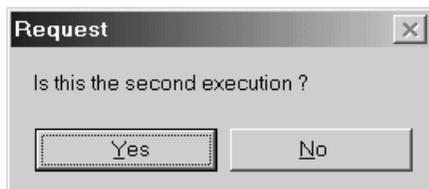
5.2.3. Catalogues, etc.

Catalogues are printouts of your database under various criteria. They can be characterised as follows:

- Catalogues are produced by external Interpreter programs, i.e. they can be easily modified. New service releases always contain later versions of catalogue programs with more options.
- They can be produced in German or English, depending on the language you want to work with.
- They are normally converted into RTF format, except for the Internet catalogue, which is in HTML format.
- Catalogues are formatted, using style sheets, except for the last one. These style sheets may be modified in your text processor before (see [Editing RTF style sheets](#); p. 51) or after conversion.

The creation of catalogues is a complicated process and there are some points you should keep in mind:

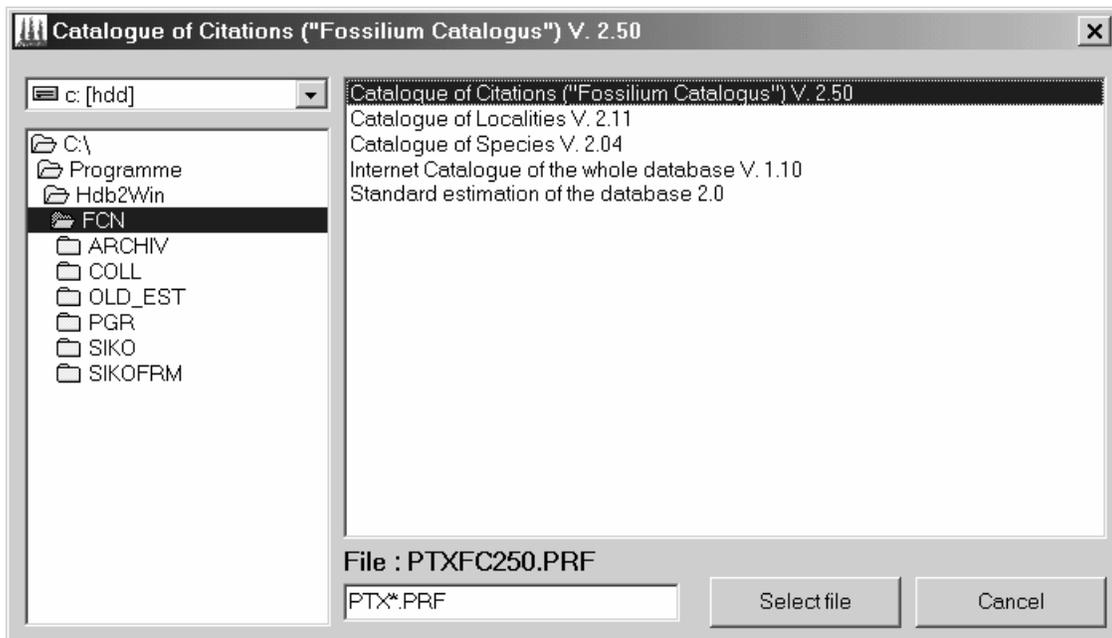
- Before running the catalogue programs, it is advisable to carry out reorganization and the consistency check. Read the results of the consistency check carefully and try to follow the recommendations.
- All catalogues have normally a list of references. Reference letters are used in the PUBLICATIONS table to distinguish publications by one and the same author published in the same year. These letters cannot be used in the same way in the catalogue because the reference list of the catalogue may represent only part of the PUBLICATIONS table. For example, the table may list three papers 'Miller 1980a, b, and c', but the catalogue only 'Miller 1980 a and c'. In the catalogue this has to be reduced to 'Miller 1980a, and 1980b'. To match the catalogue and the reference list in this point, execute the catalogue program twice. At the end you will be asked whether this is the second execution:



After the first execution answer this question with **No**, after the second execution with **Yes**. Then the catalogue and the reference list will match.

- Some catalogues offer a glossary. For the Catalogue of Citations and the Catalogue of Localities this includes scanning the original citation and the name of the locality in their various parts (as a genus, species, author; county, town, village, outcrop). The scanning process is complicated and may cause error messages ! Normally it would be possible to skip all items causing errors, but this would probably mean suppressing items. Therefore, if you receive an error message that is obviously connected with the glossary (you may switch off the glossary function), please provide detailed information about the error (see below how to do this) as well as the last ten lines of your catalogue (which is a text file with the extension ASC).

When you click on **Catalogues etc.**, a list of the standard catalogues (programs starting with PTX) will be displayed:



These programs are contributed by:

The Catalogue of Citations ("Fossilium Catalogus")

A list of all genera, species and citations, and the localities of the citations. There are numerous options of displaying or hiding data.

The Catalogue of Localities

A list of localities with all available data that you may wish to present, together with the species occurring in the particular locality. Various options are possible also here.

The Catalogue of Species

This catalogue is a very brief version of the Catalogue of Citations which only cites genera, species and their type localities.

Some catalogues are shown on the following pages.

Catalogue of Species

A

Acanthocoenia D'ORBIGNY 1850

TS: *Acanthocoenia rathieri* D'ORBIGNY 1850, monotypy in D'ORBIGNY (1850)

cerioi, D'ANGELIS D'OSSAT 1905c, A=O - "Rudite di Tiberio", Aptian to Cenomanian: Isola di Capri, Venassino (Reg. Campania, Prov. Salerno, Italy)

neocomiensis, VOLZ 1903, A=O - "Wildflysch", Barremian to Lower Aptian: Pojorita area, Cimpulung-Moldovenesc, Valeasacca, Valea Mesteacan (Regiun Suceava, Romania)

rathieri, D'ORBIGNY 1850, A=O - "Calcaire à Spatangues", Lower Hauterivian, radiatus zone: Chenay (Dépt. Yonne, France)

Acanthogyra OGILVIE 1897

TS: *Acanthogyra columnaris* OGILVIE 1897, subsequeute definition in WELLS (1936)

aptiana, TURNSEK & MIHAILOVIC 1981, A = *Preverastraea* - Lower Aptian: Zljebine (Obl. Vojvodina, Yugoslavia)

columnaris, OGILVIE 1897, A=O

micra, ELIASOVA 1973a, A=O

multiformis, OGILVIE 1897, A=O

paracolumnaris, SIKHARULIDZE 1979, A=O - Albian: Zkhanari village (Georgia)

parvisepta, ELIASOVA 1973a, A=O

tosaisis, EGUCHI 1951, A=O - "Torinosu limestone", Tithonian to Berriasian: Takaoka-gun, Sakawa-cho, Togano-mura, Konpirayama (Kochi-ken, Japan); "Torinosu limestone", Tithonian to Berriasian: Takaoka-gun, Sakawa-cho, Togano-mura, Hanabata (Kochi-ken, Japan)

Acrosmilina D'ORBIGNY 1849

TS: *Acrosmilina cernua* D'ORBIGNY 1850, monotypy in D'ORBIGNY (1850)

cernua, D'ORBIGNY 1850, A=O - "Marno-calcaires à Gauthiericeras", Upper Coniacian: Les Corbières, Soulatgé (Dépt. Aude, France)

conica, D'ORBIGNY 1850, A=O - "Marno-calcaires à Gauthiericeras", Upper Coniacian: Les Corbières, Soulatgé (Dépt. Aude, France)

cycloides, OPPENHEIM 1930a, O = *Leptophyllia*

cylindrus, REIG ORIOL 1997, A=O - Upper Campanian: Com. Pallars Jussà, Torallola (Reg. Cataluña, Prov. Lérida, Spain)

danieli, REIG ORIOL 1992, A=O - Upper Campanian: Com. Pallars Jussà, Torallola (Reg. Cataluña, Prov. Lérida, Spain)

flexuosa, OPPENHEIM 1930a, O = *Leptophyllia*

fromenteli, ETALLON 1859, O = *Leptophyllia*

fromenteli, ALLOITEAU 1957, A=O - Cenomanian: Les Corbières, Sougraigne (Dépt. Aude, France)

Catalogue of Localities

France**Dépt. Ain**

Region: France - Dépt. Ain

Outcrop: Bellegarde, Boge sur Confort

SP: Conrad 69

Age: Barremian

Species:

Valserina broennimanni SCHROEDER et al. 1968

—

Region: France - Dépt. Ain

Outcrop: Bellegarde, Fort l'Ecluse

SP: Conrad 69

Age: Barremian

Species:

Valserina broennimanni SCHROEDER et al. 1968

Valserina charollaisi (SCHROEDER & CONRAD 1968)

—

Region: France - Dépt. Ain

Outcrop: Bellegarde, Génissiat

SP: Conrad 69

Age: Barremian

Species:

Valserina broennimanni SCHROEDER et al. 1968

—

Region: France - Dépt. Ain

Outcrop: Bellegarde, Perte du Rhône

SP: Conrad 69

Age: Lower Aptian, tuarkyricus to weissii zone

Biozone: tyarkyricus - weissii

Species:

Orbitolinopsis subkilianii DIENI et al. 1963

Palorbitolina lenticularis (BLUMENBACH 1805)

—

Region: France - Dépt. Ain

Outcrop: Bellegarde, Perte-du-Rhône

SP: N 17-19

Age: Lower Aptian, lenticularis zone

Biozone: P. lenticularis

Remarks:

Whether JACOB (1907) really refers to the historical locality, is not clear. But JACOB refers to PICTET & RENEVIER (1858) and considered an Aptian age with *Orbitolina lenticularis*, what is confirmed by SCHROEDER & CHAROLLAIS (1966). SCHROEDER (1963) mentioned for this locality Early Gargasian.

References:

JACOB (1907); PICTET & RENEVIER (1857);

SCHROEDER (1963); SCHROEDER & CHAROLLAIS (1966)

Species:

Palorbitolina lenticularis (BLUMENBACH 1805)

Catalogue of Citations

***Palorbitolinoides* CHERCHI & SCHROEDER
1980**

Range: Aptian, base - Albian, top

TS: *Palorbitolinoides hedini* CHERCHI & SCHROEDER 1980, OD in CHERCHI & SCHROEDER (1980)

Palorbitolinoides hedini CHERCHI &
SCHROEDER 1980

Range: Aptian, base - Albian, top

Syn.sp.: [*Orbitolina* (*Orbitolina*) *bangoonica* ZHANG 1982 =] Academia Sinica, Nanjing Institute of Geology and Palaeontology (Nanjing): 51986 - Aptian to Albian, Baingoin county (Xizang [= Tibet] Autonomous Region, China)

References:

- 1948 *Orbitolina concava qatarica* - HENSON; p. 20, pl. 3: 4
 1980 *Palorbitolinoides hedini* n. gen. n. sp. - CHERCHI & SCHROEDER; p. 385, pl. 1
 1982 *Orbitolina* (*Orbitolina*) *bangoonica* Zhang sp. nov. - ZHANG; p. 73, text-fig. 23, pl. 12: 1-6
 1986 *Palorbitolinoides hedini* Cherchi et Schroeder - ZHANG; p. 105, text-fig. 2, pl. 2: 7-13
 1994 *Palorbitolinoides hedini* Cherchi et Schroeder - ZHANG; p. 74, pl. 2: 13, 14

Occurrences:

Aptian to Albian

China (Xizang [= Tibet] Autonomous Region) Baingoin county

Lower Albian

China (Xizang [= Tibet] Autonomous Region) Gar county

Palorbitolinoides orbiculata ZHANG 1986

Range: Albian, base - Albian, top

Type(s): Academia Sinica, Nanjing Institute of Geology and Palaeontology (Nanjing): 74131 - Albian, Xainza county (Xizang [= Tibet] Autonomous Region, China)

References:

- 1986 *Palorbitolinoides orbiculata* Zhang sp. nov. - ZHANG; p. 107, text-fig. 4, pl. 8: 1-7

Occurrences:

Albian

China (Xizang [= Tibet] Autonomous Region) Baingoin county; Xainza county

Palorbitolinoides tenuis ZHANG 1986

Range: Albian, base - Lower Albian, top

Type(s): Academia Sinica, Nanjing Institute of Geology and Palaeontology (Nanjing): 74125 - Lower Albian, Baingoin county (Xizang [= Tibet] Autonomous Region, China)

References:

- 1986 *Palorbitolinoides tenuis* Zhang sp. nov. - ZHANG; p. 107, text-fig. 3, pl. 6: 11, 12

Occurrences:

Lower Albian

China (Xizang [= Tibet] Autonomous Region) Baingoin county

***Paracoskinolina* MOULLADE 1965**

Range: Hauterivian, base - Cenomanian, top

TS: *Coskinolina sunnilandensis* MAYNC 1955, OD in MOULLADE (1965)

Paracoskinolina fleuryi DECROUEZ &
MOULLADE 1974

Range: Upper Albian, base - Cenomanian, top

Type(s): Université Claude Bernard, Institut de Géologie (Lyon): 50303, 50304 - Upper Albian, Gavrovo, Ebessos, Mont Kanala (Etolie, Greece)

References:

- 1971 *Coskinolinoides* cf. *texasus* Krejzner - FLEURY; p. 185, pl. 1: 1-9
 1974 *Paracoskinolina fleuryi*, n. sp. - DECROUEZ & MOULLADE; p. 86, pl. 4: 5-10

Occurrences:

Upper Albian

Greece (Etolie) Gavrovo, Ebessos, Mont Kanala
 Greece (Nomo Argolída) Nafplion, Grias Lithari

Cenomanian

Greece (Nomo Aitolia kai Akarnania) Varassova Mts

Paracoskinolina hispanica PEYBERNÈS 1976

Range: Hauterivian, base - Barremian, top

Type(s): Lab. Géologie Séd. Paléont., Univ. Paul Sabatier, Coll. Peybernès (Toulouse): Z 333 - Barremian, Alt Urgell, Organya (Reg. Cataluña, Prov. Lérida, Spain)

References:

- 1976 *Paracoskinolina* n. sp. 3 - PEYBERNÈS; p. 389, pl. 37: 1-9
 1976 *Paracoskinolina hispanica* n. sp. - PEYBERNÈS; p. 260, pl. 1: 1-13
 1980 *Paracoskinolina* cf. *hispanica* Peybernès - ARNAUD-VANNEAU; p. 610, pl. 99: 1-3, pl. 100: 7
 1984 *Paracoskinolina querolensis* Canérot & Peybernès - CANÉROT; pl. 2: 15
 1999 *Paracoskinolina* ? *hispanica* Peybernès, 1976 - BECKER; p. 425, pl. 24: 1-9

Occurrences:

Hauterivian to Lower Barremian

Spain (Reg. Cataluña, Prov. Lérida) Alt Urgell, Organya

Lower Barremian, hugii to compressissima zone

France (Dépt. Ain) La Rivère, Rocher-des-Hirondelles
 Spain (Reg. Cataluña, Prov. Lérida) Com. Alt Urgell, Organya section

The Internet Catalogue of the whole database

This program produces an Internet catalogue of your database. The files are written into the HTML directory (in your data directory). To see the catalogue, just open the INDEX.HTM index file with any Internet browser.

The headings in the files can be modified. To do this, edit the HTML_DEF.PRF file, which is in your data directory. This file contains the headings for the whole catalogue (all files), for the various types of pages (species, genera, localities, references), the glossary pages and a footer. It is in the ASCII format. For editing use the editor provided with Hdb2Win:

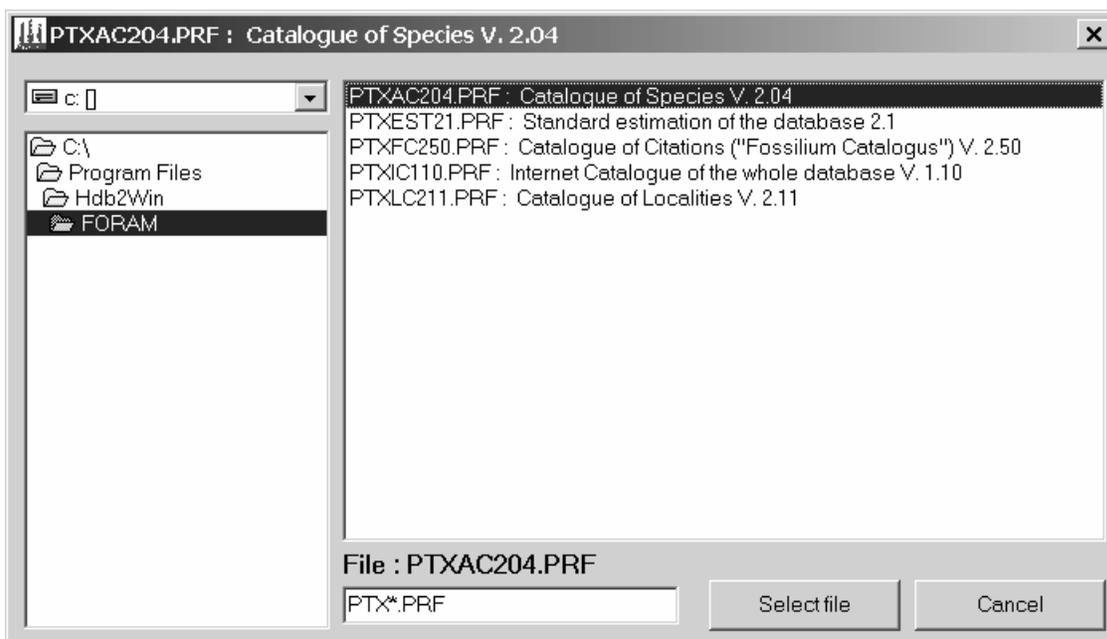
- Start Hdb2Win
- Choose CommandLine
- Change to your data directory via
CD FORAM
(replace FORAM by the name of your directory)
- Type ED HTML_DEF.PRF
- Modify the texts between the apostrophes ('...')
- Click on **Save**.
- Terminate with QUIT

Some examples of the Internet Catalogue are available in the Internet; please refer to the PaleoTax web site.

Standard estimation of the database

The standard estimation is not a catalogue but has been placed here as well. The program calculates the stratigraphic distribution of genera and species as well as some numerical data. Be careful about using this program. Any data recorded by you on the stratigraphy of your genera and species based on occurrences would be overwritten by this program and your data would be lost. But if these fields are not filled in, the calculations might be interesting.

Some calculations of this program are also carried out by the analysis (see [5.2.4. Data analysis](#); p. 40). For more detailed explanations compare to this chapter.



How to start other programs

If you want to start another program (or have been advised to do so by this documentation), click on **Catalogues etc.** but modify the file mask in the bottom (see previous page bottom).

You can also choose programs from another file directory. But please take care - there are some programs you can start from PaleoTax, others you cannot. Be generally wary about starting programs of which you do not know what they will do. There are many programs working in the background which are run by PaleoTax for specific reasons but have nothing to do with you. Do not try to find out what happens if you start one of them.

5.2.4. Data analysis¹

Introduction

Analysing data in the database is the "high spot" of working with PaleoTax. From the recorded data it is often not obvious how species and genera are stratigraphically distributed, what periods are characterised by extinction or evolutionary events.

To make data analysis easier, the new version of PaleoTax has been provided with a new module and with some programs for estimation of various values, which will hopefully answer some questions. The results of most programs are displayed in a graph and are also exported as plain text. To create your own graphs you can thus import these data into any spread-sheet program.

In view of its numerous options numerical analysis of a database is an ambitious process. It requires the user to understand the basic principles in order to interpret the results. In recording data you cannot make any grave mistakes, but misunderstanding the data analysis and choosing inappropriate options may produce nonsensical results in the best of cases and ruin your data in the worst. This chapter and the sheets delivered with the programs should therefore be read carefully if you wish to analyse your data. This will make it possible for you to choose the right options for execution of the programs and obtain reasonable results.

Requirements

To obtain any results at all you should enter taxa, localities with ages and age boundaries, citations and occurrences. Service release 5 (SR5) has to be installed and the database should comprise at least 5,000 information units (see [5.2.2. Reorganization](#); p. 34). The installation of SR5 is not required if you start with PaleoTax 2.1, which already includes this features. The Windows registration of the graphic package is executed by first clicking on **Analysis**. You should then get a message such as shown on the right.



If this message is not displayed or an error message appears, try to register manually. Terminate Hdb2Win, click on **Start**, choose **Run...** and type

```
REGSVR32 cfx32.ocx
```

into the white field. Then click on **OK**. Note the message.

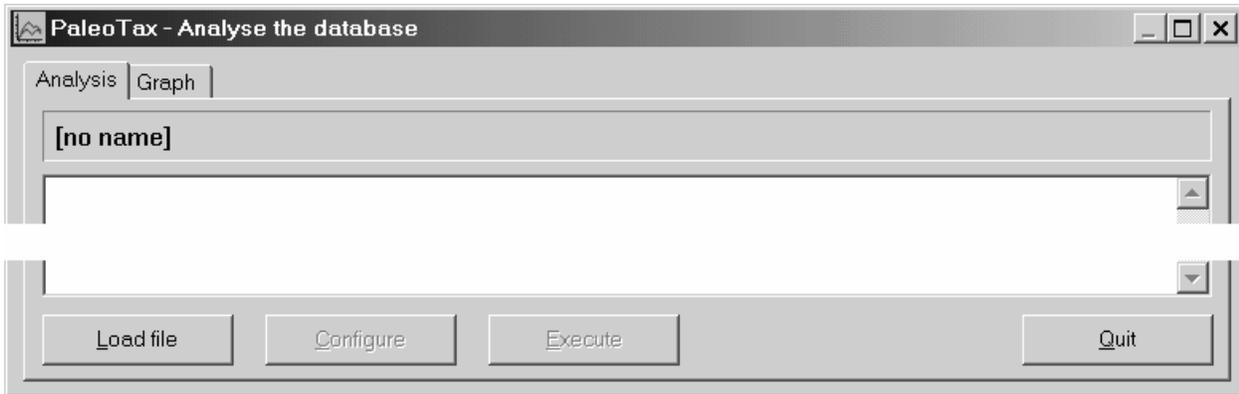
¹ This chapter is available in German as PDF file from the PaleoTax web site. Compare to the download page.

Function of the module

All analyses are Interpreter programs. Their names consist of the two letters 'AW' and a three-digit code. The enumeration is arbitrary and has mainly historical reasons. The programs can be started, using the Interpreter application. For various reasons it is, however, better to open the database concerned and click on **Analysis**. By starting the programs from the Interpreter module, you cannot configure the time raster (see below) and do not see the graphical results.

Starting the analysis

When you click on **Analysis**, a two-card form is displayed:



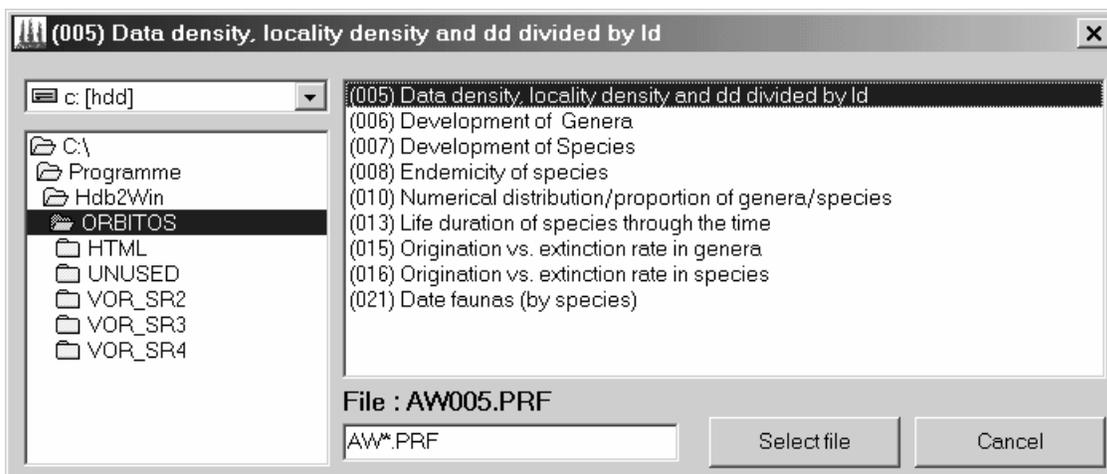
The first card is for messages of the analysing program, the second card shows a graph of the results.

At the bottom of the first card you can see four buttons:

- **Load file** (loads a file),
- **Configure** (configures the time raster),
- **Execute** (starts the program), and
- **Quit** (returns to the PaleoTax main menu).

In the second card there is only one button for opening a graph. The graph files, too, are Interpreter programs. Graphic program files created by analysis have the same name as the analysis but start with 'AC' rather than 'AW'. You can thus load and display graphs without starting the analysis again.

Loading a file



When you click on **Load file**, a menu of the currently available programs is opened. Select a program file. The program is not automatically executed, it has to be configured first.

Configuration

When a program file is loaded, PaleoTax reads the current configuration for this program. It is kept in a file of the same name but with the extension CFG. This configuration has to be checked the first time as well as later from time to time for the following reasons:

Most data-analysing programs use the time as the x-axis. The abundance of genera or species is thus calculated against time. For this calculation the programs need a time frame or time raster, which is normally provided along with the AGE BOUNDARIES table. The data in this table have to be maintained in the correct status: the data in the *value* field should be positive. The *top* and *bottom* fields (upper and lower boundaries) should not be accidentally reversed - the value of the *bottom* field should exceed that of the *top* field. The *top* field value may be zero (if you are working in the Quaternary or Holocene).

For configuration there are two switches for each age boundary which can be set to control the analysis and the display of data in the graph. Most programs first calculate the abundance (or any other value) for each age boundary. In some cases it is preferable not to calculate values for all age boundaries. This is achieved by the 'value' switch (see below). Secondly, it is confusing if all age boundaries in the graph are marked with a label. Often it is sufficient to mark just the systems or stages. The 'chart' switch is provided for this purpose. The results are displayed for all selected age boundaries, but not for all labels.

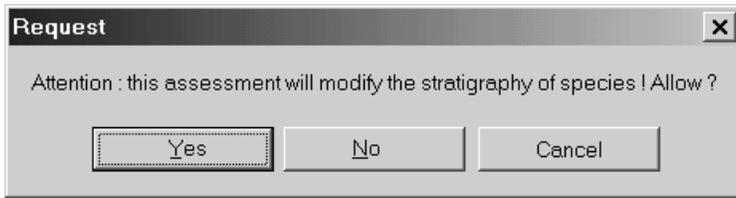
To set the switches click on **Configure**. A table will then be displayed (bottom right).

You see here the age boundaries on the left and the two switches on the right. The abbreviation AW corresponds to the 'value', the abbreviation AC to the 'chart' switch. The switches can be modified by double clicking, pressing **Enter** or **Spacebar**. As you can see in the example above, the 'chart' (AC) values are only sparsely set.

Age boundaries : 158/158			
Record	AGEIUGS	AW	AC
17	Middle Cenomanian, base	TRUE	FALSE
15	Cenomanian, dixoni, base	TRUE	FALSE
61	Cenomanian, saxbii, base	TRUE	FALSE
16	Cenomanian, base	TRUE	TRUE
158	U. Albian, perinflatum base	TRUE	FALSE
67	U. Albian, dispar, base	TRUE	FALSE
115	U. Albian, auritus, base	TRUE	FALSE
153	U. Albian, varicosum base	TRUE	FALSE
104	U. Albian, orbigny, base	TRUE	FALSE
3	Upper Albian, base	TRUE	FALSE
44	M. Albian, lautus, base	TRUE	FALSE
7	M. Albian, loricatus base	TRUE	FALSE
43	Middle Albian, base	TRUE	FALSE
116	M. Albian, dentatus, base	TRUE	FALSE
66	L. Albian, mammillatum, base	TRUE	FALSE
1	Albian, base	TRUE	TRUE
102	U. Aptian, jacobi, base	TRUE	FALSE
53	Uppermost Aptian, base	TRUE	FALSE
47	U. Aptian, melchioris, base	TRUE	FALSE
118	Aptian, lenticularis, top	TRUE	FALSE
6	Upper Aptian, base	TRUE	FALSE
25	L. Aptian, furcata, base	TRUE	FALSE
40	L. Aptian, deshaysi, base	TRUE	FALSE
62	Aptian, weiss, base	TRUE	FALSE
5	Aptian, base	TRUE	TRUE
46	U. Barremian, sarasini, base	TRUE	FALSE

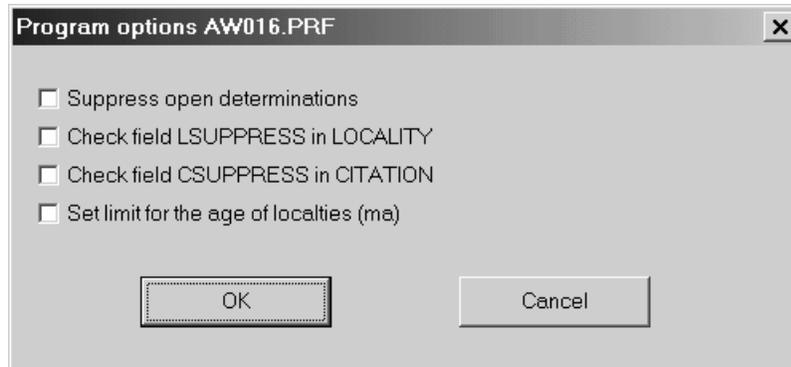
Configuration of the programs

In addition to the above-described switches, all programs offer a number of options for adapting the analysis a little to the user's needs. Many programs modify the stratigraphical extent of genera and species. If you have entered data in these fields, you better say **No** in reply to the question displayed on the next page.



In that case the analysis will be carried out on the basis of the data recorded in the *First occurrence* and *Last occurrence* fields. If the stratigraphical extent of genera and species is regularly assessed (using, for example, PTXEST21.PRG; see [Standard estimation](#) of the database; p. 40), this analysis may be skipped by clicking on **No**. This saves time.

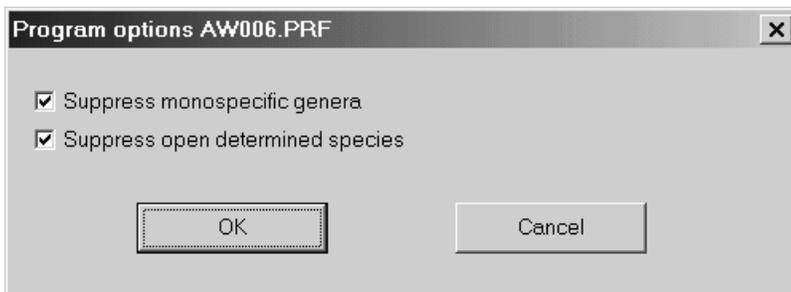
To calculate the stratigraphical extent of species, there are several options



which are explained in detail in the following:

- Suppressing open determinations - species determined in open nomenclature ("sp.") or species without an author are not included in the calculations.
- Checking the LSUPPRESS field in LOCALITY - locality records marked suppressed are not included in the calculations.
- Checking the CSUPPRESS field in CITATION - citation records marked suppressed are not included in the calculations.
- Setting limits for the age of localities (Ma) - localities of an imprecise age should be excluded. The inclusion in the analysis of Cretaceous localities dated as "Neocomian" or "Senonian" may blur the results. The localities considered in the analysis should therefore be restricted. Past experience shows that the extent of the longest stage should fix the limit. In the Cretaceous this would be the Albian. Its upper boundary is 98.9 Ma, its lower boundary 112.2 Ma. The difference (112.2-98.9) is 13.3 Ma. The value to be set is thus 13.3. All localities of an age exceeding 13.3 (*locage.bottom.value* - *locage.top.value*) should be suppressed in the calculations. Localities just dated "Albian" (without a more precise reference) should, however, be included as their extent is exactly 13.3 Ma.

In calculating the stratigraphical extent of genera the following options are provided:



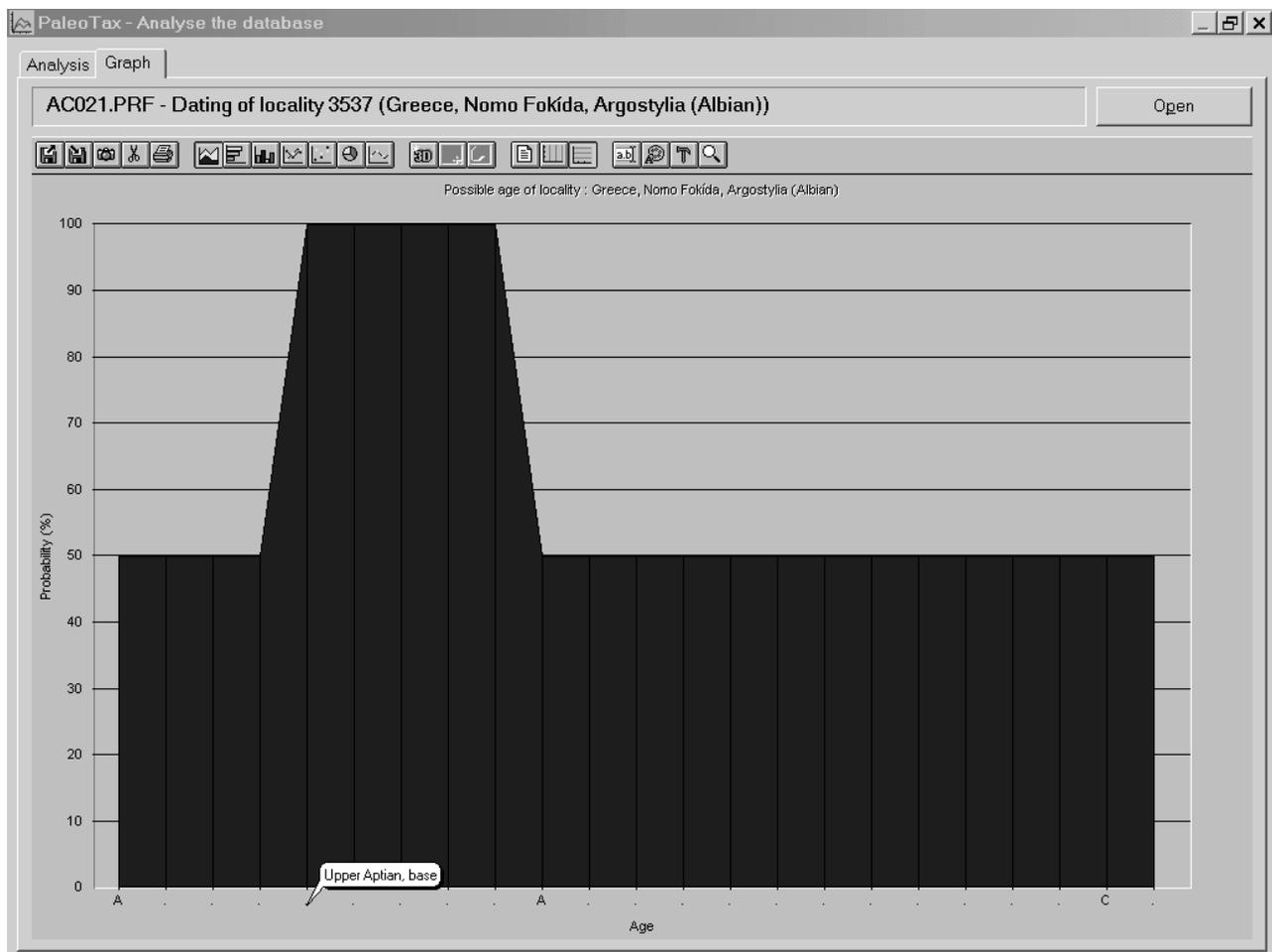
- Suppressing monospecific genera – genera comprising only one species are suppressed in the analysis.
- Suppressing open determinations – species determined in open nomenclature or species without an author are also skipped.

A reduced counting method which considers the stratigraphical extent of genera and species is used in the calculation so as to avoid a bias. The extent of the genus X (or the species Y) of -100 Ma to -80 Ma is only counted from the age boundary -100 Ma to -80.1 Ma (or the next boundary lower than -80 Ma). The age boundary -80 Ma is not included in the count. By applying this method, peaks are avoided at boundaries marked by faunal turnover (i.e. the disappearance of many genera and the appearance of new genera at -80 Ma).

With most programs the results are outputted as a simple text file (AWnnn.DAT). Decimals are normally separated by a point. But as some programs in some countries may expect a comma, you can optionally set a comma instead of a decimal point.

Function of the chart program

When a program has been successfully executed, the result is automatically presented as a graph in the second card:



In the box on top you can see the name of the chart. You can load this or any other chart just by pressing **Open**. The chart program allows modification of the chart (for explanation see below).

The x-axis of the chart normally represents the time. By double clicking on one of the points or labels you can see the full description of this age boundary (as above for the base of the Upper Aptian).

The chart program offers the following options for modification of the graph:



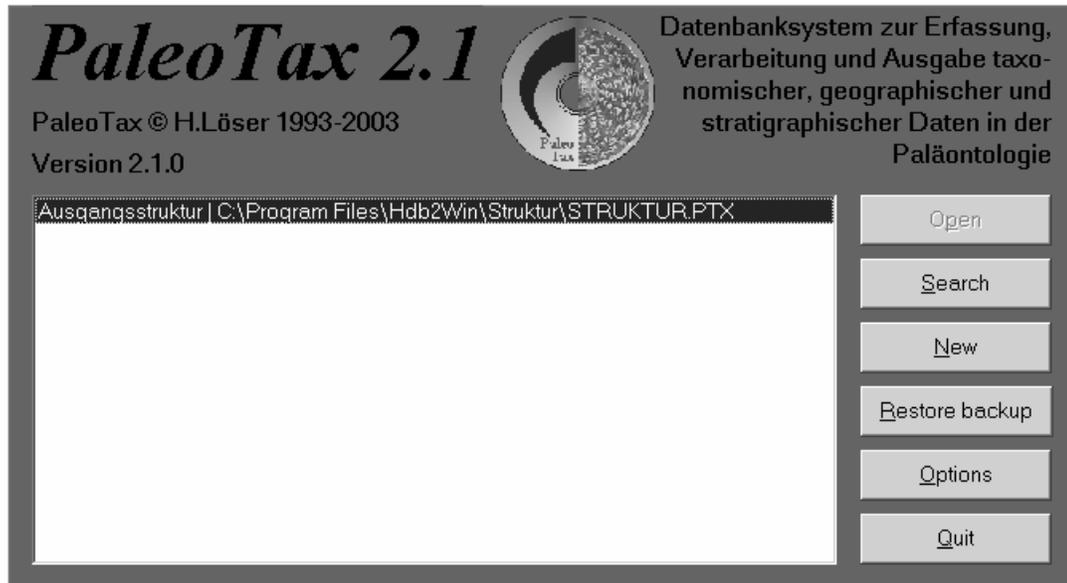
- 1 – Saving the chart in an internal format.
- 2 – Loading a chart (internal format).
- 3 – Copying the chart as a bit map for the clipboard.
- 4 – Copying the numerical chart data as text for the clipboard.
- 5 – Printing the chart.
- 6 – Displaying the chart as an area chart.
- 7 – ... as a horizontal bar chart.
- 8 – ... as a vertical bar chart.
- 9 – ... as a line chart.
- A – ... as a point chart.
- B – ... as a pie chart.
- C – ... as a curve chart.
- D – Setting the 3D effect on or off.
- E – Works only if 3D is on. Allowing you to modify chart orientation.
- F – Works only if a bar, line or point chart was selected before. Changing the 3D view.
- G – Showing the description of the x-axis in detail.
- H – Showing the vertical lines.
- I – Showing the horizontal lines.
- K – Allowing you to change the labels of the chart.
- L – Allowing you to change the font, font size, colour, etc. of the labels.
- M – Providing more tools (displaying a choice of colours and patterns, data editor).
- N – Allowing you to modify the view options.

The chart program is copyrighted by Software FX, Inc.

The analysis programs

The programs with which you can analyse your data have to be installed as service releases (a first pack comes along with the SR5). Documentation will be made available by PDF files: the program package of PaleoTax 2.1 comprise also two PDF files (AUSW1_D.PDF in German and ANALY1_E.PDF in English) which are copied to the Hdb2Win directory. More programs will be offered in the future. Compare the PaleoTax web site or subscribe to the listserv.

6. The PaleoTax database menu



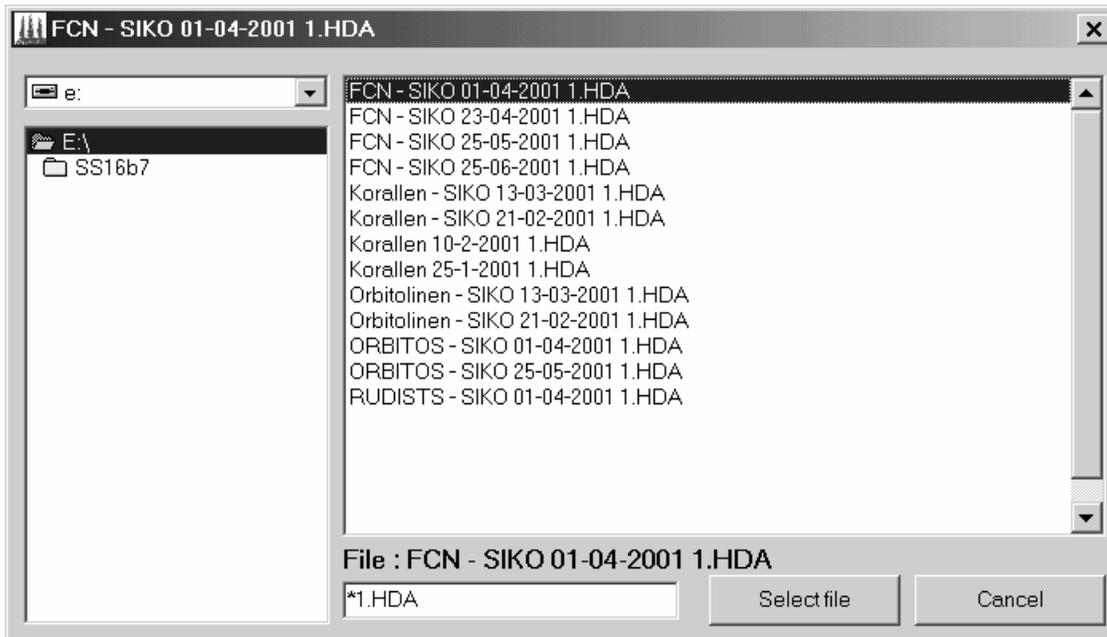
This chapter describes all the functions offered by the PaleoTax application, with the exception of the **Open**, **Search** and **New** buttons, which have already been dealt with.

6.1. Restoring backup copies

Restoring backup copies is useful if your computer is damaged or has been stolen or if you work with two computers at the same time.

By clicking on **Restore backup**, the following form appears:

Then you click on **Search** in the first line to find the (first) archive:



The file you need to select should have the suffix "1.HDA", indicating that it is the first archive (of at least two). No other files are normally displayed for selection. On selecting the file, you can modify the directory under which you want to create a new directory for the backup. The current directory does not normally have to be changed.

The name of the new directory may be modified from "PTXNEW" to any name you like. But the new name should comprise fewer than nine characters and should not contain any spaces. No directory of this name should exist. Click on **Restore now**. Once the backup has been successfully restored, enter its description for the database. Its name will now appear in the database list.

Afterwards you should rename the directory name to the original name. Otherwise references, documents and graphs cannot properly assigned to your tables.

6.2. *PaleoTax options*

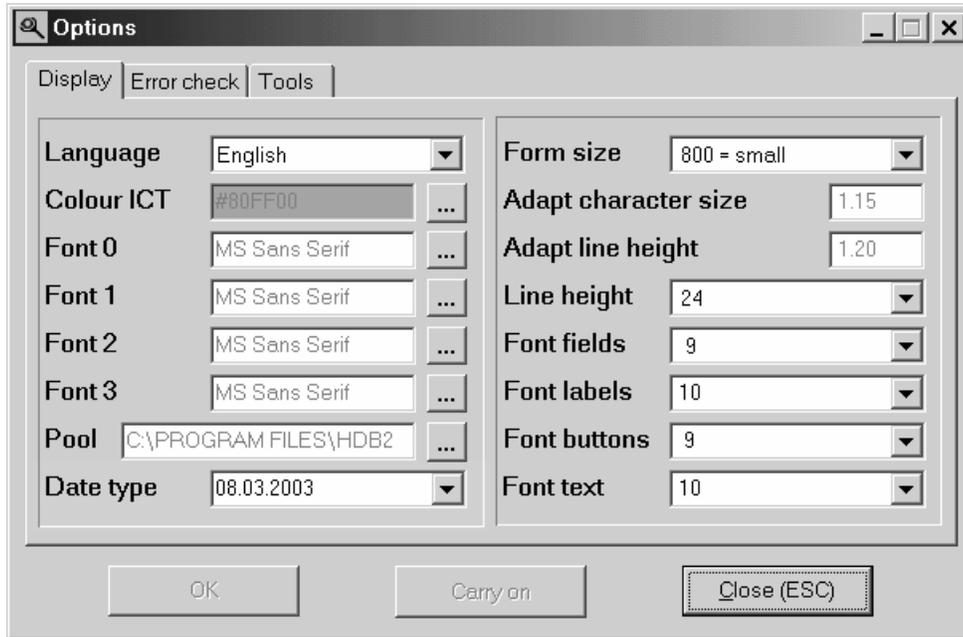
The PaleoTax options comprise not only opportunities for adapting the program to your personal needs but also a number of very powerful tools. Be careful about handling these tools as their improper use may seriously damage your data.

Options and tools are placed on three file cards. The first card controls the display, the second error handling and reporting, and the third contains some tools.

The illustration shows the options as set at the start of the system.

6.2.1. Display

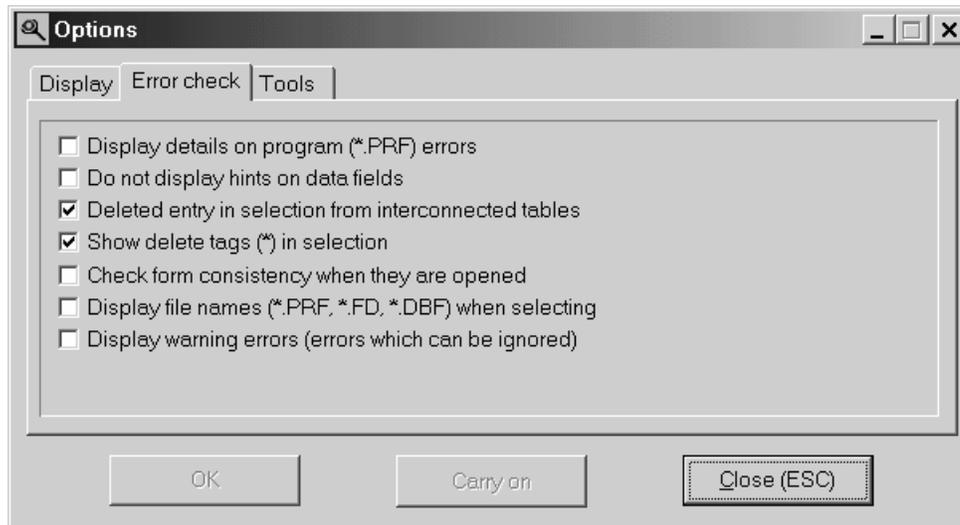
The first card is mainly dedicated to the display of data in the edit forms. With the exception of fonts and form size, the values generally do not need to be modified.



- Language - select the language you would like to work with.
- Colour ICT - select the colour of the fields for interconnected tables.
- Font 0 .. Font 3 - select fonts (see [Special fonts](#); p. 25).
- Pool - select the pool directory (see [8.1. Data pooling](#); p. 59).
- Form size - select the size of the edit form. Small (800*600) and large (1024*768) forms are available. The size of fonts and fields is automatically adapted.
- Adapt character size - all fonts are multiplied by this value if the form size is changed from small to large.
- Adapt line height - the height of a line in an edit form is multiplied by this value if the form size is changed from small to large.
- Line height - standard height of a line.
- Form fields - standard font size (in pt) of text in the edit form.
- Form labels - standard font size (in pt) of labels in the edit form.
- Form buttons - standard font size (in pt) of buttons in the edit form.
- Form text - standard font size (in pt) of notes in the edit form.

6.2.2. Error handling

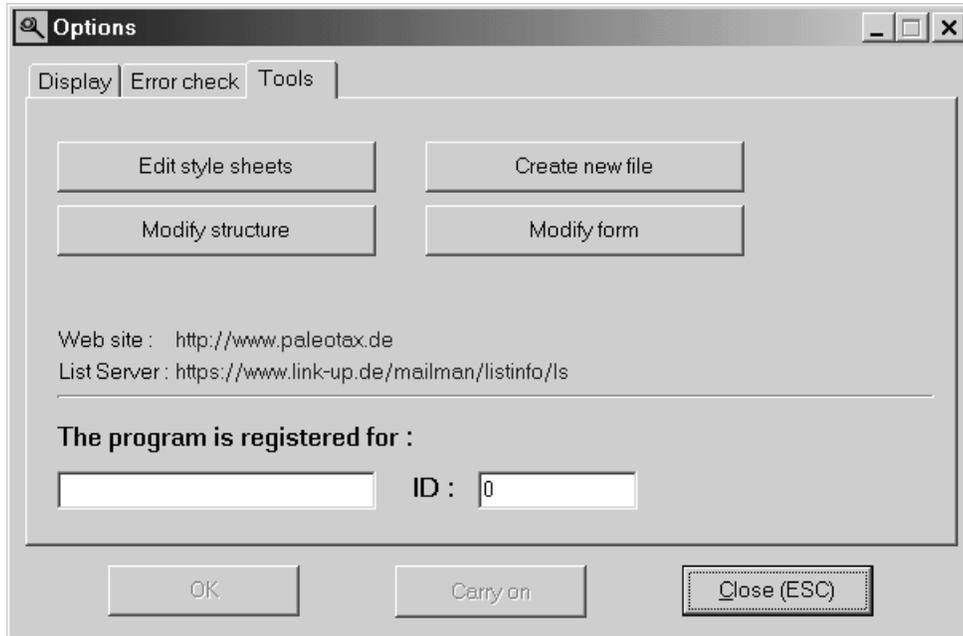
The second card is dedicated to error handling and contains some switches. You do not normally have to modify anything, unless you have been prompted to do so.



- Displaying details of program (*.PRF) errors –
If errors occur in the Interpreter programs,
 you are only notified by a brief message.
 you are informed more fully.
- No displaying hints in data fields -
 program shows hints / indications in edit forms.
 hints / indications are suppressed.
- Showing unused entries from interconnected tables in the selection -
 program does not show unused records.
 program shows also unused records from interconnected tables.
- Deleting tags (*) in the selection -
 program does not mark unused records.
 program marks them with an asterisk.
- Checking consistency of forms when opening them -
 form consistency is not checked when form is opened.
 form consistency is checked when form is opened. After manual modification of a form, this switch may temporarily turned on.
- Displaying file names (*.PRF, *.FD, *.DBF) when selecting files -
 only a description – not the file name – is usually displayed during selection of files.
 files are displayed with their full name and description.
- Displaying warning errors (errors which can be ignored) -
 warning errors are suppressed.
 warning errors are displayed.

6.2.3. Tools

The third card contains various tools and makes it possible to enter registration data. Registered users have access to more functionality (e.g. TreeView; see [Appendix 11 - Information on your project](#); p. 151).



All the four buttons above are very powerful tools that may help you to solve individual problems, but they may also cause big problems. Be careful and always make backup copies before using any of them. To be on the safe side, PaleoTax keeps the previous versions of modified files. An AUTHORS.DBF table is backed up as AUTHORS.~DBF1. If this file already exists, AUTHORS.DBF is renamed AUTHORS.~DBF2. The same applies to the project files (*.DB2) and edit forms (*.FRM). But take care: if the task "Remove temporary files" is activated in the process of reorganization, these files will be deleted.

Editing RTF style sheets

Style sheets (see next page) are used to format all kinds of files by converting them into the RTF format. You may, of course, use the style sheets also with your preferred text processor. In some cases it could, however, be easier to modify the style sheet, especially if you have to deal with many formats. To modify an existing style sheet or to create a new one, you have to use this tool.

Reading a file (**Search**) or entering a new target file. In a new file two formats are always predefined and cannot be modified or deleted. These are the standard formats.

Create a new format by choosing the item '< New format >' from the 'Select format' list. Enter the name under 'Name'. Be sure to select the 'Form type'. Enter a previously unused number under 'Number'. Paragraphs and character formats have to be counted separately. Predefined formats always use the number one.

To modify a style sheet, select a format from the 'Sel.Format' list. This format can then be modified or changed.

Do not forget to save the format.

Creating a new table

Creating a new table is very easy. First select the directory. Then enter the file name of the new table (fewer than nine characters), adding up to three alias names. By clicking on **Execute** the file is created and you are automatically forwarded to the next function, modification of data structure (see next chapter) :

Except for one field (which should not be removed), the table is blank. New items may be appended as shown below. When you have completed designing the table, you are forwarded to modification of the edit form (see overnext chapter) to adapt the edit form to your needs.

Modifying the data structure of a table

When you create a new file, the list of fields (in the form above it is on the right) is almost blank. By modifying the structure of a table, you obtain the fields as listed on the right top.

In editing the structure of a file that is part of the PaleoTax standard structure, you cannot modify or remove fields. In files that you have created yourself or added to the PaleoTax files, fields can be modified or removed. To add a field, enter at least its name and type. When the **Add field** button is enabled, you can add the field to the list. It is, however, advisable to enter an alias name as well (right bottom).

Modify structure [X]

Select a table

Genera (GENERA.DBF)

Name of the data field

Name :

Alias (D) :

Alias (E) :

Alias (S) :

Type of the data field

Character, length

Number, length, decimals

Logic Text Graphic

Reference to another table

GNAME [Name/Name/Nombre] C = 40

GAUTHOR [Autor/Autor/Autor] H = 5

GENSTAT [Status/Status/Estado] H = 5

ISSUBGEN [Issubgen/Issubgen/Issubgen] L = 1

EMENDGEN [Emendiert/Emended/Emendgen] H = 5

GENNOV [Nom.nov.pro/Nom.nov.pro/Gennov] C = 40

PGAUTHOR [Vorherg.Autor/Prev.author/Autor previo] H = 5

FAMILY [Familie/Family/Familia] H = 5

SUBFAM [Unterfamilie/Subfamily/Subfamilia] H = 5

FASSIGN [Familie zugew./Family assigned/Familia asignada] H = 5

SFASSIGN [Unt.Familie zugew./Subfam.assigned/Subfamilia asignada] H = 5

GAGE_L [Alter von/First occurrence/Gage_] H = 5

GAGE_U [Alter bis/Last occurrence/Gage_u] H = 5

GNOTE [Notiz/Note/Nota] M = 10

GA_SORT [Sortierung/Sort key/Clasificador] N = 5

NUMSPEC [Anzahl der Arten/Number of species/Número de especies] N = 5

GPICT [Bild/Picture/Ilustración] G = 64

Modify structure [X]

Select file.

Sections (SECTIONS.DBF)

Name of the data field

Name :

Alias (D) :

Alias (E) :

Alias (S) :

Type of the data field

Character, length

Number, length, decimals

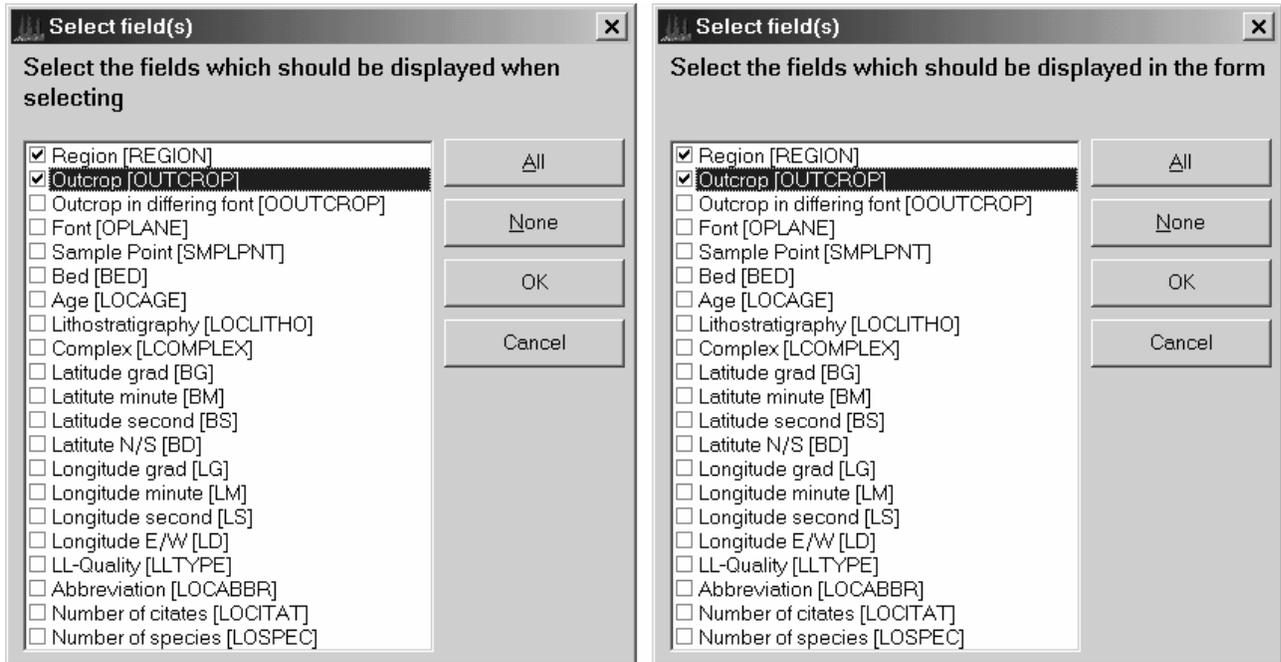
Logic Text Graphic

Reference to another table

KEYFLD [Keyfld/Keyfld/Keyfld] N = 10

N: NAME [Name/Name/Nombre] C = 50

If you choose the 'Reference to another table' field type, be prepared to select a table from the same directory as well as one or two data fields that will be displayed in the form and when selecting:



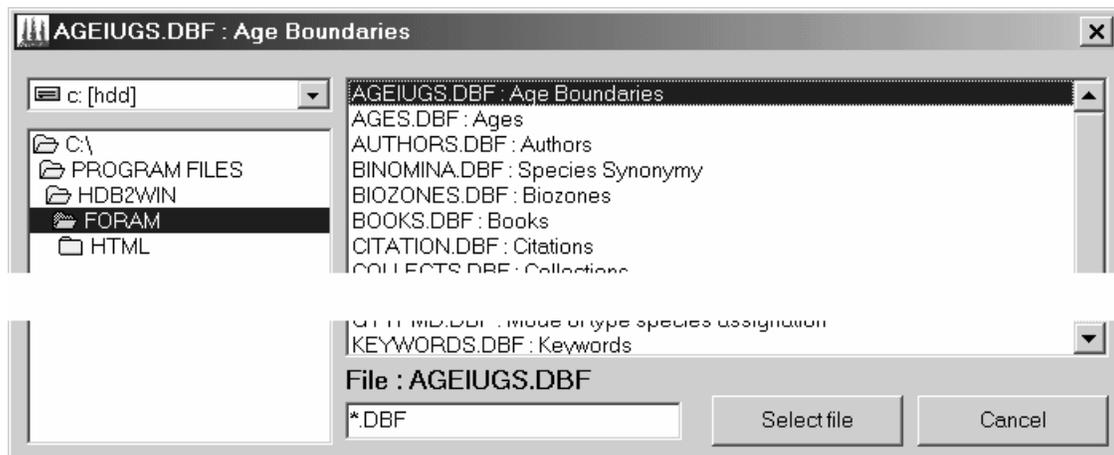
Do not forget to click on **Add field**.

To remove fields, just mark them one by one and click on **Remove field**. You may also modify fields that you have just created. Modify the field concerned and click on **Modify field**.

When you have done your share towards creating or modifying, press **Execute** and PaleoTax will create or modify all files that need doing it. Then you are usually forwarded to modification of the edit form (see next chapter).

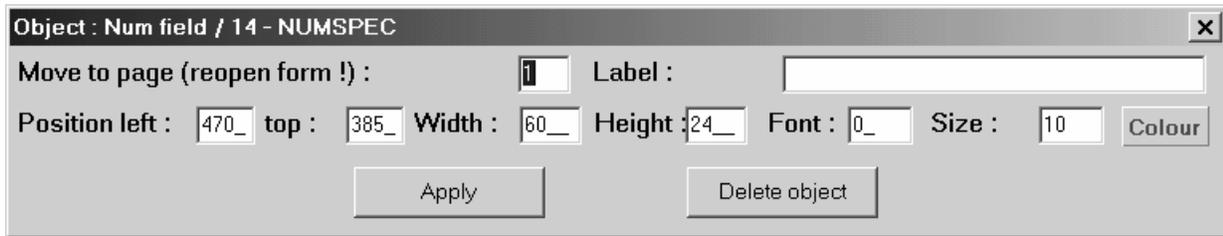
Modifying edit forms

When you select this function to modify the edit form, you first have to select a table (or should have been forwarded from modification of the data structure):



Once a table has been selected, the edit form is displayed on the screen. Fields, labels and frames can be moved, resized or removed. The label text, the font of labels and fields, its size and colour can all be changed.

First mark an object (such as a field, a label, a frame). Move it by using the cursor keys. For a five pixel movement use the **Shift** key. To enlarge an object, press **Ctrl** and use the **→** and **↓** keys, to make it smaller, use the **←** and **↑** keys. The values may also be entered into the small window at the bottom of the screen:



Do not forget to click on **Apply**. You may also change the font number, font size and the colour of labels and fields. If you want to change the position of an object from one page to another, change the page number, click on **Apply**, click on **Save** (in the edit form) and reopen the form. If there is only one page in the edit form, you cannot move a field to page three, only to page two. This page will be automatically created when PaleoTax notices that you have moved an object to this page.

Be wary about deleting objects as you cannot restore them (but you can rename the latest backup file). When ready, do not forget to click on **Save** in the edit form.

7. Help, errors!

Since it is a scientific fact that computer programs cannot be written without errors (as the author was recently told by a German geology professor), the author has tried to integrate some into PaleoTax. Errors may have various reasons. The concept of finding their place of origin and tracing their way through the program code was designed with great care so as to locate and remove them quickly. Your support in sending your error reports to the author will be greatly appreciated. In the following the various errors are explained in detail.

7.1. Internal errors

Internal errors are programming errors and are displayed as follows (sorry, but an English error version is not available):



Close the program immediately, if possible. A copy of the message may be transferred to the clipboard via **Alt+PrtScr** and from there into any text document (such as WordPad). This, and the conditions which caused the error may together help to eliminate it. It is important to know whether the error may be reproduced, i.e. whether it will occur again in the same place or as a result of the same action.

7.2. Program errors

Program errors are caused by a mistake in the program or in a parameter file. They are reported as shown on the right.

Although they are tiresome, they are not dangerous to your data. Report the errors as described above.

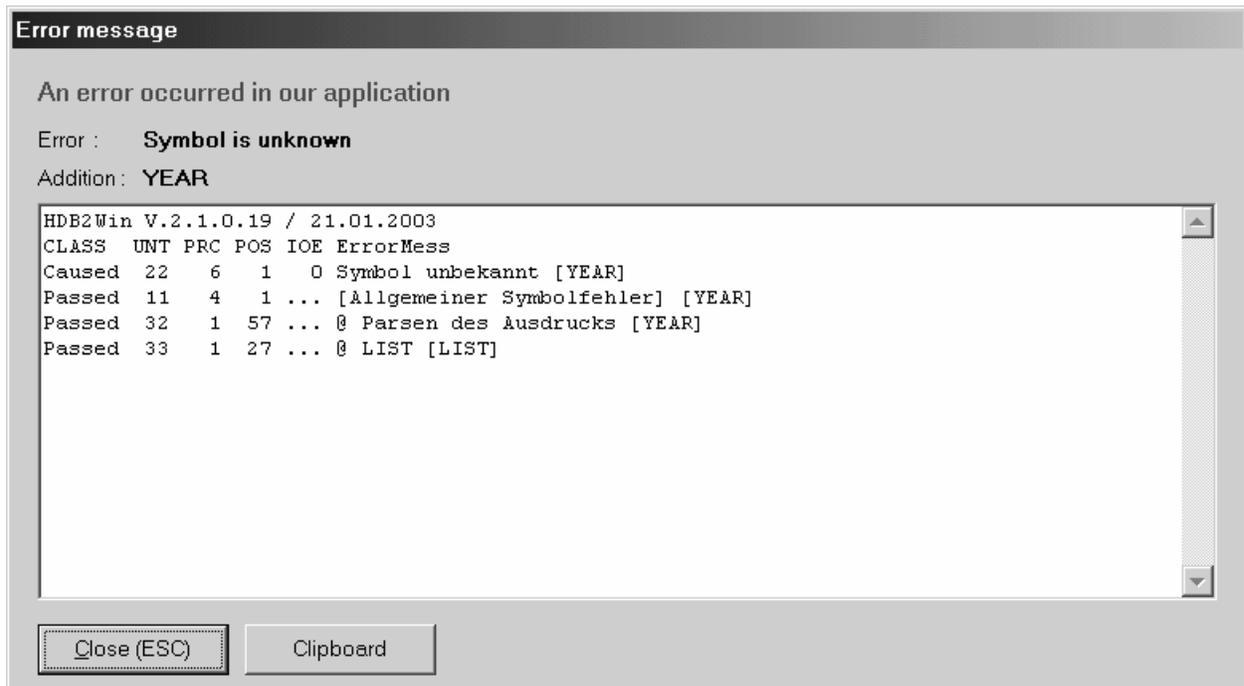


7.3. Operating errors

Operating errors are caused by incorrect operations or by errors in parameter files. They are displayed as follows:



"Error" obviously provides a description of the error and "Addition" an additional explanation. Under addition you may find a file name, the name of a symbol or data field, or it may be left blank. In the above example the data field *Year* was to be listed in the AUTHORS table. But it turned out that there was no such field. To obtain more information click on **Details (Enter)**. You will be informed where the error occurred and which modules it passed to reach the screen:



This may be a bit cryptic since the explanation is moreover in German, but it provides detailed information on what exactly happened. Sometimes the list is very long.

CLASS stands for the error class, UNT for the module which caused the error, PRC for the procedure, POS for the position and IOE indicates an additional input-output error. "ErrorMess" explains the error. To send this information to the author, please copy the contents of the window to the clipboard by clicking on **Clipboard** and insert it from there into an e-mail.

7.4. Interpreter's errors

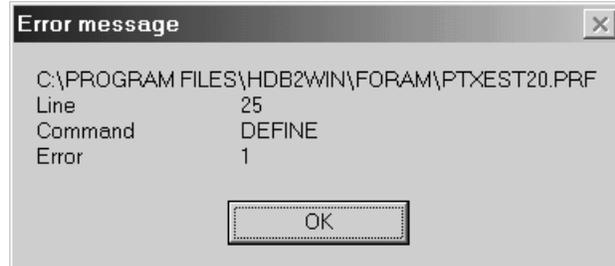
Even though invisible, an Interpreter works in the background and is responsible for many things, such as filling a list box (synonymy list, species list of the locality), creating the global index, repairing files, output data and, of course, for producing the catalogues and analysing the database.

During its compilation as well as during execution this program may also cause errors.

A compilation error is reported as follows:



Errors occurring during execution are displayed as follows:



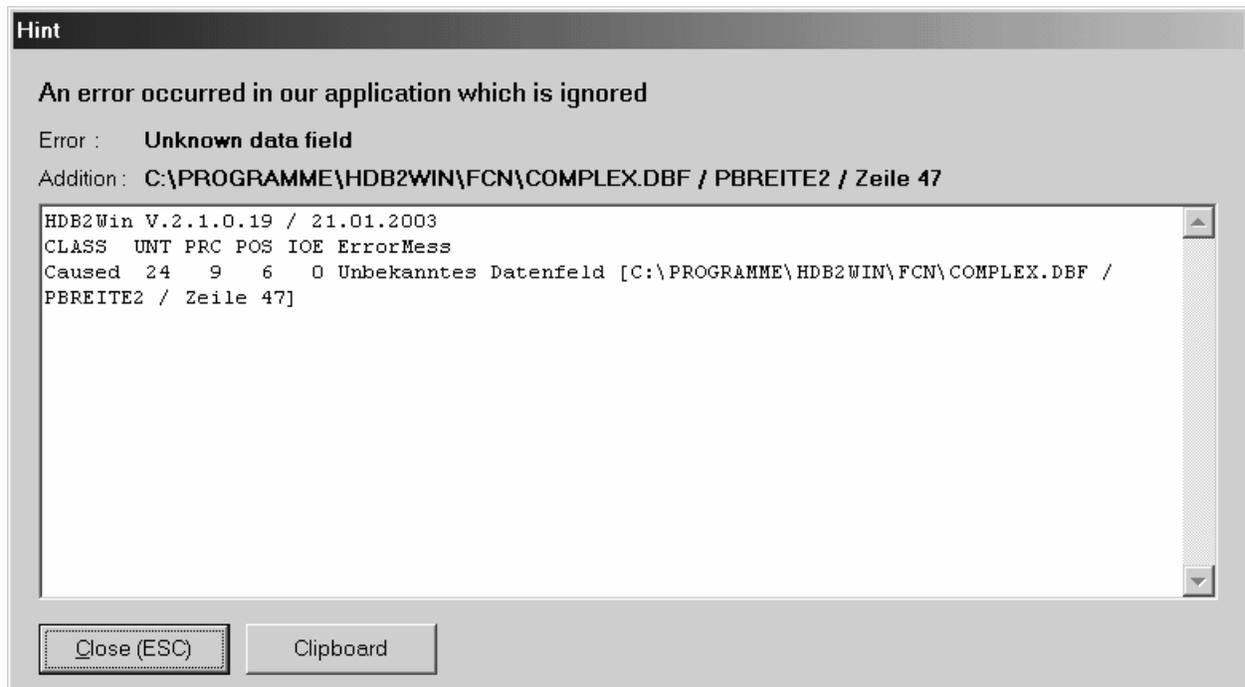
After setting the "Display details on program (*.PRF) errors" switch (see [6.2.2. Error handling](#); p 50) more details are reported:



By clicking on **Details** you are shown details of the error as described above.

7.5. Warning errors

Warning errors are errors which can be ignored since they have been detected and removed by the system. They are only reported if the "Displaying warning errors" switch is activated in the PaleoTax options:



As a rule they only serve to detect configuration errors or parameter file errors.

7.6. How to report errors

Please inform the author about errors. The reports can be easily transferred into the clipboard; they usually contain all the necessary information. Note the circumstances which caused the error and tell me whether the error can be reproduced.

8. Miscellaneous

8.1. Data pooling

Pooling means using tables from two databases at the same time. The user generally starts with one database (here called FIRST) which he uses to record data. Later he decides to create a new database (NEW). It is normal for both bases to contain identical data (at least the COUNTRIES, TOWNS, JOURNALS, but also the AGES, AGE BOUNDARIES or LOCALITIES tables). Therefore it would not make sense to record these data all over again, since the recorded data of the FIRST base can be used (as well, it would not make sense, just to copy the files, because new entries would need to be added in both databases).

To use this option, we have to take the following steps:

1. In our example the existing database is assumed to be C:\PROGRAM FILES\HDB2WIN\FIRST. We create a new database (see [4.2. Creating a database](#); p. 16) based on the basic structure provided in the directory STRUKTUR or on the FIRST database (it does not really matter which). Let us assume that the newly created database is called NEW and is stored in the C:\PROGRAM FILES\HDB2WIN\NEW directory.
2. Now we compare [Appendix 1 - Explanation of the edit forms](#) (p. 62) and decide which tables from FIRST we want to use in the new database. We note down the file names (printed below the name of the table, such as AGEIUGS for AGE BOUNDARIES, PUBLS for JOURNALS, etc.) in a list.

3. We open the NEW database.
4. We click on **Catalogues etc.**, change the search mask below in SH*.PRF and choose the program SHARE.PRF. The program then starts.
5. We answer the first question with **Yes** and also confirm each file in our list that we have noted down before.
6. After checking all files we close the database to apply the changes to the database.
7. Now we click on **Options** in the PaleoTax database menu and select the database directory C:\PROGRAM FILES\HDB2WIN\FIRST behind the 'Pool' label.

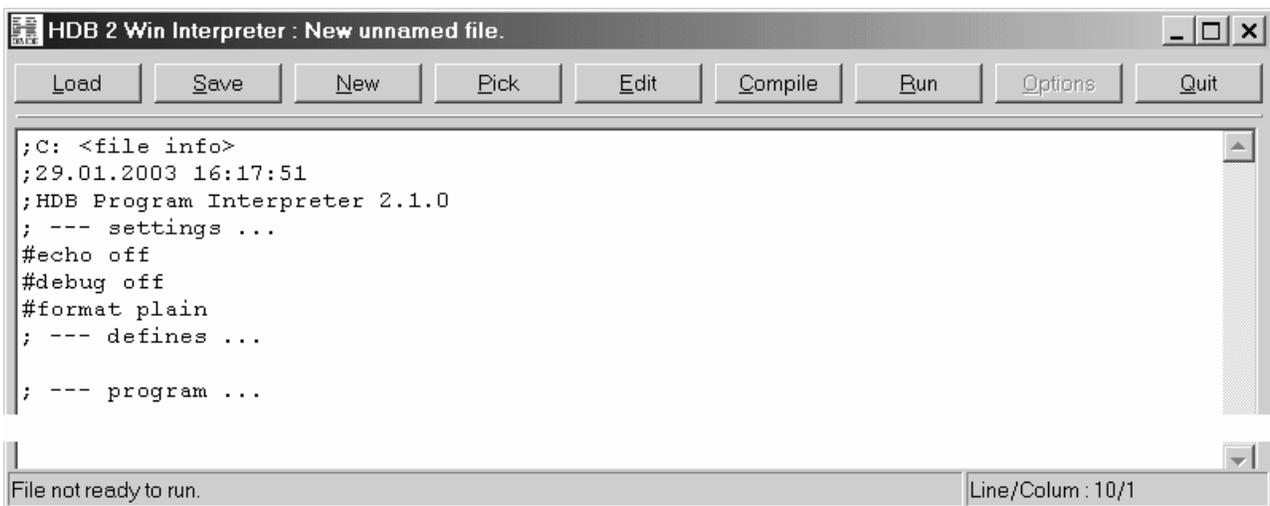
Only one database can be the central data pool. The pools cannot be chained (so that a database x would serve as the pool for y which in turn would serve as the pool for z).

8.2. The Command Line

The commands of the Command Line application are explained in [Appendix 6 - CommandLine](#) (p. 144). This application is not used generally. Terminate the application by typing QUIT.

8.3. The Interpreter

The Interpreter application is a very simple environment for program developing and testing:



- **Load** (loads a program),
- **Save** (saves the current program),
- **New** (creates a new program),
- **Pick** (selects one of the last edited programs),
- **Edit** (edits the program text),
- **Compile** (checks and translates the program),
- **Run** (executes the program),
- **Options** (not implemented),
- **Quit** (terminates the application).

The commands of the Interpreter application are explained in [Appendix 4 - Interpreter commands](#) (p. 130).

9. Service Releases

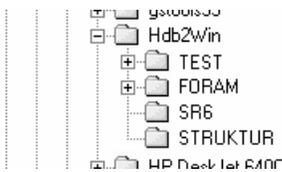
A service release corrects errors in forms and improves programs or installs new program versions (as needed, for example, for catalogues). Data are not modified. Nor is the (HDB2WIN.EXE) program affected.

Service releases help to maintain your database's current status in terms of forms, programs and driver files. Your wishes (for example, for a special sort mode or for changes in a program for catalogues) are not immediately fulfilled by a modified file but integrated into the next service release.

All service releases have to be installed. You cannot install SR8 if you have not previously installed SR7. The installation of service releases also depends on the version of PaleoTax 2.1 you have installed. The first version of August 2003 automatically brings you up to service release level 5. If you have downloaded and installed a later version of PaleoTax (for instance 2.1.3), you only have to install the service releases issued after the release of program version 2.1.2. All this is explained on the PaleoTax web page (download area).

Installation of a service release (assuming you want to install SR6)

1. Close Hdb2Win.
2. In the HDB2WIN path create a new directory and name it SR6. Copy the files from the ZIP archive (SR6.ZIP) into this path. You will obtain a structure of directories like this:



3. Copy the file HDB2WIN2.MSG from the SR6 path into the HDB2WIN path (overwriting the old file).
4. Start Hdb2Win, selecting the Interpreter application. Load the SR6.PRF program from the SR6 path (**Load**). Start the program (**Run**) and follow the instructions: select the path names of your data (in the above structure this would be FORAM or TEST).
5. If you have more than one database, start the program again. When you try to apply the program to the structure path (STRUKTUR), you receive an error message. Each database created from the basic structure has the original status, and all service releases published in the meantime have to be applied to the new database.
6. Terminate the Interpreter with **Quit**.

In case of trouble

Before applying the service release, a VOR_SR6 directory ("pre-SR6") is created by the program. All files to be modified or replaced are copied into this directory. Should any problems arise, just copy these files back into your database directory and delete the VOR_SR6 directory with all the files.

You cannot make any mistakes. Once the SR is installed, you cannot install it again (unless you have previously copied the files back from the VOR_SR6 directory into your database directory and deleted the directory as described above).

If you have any questions, please always inform the author about your last installed SR (you can find this in the history file *.DOK in your database directory - the asterisk stands for the name of your database). After opening a database you find the number of the current service release level at the bottom right of the PaleoTax main menu.

Appendix 1 - Explanation of the edit forms

In this appendix all edit forms are explained. Each form corresponds to a table and each table to a form. Forms / tables are described as follows:

Name of the table

FILE NAME

"Name of the table" is the name as used in the text of the manual, in the forms or dialogues. It is printed in the text in SMALL CAPITALS. The FILE NAME in the next line is the name of the file (table as well as form) as used in the operating system under which the file is stored on your hard disk. This name is printed in LARGE CAPITALS.

Belongs to	The complex to which the table belongs. It may be Literature, Geography, Stratigraphy, Material, Taxonomy, Citations.
Used by	Indicates the tables referring to this table.
Refers to	Indicates the tables to which this table refers.
Contents	Describes the contents of the table.
File cards	Indicates the number of file cards described below. You can move from one file card to the next by pressing Ctrl + Tab .

- Description of the file card / of the second/third file card

The illustration shows the file card; the text below describes the data fields, buttons and lists. The text refers to the labels in the file card. If a field is green (here light grey) rather than white, it refers to another table. Generally data are only recorded in the first card; all the following cards just provide additional information.

Field : Explanation of data fields. If the name of a field is underlined, recording is highly advisable (assuming that the table is used at all).

Look up this appendix whenever recording data. This is the only way to learn which data have to be recorded in which field. A systematic study of this appendix is pointless. Just open the page of the table you are dealing with at the moment.

Do not hesitate to contact the author when you feel you have difficulties. Let me have your proposals for new fields or list boxes, your ideas for improving the edit forms. You can copy the screen by pressing **Alt**+**PrtScr** and insert the picture into a text file. Explain your ideas by examples. Please do not send DOC files. Always use ZIPped RTF (Rich Text Format).

Age boundaries

AGEIUGS

Belongs to	Stratigraphy
Used by	AGES, SPECIES, GENERA
Refers to	-

Contents Name and value of an age boundary. An age boundary is a point in time and not a time interval like an age in the AGES table. An age is an interval between two values referring to the AGE BOUNDARIES table.

This table is an important part of the database and should be maintained when recording localities. It is a good idea to build it up (together with AGES) before recording other data.

File cards 1

- Description of the form

The screenshot shows a window titled "Age boundaries : 1/158 = 112.200 - Alban, base". Inside the window, there is a tab labeled "Standard" and a copyright notice "© HLK 2003". The main area is titled "Age boundaries" and contains a list of fields with their corresponding values:

- Name : Alban, base
- As base : Alban, base
- As top : Aptian, top
- Value : 112.20
- Genera : 14
- Species : 50
- Estimation 1 : 287
- Estimation 2 : 0

At the bottom of the form, there are two buttons: "Note" and "References".

Name : Name of the age boundary. This name is generally the base of a chronostratigraphic, biostratigraphic or lithostratigraphic unit, such as "Base of the Cenomanian" or "First occurrence of *Acanthodiscus radiatus*".

As base : Denomination of the base of the boundary, mostly identical with the name. This field is only used in some catalogues.

As top : Analogous to the "As base" field, this is a denomination of the boundary when it serves as the top. An age boundary can be defined as the first occurrence of an index fossil but also as its last occurrence. For instance, the base of the dispar zone is at the same time the top of the inflatum zone. The same applies to lithostratigraphic and chronostratigraphic units. This denomination can be recorded in this field. A range "Alb, mammilatum base to Alb, inflatum top" sounds clearer than a range "Alb, mammilatum base to Alb, dispar, base". If the field is not used (= not filled in), data can be taken from the Name field.

Value : Datation in -Ma (always record positive values).

Estimation 1 : First field for estimation, not relevant for data recording.

Estimation 2 : Second field for estimation, not relevant for data recording.

Note Optional recording of a text note.

References Click on this button to assign publications to this record. This may provide more detailed information on age boundaries.

Ages

AGES

Belongs to	Stratigraphy
Used by	LOCALITIES, LITHOSTRATIGRAPHY, COMPLEXES
Refers to	AGE BOUNDARIES, PUBLICATIONS, BIOZONES
Contents	A chronostratigraphic or biostratigraphic time interval. An age has defined upper and lower age boundaries (top and bottom). This table is important and should be carefully maintained. Building up this table before recording other data is a good idea.
File cards	1

- Description of the form

The screenshot shows a software window titled "Ages : 39/333 = Alb, dent - inflat". Inside the window, there is a tab labeled "Standard" and a copyright notice "© HLK 2003". The main content area is titled "Stratigraphical ages" and contains a form with the following fields:

- Name : Albian, dentatus to inflatum zone
- Top : U.Albian, dispar, base = 100
- Bottom : M.Albian, dentatus, base = 106.35
- Biozone (from) : dentatus
- Biozone to : inflatum
- Sort : 316089428.

At the bottom left of the form, there is a button labeled "Note".

- Name :** Denomination of the unit. This may be a layer, a biozone or a (sub-) stage. The length of the time period varies because it depends on the accuracy with which the recorded localities were dated.
- Top :** Upper boundary of the unit, referring to a record in the AGE BOUNDARIES table (reference to an absolute value).
- Bottom :** Lower boundary of the unit, referring to a record in the AGE BOUNDARIES table (reference to an absolute value).
- Biozone (from) :** First or only biozone if the unit correlates with one biozone. Refers to a record in the BIOZONES table.
- Biozone (to) :** Last biozone if the unit comprises at least two biozones. Refers to a record in the BIOZONES table.
- Sort :** Optional sorting of ages. These data may be important for producing a species catalogue and for sorting localities not alphabetically but according to code. The sort code may be calculated as

$$\text{round}(\text{stagecode} * 100000 - (100 * \text{bottom.value}) + ((\text{bottom.value} - \text{top.value}) * 10)).$$

Stagecode is a four-digit value which has to be defined in a separate field. The first cipher decodes the system (older systems have a lower value), the second the series and the third the stage. The last cipher is always 1, except when the age represents a stage (set to 0). See example to the right.

Ages : 347/347			
Record	AGENAME	AGESORT	STAGECODE
28	Upper Rhaetian, crickmayi zone	133079200	1331
26	Rhaetian	133079313	1331
227	Jurassic	199980045	2000
85	Liassic	209979686	2100
190	Hettang	210979468	2110
182	Sinemurian	211979876	2120
86	Lower Liassic	212079534	2121
174	Lower Sinemurian	212079841	2121
178	Pliensbachian	212980527	2130
173	Lower Pliensbachian	213080508	2131

Note Optional recording of a text note.

Authors

AUTHORS

Belongs to Literature.

Used by SPECIES, BOOKS, GENERA, PUBLICATIONS.

Refers to -

Contents Authors and editors of articles and books, or authors of taxa in an article published by another author (SPECIES table). The table is maintained through the PUBLICATIONS table.

File cards 1

- Description of the form

Authors : 152/2389 = Orbigny, A.

Standard

Authors © HLK 2003

Last name : Orbigny

First name : A.

Add (de/von) : de Before vowel (d') d'

Original :

Font : 0

Note

Name : Name of the author

First name : Abbreviated first and middle names of the author

Add (de/von) : Addition of nobiliary particles (von, de, van) between the first name and family name.

Before vowel (d') : Apostrophized family name. In most cases identical with the previous field, but not if the family name starts with a vowel (as in ORBIGNY, see picture). In this case the field has to be filled in for proper output in catalogues.

Original : Author's original name, using a special character set (East European, Cyrillic) for both the first and family name:

Last name	:	Eliasova	
First name	:	H.	
Add (de/von)	:		Before vowel (d')
Original	:	Eliášová, H.	
Font	:	2	

The font should be selected beforehand (see [Special fonts](#); p. 25); the number in the Font field refers to the font selected. The function key **F7** copies the name of the author into this field; the function key **F2** displays a character map.

Font : Enter the number of the font by which the name should be displayed in the "Original" field.

Note Optional recording of a text note.

Biozones

BIOZONES

Belongs to Stratigraphy.

Used by AGES.

Refers to -

Contents Biozones, i.e. the denomination of biostratigraphic zones or subzones named after index fossils.

This table should be maintained if the age data (see AGE BOUNDARIES table above) use biozones. These data are only important for output and catalogues, not for data analysis.

File cards 1

- Description of the form

Biozones : 2/69 = saxbii

Standard

Biozones © HLK 2003

Name : saxbii

Name : Contains the name of the biozone.

Books

BOOKS

Belongs to Literature.

Used by PUBLICATIONS.

Refers to	AUTHORS, PUBLISHING HOUSES.
Contents	Books, separate articles recorded in the PUBLICATIONS table. The BOOKS table is maintained through recording data in the PUBLICATIONS table.
File cards	1

- Description of the form

The screenshot shows a window titled "Books : 252/259 = Zanina: Novye vidy drevnikh rasteniy i bespozvonochnykh SSSR". Inside the window, there is a form with the following fields:

- Editor :** Zanina, I.E.
- 2.Editor :** (empty)
- 3.Editor :** (empty)
- Title :** Novye vidy drevnikh rasteniy i bespozvonochnykh SSSR
- Original title :** Новые виды древних растений и беспозвоночных СССР
- Font =** 1
- Publ.House :** (empty)
- Pages etc. :** 372 pp., 75 pls.

Editor :	Editor of the book, refers to a record in the AUTHORS table.
2nd Editor :	Second editor, refers to a record in the AUTHORS table.
3rd Editor :	Third editor, refers to a record in the AUTHORS table.
Title :	Title of the book.
Original title :	Title of the book, using a special character set. The font has to be selected beforehand (see Special fonts ; p. 25); the number in the Font field refers to the font selected. The function key [F7] copies the name of the book into this field; the function key [F2] displays a character map.
Font =	Enter the number of the font by which the name should be displayed in the "Original title" field.
Publ. House :	Select the publishing house that published the book. Refers to a record in the PUBLISHING HOUSES table.
Pages etc. :	Number of pages and plates in the book.

Citations

CITATION

Belongs to

Citations.

Used by

OCCURRENCES, FIGURED SPECIMENS.

Refers to

PUBLICATIONS, SPECIES SYNONYMY.

Contents

The table contains citations in the literature of species that are described, depicted or simply listed. This is practically the most important table of the whole system and you will work with it most of the time. Matters of misidentification and synonymy are dealt with in this table.

File cards

3

- Description of the form

Citations : 6010/23855 = Fromentel (1877a) : Hydnohora Styriaca

Standard | Synonymy | Search species

© HLK 2003

Citations

Source : Fromentel, E. (1877a)

Citation : Hydnohora Styriaca

Pages, illustr. : p. 468, pl. 120: 2

Listed :

Original species : Monticularia styriaca Michelin (1847)

Current species : Monticularia styriaca Michelin (1847)

Revised :

Excluded :

Personal species :

Note Localities Illustrations Suppress

Source : Contains the reference which is the source of the citation. Refers to a record in the PUBLICATIONS table.

Citation : Contains the original citation from the reference.

Pages, illustr. : Pages, plates, figures contained in the citation.

Listed : Should be marked if the citation is just listed, not described or depicted.

Original species : Indicates the species to which the citation was originally assigned (in the sense intended by the author of the Source). Refers to a record in the SPECIES SYNONYMY table. This field should always be filled in and should not be modified later.

Current species : Indicates the species to which the citation is currently assigned. The Original species and the Current species are generally identical (as above) as long as the citation is not assigned to another species. Refers to a record in the SPECIES SYNONYMY table. Press (F7) to copy the species from the Original species into this field. The field should always be completed and should not be manually modified later. Use the functions in the second file card.

Both the Original species and the Current species should be filled in. If one field is not filled in, the system will suggest that you copy the value of the completed field into the empty field.

Revised : If a revising author is of the opinion that the material described in the current citation was misidentified, the Current species field should be modified by entering another species (the "correct" species in the revising author's view). The Original species and the Current species fields thus refer to different species. And the Revised field (which was blank before) now refers to the revision (PUBLICATIONS table). If the citation describes a new species, the Current species field should not be modified as this is not a case of misidentification but of species synonymy.

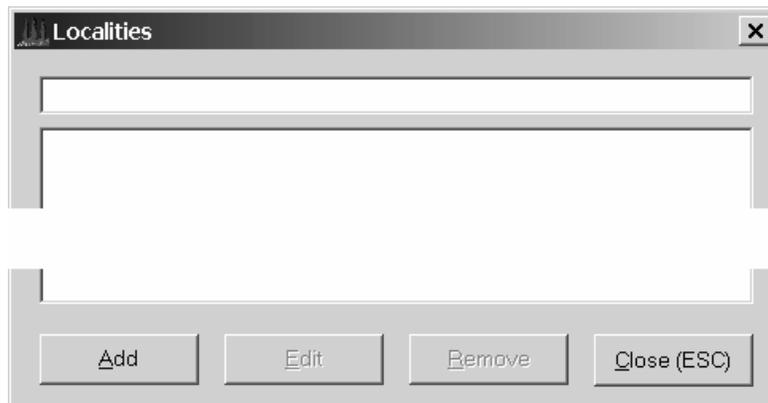
All this can (and should be) automatically arranged by the functions in the second file card. Do not touch the Current species field (except to first create the record) nor the Revised and Excluded fields. Use the functions in the second file card.

Excluded : If the citation is excluded from the original species and not assigned to another, the revising author's reference can be recorded in this field. You can also use the functions in the second file card.

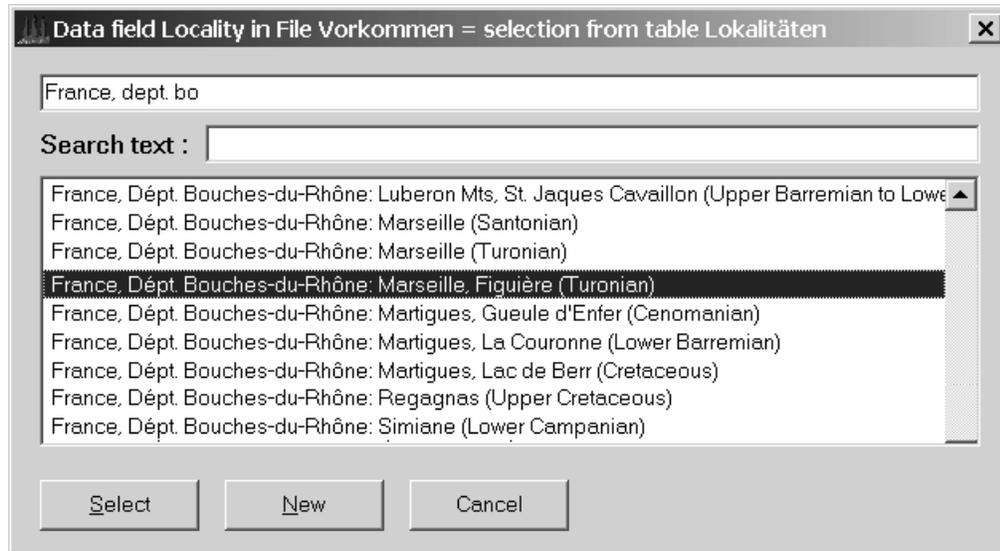
Personal species : Indicates the species which in the user's opinion is the correct one for this citation. Refers to a record in the SPECIES SYNONYMY table.

Note Optional recording of a text note.

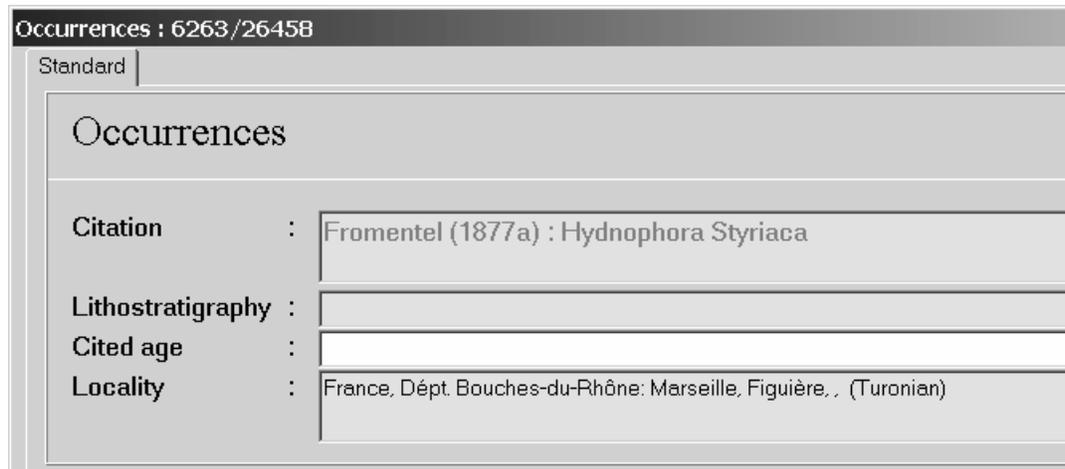
Localities Recording of localities in which the material mentioned in this citation is indicated. When you click on this button, a list of localities to which the citation relates is displayed. The locality list is generally empty when data are first recorded:



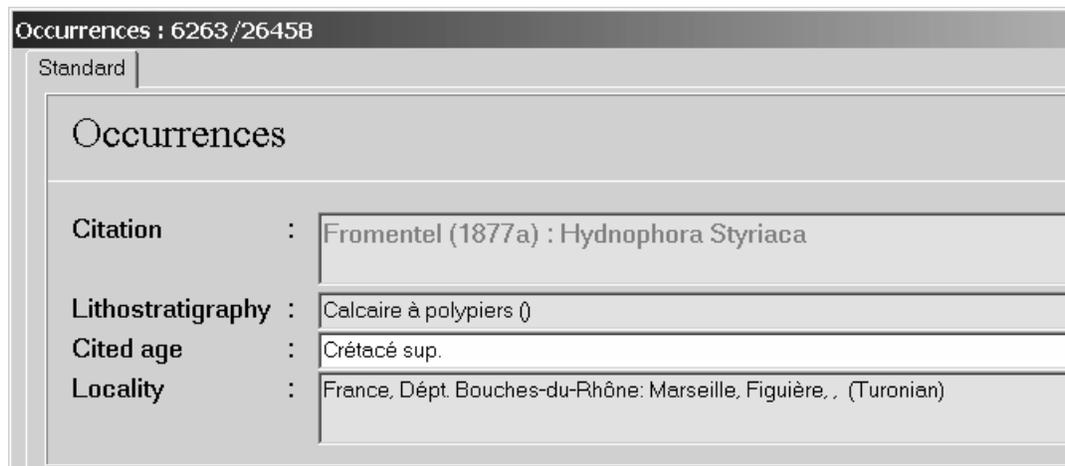
In the field at the top enter the first letter of the country in which the locality is situated. A list of available localities will then be displayed in another form. Enter more letters or append a new locality (**New**) :



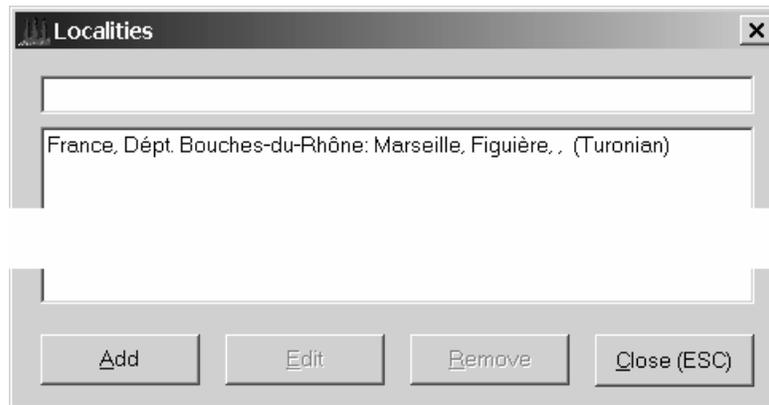
By clicking on a locality and then on **Select**, you create a new record in the OCCURRENCES table which assigns the selected locality to the current citation. This record is immediately displayed:



You can now add the lithostratigraphy and the age cited:



On closing the list and returning to the first list, the selected locality is displayed:



An item that you have selected from this list can be modified by **Edit**. You can remove the entry by clicking on **Remove**. **Add** would guide you directly to an empty (new) edit form of the OCCURRENCES table.

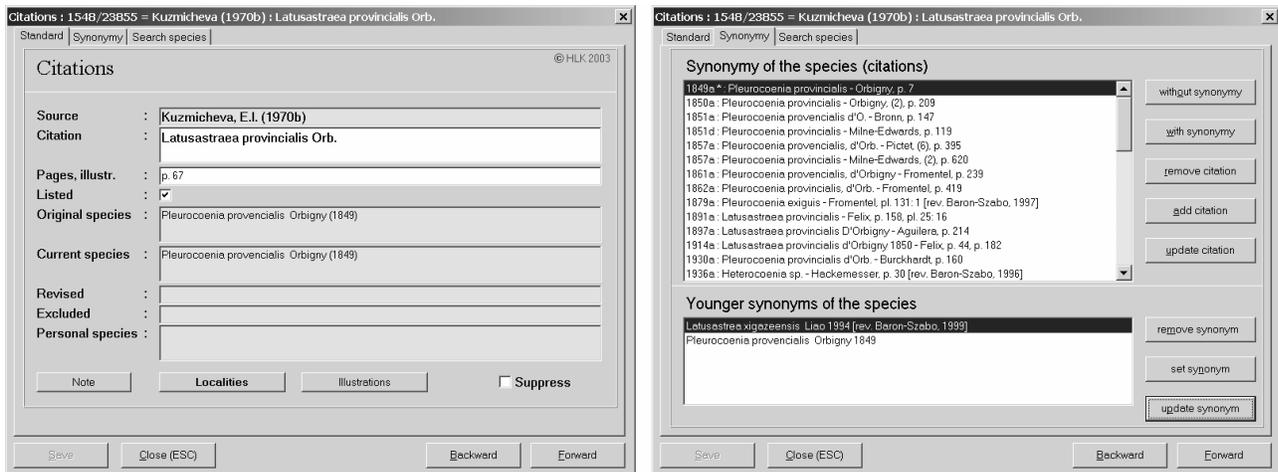
Illustrations

Click on this button to assign a graph file to the record. See [Illustrations, Literature and Documents](#) (p. 27).

Note

Optional recording of a text note.

- Description of the second file card



The second file card deals with the misidentification / synonymy of species. The list at the top handles the misidentification, the list at the bottom the synonymy of species.

Misidentification

This list displays all citations relating to the species to which the current citation is assigned. If the citation is not assigned to any species, the synonymy list remains blank.

Synonymy of the species (citations)

1849a* : <i>Pleurocoenia provincialis</i> - Orbigny, p. 7	<input type="button" value="without synonymy"/>
1850a : <i>Pleurocoenia provincialis</i> - Orbigny, (2), p. 209	<input type="button" value="with synonymy"/>
1851a : <i>Pleurocoenia provencialis</i> d'O. - Bronn, p. 147	<input type="button" value="remove citation"/>
1851d : <i>Pleurocoenia provincialis</i> - Milne-Edwards, p. 119	<input type="button" value="add citation"/>
1857a : <i>Pleurocoenia provincialis</i> , d'Orb. - Pictet, (6), p. 395	<input type="button" value="update citation"/>
1857a : <i>Pleurocoenia provincialis</i> - Milne-Edwards, (2), p. 620	
1861a : <i>Pleurocoenia provencialis</i> , d'Orbigny - Fromentel, p. 239	
1862a : <i>Pleurocoenia provincialis</i> , d'Orb. - Fromentel, p. 419	
1879a : <i>Pleurocoenia exiguis</i> - Fromentel, pl. 131: 1 [rev. Baron-Szabo, 1997]	
1891a : <i>Latusastraea provincialis</i> - Felix, p. 158, pl. 25: 16	
1897a : <i>Latusastraea provincialis</i> D'Orbigny - Aguilera, p. 214	
1914a : <i>Latusastraea provincialis</i> d'Orbigny 1850 - Felix, p. 44, p. 182	
1930a : <i>Pleurocoenia provincialis</i> d'Orb. - Burckhardt, p. 160	
1936a : <i>Heterocoenia</i> sp. - Hackemesser, p. 30 [rev. Baron-Szabo, 1996]	

The list shows the year and the citation. The asterisk (*) indicates the first description and < the current record.

A revising author, i.e. an author who moved the citation to the current species from the original one, is indicated in brackets. In the above example BARON-SZABO (1997) assigned the citation of *Pleurocoenia exiguis* DE FROMENTEL 1862 in DE FROMENTEL 1879 to *Pleurocoenia provincialis* D'ORBIGNY 1849. BARON-SZABO believed that DE FROMENTEL 1879 misidentified his material. This means not, that *P. provincialis* and *P. exiguis* are synonymous.

By default this synonymy list is shown without any species that are junior synonyms (see below) of the current species. If the species has no junior synonyms, this would not make any difference anyway. But if it has junior synonyms, the integration of synonyms would make the list much longer. Click on **with synonymy** to include citations of synonymous species, and on **without synonymy** to exclude them.

If a species is a junior synonym of another, the list may be almost empty. It would contain the first description ("Creation of the species") and perhaps some citations that were not included by a revising author in the synonymy list of the senior synonym.

The database is only helpful if it is always up to date. New publications have to be recorded. If we receive, for example, a recently published paper with a description (and synonymy list) of *Pleurocoenia provincialis* D'ORBIGNY 1849, we have to include it in the database. The synonymy list may look like this:

1879	<i>Pleurocoenia exiguis</i> - DE FROMENTEL, pl. 131: 1
...
1993	<i>Latusastraea provencialis</i> (D'ORBIGNY 1850) - BARON-SZABO, p. 157, text fig. 4, pl. 2: 3
v 1994	<i>Latusastraea xigazeensis</i> (sp. nov.) - LIAO & XIA, p. 67, 221, pl. 5: 5, 6
1994	<i>Latusastraea provencialis</i> (D'ORBIGNY) - BARON-SZABO, p. 445
1995	<i>Latusastraea exiguis</i> (FROMENTEL, 1862) - MORYCOWA et al., p. 18, fig. 1, 2, 3 a-f
1995	<i>Latusastraea provencialis</i> (D'ORBIGNY, 1849) - MORYCOWA et al., p. 16
v 1996	<i>Latusastrea provencialis</i> (D'ORBIGNY, 1850) - BARON-SZABO & STEUBER, p. 18, pl. 7: 6
v 1997	<i>Latusastrea provencialis</i> (D'ORBIGNY, 1849) - BARON-SZABO, p. 46, pl. 2: 5, 6
v non	1999 <i>Latusastrea provencialis</i> D'ORBIGNY, 1849 - BARON-SZABO, p. 482, fig. 4 d
v 1999	<i>Latusastrea atlantica</i> sp. nov. - MISTERX, p. 12, pl. 1: 1, 2
2001	<i>Latusastrea xigazeensis</i> LIAO, 1994 - LÖSER & LIAO, appendix

How to proceed ? We have to compare the synonymy list in the paper with the synonymy list in the database. There may be three different cases:

2001 *Latusastrea xigazeensis* LIAO, 1994 - Löser & Liao, appendix

There may be a citation in the synonymy list which is not in the synonymy list of the database. If the missing citation is the first description of a species, compare below (Younger synonyms of the species). First descriptions cannot be handled by the functions in the upper part. However, the above example is not a new species. Therefore click on **add citation**.

Follow the instructions: fill in a search mask (as the author of the source of the missing citation, here LÖSER & LIAO 2001). Then select the entry concerned from the list by double clicking on the citation you wish to include. Confirm with **Yes**.

1879 *Pleurocoenia exiguis* - DE FROMENTEL, pl. 131: 1

The synonymy list contains an item that was put into synonymy before (here, for example, the above-mentioned revision). To keep the database up to date, update this revision as well. Mark the entry in the list and click on **update citation**.

v non 1999 *Latusastrea provencialis* D'ORBIGNY, 1849 – BARON-SZABO,
p. 482, fig. 4d

In the synonymy list there is a citation which is also listed in your database but is explicitly excluded by adding "non". Mark the citation and click on **remove citation**.

Younger synonyms of the species

Younger synonyms of the species

Latusastrea xigazeensis Liao 1994 [rev. Baron-Szabo, 1999]	remove synonym
Pleurocoenia provencialis Orbigny 1849	set synonym
	update synonym

The lower list deals with the synonymy of species. To see any items in this list at all, assign the citation to a species (Current species field).

There is generally just one entry in the list - the species itself. If there are more entries, the species has younger synonyms. The author who assigned the synonym is indicated in brackets. If there is no entry, it means that the species is a junior synonym of another species. If this is the case, check who assigned the species synonymy (by double clicking on Current species). Should this designation be older than the citation with which you are working, the species is no longer a synonym. Click on **remove synonymy**.

How to set a synonym ? By putting a first description, a creation of a species, such as

v 1999 *Latusastrea atlantica* sp. nov. - MISTERX, p. 12, pl. 1: 1, 2

into a synonymy list of an earlier species, a revising author expresses the opinion that the two species are (subjectively) synonymous. In any case, a synonymous species has to be created after the one to which it is assigned. (Do not laugh, I have seen monographs in which 'older' species were put into synonymy with 'younger' species.) If the species that is put into synonymy is older, this exceptional case has to be turned upside down (i.e. it has to be considered not as intended by the revising author but in accordance with nomenclatory rules).

In general, however, the junior synonym was established later. When you find such a designation in a synonymy list (as shown above), click on **set synonym**. Select the synonymous species from the list and include it in your list. You may also remove it by clicking on **remove synonym**.

Set the synonym only when recording the citation where it is assigned, as the source of the current citation is taken to be the reference to the assignment of the synonym.

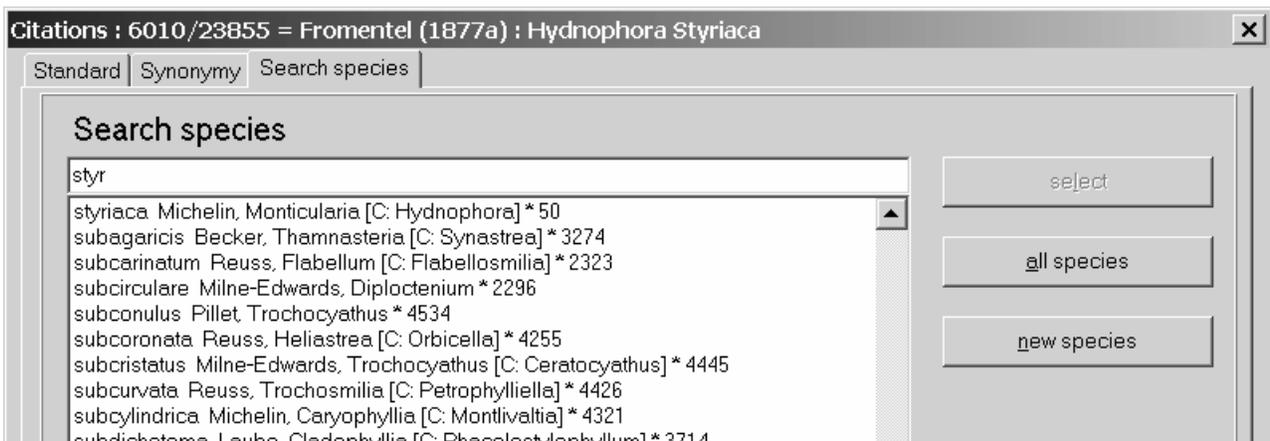
The opposite – an explicit revocation of the synonymous nature of a species - is rare. Species drop from synonymy as a result of being used, as the consistency check (p. 35) will show. In such a case you may also use the **remove synonym** button, if you like.

Should a synonym be repeated in the newly recorded synonymy list, such as

v 1994 *Latusastrea xigazeensis* (sp. nov.) - LIAO & XIA, p. 67, 221, pl. 5: 5, 6

click on **update synonym**, which is comparable to the same function in misidentification as discussed above.

- Description of the third card



The third card helps to search for species. The larger the database, the more difficult it is to remember to which genus a species was originally assigned. To search a species, you can use the third file card. Enter the first few letters of the searched species into the upper field and select an item from the list by double clicking or by clicking on **select**.

As a rule only species established during or after the publication year of the current source (reference) are displayed (to speed up the creation of the list). By clicking on **all species** you can see all recorded species.

If you cannot find the species you are searching for, click on **new species** and append a new species. Return to the first card to find that the original and current species are already assigned.

Classes

CLASSES

Belongs to	Taxonomy
Used by	ORDERS
Refers to	PUBLICATIONS, PHYLA
Contents	Classes. This table is only of interest for recording orders and assigning them to classes.
File cards	1

- Description of the form

Class :	Contains the name of the (sub)class.
Author :	Refers to a record in the PUBLICATIONS table and contains the name of the author of the (sub)class.
Phylum :	Contains the phylum of the class and refers to the PHYLA table.
Subphylum :	Contains the name of the subphylum, if any, and refers to the PHYLA table.
Sort code :	Optional recording of a sort code.
Note	Optional recording of a text note.
References	Click on this button to assign publications to this record. They may provide more detailed information on classes.

Collections

COLLECTS

Belongs to	Material
Used by	SPECIMENS
Refers to	TOWNS
Contents	Collections in which (type) specimens are kept. The table is only required for recording specimens.
File cards	1

- Description of the form

Standard

Collections © HLK 2003

Town : Mexico City (Mexico)

Institution : Instituto de Geología

Acronym : IGM

Internet : <http://geologia.igeolcu.unam.mx/PALEO/coleccion-paleo/ColNalPaleontologia1.htm>

E-Mail : mariacp@servidor.unam.mx

Note

- Town :** Town where the collection is located. Refers to an entry in the TOWNS table.
- Institution :** Name of the institution.
- Acronym :** The acronym is a more or less official abbreviation of the name of the collection. Acronyms should not be invented but requested from the people in charge of a collection. An official list is not available. Some acronyms can be obtained from LÖSER et al. (2002; available also from <http://www.cp-v.de/ccc/acronyms>). A list of Austrian collections is available from <http://www.oeaw.ac.at/oetyp/palsea.htm> .
- Internet :** Internet address of the collection concerned.
- Email :** Email address of the collection concerned.
- Note** Optional recording of a text note.

Complexes

COMPLEX

Belongs to Geography

Used by LOCALITIES

Refers to AGES

Contents Complexes under which localities can be grouped. They may be stratigraphical, geographical or palaeogeographical (see also PALAEOGEOGRAPHIC UNITS). These units are to generalise locality data in analyses.

The table has to be maintained for assessments using complexes.

File cards 1

- Description of the form

The screenshot shows a software window titled "Units of regional geology : 1/512 = Tatra Platform (Valanginian)". Inside the window, there is a tab labeled "Standard" and a copyright notice "© HLK 2003". The main heading is "Complexes". Below this, there are two input fields: "Name" with the value "Tatra Platform" and "Age" with the value "Valanginian". A "Note" button is located below these fields.

- Name :** Contains the name of the complex.
Age : Optional reference to a stratigraphic age. Refers to a record in the AGES table.
Note Optional recording of a text note.

Countries

COUNTRY

- Belongs to** Geography
Used by REGIONS, TOWNS
Refers to -
Contents Names and abbreviations of countries (as well as regions such as Antarctica or Pacific, which cannot be assigned to any country).
File cards 1

- Description of the form

The screenshot shows a software window titled "Countries : 14/108 = Germany". Inside the window, there is a tab labeled "Standard" and a copyright notice "© HLK 2003". The main heading is "Countries". Below this, there are two input fields: "Name" with the value "Germany" and "Abbreviation" with the value "D".

- Name :** Name of the country.
Abbreviation : Abbreviation. Postal code or international car registration should be used.

Examination

EXAM

- Belongs to** Citations
Used by -
Refers to SPECIMENS, SPECIES

Contents Contains opinions on specimens. This table can replace the table of citations when using samples rather than citations from the literature. Support by programs and catalogues is at present low.

File cards 1

- Description of the form

Specimen : Contains an examined specimen as a reference to a record in the SPECIMENS table.

Determination : Contains the species to which the specimen was assigned (on the basis of the user's opinion) and refers to a record in the SPECIES table.

Note Optional recording of a text note.

Families

FAMILIES

Belongs to Taxonomy

Used by GENERA

Refers to PUBLICATIONS

Contents Families and subfamilies. This table is only of interest for assigning genera to families.

File cards 1

- Description of the form

Families : 1/154 = Acrosmiliidae Vaughan (1905a)

Standard

Families © HLK 2003

Name : Acrosmiliidae

Author : Vaughan (1905a)

Is subfamily :

Emended :

Order : Scleractinia

Suborder : Microsolenina Morycowa E. 1995 b

Sort code : 2

Note References

- Name :** Contains the name of the family or subfamily.
- Author :** Refers to a record in the PUBLICATIONS table and contains the name of the author who introduced the family.
- Is a subfamily :** Should be marked when the record represents a subfamily.
- Emended :** Refers to a record in the PUBLICATIONS table and contains a reference to an emendation of the family (an intended change of an incorrectly spelt name).
- Order :** Order of the family referring to an entry in the ORDERS table.
- Suborder :** Suborder of the family referring to an entry in the ORDERS table.
- Sort key :** Optional recording of a sort code.
- Note** Optional recording of a text note.
- References** Click on this button to assign publications to this record. They may provide more detailed information on families.

Figured specimens

FIGURAT

- Belongs to** Citations
- Used by** -
- Refers to** CITATIONS, SPECIMENS
- Contents** Specimens figured in any publication. This table is based on the SPECIMENS table. It is of a certain interest when comparing specimens with illustrations in books or articles.
- File cards** 1

- Description of the form

- Citation : Contains a citation in the literature and refers to a record in the CITATIONS table.
- Figure : Indicates the position of the illustration in the citation selected above.
- Specimen : Contains the figured specimen and refers to a record in the SPECIMENS table.

Films / Slides

FILM

- Belongs to Material
- Used by PHOTOGRAPHS
- Refers to -
- Contents Films, collections of slides, paper photos or digital photographs.
This table is only of interest for recording illustrations of specimens in the PHOTOGRAPHS table.
- File cards 1

- Description of the form

- Number of the film : Number of the film, the box of slides or of an envelope containing photographs.
- Film type : Any information about the type of film, such as B/W, Colour, Slides, Paper, Digital Image.

Genera

GENERA

Belongs to Taxonomy

Used by SPECIES

Refers to PUBLICATIONS, FAMILIES, AGE BOUNDARIES, VALIDITIES

Contents Genera and subgenera. Important table for recording taxonomic data.

File cards 2

- Description of the form

Genera : 38/1626 = Antiguastrea Vaughan (1919b)

Standard | Species

© HLK 2003

Genera

Name : Antiguastrea

Author : Vaughan (1919b)

Validity :

Emended :

Nomen nov. pro : Heterastraea

Previous author : Reis (1889a)

Family : Faviidae Milne-Edwards (1857a) Assigned : Wells (1956a)

Subfamily : Assigned :

Tribe : Assigned :

First occurrence : Upper Aptian, base

Last occurrence : Cenomanian, top

Sort code : 0 No of species : 7

Note Type species Illustrations References Documents

Name : Contains the name of the genus or subgenus.

Author : Refers to a record in the PUBLICATIONS table and contains the name of the author of the (sub)genus.

Validity : Indicates the status of the genus (such as nomen nudum, nomen novum) and refers to a record in the VALIDITIES table.

Emended : Refers to a record in the PUBLICATIONS table and contains the name of the author who emended the name of the genus (in the sense of an intended change of an incorrectly spelt name).

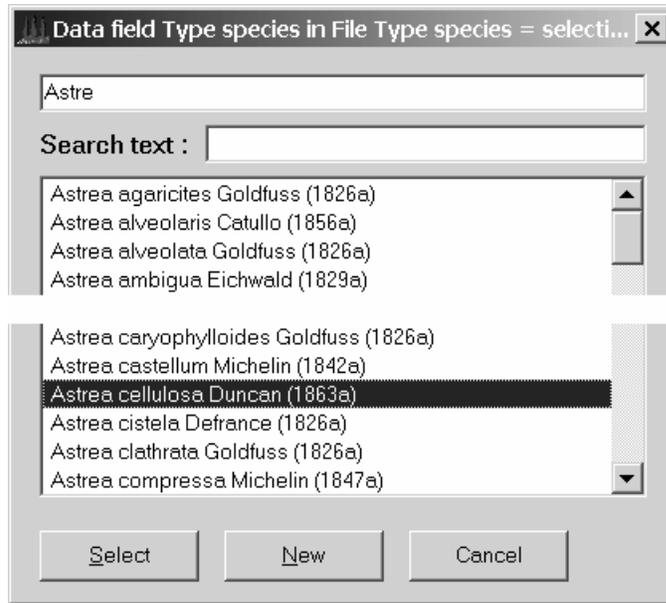
Nomen nov. pro : If the name of the genus was preoccupied and had to be replaced by a new name (nomen novum), the original name was to be indicated in this field.

Previous author : Like the original name, the original author was to be recorded in this field (refers to a record in the PUBLICATIONS table).

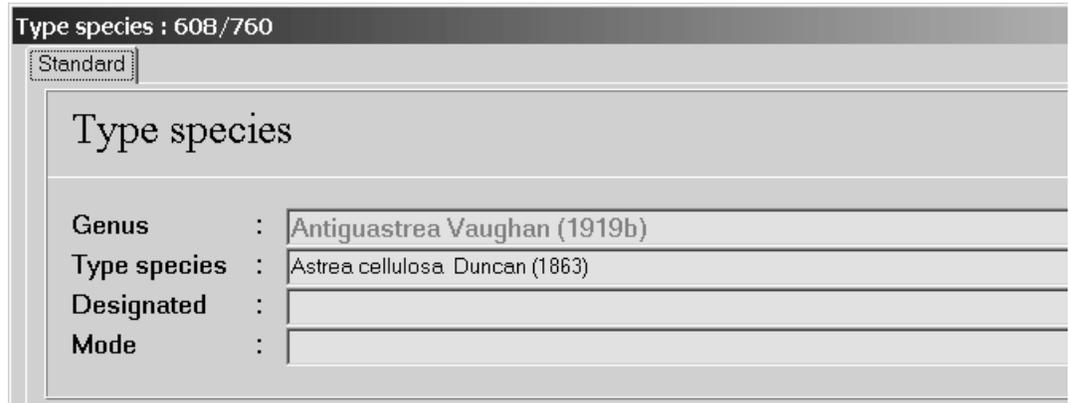
Family : Family to which the genus belongs. Refers to a record in the FAMILIES table.

- Assigned :** Refers to a record in the PUBLICATIONS table and contains the name of the author who assigned the genus to the current family. **[F7]** replaces the field containing the current (or last) source of a citation.
- Subfamily :** Subfamily of the genus. Refers to a record in the FAMILIES table.
- Assigned :** Refers to a record in the PUBLICATIONS table and contains the name of the author who assigned the genus to the current subfamily. **[F7]** replaces the field containing the current (or last) source of a citation.
- Tribe :** Tribe of the genus. Refers to a record in the FAMILIES table.
- Assigned :** Refers to a record in the PUBLICATIONS table and contains the name of the author who assigned the genus to the current tribe. **[F7]** replaces the field containing the current (or last) source of a citation.
- First occurrence :** First stratigraphical indication of the genus (refers to a record in the AGE BOUNDARIES table). This value can be set or automatically assessed (see Standard estimation of the database; p. 40).
- Last occurrence :** Last stratigraphical indication of the genus (refers to a record in the AGE BOUNDARIES table). This value can be set or automatically assessed (see Standard estimation of the database; p. 40).
- Sort code :** Optional recording of a sort code.
- Note** Optional recording of a text note.
- Type species** Recording of the type species. By clicking on this button, a form with the type species of the genus is displayed. When data are first recorded, this form is generally empty:

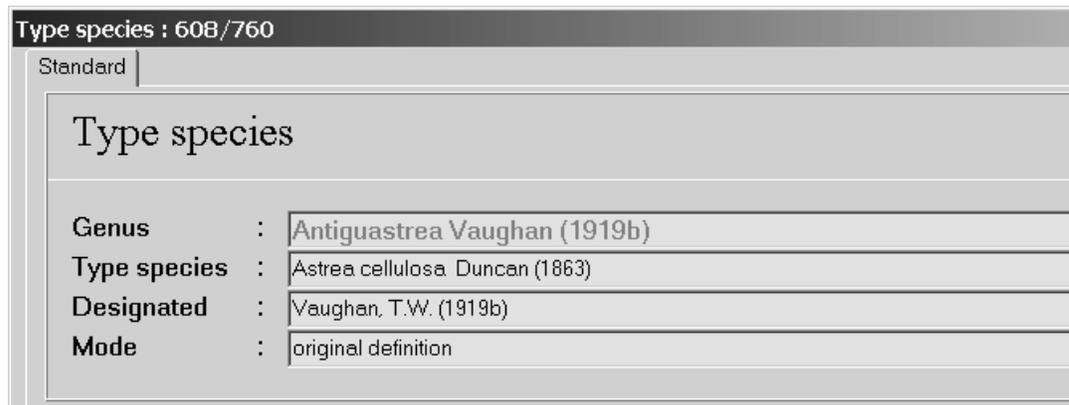
Enter the first few letters of the genus of a species into the field at the top. A list of available species is then displayed in a new form. Enter more letters. Select a species or enter a new one (**New**) :



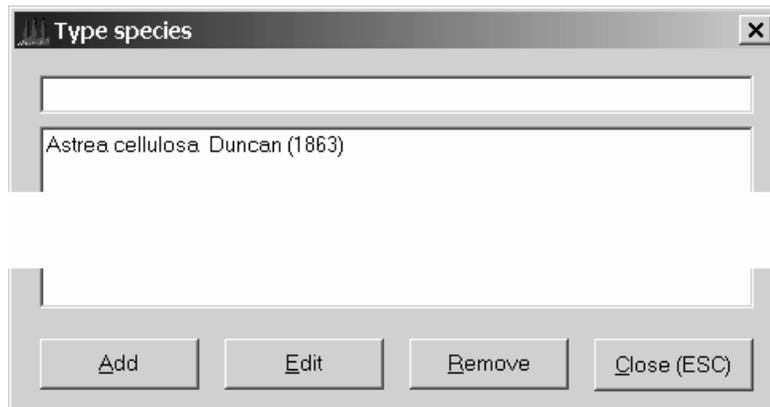
By clicking on a species and then on **Select**, a new record is created in the TYPE SPECIES table. It assigns the selected species to the current genus as a type species. This record is immediately displayed:



You can now add the author who designated the type species (**F7** replaces the designation by the author of the type species) and the mode of designation:



After closing the list and returning to the first form, you find the selected type species:



An item that you have selected from this list can be modified by **Edit**. You can remove the entry by clicking on **Remove**. **Add** would guide you directly to an empty (new) edit form of the TYPE SPECIES table.

By pressing **Close**, the list is closed.

References

Click on this button to assign publications to this record. They may provide more detailed information on the genus.

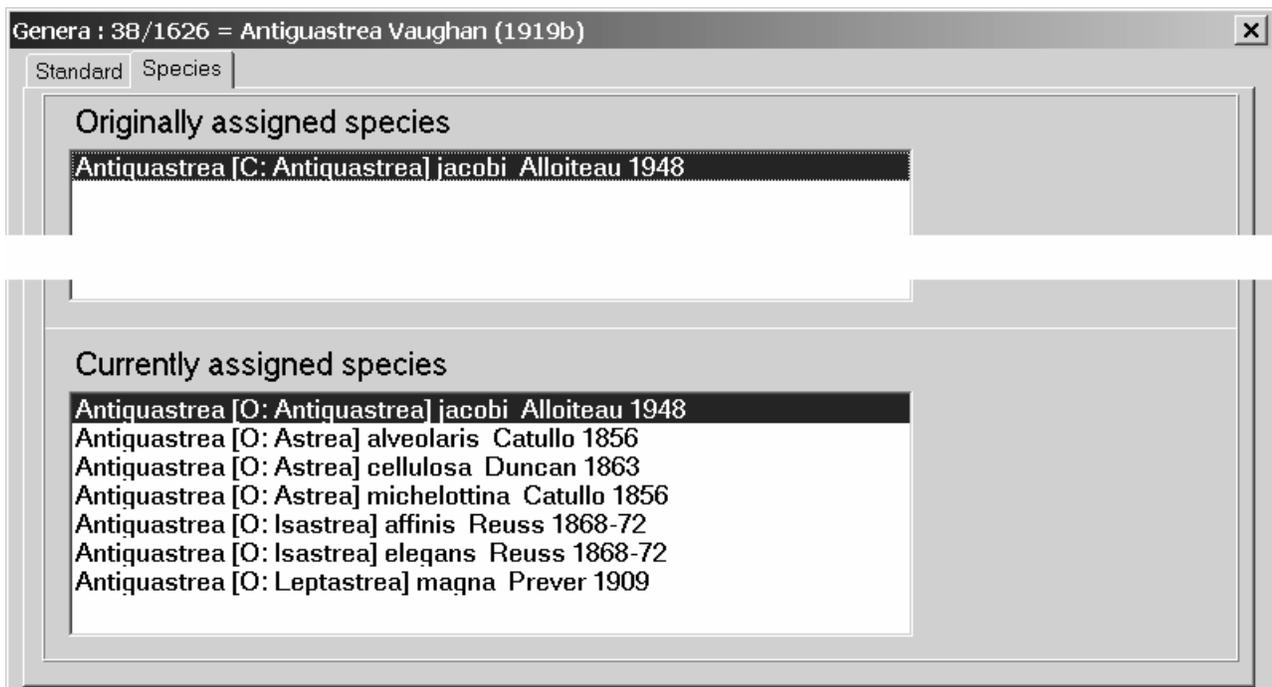
Illustrations

Click on this button to assign a graph file to this record. See [Illustrations, Literature and Documents](#) (p. 27).

Documents

A document may also be assigned to the genus. For details compare [Illustrations, Literature and Documents](#).

- Description of the second file card



The second card provides information about species originally and currently assigned to this genus.

Journals

PUBLS

Belongs to Literature

Used by PUBLICATIONS

Refers to PUBLISHING HOUSES, TOWNS

Contents Journals on references, publishing houses. The table is maintained through recording data in the PUBLICATIONS table.

File cards 1

- Description of the form

Journal : Name of the journal.

Original : Original name of the journal (as in the example above), using a special character set (East European, Cyrillic).

The font should be selected beforehand (see [Special fonts](#); p. 25); the number in the Font field refers to the selected font. The function key **F7** copies the name of the journal into this field; the function key **F2** displays a character map.

Font = Enter the number of the font by which the name should be displayed in the "Original" field.

Publ. house : Publishing house of the journal or book. The field refers to a record in the PUBLISHING HOUSES table. For historical reasons the names of these publishing houses – and not the names of publishing houses in the BOOKS table - are used in the lists of references published by various catalogues.

Town : Town in which the journal is published or the publishing house is situated. Refers to the TOWNS table.

Available This text field provides information about the availability of a journal.

Keywords

KEYWORDS

Belongs to	Literature
Used by	KEYWORDS TO LITERATURE
Refers to	-
Contents	Keywords to describe the contents of publications. This table is only of interest for recording the contents of publications. Maintained exclusively through the PUBLICATIONS table.
File cards	1

- Description of the form

Keywords : 10/16 = Thema : Mass extinction

Standard

Keywords

© HLK 2003

Level 1 : 0

Level 2 : 0

Level 3 : 0

Keyword name : Thema : Mass extinction

Level 1 :	A three-level index is available for classifying the literature by means of a thesaurus.
Level 2 :	See above.
Level 3 :	See above.
<u>Keyword name</u> :	Name of the keyword.

Keywords for literature

PUBLKEY

Belongs to	Literature
Used by	-
Refers to	PUBLICATIONS, KEYWORDS
Contents	This table establishes a connection between publications and keywords. It contains references to both publications and keywords. It is of interest to users who record the contents of their literature, using keywords.
File cards	1

- Description of the form

Keyword : Contains references to keywords in the KEY WORDS table.

Publication : Contains references to publications in the PUBLICATIONS table.

Lithostratigraphy

LITHOS

Belongs to Stratigraphy

Used by LOCALITIES, OCCURRENCES

Refers to AGES

Contents Lithostratigraphical units with their datation.

The table is used in recording localities. The age of a locality may change, but not its assignation to a lithostratigraphical unit. The table may also help to reconstruct the exact place in a locality from where samples were taken.

File cards 1

- Description of the form

Unit name : Name of the lithostratigraphical unit.

Age : Refers to a record in the AGES table and indicates the age of the unit.

Precision Optional recording of a text note.

References Click on this button to assign publications to the record. These publications may provide more detailed information on the unit.

Localities

LOCALITY

Belongs to	Geography
Used by	OCCURRENCES, SPECIMENS
Refers to	REGIONS, AGES, COMPLEXES, PUBLICATIONS, PALAEOGEOGRAPHIC UNITS
Contents	Locations of samples indicating a region, stratigraphic age and lithostratigraphy. Important for recording samples or occurrences.
File cards	2

- Description of the form

Localities : 503/4081 = Germany, BL Sachsen: Dresden-Plauen, Ratssteinbruch, northern quarry "Dölzschen ...

Standard | Species

Localities © HLK 2003

Region : Germany, BL Sachsen

Outcrop : Dresden-Plauen, Ratssteinbruch, northern quarry

Original :

Font = 0

Sample point : Bed :

Age : Upper Cenomanian, plenus zone

Lithostratigr. : Dölzschen Fm (Upper Cenomanian)

Complex : -Saxonian basin (Upper Cenomanian, PGU : Bo (Boreal)

Note References Illustrations Documents

Latitude : 51 ° 1 ' 40 " N N/S

Longitude : 13 ° 42 ' 10 " E E/W

Data quality : L Code : RN

No of citations : 35 No of species : 18 Suppress locality

Region : Contains the (mostly political) region to which the locality belongs and refers to a record in the REGIONS table.

Outcrop : Contains the name of the outcrop.

Original : Original name of the outcrop, using a special character set (East European, Cyrillic).

The font should be selected beforehand (see [Special fonts](#); p. 25); the number in the Font field refers to the selected font. The function key **F7** copies the name of the outcrop into this field; the function key **F2** displays a character map.

Font = Enter the number of the font by which the name should be displayed in the "Original" field.

Sample point : Specifies a sample point in a locality.

- Bed :** Specifies a bed in a locality (at a sample point).
- Age :** Indicates the stratigraphical age of the locality and refers to a record in the AGES table.
- Lithostratigr. :** Indicates the lithostratigraphical unit of the locality and refers to a record in the LITHOSTRATIGRAPHY table.
- Complex :** Indicates a complex as a stratigraphical, geographical or palaeogeographic name or a tectonic unit (terrane, plate, platform). Refers to a record in the COMPLEXES table.
- PGU :** Indicates a palaeogeographic unit. Refers to a record in the PALAEOGEOGRAPHIC UNITS table.
- Note** Optional recording of a text note.
- References** Click on this button to assign publications to this record. These publications may provide more detailed information on the locality.
- Illustrations** Click on this button to assign a graph file to this record. See [Illustrations, Literature and Documents](#) (p. 27).
- Documents** Documents may also be assigned to the locality. For details compare [Illustrations, Literature and Documents](#).
- Latitude :** Optional indication of the geographical latitude of the locality.
- Longitude :** Optional indication of the geographical longitude of the locality.
- Data quality :** Optional indication of an abbreviation describing the quality of the latitude and longitude data. The locality catalogue provides information when the following abbreviations are used (all other abbreviations are ignored):
 L = Position was taken at the locality with a GPS.
 S = Position indicates the next larger town/village.
 M = Position was taken from a map.
 X = Position was taken from the literature.
 P = Position indicates a mountain peak.
 D = Position was derived from the "3D Talking Globe" database.
 E = Position was taken from the "MS Encarta" database.
 N = Position was taken from the NIMA database
 (<http://164.214.2.59/gns/html/index.html>).
 R = Position indicates the approximate region.
- Code:** Optional indication of an abbreviation of the locality. Together with the national and regional code it represents a locality code which can be output in the locality catalogue.

- Description of the second file card



The second file card only contains a list of species indicated in these localities.

Mode of type species designation

GTYPMD

Belongs to Taxonomy

Used by TYPE SPECIES

Refers to -

Contents Mode of designation of the type species for a genus (for example, original designation, monotypy, subsequent designation).

The table is maintained through the TYPE SPECIES table.

File cards 1

- Description of the form

Mode of type species designation : 9/12 = subsequeute definition

Standard

Mode of type species designation © HLK 2003

Name : subsequent designation

Abbreviation : SD

Explanation : 69a = 69.1

Name : Description of the mode of designation.

Abbreviation : Abbreviation of the mode (as used in some catalogues).

Explanation : Additional explanation.

Occurrences

OCCURR

Belongs to Citations

Used by -

Refers to CITATIONS, LITHOSTRATIGRAPHY, LOCALITIES

Contents This table connects the LOCALITIES and CITATIONS tables and records the localities mentioned in citations. Data are normally not directly recorded in this table. It is maintained through the CITATIONS table.

File cards 1

- Description of the form

Occurrences : 237/26458

Standard

Occurrences © HLK 2003

Citation : Wells (1932a) : *Astrocoenia scyphoidea* Wells n.sp.

Lithostratigraphy : Trinity Gr, Lower Glen Rose Limestone (Lower Albian)

Cited age : Lower Albian

Locality : USA, State Texas: Hays County, Blanco River, Pleasant Valley Crossing, . (Lower Albian, tardefurcata zone)

- Citation :** Contains the citation and refers to a record in the CITATIONS table.
- Lithostratigraphy :** Contains the original lithostratigraphic unit in which the material mentioned in the citation was found. The field refers to a record in the LITHOSTRATIGRAPHY table. It is only included for historical reasons and does not have to be filled in if the lithostratigraphic unit is recorded in the LOCALITIES table.
- Cited age :** Contains the age as indicated by the author of the citation. Data recording is not required as the field is only included for historical reasons.
- Locality :** Contains the locality in which the species indicated in the citation was found. A citation may have more than one locality (= more than one record in the OCCURRENCES table). The field refers to a record in the LOCALITIES table.

Orders

ORDERS

Belongs to

Taxonomy

Used by

FAMILIES

Refers to

PUBLICATIONS, CLASSES

Contents

Orders and suborders. This table is only of interest for recording families and assigning them to orders.

File cards

1

- Description of the form

Orders : 23/26 = Scleractinia ()

Standard

Orders © HLK 2003

Order : Scleractinia

Author :

Class : Anthozoa

Subclass : Zoantharia

Sort code : 0

Note References

Order :	Contains the name of the order.
Author :	Refers to a record in the PUBLICATIONS table and contains the name of the author of the (sub)order.
Class :	Contains the class of the order and refers to the CLASSES table.
Subclass :	Contains the subclass of the order, if any, and refers to the CLASSES table.
Sort code :	Optional recording of a sort code.
Note	Optional recording of a text note.
References	Click on this button to assign publications to this record. These publications may provide more detailed information on the order.

Palaeogeographic units

PGUNITS

Belongs to	Geography
Used by	LOCALITIES
Refers to	-
Contents	A table comparable to COMPLEXES but dedicated to palaeogeographic units or palaeobiogeographic provinces. The table has to be maintained during assessments using these units.
File cards	1

- Description of the form

Standard | Palaeogeographic units © HLK 2003

Abbreviation : Sub unit :

Explanation :

Localities :

Indications :

Species :

Estimation 1 :

Estimation 2 :

Abbreviation :	Abbreviation of the unit.
Subunit :	Abbreviation of the subunit or province, if any.
Explanation :	Explanation of the unit.
Localities :	The number of localities assigned to this unit (calculated automatically).

Indications :	The number of indications of this unit (calculated automatically).
Species :	The number of species in this unit (calculated automatically).
Estimation 1 :	Internal field for future analysis.
Estimation 2 :	Internal field for future analysis.
Note	Optional recording of a text note.
References	Click on this button to assign publications to this record. These publications may provide more detailed information on the unit.

Photographs

PHOTO

Belongs to	Material
Used by	-
Refers to	PREPARATIONS, FILMS
Contents	Photographs of preparations of specimens, including photographs of the specimen itself. The PREPARATIONS table is used because in many groups of organisms the material is prepared in a special way, to produce preparations such as peel, thin sections, serial sections, etc.
File cards	1

- Description of the form

The screenshot shows a window titled "Photographs : 100/1503" with a "Standard" tab. The window contains a form titled "Photographs / slides" with the following fields:

- Preparation : TUM 35136 (thin section)
- Film : 3/2000
- Photo-no : 28
- Enlargement : 0.65
- Remark : DS

At the bottom of the form is a button labeled "Illustrations". The copyright notice "© HLK 2003" is visible in the top right corner of the window.

<u>Preparation</u> :	A preparation (or specimen) of which a photograph was taken. Refers to a record in the PREPARATIONS table.
<u>Film</u> :	A film (or box of slides, or folder with digital photographs). Refers to a record in the FILMS table.
<u>Photo number</u> :	Number of the photo in a film (or any other enumeration).
<u>Enlargement</u> :	Factor of enlargement (>1.0) or reduction (<1.0) compared with the size of the original specimen or preparation.
Remark :	Optional recording of a remark.
Illustrations	Click on this button to assign a graph file to this record. See <u>Illustrations, Literature and Documents</u> (p. 27).

Phyla

PHYLA

Belongs to

Taxonomy

Used by

CLASSES

Refers to

PUBLICATIONS

Contents

Phyla and subphyla. This table is only of interest when using classes.

File cards

1

- Description of the form

The screenshot shows a window titled "Phyla : 2/2 = Cnidaria Milne-Edwards (1857a)". Inside the window, there is a "Standard" tab and a "© HLK 2003" copyright notice. The main content area is titled "Phyla" and contains three input fields: "Phylum" with the value "Cnidaria", "Author" with the value "Milne-Edwards (1857a)", and "Sort code" with the value "0". Below these fields are two buttons: "Note" and "References".

Phylum :

Contains the name of the phylum or subphylum.

Author :

Refers to a record in the PUBLICATIONS table and contains the name of the author of the (sub)phylum.

Sort code :

Optional recording of a sort code.

Note

Optional recording of a text note.

References

Click on this button to assign publications to this record. These publications may provide more detailed information on the phylum.

Preparations

PREPARAT

Belongs to

Material

Used by

PHOTOGRAPHS

Refers to

SPECIMENS, PREPARATION TYPES

Contents

Preparations of specimens. The specimen itself may also be a preparation (important for the PHOTOGRAPHS table).

This table is only of interest for recording specimens, their preparations or photographs.

File cards

1

- Description of the form

Preparations : 4/1156 = NMB D 6134 (peel) : LF9

Standard

Preparations © HLK 2003

Specimen : Basel: Naturhistorisches Museum Basel - D 6134

Type of preparation : peel

Number : LF9

Illustrations

Specimen : A specimen of which a preparation has been made. Refers to an entry in the SPECIMENS table.

Preparation type : Type of preparation (such as peel, thin section, serial section). Refers to an entry in the PREPARATION TYPES table.

Number : Subnumber, if any, of the preparation within the specimen number.

Illustrations Click on this button to assign graph file to this record. See [Illustrations, Literature and Documents](#) (p. 27).

Preparation types

PRTYPES

Belongs to Material

Used by PREPARATIONS

Refers to -

Contents Type of preparation (such as peel, thin section).

This table is only of interest for recording photos of specimens and their preparations.

File cards 1

- Description of the form

Preparation types : 2/4 = thin section

Standard

Preparation types © HLK 2003

Name : thin section

Name : Indicates the type of preparation.

Publications

PUBLICAT

Belongs to Literature
 Used by FAMILIES, GENERA, SPECIES, PUBLICATIONS ON LOCALITIES, TYPES, ...
 Refers to AUTHORS, BOOKS, JOURNALS
 Contents Publications: books, articles in books and journals. Important table.
 File cards 2

- Description of the form

Publications : 47/4023 = Alloiteau, J. (1951a) Coralliaires.

Standard | Citations

Publications © HLK 2003

Author : Alloiteau, J. Year : 1951 Ref.letter : a

2.Author : 4:

3.Author : 5:

Title : Coralliaires.

Original :

Font

Book : Collignon: Faune maestrichtienne de la côte d'Ambatry (province de Betioky).

Journal : Annales géologiques du Service des Mines de Madagascar Tananarive

Reference: 19: 47-49, pl.8

Serial : Volume: 19 Issue :

Pages : 47-49 Plates : pl. 8 Figs. :

No.Cit. : 2 Mark

Note Keywords Documents

Author : Indicates the first author as a reference to an entry in the AUTHORS table.

Year : Indicates the year of publication or a time interval if the exact year cannot be determined.

Ref.letter : Reference letters are used to distinguish various papers published by the same author in the course of a year.

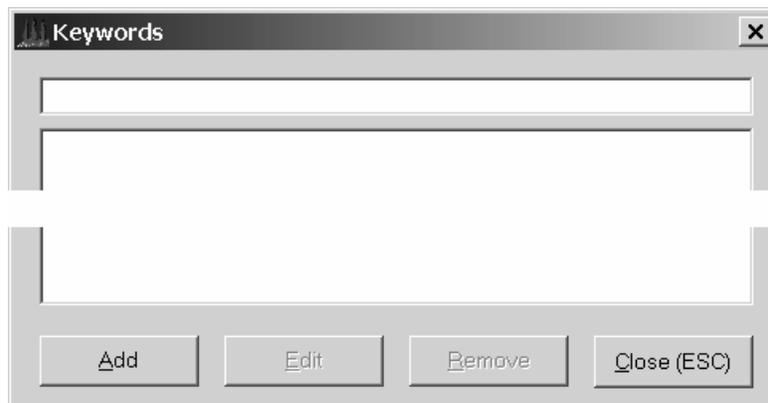
2nd author :

3rd author :

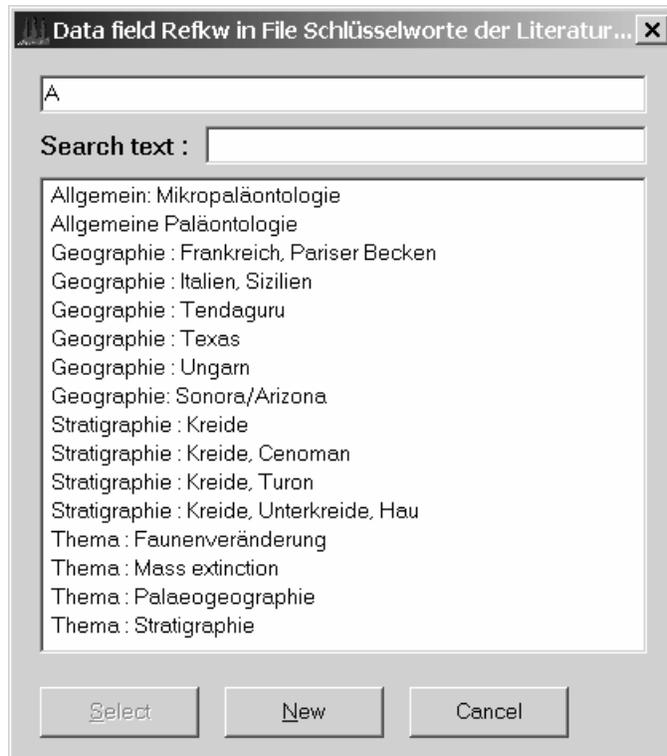
4th, 5th : Additional authors are indicated in these fields as references to entries in the AUTHORS table.

Title : Contains the title of the publication.

- Original :** This field contains the original title, using a special character set (East European, Cyrillic).
The font should be selected beforehand (see [Special fonts](#); p. 25); the number in the Font field refers to the selected font. The function key **F7** copies the name of the title into this field; the function key **F2** displays a character map.
- Font** Enter the number of the font by which the name should be displayed in the "Original" field.
- Book :** Indicates the name of the book in which the article was published. Refers to a record in the BOOKS table.
- Journal :** Indicates the name of the journal / publishing house in which / by which the article was published. Refers to a record in the JOURNALS table. The publishing house can be selected here for articles published in books and for books as well.
- Reference :** The serial, volume, issue, pages, plates, etc. of the article are recorded in one line. These data are used for reference lists in reports and catalogues.
- Serial :** Serial of the journal in which the article was published.
- Volume :** Volume of the journal in which the article was published.
- Issue :** Issue of the journal in which the article was published.
- Pages :** Pages of the article.
- Plates :** Plates in the article.
- Figs. :** Figures in the article.
- Number of citations :** Contains the number of recorded citations. This field is in red as its contents are assessed by the PaleoTax estimation program (see [Standard estimation of the database](#); p. 40).
- Mark :** This field can be used to mark entries. When searching in the table, some queries referring to this field are found.
- Note** Optional recording of a text note.
- Keywords** Recording of keywords for the publication. When you click on this button, a list of keywords for this publication is displayed. The list is normally empty:



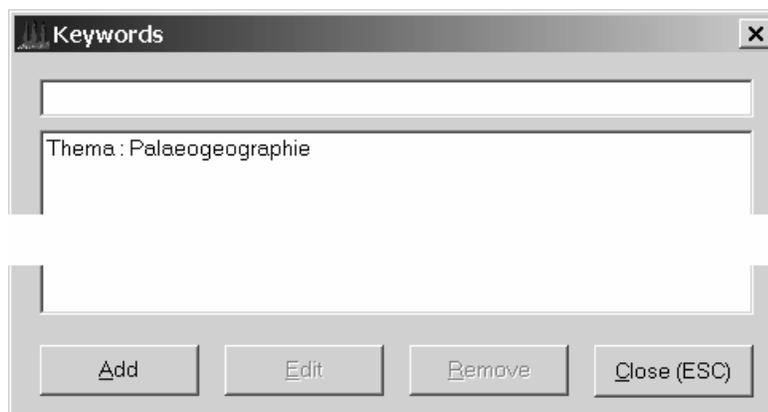
Enter the first letter of a keyword into the upper field and see the list of available keywords (or a message that there are no keywords available and you should enter a new one) displayed below:



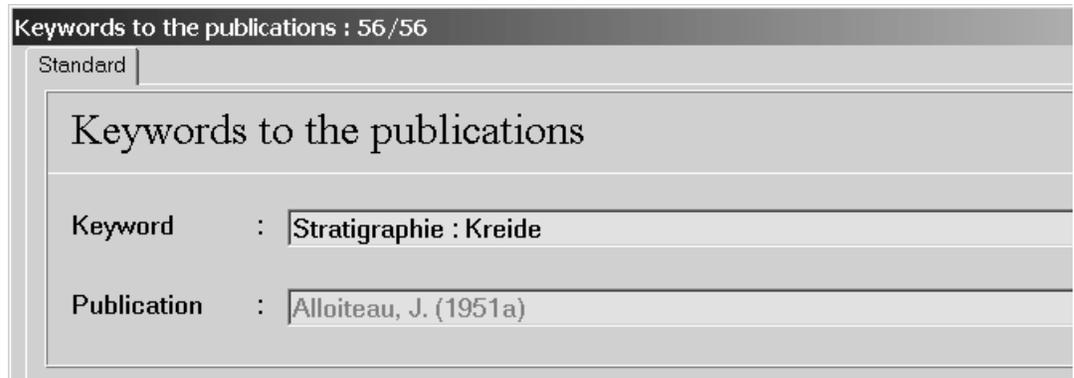
Mark a keyword and click on **Select**. This creates a new record in the KEYWORDS FOR PUBLICATIONS table and the selected keyword is assigned to the current publication.

New takes you to the Keywords table and creates a new keyword, **Cancel** closes the list.

By closing the list and returning to the first list, you will find the selected keyword:



A selected item may be modified by **Edit**:

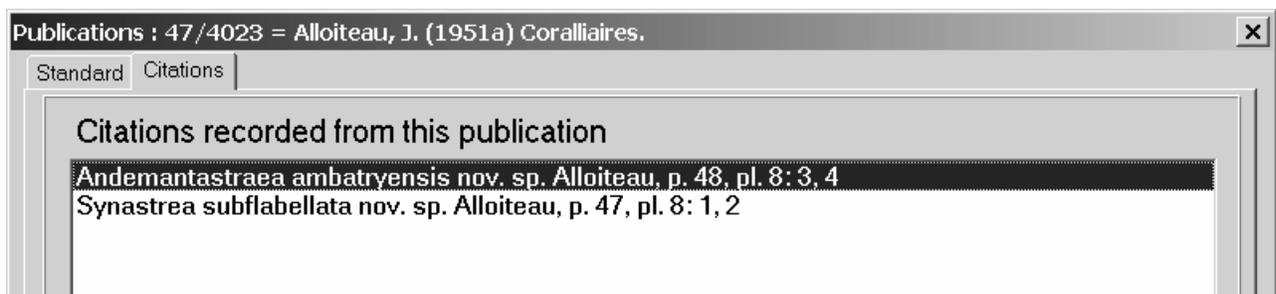


An entry can be deleted by clicking on **Remove**. By clicking on **Add** you are guided to a blank (new) edit form of the KEYWORDS FOR PUBLICATIONS table. By clicking on **Close**, the list is closed. The text on the button then appears in bold.

Documents

A document may be assigned to the publication. For details compare [Illustrations, Literature and Documents](#).

- Description of the second file card



The second file card contains a list of citations recorded from this publication.

Publishing houses

PHOUSES

Belongs to	Literature
Used by	JOURNALS, BOOKS
Refers to	-
Contents	Publishing houses of books or journals. Data are recorded by recording publications.
File cards	1

- Description of the form

The screenshot shows a software window with the title bar 'Publishing houses : 10/258 = Academic Press'. Inside the window, there is a tab labeled 'Standard' and a copyright notice '© HLK 2003'. The main area is titled 'Publishing houses' and contains a form with a label 'Name' and a text input field containing the text 'Academic Press'.

Name : Name of the publishing house.

Regions

REGIONS

Belongs to	Geography
Used by	LOCALITIES
Refers to	COUNTRIES
Contents	Countries, names and abbreviations of geographical regions. Political regions should preferably be used. There are some countries (France, Italy, Spain) with provinces and regions, while others (Austria, Germany) only have states. If the region is unknown or for a country without regions (such as Andorra), a question mark should be put into the "Region" field. The catalogue program knows how to handle this question mark and suppresses the name of the region. The table is essential for recording localities.
File cards	1

- Description of the form

The screenshot shows a software window titled "Regions : 57/593 = Romania: Regiun Piatra Neamt". Inside the window, there is a form with the following fields:

- Country : Romania
- Region name : Regiun Piatra Neamt
- Original : Regiun Piatra Neamt
- Font : 2
- Code :

At the bottom of the form, there is a button labeled "References". The window also has a "Standard" tab and a copyright notice "© HLK 2003".

Country : The country to which the region belongs, which refers to an entry in the COUNTRY table.

Region : Name of the region.

Original : Original name of the region (as in the example above), using a special character set (East European, Cyrillic).

The font should be selected beforehand (see [Special fonts](#); p. 25); the number in the Font field refers to the selected font. The function key **[F7]** copies the name of the region into this field; the function key **[F2]** displays a character map.

Font : Enter the number of the font by which the name should be displayed in the "Original" field.

Code : Regional codes. As a rule the data are difficult to obtain. Each country generally has a system of its own which can be found in its atlases. The code is optional and serves to compile locality abbreviations comprising the national, regional and local codes.

References Click on this button to assign publications to this record. The publications may provide more detailed information on the region.

Species

SPECIES

Belongs to Taxonomy

Used by SPECIES SYNONYMY, TYPE SPECIES

Refers to GENERA, PUBLICATIONS, AGE BOUNDARIES, AUTHORS, VALIDITIES

Contents Species and subspecies. - Important table for recording taxonomic data.

File cards 3

- Description of the form

Species : 1B/5192 = *Astrea agaricites* Goldfuss (1826a)

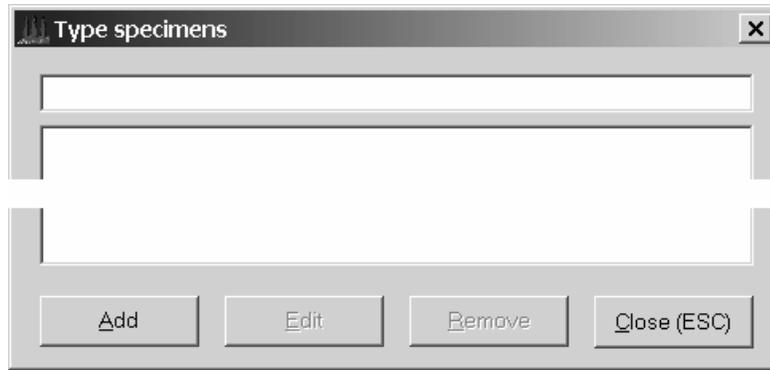
Standard | Synonymy list | Occurrence

Species © HLK 2003

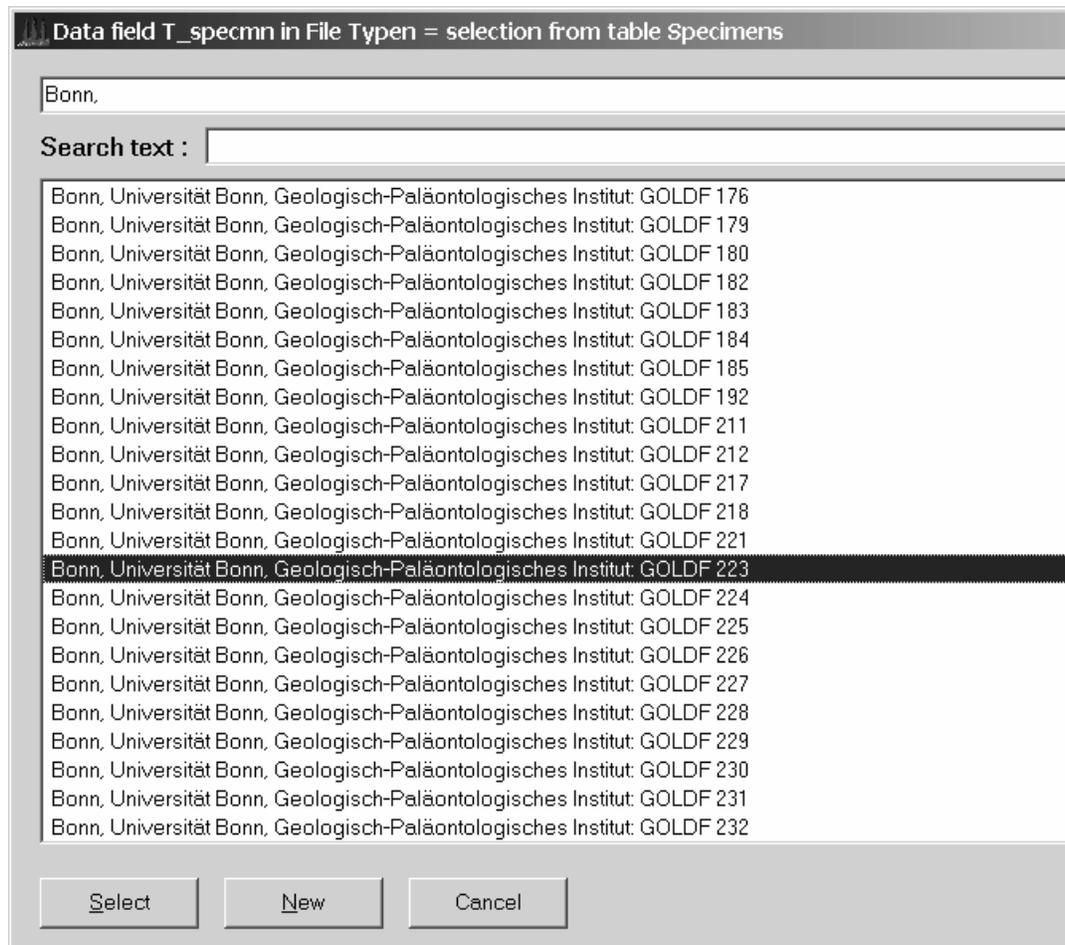
Orig.genus	: <input type="text" value="Astrea Lamarck (1801a)"/>	OSG:	<input type="text"/>	
Species name	: <input type="text" value="agaricites"/>	SubS:	<input type="text"/>	V: <input type="checkbox"/>
Reference	: <input type="text" value="Goldfuss (1826a)"/>	Auth.:	<input type="text"/>	
Species sensu	: <input type="text"/>			
Spec.emended	: <input type="text"/>			
Nom.nov. pro	: <input type="text"/>	P.A.:	<input type="text"/>	
Validity	: <input type="text"/>			
	Genus	Subgenus		
Current genus	: <input type="text" value="Synastrea Milne-Edwards (1848b)"/>	<input type="text"/>		
Assigned	: <input type="text" value="Baron-Szabo (2001)"/>	<input type="text"/>		
Pers. genus	: <input type="text" value="Synastrea Milne-Edwards (1848b)"/>	<input type="text"/>		
First occurren.	: <input type="text" value="Cenomanian, base"/>			
Last occurren.	: <input type="text" value="Lower Maastrichtian, top"/>			
Sort code	: <input type="text" value="0"/>	No. of citations	: <input type="text" value="78"/>	

- Original genus** : Contains the genus to which the species was originally assigned. Refers to a record in the GENERA table.
- Original subgenus** : Contains the subgenus to which the species was originally assigned. Refers to a record in the GENERA table.
- Species name** : Contains the name of the species.
- Subspecies** : Contains the name of the subspecies, if any.
- V** : Should be marked to record a variety in the subspecies field.
- Reference** : Contains the reference in which the species was described and refers to a record in the PUBLICATIONS table. The reference is generally identical with the author.
- P.A.** : This field is optional. It contains the name of an author who is not identical with the author in the reference field (such as "MÜNSTER in GOLDFUSS"). Refers to a record in the AUTHORS table.
- Species sensu** : Contains the reference to which a species in the sense of a subsequent author (s.l.) refers. In the species "*Astraea ramosa* Sowerby 1835 sensu Michelin 1841" the original author "Sowerby 1835" is recorded in the Reference field and "Michelin 1841" in the Species sensu field. This is taxonomically incorrect but unfortunately often done in the literature. The field refers to a record in the PUBLICATIONS table.
- Spec. emended** : Contains a reference to an emended species (an intended change of an incorrectly spelt name). Emendation is only possible in conformity with the IRZN. An emendation in the sense of a "correction" or "confirmation" of a diagnosis has no nomenclatory value.

- Nom. nov. pro :** If the name of the species was preoccupied and had to be replaced by a new name (nomen novum), the original name was recorded in this field.
- P. A. :** Previous Author. - Like the original name of the species, the name of the original author has to be recorded in this field. Refers to a record in the PUBLICATIONS table.
- Validity :** Contains the status of the species (such as nomen nudum, nomen novum) and refers to a record in the VALIDITIES table.
- Genus**
- Current genus :** Contains the current genus of the species. Refers to a record in the GENERA table.
- CSG :** Contains the current subgenus of the species. Refers to a record in the GENERA table.
- Assigned :** Refers to a record in the PUBLICATIONS table and contains the name of the author who assigned the species to the current genus. replaces the field with the current (or last) source of a citation.
- Pers. genus :** Indicates the genus to which the species should be assigned in the user's opinion. Refers to a record in the GENERA table.
- Subgenus**
- Current genus :** Contains the current subgenus of the species. Refers to a record in the GENERA table.
- Assigned :** Refers to a record in the PUBLICATIONS table and contains the name of the author who assigned the species to the current subgenus. replaces the field with the current (or last) source of a citation.
- Pers. genus :** Indicates the subgenus to which the species should be assigned in the user's opinion. Refers to a record in the GENERA table.
- First occurren. :** First stratigraphical indication of the species (refers to a record in the AGE BOUNDARIES table). This value may be set or automatically determined (see Standard estimation of the database; p. 40).
- Last occurren. :** Last stratigraphical indication of the species (refers to a record in the AGE BOUNDARIES table). This value may be set or automatically determined (see Standard estimation of the database; p. 40).
- Sort code :** Optional recording of a sort code.
- Number of citations:** Number of citations of this species. This value is automatically determined.
- Note** Optional recording of a text note.
- Type specimens** Recording of type specimen(s) of the species. By clicking on this button, a list of type specimens of the species is displayed. When data are first recorded, the list is generally empty :



Enter the first few letters of a town into the field at the top. A list of available specimens is displayed. Then enter more letters or append a new specimen (**New**) :



By clicking on a specimen and then on **Select** you create a new record in the TYPES table, assigning the selected specimen as a type to the current species. This record is immediately displayed:

Type specimens : 353/3960

Standard

Type specimens

Species :

Specimen :

Type specification:

Type questionable:

Designated :

Designation mode:

You can now add the name of the author who designated the type (**F7** replaces the designation with the author of the species) and the mode of designation :

Type specimens : 353/3960

Standard

Type specimens

Species :

Specimen :

Type specification:

Type questionable:

Designated :

Designation mode:

By closing the list and returning to the first list, you find the selected types:

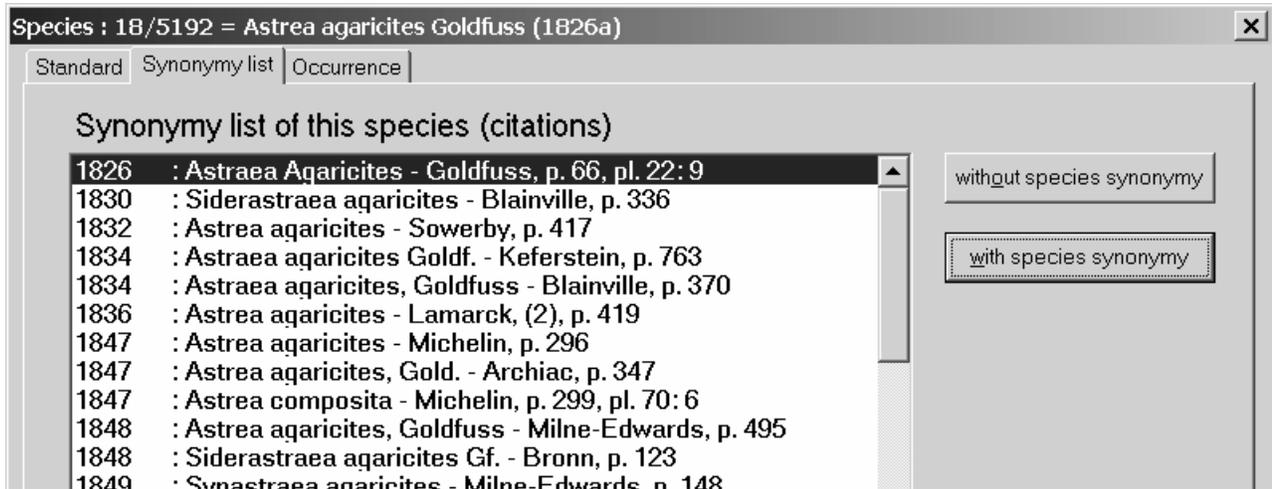
Type specimens ✕

Bonn Universität Bonn, Geologisch-Paläontologisches Institut: GOLDF 223

A selected item may be modified by **Edit**. The entry can be deleted by clicking on **Remove**. Clicking on **Add** would take you to a blank (new) edit form of the TYPES table. Clicking on **Close** closes the list.

- Illustrations** Click on this button to assign a graph file to the record. See [Illustrations, Literature and Documents](#) (p. 27).
- References** Click on this button to assign publications to the record. These publications may provide more detailed information on the species.
- Documents** Any document can be assigned to the species. For details compare [Illustrations, Literature and Documents](#).

- Description of the second file card



The second file card provides information on the synonymy list of the species (default without synonymous species). By clicking on the field "**with species synonymy**" citations of synonymous species are also displayed.

- Description of the third file card



The third card lists the localities in which the species occurred.

Species synonymy

BINOMINA

Belongs to Taxonomy

Used by CITATIONS

Refers to SPECIES, PUBLICATIONS

Contents Contains the synonymy of species. A species is synonymous with another if its first description is included in a synonymy list of a species described earlier.

Entries in this table should not be manually modified but using the tools provided in the edit form of the CITATIONS table. The program installed in this form helps to prevent errors.

The table is very important for working with taxonomic data in PaleoTax.

File cards 1

- Description of the form

Species Synonymy : 21 / 4559 = Heterocoenia tetrseptata Eguchi (1951)

Standard | © HLK 2003

Species Synonymy

Species : Heterocoenia tetrseptata Eguchi (1951)

Senior synonym : Heterocoenia tetrseptata Eguchi (1951)

Assigned by :

Remark :

Pers. synonym : Heterocoenia tetrseptata Eguchi (1951)

Species : Contains the species and refers to a record in the SPECIES table. After creating the record this field should not be modified.

Senior synonym : Contains the synonym of the species and refers to a record in the SPECIES table. If the species is not synonymous (which is the rule and not an exception), this field refers to the same species as the **Species** field, i.e. both entries are identical (see above). To append a new record, select the species in the **Species** field, move to the **Senior synonym** field and just press **[F7]** to copy the same entry into this field.

If the species in the **Species** field is later considered a junior synonym of another species, the entry in the **Senior synonym** field will change and refer to another species as the senior synonym:

Species Synonymy	
Species	: Isastrea siva Stoliczka (1873)
Senior synonym	: Isastrea neocomiensis Fromentel (1857)
Assigned by	: Baron-Szabo, R.C. (1997b)
Remark	: since Isastrea neocomiensis is no true Isastrea, it cannot be a senior synonym of another Isastrea (which is a true Isastrea)
Pers. synonym	: Isastrea siva Stoliczka (1873)

- Assigned by :** Contains the reference to the assignment of the species to a senior synonym. Refers to a record in the PUBLICATIONS table.
- Remark :** Space for a personal note.
- Pers. Synonym :** Contains the synonym in the user's opinion. You may select any species from the SPECIES table that you believe to be the senior synonym of the species.

Species type modes

STYPMD

Belongs to Taxonomy

Used by TYPES

Refers to -

Contents Species type modes, such as holotype, paratype, etc.

The table is only used for recording species and their types.

File cards 1

- Description of the form

Species type modes	
Name	: Holotype

- Name :** Contains the name of the type.

Specimens

SPECMENS

Belongs to	Material
Used by	TYPES, EXAMINATIONS, FIGURED SPECIMENS
Refers to	COLLECTIONS, LOCALITIES
Contents	Specimens, mostly type specimens. The table is needed for recording species with their types. In the future it will be enlarged so that PaleoTax can also be used as a specimen-based database.
File cards	2

- Description of the form

Collection : Collection in which the specimen is kept. Refers to a record in the COLLECTIONS table. If the location of the specimen (but not its locality) is unknown, a fictitious collection may be entered in this field (see TYPES table).

Number : Number of the specimen in the collection.

Old Number : Previous or old number of the specimen.

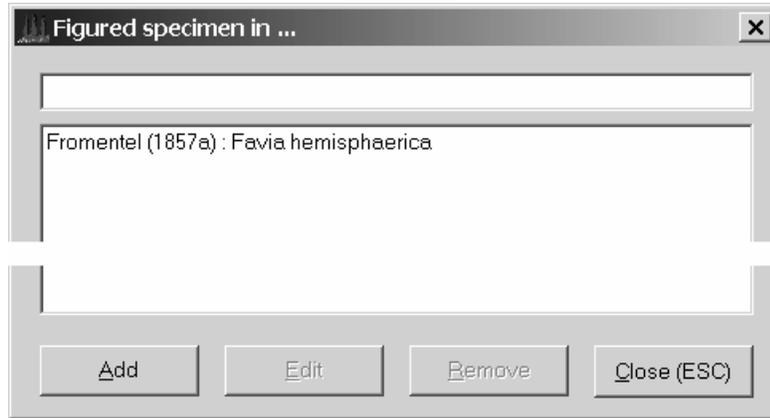
Location : Location of the specimen in the collection (cupboard, drawer).

Locality : Locality of the specimen. Should be recorded even if the location of the specimen is unknown. - Refers to a record in the LOCALITIES table.

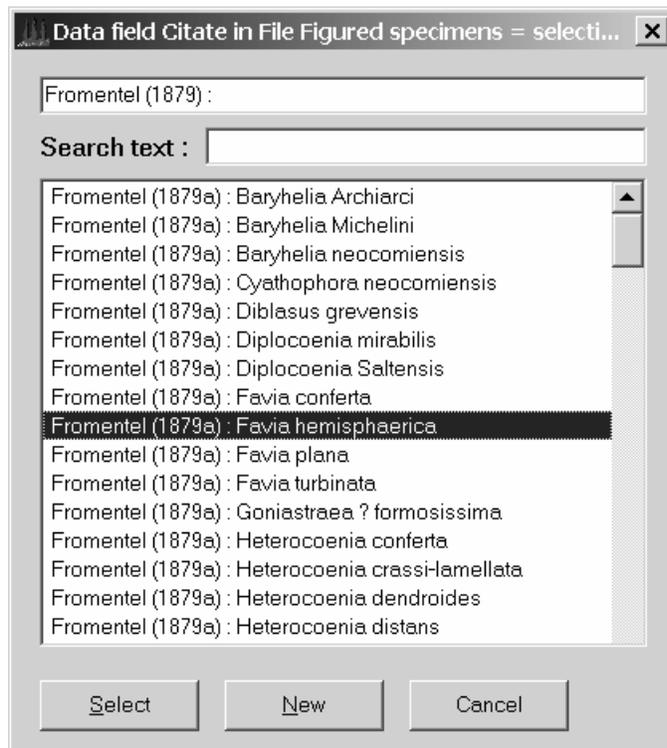
Area ? When this box is marked it means that it was not possible to exactly define the locality of the specimen. For example, terms such as "southern England" or "Pyrenees" are often used in the old literature. This field should also be taken into consideration when recording the locality of a fictitious type specimen. Some catalogues check this box and replace the name "Type locality" by "Type region".

Figured specimen in ...

Recording of figured specimens for this type. Figured specimens are specimens which are (types or not) depicted in a publication. When you click on this button, a list of citations with illustrations of the specimen is displayed. As a rule this list is empty when data are first recorded, but here one item is already available:



Enter the first few letters of an author's name into the field at the top. A list of available citations will then be displayed. Enter more letters or append a new citation (**New**) :



By clicking on a citation and then on **Select** (or double clicking on the item) you create a new record in the FIGURED SPECIMENS table which assigns the selected citation to the current publication. This record is immediately displayed by adding the number of the figure (see cursor) :

Figured specimens : 695/1664 = Fromentel (1879) : Favia hemisphaerica - pl. 118: 2

Standard

Figured specimens

Citation : Fromentel (1879a) : Favia hemisphaerica

Figure : pl. 118: 2

Specimen : Paris, Muséum National d'Histoire Naturelle: M03709

By closing the list and returning to the first list, you are shown the selected citation:

Figured specimen in ...

Fromentel (1857a) : Favia hemisphaerica

Fromentel (1879a) : Favia hemisphaerica

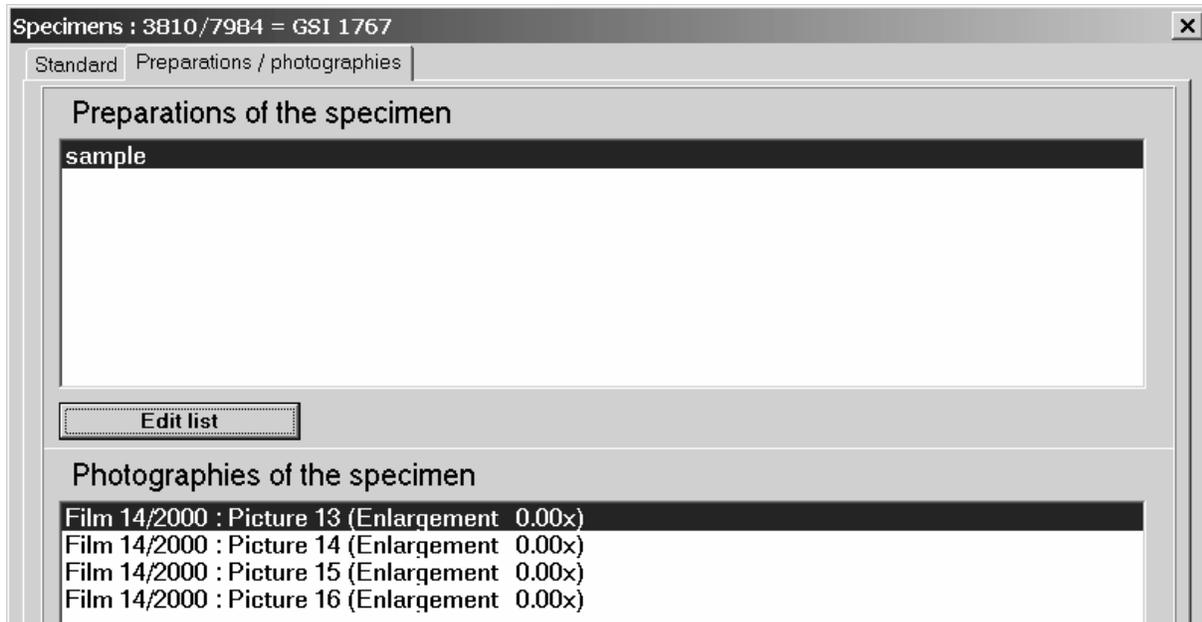
Add Edit Remove Close (ESC)

An item that you have selected can be modified by **Edit**. You can delete the entry by clicking on **Remove**. **Add** would take you directly to an empty (new) edit form of the FIGURED SPECIMENS table.

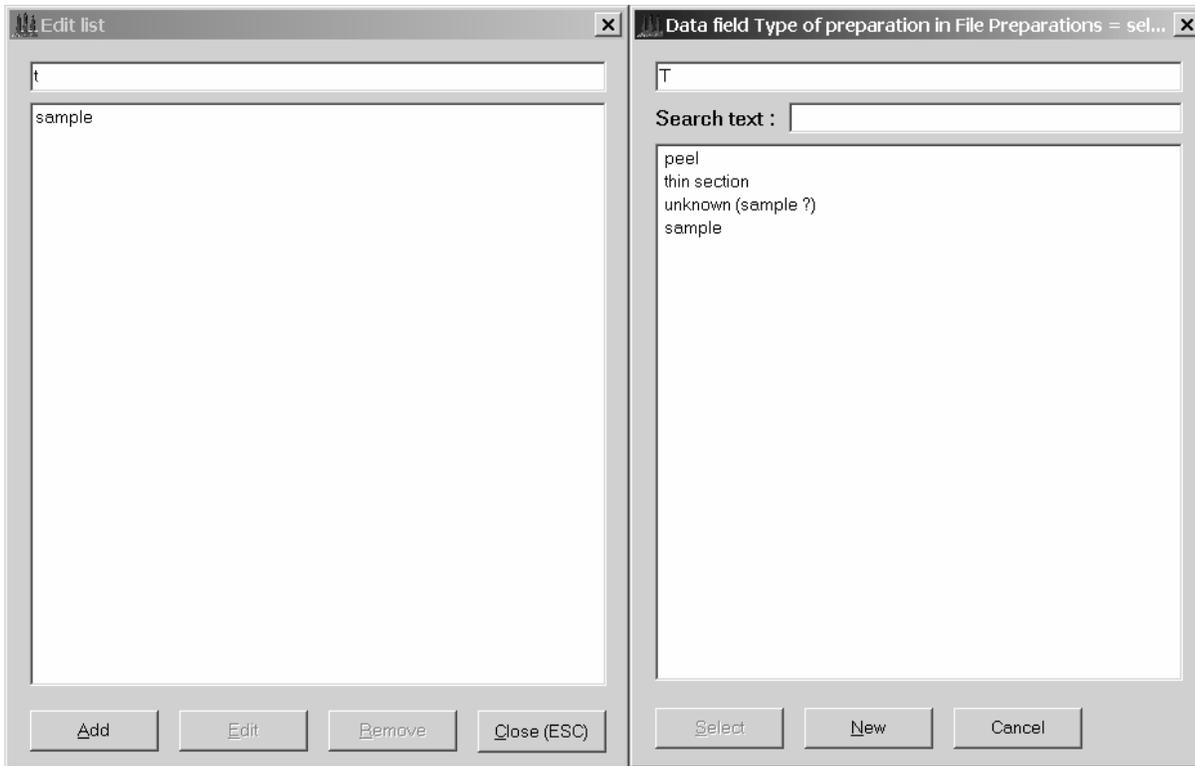
By clicking on **Close**, the list is closed.

Illustrations Click on this button to assign a graph file to this record. See [Illustrations, Literature and Documents](#) (p. 27).

- Description of the second file card



The second card lists the preparations and photographs available for this specimen. The list of preparations can be edited by clicking on the **Edit list**:



Typing a letter into the field at the top calls up a list of preparation modes. Select one of them and the edit form of the PREPARATIONS table will be displayed for you to enter the preparation number.

Towns

TOWNS

Belongs to	Literature
Used by	JOURNALS, COLLECTIONS
Refers to	COUNTRIES
Contents	Towns in which journals are published and collections located. Data are usually maintained by using one of these two tables.
File cards	1

- Description of the form

The screenshot shows a software window with the title bar 'Towns : 14/359 = Barcelona (Spain)'. Inside the window, there is a 'Standard' tab. The main area of the window is titled 'Towns' and includes a copyright notice '© HLK 2003'. Below the title, there are two input fields: 'Town : Barcelona' and 'Country : Spain'.

Town : Name of the town.

Country : Country in which the town is situated. Refers to an entry in the COUNTRIES table.

Type species

TYPESPEC

Belongs to	Taxonomy
Used by	-
Refers to	GENERA, SPECIES, PUBLICATIONS, MODE OF TYPE SPECIES DESIGNATION
Contents	Type species of genera and subgenera. The data are recorded in the GENERA edit form, using the function of the Type species button. This table should be used for recording genera.
File cards	1

- Description of the form

Type species	
Genus	Cyclophyllopsis Alloiteau (1952b)
Type species	Cyclolites aptiensis Fromental (1863)
Designated	Alloiteau, J. (1952b)
Mode	original definition

- Genus** : The genus concerned. Refers to a record in the GENERA table.
- Type species** : The type species of this genus. Refers to a record in the SPECIES table.
- Designated** : Publication in which the type species was designated. Refers to a record in the PUBLICATIONS table.
- Mode** : Mode of designation : original designation (OD), monotypy (MT), subsequent designation (SD), etc. Refers to an entry in the MODE OF TYPE SPECIES DESIGNATION table.

Types

TYPES

- Belongs to** Taxonomy
- Used by** -
- Refers to** SPECIES, SPECIMENS, PUBLICATIONS, SPECIES TYPE MODES
- Contents** Real and fictitious type specimens.

A real type is a type specimen of which at least the depository institution is known. A fictitious type is a type specimen the location of which is unknown, while its locality is known. A type locality (locus typicus) is defined as the locality of the type. In the historic literature the location of a type is often omitted, but its locality is indicated. In such cases a fictitious specimen has to be created (in a fictitious collection). There should be a question mark in the name of the institution, and the type number should contain the abbreviations 'n/a' or 'nn' (data containing these abbreviations are skipped in catalogues). The locality can be recorded. The "Type specification" field should remain empty.

This table is maintained through the SPECIES table.

- File cards** 1

- Description of the form

Species : Species concerned. Refers to a record in the SPECIES table.

Specimen : Type. Refers to a record in the SPECIMENS table.

Type specification : Selection of a type category (holotype, paratype, syntype, lectotype, paralectotype, neotype). Various syntypes, paratypes and paralectotypes should be separately recorded. Refers to a record in table SPECIES TYPE MODES.

Type questionable : Should be marked if the type is questionable.

Designated : Refers to the publication in which the type was designated. copies the author of the species into this field.

Designation mode : Mode of designation as an OD (original designation), MT (monotypy), SD (subsequent designation).

Validity of genera/species

Validity

Belongs to Taxonomy

Used by SPECIES, GENERA

Refers to -

Contents Status or validity of taxa.

File cards 1

- Description of the form

Name : Describes the status of genera/species. Possible descriptions are, for example, nomen novum ("nom. nov."), nomen dubium ("nom. dub."), nomen nudum ("nom. nud").

Appendix 2 - Data structure

This appendix is a complete list of all files with their data fields. It should only be studied to formulate complex queries.

The structure (Version LLM 7.C/SR5) is presented as a table and is ordered by groups and tables. The name of the table is followed by the name of the file (*.DBF) and the priority level (see below). The fields are explained as follows:

1	2	3	4	5
(1)	Main author	<i>author</i>	R → AUTHORS	(Prever, P.L.)

The **first** column indicates the priority of the tables and fields:

1. Table should be used and field filled in in any case.
2. Use of table and field is recommended.
3. As far as data are available, they should be recorded.
4. Data recording is not necessary and depends solely on you own wishes and preferences.
5. No data recording (field is only provided for internal purposes).

The name of the field as used in the text or in Appendix 1 follows in the **second** column.

The **third** column contains the name of the field as used by the system (and in programs and queries).

The **fourth** column indicates the data type: N for numbers, C for characters, R for a relation to another table.

An example is given in the **fifth** column (in brackets if the data are not stored in the table concerned, which is the case for all fields related to other tables).

1	2	3	4	5
A. Literature				
1. PUBLICATIONS (PUBLICAT) - (1)				
(1)	Main author	<i>author</i>	R → AUTHORS	(Prever, P.L.)
(1)	Year	<i>year</i>	C, 9	1909
(2)	Reference letter	<i>refl</i>	C, 1	
(3)	Second author	<i>author2</i>	R → AUTHORS	
(3)	Third author	<i>author3</i>	R → AUTHORS	
(3)	Fourth author	<i>author4</i>	R → AUTHORS	
(3)	Fifth author	<i>author5</i>	R → AUTHORS	
(2)	Title or translation	<i>title</i>	C, 250	Anthozoa
(4)	Original title	<i>otitle</i>	C, 250	
(4)	Font selector	<i>tplane</i>	N, 1	
(3)	Book	<i>book</i>	R → BOOKS	(Parona, C.F.: La fauna coralligena del Cretaceo dei Monti d'Ocre nell'Abruzzo Aquilano)
(2)	Journal/Publishing House	<i>publ</i>	R → PUBLISHERS	(Memorie descrittive della carta geologica d'Italia)
(2)	Ser./Vol./Number/Pages/Plates	<i>referenc</i>	C, 50	5, 1: 51-147, pl.1-15
(4)	Serial	<i>serial</i>	C, 10	
(4)	Volume	<i>volume</i>	C, 10	
(4)	Issue	<i>issue</i>	C, 20	

(4)	Pages	<i>pages</i>	C, 20	51-147
(4)	Plates	<i>plates</i>	C, 20	1-15
(4)	Figures etc.	<i>Figures</i>	C, 30	1 map.
(4)	Note	<i>pnote</i>	text, pnote	
(4)	Mark	<i>marker</i>	L, 1	
(4)	Mark intern	<i>markerin</i>	L, 1	
(5)	Number of citations	<i>ncitat</i>	N, 5, 0	
(5)	HTML internal	<i>html</i>	N, 1, 0	
2. AUTHORS (AUTHORS) - (1)				
(1)	Family name	<i>fname</i>	C, 25	Orbigny
(1)	Given name	<i>cname</i>	C, 10	A.
(3)	Addition before family name	<i>afname1</i>	C, 10	de
(3)	Addition ... with the vowel excluded	<i>afname2</i>	C, 10	d'
(4)	Original author's name	<i>ofname</i>	C, 35	
(4)	Font selector	<i>aplane</i>	N, 1	
(4)	Note	<i>atnote</i>	text, atnote	(1802-1857)
3. BOOKS (BOOKS) - (2)				
(2)	Book editor	<i>beditor</i>	R → AUTHORS	(Parona, C.F.)
(3)	Book editor 2	<i>beditor2</i>	R → AUTHORS	
(3)	Book editor 3	<i>beditor3</i>	R → AUTHORS	
(2)	Book title	<i>bname</i>	C, 200	(La fauna coralligena del Cretaceo dei Monti d'Ocre nell'Abruzzo Aquilano)
(4)	Original book title	<i>obname</i>	C, 200	
(4)	Font selector	<i>bplane</i>	N, 1	
(2)	Book publisher	<i>bpubl</i>	R → PUBLISHERS	
(4)	Book pages	<i>bpages</i>	C, 50	
4. PUBLISHERS (PUBLS) - (2)				
(2)	Journal name	<i>pname</i>	C, 200	Memorie descrittive della carta geologica d'Italia
(4)	Original name	<i>opname</i>	C, 200	
(4)	Font selector	<i>pplane</i>	N, 1	
(2)	Publishing house	<i>phouse</i>	R → PUBLISHING HOUSES	
(2)	Town of publication	<i>ptown</i>	R → TOWNS	(Firenze, Italy)
(4)	Availability	<i>availb</i>	text, availb	
5. PUBLISHING HOUSES (PHOUSES) - (2)				
(2)	Name of publishing house	<i>phname</i>	C, 50	
6. TOWNS (TOWNS) - (2)				
(1)	Town name	<i>tname</i>	C, 50	Firenze
(2)	Country	<i>tcountry</i>	R → Geography.COUNTRIES	(Italy)
7. KEY TO LITERATURE (PUBLKEY) - (4)				
(2)	Keyword	<i>refkw</i>	R → KEYWORDS	(Appenin)
(2)	Reference	<i>kwref</i>	R → PUBLICATIONS	(Parona, 1909)

8. KEYWORDS (KEYWORDS) - (4)

(4)	Keyword Level 1	<i>kwlevel1</i>	N, 3	
(4)	Keyword Level 2	<i>kwlevel2</i>	N, 3	
(4)	Keyword Level 3	<i>kwlevel3</i>	N, 3	
(1)	Keyword	<i>keyword</i>	C, 50	Appenin

B. Stratigraphy**1. AGES (AGES) - (1)**

(1)	Age name	<i>agename</i>	C, 50	Uppermost Aptian to Lower Albian
(1)	Upper border	<i>top</i>	R → AGE BORDERS	(Middle Albian, base)
(1)	Lower border	<i>bottom</i>	R → AGE BORDERS	(Uppermost Aptian, base)
(3)	Biozone (from)	<i>biozone</i>	R → BIOZONES	nolani
(3)	Biozone to	<i>biozonet</i>	R → BIOZONES	mammillatum
(4)	Note	<i>agenote</i>	text, agenote	
(4)	Age sort	<i>agesort</i>	N, 10	

2. AGE BORDERS (AGEIUGS) - (1)

(1)	Name of age border	<i>ageiugs</i>	C, 50	Uppermost Aptian base
(4)	Age from	<i>namefrom</i>	C, 50	Aptian, base
(4)	Age to	<i>nameto</i>	C, 50	Lower Upper Aptian, top
(1)	Absolute age	<i>value</i>	N, 7, 2	115.1
(4)	Assignment of value	<i>agelit</i>	R → Literature PUBLICATIONS	(Gradstein, 1995)
(5)	Number of genera	<i>agegenus</i>	N, 5, 0	
(5)	Number of species	<i>agespec</i>	N, 5, 0	
(4)	Age border note	<i>anote</i>	text, ageiugs	
(5)	Age estimation value 1	<i>aidata</i>	N, 10, 0	
(5)	Age estimation value 2	<i>aidata2</i>	N, 10, 0	
(5)	Analysis / calculation	<i>AW</i>	L, 1	
(5)	Analysis / display	<i>AC</i>	L, 1	

3. BIOZONES (BIOZONES) - (3)

(2)	Biozone name	<i>biozname</i>	C, 50	nolani
-----	--------------	-----------------	-------	--------

4. LITHOSTRATIGRAPHY (LITHOS) - (2)

(2)	Unit name	<i>luname</i>	C, 50	Lower Glen Rose Formation
(2)	Age	<i>liage</i>	R → AGES	(Uppermost Aptian to Lower Albian)
(4)	Notes	<i>precis</i>	text, lithos	

C. Geography**1. LOCALITIES (LOCALITY) - (1)**

(1)	Region	<i>region</i>	R → REGIONS	(Reg. Abruzzi, Prov. L'Aquila)
(1)	Outcrop	<i>outcrop</i>	C, 100	Monti d'Ocre, Fossa Agnese
(4)	Original outcrop	<i>ooutcrop</i>	C, 100	
(4)	Font selector	<i>oplane</i>	N, 1	
(3)	Sample point	<i>smp1pnt</i>	C, 30	
(3)	Bed	<i>bed</i>	C, 30	
(1)	Age	<i>locage</i>	R → Stratigraphy.AGES	(Upper Aptian)

(4)	Locality note	<i>locnote</i>	text, locality	
(3)	Lithostratigraphy	<i>loclitho</i>	R → Stratigraphy.LITHOSTRATIGRAPHY	
(4)	Locality complex	<i>lcomplex</i>	R → COMPLEXES	(Apulia, Apt)
(4)	Palaeogeographic unit	<i>locpgu</i>	R → PALAEOGEOGRAPHIC UNITS	(Ap)
(4)	LL Grid position, lat. degree	<i>bg</i>	N, 5	13
(4)	LL Grid position, lat. minute	<i>bm</i>	N, 5	14
(4)	LL Grid position, lat. second	<i>bs</i>	N, 5	24
(4)	LL Grid position, N/S	<i>bd</i>	C, 1	
(4)	LL Grid position, long. degree	<i>lg</i>	N, 5	42
(4)	LL Grid position, long. minute	<i>lm</i>	N, 5	17
(4)	LL Grid position, long. second	<i>ls</i>	N, 5	42
(4)	LL Grid position, E/W	<i>ld</i>	C, 1	
(4)	Quality of LL data	<i>lltype</i>	C, 10	Loc. GPS
(4)	Abbreviation or code	<i>locabbr</i>	C, 50	MO5
(5)	Number of citations	<i>locitat</i>	N, 5, 0	
(5)	Number of species	<i>lospec</i>	N, 5, 0	
(4)	Suppress locality	<i>lsuppress</i>	L, 1, 0	
(5)	HTML internal	<i>html</i>	N, 1, 0	
2. REGIONS (REGIONS) - (1)				
(1)	Country	<i>rcountry</i>	R → COUNTRIES	(Italy)
(1)	Region name	<i>rname</i>	C, 50	region Abruzzi, province L'Aquila
(4)	Original region	<i>oregion</i>	C, 50	
(4)	Font selector	<i>rplane</i>	N, 1	
(4)	Region code	<i>recode</i>	C, 10	61
3. COUNTRIES (COUNTRY) - (2)				
(1)	Country name	<i>coname</i>	C, 25	Italy
(4)	Country code	<i>cocode</i>	C, 10	
4. COMPLEXES (COMPLEX) - (4)				
(2)	Complex name	<i>comname</i>	C, 50	Apennine Platform
(2)	Complex age	<i>comage</i>	R → Stratigraphy.AGES	(Lower Aptian)
(4)	Complex note	<i>comnote</i>	text, complex	
5. PALAEOGEOGRAPHIC UNITS (PGUNITS) - (4)				
(1)	Abbreviation	<i>pgushort</i>	C, 10	Ap
(3)	Subunit	<i>pgusub</i>	C, 10	
(3)	Explanation	<i>pguexpl</i>	C, 100	Apulia
(4)	Number of localities	<i>pguloc</i>	C, 5, 0	
(4)	Number of indications	<i>pguind</i>	C, 5, 0	
(4)	Number of species	<i>pguspec</i>	C, 5, 0	
(5)	Estimation 1	<i>pguest1</i>	C, 10	
(5)	Estimation 2	<i>pguest1n</i>	N, 5, 0	
(3)	Note	<i>pgunote</i>	text, pgunote	

D. Material				
1. SPECIMENS (SPECMENS) - (1)				
(1)	Collection	<i>spmncoll</i>	R → COLLECTIONS	(Torino, PU)
(1)	Number	<i>spmno</i>	C, 50	17942
(4)	Old number	<i>spmnono</i>	C, 50	
(4)	Location	<i>spdepos</i>	C, 50	
(1)	Locality	<i>spmiloc</i>	R → Geography.LOCALITIES	(Italy, Aquila, Monte d'Ocre)
(4)	Locality is poorly defined	<i>spisreg</i>	L, 1	
2. COLLECTIONS (COLLECTS) - (4)				
(1)	Town	<i>ctown</i>	R → Literature.TOWNS	(Torino)
(1)	Name of institution	<i>institut</i>	C, 100	Universita degli studi, dipartimento di scienza della terra
(3)	Acronym	<i>acronym</i>	C, 10	PU
(4)	Internet	<i>collhttp</i>	C, 200	http://www.dst.unito.it
(4)	Email	<i>collmail</i>	C, 80	
(4)	Note	<i>collnote</i>	text, collnote	
3. PREPARATION (PREPARAT) - (4)				
(2)	Specimen	<i>pr_spmn</i>	R → SPECIMENS	(Torino, PU, 17942)
(2)	Type of preparation	<i>pr_type</i>	R → PREPARATION TYPES	(peel)
(2)	Number	<i>pr_no</i>	C, 20	LF 32
4. PREPARATION TYPES (PRTYPES) - (4)				
(2)	Name of preparation type	<i>prtype</i>	C, 20	Peel
5. PHOTOGRAPHIES (PHOTO) - (4)				
(2)	Preparation	<i>ph_spmn</i>	R → PREPARATION	(Torino, PU 17942, LF 32)
(2)	Film	<i>ph_film</i>	R → FILM	(NF 97/1)
(2)	Picture no	<i>ph_no</i>	C, 10	23
(2)	Enlargement	<i>ph_enlg</i>	N, 7, 2	0.5
(4)	Remark	<i>ph_rem</i>	C, 200	
6. FILM (FILM) - (4)				
(2)	Film no	<i>filmno</i>	C, 20	NF 97/1
(2)	Film type	<i>filmtype</i>	C, 20	negative b/w
E. Taxonomy				
1. SPECIES SYNONYMY (BINOMINA) - (1)				
(1)	Species (synonym)	<i>species</i>	R → SPECIES	(Aulastraeopora dalpizi Prever, 1909)
(1)	Senior synonym	<i>senior</i>	R → SPECIES	(Aulastraeopora deangelisi Prever, 1909)
(2)	Assigned by	<i>assign</i>	R → Literature.PUBLICATIONS	(Löser, 1998)
(4)	Remarks on synonymy	<i>disorder</i>	C, 200	
(4)	Private synonymy	<i>private</i>	R → SPECIES	(Aulastraeopora deangelisi Prever, 1909)

2. SPECIES (SPECIES) - (1)

(1)	Original genus	<i>o_genus</i>	R → GENERA	(Dimorphocoenia Orbigny 1850)
(3)	Original subgenus	<i>o_subgen</i>	R → GENERA	
(1)	Species name	<i>sname</i>	C, 50	solomkoae
(3)	Subspecies or variety name	<i>subname</i>	C, 50	
(3)	Variety	<i>variety</i>	L, 1	
(1)	Species publication	<i>sauthor</i>	R → Literature.PUBLICATIONS	(Bendukidze, 1956)
(3)	Species (in) author	<i>satname</i>	R → Literature.AUTHORS	
(3)	Species used sensu	<i>spensu</i>	R → Literature.PUBLICATIONS	
(3)	Species name emend.	<i>emenspec</i>	R → Literature.PUBLICATIONS	
(3)	Nomen novum pro	<i>specnov</i>	C, 50	Aphragmastraea crassisepta
(3)	Author previous species	<i>psauthor</i>	R → Literature.PUBLICATIONS	(Solomko, 1888)
(3)	Validity	<i>validity</i>	R → VALIDITIES	
(1)	Current genus	<i>c_genus</i>	R → GENERA	(Dimorphocoenia Orbigny, 1850)
(3)	Current subgenus	<i>c_subgen</i>	R → GENERA	
(2)	Assignment of current genus	<i>gassign</i>	R → Literature.PUBLICATIONS	(Kusmicheva, 1988)
(3)	Assignment of current subgenus	<i>sgassign</i>	R → Literature.PUBLICATIONS	
(4)	Private genus	<i>p_genus</i>	R → GENERA	(Dimorphocoenia Orbigny, 1850)
(4)	Private subgenus	<i>p_subgen</i>	R → GENERA	
(4)	Stratigraphic occurrence: lower age	<i>sage_l</i>	R → Stratigraphy.AGE BORDERS	(Valanginian, base)
(4)	Stratigraphic occurrence: upper age	<i>sage_u</i>	R → Stratigraphy.AGE BORDERS	(Lower Aptian, top)
(4)	Species note	<i>snote</i>	text, snote	
(4)	Species sort	<i>sp_sort</i>	N, 5	
(5)	Number of citations	<i>numcitat</i>	N, 5, 0	
(5)	HTML internal	<i>html</i>	N, 1, 0	
(5)	Analysis internal	<i>spdata</i>	N, 5, 0	

3. TYPES SPECIES (TYPESPEC) - (1)

(1)	Genus	<i>ts_genus</i>	R → GENERA	(Aulastraeopora Prever, 1909)
(1)	Species	<i>ts_spec</i>	R → SPECIES	(Aulastraeopora deangelisi Prever, 1909)
(2)	Designation of the type species	<i>ts_asgnd</i>	R → Literature.PUBLICATIONS	(Wells, 1933)
(2)	Type species according to IRZN	<i>ts_mode</i>	R → GENUS TYPE MODES	(SD)

4. TYPES (TYPES) - (2)

(1)	Species	<i>t_spec</i>	R → SPECIES	(Aulastraeopora deangelisi Prever, 1909)
(1)	Specimen	<i>t_specmn</i>	R → Material.SPECIMENS	(Torino, PU, 17942)
(2)	Holotype, lectotype	<i>t_type</i>	R → SPECIES TYPE MODES	(Syntype)
(4)	Type questionable	<i>t_typequ</i>	L, 1	
(2)	Assignment of type	<i>t_asgnd</i>	R → Literature.PUBLICATIONS	(Prever, 1909)
(2)	Mode of assignation	<i>t_mode</i>	C, 20	(OD)

5. SPECIES TYPE MODES (STYPMD) - (2)				
(2)	Species type denomin.	<i>t_mname</i>	C, 20	Syntypus
6. VALIDITIES (VALIDITY) - (2)				
(2)	Name of validity	<i>vname</i>	C, 20	nomen nudum
7. GENERA (GENERA) - (1)				
(1)	Genus name	<i>gname</i>	C, 40	Aulastraeopora
(1)	Genus author	<i>gauthor</i>	R → Literature.PUBLICATIONS	(Prever, 1909)
(4)	Genus status	<i>genstat</i>	R → VALIDITIES	
(3)	Subgenus?	<i>issubgen</i>	L, 1	
(3)	Genus name emended	<i>emendgen</i>	R → Literature.PUBLICATIONS	
(3)	Nomen novum pro	<i>gennnov</i>	C, 40	
(3)	Author of previous genus	<i>pgauthor</i>	R → Literature.PUBLICATIONS	
(2)	Current family	<i>family</i>	R → FAMILIES	(Aulastraeoporidae All, 1957)
(3)	Current subfamily	<i>subfam</i>	R → FAMILIES	
(2)	Family assigned	<i>fassign</i>	R → Literature.PUBLICATIONS	(Löser, 1998)
(3)	Subfamily assigned	<i>sfassign</i>	R → Literature.PUBLICATIONS	
(4)	Stratigraphic occurrence: lower age	<i>gage_l</i>	R → Stratigraphy.AGE BORDERS	(Aptian, base)
(4)	Stratigraphic occurrence: upper age	<i>gage_u</i>	R → Stratigraphy.AGE BORDERS	(Cenomanian, top)
(4)	Genus note	<i>gnote</i>	text, gnote	
(4)	Genus sort	<i>ga_sort</i>	N, 5	
(5)	Number of species	<i>numspec</i>	N, 5, 0	
(5)	HTML internal	<i>html</i>	N, 1, 0	
8. GENUS TYPE MODES (GTYPMD) - (2)				
(2)	Genus type mode	<i>ts_mname</i>	C, 50	OD
(2)	Genus type mode abbreviation	<i>ts_abbr</i>	C, 10	OD
(2)	Genus type mode explanation	<i>ts_expl</i>	C, 60	Original designation
9. FAMILIES (FAMILIES) - (2)				
(2)	Family name	<i>famname</i>	C, 50	Aulastraeoporidae
(2)	Family author	<i>fauthor</i>	R → Literature.PUBLICATIONS	(Alloiteau, 1957)
(3)	Subfamily?	<i>issubfam</i>	L, 1	
(3)	Family name emended	<i>emendfam</i>	R → Literature.PUBLICATIONS	
(4)	Family text	<i>famnote</i>	text, fnote	
(4)	Family sort	<i>fa_sort</i>	N, 5	
(4)	Order	<i>famorder</i>	R → ORDERS	(Scleractinia, Bourne, 1900)
(4)	Suborder	<i>famsorder</i>	R → ORDERS	(Microsolenida)
10. ORDERS (ORDERS) - (4)				
(1)	Name of order	<i>orname</i>	C, 80	Scleractinia
(1)	Author	<i>orauthor</i>	R → Literature.PUBLICATIONS	(Bourne, 1900)
(4)	Class	<i>orclass</i>	R → CLASSES	(Anthozoa, Ehrenberg, 1834)
(4)	Subclass	<i>orsclass</i>	R → CLASSES	(Zoantharia, Blainv., 1830)
(4)	Note	<i>ornote</i>	text, orders	
(4)	Sort code	<i>orsort</i>	N, 5, 0	

11. CLASSES (CLASSES) - (4)				
(1)	Name of class	<i>cname</i>	C, 80	Anthozoa
(1)	Author	<i>clauthor</i>	R → Literature.PUBLICATIONS	
(4)	Phylum	<i>clphylum</i>	R → PHYLA	(Coelenterata, Frey ..., 1847)
(4)	Subphylum	<i>clsphylum</i>	R → PHYLA	(Cnidaria, Hatschek, 1888)
(4)	Sort code	<i>clsort</i>	N, 5, 0	
(4)	Note	<i>clnote</i>	text, clnote	
12. PHYLA (PHYLA) - (4)				
(1)	Name of phylum	<i>phyname</i>	C, 80	Coelenterata
(1)	Author of phylum	<i>phauthor</i>	h, 5, 0	(Frey & Leuckart, 1847)
(4)	Sort code	<i>phsort</i>	N, 5, 0	
(4)	Note	<i>phnote</i>	text, phynote	
F. Citations				
1. OCCURRENCE (OCCURR) - (1)				
(1)	Citation	<i>ocitate</i>	R → CITATIONS	(Hackemesser, 1936 : cf. Montlivaltia pauciradiata From./Dasmioipsis Opp.)
(4)	Lithostratigraphy	<i>lithos</i>	R Stratigraphy.LITHOSTRATIGRAPHY	(Evangelistria-Schichten) (Evangelistria layers)?
(4)	Cited age	<i>c_age</i>	C, 60	(Cenomanian)
(1)	Locality	<i>locality</i>	R → Geography.LOCALITIES	(Greece, Fokida, Dremisa)
2. CITATIONS (CITATION) - (1)				
(1)	Source	<i>source</i>	R → Literature.PUBLICATIONS	(Hackemesser, 1936)
(2)	Citation	<i>cite</i>	C, 100	cf. Montlivaltia pauciradiata From./Dasmioipsis Opp.
(2)	Reference	<i>cref</i>	C, 100	p. 34
(2)	Listed only	<i>listonly</i>	L, 1	F
(2)	Originally assigned to	<i>onow_ass</i>	R → Taxonomy.SPECIES SYNONYMY	(Montlivaltia pauciradiata Fromentel, 1886)
(1)	Now assigned to	<i>now_ass</i>	R → Taxonomy.SPECIES SYNONYMY	(Aulastraeopora deangelisi Prever, 1909)
(2)	Modified by	<i>revised</i>	R → Literature.PUBLICATIONS	(Löser, 1998)
(2)	Excluded by	<i>excluded</i>	R → Literature.PUBLICATIONS	
(4)	Personally assigned to	<i>pnow_ass</i>	R → Taxonomy.SPECIES SYNONYMY	(Aulastraeopora schnauzeae Löser, 1998)
(4)	Note on citation	<i>cnote</i>	text, paleotax	
(4)	Suppress citation	<i>csuppress</i>	L, 1	
3. FIGURED SPECIMENS (FIGURAT) - (4)				
(2)	Citate	<i>fcitate</i>	R → CITATIONS	(Prever, 1909 : Aulastraeopora deangelise)
(2)	Figure number	<i>figno</i>	C, 100	Pl. 138, Fig. 32
(2)	Specimen	<i>figspmn</i>	R → Material.SPECIMENS	(Torino, PU, 17942)
4. EXAMINATIONS (EXAM) - (4)				
(2)	Specimen	<i>examspmn</i>	R → Material.SPECIMENS	(Torino, PU, 17941)
(2)	Opinion	<i>opinion</i>	R → Taxonomy.SPECIES	(Aulastraeopora deangelisi)
(4)	Note	<i>examnote</i>	text, exam	

Appendix 3 - File formats

This appendix is only required for manual modification of configuration files or edit forms (generally not required).

Configuration files (DB2)

Configuration necessitates information about

- the relations between tables
- extended file types (text, graphic)
- which data are displayed when selected from other tables
- alias names of tables and fields

Field types

Text fields have to be defined. More than one text field is allowed. The definition is:

```
MEMO      <field name> FROM <DBT file>,0
```

Graphics are not part of the xBase standard and have to be defined as well:

```
TYPE      <field name> TO GRAPHIC
```

The type of the field has to be a character field of a length of (at least) 80 characters.

The interconnection between two tables is defined as

```
POINT     <field> TO <table>
```

The field should be of the numerical type of a length of at least 5 digits and without decimals. The related tables should be stored in the same directory (or in the pool directory).

Display data

Define which data of interconnected tables are to be displayed in the edit mask:

```
SHOW      <field> WITH IFF(<field>=0, '', <expression>), <maximal length>
```

A valid declaration would be :

```
SHOW      O_GENUS WITH (IFF(O_GENUS=0, '', O_GENUS.GNAME+' '+O_GENUS.GAUTHOR.
AUTHOR.FNAME+' ('+O_GENUS.GAUTHOR.YEAR+O_GENUS.GAUTHOR.
REFL+' ')), 85
```

Then define which data of interconnected tables are to be displayed when selected:

```
CHOOSE    <field> WITH (<expression>), 1
```

A valid declaration would be :

```
CHOOSE    O_GENUS WITH (GNAME+' '+GAUTHOR.AUTHOR.FNAME+'
('+GAUTHOR.YEAR+GAUTHOR.REFL+' ')), 1
```

If a global key is defined, it is always of higher priority:

```
KEY       (<expression>), 1
```

A key for the current table is always defined in the current configuration file. An example for the BOOKS table would be:

```
KEY       (IFF(@BEDITOR = 0, '', BEDITOR.FNAME+' : ') + BNAME) , 1
```

Global keys are recommended as they help the database to achieve a higher degree of standardisation.

Re-index of access files

Access files for interconnected tables are only updated when certain fields are modified. These fields have to be declared:

```
REINDEX <field>
```

Table and field aliases

A table alias assigns an understandable name to the table:

```
DBALIAS "Autoren", "Authors", "Autores"
```

A field alias assigns an understandable name to a data field:

```
FALIAS FNAME, "Familiennamen", "Family name", "Apellido"
```

Internal definitions

When opening a database, it is possible to set configuration values of Hdb2Win:

```
INI <number> TO <value>
```

The numbers can be obtained from ([Appendix 7 - HDB2WIN.INI](#); p. 147).

A valid change of the pool directory would be declared as follows:

```
INI 36 TO c:\data\mail
```

Edit forms (FRM)

Edit forms are not part of the program but are described in parameter files. They are interpreted during run time. The parameter files are briefly described here. As a rule edit masks should not be manually modified; the available tools ([6.2.3. Tools](#); p. 51) are generally sufficient.

If manual modification of an edit mask is inevitable, always use the in-built editor of Hdb2Win, which is available through the CommandLine:

```
cd FORAM
ed *.frm
```

Edit the file, save it and terminate the application:

```
quit
```

General

Each edit form may contain 1,024 objects (including fields, labels, frames, list boxes, etc.). The client working area always has a size of 768 * 489 pixels. This value is also indicated in the header of the file:

```
AREA 768,489
```

Do not modify this value.

Part of the header is also the alias name of the table:

```
DBALIAS "Autoren", "Authors", "Autores"
```

Different languages are separated by commas. After German follows English and then Spanish. Additional languages depend on the user's needs. If you wish to create forms in your own language, it is better to overwrite the Spanish version rather than to append another language (which will not be understood by the Interpreter).

The forms require a minimum of one file card and allow a maximum of 16 file cards. The number of file cards has to be indicated:

```
PAGES 4
```

Fields

Data fields are boxes (characters, numbers, logic fields, relations to other tables) or buttons (text). Only fields indicated in the form are displayed for editing:

FLDID	SOURCE, 2
FALIAS	2, "Quelle", "Source", "Publicación"
POSOBJ	2, 180, 75, 560, 1, 1
PREVIOUS	2, 1
NEXT	2, 3
FONT	2, 0
FSIZE	2, 9
COLOUR	2, \$000000
HINT	2, "Auswahl der Quelle des Zitats (Literaturstelle)", "Selection of the source of the citation (publication) "
FLDID	Definition of the object and assignment of an ID number to a data field. The ID is then used to identify the field. Use of the value '1,024' instead of a number always refers back to the last definition.
FALIAS	Alias name.
POSOBJ	Position of the field: row start position, column start position, width of field in pixels, height of field in lines, number of the file card.
PREVIOUS	ID number of the previous field (where to go when  or  is pressed).
NEXT	ID number of the next field (where to go when  or  is pressed).
FONT	Font number according to the font table (see Special fonts ; p. 25). Can be skipped if zero. A dynamic font (l.c.) is defined by setting the first bit in the upper half byte and the corresponding field number in the lower half byte.
FSIZE	Font size. 9 or 10 is normal. Can be skipped.
COLOUR	Text colour. Can be skipped if black. The value is a 3-byte hex number (\$BBGRR). The three bytes corresponds to the value between 0 and 255 for the blue, red and green colour.
HINT	Hint is displayed when the mouse is moved over the field.

Labels

Labels are all captions in the edit form that are fixed and cannot be modified during run time.

LABEL	201, "Zitate", "Citation", "Cita"
POSOBJ	201, 28, 10, 0, 0, 1
FSIZE	201, 14
COLOUR	201, \$0000FF
LABEL	Definition of the object with the assignation of an ID number. It is the caption.
POSOBJ	Position as above. Width and height may be zero because they are defined by the text size.
FSIZE	As below. Can be skipped.
COLOUR	As below. Can be skipped.

Button caption

To label a button (as a text field, list box action, non-relational interconnection) refer to the ID number of the object:

```
FLDLBL 12, "Notiz", "Note", "Nota"
```

Page labels

To label file cards, use a separate ID number for each file card:

```
PAGELBL 131, 3, "Abbildung", "Figure", "Imagen"
```

The ID is followed by the page number and the caption.

Frames

The ID number is followed by the start value for column and row, the width and height in pixels and the page number:

```
BEVEL 150, 8, 0, 752, 400, 1
```

Graphics

Graphics are declared to be normal fields, but the position indicates the area for the whole graphic. Width and height are expressed in pixels. Previous and next refer to the ID number of the graph.

```
FLDID SPICT, 23
FALIAS 23, "Abbildung", "Graphic", "Imagen"
POSOBJ 23, 28, 50, 700, 425, 4
PREVIOUS 23, 23
NEXT 23, 23
```

Replacements

Replacements are non-visual objects used to automatically replace data fields with data.

```
F7REPL 440, CITATE, (ONOW_ASS.SPECIES.C_GENUS.GNAME+' '+ONOW_ASS.SPECIES.
SNAME+' '+ONOW_ASS.SPECIES.SAUTHOR.AUTHOR.FNAME+' '+ONOW_ASS.
SPECIES.SAUTHOR.YEAR), 3
```

A new ID number is followed by the name of the field, the replace expression and a mode:

1 = field is always automatically replaced

2 = field is only replaced if empty

3 = field is replaced when is pressed

List boxes

List boxes only display data. The content of a list box is defined by an external program.

```
LBOX 410, CITAT1.LBA, 1
POSOBJ 410, 25, 40, 570, 11, 2
HINT 410, "Doppel-Klicken Sie, um die Synonymliste zu aktualisie-
ren", "Double click to update the list of synonyms"
```

- LBOX** An ID number is followed by the name of the program that fills the list box and by a mode. The mode is coded bit by bit:
bit1 = 1 The list box is filled when the file card is entered.
bit2 = 1 The object-type combo box is used.
bit3 = 1 Works also in the query-by-example mode.
bit4 = 1 Always rebuild when card is entered.
- POSOBJ** Position as in fields (height in lines).
- HINT** May give a hint to the list box (optional).

List box actions

List box actions are programs started to display or modify data. Normally they refer to a list box.

- LBACTION** 413,410,CITAT13.LBA,0
POSOBJ 413,610,140,140,32,2
FLDLBL 413,"Zitat &entfernen","Remove &citation"
HINT 413,"Entfernt das markierte Zitat aus der Synonymliste","Removes the marked citation from the list"

LBACTION The ID number is followed by the ID number of the list box to which the action refers, the name of the program and a mode. The mode is coded bit by bit:

- bit 1 = 1 The data buffer is modified by the action and has to be restored.
bit 2 = 1 Do not rebuild the list after the action.
bit 3 = 1 Action has to be allowed also when no item from the list box is selected.
bit 4 = 1 This action is started by double clicking on a list box item.

- POSOBJ** Position and size of the button in pixels.
- FLDLBL** Caption of the button. The et sign ('&') before a letter indicates that this letter will be underlined and the action can be started by pressing **[Alt]+letter**.
- HINT** May give a hint to the action (optional).

Non-relational interconnection with other tables

Non-relational interconnections with other tables as described above are represented by a button:

- CONNECT** 400,OCCURR,OCITATE,LOCALITY,0
POSOBJ 400,180,410,240,24,1
FLDLBL 400,"Lokalitäten zu diesem Zitat","Localities for this citation"
HINT 400,"Lokalitäten anzeigen, entfernen oder hinzufügen","Indicate, remove or add localities"

CONNECT The ID number is followed by the name of the interconnected table (here OCCURRENCES), the name of the data field in this table which is refers to the current table (here *ocitate* in OCCURRENCES, which refers to a record in CITATIONS) and the name of the data field to be selected in the interconnected file (here *locality* in the table OCCURRENCES).

The mode is coded bit by bit:

- bit 1 = 1 A newly created record will be displayed (see description of tables).
bit 2 = 2 The items in the list are treated as graph files and are displayed.
bit 3 = 3 The item is not dedicated to one table but shares it with other tables (OWNER mode).
bit 4 = 4 The item is a document which has to be opened by an external program.

POSOBJ	Position and size of the button in pixels.
FLDLBL	Caption of the button. The et sign ('&') before a letter indicates that the letter will be underlined and the action can be started by pressing Alt +letter.
HINT	Optional addition of a hint to the connection.

Tips

1. Make backup copies before modifying edit form files.
2. Skip as much as possible. Many options (PREVIOUS, NEXT, FONT, FSIZE, COLOUR) will set to best fits of default standard values.
3. After the declaration of objects (FLDID, LABEL, LBOX, LBACTION, CONNECT), use '1024' instead of the object number to refer to the previously declared object:

```
FLDID  SOURCE,2
FALIAS 1024,"Quelle","Source"
POSOBJ 1024,180,75,560,1,1
HINT   1024,"Auswahl der Quelle des Zitats (Literaturstelle)","Selection
of the source of citation (publication)"
```

4. To create a new file card, just increase the number of pages.
5. After modification activate "Check page consistency" in the PaleoTax options.

Appendix 4 - Interpreter commands

Only read this appendix if you wish to write your own programs for outputting or analysing data. The Interpreter is designed on the model of the Microsoft Macro Assembler: there are no cyclic structures, and all decision structures have been reduced to jumps. The input-output system is primitive. Commands and jump labels are not case sensitive. A simple program for converting dollars into euros and euros into dollars looks like this:

```
DEFINE  c,n
MOV     c,1.2                ; 1 euro = 1.2 dollars
; --- program ...
CON                                          ; clear output window
DEFINE  w,c                  ; define variable
DEFINE  v,n
:begin                                  ; begin here
MOV     w,''
KBD     "Enter any value, <Enter> or zero to finish",w,c
CMP     w='' or w='0',1      ; got enough ?
JE      ende                ; yes
CMP     isnum(w),1          ; number valid ?
JE      ok                  ; yes
REQ     "The value you entered is invalid !",0
JMP     begin               ; try again
:ok
MOV     v,val(w)
CON     'If one euro is equal to '+str(c)+' dollars ...'
CON     str(v)+' euro   = '+str(v*c,8,2)+' dollars'
CON     str(v)+' dollar = '+str(v/c,8,2)+' euro'
JMP     begin               ; back to the start
:ende
RELE    ALL                  ; release all variables
EXIT    ; terminate program
```

To create programs you need to know the syntax of the Interpreter, the numerous functions of the data-base kernel ([Appendix 5 - Data types, operators and functions](#); p. 141) and the data structure ([Appendix 2 - Data structure](#); p. 116).

Program control

#DEBUG [ON,OFF]	Interpreter directive –step-by-step execution.
#STATUS [ON,OFF]	Interpreter directive - display status.
#PROGRAM [ON,OFF]	Interpreter directive - display program lines.
#ECHO [ON,OFF]	Interpreter directive - display output.
#ECHOREFR	Refresh display.
#COMMENT [ON,OFF]	Interpreter directive - comment.
#FORMAT <n>	Interpreter directive - define output format. n=0 ASCII (Standard) n=1 Word n=2 RTF n=3 HTM n=4 simple RTF (when ANSI is exported) n=5 ANSI
#ERROR <n>	Interpreter directive - error status. Action taken when an error occurs. n = ON 0 Displays error and terminates program. n = 1 Displays error and queries whether program should be terminated. n = OFF 2 Does not display but stores error in the variable LASTERROR.
LASTERROR	No command, but a variable which stores an error when the error status is set at OFF (or 2). When the directive #ERROR 2 precedes a command and the execution of this command causes an error, in LASTERROR a value other than zero will be stored. The error can be called and handled. LASTERROR becomes zero when #ERROR 2 is called again. Example: <pre>#error 2 file test #error 0 CMP last error,0 JE ok ; jump if equal CON 'File test not found!' JMP end ; absolute jump :ok CON 'File test is ready !'</pre>

EXEC <program>[,<option>]	Starts an external program, with, for example, a file name as option. Example: EXEC notepad.exe,test.txt NOTEPAD.EXE will be executed and the file test.txt opened. EXEC c:\temp\test.pdf The file C:\TEMP\TEST.PDF will be displayed.
EXIT	Terminates the program.
TERM	Terminates Hdb2Win after terminating the Interpreter.
CALL <label>	Call of a subroutine - goes to label and returns after RET.
RET	Returns after CALL.
GSYS <ivar>,<cvar>	Reads the system variable number <ivar> (see Appendix 7 - HDB2WIN.INI; p. 147) into the variable <cvar>.
SSYS <ivar>,<cvar>	Sets the system variable number <ivar> to the value contained in the variable <cvar>.

Data input and output (console)

KBD <text>, <var> [,C N]	Reads a value from the keyboard. The data type is optional. DEFINE x,c KBD "Enter your name :",x,C
CON <expression>	Output of an expression to the standard console. Will be ignored if no console is available
CONX <expression>	Output of an expression without line feed/carriage return.
REQ <text>,<mode>,<ivar>	Request. Mode defines the displayed buttons as follows: <mode> = 0 OK <mode> = 1 OK + CANCEL <mode> = 2 ABORT + RETRY + IGNORE <mode> = 3 YES + NO + CANCEL <mode> = 4 YES + NO <mode> = 5 RETRY + CANCEL <ivar> must be a variable of the numerical type and contains the returned value as follows: <ivar> = 1 OK <ivar> = 2 CANCEL <ivar> = 3 ABORT <ivar> = 4 RETRY <ivar> = 5 IGNORE <ivar> = 6 YES <ivar> = 7 NO <ivar> = 8 CLOSE <ivar> = 9 HELP

LB.CREA <ivar>	(Creates a list box. Not yet implemented.)
LB.TOC <ivar>	Assigns a token. The token has to be the valid address of a list box.
LB.CLR	Clears the list box.
LB.ADD <text>	Appends an item to the list box.
LB.SEL <number>	Sets the current item in the list box.
LB.IDX <ivar>	Requests the current item in the list box and writes it to <ivar>
LB.CAP <ivar>	Requests the capacity and writes it to <ivar>.
LAB.CREA <ivar>	(Creates a label. Not yet implemented.)
LAB.TOC <ivar>	Assigns a label. The token has to be the valid address of a label.
LAB.CAP <expression>	Assigns text to a label. If the text 'User Break !' is written to the label, the program will stop at the next JNEOF command (internal process communication).
OPT.INI <number>,<[&]caption>[,1]	Creates an option table with <number> check boxes. A caption is optional, but has to be used when a third parameter is applied. If the third parameter is set to '1', only one box can be checked (exclusive mode). See example below.
OPT.LBL <number>,<text>	Assigns the label in <text> to the check box <number>.
OPT.SET <number>,<0,1>	Sets the default value (0 or 1) of the check box <number>.
OPT.ENB <number>,<0,1>	Enables (1) or disables (0) the check box <number>.
OPT.EXE	Execution of option table.
OPT.RES <number>,<ivar>	Writes the result of the check box <number> back to <ivar>
OPT.ONE <ivar>	If only one box is checked, this command writes its number to <ivar>. Example:
	<pre> DEFINE res,i OPT.INI 3,"Select value ... ",1 OPT.LBL 1,'100' OPT.LBL 2,"1,000" OPT.LBL 3,"10,000" OPT.SET 1,1 OPT.EXE OPT.ONE res CMP res,0 ; Abbruch JE exit CON 'Your selection : ' CON STR(IFF(res=1,100,IFF(res=2,1000,10000))) :exit EXIT </pre>

RSUB <text>,<field>,<ivar>

Selects an item from an interconnected table. Example:

```
DEFINE  an, i
OPEN    publicat ; open references with all
          ; interconnected files
RSUB    "Select an author...", author, an
RESET
:begin
CMP     author, an
JE      skip
; do anything with that reference
:skip
SKIP
JNEOF  begin
RELE   an
```

RSEL <text>,<ivar>[,<0,1>]

Selects an item from a table. Example:

```
DEFINE  gen, i
FILE    genera
RSEL    'Select a genus', gen, 0
GO      gen
CON     'Selected genus : '+gname
```

The option <1> should be set when new items may be appended.

BRW <"Caption">[,<ivar>]

Browses through a table. If a variable is given, the last (= selected) item is stored in <ivar>.

EDT

Edits a record. The error check should be preferably switched off and the result controlled:

```
#error 2
EDT
#error 0
CMP    last error, 0
JE     ok
JNE    cancel
```

EDM <field>

Edits a text field.

File system

CD <[&]directory>

Changes the directory.

CDA

Changes the directory to that of the current program.

MD <[&]directory>

Creates a directory.

CPF <[&]source>,<[&]target path>[,<[&]target file name>]

Makes a copy of any file.

FFND <mask>,<cvar>,[<ivar>]

Searches for any file, using the <mask>, and writes its name back to <cvar>. If the variable is indicated, the file attribute is stored in <ivar>. See example below.

NFND <cvar>,[<ivar>]

Searches for the next file, using the mask indicated in FFND. If the variable is indicated, the file attribute is stored in <ivar>.

```

DEFINE name,c
DEFINE attrib,i
FFND *.PRF,name,attrib
:check
CMP name,' '
JE notfound
CON 'Found : '+name+' / '+str(attrib)
NFND name,attrib
JMP check
:notfound
exit

```

FDEL <&mask>

Erases a file or files, using a file mask.

FSEL <[&]var>[,mask]

Selects a file. Example:

```

DEFINE s,c
FSEL s,*.dbf
FILE &s

```

DSEL <var>[,0|1]

Selects a directory. No drive change is possible, if the second parameter is zero.

Data input and output (file)

STRM {CON | <[&]file>} [,A | B | O | Q]

Opens an output channel, which is usually the console or a text file. The optional letters stand for (A)ppend, (B)ackup, (O)verwrite, and (Q)uest, if the file already exists.

STRM

Closes the output channel.

OUT <expression> [,format]

The <expression> sent into the output channel defined by STRM. Format is only valid for files which are to be later converted into Word or RTF. Valid formats are 'n' and 'nn', the former indicating a paragraph format ('1' to 'F') and the latter a character format ('01' to '99'). Formats should correspond to the style sheet used for conversion.

OUTL <expression> [,format]

As OUT but with line feed / carriage return

OUTP <text> [,format]

Output of plain text.

OUTPL <text> [,format]

As OUTP but with line feed / carriage return.

OUTTEXT <text field> [,format]

Output of a text field.

TXT.CR <name>

Creates a text file for output data.

TXT.OP <name> [,0|1] [,0|1]

Opens an already existing text file for reading or writing data. The first optional parameter allows (1) or suppresses (0) the use of the pool directory; the second allows or suppresses long file names.

TXT.RD <cvar>

Reads a line from the text file to <cvar>.

TXT.AP

Prepares an already existing text file for appending data.

TXT.RS

Resets an already opened text file back to the beginning.

TXT.WR <cvar>	Writes the text in <cvar> to the text file.
TXT.WL <cvar>	As TXT.WR but with line feed / carriage return.
TXT.GO <ivar>	(Goes to line number. Not yet implemented.)
TXT.CL	Closes the text file.

Data base

FILE [&]table> [,<id>]	Opens a table and assigns a personal task number.
OPEN [&]table> [,<mode>]	Opens a table with all interconnected tables. Mode : bit1 = checks access index. bit2 = creates access index if not available. bit3 = opens cache. bit4 = reads alias names from the form files. bit5 = extended open mode, not used. bit6 = opens base in the read-only mode. bit7 = data pooling is not allowed. bit8 = unused.
SLN	Selects a task by the personal task number. This command can only be used immediately before the FILE command, unless the table is opened with interconnected tables. Example: <pre>FILE test,1 ; open table as task 1 FILE new,2 ; open table as task 2 ; but close table test ; therefore : FILE test,1 SLN FILE new,2 SLF 1 ; use table test SLF 2 ; use table new</pre>
RLD	Reloads database.
SLF [&]<id>	Selects table by personal task number.
TSK [&]<task>	Selects table by global task number.
POB [&]<name>	Requests whether the table (without directory) is part of the database, opened, for example, as an interconnected file. Example: <pre>POB publicat ; part of base ? JE ok ; yes JNE error ; no</pre>
POPL	Requests whether the current table is stored in the pool directory (see 8.1. Data pooling ; p. 59).
CLB	Closes all tables and all interconnected tables.
SDS <ivar>	Saves data buffer pointer in <ivar>.
LDS <ivar>	Restores data buffer pointer from <ivar>.

REIDX	Invalidates the access index if a relevant field was modified.
CHBI	Consistency check of database, initial command.
CHB	Consistency check of the current table. Example: <pre> OPEN occurr CHBI FILE publicat CHB FILE occurr CHB CLB </pre>
CAO	Clears all objects, used only after CLB.

Index

INDEX <expression>, <name> [, {O | U | Q}]

Creates an index over <expression> and writes the file to <name>. The optional mode stands for O(overwrite), U(se) or Q(uestion) and is applied if the index file exists and is valid.

USIND <name>

Opens an index file.

FIND <var>

Searches <var> the index and sets the file pointer to the table in question. Example:

```

FILE      authors
INDEX     fname, fname
FIND     'Cheetham'
CMP      fname, 'Cheetham'
JE       found
JMP      notfound

```

Move file pointer

RESET

Resets the file. Should always be applied after using FILE.

SKIP

Skips to the next record. If the file end is reached, the flag EOF is set. It can be requested by JNEOF (jump if not eof).

GO <ivar>

Moves the file pointer to the number indicated in <ivar>.

Filters, conditions and jumps

SFLT <expression>

Sets a global filter which is only valid for CND, CPY, ADDF, ADDR, CMPR.

CND

Checks whether or not the condition is fulfilled. If it is, the flag EQUAL is set. A following JE (jump if equal) proceeds with the command next to the indicated label.

CFLT

Invalidates condition.

CMP <expression> , <expression>

Compares two expressions and sets the flags EQUAL, BELOW, ABOVE. All jump commands refer to a previously called CND or

CMP. CMP compares the left with the right expression and determines whether they are smaller or larger, while CND, QDEL, SX, FILEX, FLDEXS, POB or POPL only assess whether the statement is true or false. Only JE (yes, true, equal) or JNE (no, false, unequal) should therefore be used for the latter commands.

JE <label>	Jumps if equal (true).
JNE <label>	Jumps if not equal (false).
JA <label>	Jumps if left expression is larger.
JB <label>	Jumps if left expression is smaller.
JAE <label>	Jumps if left expression is larger or equal.
JBE <label>	Jumps if left expression is smaller or equal.
JNF <label>	Jumps if not found. Can only be used after FIND. This command is not very reliable. There is an option (which is generally set) which says that the condition is also fulfilled by any item larger than the one searched for.
JNEOF <label>	Jumps if the end of the table has not been reached.
JMP <label>	Jumps in any case.

Defining variables

DEFINE [&]name>, { C | N | I } [,Id]

Defines a variable, possibly also with an ID. Variables referring to record numbers should always be of the integer type (I). The abbreviation C stands for character (text up to 200 letters) and N for any numerical variable (also float).

RELE { <var> | ALL } [,<IdNum>] Releases a specified variable, all, or only those created with a specified ID.

SX [&]name> A request whether a certain variable exists.

```
SX      name
JE      ok
DEFINE  name, c
:ok
```

Modifying data

MOV <var> , <expression> Stores an expression in a variable. Data types have to be compatible.

PUT <field> , <var> Replaces a field in a table by a value. Data types have to be compatible. The command should be followed by a FLSH command to write the data buffer back to the table.

FNC <var>,<expression>	Assignment of a function to a variable assessed during run time. <pre> OPEN publicat FNC name,author.fname+' '+year+refl GO 10 CON name Smith 1980a </pre>
FLSH	Writes data buffer back to table after one or more PUT commands.
SETD	Sets delete tag.
CLRD	Removes delete tag.
QDEL	Requests delete tag. Should be followed by JE (jump if deleted): <pre> QDEL JE deleted </pre>
WRMEMO <field>,<text file>[,n]	Writes text from a text (Memo) field to a text file. Optional parameter converts the text to (1) ASCII or (2) ANSI.
RDMEMO <field>,<text file>[,n]	Reads text from a text file and writes it to a text field. Optional parameter converts the text to (1) ASCII or (2) ANSI.

Requesting, appending and modifying data fields

FLDEXS <name>	Requests whether the data field exists. Should be followed by JE (jump if field exists).
ADDFLD <text>	Appends a data field. The parameter <text> has to be put in apostrophes and should contain the name, type (C, N, L), size in characters and decimals. <pre> FILE publicat FLDEXS data JE nodata ADDFLD 'DATA,N,10,2' :nodata ADDFLD 'MYNOTE,C,100,0' FILE </pre>
FLDD <number>,<cvar>	Stores the data of a data field in a variable. Same format as ADDFLD.

Table and structure

FILEX <cvar>	An request whether a file exists. Should be followed by JE (jump if file exists).
APB	Appends an empty record to the table. Identical with the commands APR and CLR.
APR	Appends the current record as a new record.
CPS [&]<table>[, {A B O Q}]	Copies the data structure to another table. Mode can be O(overwrite), B(ackup), A(ppend) or (Q)uestion.
CLR	Clears the data buffer.

CFL	Clears the field list for copy procedures.
FFL	Fills the field list with all fields of the table.
AFL <field>	Adds a field to the field list.
DFL <field>	Removes a field from the field list.
CPY [&<table>[, {A B O Q}]	Copies records to a new table from the field list. The optional mode stands for O(overwrite), B(backup), A(append), or (Q)uestion and is applied if the target file already exists.
PCK	Packs file. Records marked as being deleted are removed.
ADDF [&<table>	Records are added to another table. Field names have priority.
ADDR [&<table>	Records are added to another table. Records have priority.
CMPR [&<table>[, {A B O Q}]	Compresses a table and creates a new one. Double items (according to an active index) are removed. The optional mode stands for O(overwrite), B(backup), A(append), or (Q)uestion and is applied if the target file already exists.

External calls

CVT <[&]file>,<format>[0,1]	Text conversion. The parameter <format> has to contain a style sheet name (name.DFV or name.TCV) to export to MSWord or RTF. RTF is generally preferable as it is more robust. If the third parameter is set at '1', this command will not display any messages.
CH.nn	Commands of the Chart system. Can only be started from PaleoTax.

Appendix 5 - Data types, operators and functions

Operators and functions are needed for writing Interpreter programs.

Data types

Hdb2Win distinguishes between two main data types : characters (C) and numbers (N). Both have subtypes. Characters may consist of one letter (C (char)) or a string of letters (C). A number may be an integer (I) or a real number (R). Functions and operations expect certain data types and deliver their results in a defined data type. The fields of a table also have the same data types: character fields are always of the C type, numerical fields with decimals are of the R type and all other fields are of the I type. Characters have to be written in apostrophes: 'Hello' is a character, '100' as well, but 100 is interpreted as a number.

Operators

Name , Symbol	Explanation	Applied to	Result type	Example
-	sign	N	N	$-(-1) = 1$
\$	subtext in text, case insensitive	C	I	'a' \$ 'halt' = 2
in	subtext in text, case sensitive	C	I	'A' in 'halt' = 0
^ or sqr	square	N	N	$2^8 = 256$ $2 \text{ sqr } 8 = 256$
% or mod	rest of a integer division	I	I	$21 \% 8 = 5$
DIV	integer division	I	I	$21 / 8 = 2$
/	real division	R	R	$21.0 / 8 = 2.625$
*	multiplication	N	N	$10 * 2 = 20$
-	subtraction	N	N	$10 - 13 = -3$
+	numerical addition	N	N	$10 + 13 = 23$
+	string addition	C	C	'Ha'+ 'lt' = 'Halt'
shl	bit-by-bit shift to the left	I	I	$2 \text{ shl } 4 = 32$
shr	bit-by-bit shift to the right	I	I	$256 \text{ shr } 4 = 16$
<	smaller	CN	I	'a' < 'b' = 1
<=	smaller or equal	CN	I	'a' <= 'a' = 1
>	larger	CN	I	'g' > 'G' = 1
>=	larger or equal	CN	I	$25 \geq 25 = 1$
<>	unequal	CN	I	'a' <> 'A' = 1
=	equal	CN	I	'a' = 'A' = 0
and , &	logical and	I	I	$1 \& 0 = 0$
or ,	logical or	I	I	$1 \& 0 = 1$

Functions

Functions expect parameters and their result has a specified data type (as character, integer or real number). Some parameters are optional (here in brackets).

Name	Description	Parameter(s)	RT	Example
ABS	returns the absolute value	N	N	ABS(-12.2) = 12.2 ABS(6) = 6
AT	position of a string in another string	1 = C (search string) 2 = C (string)	I	AT('a','halt') = 2
CHR	number to char	I (0 .. 255)	C	CHR(65) = 'A'
DATSTR	converts an integer into a date	I	C	DATSTR(1)=' 1. 1. 0' DATSTR(731094) = 31.08.2001
DATVAL	converts a date into an integer	C	I	DATVAL('12.3.2001')=730922
DELETE	deletes a substring in a string	1 = C (string) 2 = I (start position) 3 = I (number)	C	DELETE('yes',2,1) = 'ys'
DELINS	deletes a substring in a string and inserts another substring	1 = C (string) 2 = I (start position) 3 = I (number of characters to be deleted) 4 = C (substring to be inserted)	C	DELINS('Good morning',6,7,'night') = 'Good night'
FLDLEN	returns the length of a data field	C		FLDLEN('fname') = 25
FLDPOS	returns the position of a data field in the buffer			FLDPOS('fname') = 2
FULLTEXT	full text search in the current record	C	I	FULLTEXT('name') = 0
GRAW	gets data from the buffer	I (position of the field) I (length of the field)	C	GRAW(2,10) ='Anonymous'
IFF	a value is returned, depending on the result of a condition	1 = I (condition) 2 = * (if true) 3 = * (if false)	*	IFF(3>2,'true','false') = 'true' IFF(name="",0,len(name))=12
INSERT	inserts a substring into a string	1 = C (string) 2 = I (position) 3 = C (substring to be inserted)	C	INSERT('negate',6,'iv') = 'negative'
INT	cuts the decimal part from a real number without rounding	N	R	INT(12.9) = 12 INT(100) = 100
ISNUM	returns 1, if a string is a valid number	C	I	ISNUM('yes') = 0 ISNUM('7') = 1
LEN	returns the length of a string	C	I	LEN('HELLO') = 5
LOCASE	converts a string into small letters	C	C	LOCASE('ABC') = 'abc'

LPOS	returns the last position of a char in a string	1 = C (char) (search value) 2 = C	I	LPOS('l','hello') = 4
LTRIM	removes spaces to the left of the string	C	C	LTRIM(' name ') = 'name '
NOT	logical negate	I	I	NOT(4) = 0 NOT(0) = 1
ORD	converts a char into the ASCII value	C (char)	I	ORD('@') = 64
POS	returns the first position of a char in a string	1 = C (char) (search value) 2 = C	I	POS('l','hello') = 3
REAL	converts an integer into a real number	I	R	REAL(6) = 6
REPLSTR	replaces a substring in a string by another substring	1 = C (string) 2 = C (search string) 3 = C (substring to be inserted)	C	REPLSTR('seven','se','hea') = 'heaven'
ROUND	rounds a number	N	I	ROUND(100) = 100 ROUND(12.9) = 13
RTRIM	removes spaces to the right of the string	C	C	RTRIM(' name ') = ' name'
SIN	returns the sinus of a value between 0 and 90	N	R	SIN(90) = 1
SPACE	returns a number of spaces	I	C	SPACE(1) = ' '
STR	converts a number into a string	1 = N [2 = I (length)] [3 = I (decimals)]	C	STR(12.5) = 12.5 STR(12.5,5) = ' 12.5' STR(12.5,7,2) = ' 12.50'
SUBSTR	returns a substring	1 = C (string) 2 = I (start value) 3 = I (number of characters)	C	SUBSTR('hello',2,2) = 'el'
TRIM	removes all spaces in a string	C	C	TRIM(' my name ') = 'myname'
TRUNC	converts a real number into an integer without rounding	N	I	TRUNC(2.2) = 2 TRUNC(9.9) = 9
UPCASE	converts a string into capital letters	C	C	UPCASE('aBc') = 'ABC'
VAL	converts a string into a number	C	R	VAL('12.5') = 12.5 VAL('x') = error

Appendix 6 - CommandLine

The commands of this application are only included for the sake of a completeness. You do not have to read this part of the documentation unless you wish to import data or carry out other functions that cannot be performed with the PaleoTax application.

? <expression> [, <expression> [, ...]]

Displays expressions.

ADD { RECORDS | FIELDS } TO < table > FOR < condition >

Adds records from the current table to another table.

APPEND

Appends records.

APPEND { RECORDS | FIELDS } FROM < table >

Appends records from another table, conditions cannot be defined (use ADD).

APPEND { SDF | CDF } FROM < text file >

Appends records from a text file (SDF = Space Delimited File, CDF = Comma Delimited File), no filter must be applied.

BROW [field list] [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]

Shows records in the browse mode.

CLS

Cleans the output windows.

CD [< directory > | ?]

Sets a new directory or selects the directory from a list.

CLOSE [< Alias > | ALL | BASE }

Closes a table, a table specified by an alias, the whole database, or all.

COMPRESS [field list] TO <table>[/mode] [FOR <condition>]

Copies all records or only those specified, all fields or only those specified, into a new table. Double records are found by an active index and removed.

COPY [field list] TO <table>[/mode] [FOR <condition>]

Copies all records or only those specified, all fields or only those specified into a new table.

COPY STRUCTURE TO <table>[/mode]

Copies the table structure into a new table.

COUNT [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]

Counts records.

CREATE <table>

Creates a new table.

DEFINE <symbol name>, <symbol type { C, I, L, N, R, S } >

Defines a symbol.

DELETE [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]
Marks records that fit a certain condition as deleted.

DISPLAY [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]
Displays records.

DISPLAY FILES [TO < con | file | device > [/Option]]
Displays files in the current directory.

DISPLAY PROJECT [TO < con | file | device > [/Option]]
Displays the project data (DB2) of the current table.

DISPLAY STATUS [TO < con | file | device > [/Option]]
Displays the database system status.

DISPLAY STRUCTURE [TO < con | file | device > [/Option]]
Displays the table structure.

DO <program>
Starts a script.

EDIT [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]
Edits records.

EDIT STRUCTURE
Edits the table structure (only field names and types can be modified).

ERASE < file {, file {,...}} >
Deletes files.

FIND < expression >
Searches an activated index for an expression.

FREE
Releases all the memory.

FORM FROM < format file > [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>] [TO < con | file | device > [/Option]]
Formatted output.

FUNCTION < variable > := < expression >
Assignment of a function to a variable.

INDEX ON <expression> [, <size>] TO <file> [/mode]
Creates an index.

LET <variable>, <content>
Assignment of a value (or the result of an expression) to a variable.

LIST [, <expression> [, ...]] [FOR <condition>] [TO < con | file | device > [/mode]]
[RECORD < operator > < record number >]
Lists a table.

MODIFY STRUCTURE
Modifies the table structure (all).

OPEN <table>,<mode>

Opens a table in extended base mode:

- bit1 = checks access index
- bit2 = creates access index if not available
- bit3 = opens cache
- bit4 = reads alias names from the form files
- bit5 = extended open mode, not in use
- bit6 = opens base in the read-only mode
- bit7 = data pooling is not allowed
- bit8 = unused

PACK

Cleans a table and removes deleted items.

QUIT

Terminates the application.

RECALL [{ < record number > | RECORD < operator > < record number > }] [FOR <condition>]

Recalls marked records as deleted.

RELE { ALL | <Symbol> }

Releases one variable or all variables.

REPLACE { field[.field[.field...]] | variable } WITH <expression> [{ < record number> | RECORD < operator > < record number > }] [FOR <condition>]

Replaces a field or symbol by a specified value.

SAVE

Saves changes.

SELECT { NEXT | < alias > }

Selects a table or alias (1..64, A..Z).

SET INDEX TO <index file>

Opens an index file.

SET UNIQUE < ON | OFF >

Sets the index mode.

SET CARRY < ON | OFF >

Sets the carry mode.

SUM expression [RECORD < operator > < record number > }] [FOR <condition>]

Summarizes a numerical expression.

USE [<table> [{ shared | EXCLUSIVE }]]

Closes a table and may optionally open another.

The mode of the command TO stands for A=append, B=backup, L=leave, O=overwrite, Q=quit

Appendix 7 - HDB2WIN.INI

The configuration data of Hdb2Win is stored in the HDB2WIN.INI file. The Windows registry is not used by Hdb2Win. Important configurations can be set in the PaleoTax option menu (6.2. [PaleoTax options](#); p. 48). You do not have to read this chapter unless you are told - in this documentation or in the F.A.Q. – that you should modify values.

The configurations are grouped in modules. The abbreviation that you may see in the file is indicated in brackets. The number before the denomination is the current number that may be used in the Interpreter (GSYS, SSYS) and the project files (INI). The indicated values are standard values. You may delete the file HDB2WIN.INI to reset all values to the standard. The domain for the value is put in brackets.

Edit form [HDFRM]

1	Font0=MS Sans Serif	Standard font
2	Font1=MS Sans Serif	First font
3	Font2=MS Sans Serif	Second font
4	Font3=MS Sans Serif	Third font
66	Font4=MS Sans Serif	Fourth font
67	Font5=MS Sans Serif	Fifth font
68	Font6=MS Sans Serif	Sixth font
69	Font7=MS Sans Serif	Seventh font
5	EditFontSize=9	Font size of data fields (8..12)
49	LabelFontSize=10	Font size of labels (8..128)
61	ButtonFontSize=9	Font size of buttons (8..128)
62	MemoFontSize=10	Font size of text fields (8..128)
6	FormSize=800	Width of the edit mask (800, 1024)
7	LineHeight=24	Height of data fields (20..28)
13	FieldAdjust=0	Enlargement ratio of the font size of data fields (0...2)
14	LabelAdjust=0	Enlargement ratio of the label size of data fields (0...2)
15	ButtonAdjust=0	Enlargement ratio of the font size of buttons (0...2)
16	PageAdjust=0	Enlargement ratio of the font size of page labels (0...2)
41	AdjustFonts=1.15	Enlargement ratio of the font size when the width of the edit mask = 1,024 (1 .. 1.5)
42	AdjustLineheight=1.2	Enlargement ratio of the line height when the width of the edit mask = 1,024 (1 .. 1.5)
27	FormTarget=	Target file for the current edit mask
31	ShowProfilError=0	Display of details of program errors (0, 1)
32	ShowFieldHints=1	Display hints (small yellow boxes) on data fields (0..3)
35	SubFieldColor=8453888	Background colour of interconnected fields
39	CheckPageConsistency=0	Control of page consistency (0, 1)
48	GraphicDirectory=	Last directory from which files were selected
58	CheckConnections=1	Check the status of non-relational interconnected tables

Definitions [HDDEF]

7	MaxDynamicSymbols=1024	Maximal number of internal symbols
28	MaxKeyWide=64	Width of key for searching interconnected files
29	CarryOn=0	Copy the content of the last record into the next appended one (1, 0)
30	ShowDel=1	Display deleted records (0, 1)
50	User=	User's name
51	UserID=0	User's registration code

Non-relational interconnection of tables [HDCON]

- 9 MaxConnectShow=256 Maximal number of displayed items.
 55 MaxRecursion=2 Maximal number of allowed recursions.

Relational interconnection of tables [HDSEL]

- 10 MaxSelectShow=256 Maximal number of displayed items
 33 ShowDeletedItems=1 Displays deleted items (0, 1)
 34 ShowDeleteSign=1 Displays delete sign in deleted records (0, 1)
 63 WindowMinWidth=400 Minimum width of the form in pixels

Text fields [HDMEMO]

- 11 TextFont=0 Font for editing text files (0..15)
 12 TextFontSize=10 Font size for editing text files (8..12)

Browser [HDBROWSE]

- 17 FontSize=9 Font size (8..12)
 18 XFaktor=1.1 Factor for determining cell width, depending on font size
 19 YFaktor=2 Factor for determining cell height, depending on font size
 20 MinXWidth=50 Minimum width of cells in pixels

CommandLine [APPCOML]

- 21 MaxHistory=32 Maximal number of items in command history

PaleoTax [PALEOTAX]

- 22 ArcFileSize=8,000,000 Maximum archive size; must be larger than the largest file in the data directory
 23 ArcFileNum=128 Maximum number of files per archive
 24 TempFileName=\$TEMP Name of temporary file
 25 TempFileCount=1 Counter of temporary files
 52 ReorgOptions=15 Last reorganization tasks executed
 53 BaseT=0 For internal use only
 59 InitAnalysis=0 For internal use only

String [HSSTR]

- 26 Language=0 Language (0..2), 0 = German, 1 = English, 2 = Spanish
 43 DateType=6 Date type (1..7)
 1 = MM-DD-YYYY (USA, CDN)
 2 = YYYY-MM-DD (French CDN, CS, H, PL, S, YU)
 3 = DD/MM/YYYY (E, GB, I, P, South America)
 4 = DD-MM-YYYY (NL)
 5 = DD/MM/YYYY (B)
 6 = DD.MM.YYYY (CH, D, F, N, SF)
 7 = DD-MM-YYYY (DK, GB)
 The difference between 3 and 5, and 4 and 7 is the display of the leading '0'.
 70 ASCIISort=0 For internal use only

File [HSFILE]

- 36 PoolPath=C:\PROGRAM FILES\HDB2WIN\
 Pool directory

Append [HDAPP]

37 CdfMarker=44 Limitation mark of data fields in the CDF format

Edit Mask Sub [HDFRMS]

38 ConnRequestSave=1 Request whether record can be saved if required by the execution of a procedure.

File select [HWXSEL]

40 ShowTruePrfNames=0 Shows the real names of files (0, 1)

Interpreter [HDPRG]

44 Status=0 Status display on / off (1, 0)
 45 Program=0 Program display on / off (1, 0)
 46 Step=0 Step-by-step execution on / off (1, 0)
 47 Echo=0 Output echo display on / off (1, 0)
 56 MaxLine=3,096 Maximum number of lines
 57 MaxLabel=512 Maximum number of labels

Output [HDSEQ]

54 ListDelim=32 Delimiter between listed fields (1..255)

Error [HWERROR]

60 ShowWarningErrors=0 Shows warning errors (1..0)

[HDIDX]

64 BufferSizeMB=8 For internal use only
 65 PageSizeMB=2 For internal use only

Appendix 8 - Technical data

The technical data are mainly provided for programmers preparing the import or export of data.

- The data (DBF) are stored in the xBase / dBase 3 format. For reasons of compatibility the data are stored in the ASCII format (not ANSI).
- The DBT files have an (empty) header which is 1,024 byte long and they contain units of 512 bytes each. Texts are in the ASCII format.
- Configuration (DB2) as well as form (FRM) files are plain text files in the ASCII format. Details are given in ([Appendix 3 - File formats](#); p. 125).
- Archive files are stored in a modified LZW format. An unpacking program can be obtained from the author.
- Definition files (DEF) are plain text files.
- Access files (FIX) and index files (SFX) are stored in a private format. If lacking, they are automatically generated by the program.
- Interpreter program files (ACT, EXT, LBA, PRF) are stored in the ASCII format.

Appendix 9 - Literature

Cited references:

Löser, H. 2000. Repertoire of Species. -- Catalogue of Cretaceous Corals, 1: 137 pp.; Dresden (CPress Verlag).

Löser, H. et al. 2002. List of citations. -- Catalogue of Cretaceous Corals, 2: 2 vols., 784 pp.; Dresden (CPress Verlag).

The following literature is recommended:

LÖSER, H. 1996. Database applications in coral research. -- Stanley, G.D. [Ed.]: Paleobiology and biology of corals. Paleontological Society Papers, 1: 207-247; Lakewood, Colo. (The Paleontological Society). — The publication explains the data structure in greater detail and why the tables are interconnected the way they are.

LÖSER, H. 2002. Biostratigraphic dating of Cretaceous coral communities, using large datasets. -- Paläontologische Zeitschrift, 76, 1: 75-81; Stuttgart. — The publication describes a method of applying PaleoTax for dating, using large datasets of organisms that are not known as index fossils.

STUEBER, T. & LÖSER, H. 2000. Species richness and abundance patterns of Tethyan Cretaceous rudist bivalves (Mollusca: Hippuritacea) in the Central Eastern Mediterranean and Middle East. - Palaeogeography, Palaeoclimatology, Palaeoecology 162, 1/2: 75-104. — The publication is based on data recorded and analysed by means of PaleoTax. A good example of the various options available with PaleoTax.

Appendix 10 - History and release notes

History and release notes

PaleoTax 1.0 (June 1993), 1.1 (July 1994), 1.2 (August 1996), 1.3 (August 1998), 1.4 (August 2000)

PaleoTax 2.0 (August 2001), 2.1 (August 2003)

Data structure design by Hannes LÖSER (Hermosillo, Mexico),
Bernard LATHUILIÈRE (Nancy, France),
Denis MARCHAL (Nancy, France)

Data structure version LLM 7.C / SR5

Disclaimer

PaleoTax (Version 2.1) is freeware. The use of the program is free of charge but at your own risk. The user cannot advance any claims for damage to data / hardware / domestic harmony.

Support is at present free. Your comments are welcome. Visit the PaleoTax web page or send an e-mail if you have any problems or to ask for improvements. By sending your mail to me you agree that your question and my answer will be included in the F.A.Q. Programs or that any forms that I have modified for you will be offered to the whole community.

Information under <http://www.paleotax.de>

Send your requests to info@paleotax.de

Registration for the list server <https://www.link-up.de/mailman/listinfo/ls>

List server mail address ls@paleotax.de

This manual is a description of the PaleoTax program. You may download the latest version of the program from the PaleoTax web site or ask for a (3") mini compact disk.

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