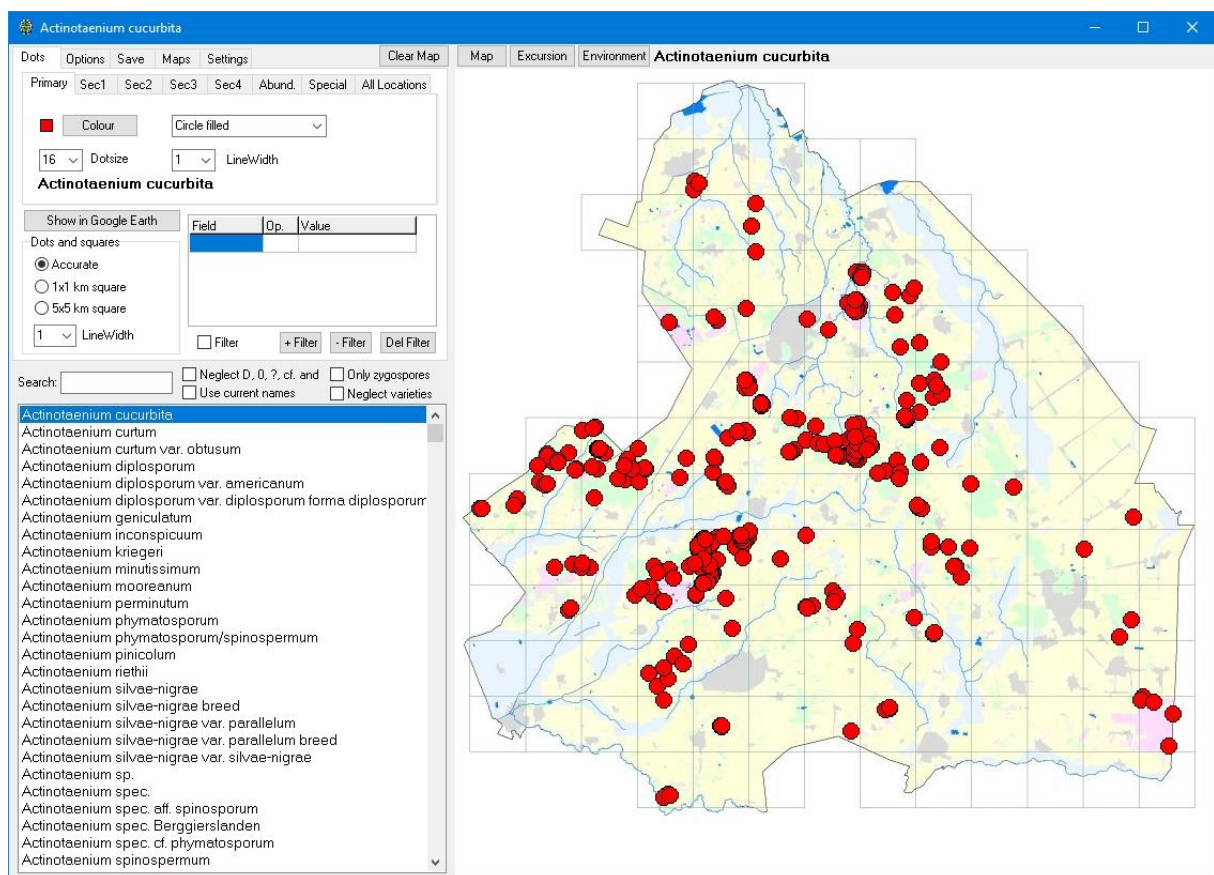


Desmid Database (Version 3.0)

Manual



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1. Introduction

There are many ways to store nature survey data. For small amounts of data many of us will use Excel. In the Netherlands some people use the now somewhat outdated databases Spot or BasisLogboek. There are also professional systems such as Turboveg or EcoLIMS. Popular web based databases in the Netherlands are Telmee.nl or Waarneming.nl.

Because I do a lot of surveys for nature conservation organizations and I have to write reports with distribution maps and tables with survey data all those systems had their shortcomings. For that reason I started writing my own database system four years ago. This database specifically focused on desmids. This system is called DesmidDataBase.

DesmidDataBase (DDB) is a database program that can be used to collect information on desmids in a systematic way. As in any database searching options are very important. So I implemented many features that I needed for my reports. Creating distribution maps is also possible with this program, as well as creating tables with species lists. The calculation of the Nature Conservation Value according the method of Peter Coesel (1) is included in the program. This is something that is so specific for desmids that no single database offers this possibility. So in that respect DDB is unique.

To produce distribution maps only three maps of the Netherlands are included, but the user can add maps to the system. It is also possible to display data in Google Earth so you can even do without maps. This allows you to find the exact location where a particular sample was taken even without topographic map.

The menu option "Cell Data" makes it possible to find information on inventoried 1x1 km squares ('km-hokken' in Dutch) or 5x5 km squares ('uurhokken'). If your country has a coordinate system based on 1x1 km and/or 5x5 km squares you can use this option for your system as well. However it is necessary that the coordinates contain only digits and a decimal separator (dot or comma) and no other characters.

For other the most convenient system will be to use Latitude-Longitude coordinates, as you can show distribution maps in a map with rectangular coordinates, or you can show them in Google Earth. For the Netherlands the most convenient system will be the use of coordinates in the Dutch RD- system (Amersfoort coordinates).

If desired you can export the collected data to other formats: for example in Excel (XLS or XLSX) format or the Tab Separated Values format (TSV).

Data created with Excel can also be read, as well as TSV files that are created with other programs.

Finally, it is possible to create an empty folder on the computer with location information (location name and x and y coordinates) as filename. This can be useful if you make photographs with a microscope and want to save the pictures in a systematic way.

Although this database is intended to store desmid data it is also suitable for other aquatic organisms, provided one has a list of names of these organisms. The user can create such a list using Notepad. Also adding names to the existing list of names is possible. Open the file 'AdditionalTaxalist.csv' (in the Lib folder) with Notepad to see how such a list has to look like. Who wants to store information on higher plants, mosses and fungi can also use this database. Of course information as pH and EC (Electric Conductivity) in that context is obviously irrelevant.

2. Getting started with DesmidDataBase

When DDB starts the main window is visible with a menu bar at the top and a large number of input fields in the rest of the window. The menu bar allows the user to choose from the many options DDB offers. Although it looks a bit intimidation at first sight (figure 1) it will be rather easy to work with this system.

DDB29

File Location list Conservation Value Distribution Map Cell Data Tables CreatePhotoFolder Preferences Help

Location name: Eexterveld plek 09 Ven aan zuidkant Location owner: SBB

Day: 27 Month: 08 Year: 2020 Location code: potje#8

Opmerking: erg eutroof pH: 5.3

X-coord: 243,056 Database: Drenthe Conductivity (EC): 215

Y-coord: 558,455 Copy this record Location List

Acidity: Acidic Water temperature: Analyst: MVW

Sample type (squeeze, plankton): opgezogen algen Herbarium (code): 2020-29

Biotope: 351 351 vennen ("normaal" ven) Abundance unit: 1,2 of 3 (dood=0)

Search: Desmid: *Closterium limneticum* var. *tenue* Conservation Value: ☐ Alternative Method

Lemma: Lemmermann 1899

Abundance: 1 (D/L/U) L Add to search list

Photo: F Sure? Zygo: Zygospore

Comment: Info: ☐ Neglect D.O. ?, cf. and N

RedList species: 0 Cons. Value: 4

| | Desmid | Abund. | D/L/U | Zygo | Image | Sure? | Remark | Info |
|----|--|--------|-------|------|-------|-------|---------------------------------------|------|
| 1 | <i>Closterium limneticum</i> var. <i>tenue</i> | 1 | L | | F | | | |
| 2 | <i>Closterium pusillum</i> var. <i>pusillum</i> | 2 | L | | F | | | |
| 3 | <i>Cosmarium dilatatum</i> forma2 | 2 | L | | F | | lijkt op <i>Euastrum biverrecosum</i> | |
| 4 | <i>Cosmarium dilatatum</i> | 3 | L | | F | | | |
| 5 | <i>Cosmarium laeve</i> | 2 | L | | F | | Sensu West&West 1908 | |
| 6 | <i>Cosmarium</i> spec. 2 | 1 | L | | F | | 11x11 elliptische semicellen | |
| 7 | <i>Cosmarium</i> spec. 3 | 1 | L | | F | | 28x24 crenate, | |
| 8 | <i>Cosmarium</i> spec. | 1 | L | | F | | hoge vorm van <i>regnellii</i> | |
| 9 | <i>Staurastrum minimum</i> | 1 | L | | F | | | |
| 10 | <i>Staurastrum striatum</i> | 1 | L | | F | | | |
| 11 | <i>Staurastrum tetracerum</i> var. <i>tetracerum</i> | 1 | L | | F | | | |
| 12 | <i>Staurodesmus extensus</i> | 1 | L | | F | | erg klein; 9x12 | |

Figure 1. DesmidDataBase main window

The screen is split into three parts. The upper part contains the general information of a particular location. The lower part contains a list of all species found and additional information about the particular species. The middle part is the entry section for the found species. Entering a name is very easy. Just type a part of the name in the field **Search**. All names that match are displayed and after selecting the correct name, the other data can be entered.

Finally, using the menu bar a number of additional options can be selected. Detailed information of those options you can find in other parts of this manual.

2.1 Create a new database

When you first start the program you have no database, so first you have to create one. Choose **File -> Select Database** and then choose "Create new database". An empty database with the selected name will be created. Click OK to return to the main screen. Now you can start entering data. Everything entered is stored immediately and is available again at the next start of the program. Note that when you start the program again, it opens the last used database.

First you have to enter the data of a sample location.

Click in the upper half of the screen on the + on the **navigator bar** (the bar with 9 buttons next to each other) and enter the required information (this can also with the ALT-INSERT keys).

Try to fill in as much data as is available for your sample location. At least provide a location name, date and coordinates. Use the TAB key to move to the next field (with SHIFT-TAB you move to the previous field).

The date must be entered in separate boxes for day, month and year. You might want to enter some comments on the location but that is up to you.

Now the co-ordinates X and Y have to be entered. How they should be entered depends on the coordinate system used: In the Dutch RD system, enter the coordinates in meters (six digits) in or km (ie with a dot. Note we do not use thousand separators). With a GPS you'll get X = Y = 236,215 and 559,987 (in meters). You may also enter X = 236.215 and Y = 559,987 (Note you can use a comma or a dot as separator).

In most situations, data will be entered in decimal degrees (Latitude and Longitude). X = 6.597182 degrees, and Y = 53.020965 degrees. Google Earth can be used to find the coordinates if you did not measure those in the field.

Use enough decimal places when in entering decimal degrees!

It is not possible to mix different systems. Keep this in mind!

Note: The location name and complete date have to be entered.

After entering all location data you have to click the button with the check mark on the navigator bar stored (or press Alt-ENTER). Only then the information is stored. If you change your mind you can cancel entering data by pressing the X button (Cancel) or the ESC key.

If you regularly take a sample from the same point you can use 'Copy this record' to create a copy of the site information (only the date, pH and EC is not included). This saves a lot of typing.

In the box titled "**Cons. Value**" a brief calculation of the Nature Conservation Value will be displayed. If you want to apply the calculation only to species for which no doubt exists, then uncheck "Ignore D, 0, ? and N". This means that all species with abundance 0 (zero) and cells with life state D (dead) are ignored (this means dead cells will not be taken into account) also cells where doubts about the determination exists (N in box Sure? or cf. in the name) will be omitted from the calculation.

2.2 Adding desmid data

Entering data of found desmids is most easy using the keyboard only so the mouse is not necessary. DDB contains a list of desmid species. Actually there are two lists. One for the Dutch desmids (*TaxalistAnnotatedNL.dbf*) and one for the European desmids (*TaxalistAnnotatedEU.dbf*). This last list contains species found in Europe although this list is far from complete at this moment. The lists contain author information, but also the environmental preferences of the species and information about rarity.

With the INSERT-key (make sure that Num-Lock is switched off) you can enter a new species in the list. The cursor is now in the search box. Enter a few characters of the name here. Should e.g. *Tetmemorus* be entered, then key in "tetm". In the field below the search box a list of names that meet the search characters will appear. Press the TAB key to go into this field and select the correct name with the arrow keys. Note: you do not have to enter the initial characters of the name. To find *Euastrum binale* var. *gutwinskii* just type "gut" ! To enter *Cosmarium obtusatum* you only have to enter 'c obt'. Do not forget the space between 'c' and 'obt'. After selecting the correct name, it will appear in the 'Desmid' field. Use the TAB key to move to that field. Everything in this field can be edited. E.g. press the END button and add (or append) something to the name ('cf.' for example, or a variety that is not in the list).

For frequently found Desmids that are not in 'TaxalistAnnotated' you can use the button **Add to Search List** to add that species to an additional list (*AdditionalTaxalist*). For this additional list also an NL and EU version exist. When you choose a list the appropriate *AdditionalTaxalist* will be used to add names. A useful addition is e.g. 'No Desmids found' or 'Closterium idiosporum/pronum' etc.

Alternatively the list of names as stored in 'taxalist.csv' can be changed with e.g. Notepad. If you want to remove names from the list you also can do that with Notepad.

Press the TAB key to enter the abundance. You also can use the arrow keys (UP and DOWN) to select the abundance. Depending on the chosen format you enter a '+' or a number representing the number of cells per ml is indicated or an abundance number (1, 2 or 3).

Use the TAB key to move to the next field. There you enter a single character (L, D, or U) to indicate whether the cell is living or dead. Use U (unknown) when incomplete observations from someone else have to be entered. Here you can use the arrow keys too.

In the following field a '+' indicates a zygospore found. In the next field the '+' indicates that a picture or drawing is present. Finally, there is space for some additional comments.

Use SHIFT-TAB to return to a previous field.

Use the ESC key to cancel all changes at once (you can also use the X-key on the navigator bar for that).

CTRL-ENTER saves all changes to the database.

Use CTRL-E to enter Edit mode. Then one or more fields of a record can be altered.

It is also possible to change the desmid information from the table at the bottom of the main form. When you have move to a field you want to change press the ENTER-key. In the fields above the table you can now change what ever you want. With CTRL-ENTER you can save the changes.

3. The menu of DesmidDatabase

3.1. File

Select Database

It is possible to manage multiple databases with desmid info in DDB. With this option you can select a database but also a completely new (empty) database can be created.

It is also possible to remove a database here.

Attention! If you remove a database all data will be permanently deleted!

Import ...

A submenu will be opened: **Import a TSV or XLS file**

When you have your data in a suitably formatted Excel-file you can open this XLS (XLSX) file with DDB and import the data. Many programs offer the opportunity to export data as Tab Separated Value files (TSV files). DDB can read those files, so you can use this option to transfer data to DDB.

3.1.1 Importing Excel-files or TSV-files

DDB is able to import Excel files. So if you previously stored your Desmid data in an Excel file, it is easy to convert your data to DDB. Some database programs can export their data in Excel format, so you can also import data from those programs. However, not all programs are able to export their data in XLS format. Fortunately many of these programs have the option to export to a so-called Tab Separated File (often with the extension. CSV).

If you want to import data to DDB first select the right database or create a new one.

Then open the **File** menu and select **Import...** then choose **Import TSV or XLS file**. A new window will open.

Top left is a button **Open Database** click it and select the desired file. All data from the file will appear in a more or less Excel like format at the bottom half of the screen (the column width probably is not correct but you can change that in the same way as you can do that in Excel).

In the upper half of the window you can specify in which column, the Location Name, Day, Month, Year etc can be found. Select the right column for each item you want to import in the database. If certain data is not available, then select 0 (zero).

Also indicate in which row the real data starts. Sometimes the top lines in an Excel sheet contain some additional information you might want to skip during the import. The program determines what data belong to the same location by checking the contents of certain columns. When the content of these columns is the same, the data comes from the same sample location. You can select the columns that determine a unique location at the right (Unique location determined by column :).

NB The program assumes that all data belonging to one location is in successive lines in the import file! If that is not the case in your file, first select the unique locations and then sort the table with **Sort Data at Unique Location**.

Make sure to select the right coordinate system that is used for the X-and Y-coordinates.

Finally, in some tables the date will be in one column and not in individual columns for Day, Month and Year. On the right (Date format) you can specify how the date should be treated.

It is also important to indicate whether the existing database needs to be replaced or that the information from this file should be added to what already exists.

It is possible to save these settings with **Save Column info file**, so next time you do not have to select everything all over again. When you import many files of the same type you can select **Last used Column info** so you do not have to reopen the file.

If everything is set then click the button **Create Database**. Depending on the size of the file it might take a while until the database is created. Close the import window to observe the imported database in the main window.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|----|---------|-----|-------|------|-----------|---------------|--------|--------|----------|---------|-------|--------|----|-----------|
| 1 | LOCATIE | DAG | MAAND | JAAR | ZUURGRAAD | OPMERKING | COORDX | COORDY | MONSTERS | ANALIST | OWNER | LOCODE | PH | GELEIDING |
| 2 | Ameland | 12 | 6 | | | Rietpad | 147 | 0 | NL | | | | | |
| 3 | Ameland | 26 | 6 | | | water in Lang | 147 | 0 | NL | | | | | |
| 4 | Ameland | 13 | 7 | | | water in Lang | 147 | 0 | NL | | | | | |
| 5 | Ameland | 13 | 7 | | | water in Lang | 147 | 0 | NL | | | | | |
| 6 | Ameland | 17 | 6 | | | Zwanewater | 148 | 0 | NL | | | | | |
| 7 | Ameland | 12 | 6 | | | Frettenpad bi | 170 | 608 | NL | | | | | |
| 8 | Ameland | 4 | 5 | | | Jan Roepe h | 172 | 607 | NL | | | | | |
| 9 | Ameland | 18 | 6 | | | Jan Roepe h | 172 | 607 | NL | | | | | |
| 10 | Ameland | 18 | 6 | | | Jan Roepe h | 172 | 607 | NL | | | | | |
| 11 | Ameland | 18 | 6 | | | Jan Roepe h | 172 | 607 | NL | | | | | |
| 12 | Ameland | 22 | 6 | | | Jan Roepe h | 172 | 607 | NL | | | | | |

Figure 2. The import window

In figure 2 you see that columns 1, 7 and 8 determine the unique location (often it is useful to use the location name, coordinates and/or date as criterion). As the numbers 1 to 8 represent priority, it means that the data will be sorted on location name, then on X-coordinate, then on Y-coordinate. In most situations all data belonging to one location will be sorted in successive lines in the table.

Export ...

This also opens a submenu. There are two different export options:

- **Export as TSV separated text**
Data can be exported in TSV format. Tables in this format can easily be imported in other databases, but also in Excel.
- **Export as Excel (XLS or XLSX) file**
The data will be saved as an Excel file format. Tables in this format can be opened by Excel and other databases.

Create Backup

This creates a backup of the database. e.g. on a USB stick or in a different folder on another disk. ***Do this regularly!***

Exit

The program will be closed. You can also Exit the program by clicking the close button of the main window. After each operation, data is written to the disk, so even if the program or Windows crashes there is no data loss. Only a hard disk crash can cause data loss, hence the need for regular backup on a different disk.

3.2 Location List

Choose from the menu **Location List** or use the button **Location List** just above the navigation bar. This option opens a window where the most important information of each sample location is shown. This is useful when you try to find a certain location, or if you want an overview of all sample locations in a given area.

Depending on the purpose, this list can also be sorted by date instead of on location name. There are several options to display the list:

- Show all locations without any selection.
- At the upper right top of the window you can enter the name (often part of the name is sufficient) of a Desmid. From the list of algae that match choose the one you want. Only those sites where the selected desmid was found will be shown in the list. If you want to search for a desmid that is not in the list, then enter the complete name and press ENTER.
- Show all areas owned by a named nature organization.
- Enter (part of) a location name to quickly find all the sample data from a specific location.
- Search in the Desmid-comment. You can search in the comment placed after a desmid name.
- Finally you can enter a year and the selection will be restricted to that year.

To select rows from the list of locations shown, hold down the CTRL key and click with the mouse on the lines/rows you want to select.

If multiple samples are taken from one area it may be more useful to calculate the Conservation Value of that area instead of that of each sample point separately.

The button top left of the table allows you to calculate the Conservation Value of the selection you made.

You can change what columns (fields) of the database are displayed:

Click on the title of a column you want to change. A new small window will open, where you can select the field you want to see. Click OK and the old field column will be replaced by the new one. To add a column, just **RIGHT-CLICK** on the title of a column and a new empty column will appear. Then change the title of this new column. Use **CTRL + RIGHT-CLICK** to delete the rightmost column.

3.3 Conservation Values

The Conservation Values are made visible in a separate window (figure 3). The significance of the various numbers is extensively explained in (Coesel, 1998). This help file is not the right place to discuss this topic.

A handy addition is that if you move the mouse cursor over the indicators of Acidity and Trophic state, a popup will show which species in the sample belong to a particular environment. The Red List species found can also be shown (mouse over the red list species number).

Furthermore, in a separate list at the bottom the names are shown that the program could not find in *TaxalistAnnotated.dbf*.

Be aware that the Conservation Value values will differ if you use the NL or EU version of *TaxalistAnnotated*.

Remark

In the original system developed by Coesel, the Conservation Value can increase a whole point after adding a single species. I therefore developed an **Alternative Method** where a function is used to calculate the Conservation Value. This prevents the 'steps' in the calculation, but of course sometimes the results of both methods can differ more than one point.

3.4 Distribution Maps

When you select this option a new window will open. At the right a map is displayed to show the distribution. At the bottom left you see a complete list of all Desmids found in the database (Figure 4). Clicking on a name of this list will show a distribution map of that species.

Note: In case something goes wrong due to an error in the database the label on top saying 'Calculating....' might stay visible. By clicking the button 'Clear Map' you can reset the program. In many situations the cause of the problem will lie in invalid numbers for date and coordinates.

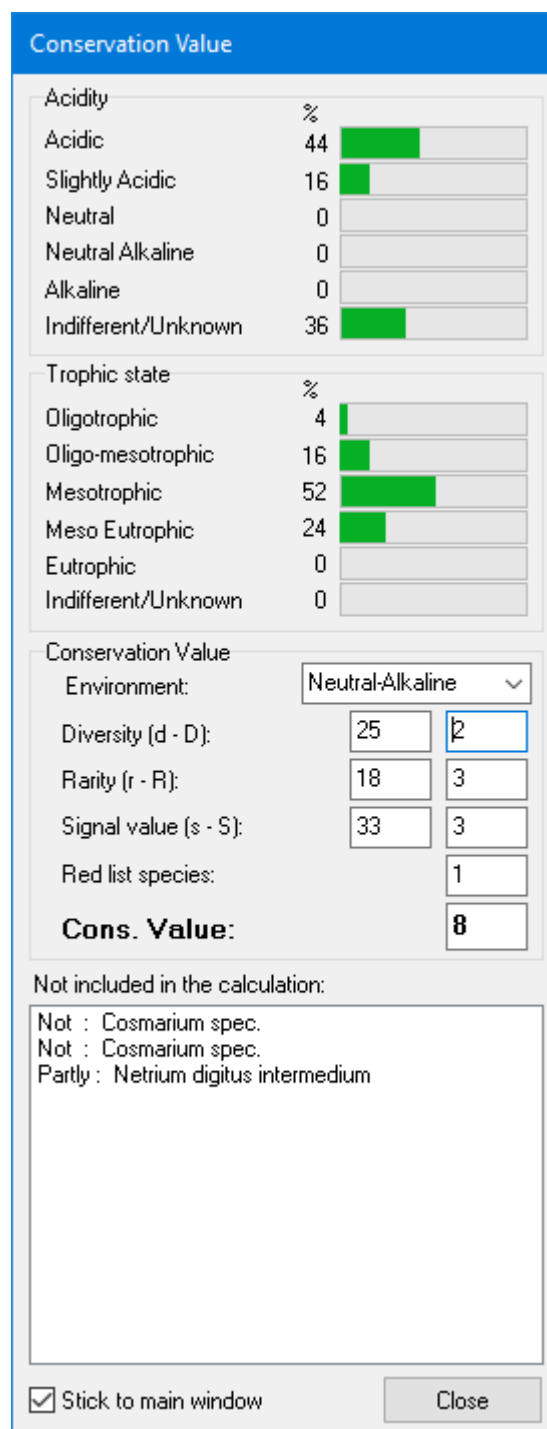


Figure 3. Conservation value calculation

If you are not sure about your determination, you can exclude those findings from displaying. When you select *Neglect D, 0, cf., N* All occurrences in the database of dead cells (D), abundance 0 (only dead cells), cf. in the name and N (in the field Sure) will be omitted from displaying. If you want to neglect varieties you can select to do that. A third option allows you to display only those species you have found zygospores of.

Desmid taxonomy is still changing. So it is very well possible that you have species in your database with old and new names. To display them all, check the *Use current names* checkbox. The file *TaxalistAnnotated (NL and EU version)* contains a reference to the current names and can display the species with the old names and the new names in the same map.

There are more options to filter your data. Those options will be discussed later in this manual.

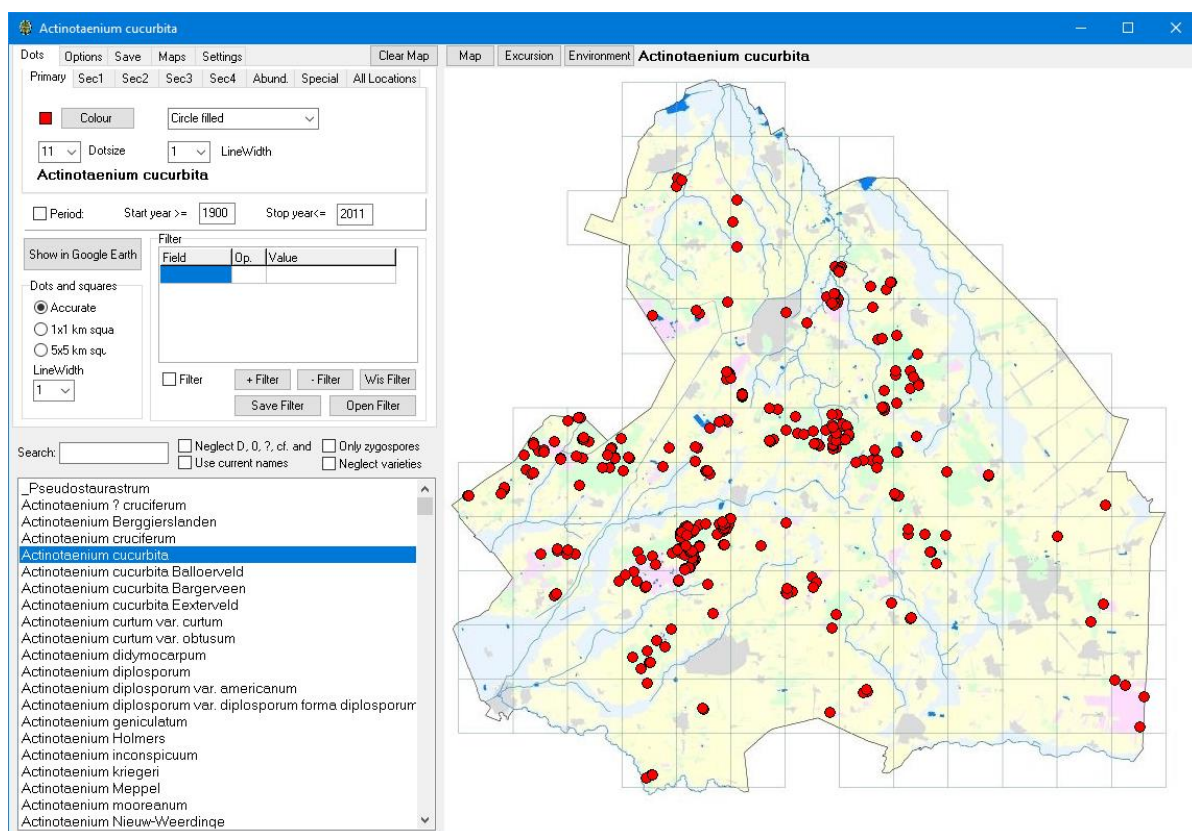


Figure 4. Distribution map of *Actinotaenium cucurbita*.

If the map is too large to fit the screen, you have to press the right mouse button, then you can use the mouse to move the map the area you want to observe. Or you can go to the tab **Maps** and select the option 'Adjust map to window size'.

At the top left you see a number of tabs that give access to the following options:

Tabs to display dots on the map

- **Dots**
Here you can select how the dots will be drawn. You can adjust the shape, size and colour of the dots. In most circumstances the default values will produce a usable map.

Primary

When you select this tab and you click on a name of a desmid in the table below a complete new map will be drawn. So only the dots showing the distribution of a single species will be shown.

Sec1 t/m Sec5

If you have selected this option you can draw dots just like when using the primary tab. The difference is that now the map will not be cleared when you select another species. So this way you can create a distribution map containing information of several species. If necessary you can even use different shapes, colours and sizes for the different species. Figure 5 shows the distribution of *Haplotaenium minutum* and *Haplotaenium indentatum* in one map.

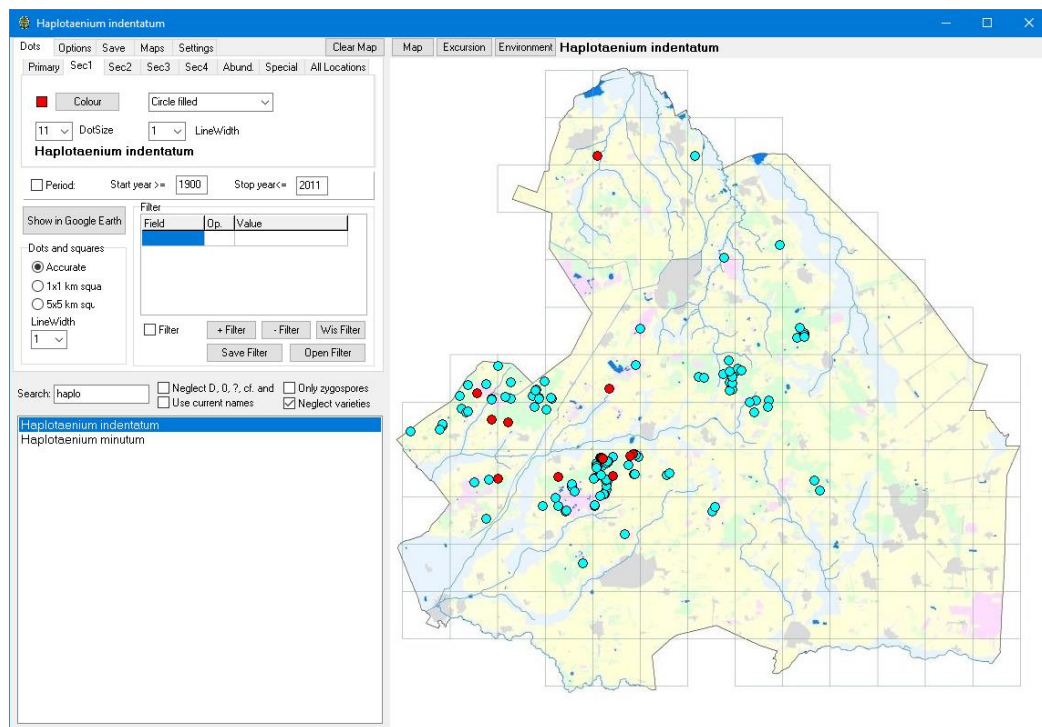


Figure 5. The distribution of *Haplotaenium minutum* (blue) and *Haplotaenium indentatum* (red) in one map.

- **Special**

Here you can show the distribution before and after a certain year of a certain species. There are other ways to achieve this, but this method is much easier to apply.

- **All locations**

This shows a map of all locations in the database.

- **Position of the dots**

Here you can select how you want to present the data: precise, at kilometre level or at 5 kilometre level. Again you can adjust the shape, size and colour of the dots.

Note: In the case of LatLon coordinates you can change the accuracy to **accurate** and to **square**. When **accurate** is selected the dots will always be placed as accurate as possible. When **square** is selected, the map will be divided in squares of 1' (1 minute of arc) by 0.5'. As in vertical direction 1' = 1 Nautical Mile (= 1.852 km) in vertical direction the squares will be 926 m. The width of the squares depends on the latitude. At a latitude of 60° the width will be 925 m as well, so a perfect square. For lower

latitude the width will be larger and for higher latitude values it will be lower.

Important is that the maps you use is calibrated in a rectangular coordinate system and that decimal degrees are used.

- **Show in Google Earth**

If Google Earth is installed on the computer, the data can also be visualized with this program. If the data are entered accurately the exact location of the sampling site can be found this way. A so-called KML file is created (in the folder KML) of the data you want to show up in GE. These files can later be viewed without opening DDB. By clicking the red dots in Google Earth additional information of the sampling location is given.

It is possible to display the dots in the ce

- **Filter**

It is possible to filter the results. The filter is based on the so-called postfix notation and uses a stack. This has a number of advantages.

The difference with infix processing is in the way of processing a somewhat more complicated calculation. The method is discussed on the basis of a simple calculator. The common way to display a calculation is $3 + 4 = \text{answer}$ or $3 + 4 - 5 = \text{answer}$. In postfix notation this becomes $3\ 4\ +$ and $3\ 4\ 5\ -\ +$.

Before the operation, the computer reads the numbers from left to right and places them in a stack. If there is an operator (+ sign), that operation is applied to the top two values on the stack. The result is returned to the stack. This continues until the last operator has been processed. The result will then be on top of the stack.

Example 1: $3\ 4\ +$

This sequence produces a stack of two numbers. First the 3 and on top of that the 4. The operator + takes those two numbers from the stack and adds them. The result (7) is returned to the stack. There are no more elements to read, so the calculation is complete. The result is on top of the stack.

Example 2: $3\ 4\ 5\ -\ +$

After reading the three numbers, 3 is at the bottom of the stack and 5 is on top. The operator - subtracts 5 from 4 and the result (-1) is returned to the stack. So there are now 3 and -1 on the stack. Then the next operator is read (+) and the operation is performed, the result $3 + (-1) = 2$ is put on the stack. The calculation is now complete and the answer (2) is on the stack.

Alternative: We can also write this problem as $3\ 4\ +\ 5\ -$. Now 3 and 4 are put on the stack. The + operator works on those two numbers. The 3 and 4 are removed from the stack and the result of the addition (7) is added to the stack. Now the 5 is read and put on the stack. The operator - takes those two from the stack and returns $7 - 5 = 2$ and that is put on the stack. The calculation is now complete.

The advantage of this method is that no parentheses are required in calculations.

Another example: the calculator must calculate $4 + 6/2$. Dividing takes precedence over addition, so dividing must be done first and then the addition must be performed. This gives $4 + 3 = 7$ as a result. But if we want to add and then divide first, we must use parentheses in this format: $(4 + 6) / 2$. The result of this calculation is 5.

How do we do this in postfix notation? In the first case, the division must be performed first and then the addition. So this becomes $6\ 2\ /\ +$ or $4\ 6\ 2\ /\ +$. In the second case, the addition must be performed first and then the division thus $4\ 6\ +\ 2\ /\$.

No brackets are therefore required. That is the great advantage of the postfix notation.

In the filter in DDB we do not add numbers, but for each record it is checked whether a certain condition for that record is true or false. This may or may not be the case. So the line with an equation can be true or false (T or F). These lines are the equivalent of numbers in the calculator from the previous example. The operators that can be used are AND, OR and NOT.

Here too the results of the operation are put on the stack. The operators AND and OR always get 2 results from the stack and return one value back on the stack. The NOT operator takes one value from the stack and also returns one value.

The filter in DesmidDataBase

The name of the field is entered in the left column and in the right column the value that is used by the operator. The column "Op." Indicates the operator that will be used. There are the following options: =, <>, <, <=, >, >= and 'like'.

The latter means that the text in the database field should contain that text somewhere. If a filter is chosen with field "Location", Op. "Like" and value "Eexterfield" are shown only the data containing the word "Eexterfield". N.B. the filter is case insensitive.

When the filter is applied, only the records where the outcome of the filter operation is true will be used.

Year >= 2000

Year < 2005

AND

Now only the finds from 2000 to 2004 are displayed.

Note that only data that complies with ALL rules is displayed. Suppose you want to see the results that are NOT managed by Staatsbosbeheer, Natuurmonumenten or Het Drentse Landschap.

That would be with Boolean logic: NOT (owner = SBB OR owner = NM OR owner = HDL).

This is entered in the filter as:

owner = SBB

owner = NM

OR

owner = HDL

OR

NOT

It is clear that the examples given only work when the information you want to filter is available in the database!

With **Save Filter** the filter can be saved in the folder *filters*. With **Open Filter** earlier saved filters can be opened.

In another example you only want to see the results of a species found in pools. The biotope code for pools is 351. There are also codes for outlying pools with codes 351a and 351b. It is very easy to create a filter for this with the rule **biotope like 351**. If no further combinations need to be made, this is the only rule in the filter.

The options available can also be obtained from the files FieldNames.csv and biotopeCodes.dbf

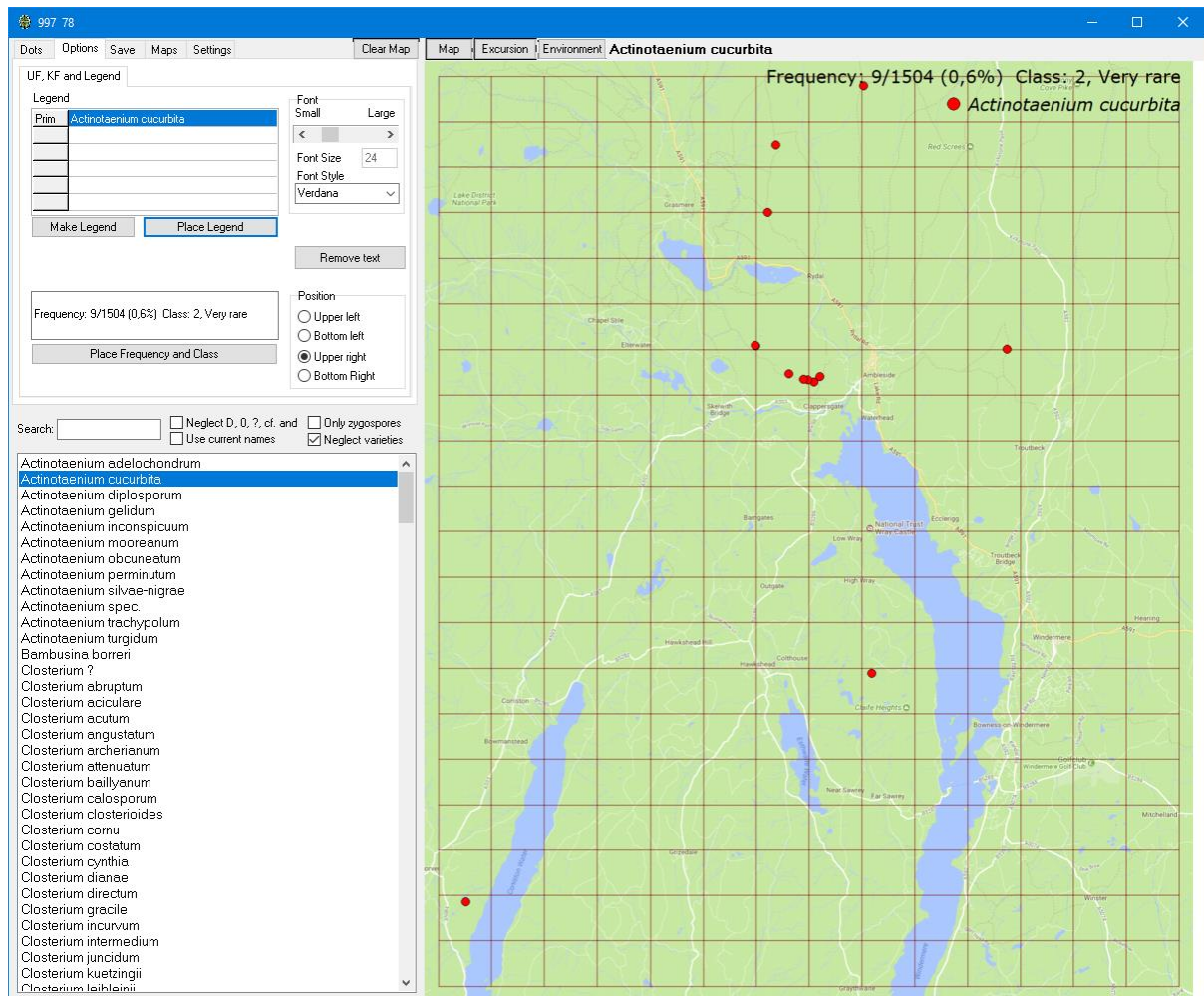


Figure 6. Options to place additional information in the map

3.4.2 Options

Name(of the desmid)

Set position (only the four corners) and font.

Behind the name you can place additional information. Make sure that there is enough space at the top or bottom of the map to place the name.

UF en KF

The behaviour in this case is a little bit different for the use of the Dutch grid and LatLon coordinates.

Dutch RD grid:

UF ('uurhokfrequentie' in Dutch) means the amount of 5x5 km squares related to the total amount of visited squares. KF (kilometerhokfrequentie) is the amount of 1x1 km squares related to the total amount of visited squares. This will be displayed in the upper right corner of the map (see figure 6). UFK and KFK are the accompanying classes.

A logarithmic scale is used for the translation of frequency to class (see table 1).

LatLon grid:

Here we only have the 1' x 0.5' grid. So the number of 'squares' where a specific species is found is related to the number of visited squares.

The name and abundance information is shown in the upper right corner of the map, but this position (and font of the text) can be changed (see figure 6).

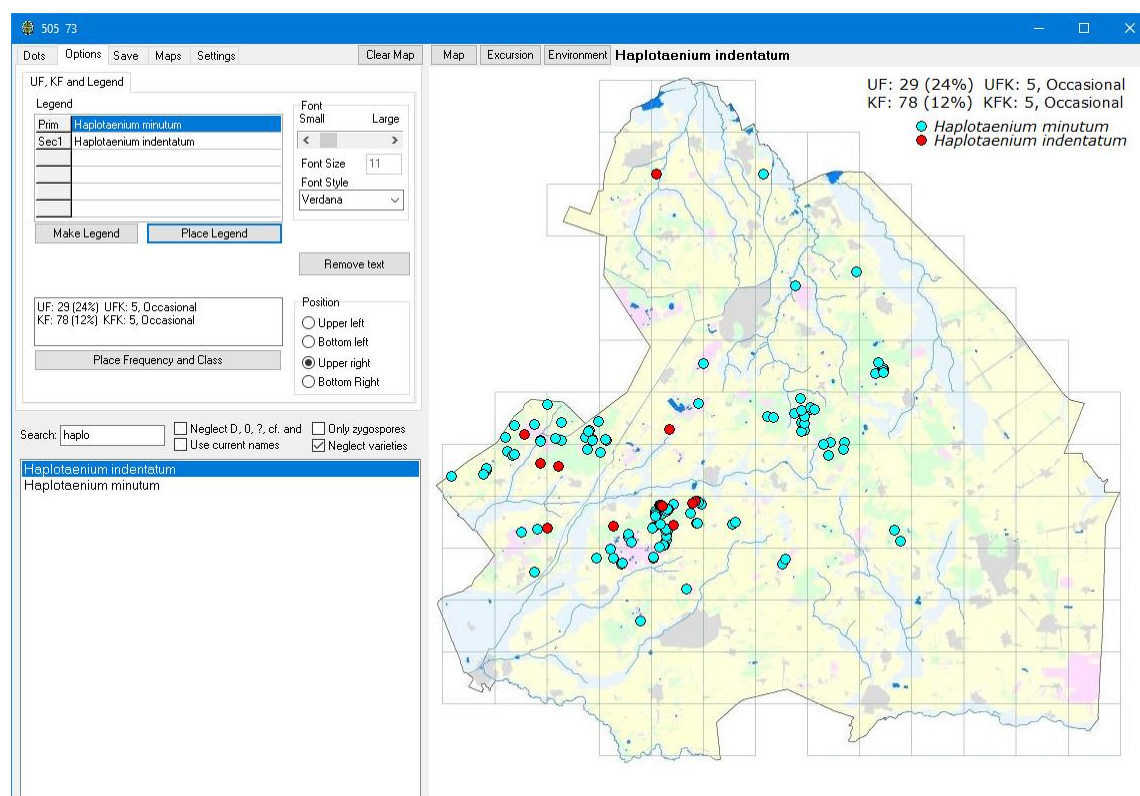
Legend

When several species are shown in a single map, a legend can be placed at the upper right corner of the map (see figure 7). When the Legend text is made (with **Make Legend**) The text can be edited. When you are satisfied with the text, then select **Place Legend**.

When the text in the map is not as intended, it can be removed with **Remove text**. After applying changes the text can be placed again.

Table 1. Frequency classes

| Description | Class | Percentage of the total amount of visited squares |
|-------------|-------|---|
| Absent | 0 | 0 |
| Very rare | 1 | Less than 0,2 |
| Very rare | 2 | 0,2 to 0,5 |
| Rare | 3 | 0,6 to 1,9 |
| Rare | 4 | 2,0 to 4,9 |
| Occasional | 5 | 5,0 to 9,9 |
| Frequent | 6 | 10,0 to 24,9 |
| Common | 7 | 25,0 to 44,9 |
| Very common | 8 | 45 to 71,9 |
| Abundant | 9 | More than 72,0 |



Figur 7. Legend for *Haplotaenium indentatum* and *Haplotaenium minutum*

3.4.3 Save

The distribution maps can be saved as BMP, PNG or JPG file. Here you can select what type of image you want to use. Another option that will be discussed later in this manual is that you also save the pH-EC diagram and the phenology diagram.

3.4.4 Maps

DDB is shipped with three maps of the Netherlands but you can add your own maps. The supplied maps are calibrated in the Dutch RD-system, but for other countries it is better to use maps in a rectangular Latitude Longitude system.

How to add your own maps?

Select 'Open map' and open a BMP or JPG file containing a map of an area of interest with a rectangular coordinate system. The program then warns you that the map is not calibrated. You calibrate the map by clicking on two opposite positions on the map with known coordinates. The program asks for the coordinates of the spot you have selected. The calibrated map will be saved and also used immediately as the default map. When you replace the map by a new one you always can reopen the calibrated map. If you are not satisfied with the calibration, you always can recalibrate the map again.

3.4.5 Presentation of the data

Besides presenting the data on a map we can also show the data in a table (figure 8). You can sort this table on Location, Date or on Coordinates. When you click on a location name, all the other species found on that location will be shown in the table below the locations list.

The screenshot shows the DDB software interface. The top menu bar includes 'Dots', 'Options', 'Save', 'Maps', 'Settings', and 'Clear Map'. The 'Maps' menu is open, showing 'UF, KF and Legend'. The 'Legend' section lists 'Prim' and 'Sec1' with 'Haplotaenium minutum' and 'Haplotaenium indentatum' respectively. The 'Font' section shows 'Font Size' 11 and 'Font Style' Verdana. The 'Position' section shows 'Upper right' selected. The 'Place Frequency and Class' button is visible. The 'Search' field contains 'haplo'. The 'Neglect D, O, ?, cf. and' checkbox is checked. The 'Only zygospores' checkbox is checked. The 'Use current names' checkbox is checked. The 'Neglect varieties' checkbox is checked. The 'Map' section shows 'Excursion' selected. The 'Environment' section shows 'Haplotaenium indentatum'. The 'Total number of items: 147' is displayed. The table below shows data for 'Haplotaenium indentatum' with columns: ID, Location, Date, X, Y, pH, EC, Analyst, Abund, Zygo, Pl. The table lists 147 items, with the first few rows showing data for 'Haplotaenium indentatum' found at 'Grolloerveen' on 2007-07-18. The bottom right section shows a table of other species found on that location, with columns: Nr, Desmid, Abun, DLO, Zygo, Photo, Remark. The table lists 15 species, with the first few rows showing data for 'Actinotaenium cucurbita', 'Bambusina borreni', 'Closterium abruptum', 'Cosmarium amoenum', 'Cosmarium pyramidatum', 'Cosmarium subumidum var. subumidum', 'Cylindrocapsa brevissonii', 'Euastrum binale var. gutwinski', 'Haplotaenium minutum var. minutum', 'Micrasterias truncata var. truncata', 'Netrium digitus var. digitus', 'Spondylosium pulchellum', 'Staurostrum furcatum var. aciculiferum', 'Staurostrum margaritaceum', and 'Tetmemorus flensburgii'.

| ID | Location | Date | X | Y | pH | EC | Analyst | Abund | Zygo | Pl |
|-----|---|------------|---------|---------|----|----|---------|-------|------|----|
| 232 | Grolloerveen | 2007-07-18 | 240.3 | 548.4 | | | MvW | 2 | | + |
| 233 | Grolloerveen Sphagnum naast fietspad | 2007-07-18 | 240.3 | 548.6 | | | MvW | 2 | | + |
| 237 | Grolloerveen (vochtig sphagnum) | 2007-07-18 | 240.7 | 548.4 | | | MvW | 1 | | + |
| 180 | Dwingeloo Poort 1 | 2007-07-23 | 225.5 | 538.3 | | | MvW | 2 | | |
| 181 | Dwingeloo Poort 2 | 2007-07-23 | 225.5 | 538.6 | | | MvW | 2 | | |
| 182 | Dwingelderveld Schurenberg | 2007-07-23 | 225.50 | 538.05 | | | MvW | 2 | | |
| 183 | Dwingeloo Wolfskavutjesveen | 2007-07-23 | 226.0 | 538.6 | | | MvW | 3 | | + |
| 396 | Spiet Terhorster zand Makkumerplas | 2008-04-30 | 229.450 | 539.514 | | | MvW | 1 | | |
| 398 | Spiet Terhorster zand westelijke plas | 2008-04-30 | 229.045 | 539.381 | | | MvW | 1 | | F |
| 230 | Grollo Halkenveen 2 vochtig sphagnum | 2008-06-22 | 238.842 | 548.005 | | | MvW | 3 | | + |
| 228 | Gijsselle Boswachterij Ruinen ven in perceel 49 | 2008-07-14 | 224.045 | 527.959 | | | MvW | 2 | | |

| Nr | Desmid | Abun | DLO | Zygo | Photo | Remark |
|----|--|------|-----|------|-------|--------------|
| 1 | Actinotaenium cucurbita | 3 | L | | + | |
| 2 | Bambusina borreni | 3 | | | + | |
| 3 | Closterium abruptum | 3 | | | + | |
| 4 | Cosmarium amoenum | 2 | | | + | 2 pyrenoiden |
| 5 | Cosmarium pyramidatum | 2 | | | + | |
| 6 | Cosmarium subumidum var. subumidum | 2 | | | + | |
| 7 | Cylindrocapsa brevissonii | 1 | | | | |
| 8 | Euastrum binale var. gutwinski | 2 | | | + | |
| 9 | Haplotaenium minutum var. minutum | 2 | | | + | |
| 10 | Micrasterias truncata var. truncata | 2 | | | + | |
| 11 | Netrium digitus var. digitus | 2 | L | | + | |
| 12 | Spondylosium pulchellum | 2 | | | + | |
| 13 | Staurostrum furcatum var. aciculiferum | 2 | | | + | twijfel |
| 14 | Staurostrum margaritaceum | 2 | | | + | |
| 15 | Tetmemorus flensburgii | 2 | | | + | |

Figure 8. Data of all locations where the selected species was found (top right). Together with the data of others species found on that location (bottom right).

Finally information on the environment can be displayed on another field (figure 9). pH en EC are shown in a table, but also in a diagram. Environmental information is shown in a table and the dates when the samples were taken are shown in a diagram.

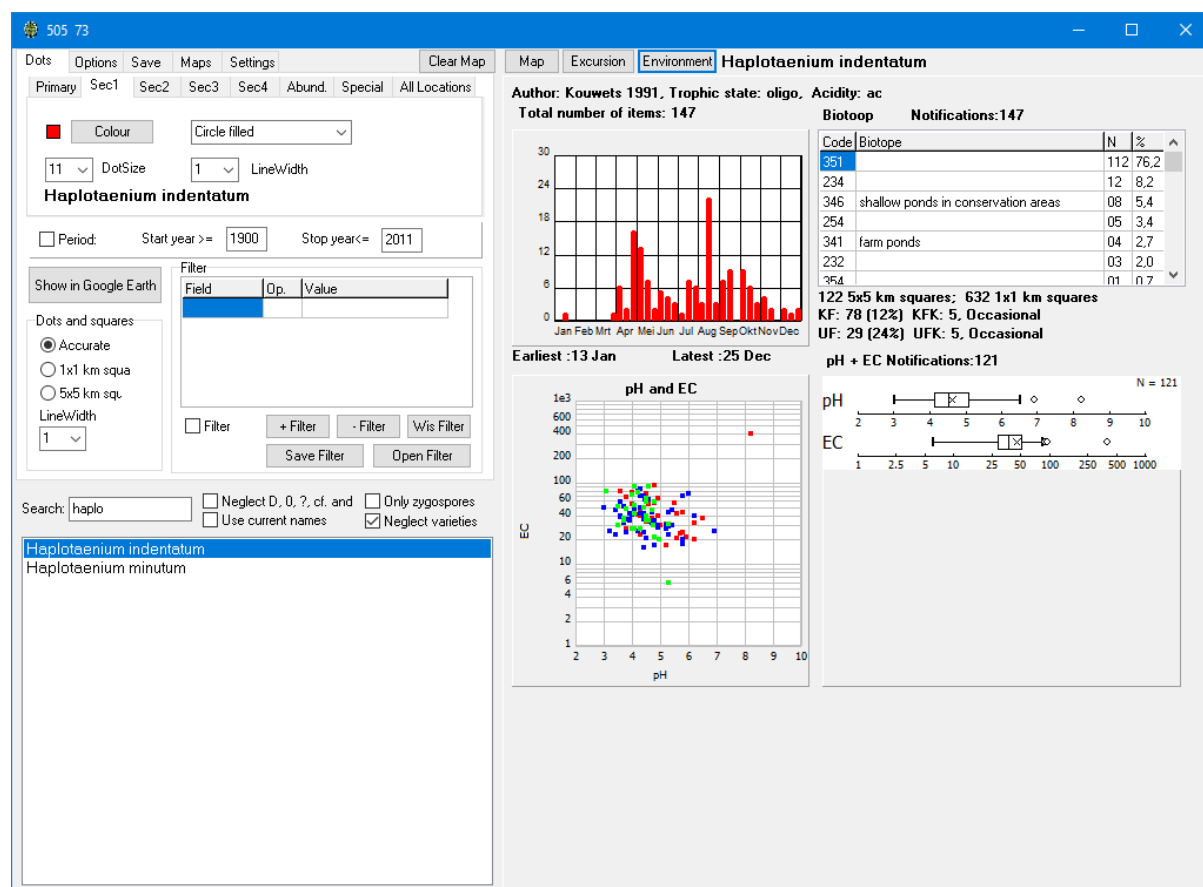


Figure 9. Environmental data of the selected species.

3.5 Cell Data

At this moment this option only shows something when you use a kilometre based coordinate system. It does not function for Latitude-Longitude!

You can select a 1x1 km square or a 5x5 km square and make a table of all species found in that square (figure 10). You can select the square with a mouse click on the map, or you can enter the coordinates at the top left of the form. Additional info will be displayed in red (total amount of taxa, blue (amount of samples taken from that square or green (number of 1x1 km squares in a specified 5x5 km square. There is an option to restrict this information to a certain period. Also you can decide to ignore doubtful results or unknown species (for instance those with 'cf' or not in the taxalist). You can ignore varieties and use the current names.

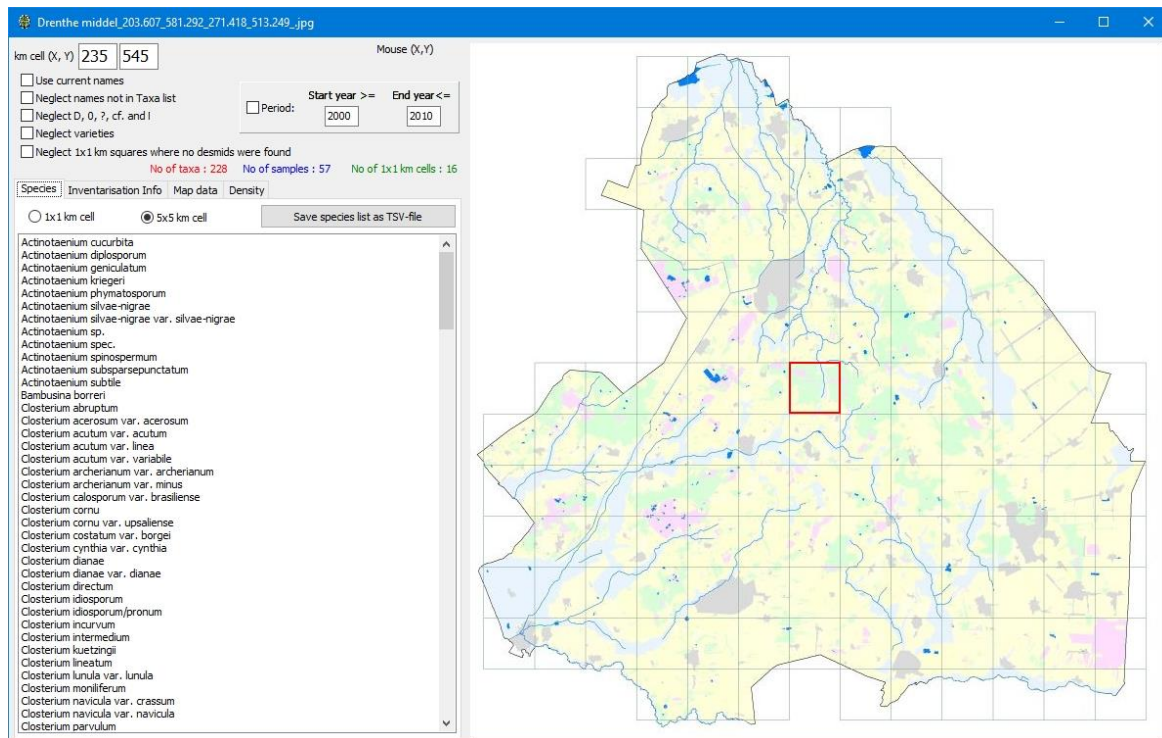


Figure 10. All species found in 5x5 km square 235-545

An additional option is to create a map with the total amount of taxa, total number of samples and total amount of 1x1 km squares in one 5x5 km square of ALL squares in an area (figure 11). The colours can be changed by clicking the three red crosses in the legend.

Note: In case something goes wrong due to an error in the database the label on top saying 'Calculating....' might stay visible. By clicking this label you can reset the program. In many situations the cause of the problem will lie in invalid numbers for date and coordinates.

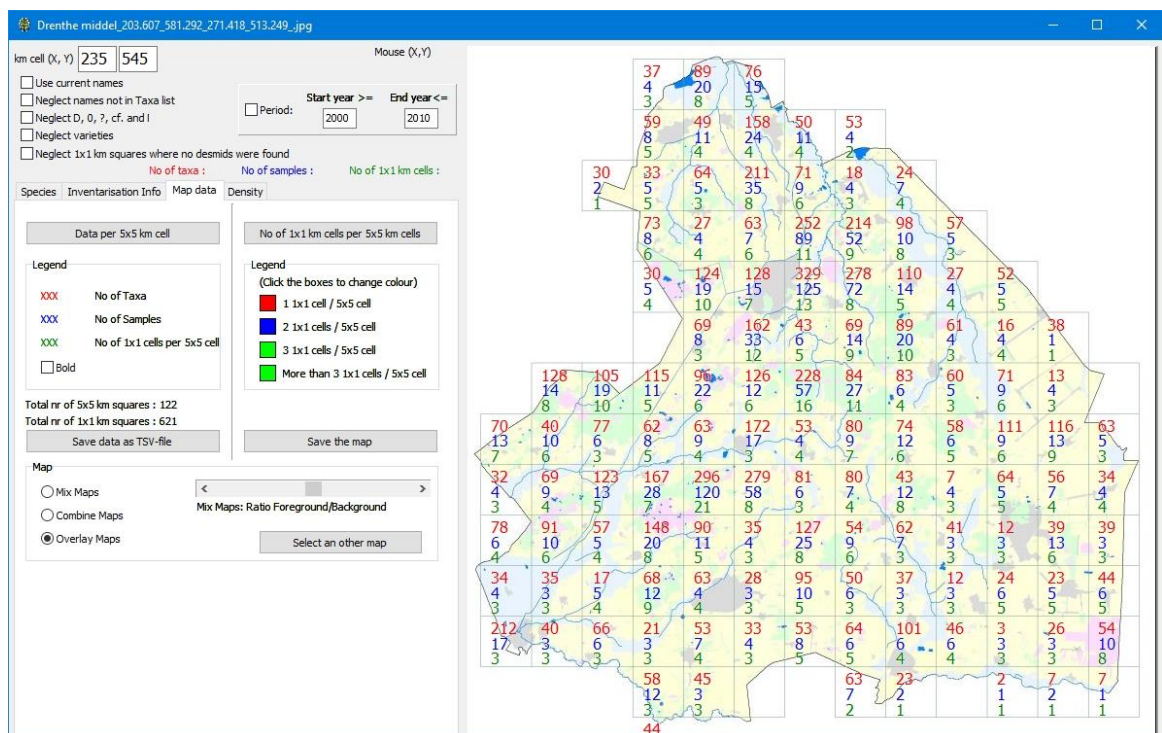


Figure 11. Information about all visited 5x5 km squares in the province of Drenthe.

Figure 12 shows how you can display the coverage of the sampling sites over the whole province. It shows a coloured square, where the colour depends on the total amount of 1x1 km squares visited in one 5x5 km square. Here you can also adjust the colours by clicking on the coloured squares in the legend.

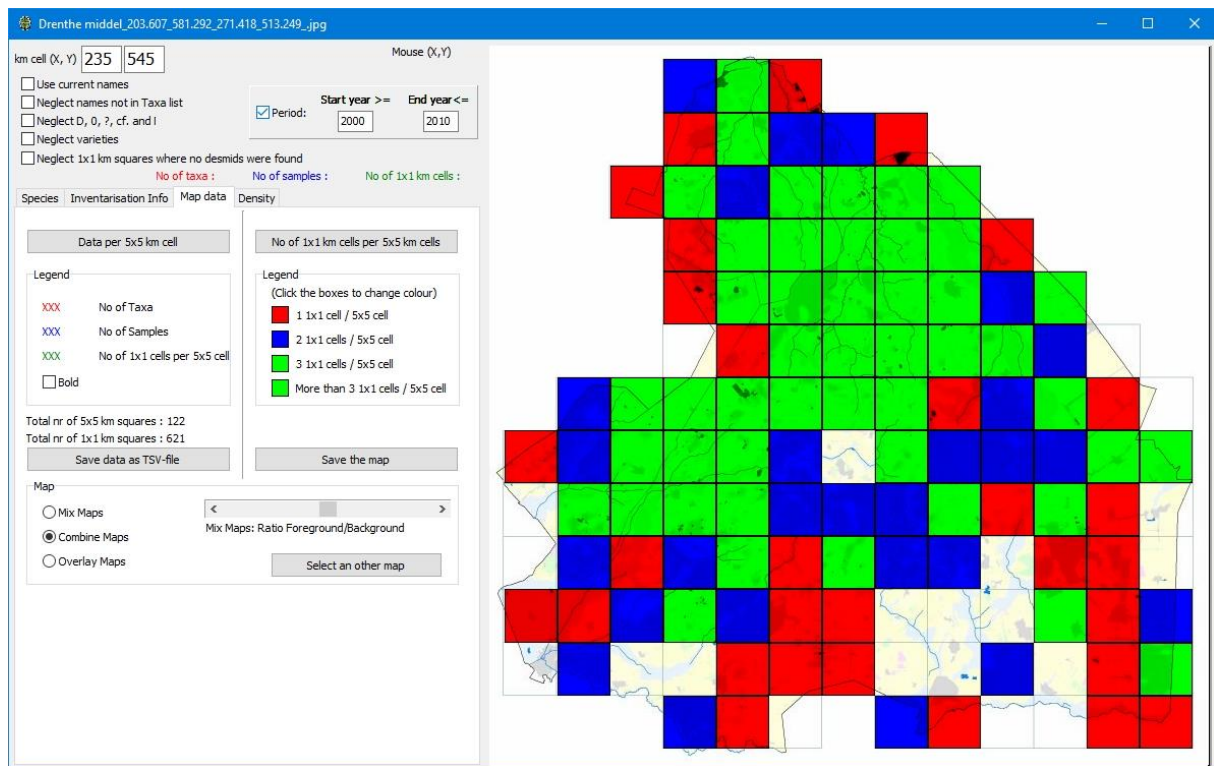


Figure 12. Coverage of the inventarisations

Finally you can save the numerical data and maps for further processing. If you want to use another map you can select one of the already calibrated maps (button at the bottom of this tab).

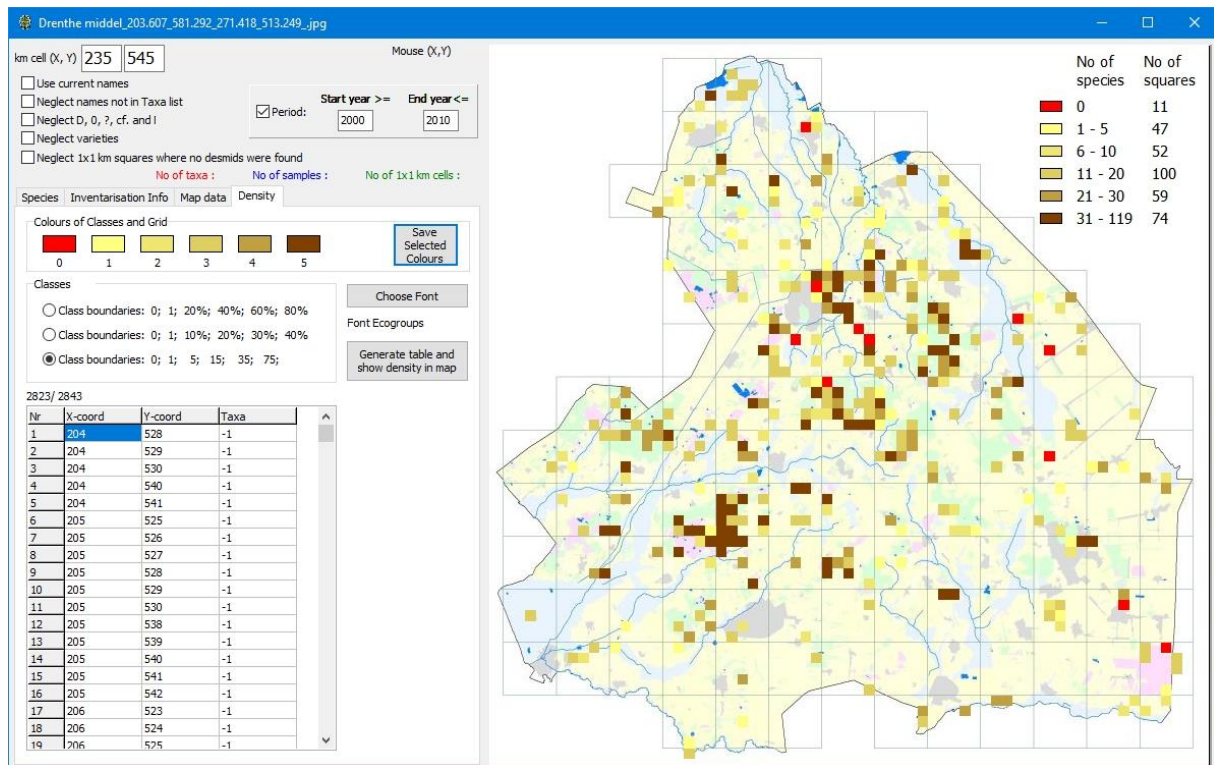


Figure 13. Species density per 1x1 km square

Finally it is also possible to make a plot of the species density (figure 13). You can select colors 1, 3 and 4. The intermediate colors of box 2 and 4 will be chosen automatically.

3.6 Tables

If you have to make a report of the species found in your samples it is very convenient if they can be made more or less automatically. When you select this option a window will open where you see a list of all locations in your database. You can restrict the number of locations by applying an appropriate filter (see figure 14 top left). So you can limit the locations to a certain place or area, but also to locations where a specific species was found.

Within the selection you can make a sub selection by clicking the location you want to select. This line will be coloured light-blue. Click again on this line to deselect the location. To facilitate selection even more, you can use the three buttons marked 'Select All', 'Select Nothing' and 'Invert Selection'.

The most important option after selecting the appropriate locations is to produce a species list of the selected locations (figure 15). Note that the Red List species will also be listed in this table. This is a very useful option if you have to write a report in which a table of all species found has to be included.

If you want to combine data of samples taken on different dates into one column you can do that by using the column marked 'Merge'. In figure 14 you see samples from locations in the Lake District in the United Kingdom. I selected all samples from Loughrigg Fell.

We do this by filtering the location name on 'Loughrigg'. Locations that have to be merged must have the same number in the Merge column. In this example we entered a '1' for Lily Tarn (Lily pond) and a '2' for Black Mire. When you leave the rest open, the system will attribute a different number to all other locations. The result will be a species list with less

columns (see figure 15). You can also see in the locations list that the location in for instance Black Mire now all have number 2.

The 'Tables' application window displays a table of sample locations. The interface includes a filter section on the left with fields for 'Desmid name contains:', 'Owner contains:', 'Location contains:', 'Analyst contains:', and 'Year, Value or Range:'. There are buttons for 'Clear Filter', 'Apply filter', and 'Case sensitive'. A 'Selection' section on the right has buttons for 'Select all', 'Invert selection', and 'Select nothing'. Further right are buttons for 'Clear selection', 'Create Cons. Value table (use selection)', 'Create species list (use selection)', 'Export Selection with Desmid Info as TSV', 'Save table as TSV file', and 'Save table as Excel file'.

| Location | Date | X | Y | pH | EC | Analyst | Merge |
|---|------------|-----------|-----------|-----|----|---------|-------|
| Lake District Loughrigg Fell, P1 Lily pond | 2014-07-17 | -2,981850 | 54,427758 | 5,6 | 45 | MvW | |
| Lake District Loughrigg Fell, P2 small pool | 2014-07-17 | -2,983554 | 54,427792 | 4,3 | 32 | MvW | |
| Lake District Loughrigg Fell, P3 small pool | 2014-07-17 | -2,994255 | 54,430345 | 5,6 | 52 | MvW | |
| Lake District Loughrigg Fell, P4 small tarn near Black mire | 2014-07-17 | -3,000154 | 54,434050 | 5,9 | 30 | MvW | |
| LD03 Loughrigg Fell puddle 1 | 2017-09-18 | -2,97975 | 54,42844 | 6,9 | 14 | MvW | |
| LD04 Loughrigg Fell Lily Tarn | 2017-09-18 | -2,98169 | 54,42740 | 6,9 | 14 | MvW | |
| LD05 Loughrigg Fell puddle 2 | 2017-09-18 | -2,98354 | 54,42780 | 4,8 | 14 | MvW | |
| LD06 Loughrigg Fell small shallow stream 1 | 2017-09-18 | -2,98494 | 54,42789 | 6,2 | 25 | MvW | |
| LD07 Loughrigg Fell small shallow stream 2 | 2017-09-18 | -2,98420 | 54,42812 | 6,4 | 23 | MvW | |
| LD08 Loughrigg Fell puddle 3 | 2017-09-18 | -2,98960 | 54,42891 | 6,3 | 45 | MvW | |
| LD09 Loughrigg Fell Black Mire pool 1 | 2017-09-18 | -3,00017 | 54,43411 | 5,4 | 13 | MvW | |
| LD10 Loughrigg Fell Black Mire pool 2 | 2017-09-18 | -2,99993 | 54,43425 | 5,9 | 17 | MvW | |
| LD11 Loughrigg Fell Black Mire pool 3 | 2017-09-18 | -3,00034 | 54,43294 | 7,4 | 12 | MvW | |

Figure 14. Location list with information about the sample locations

Note that when you use abundance codes 1, 2 and 3, the *lowest* value will be noted in the list. If other units are used (like cells per ml) then you will see all values, separated by a '/'.

Another option is that you can produce a list with Nature Conservation Values of the samples (figure 16 and 17). This table can also be used in reports for nature conservation organisations.

The 'Tabellen' application window displays a species list. The interface includes a filter section on the left with fields for 'Desmid name contains:', 'Owner contains:', 'Location contains:', 'Analyst contains:', and 'Year, Value or Range:'. There are buttons for 'Clear Filter', 'Apply filter', and 'Case sensitive'. A 'Selection' section on the right has buttons for 'Select all', 'Invert selection', and 'Select nothing'. Further right are buttons for 'Back to Location table', 'Create Cons. Value table (use selection)', 'Create species list (use selection)', 'Save table as TSV file', 'Save table as Excel file', and 'Add all location info'. There are also checkboxes for 'Merge abund. when merging locations', 'Add author name', 'Neglect varieties in species list', 'Use current names', 'Neglect dead species (D, 0)', and 'Neglect unsure species (?, N)'.

| LocationNumber | Date | X | Y | Zuurgraad | pH | EC |
|---|------------|-----------|-----------|-----------------|-----|----|
| 1 Lake District Loughrigg Fell, P1 Lily pond | 2014-07-17 | -2,981850 | 54,427758 | Zwak zuur | 5,6 | 45 |
| 2 Lake District Loughrigg Fell, P2 small pool | 2014-07-17 | -2,983554 | 54,427792 | Zuur | 4,3 | 32 |
| 3 Lake District Loughrigg Fell, P3 small pool | 2014-07-17 | -2,994255 | 54,430345 | Zwak zuur | 5,6 | 52 |
| 4 Lake District Loughrigg Fell, P4 small tarn near Black mire | 2014-07-17 | -3,000154 | 54,434050 | Zwak zuur | 5,9 | 30 |
| 5 LD03 Loughrigg Fell puddle 1 | 2017-09-18 | -2,97975 | 54,42844 | Slightly Acidic | 6,9 | 14 |
| 6 LD04 Loughrigg Fell Lily Tarn | 2017-09-18 | -2,98169 | 54,42740 | Slightly Acidic | 6,9 | 14 |
| 7 LD05 Loughrigg Fell puddle 2 | 2017-09-18 | -2,98354 | 54,42780 | Acidic | 4,8 | 14 |
| 8 LD06 Loughrigg Fell small shallow stream 1 | 2017-09-18 | -2,98494 | 54,42789 | Slightly Acidic | 6,2 | 25 |
| 9 LD07 Loughrigg Fell small shallow stream 2 | 2017-09-18 | -2,98420 | 54,42812 | Slightly Acidic | 6,4 | 23 |
| 10 LD08 Loughrigg Fell puddle 3 | 2017-09-18 | -2,98960 | 54,42891 | Slightly Acidic | 6,3 | 45 |
| 11 LD09 Loughrigg Fell Black Mire pool 1 | 2017-09-18 | -3,00017 | 54,43411 | Acidic | 5,4 | 13 |
| 12 LD10 Loughrigg Fell Black Mire pool 2 | 2017-09-18 | -2,99993 | 54,43425 | Slightly Acidic | 5,9 | 17 |
| 13 LD11 Loughrigg Fell Black Mire pool 3 | 2017-09-18 | -3,00034 | 54,43294 | Slightly Acidic | 7,4 | 12 |

Figure 15. A species list containing information of three locations

Tabellen

Filter

Number of filtered records13

Desmid name contains:

Owner contains:

Location contains:Loughrigg

Analyst contains:

Year, Value or Range:

Clear Filter

Apply filter

Case sensitive

Selection

Select all

Invert selection

Select nothing

Back to Location table

Create Cons. Value table (use selection)

Create species list (use selection)

Transpose table

Neglect varieties in species list

Use current names

Neglect 'Not in Taxalist'

Neglect dead species (D, 0)

Neglect unsure species (?, N)

Save table as TSV file

Add all location info

Save table as Excel file

| | Location | Date | Con | Red | d | (r | (r | s | (S | D | (R | (S | (D | Acidic | Slightly | Neutral | Neutral | Alkaline | Indiffer | Oligotr | Oligo-m | Mesotr | Meso E | Eutroph | Indiffer |
|----|--|------------|-----|-----|-----|-----|-----|---|----|---|----|----|----|--------|----------|---------|---------|----------|----------|---------|---------|--------|--------|---------|----------|
| 1 | Lake District Loughrigg Fell, P1 Lily pond | 2014-07-17 | 9 | 6 | 53 | 57 | 72 | 3 | 3 | 3 | 79 | 11 | 0 | 4 | 0 | 4 | 25 | 32 | 36 | 6 | 0 | 0 | 0 | 0 | |
| 2 | Lake District Loughrigg Fell, P2 small pool | 2014-07-17 | 7 | 8 | 21 | 26 | 32 | 2 | 2 | 3 | 90 | 0 | 0 | 0 | 0 | 10 | 67 | 24 | 5 | 0 | 0 | 5 | 0 | 5 | |
| 3 | Lake District Loughrigg Fell, P3 small pool | 2014-07-17 | 9 | 6 | 59 | 63 | 77 | 3 | 3 | 3 | 85 | 7 | 0 | 3 | 0 | 5 | 19 | 44 | 31 | 5 | 0 | 2 | 0 | 2 | |
| 4 | Lake District Loughrigg Fell, P4 small tarn near Black m | 2014-07-17 | 10 | 13 | 61 | 80 | 90 | 3 | 3 | 4 | 77 | 13 | 0 | 0 | 0 | 10 | 23 | 34 | 34 | 5 | 0 | 3 | 0 | 3 | |
| 5 | LD03 Loughrigg Fell puddle 1 | 2017-09-18 | 8 | 6 | 46 | 61 | 56 | 2 | 3 | 3 | 83 | 9 | 0 | 2 | 0 | 7 | 48 | 28 | 15 | 4 | 0 | 4 | 0 | 4 | |
| 6 | LD04 Loughrigg Fell Lily Tarn | 2017-09-18 | 8 | 7 | 47 | 57 | 67 | 2 | 3 | 3 | 81 | 15 | 0 | 2 | 0 | 2 | 26 | 43 | 28 | 0 | 2 | 2 | 0 | 2 | |
| 7 | LD05 Loughrigg Fell puddle 2 | 2017-09-18 | 7 | 7 | 17 | 20 | 28 | 2 | 2 | 3 | 94 | 0 | 0 | 0 | 0 | 6 | 71 | 18 | 12 | 0 | 0 | 0 | 0 | 0 | |
| 8 | LD06 Loughrigg Fell small shallow stream 1 | 2017-09-18 | 10 | 16 | 83 | 115 | 122 | 3 | 3 | 4 | 83 | 10 | 0 | 1 | 0 | 6 | 30 | 37 | 27 | 4 | 0 | 2 | 0 | 2 | |
| 9 | LD07 Loughrigg Fell small shallow stream 2 | 2017-09-18 | 10 | 17 | 77 | 106 | 124 | 3 | 3 | 4 | 75 | 16 | 0 | 1 | 0 | 8 | 19 | 32 | 42 | 5 | 0 | 1 | 0 | 1 | |
| 10 | LD08 Loughrigg Fell puddle 3 | 2017-09-18 | 6 | 5 | 27 | 39 | 23 | 2 | 2 | 2 | 93 | 4 | 0 | 0 | 0 | 4 | 67 | 22 | 7 | 0 | 0 | 4 | 0 | 4 | |
| 11 | LD09 Loughrigg Fell Black Mire pool 1 | 2017-09-18 | 10 | 9 | 50 | 72 | 69 | 3 | 3 | 4 | 84 | 6 | 0 | 4 | 0 | 6 | 32 | 32 | 28 | 4 | 0 | 4 | 0 | 4 | |
| 12 | LD10 Loughrigg Fell Black Mire pool 2 | 2017-09-18 | 10 | 14 | 66 | 95 | 103 | 3 | 3 | 4 | 85 | 9 | 0 | 3 | 0 | 3 | 35 | 27 | 33 | 3 | 0 | 2 | 0 | 2 | |
| 13 | LD11 Loughrigg Fell Black Mire pool 3 | 2017-09-18 | 8 | 3 | 34 | 42 | 55 | 2 | 3 | 3 | 79 | 12 | 0 | 0 | 0 | 9 | 24 | 41 | 29 | 0 | 0 | 6 | 0 | 6 | |
| | Conservation Value of all locations | | 10 | 47 | 238 | 326 | 342 | 3 | 3 | 4 | 77 | 14 | 0 | 2 | 0 | 6 | 30 | 32 | 33 | 3 | 0 | 1 | 0 | 1 | |

Figure 16. A table with Nature Conservation Values

Tabellen

Filter
Number of filtered records: 13
Desmid name contains:
Owner contains:
Location contains: Loughrigg
Analyst contains:
Year, Value or Range:

☐ Case sensitive

Selection

☐ Neglect varieties in species list
☐ Use current names
☐ Neglect 'Not in Taxalist'
☐ Neglect dead species (D, 0)
☐ Neglect unsure species (?, N)

☐ Add all location info

| Location | Lake District L | Lake District L | LD03 Loughrigg | LD04 Loughrigg | LD05 Loughrigg | LD06 Loughrigg | LD07 Loughrigg | LD08 Loughrigg | LD09 Loughrigg | LD10 Loughrigg | LD11 Loughrigg | Conservation |
|---------------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| Date | 2014-07-17 | 2014-07-17 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | 2017-09-18 | |
| Cons. Value | 9 | 10 | 8 | 8 | 7 | 10 | 10 | 6 | 10 | 10 | 8 | 10 |
| Redlist species | 6 | 13 | 6 | 7 | 7 | 16 | 17 | 5 | 9 | 14 | 3 | 47 |
| d (diversity) | 59 | 61 | 46 | 47 | 17 | 83 | 77 | 27 | 50 | 66 | 34 | 238 |
| r (rarity) | 63 | 80 | 61 | 57 | 20 | 115 | 106 | 39 | 72 | 95 | 42 | 326 |
| s (Signal Value) | 77 | 90 | 56 | 67 | 28 | 122 | 124 | 23 | 69 | 103 | 55 | 342 |
| D (0-3) | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 2 | 3 |
| R (0-3) | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 3 |
| S (0-4) | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 2 | 4 | 4 | 3 | 4 |
| Acidic | 85 | 77 | 83 | 81 | 94 | 83 | 75 | 93 | 84 | 85 | 79 | 77 |
| Slightly Acidic | 7 | 13 | 9 | 15 | 0 | 10 | 16 | 4 | 6 | 9 | 12 | 14 |
| Neutral | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Neutral Alkaline | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 4 | 3 | 0 | 2 |
| Alkaline | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indifferent/Unknown | 5 | 10 | 7 | 2 | 6 | 6 | 8 | 4 | 6 | 3 | 9 | 6 |
| Oligotrophic | 19 | 23 | 48 | 26 | 71 | 30 | 19 | 67 | 32 | 35 | 24 | 30 |
| Oligo-mesotrophic | 44 | 34 | 28 | 43 | 18 | 37 | 32 | 22 | 32 | 27 | 41 | 32 |
| Mesotrophic | 31 | 34 | 15 | 28 | 12 | 27 | 42 | 7 | 28 | 33 | 29 | 33 |
| Meso Eutrophic | 5 | 5 | 4 | 0 | 0 | 4 | 5 | 0 | 4 | 3 | 0 | 3 |
| Eutrophic | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Indifferent/Unknown | 2 | 3 | 4 | 2 | 0 | 2 | 1 | 4 | 4 | 2 | 6 | 1 |

Figure 17. The transposed table with Nature Conservation Values

When you save a species list or list with conservation values, also the location information is saved. Normally only the location information as displayed in figure 15 is saved, but when you need ALL location info, Check the item at the top right: **Add all location info**.

3.7 Correct desmid names in database

Sometimes a species is found that cannot be identified. So maybe a temporary working name is given to that species. If this species is found more often, that name will be at several locations in the database. If a better name is found later, it is useful if that working name can be replaced in the entire database at once. In another case a variety is elevated to species level and you want to adjust that in the database. A module is available for this under **File → Correct desmid names in database** (see figure 18).

In the column left the names are displayed that are not included in the TaxaListAnnotated or in the AdditionalTaxalist. You can select a name in that column. The data of the location appears in the middle column at the top. Below that is the chosen name and suggestions for a new name. Sometimes the dubious name concerns a manually entered name with a spelling error. Usually the correct name is already suggested. The name can then be changed in only one place in the database or wherever that name occurs.

At the very bottom of the middle column you can correct malformed names. Very often errors are due to manual input with too many spaces, capital character after var. (a nuisance in Excel). Most errors can be corrected with this option.

Finally, errors in the database can be fixed if an existing name is consistently assigned to the wrong type. For this, a name can be chosen from the right column.

N.B. in the TaxaListAnnotated you can find changed names, together with the old names. If tables are generated, you can choose to use only the new names. If the database contains both old and new names, those old names are "automatically translated" into the new names.

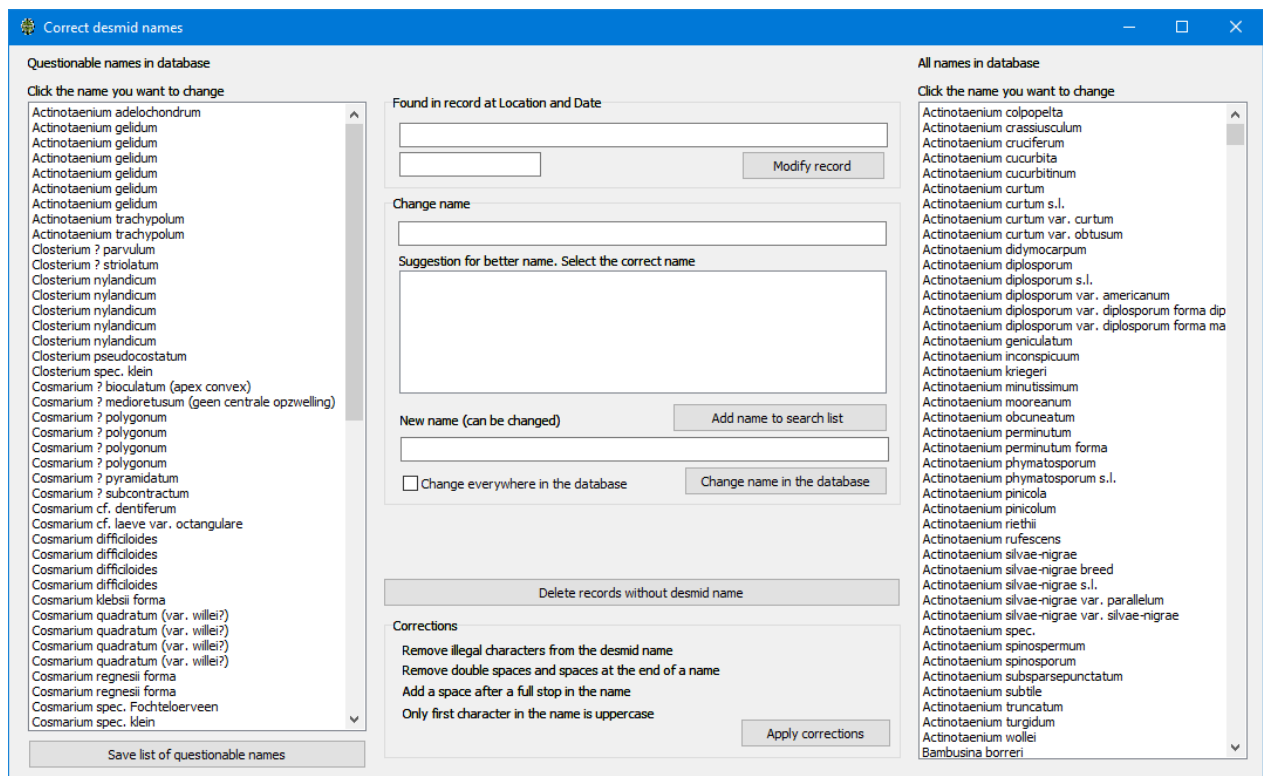


Figure 18. The window to correct desmid names in the database

3.8 Make photo folder

Sometimes you need a folder to store additional information of a certain sample location. Like maps, environmental data, pictures of the species found on that location etc. The program allows you to create a folder with the same location name and coordinates as used in the database. When you select this option, the program suggests the name and the only thing you have to do is accept this name, or alter it and then accept the altered name. If you use the suggested names, you will get a directory structure that allows you to find the stored data very easily (figure 19).

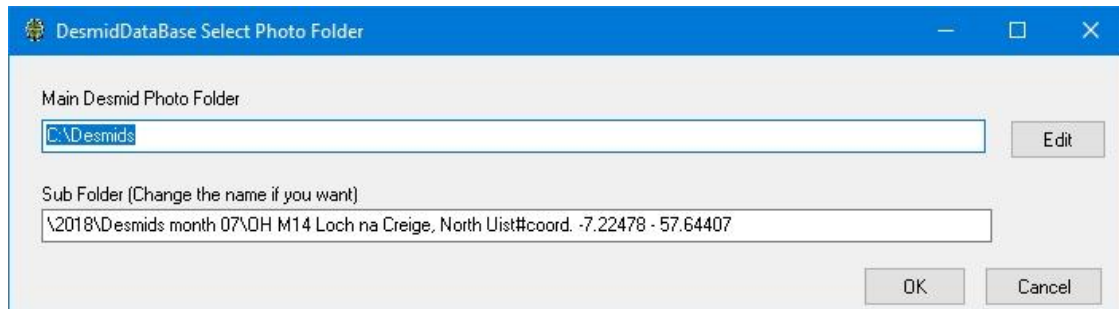


Figure 19. How to make a photo folder

3.9 Preferences

In this window you can set some default values that will be used every time the program is used (figure 20).

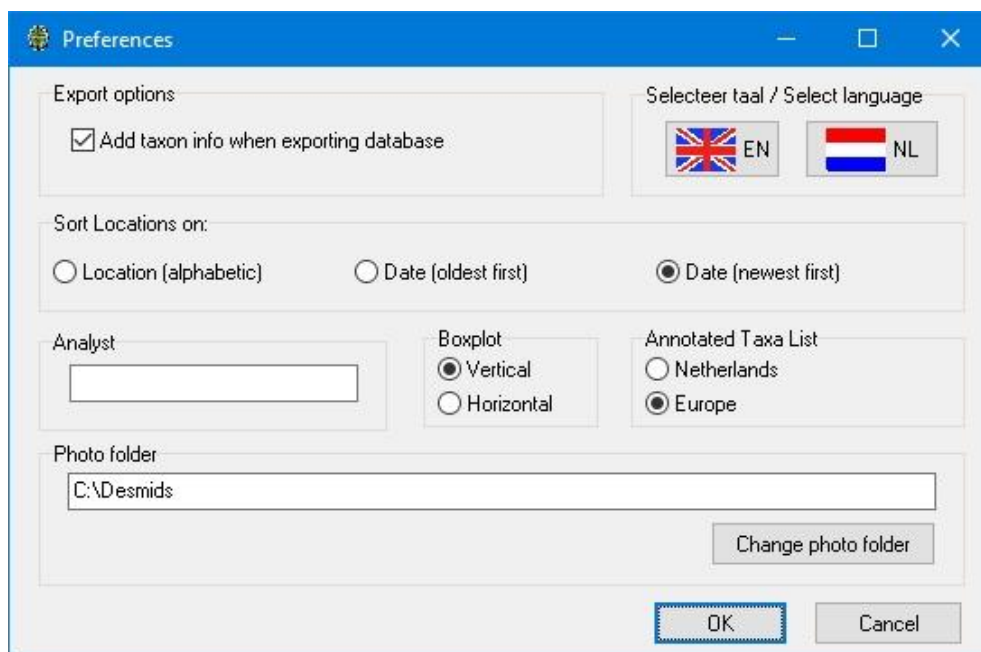


Figure 20. The preferences window

Export options:

- **Add Taxon info to TAB separated export:** Add additional information to every exported desmid, like author name, acidity, rarity etc. (all information that can also be found in the annotated taxon list).
- **Sort locations on:** Choose for location name or date (ascending or descending).
- **Select your language:** Select your language. There are only two options: Dutch (NL) or English (EN).
- **Analyst:** Here you can enter the name (or initials) of the default analyst. Every time a new (sample) location is selected, this name will be used automatically for the analyst.
- **Photo folder:** Select the main folder where you want the sub photo folders to be created.
- **Boxplot** you can select a vertical or a horizontal plot. Select the one that is most convenient.
- **Annotated Taxa List.** When you select the Dutch RD coordinate system when you open a database, TaxalistAnnotatedNL will be chosen automatically, TaxalistAnnotatedEU will be selected when you select LatLon coordinates. Here you can change the situation if necessary.

3.10 Help

Here you can either select to show this manual or it will show the About window showing the version information and the websites with relevant information on Desmids or where you can find updates of the software (figure 21).

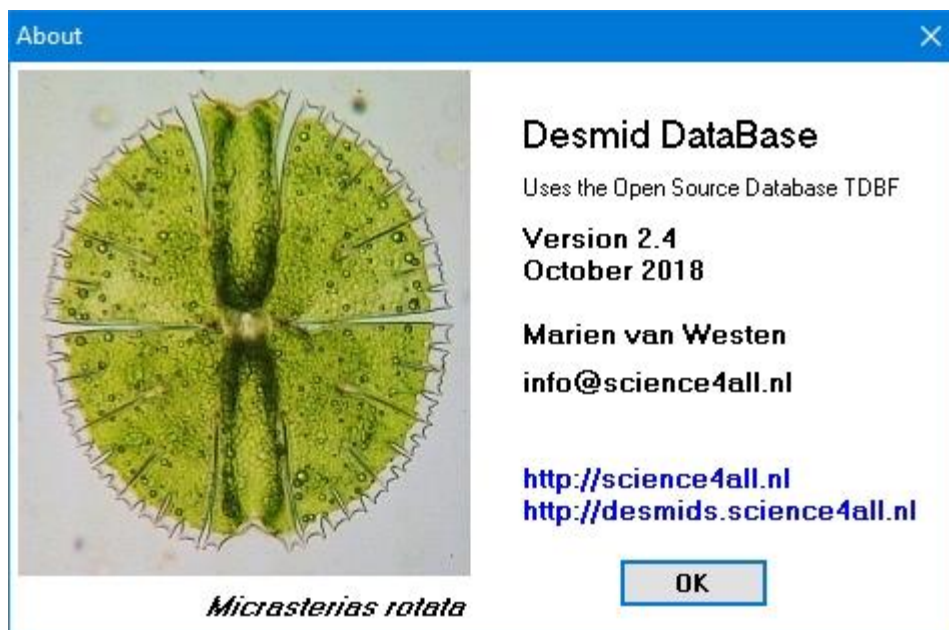


Figure 21. The About window

4. Finally

Regularly create backups of the data on ANOTHER computer or a USB-stick! You will not be the first person to lose all information by some silly mistake!

Marien van Westen, October 2018

Literature

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