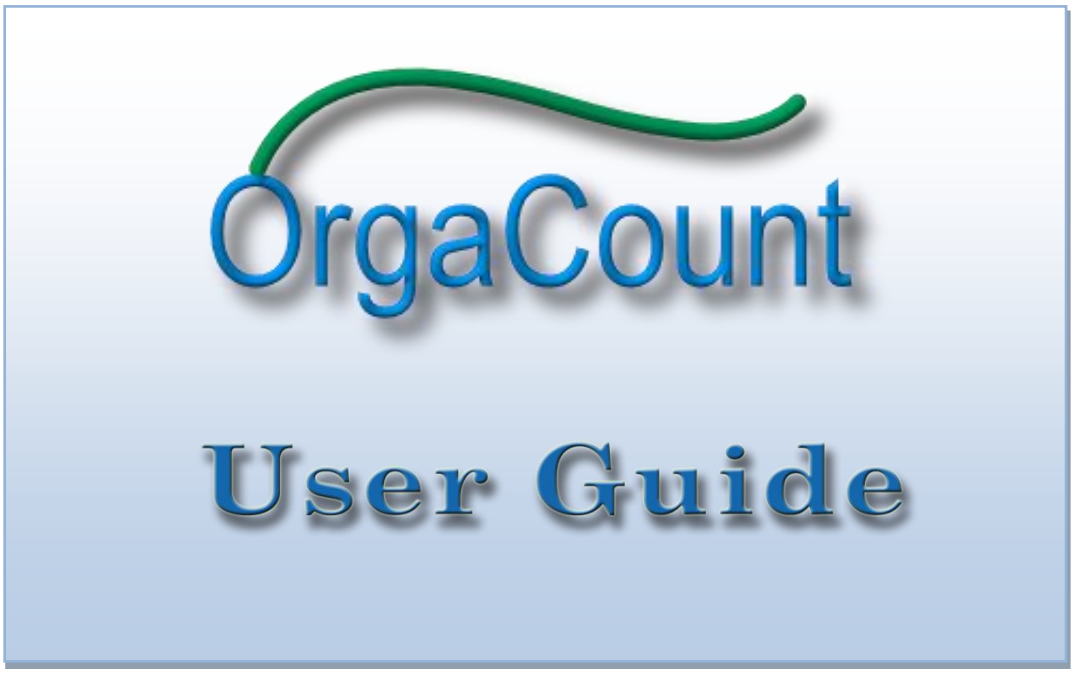


Aqua Ecology

Vers. 20110121

Contents

1. Welcome

Thank you for choosing OrgaCount to aid your counting processes. We have worked hard to make the application highly efficient and easy to use for you. This user guide covers all relevant aspects, and we hope that the instructions will support your processes of familiarising with OrgaCount and its working principles.

What is OrgaCount?

OrgaCount is a scientific, web-based software designed by AquaEcology to aid the counting of organisms of different taxonomic groups. A current version is implemented for the analysis of phyto- and zooplankton as well as macrozoobenthos. Especially for phytoplankton, this application may be used for the calculation of biovolumes and other statistics used in monitoring procedures. OrgaCount algorithms for assessing these statistics include two major trends in phytoplankton monitoring (see *chapter 6: Counting → Counting Modes & Domains → Size Classes: Predefined Size Classes and Ad-hoc Counting*).

In addition, two further general analytical modes are available: 'Taxon & Size Class' and 'Taxon Only' mode. They can be well employed for counting other taxonomic groups or events.

In contrast to other applications, OrgaCount runs in a safe server environment connected to the Internet. Alternatively, it may be installed as local version on a personal computer (see → *Technical Information & Requirements* in this chapter). However, web-based installations have several benefits with regards to the notions of compatibility and accessibility, as indicated below.

Currently, OrgaCount may be used for counting organisms as well as all other types of items (for instance, events; behavioral stages). In the case of organisms, OrgaCount can be used for counting any taxon generally, but it also has special functions for inferring statistics on phyto- and zooplankton, and macrozoobenthos in particular.

A web-based installation

OrgaCount is a web-based installation that...

- ✓ ...is not dependent on a specific type of operating system (i.e. it can be used with any release of Windows, Linux, or Mac that has a web browser);
- ✓ ...is accessible to more than one user without any additional installation;
- ✓ ...allows several users to work on the database at the same time. Data from assessments can be centralised in the same database without any additional operations (such as successive import-export operations from various agents of one and the same project);
- ✓ ...is accessible from anywhere in the world. This means that several members of a national or international project team can use the same software installation, even if laboratories are located in distinct geographical areas;
- ✓ ...stores data in a performant database environment, and in a non-proprietary format. The data can directly be obtained via the OrgaCount interface;

- ✓ ...runs inside biodivDP, which is a content management system that can be used not only for the collection, but also the dissemination of data, project achievements, and web reports (for instance, harmful algae blooms warnings, water quality assessments, and so forth). Its modular structure and the technology on which OrgaCount is based allows for a fast development of additional functions and presentation panels. The current interface may easily be customized to fit the demands of any type of project.

Technical Information & Requirements

Technical Information

OrgaCount is a web application that runs in a server environment. It uses a technology that can be run on a wide variety of operating systems, including various editions of Linux and Windows. The web-based version of this application is served on the AquaEcology server, and is maintained using most recent updates. The database is also backed up regularly. Installation and usage of OrgaCount run through a secure port (https), which is vital to protecting your user login information as well as your data. Alternatively, OrgaCount may be installed on a customer's server system or used locally, running on any hard drive, compact flash or SD card. The local version of OrgaCount also runs a local Apache server with PHP and MySQL, but it does not require any installation (Windows only).

The database used by OrgaCount is *MySQL*, one of the fastest and most reliable database systems on the market. Any data produced with this application may be accessed easily, also beyond the current functionality of OrgaCount.

Requirements

In order to run the web-based version of OrgaCount, you only need a web browser. The application is optimised for Firefox 3 or higher or Google Chrome 8 or higher. The Internet Explorer 7 or higher, as well as Opera 10 or higher were also some of the browsers used for testing OrgaCount, but could have some limitations at some points. However, the application also works with other types and versions of web browsers. We recommend using Firefox, which is currently the most reliable web browser available.

User System

The web-based version of OrgaCount can be used by several users at the same time. Standard users can only inspect their personal counting data. Project administrators, however, may view the data of other users in the team, as well.

In order to use OrgaCount, please use the *sign-in panel* located under *menu* on the left side of the interface as a first step. If the user name and password are successfully verified, the OrgaCount tree will be loaded in the top panel of the application. Use this tree structure to navigate within OrgaCount (see the following instructions of this user guide).

All user accounts in OrgaCount are initialized by AquaEcology, based on the purchased licence and the user's preferences/request. This applies to both local and web-based versions of OrgaCount; regardless of whether they run on the AquaEcology server or not.

Copyright & Contact

If you have any queries regarding OrgaCount or other services of AquaEcology, please ring us at +49 441 36116 250, or send an e-mail to info@aquaecology.de. For technical questions, please, e-mail to service@orgacount.com.

2. Getting Started

A few preliminary notes on the structure of OrgaCount are worth noting before setting up a new counting session.

The OrgaCount environment is organised in various modules related to each other in a tree structure. This allows you to easily understand the relationship between items, and provides an easy navigation flow to the various functions available at each level of organisation. Information is stored by three main levels of organization, from general to specific: projects, samples, and sessions.

- *Projects* (→ *chapter 3*) hold general information on a working programme that can be defined by a certain institution, a specific geographic location, a grant, etc. One project may contain one or more samples and sessions.
- *Samples* (→ *chapter 4*) are treated in the same sense as they are used in biology and, particularly, in oceanography. They hold information about all data that associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc. One sample may contain one or more sessions.
- *Sessions* (→ *chapter 5*) only contain those kinds of information related to organism counting processes, such as the microscope settings, the area counted, etc. For counting modes using plankton counting domains such as Phytoplankton Size Class and Phytoplankton Biovolume, please note that each counting session is microscope- and magnification-specific (see *chapter 6: Counting* → *Counting Modes & Domains*).

Projects, samples and sessions work in very similar ways; creating an easy workflow once you are familiar with the principles of working with OrgaCount.

Setting up a New Counting Session

The following represents the steps to set up a new counting session. If you are a first-time user of OrgaCount and wish to start counting, this section is for you.

Despite the numerous actions displayed here, the procedure in fact is rather simple. Moreover, projects, samples and sessions work in very similar ways, as you will see.

1. Sign in to the OrgaCount environment using your account details (the sign in box is located below the menu on left).
2. Go to the *Counter* panel and expand the available branches by clicking on the plus sign located to the left of the branch label. Expand both the Current *project* and the *Search projects* branch.

Setting up a new Project

3. **Add a new project** (a project holds general information on a working programme that can be defined by a certain institution, a specific geographic location, a grant, etc.).

- In the search box, click on the item ✚ *Add new project*
- You will see that the text *Current project: untitled project – unsaved*, which means that the branch is now expanded and a project is active, but it has no name yet and is not saved.
- At the same time, a first sub branch labelled *Project details* appears which contains an empty data entry form.

4. Fill in relevant project information: add a project name, a description, an abbreviation, etc.
   - If needed, open the list of optional fields (click on the ⊞ sign at the right side of the label named *Optional fields*), and add other types of information to describe the project.
   - If you licensed more than one counting mode, or have purchased the plugin → *SetCountingDomain*, you will be able to choose among different counting domains. In this case please note:

     The selection of the counting domain is very important, , for this will specify the type of counting strategy, the master taxon and size class tables, and other variables used in rendering the OrgaCount interface, such as reports etc. (see *chapter 6: Counting* → *Counting Modes & Domains*).
5. Preview, modify and/or save the project.
   - If you wish to preview the project, click on the *Preview* button at the bottom of the form. A module with your entered information and settings is displayed which you can now review.
   - Click on the *Back* button to leave the preview mode and modify some of the information; or click on *Save data* in order to save the project in the database.
   - After having saved the project, a message displaying the name of the saved project and its internal database identifier pops up. Click on the *OK* button. The project details module is displayed within the branch labelled *Project details*.

     Please note that a current project branch is tagged now, using the name of the project that was just created. When saving project information, sample sub-branches are automatically created to the current project branch.
6. Expand the *Search samples* branch.

   Please note that a *Current sample* branch is tagged with *none selected*; hence, a sample has to be added to the current project and selected for further use. The current project branch is tagged with the name of the project recently added to the database.

➢ Please refer to *chapter 3*: *Projects* for more details.

Setting up a New Sample

7. **Add a new sample** (samples on OrgaCount are treated in the same sense as they are used in biology and, particularly, in oceanography).
   - In the search box, click on the item ✚ *Add new sample*

- A branch labelled *Sample details* will be expanded; which contains an empty data entry form. The *Current sample* branch is tagged with the text *untitled sample – unsaved*.

8. Enter relevant information relating to the sample. Add a sample code, a ship, a cruise, etc. The sample code can be generated automatically, including the contents of the station name, the sample depth range, the date and the time. If you wish to use different samples codes just uncheck the box tagged with *automatically,* or overwrite the automatic text by hand.

9. If needed, open the list of optional fields (click on the ⊞ sign on the right hand side of the label named *Optional fields*) to add more types of information describing the sample:

   - By clicking on the blue button labelled S located to the right side of the *Station name* field, a list of pre-recorded stations will pop up; if you select a station from this lists, the software will automatically add the relevant information to the *Sample code* and the *Station number* fields. If geographic coordinates and depth information are available for the selected station, this type of information will also be filled in automatically.

     Please note that in the optional field labelled *Geographic units*, the different formats used for adding geographical coordinates specify as follows:
     DD stands for *decimal degrees*;
     DM is used for *degrees* and *minutes*;
     DMS specifies *degrees, minutes,* and *seconds*.

     Please use positive numbers, only. For *seconds* only integers are possible. A fault message will appear in red if any of the information entered does not fit the format chosen.

10. Preview, modify and save the sample.

    - Click on the *Preview* button at the bottom end of the form. A module with all entered data is loaded for review.
    - Click on the *Back* button to modify some of the information you have entered, or click on the *Save data* button to save the sample in database.
    - After having saved the sample, a message displaying the code of the saved sample and its internal database identifier pops up. Click on the *OK* button. A module containing the sample details is displayed within the branch labelled *Sample details*.
    - The *Load previous data* button is a useful feature if you have to change only minimal details from sample to sample. By using this button you can load the entered information for your previous sample and edit them for the new one.

➢ Please refer to *chapter 4: Samples* for more details.

Setting up a New Counting Session

11. **Add a new session** (sessions in OrgaCount contain only those settings generally related to organism counting processes. For counting modes like Phytoplankton Size Class and Phytoplankton Biovolume, please note that each counting session is microscope and magnification-specific (see *chapter 6: Counting → Counting Modes & Domains*).

- In the *Search sessions* box, click on the item *Add new session.*
- A branch labelled *Session details* is expanded containing an empty data entry form.

12. Enter information relating to the session, including the microscope name, the magnification, the counted area item, the counting factor, the chamber volume etc.
    - Please note that some of these fields may not be displayed in counting domains that do not use microscopes. However, if you need these entry fields, simply open the list of optional fields (by clicking on the sign at the right hand side *Optional fields*), and add more information fields to describe your session.
    - The data information entered about microscope, magnification, counting factor, and counted area item is essential to calculations of counts and biovolumes. Therefore, **please pay close attention when filling in these fields**. However, the information may be changed at any time later, without affecting the counting results. Moreover, whilst these settings you enter are considered the default for this session, some information (like the counting factor or the counting area unit) may be changed later for each individual taxon (or size class) counted.
13. Preview, modify and save the session.
    - Click on the *Preview* button at the bottom end of the form. A module containing all session settings is loaded for review.
    - Click on the *Back* button to modify some of the information you have entered, or click on *Save data* in order to save the session in database.
    - More branches labelled *Counter* and *Settings* will appear beneath the session branches.
    - ➢ Please refer to *chapter 5:* Sessions for more details.
14. Set up the counting layout using the *Counting layouts* interface.

    The counting layout may be adjusted using the branches under *Settings*. There are three major settings that need to be considered here:

    (a) the counting list,
    (b) the design of the counting layout, and
    (c) the keyboard layout.

    - ➢ Please also see *chapter 6: Counting* → *The Counting Layout* for further details.

(a) Setting up a Counting List

In order to building and adjusting the counting list that will be loaded in your counting layout, please expand the branches

Settings → *Counting layouts* → *Counting list.*

Use the two panels in the Counting list module to search for taxa/items (see the list in the right panel of the module).

- Add or remove taxa/items to the counting layout by clicking on the check boxes located in front of each name of taxa/items.

  First time users of an OrgaCount counting domain please note that you will need to **initiate a new Counting selection list** first, by clicking on the item *Add new Counting list* located in the left panel! Only after doing so you can proceed to add taxa/items to your counting layout. Each of the selections made are automatically reflected in the counting layout interface.

- In the predefined size class mode, the buttons can be used to expand the list. Click on a checkbox near a size class to add it to counting layout.

  Please note that the counting list used for a session may be adjusted at any time during counting.

- Keyboard keys can be allocated to taxa/items in a counting layout. By clicking on a taxon/item name, a popup appears in which you can select a particular key for a particular taxon. Only those keys actually available for use are displayed in the popup window.

➢ Please see *chapter 8: Managing Counting Lists* for more information on working with counting lists.

(b) Choosing a Counting Layout Design

The appearance of items in your counting layout may be changed to fit your preferences. OrgaCount comes with several design templates; you may switch between those and select a preferred design by following the branches *Settings* → *Counting layouts* → *Design template.*

- Click on one of the template names in the list; and the design of the counting layout will change automatically.

➢ For further information please see *chapter 6: Counting → Settings → Modifying the Counting Layout*.

(c) Selecting a Keyboard Layout

OrgaCount allows you to select one of a variety of different keyboard layouts, which mainly differ according to various country features and languages. Depending on the language of the relevant keyboard, some of the keys in the keyboard layouts may not be available. It may therefore be useful to switch to a relevant keyboard layout which lists more items in your counting layout. The keyboard you use with your computer is relevant to the settings of the keyboard layout you should select.

In order to maximise the number of keys available for counting, please expand the branches *Settings* → *Keyboard layouts.*

- Now pick an appropriate keyboard type from the keyboard selection list (as shown on the right).
- The list of available keys is automatically rendered after your selection.

  Please note:

  - The keyboard layout may be changed at any time during counting and does not affect your counting results.

- The counting lists are saved in database and can be reused when counting other samples. They can also be modified and/or saved under distinct names. You can work with more than one counting list during one single counting session.

➢ For more information please see *chapter 6: Counting → Settings →* *Selecting a Keyboard Layout*.

3. Projects

The OrgaCount environment is organised in various modules related to each other in a tree structure. This allows you to easily understand the relationship between items, and provides an easy navigation flow to the various functions available at each level of organisation. Information is stored by three main levels of organization, from general to specific: projects, samples, and sessions.

- **Projects hold general information on a working programme that can be defined by a certain institution, a specific geographic location, a grant, etc. One project may contain one or more samples and sessions.**
- *Samples* (→ *chapter 4*) are treated in the same sense as they are used in biology and, particularly, in oceanography. They hold information about all data that associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc. One sample may contain one or more sessions.
- *Sessions* (→ *chapter 5*) only contain those kinds of information related to organism counting processes, such as the microscope settings, the area counted, etc. For phytoplankton counting modes as Phytoplankton Size Class and Phytoplankton Biovolume, please note that each counting session is microscope- and magnification-specific (see *chapter 6: Counting* → *Counting Modes & Domains*).

Projects, samples and sessions work in very similar ways; creating an easy workflow once you are familiar with the principles of working with OrgaCount.

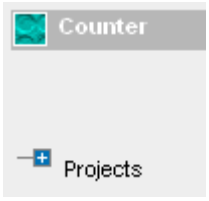
This chapter deals with various ways of working with projects. Defining a project is the first step in organizing a counting process within OrgaCount. You can imagine all samples as sub-branches of a project. In order to locate a sample and its sessions, you have to first load a project. This is done either by finding an existing project in the database (as demonstrated below), or by → *Adding a New Project*.

Locating an Existing Project

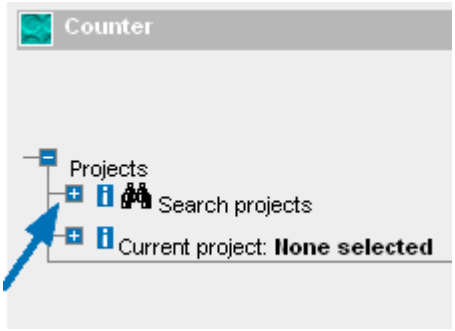
Your counting data may be organized in one or more projects. In order to locate data from previous counts, you need to select a project from the list of existing projects.

To locate a project, follow these steps:

Expand the project branch. This is easy to find as it is placed at the root of the OrgaCount tree. Expand the branch by clicking on the plus sign to the left of the *Projects* label, as shown in the image below.



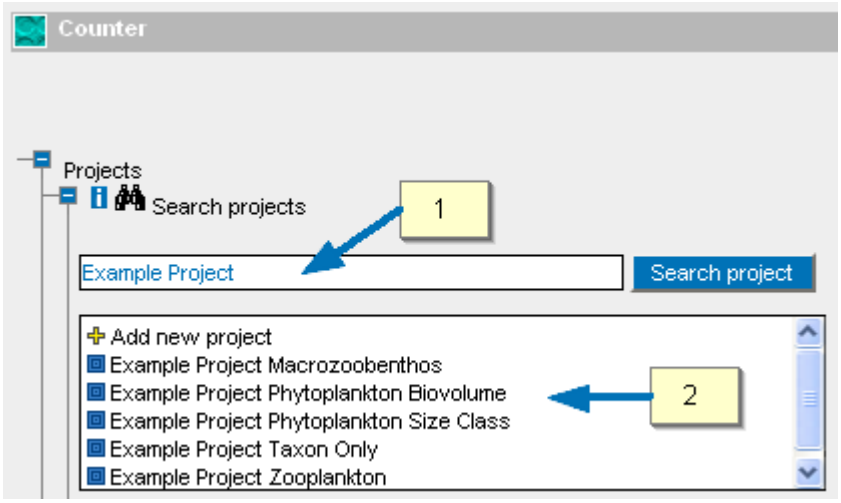
The project branch will expand revealing two sub-branches labelled *Search projects* and *Current project*. Click on the plus sign located to the left of *Search projects* to load the search projects module, as shown below.



The *Search projects* module includes a search textbox and a list containing all projects stored in the OrgaCount database.

If your project is not visible in list, please use the scroll bar on the right hand side of the list to browse the existing projects.

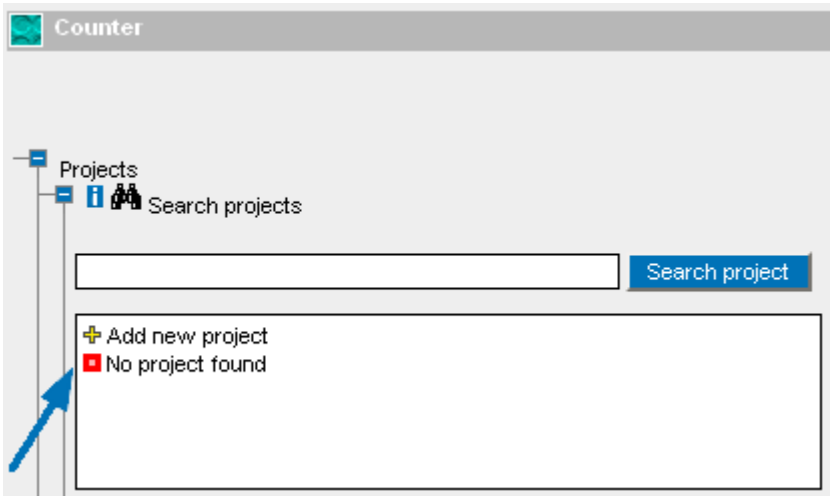
If the list of projects is rather long, you may find it easier using the search textbox. Enter the project name, or part of the project name that you are trying to locate, then click on the *Search Projects* button.



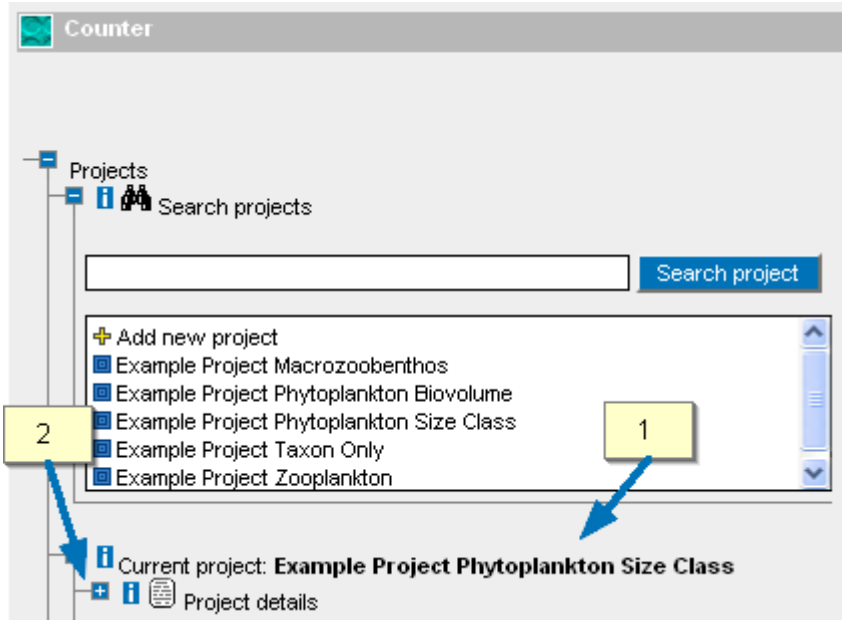
You may use only part of the name of the project. In this case, OrgaCount lists all projects that include the search phrase in their name. If you do not remember the project name in full, you might find it by using a shorter text which results in a range of projects found.

The search results in the picture above contain all projects that have in their name at least part of the phrase [2] which you have entered in the search field [1].

If no project matching your search query is found, the list will display a *no project found* message, as in the picture below. To get back to the complete list, simply click on *Search project*.



If you have located your project, click on the project name in order to load all sub-branches and associated information.

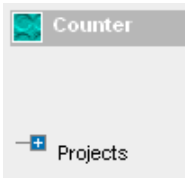


The details of the selected project and all sample branches will be shown under the *Current project* branch [1]; the name of the selected project is displayed near the *Current project* label. Click on plus sign to left of *Project details* [2] to inspect the available information, as shown in the image above.

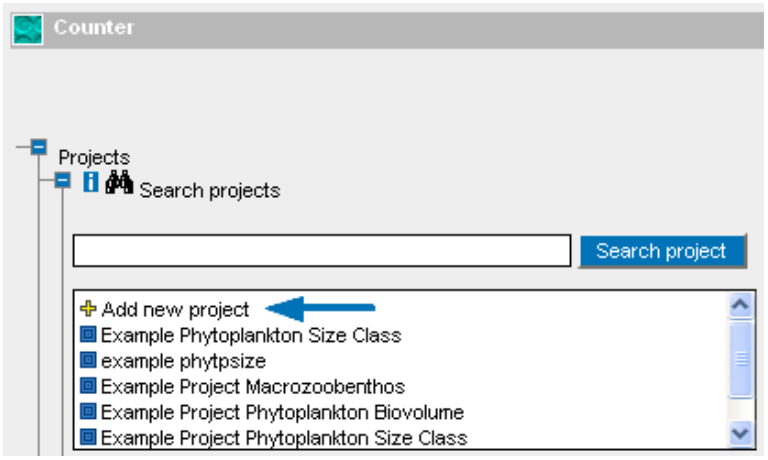
Adding a New Project

A new project can be added to database by following these steps:

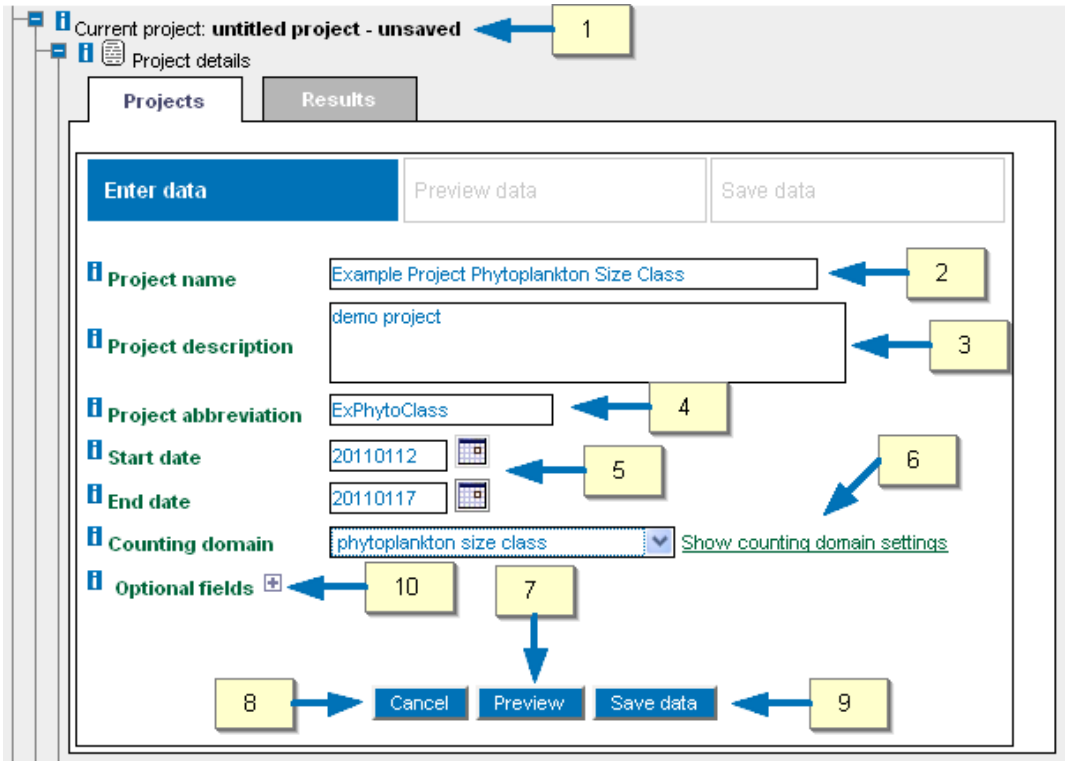
Expand the *Projects* branch which is easy to find as it is located at the root of the OrgaCount tree (i.e. the item at the top of the *Counter* panel). Click on the *plus* sign to the left of *Projects*.



The *Search projects* module with all projects will be displayed as shown below.



In the search box, click on the item ✚ *Add new project*, the first item in the list of projects. The add *project data entry form* is displayed, as shown below.



[1] Please note that at this stage the *Current project* branch is marked as untitled and unsaved, which means that the branch is now expanded and a project is active, but it has no name yet and is not saved. At the same time, a first sub branch labelled *Project details* is expanded. This branch contains an empty data entry form.

[2] For identification purposes, fill in at least the project name. To be unambiguous, choose a project name that is distinctive enough from other existing projects listed within the project list box.

The other fields in this form are optional, but will help you identify the project. Add

[3] a *Project description,*

[4] a *Project abbreviation,*

[5] a *Start* and *End date.*

[6] If you have more than one counting mode license, or have purchased the plugin → *SetCountingDomain*, you will be able to choose among different counting domains. In this case please note:

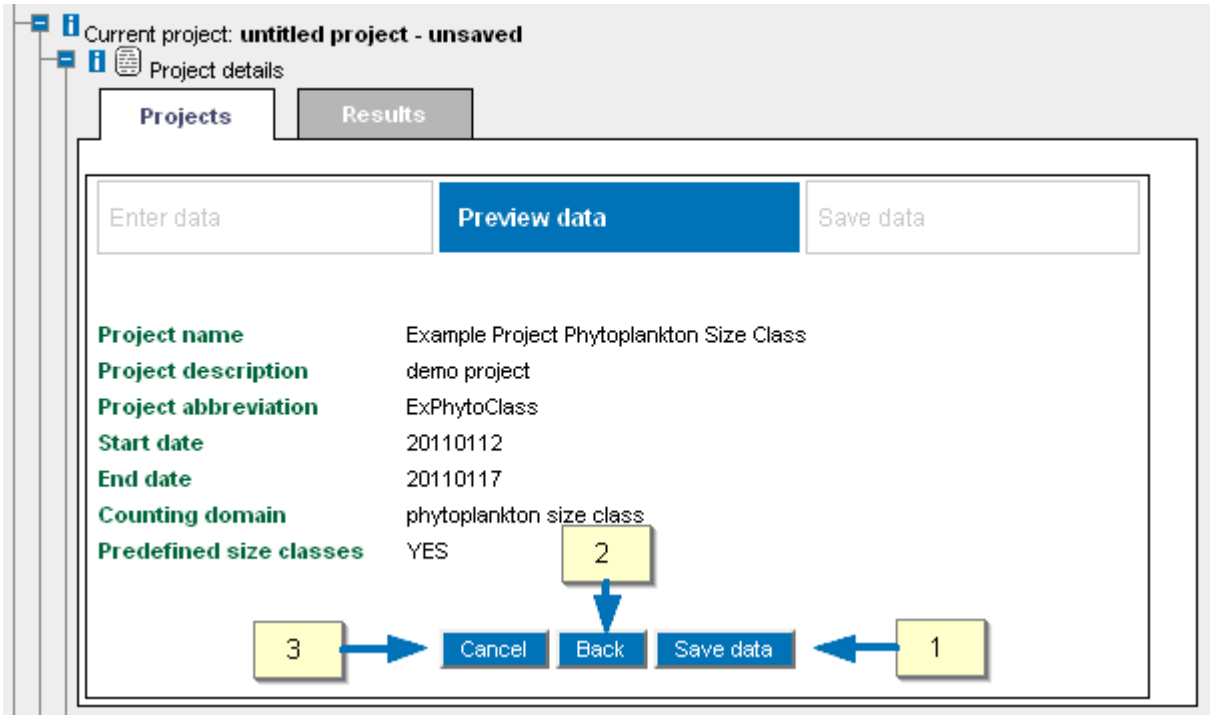
Please note: The selection of the counting domain is very important, for this will specify the type of counting strategy, the master taxon and size class tables, and other variables used in rendering the OrgaCount interface, such as reports etc. (see *chapter 6: Counting* → *Counting Mode & Domains*).

[7] In order to preview the project before saving, click on the *Preview* button at the bottom of the form. A module with your entered information and settings is displayed which you can now review (see below).

[8] If you do not wish to keep any of the information entered or discard the entire project, click *Cancel*.

[9] Or click on *Save data* if you are sure that all relevant information entered is alright in order to shorten the entry process

[10] If needed, open the list of optional fields to add more information describing the project (see *chapter 7: Working with Optional Fields*).



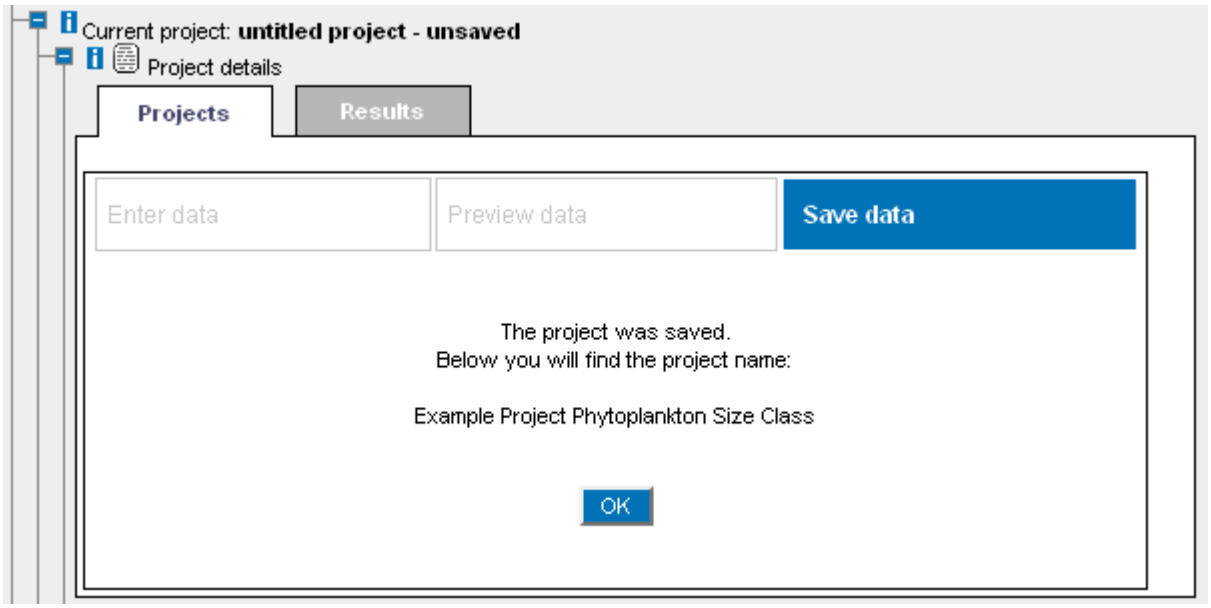
In the preview mode,

[1] click on *Save data* in order to save the project in the database, or

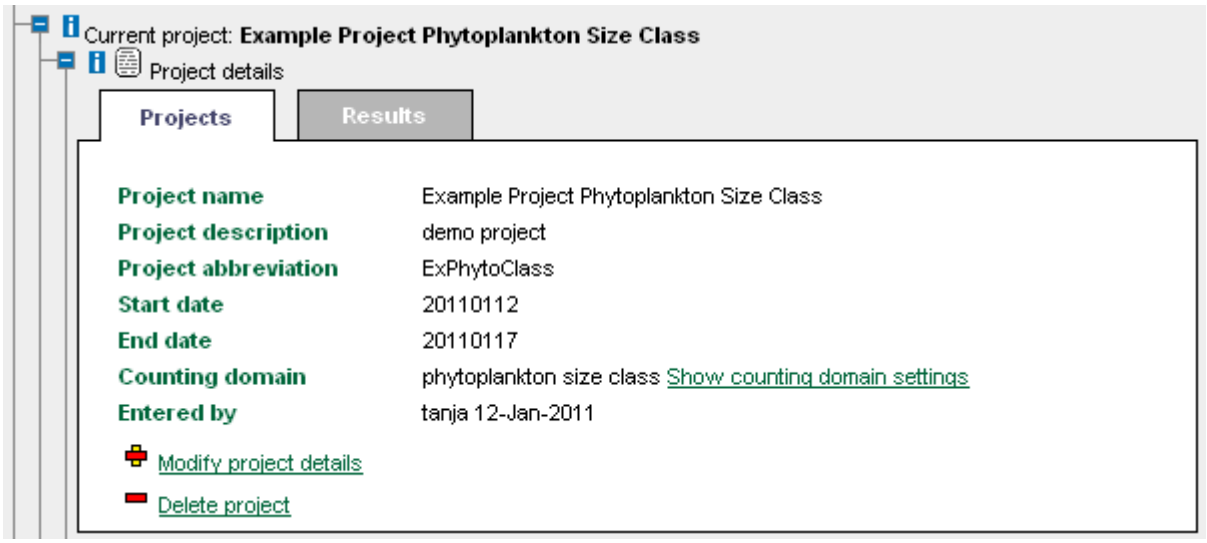
[2] click on the *Back* button to leave the preview and modify some of the information, or

[3] cancel the entire data entry process by clicking on the *Cancel* button.

After saving the project, a message displaying the name of the saved project and its internal database identifier pops up. Click on *OK* to finalise saving the project and close the data entry form.



Now the project details are displayed within the branch labelled *Project details* and the saved project will be set as current project item. Please note that the *Samples* branch will be expanded now, using the name of the project that was just created. When saving project information, sample sub-branches are automatically created to the current project branch.



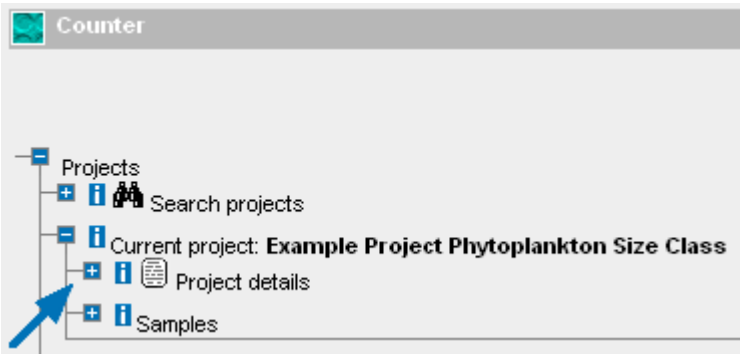
If you wish to proceed by → *Adding a New Sample* please refer to *chapter 4.*

Modifying Project Details

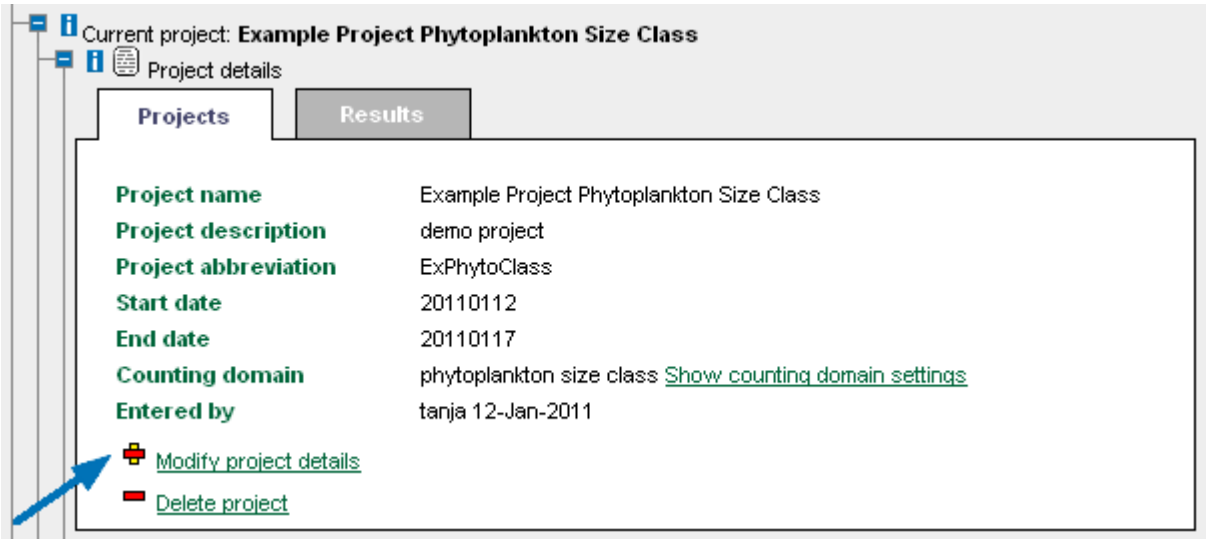
The steps described here can be used to modify the details of existing projects, but also apply to the principles of *Modifying Sample Details* and *Modifying & Deleting Sessions*. If you wish to change the details of a particular sample or session, please read the instructions below, and apply the steps to the relevant action.

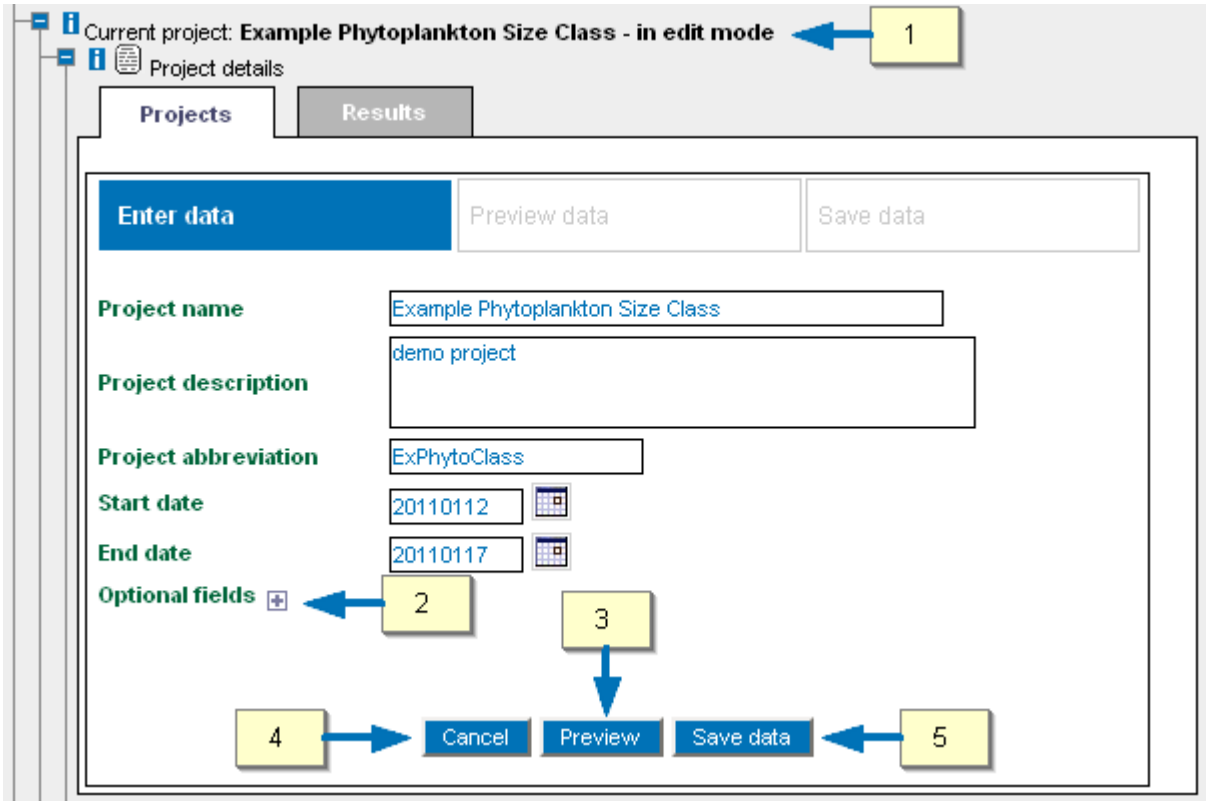
In order to modify information relating to a particular project (or sample, or session), please follow these steps:

Click on the *plus* sign near the *Project details* label (a branch under *Projects*). The *project details* module will be loaded under this branch.



Click on the *Modify project details* link located at the bottom of the module.





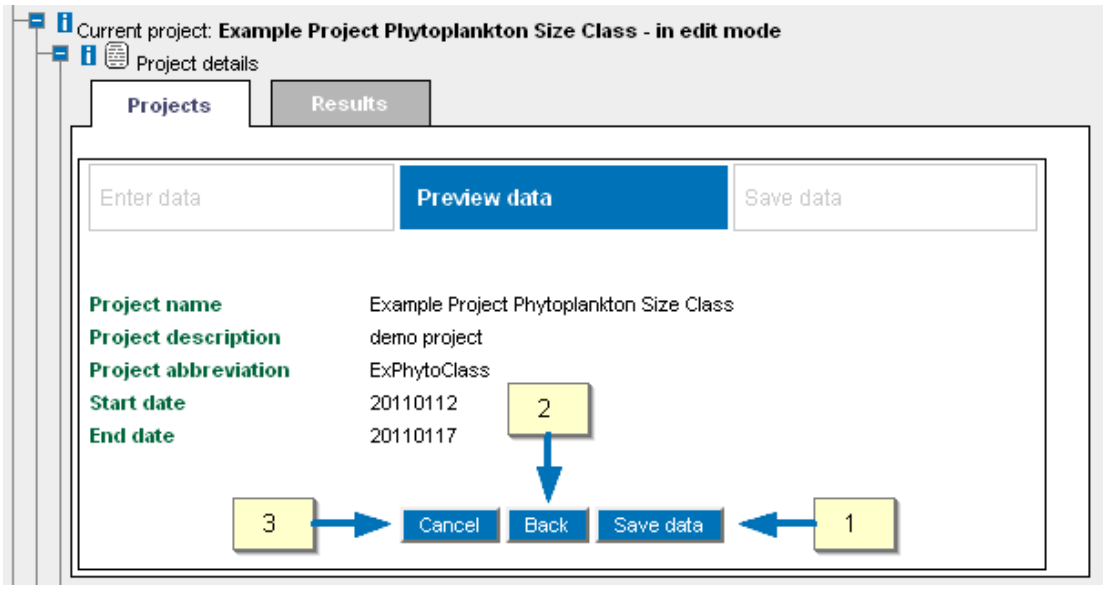
The *edit project data* entry form loads in the place of the *project details* form [1] (see image above).

[2] You can now change the information in any of fields displayed, or you can add/edit/remove optional fields (see *chapter 7: Working with Optional Fields*).

[3] Click on the *Preview* button and inspect the project information, or

[4] Click on *Cancel* to cancel editing (this action will take you back to the *project details* module).

[5] Or click on *Save data* if you are sure that all relevant information entered is alright in order to shorten the entry process.



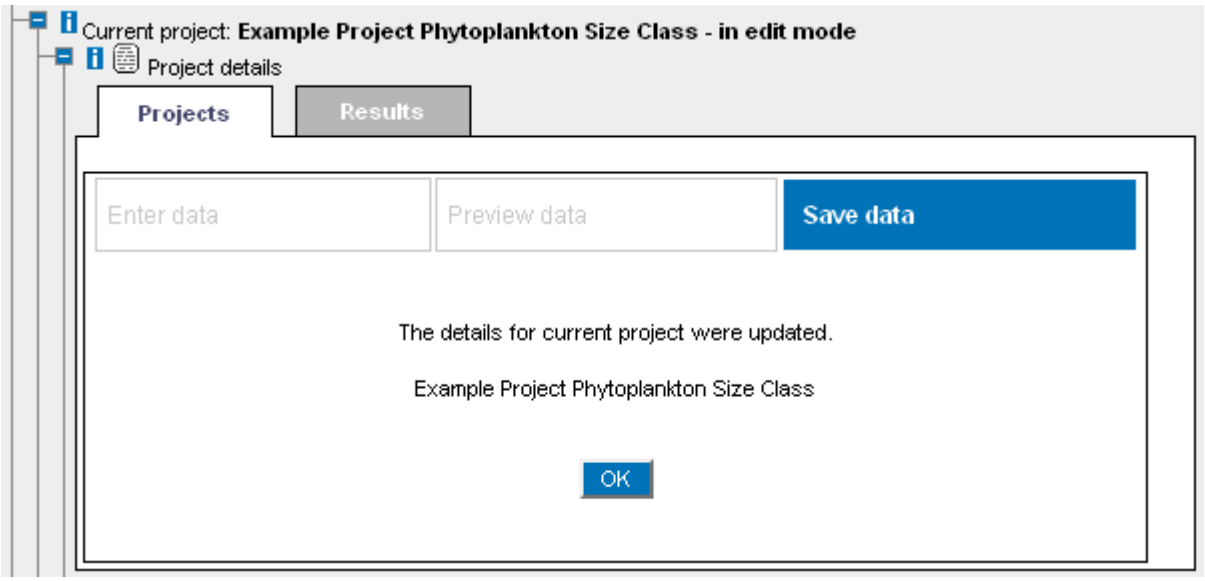
In the preview mode,

[1] click on *Save data* to save the project information.

[2] In order to change information, click on the *Back* button.

[3] If you wish to cancel the data entry process, click on the *Cancel* button.

After saving the project details, click on the *OK* button to close the edit data entry form. This will take you back to the project details module.

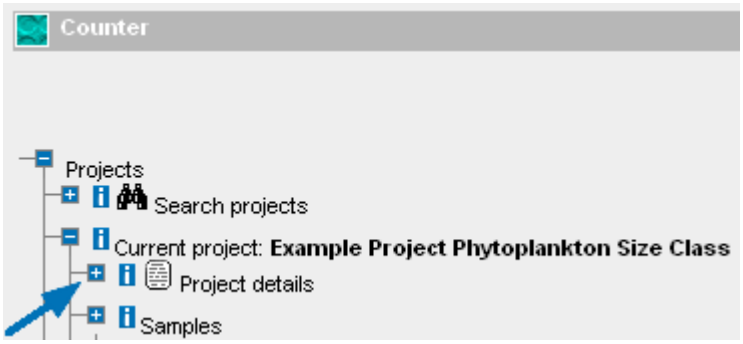


Deleting a Project

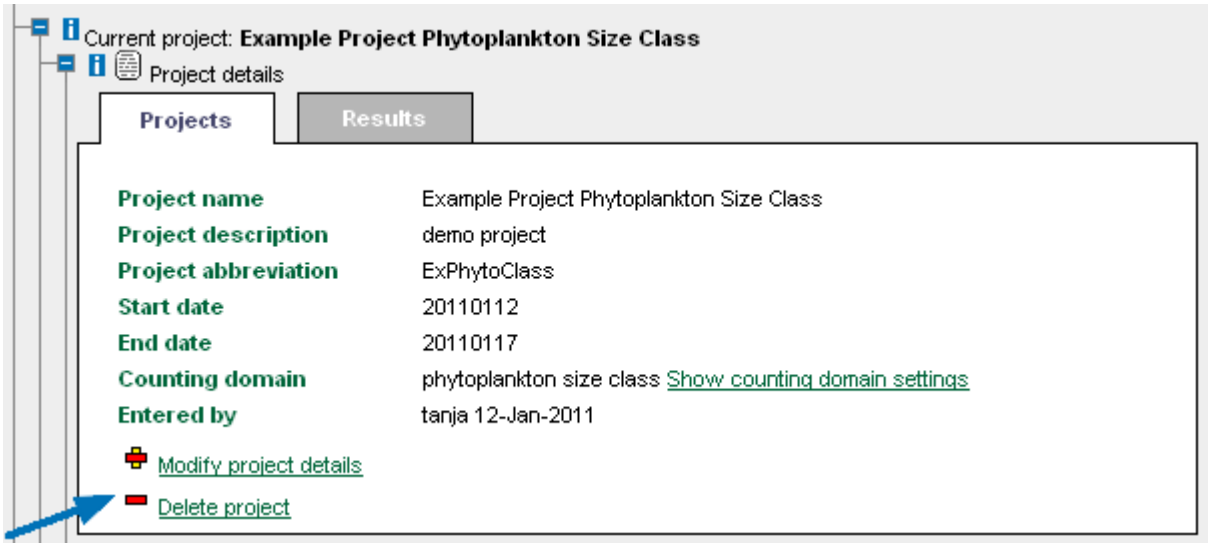
You can delete projects from the OrgaCount database, however, please note that this procedure proceeds in two steps, in order to prevent mistakes and protect your data.

To delete a project, please follow these steps:

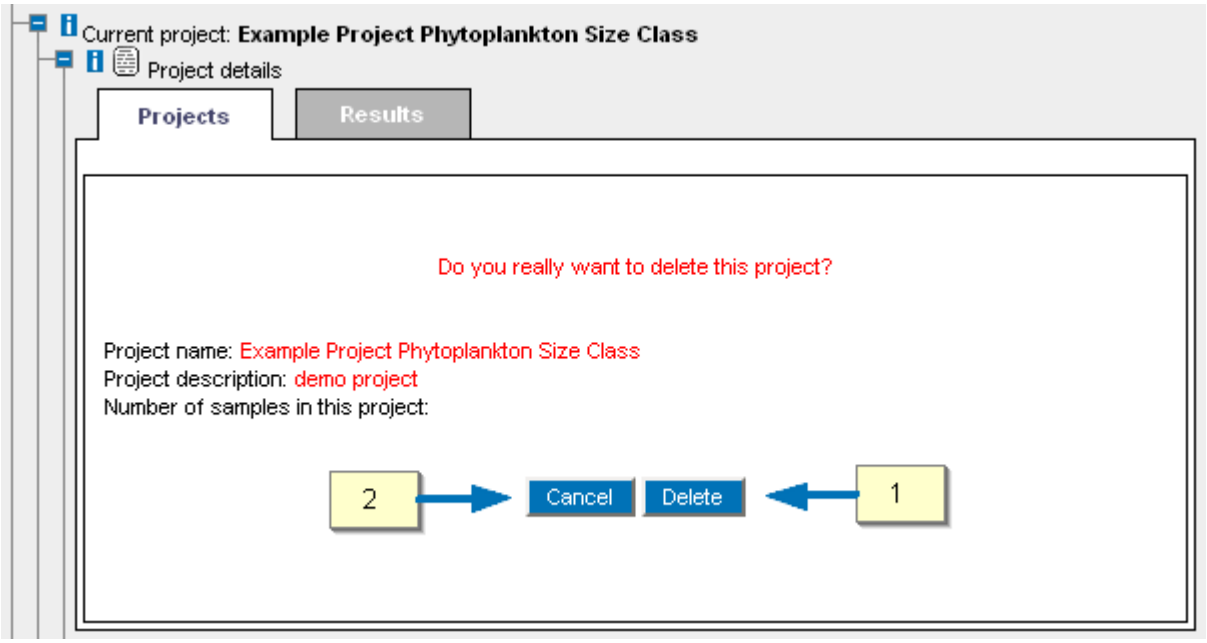
Click on the plus sign to the left of the *Project deta*ils label (a branch under *Projects*). The project details module will be loaded under this branch.



Click on *Delete project* at the bottom end of the display (see arrow in image below).



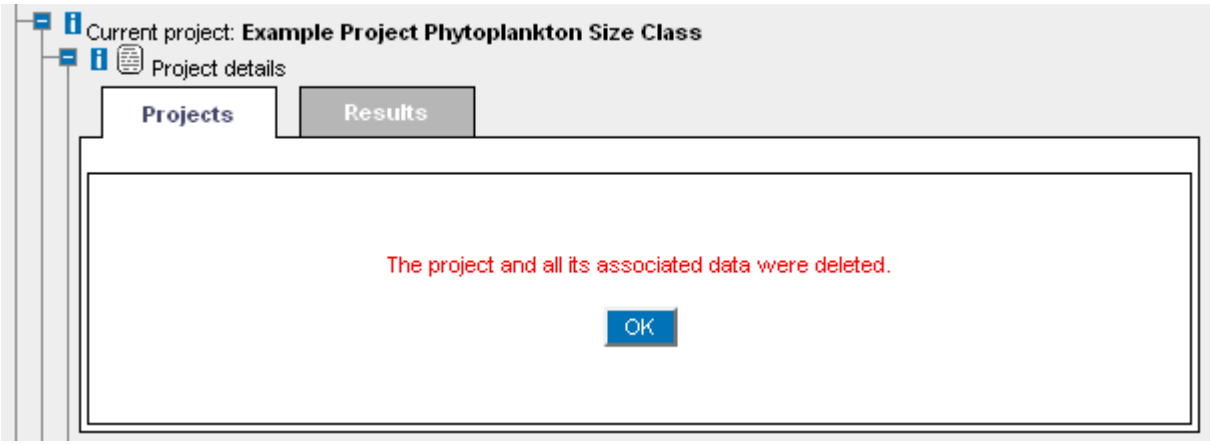
A warning message will inform you about the name of the project selected for deletion.



Click on *Delete* to remove the project [1], or click on *Cancel* if you do not wish to remove the project from the database [2].

Please note that deleting a project removes not only the projects details, but also all associated samples, sessions, and organism counts!

After deleting a project, a message will appear resuming the action. Click on *OK* to return to the *Projects* branch.



4. Samples

The OrgaCount environment is organised in various modules related to each other in a tree structure. This allows you to easily understand the relationship between items, and provides an easy navigation flow to the various functions available at each level of organisation. Information is stored by three main levels of organization, from general to specific: projects, samples, and sessions.

- *Projects* (→ *chapter 3*) hold general information on a working programme that can be defined by a certain institution, a specific geographic location, a grant, etc. One project may contain one or more samples and sessions.
- **Samples are treated in the same sense as they are used in biology and, particularly, in oceanography. They hold information about all data that associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc. One sample may contain one or more sessions.**
- *Sessions* (→ *chapter 5*) only contain those kinds of information related to organism counting processes, such as the microscope settings, the area counted, etc. For phytoplankton counting modes such as Phytoplankton size class and Phytoplankton Biovolume, please note that each counting session is microscope- and magnification-specific (see *chapter 6: Counting* → *Counting Modes & Domains*).

Projects, samples and sessions work in very similar ways; creating an easy workflow once you are familiar with the principles of working with OrgaCount.

This chapter deals with various ways of working with samples. You can imagine all samples as sub-branches of a project. In order to locate a sample and its sessions, therefore, you have to first load a project. This is done by either → *Locating an Existing Project*, or – in the case of a new project and a new sample – by → *Adding a New Project* (both *chapter 3*).

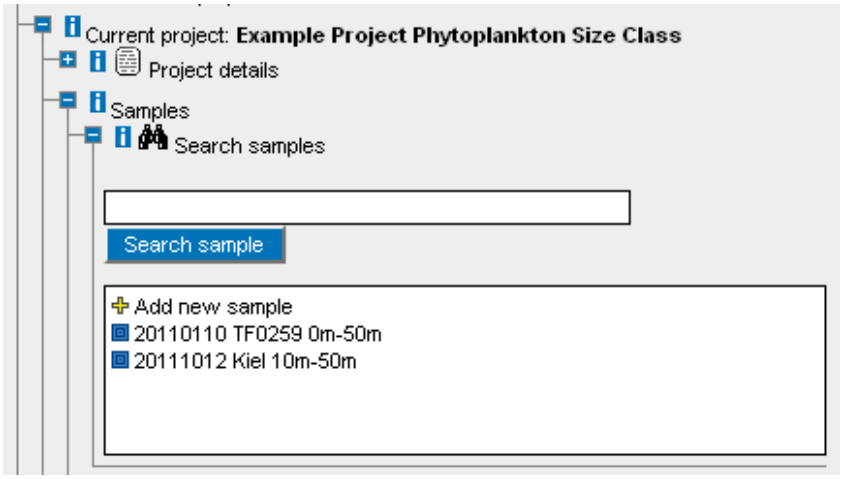
Locating an Existing Sample

One project may contain several samples. Samples in OrgaCount hold information about all data that associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc.

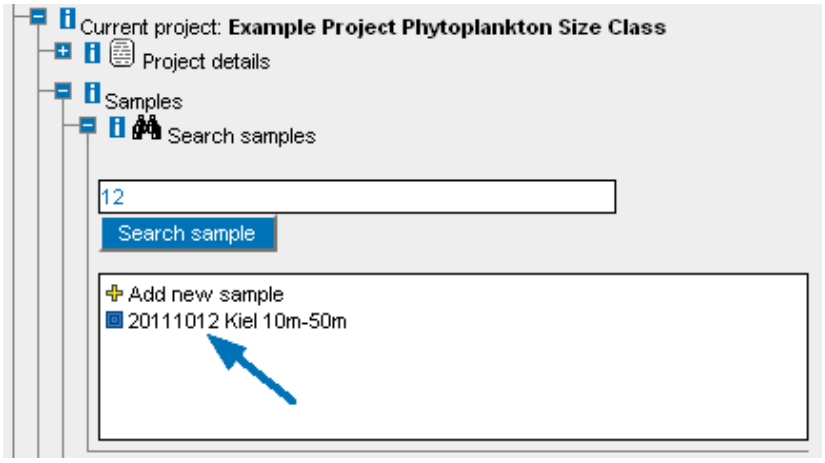
To locate an existing sample in the database, please follow these steps:

Expand the *Samples* branch by clicking on the plus sign to the left of the *Samples* label, i.e. the second branch that is shown below *Current project*, as you see in the image below.

Click on the *plus* sign located to the left of the *Search samples* label to load the search module, which includes a search textbox and a list of all samples for the current project (see image below).

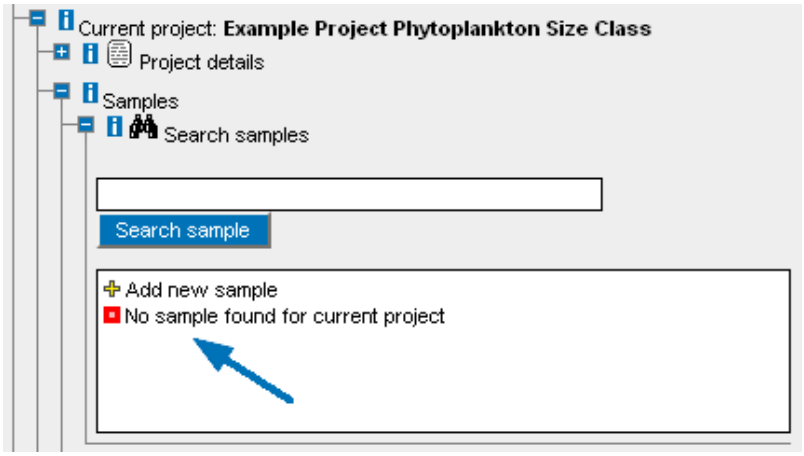


If the list of existing samples is longer than the display field, please use the scroll bar to the right of the list to move down and view further samples. If the list of samples is very long, it might be easier using the search textbox to find the sample you are looking for. In this case, enter the code of the sample, or part of the sample code which you are trying to locate, then click on the *Search samples* button.



The search results will display a list of samples which include your search phrase in their code, as shown above. You can now click on the relevant sample in the list to load it.

In case the sample code you have searched for could not be found in the OrgaCount database, a message will appear in the sample list indicating that no sample could be found. To get back to the complete list click on *Search* while leaving the text box blank.



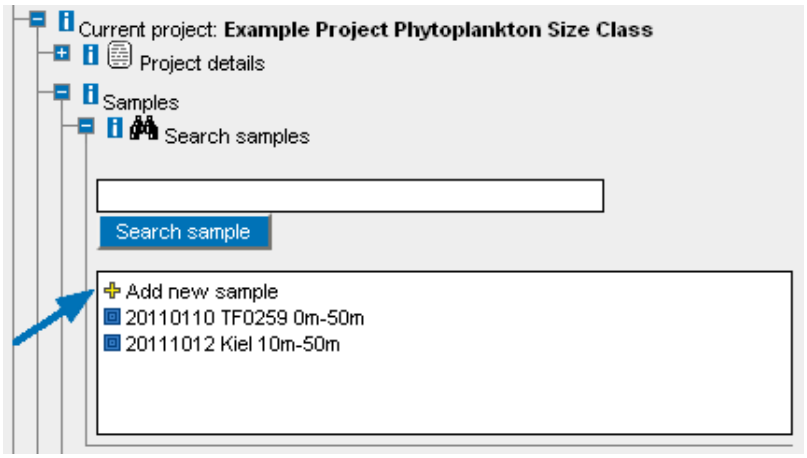
Adding a New Sample

One project may contain several samples. Samples in OrgaCount hold information about all data that are associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc.

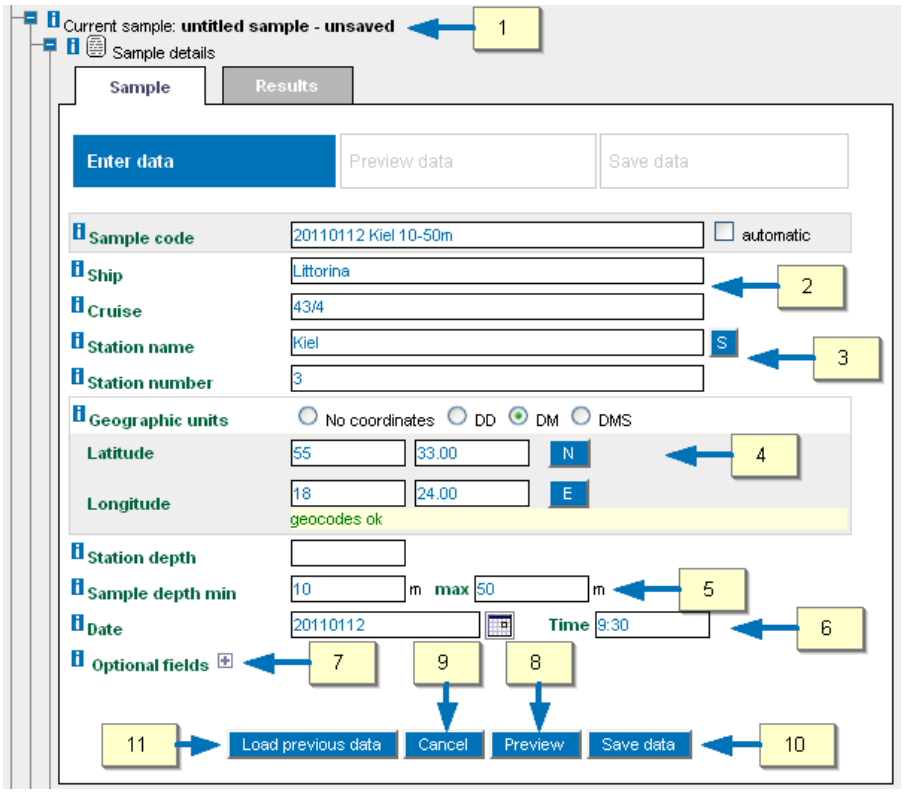
To add a new sample, please follow these steps:

Locate and expand the *Search samples* branch. Click on the *plus* sign to the left of *Projects* → *Search projects*. Select the project from the appearing list that you wish to add the sample to (see *chapter 3: Projects* → *Locating an Existing Project*). Expand the branches *Current project* → *Samples* → *Search samples* by clicking on the relevant *plus* signs next to the labels.

Click on the item *add new sample* on top of the list of samples.



The *Sample details* entry form (see below) will be loaded. Please note that your *Current sample* branch is yet marked as *untitled* and *unsaved* [1].



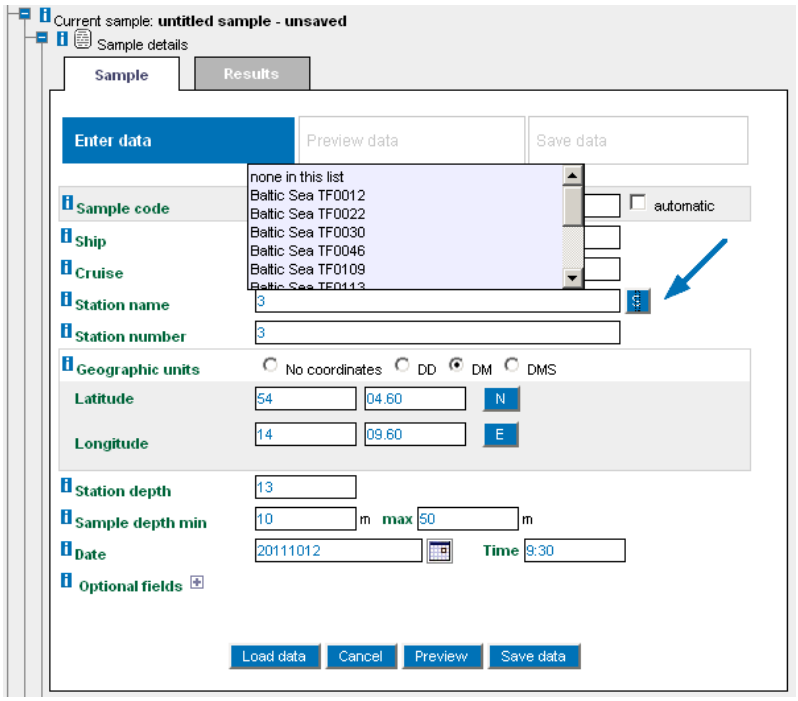
Enter relevant information about the sample in the empty fields.

At your choice, you may leave the sample code empty, for a code will automatically be compiled using the information entered in some of the other fields; for instance, the *Date* [6], the sample *Station* [3] and the *depth* [5].

However, in order to be able to identify the sample in the database later, please enter information on the following:

[2] the *Ship* and the *Cruise;*

[3] the *Station name* and the *Station number* (please note: if the station is stored in the OrgaCount database, this information may be filled in automatically. You can retrieve it by clicking on the button to right of the *Station number* textbox (marked with an *S,* see image below). When doing so, a list of pre-recorded stations will be shown. If you find your station in this list, click on its name to load pre-defined data associated to it into the relevant entry fields);



[4] the *Geographic units*. These may be entered using either of the following formats: DD (= decimal degrees), DM (= degrees, minutes), DMS (= degrees, minutes, seconds); A fault message will appear in red if any of the information entered does not fit the relevant format. Please use positive numbers, only. For *seconds* only integers are possible. Please note: if the station is stored in the OrgaCount database, this information may be filled in automatically. You can retrieve it by clicking on the button to right of the *station number* textbox (marked with an *S*). When doing so, a list of pre-recorded stations will be shown. If you find your station in this list, click on its name to load pre-defined data associated to it into the relevant entry fields);

[5] the *Station depth* and the *Sample depth*;

[6] the *Date* and the *Time*. (The date should be entered as numbers following the format YYMMDD (YearMonthDay) with leading 0s in case of values lower than 10 (e.g. 200080929). An easy way to enter the date is to click on a button at the right of the date textbox and select a day from the calendar).

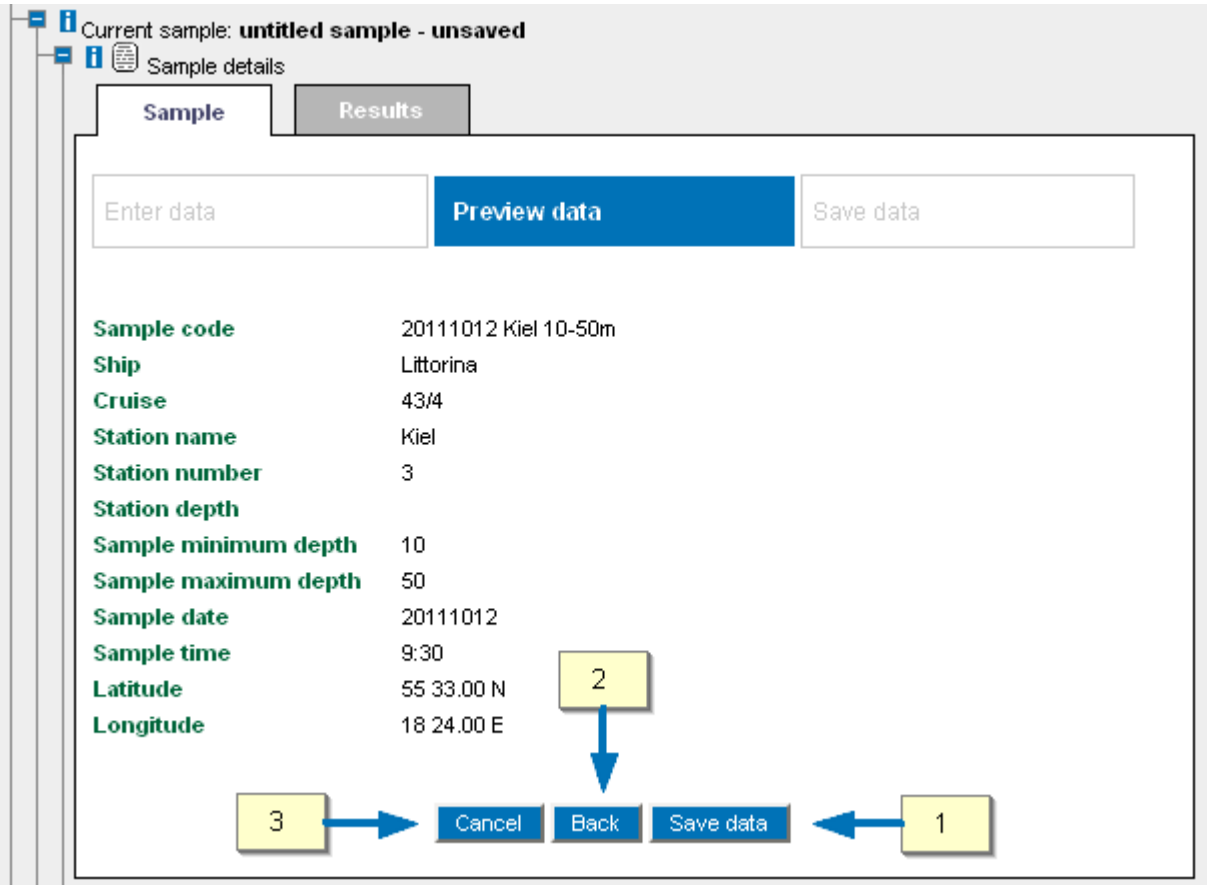
[7] To add more fields, click on the plus sign near the *Optional fields* label. Detailed information on → *Working with Optional Fields* can be obtained in *chapter 7.*

[8] When you have finished entering in all relevant information, click on the *Preview* button at the bottom of the form to continue, and inspect the data in the *Preview* mode (see image below),

[9] or click on *Cancel* to leave data entry process (no data is stored in that case),

[10] or click on *Save data* if you are sure that all relevant information entered is alright in order to shorten the entry process.

[11] The *Load previous data* button is a useful feature if you have to change only minimal details from sample to sample. By using this button you can load the entered information for your previous sample and edit them for the new one.

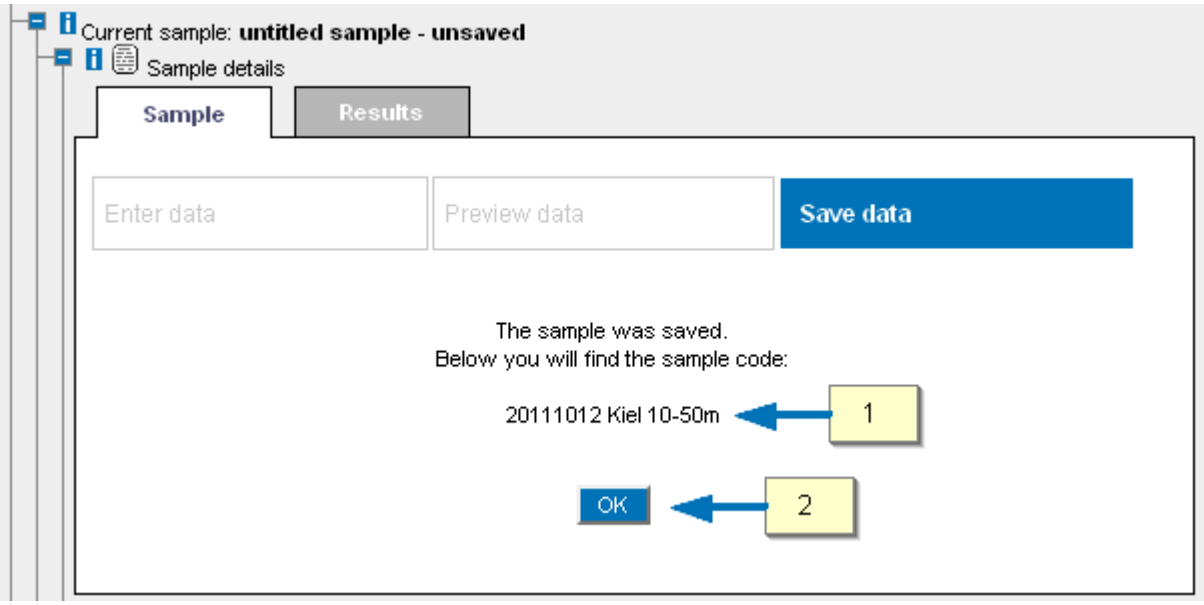


[1] Click on the *Save data* button in order to save the sample in the OrgaCount database, or

[2] click on the *Back* button to return to the data entry form and modify some of the information, or

[3] click on *Cancel* to leave data entry process.

After saving the sample, a message will appear displaying the sample code (see below):



[2] Click on *OK* to close the module and store the sample in the database under the code shown [1].

The *Current sample* label now displays the code of your recently added sample (see below).

If you wish to re-inspect the details of the sample, simply click on the *plus* sign to left of *Sample details* (the first branch under *Current sample*).

If you wish to proceed by → *Adding a New Counting Session* please refer to *Chapter 5.*

Modifying Sample Details

In order to modify the details of a sample, please refer to the instructions in *chapter 3: Projects* → *Modifying Project Details*, for the principles described in that section apply to projects, samples, and sessions alike.

Deleting a Sample

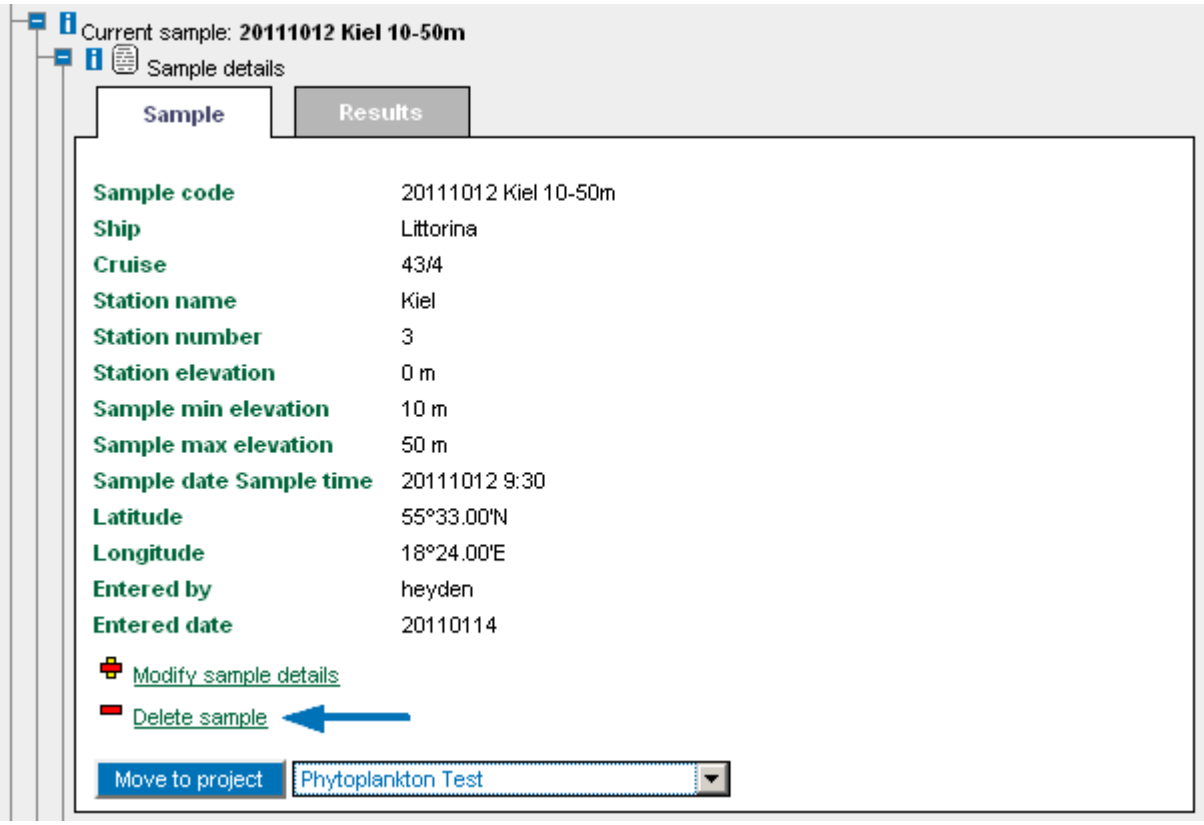
You can delete any unwanted sample from the OrgaCount database, however, please note that deleting samples proceeds in two steps, in order to prevent mistakes and protect your data.

In order to delete a sample, please follow these steps:

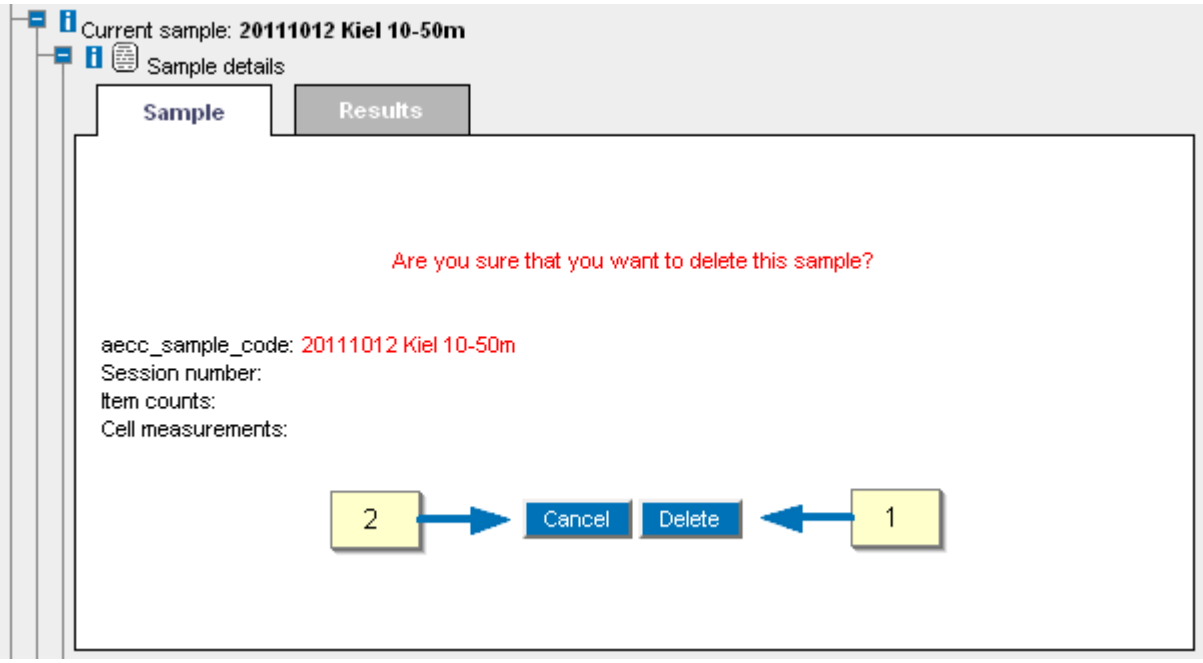
Click on the *plus* sign to the left of the *Sample details* label (which is a branch under the *Current sam*ple branch; see image below).

The *sample details* module is loaded.

Click on the *delete sample* link at the bottom of the form (see blue arrow in image below).



A warning message will inform you about the name of the project selected for deletion (see image below).

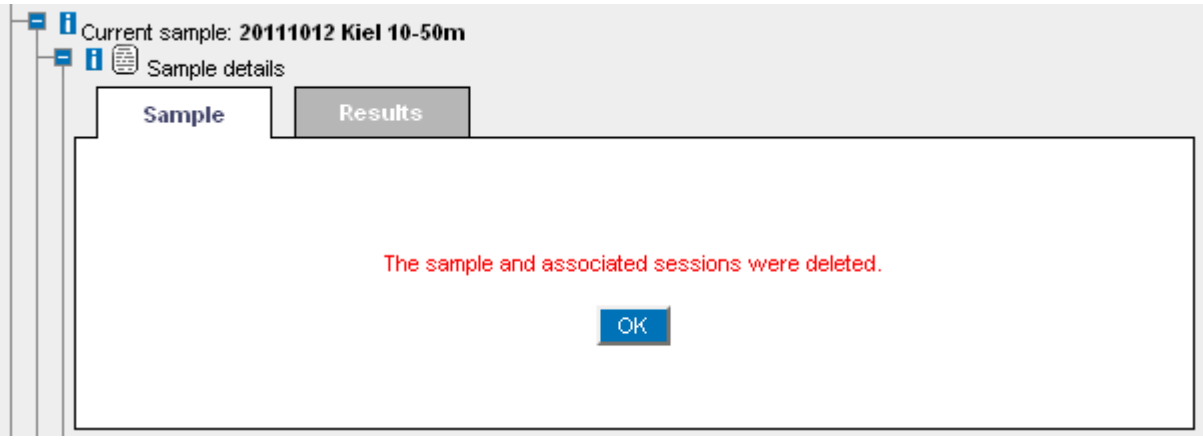


[1] Click on *Delete* to remove sample, or

[2] click on *Cancel* to leave the form without removing the sample from the database.

Please note that by deleting a sample, not only the sample details are removed, but also all associated sessions, and organism counts!

After deleting the sample, click on *OK* to leave the module (see image below).



5. Sessions

The OrgaCount environment is organised in various modules related to each other in a tree structure. This allows you to easily understand the relationship between items, and provides an easy navigation flow to the various functions available at each level of organisation. Information is stored by three main levels of organization, from general to specific: projects, samples, and sessions.

- *Projects* (→ *chapter 3*) hold general information on a working programme that can be defined by a certain institution, a specific geographic location, a grant, etc. One project may contain one or more samples and sessions.
- *Samples* (→ *chapter 4*) are treated in the same sense as they are used in biology and, particularly, in oceanography. They hold information about all data that associated to a real sample, such as codes, information about the collecting site and the local conditions, counting procedures etc. One sample may contain one or more sessions.
- **Sessions only contain those kinds of information related to organism counting processes, such as the microscope settings, the area counted, etc.** For phytoplankton counting modes such as Phytoplankton Size Class and Phytoplankton Biovolume, please note that each counting session is microscope- and magnification-specific (see *chapter 6: Counting* → *Counting Modes & Domains*).

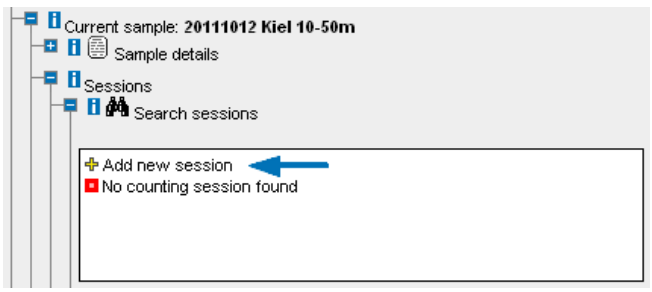
Projects, samples and sessions work in very similar ways; creating an easy workflow once you are familiar with the principles of working with OrgaCount.

This chapter deals with various ways of working with sessions. One sample may contain one or more sessions. Sessions in OrgaCount contain information related to counting process (microscope settings, area counted etc.). You may define a session based on various criteria, for instance, organism size, taxonomic group, microscope magnification, area counted, investigator etc.

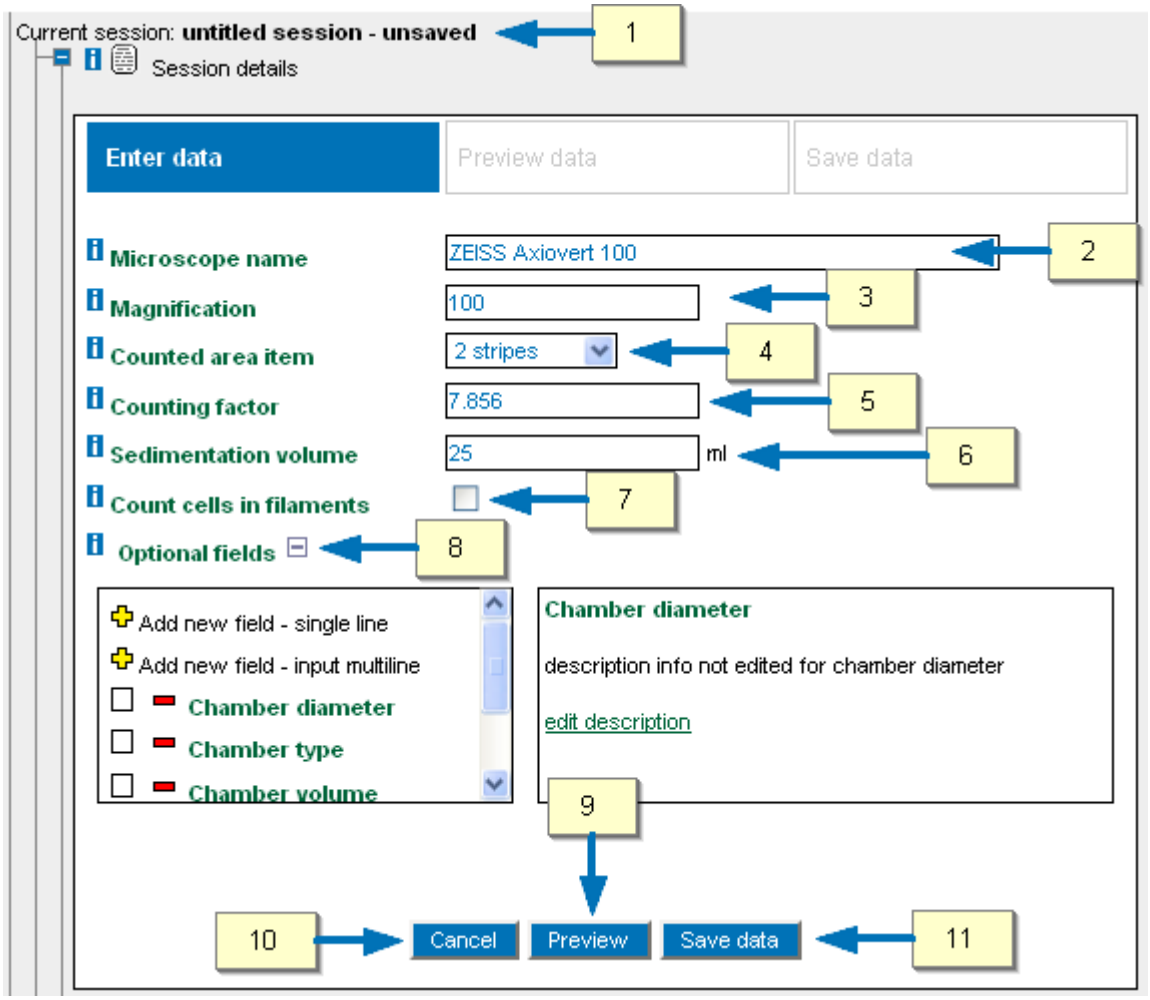
Adding a New Counting Session

To set up a new counting session, please follow these steps:

Locate the *Search sessions* module by expanding the branches on the following path: *Current sample* → *Sessions* → *Search sessions* (as in the image below). Click on *add new session* in the list of sessions. The relevant data entry form will be loaded in a subsequent branch.



Please note that the *Current session* branch is now labelled as *untitled* and *unsaved* (as indicated in the picture below [1]).



Add details to describe the counting session [2]–[8]; see individual descriptions below.

Please note that the information you supply here is vital to calculating counts and biovolumes. Therefore, please pay close attention when filling in these fields! However, the information may be changed at any time later, without affecting the results. The details you enter in these fields apply to all items in the counting layout, but they can also be changed for each taxon/item individually later.

Enter information relating to:

[2] The *Microscope name*.

[3] The *Magnification*.

[4] The *Counted area item* and [5] the *Counting factor*.

Please note that in order to establish the *Counting factor*, it is necessary to correctly select the *Counted area item*.

[6] The *Chamber volume*.

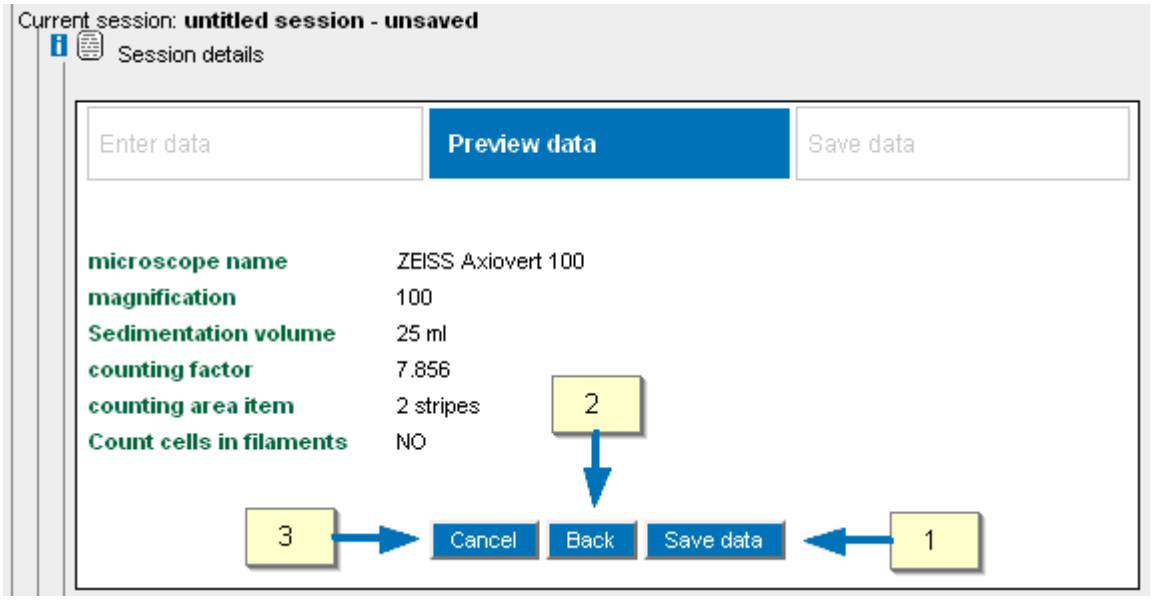
[7] The *Count cells in filaments*. Check the box next to this field, if you want to include cells per colony in statistics of counts and biovolumes (for more details, see *chapter 6: Counting → Useful Features →* *The 'Count Cells in Filaments' Option**).*

[8] The fields listed above are missing in counting domains that are not using microscopes for counting. Some of these fields may not be displayed. However, you can add these fields to your session information by opening the list of *Optional fields* (click on the *plus* sign to the right of *Optional fields*). Pick items from the list to add more types of information fields that describe your session. For more details on optional fields please see *chapter 7:* *Working with Optional Fields*).

[9] After filling in details about the session, click on *Preview* at the bottom of the form to inspect the data you have entered for the counting session. This will take you to the preview modus, as in the image below.

[10] Or, if you wish to discard the session and all information entered, click on *Cancel*. This will take you back to the *Current sample* branch.

[11] Or click on *Save data* if you are sure that all relevant information entered is alright in order to shorten the entry process.

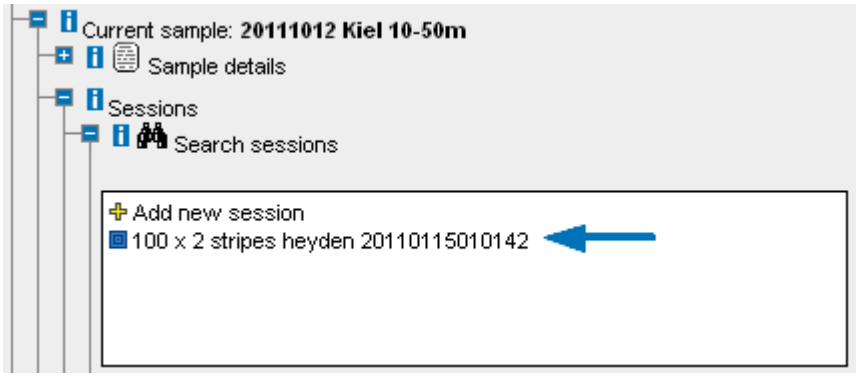


In the preview modus (see image above),

[1] click on *Save data* to save the session in the OrgaCount database.

[2] Or, click on *Back* to return to the session details and change some of the information entered.

[3] Or, click on *Cancel* if you wish to leave the editing process.



After saving the session, a message will appear displaying the code of the saved session, and the new session which you have just set up is listed in list of sessions in the *Search sessions* branch.

Modifying & Deleting Sessions

In order to modify the details of a session or delete a session, please refer to the instructions in *chapter 3: Projects* → *Modifying Project Details* and → *Deleting a Project*, for the principles described in those sections apply to projects, samples, and sessions alike.

6. Counting

Counting Modes & Domains

OrgaCount may be used for counting organisms as well as other types of items (e.g. events, behavioural stages, etc). In the case of organisms, OrgaCount can be used for counting any taxon, but it also has special functions for generating statistics on phyto- and zooplankton and macrozoobenthos in particular.

The application is a very flexible system which can be adjusted to an unlimited number of counting strategies. These strategies are defined by the rules, formulas, and procedures that are used for assessing the number of organisms/items per unit volume, surface, time or similar, as well as by the specific settings for size classes and for calculating statistics like biovolume, carbon, sequence of items etc.

The counting strategies and respective settings are reflected by different **counting modes** that may be purchased individually and be included in the programme. Depending on the license, so-called **counting domains** can be set up. These domains comprise various pre-defined settings, such as counting strategies, taxon lists and classification datasets, and represent the basis for creating new counting projects within the system**.**

Aside from simply counting taxon numbers, the different counting modes offer various size class counting strategies which are be explained in the following.

Size Classes: Predefined Size Classes and Ad-hoc Counting

Individuals of the same species may occur in various sizes within one and the same sample or in several samples over time (intra-specific and seasonal variability). The size of individuals is of great importance for the plankton biovolume and other statistic calculations. Therefore, keeping track of this intra-specific size variability is very important. The most common solution for including size variability of a species is to record not only species to which an individual item belongs, but also its size class – in other words, the counting process requires means of recording the amount of organisms included in each size class for an observed species in a volumetric unit.

OrgaCount may be used for two major strategies for recording size classes in a sample. Based on the way the size classes are established, we refer to these as *predefined size class* and *ad-hoc* counting.

In case of *predefined size class counting*, size classes are already defined in the database. For each species in a list, the database holds one or more size classes. This means that for each size class listed for a particular species (or a higher taxon), the database associates a type of geometry, size range, various applicable dimensions, as well as pre-calculated values for the volumes of cell and carbon. These values are used in calculations for the assessment of species' biovolume and carbon in volume unit of water (units per litre, biovolume per litre, etc.).

Adding a new size class to the database is a process distinct from counting, and it is done based on empirical information from various members of a project. It is possible that, over time, additional size classes may be added or existing size classes may be re-

defined. New size classes may be added to the database through OrgaCount. The management of size class lists and counting information over time in some cases may be difficult and needs some care, for obsolete size classes used in counting cannot be deleted as volumetric data is directly related to the definition of the size class used.

In case of *ad-hoc counting*, there are pre-defined size classes. They are estimated during the counting process. For each species in a list, the database only holds an associated geometry formula. Based on this formula as well as the counts of organisms of various sizes in a sample, the biovolume information is obtained. This makes the management of species lists easy. The biovolume assessment is, moreover, always adjusted to the sample, for it is calculated using actual cell measurements.

Available Counting Modes and Domains

Depending on the type of license(s) purchased, predefined size class or ad-hoc counting is used in OrgaCount. Currently, the following six modes are available for licensing:

- *Phytoplankton Biovolume* (ad-hoc counting and measuring biovolumes, a taxon list and classification of the North Sea and the Baltic Sea will be included and can be altered and extended);
- *Phytoplankton Size Class* (predefined size class counting; a taxon list and classification of the Baltic Sea will be included and can be altered and extended);
- *Zooplankton* (predefined size class counting; an extract of the taxon list of the North Sea will be included and can be altered and extended);
- *Macrozoobenthos* (predefined size class counting; a taxon list and classification of the North Sea and the Baltic Sea will be included and can be altered and extended);
- *Taxon & Simple Size Class* (predefined size class counting; a blank taxon list will be included);
- *Taxon Only* (determining abundances only, a blank taxon list will be included).

By default, one domain only will be available for every licensed mode, which is referred to by the same name as the relevant mode. The domain comprises various settings, such as counting strategy, taxon list and classification dataset.

In addition, a plugin is available for OrgaCount that enables you to create an unlimited number of domains. Each domain can have a set of individual settings (see *chapter 10: Optional Plugins* → *The Plugin 'Set Counting Domain'*).

When setting up a new project, select a counting domain from a pick list. **Please note that this is an important setting which cannot be changed later on!**

Please also see *chapter 8: Managing Counting Lists* for further information.

Counting in a Domain with Predefined Size Classes

- When in counting mode, a popup will appear containing a list of predefined size classes and other relevant information, if more than one size class is defined for a taxon listed in the counting layout.
- Simply hit a key, or click on an appropriate size class in this panel in order to count it in the relevant size.

- If needed, you can also add a new size class (*see chapter 8: Managing Counting Lists* → *Managing the Master Size Class Table* and → *Adding a New Size Class to the Database*).

  Please note that OrgaCount allows you to list available size classes as *items within your generic counting layout*. You can use this feature to speed up the counting process and skip the size class popup window, which is particularly useful for very common size classes (see → *The Counting Layout* → *Generic Elements of the Counting Layout* in this chapter).

Counting in a Domain with Ad-hoc Counting

- When in counting mode, each item in a counting layout has a button labelled *V*. Clicking on this button, a biovolume popup window appears which may be used to define size classes and generate statistics necessary for inferring biovolumes (see → *The Counting Layout* → *Additional Counting Layout Elements for Ad-hoc Counting* in this chapter).

Starting the Counting

Assuming that a counting session has successfully been set up, this text addresses users who would like to familiarise themselves with the principles of counting in OrgaCount.

If you are not sure whether or not a counting session has been set up previously, or do not know how to do so, please refer to *chapter 2: Getting Started* → *Setting up a New Counting Session*.

- Localise a counting session by following this trail of branches:
  projects → *samples* → *sessions*.
- Select and set keys for counting items in the counting layout, if not done so earlier. Items that do not have keyboard keys associated to them are marked by a red question mark on a white background.
- Click on *run counting*  near the *results* tab to start the active counting. You will notice that when in counting is active, the symbol of this button changes, and the text 'counting items' in a red box appears beneath it. When in counting mode has been started, press relevant keys on the keyboard or use the mouse to click on buttons in the counting layout interface in order to count taxa/items, or their size classes. To stop the active counting, click on the *stop counting* button  . The same button is used for starting a counting session, but it resembles a different symbol when the counting is active (see → *The Counting Layout* → *Generic Elements of the Counting Layout* in this chapter).

Popup Windows

The Item Popup Window

The item popup is an extra window containing individual information and counting settings for each of the items listed in your → *Counting Layout*.

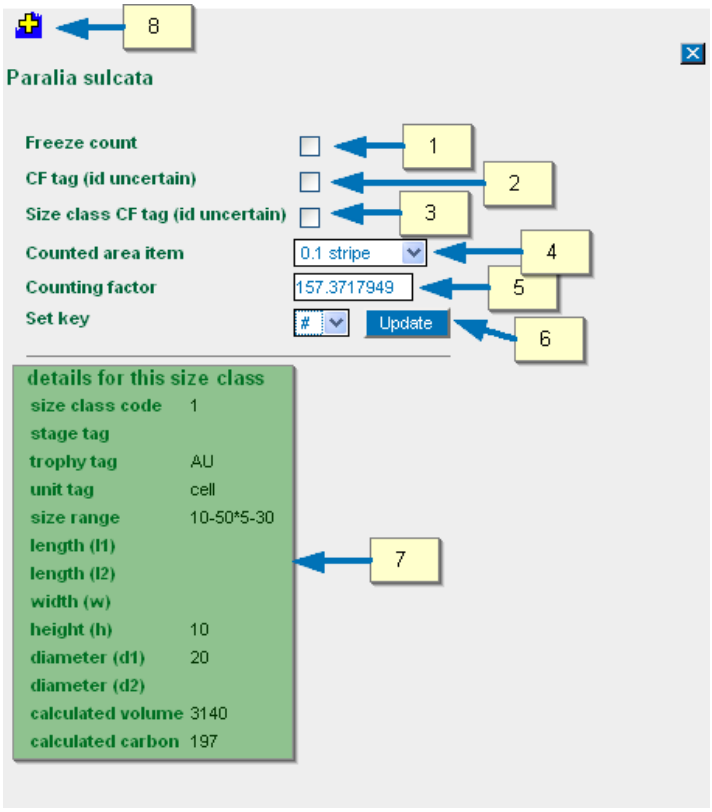
You can access the item popup for any individual item at any time before, during, or after a counting session. Simply click on the name of an item listed in the counting layout, and the item popup for the relevant item will appear.

Within the popup, you may assign and/or change a relevant keyboard key used for counting the item; set the CF status; change a size class level; freeze the counting of the item; or change the item counting area unit and counting factor. Each of these settings applies to the selected item only, and will be treated separately from general session settings. This means that units per litre, for instance, will be calculated using the general session settings, unless you have changed the settings for an individual item. In that case, the changed settings will form the basis for calculations of this individual item.

The assembly of elements in an item popup window can differ according to the type of item it relates to; i.e. elements relating to a size class item differ from those relating to a taxon.

Elements of a Size Class Item Popup

The item popup window for a size class item usually looks like the one displayed in the image below. The individual elements (marked by numbers) are explained below.



An item popup relating to a size class item (please see image above) usually contains the following:

[1] The *Freeze count* checkbox (see also → *Useful Features* → *Freezing the Counting of an Individual Item* in this chapter). This checkbox will be available if at least one organism was counted for the item (in case no organism was counted for the item you will see a label such as shown in the image below).

[2] The *Taxon CF tag* checkbox. Use this in case you are uncertain of the identity of a whole taxon (see also → *Useful Features* → *Items with Indefinable Identities: The 'cf' Status* in this chapter). This checkbox will be available if at least one organism was counted for the item (in case no organism was counted for the item you will see a label such as shown in the image below).

[3] The *Size class CF* tag checkbox. Use this in case you are uncertain of the identity of a size class only. This checkbox will be available if at least one organism was counted for the item (in case no organism was counted for the item you will see a label such as shown in the image above).

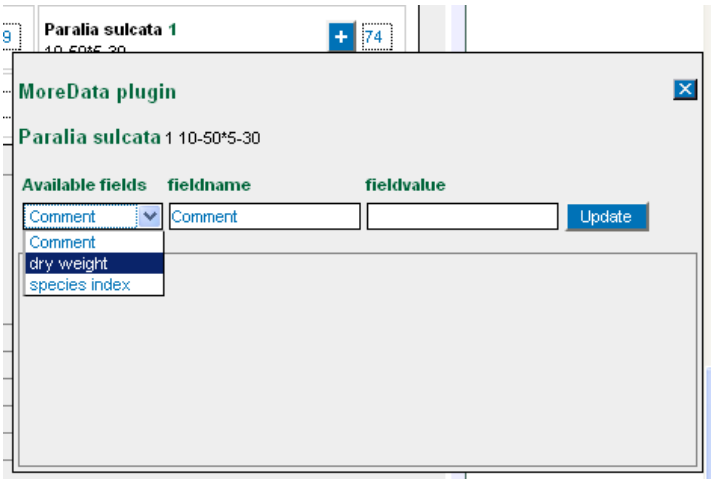
[4] The *Counted area item*. Use this to change the counted area for individual species within the session

[5] The *Counting factor*. The correct counting factor depends on the counted area, which you can change for individual species within the session.

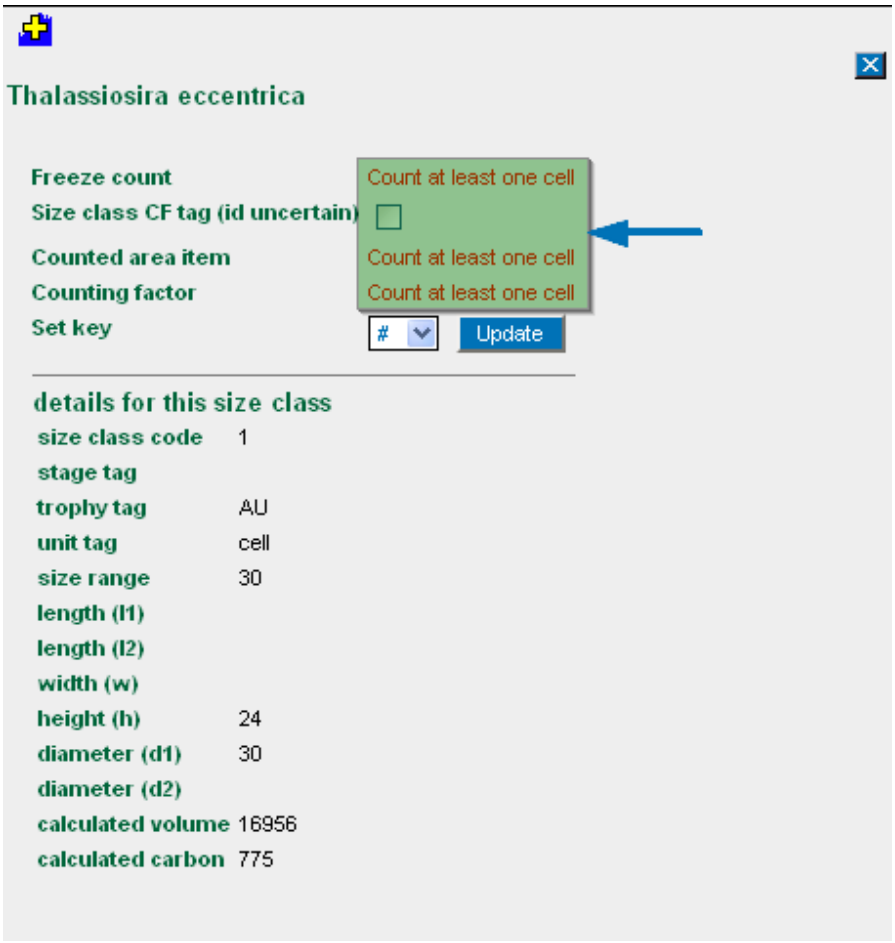
[6] The *Set key*. Use the list in this field to assign a keyboard key, or change the existing setting.

[7] *Details for this size class*. This box displays detailed information on the size class (codes, tags, measurements, statistics, etc.)

[8] The *More data plugin tool*. Add further information to items in the counting layout using this tool. If you click on the plus sign a popup window will open as you can see below to add more data such as dry weight values or a species index. You can create new available fields, just enter a fieldname and a field value for the taxon you want to add information to. The update function will add the field to the available fields for all items.

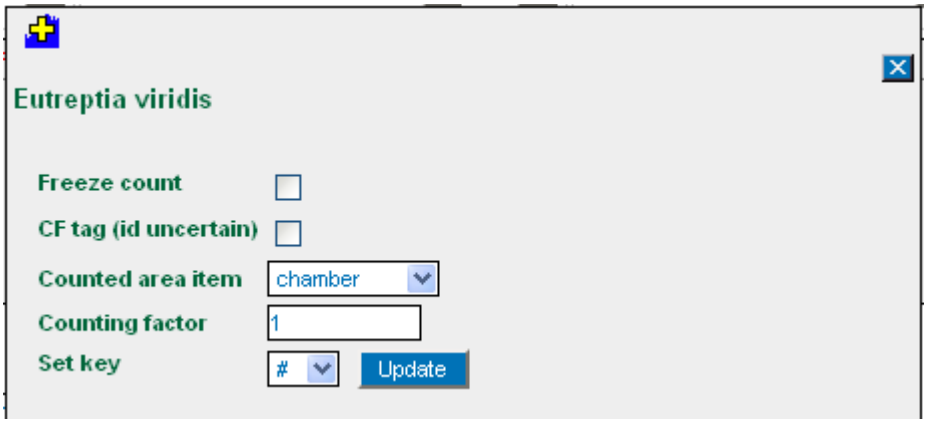


If no organism has yet been counted for an individual item, a set of elements may not be available in the size class popup. In those cases, the popup looks like the one displayed below.



Elements of a Counting Item Popup

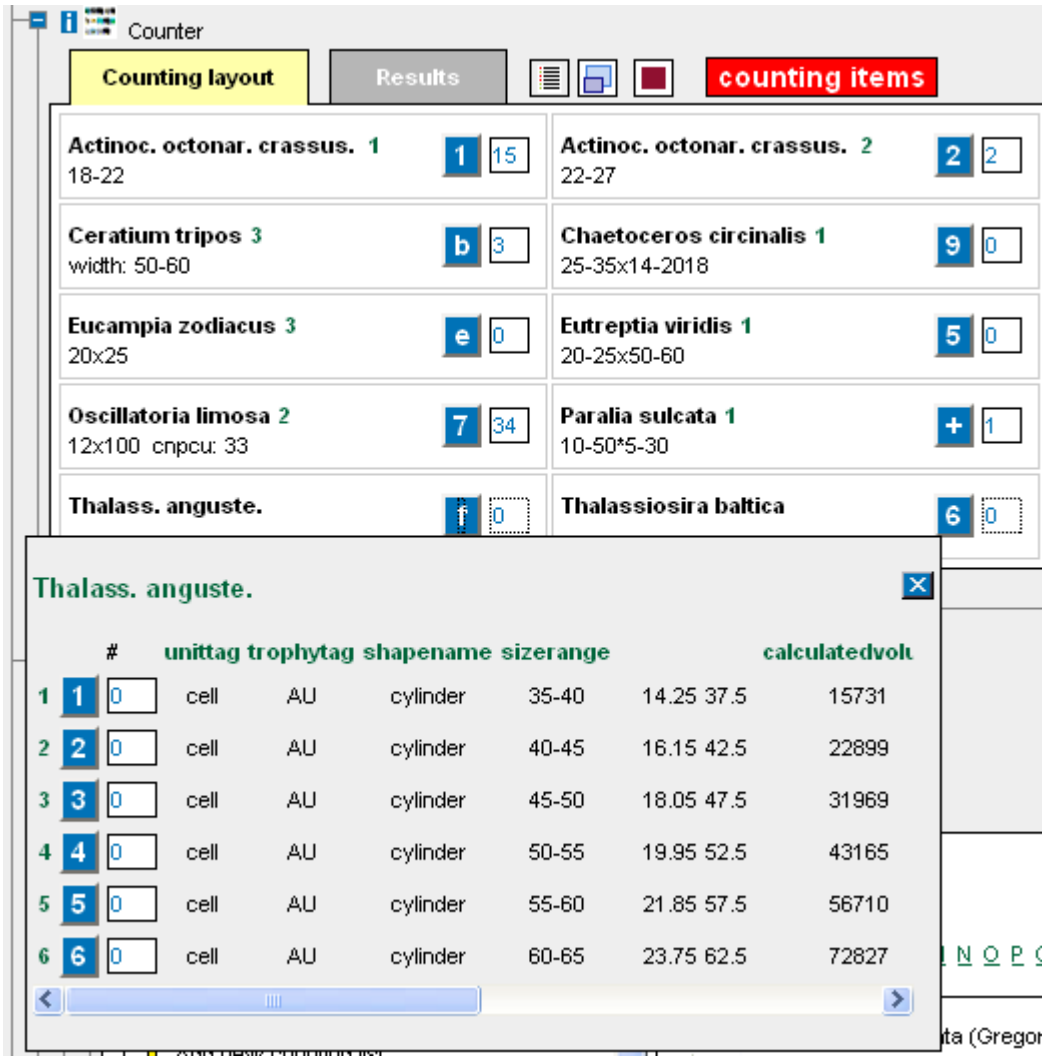
Items representing a whole taxon (with more than one predefined size class recorded in the OrgaCount database) and items of modes without predefined size classes (see also → *Counting Modes & Domains* in this chapter) have a similar but shorter item popup, for no information about size classes is included. An item popup for a taxon usually looks like the one displayed below:



The Counting Size Classes Popup Window

Predefined size classes can be counted directly, by transferring them separately into the counting layout, or by using the main taxon to count all size classes.

Just press the relevant key on the keyboard, or click on the button in the counting layout to open the counting size classes window, which includes all size classes of this taxon (see image below). Count the size classes by clicking on the relevant buttons, or use the keyboard keys that are displayed in the window.

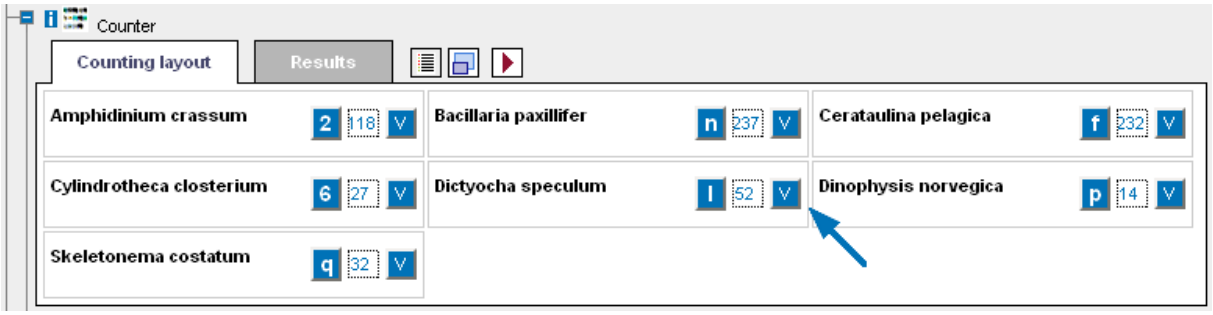


The Biovolume Popup Window

The *Biovolume Popup* is a module used to define size classes during the counting process. It serves to render statistics necessary for calculating the biovolume of a taxon within a sample. Please note that this popup is only available for the phytoplankton biovolume mode (see also → *Counting Modes & Domains* in this chapter). Most taxa have a relevant geometric form associated to them. If this is not the case (for instance, in the case of certain higher taxa which occur in more than one geometric form), you will be

able to select one. .If you wish to engage in more detail the geometric shapes and its formulas OgaCount offers, take a look at the *VolumeFormulaEditor* plugin.

You can access the biovolume popup by clicking on the Volume (*V*) button next to each of the items in your counting layout (see the black arrow in the image below).



Main Elements of the Biovolume Popup

In the image displayed on the following page, you can see the main elements of the biovolume popup:

[1] the taxon name;

[2] a text box referring to the action;

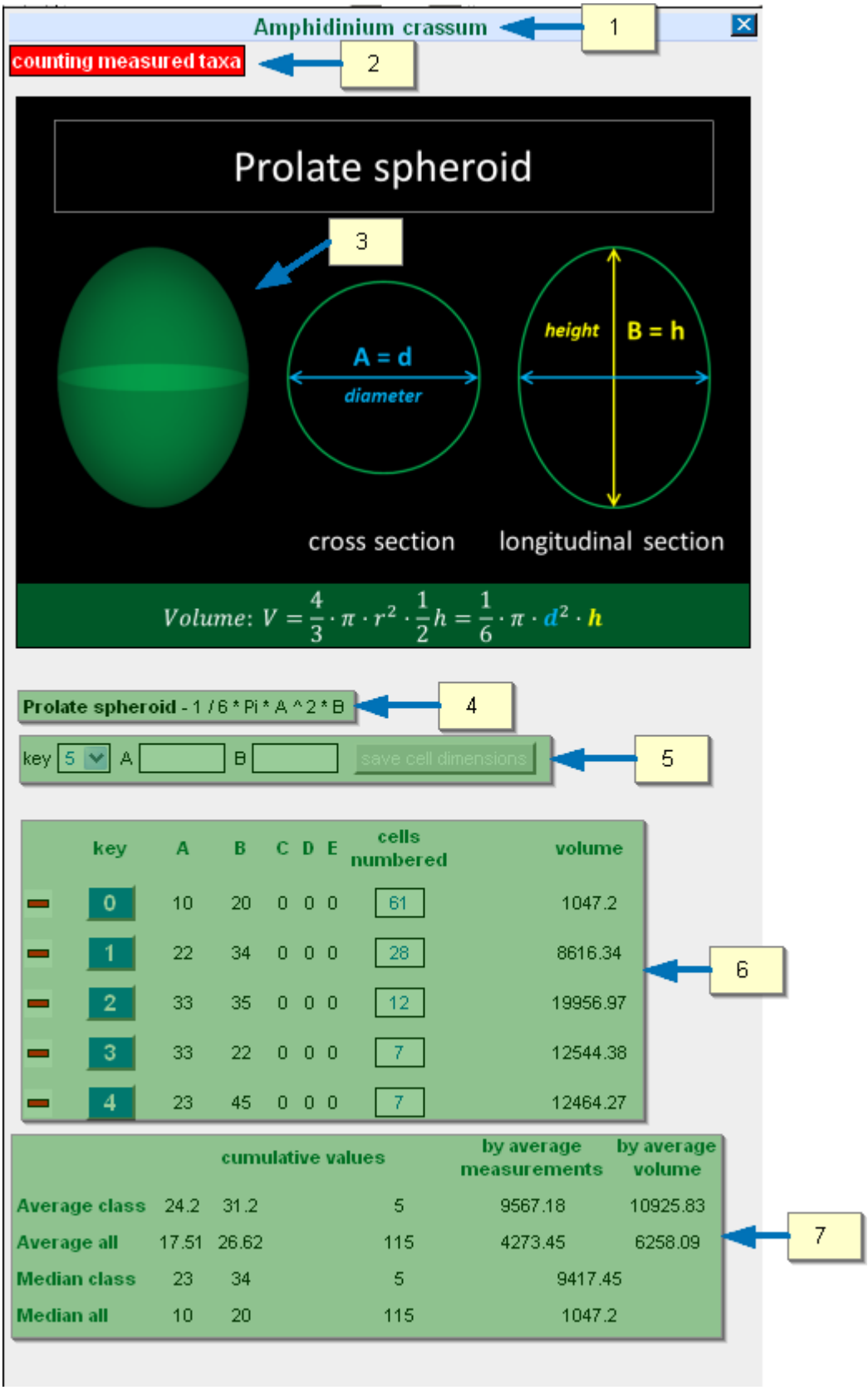
[3] a diagram showing the volumetric shape of the taxon and its measurements;

[4] the name of the volumetric shape and its formula;

[5] a form for measuring cell dimensions for the taxon (for further explanation please see → *Elements of the Form for Measuring Cell Dimensions* below);

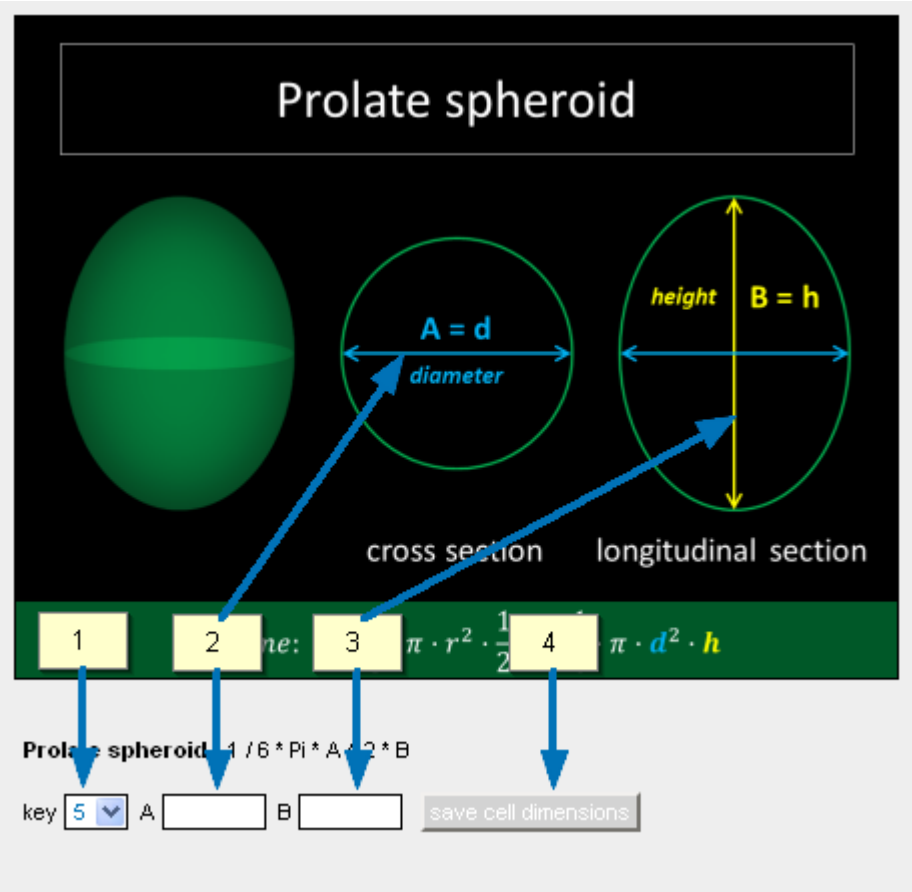
[6] a list of the items measured (see → *Elements of the List of Measured Cells* below;

[7] various statistics for biovolume calculations, generated from the cells measured.


Amphidinium crassum
1
counting measured taxa
2
Prolate spheroid
3
A = d
diameter
height
B = h
cross section
longitudinal section
Volume: $V = \frac{4}{3} \cdot \pi \cdot r^2 \cdot \frac{1}{2}h = \frac{1}{6} \cdot \pi \cdot d^2 \cdot h$
Prolate spheroid - 1 / 6 * Pi * A ^ 2 * B
4
key 5 A B save cell dimensions
5
key A B C D E cells numbered volume
0 10 20 0 0 0 61 1047.2
1 22 34 0 0 0 28 8616.34
2 33 35 0 0 0 12 19956.97
3 33 22 0 0 0 7 12544.38
4 23 45 0 0 0 7 12464.27
6
cumulative values
by average measurements
by average volume
Average class 24.2 31.2 5 9567.18 10925.83
Average all 17.51 26.62 115 4273.45 6258.09
Median class 23 34 5 9417.45
Median all 10 20 115 1047.2
7

Elements of the Form for Measuring Cell Dimensions

The form for measuring cell dimensions (see image below) in → *The Biovolume Popup Window* can be accessed and used at any time during counting.



The individual elements of the form for measuring cell dimensions (see above) in the biovolume popup window are as follows:

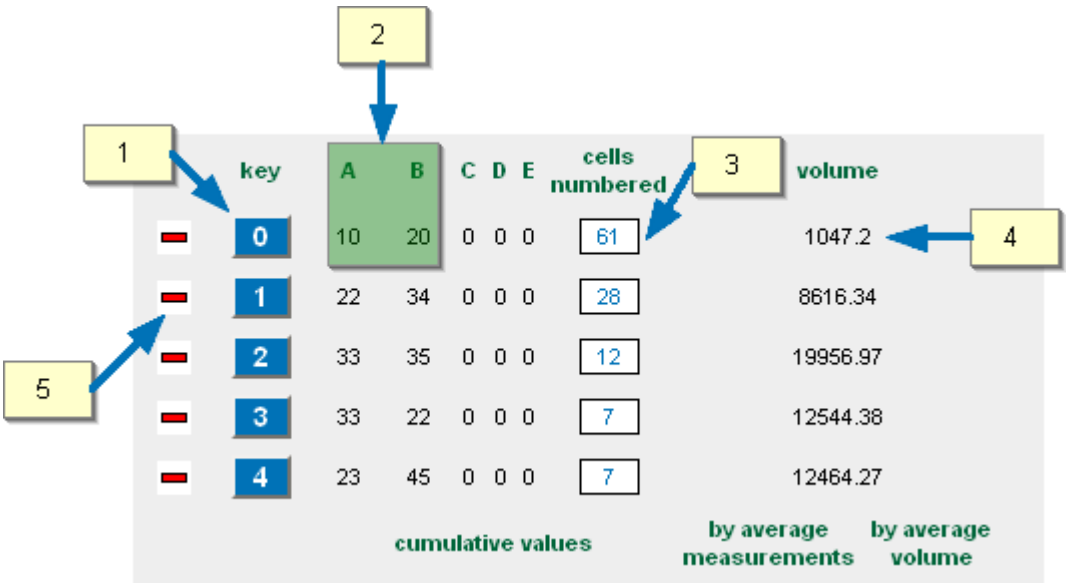
[1] You can set the key which you wish to use when measuring a new cell. Choose a key from the pick list on the left side of the form.

[2]+[3] To the right of the key pick list, a variable number of input boxes is displayed (*A* → *E*; depending on the number of measurements needed for the formula that calculates the volume). In these boxes, enter the measurements of organisms, following the labels in the diagram. Measurements for the dimension A are entered in the input box A, measurements for the dimension B into the input box B, and so forth. The action text box displays the status '*measuring cell dimensions*'. Once relevant information has been entered into all boxes, the disabled key at their right turns blue, and the cell dimensions can be saved [4]. The measurements will be included in the relevant formulas for calculating the volume of cells. Up to ten different cell sizes can be measured (key 0-9)

Elements of the List of Measured Cells

All size classes for a taxon in a session are stored in the database. They can be accessed via → *The Biovolume Popup Window* during counting, in order to record other cells with similar dimensions in the same sample (see image below).

The list of recorded size classes displays the following elements:



[1] A button relating to the key used for counting the cells, and their relevantsizes;

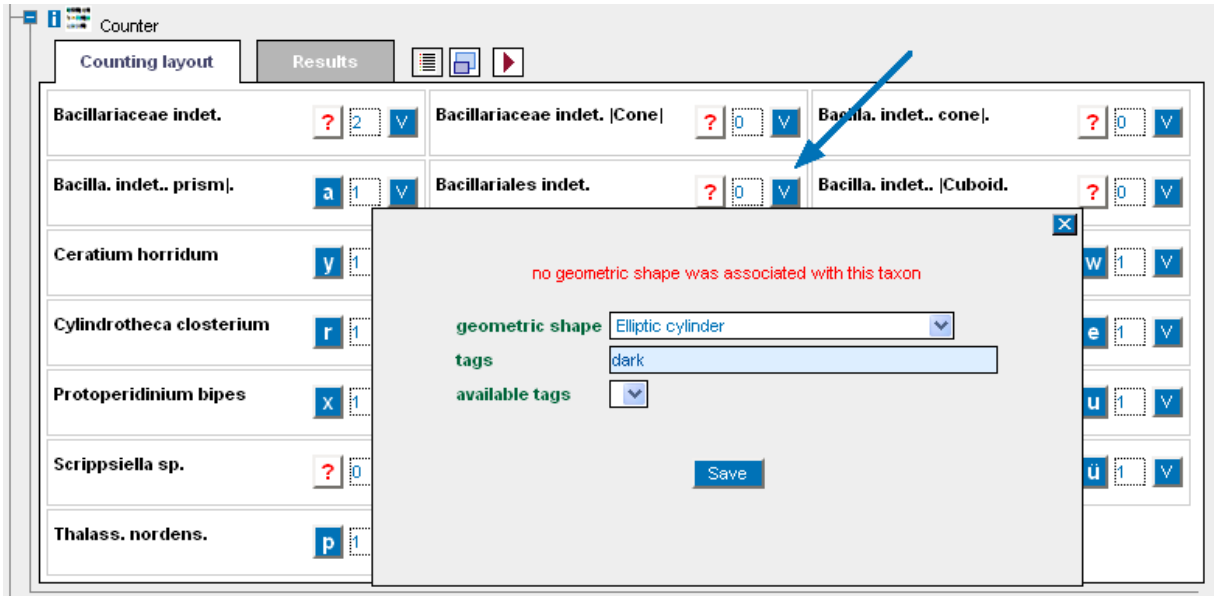
[2] A variable number of measurements *(A → E)* indicating the dimensions that are required for the volumetric formula;

[3] The counts of the measured cells and their respective size (the number in this textbox increases whenever the size class key is pressed, or at a click on the size class key button. The value in the text box may also be edited directly). The action text changes to '*counting measured taxa*' At the same time, the value in the text box of the taxon in the main counter increases. You can use the biovolume popup independently from counting to calculate biovolumes; just do not start the active counting. However, please note that in order to export these biovolume calculations (e.g. as an excel file), at least one item has to be counted for each taxon in the count textbox.

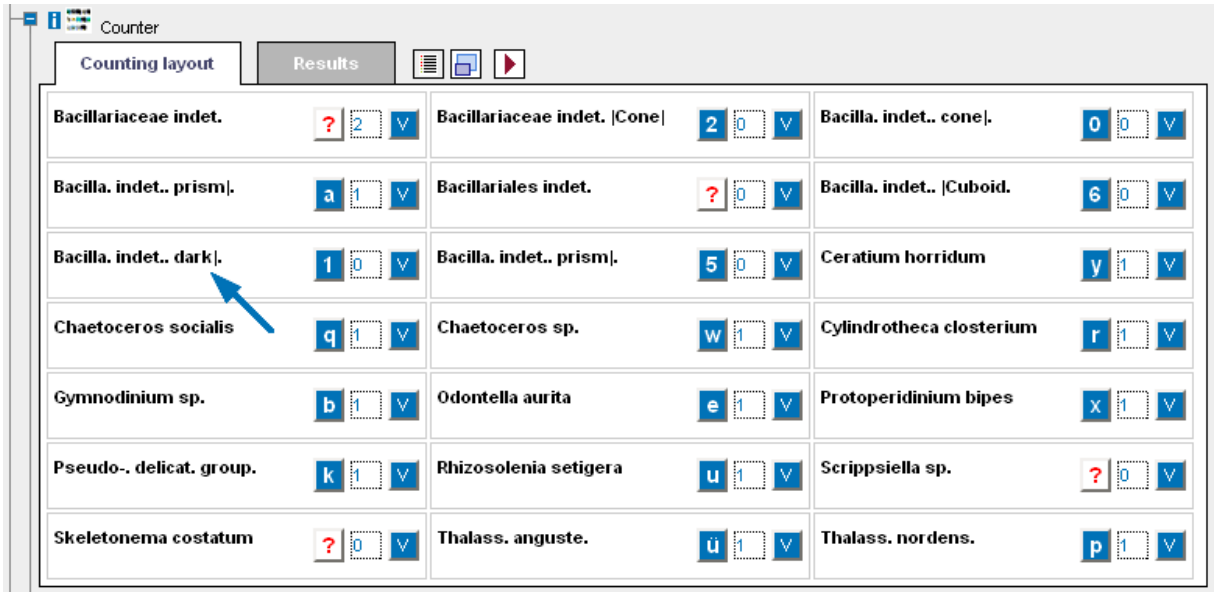
[4] The volume calculated for each cell size measured.

[5] A button to delete size classes (please note that if size classes are deleted in the biovolume popup, they disappear in the biovolume window, but the numbers in the main counter are not affected by this).

If no geometric form is assigned to the taxon, you can open it by clicking on the V button which will open a pick list. In the field labelled *tags* you can add additional information, which will be displayed in your counting layout.



The taxa will be added to the counting layout and will appear in the report, including the geometric form assigned to it (see example below).



Useful Features

Freezing the Counting of an Individual Item

The count for any item in a counting layout may be frozen, for instance, when using a counting area other than that set up originally for the session. The counting area is only changed for this one item.

- To freeze the counting of a taxon/item, click on the taxon name in the counting layout and in check the box *Freeze count* in the appearing popup window.
- The keyboard keys of frozen items will be marked with a grey background in the counting layout, and they will be disabled.
- Change the *Counted area item* and the relevant *Counting factor*.
- You can freeze and unfreeze the counting for any item at any time during the session (see → *The Counting Layout* → *Key Button Stages* in this chapter).

Items with Indefinable Identities: The 'cf' Status

If you are not sure of the id of a certain taxon, you can mark this by applying a *CF tag* (meaning: 'id uncertain').

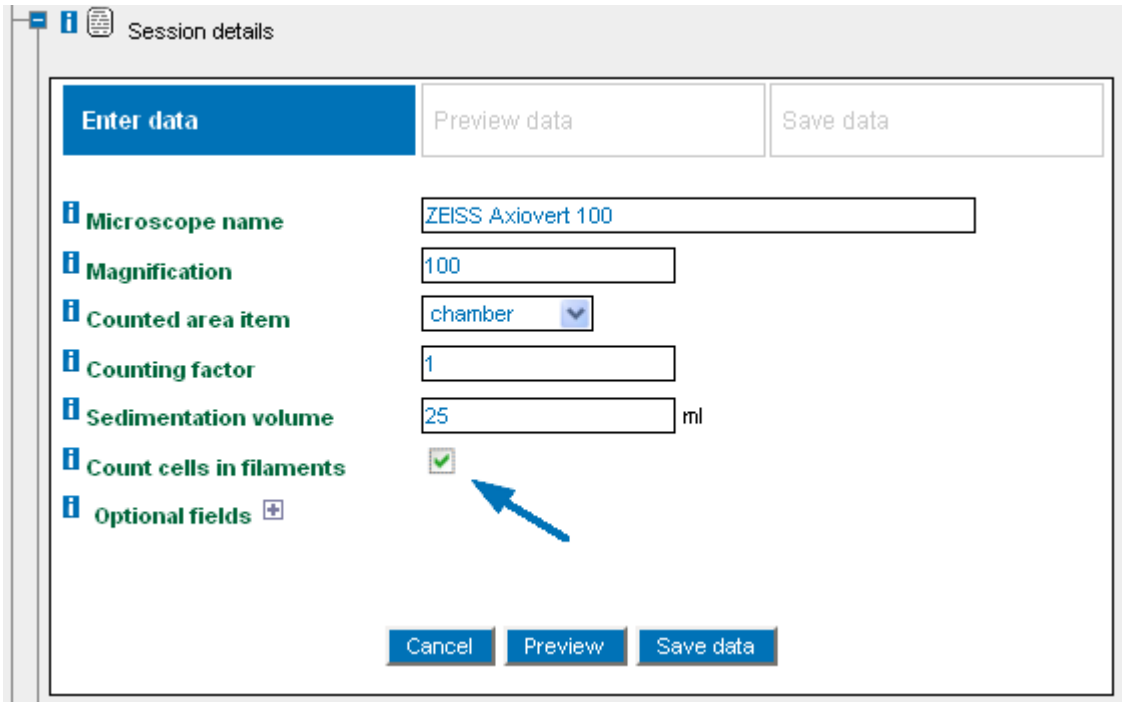
- Click on the taxon name in the counting layout to open up a popup.
- Check the box beside the *CF tag*.

  Please note that in domains using predefined size classes, there is also an option to apply a *CF tag* to a particular size class only.
- Taxa/size classes with a CF tag are visibly marked in reports.

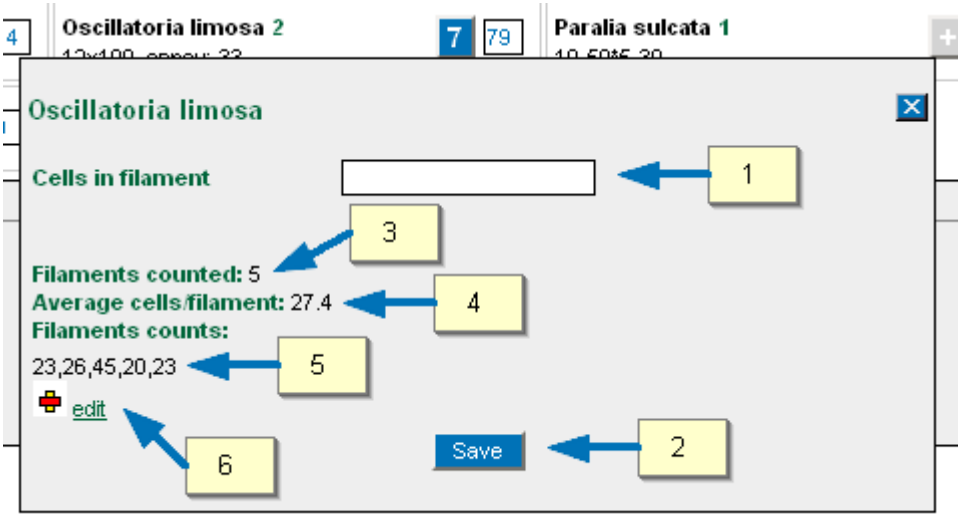
The 'Count Cells in Filaments' Option

The session details form holds an option labelled *Count cells in filaments*. This relates to the fact that certain taxa found in plankton samples may form colonies. OrgaCount offers this option in order to store the number of cells that form the counted colonies in the database. These are then used for statistical calculations such as units per litre.

To enable this option, check the box to the right of *Count cells in filaments* in the relevant session details entry form (see blue arrow in the image below). You can enable the option during the process of setting up a new session, but also at a later time through clicking on the *Modify session details* link in the *session details* module. Please note that this feature is not available for all modes.



When the *Count cells in filaments* option is enabled, a popup appears every time during counting when a taxon forming colonies is counted (see image below). This allows you to enter the number of cells counted in colony.



As in the image above, enter the number of cells counted in filament into the *Cells in filament* field [1], then click on the *Save* button [2]. OrgaCount now automatically increases the number of filaments counted [3], as well as the average of cells per filament [4], and adds an additional value to the string of filament counts [5]. All of this is stored in the database. If you wish to correct some of the information entered, click on the *edit* link [6].

The Counting Layout

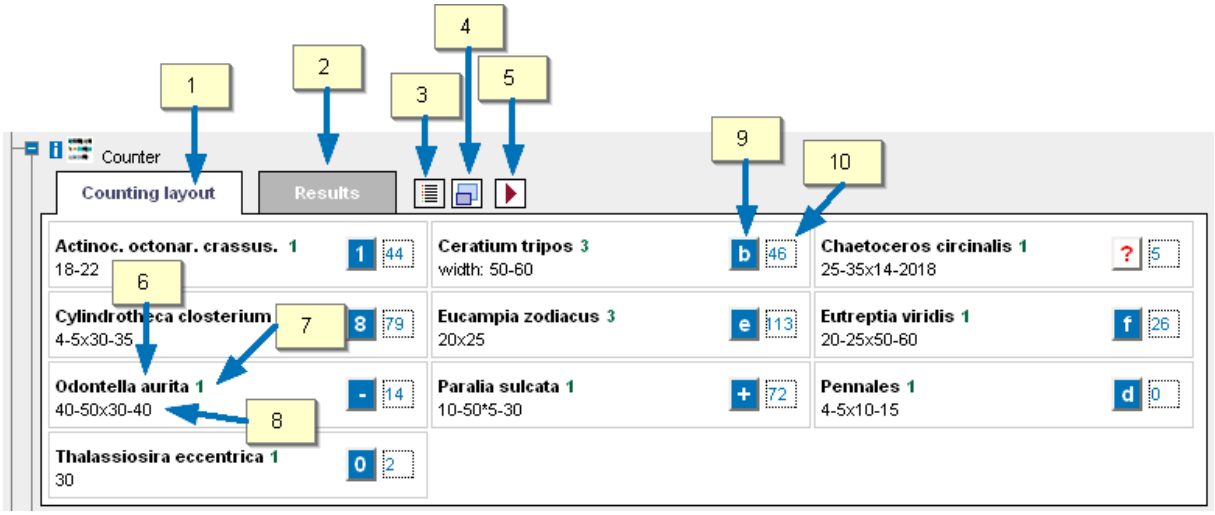
OrgaCount comes with an array of user-friendly counting layouts, which may be modified to meet the requirements of different projects und users.

The counting layout refers to the list of items (taxa, size classes of taxa, or items that are not organisms) that are counted during a counting session. Each item contains elements used for accomplishing the counting: the name of a taxon, details on its size class (in the case of predefined size classes), the keyboard button it relates to, a textbox with the count value, and other controls for individual counting settings. The elements of the counting layout are shown below.

The appearance of an item in the counting layout can be adjusted through changing the layout template, by clicking on *Settings* → *Counting Layout* → *Design templates* (see → *Settings* → *Modifying the Counting Layout* in this chapter).

Generic Elements of the Counting Layout

The individual elements of the counting layout are listed and explained below.



[1] The *Counting layout* contains all items that may be counted in a session.

[2] *Results* is a tab that includes the report on counts for the current session. This tab may be accessed at any time, for OrgaCount calculates the results during counting.

[3] *Load counted session items* builds or rebuilds the counted taxa of the session, if the template has been changed. Please note that items not counted disappear not only from the *Counting layout*, but also from the *counting list*, which might you might want to use as a template for further counting sessions (see *chapter 8: Managing Counting Lists* → *Counting Lists as Templates*).

[4] *Maximaze/minimaze* is a button that can be used to maximise the counting layout to full screen or minimise to the size of a module in the OrgaCount tree structure. In full screen mode, only those items to be counted are visible. This allows an increased number of items to be visible on the screen without having to scroll to the end of the page (see → *Maximising/Minimising the Counting Layout* further below).

[5] *Run counting/stop counting* is a button that has two states. It can be used to start and stop counting (see → *Starting the Counting* in this chapter).

[6] Name of an item: usually, this refers to the name of a taxon, species or higher taxon. By clicking on the name you can access the item popup window containing more information about the item, as well as controls for adjusting individual settings such as the associated keyboard key, the counting factor, the freezing status, etc. (see → *Popup Windows* → *The Item Popup Window* in this chapter).

[7] Size class code of item: this only applies if an item is a size class of a taxon.

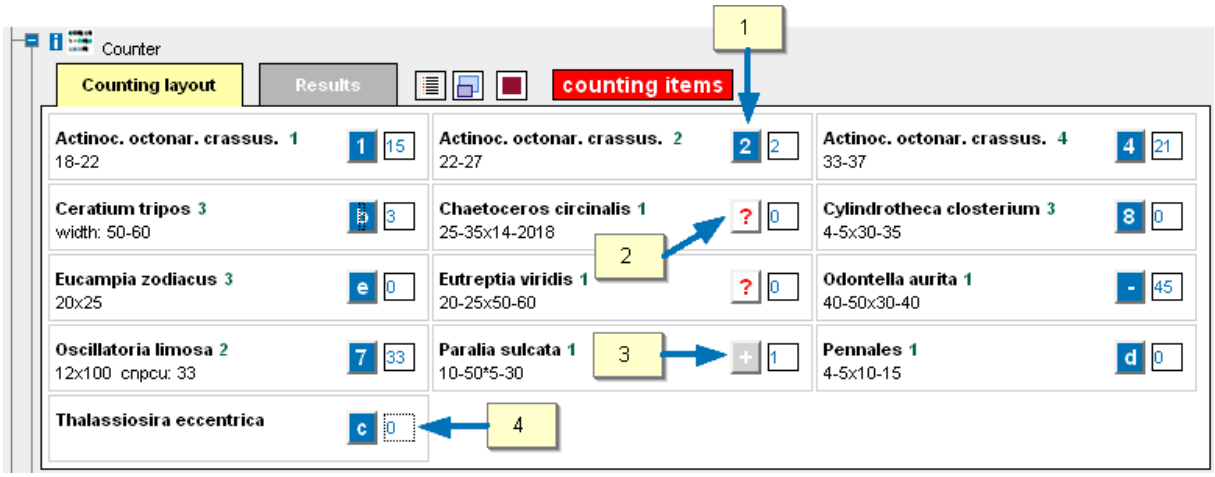
[8] Size range: this only applies if an item is a size class of a taxon.

[9] Keyboard key button: this button shows the relevant keyboard key associated to the item. By pressing this key on your keyboard, the value of your count is increased. This button has three states (see → *Key Button Stages* below). It can also be used for counting items by mouse clicks.

[10] Count textbox: this box indicates the number of organisms counted for an item. The value it displays may be increased through pressing the relevant keyboard key or clicking the mouse; or through direct editing.

Key Button Stages

The different key button stages available in the OrgaCount counting layout are explained below.



[1] Item with a key assigned to it: this item may be counted.

[2] Item with no key assigned to it: this item cannot be counted at present, unless a keyboard key is assigned to it in → *The Item Popup Window*.

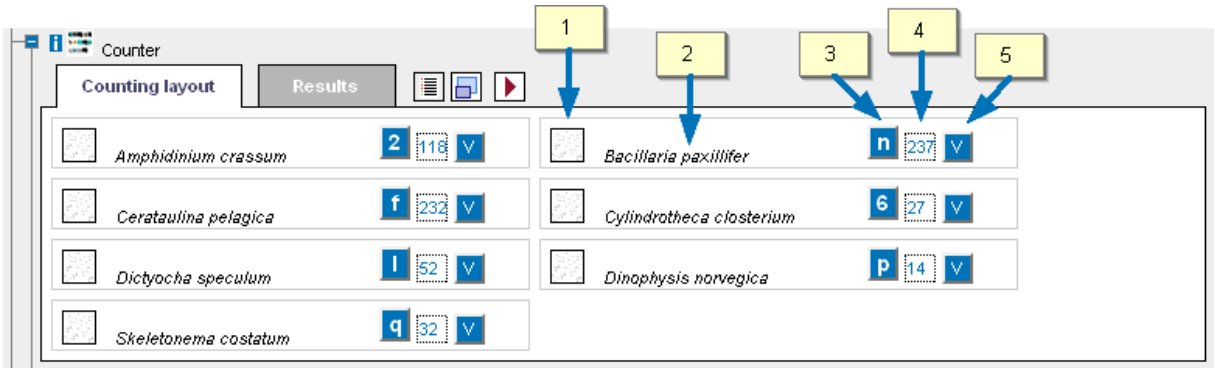
[3] Frozen item: this item cannot be counted at present, unless the freeze is reversed (which is possible at any time during counting).

[4] Key button border styles:

solid lines - the count textbox is active and its content can be edited;
dashed lines – the count textbox is inactive but its content can still be edited;
dotted lines – the count textbox is inactive, its content is protected and cannot be edited.

Additional Counting Layout Elements for Ad-hoc Counting

When using ad-hoc counting, the counting layout has some additional elements which are described below.



[1] Icon (or thumbnail) of the species: some counting layout designs include images of species which are displayed (if available) in the OrgaCount repository.

[2] Name of the item: usually, this is the name of a taxon, species or higher taxon. A click on this opens up a popup window containing additional information about the item, as well as some controls for adjusting individual settings such as the associated keyboard key, the counting factor, the freezing status, etc.

[3] Keyboard key button: This button shows which keyboard key is associated to the item. You can press this key to count the item. This button can be clicked when counting items using mouse clicks.

[4] Count textbox: indicates the number of organisms counted for an item. The value may be increased through pressing the relevant keyboard key press, clicking on the mouse, or editing it directly.

[5] Volume button: opens the biovolume popup window. If using ad-hoc counting, the measured cells and their generic biovolume values are calculated dynamically from formulas during counting. The measurements and associated counts are generally done in a smaller number than the counts of whole taxa from a sample (usually less than 25 per taxon). These are used to define generic volumetric values that are then extrapolated to all counts of a certain taxon during a session. Size classes and their biovolumes statistics may be defined throughout the entire counting process (before, during, or after).

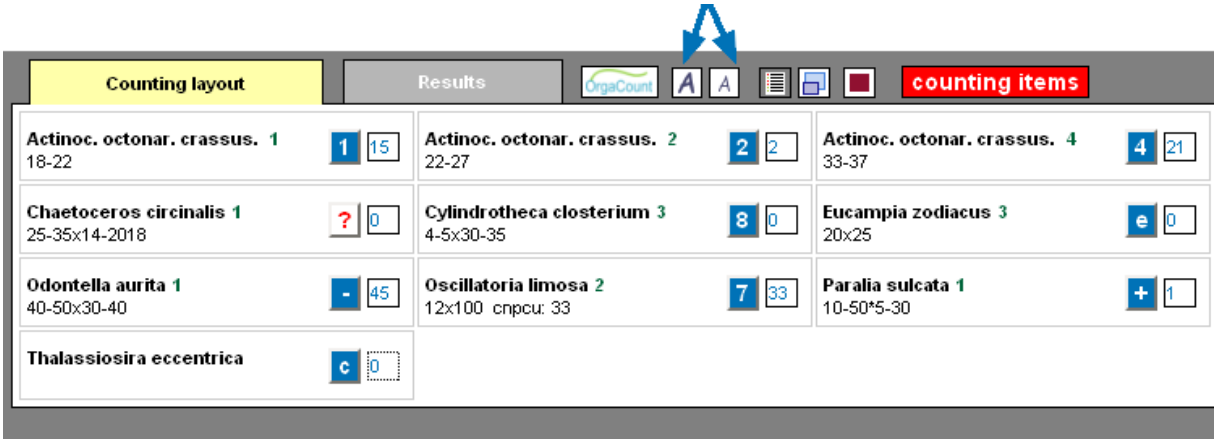
Maximising/Minimising the Counting Layout

Often, the number of taxa found in a sample or counted in the field is very large. This results in a counting layout exceeding the height of your screen. To avoid scrolling up and down the page, OrgaCount allows you to maximise the counting layout to full screen.

You can maximise/minimise the counting layout during your session by clicking the  *minimize/maximize button* located at the top of the panel. If maximised, the counting layout will be displayed as shown below. To return to the normal (i.e. minimised) counting layout, click on the same button again.

Increasing/Decreasing Font Size

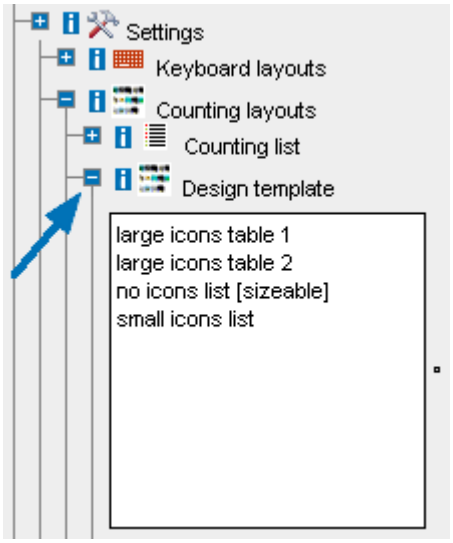
If your computer screen is located at a distance from your microscope, it may be useful to increase the font of the screen display. To adjust the size of the text please use the *font size* buttons which are indicated by the blue arrows below.

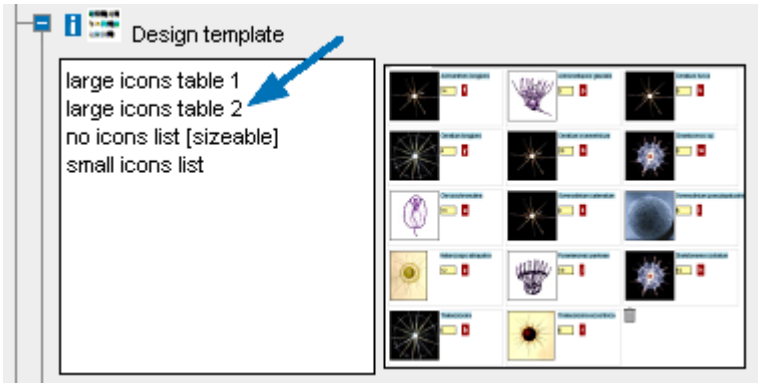


Modifying the Counting Layout

OrgaCount comes with several design templates that can be selected in order to customise items in your counting layout. Switching to a different design can easily be done without restarting the programme, even in the middle of a counting process.

In order to switch to another design, please expand the branches *Settings* → *Counting layout* → *Design template* (see black arrow in the image below). A module for controlling the counting layout templates is loaded.





In the image above, a design template is displayed that also includes taxa icons. This feature may ease the localisation of items in the counting layout, and help new users becoming familiar with the different taxonomic subjects.

Move the mouse over of the items in the design templates list in order to preview a small sample of the relevant design, and/or click on one of the templates to change the design.

You can minimize and maximize the counting layout by clicking on the  button located at top of the counting layout (see also → *The Counting Layout* in this chapter).

If you are counting in domains that use predefined size classes, the template called *no icons list* may be the best design for you, as it is enriched with elements that are not available in most other design templates (such as, for instance, original size class code, tags, size ranges etc.) However, please note that only items with tags (sizeable) can scale correctly in the full screen mode.

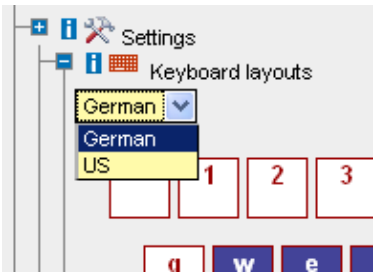
Because of OrgaCount's internal structure, the design feature is fully separated from other database functions. This means that creating new design templates is uncomplicated and easy with limited knowledge of HTML and JavaScript. Virtually, there are no limits for controlling the appearance of items in terms of colour, style, size of fonts, etc.

Selecting a Keyboard Layout

OrgaCount allows you to select one of a variety of different keyboard layouts, which mainly differ according to various country features and languages. Depending on the language of the relevant keyboard, some of the keys in the keyboard layouts may not be available. It may therefore be useful to switch to a relevant keyboard layout which lists more items in your counting layout. The keyboard you use with your computer is relevant to the settings of the keyboard layout you should select.

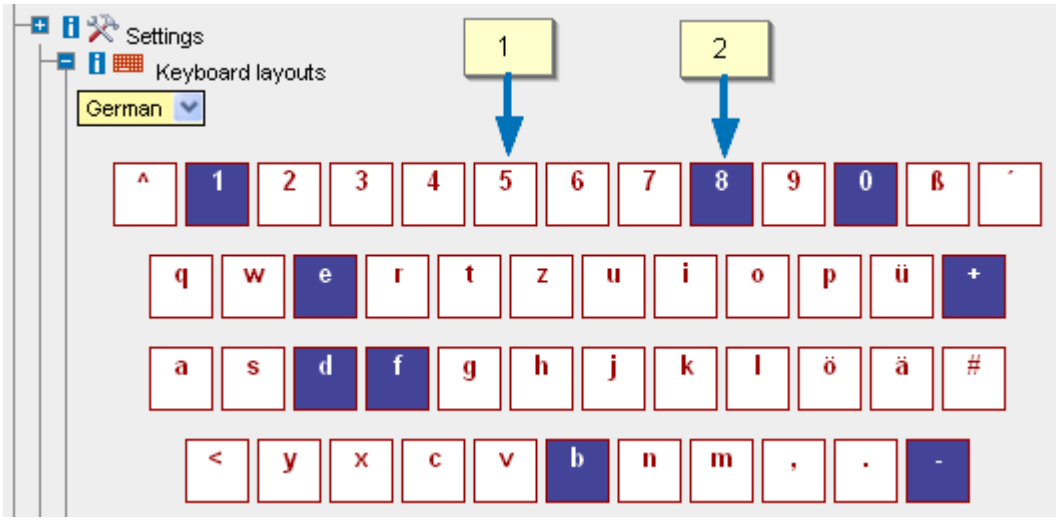
In order to maximise the number of keys available for counting, please expand the branches *Settings* → *Keyboard layouts*.

Pick the relevant keyboard type from the selection list (as shown on the right).



The list of available keys will automatically be rendered after you have made you selection.

As you can see in the image below, keys that are not used in the current counting layout are displayed in white [1]. Used keys are displayed in blue [2]. If there are keys that are used in your current counting layout, but not available on the chosen keyboard type, these are marked in red. You can use this feature as an easy way to see which keys are available.



Please note:

The keyboard layout may be changed at any time during counting and does not affect your counting results.

The template design and keyboard layout are inherited from previous counting sessions or from default settings of OrgaCount. Therefore, you may either decide to remain with the existing settings, or personalize these (see → *Modifying the Counting Layout* in this chapter).

7. Working with Optional Fields

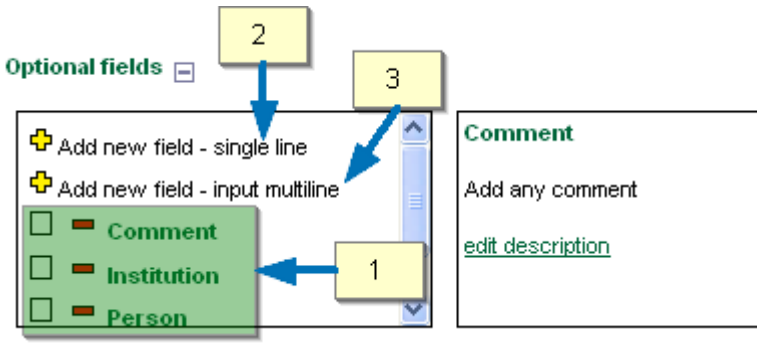
In each of the data entering forms relating to → *Adding a New Project*, → *Adding a New Sample*, → *Adding a New Counting Session*, → *Modifying Project Details*, → *Modifying Sample Details* and → *Modifying & Deleting Sessions*, you will find an *optional fields* button.

The optional fields in OrgaCount are highly useful, for they allow you to go beyond the default setting. *Optional fields* can be modified and created fitting your individual needs. OrgaCount allows storing an unlimited number in the database.

It is possible to customise your data entry forms, determining the fields that are displayed in the *details* modules (i.e. *project details, sample details,* and *session details*). The principles of manipulating the optional fields are simple, and very similar throughout each of the modules relating to projects, samples and sessions.

Accessing Optional Fields

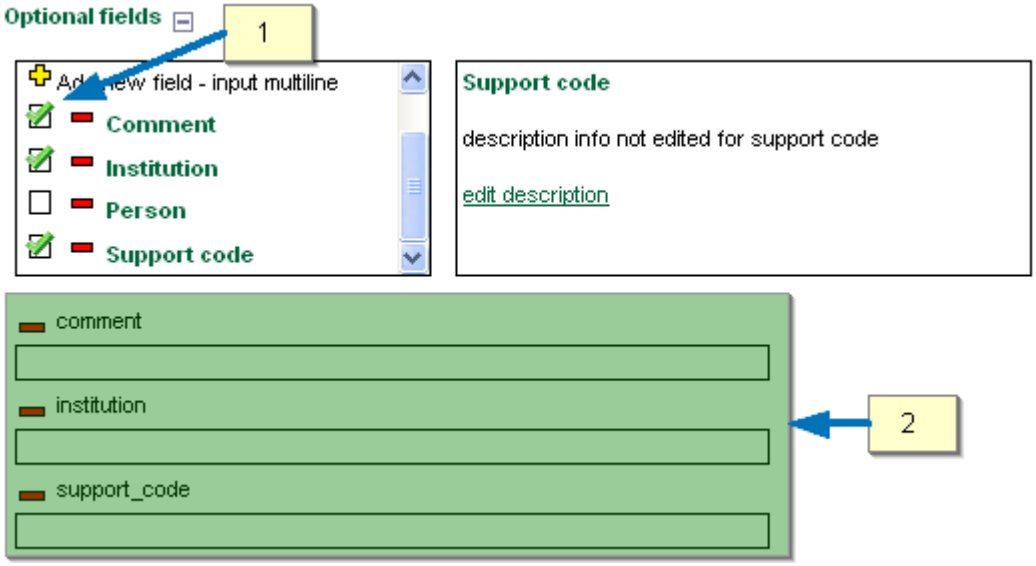
Within all data entry forms, the *Optional fields* are available by clicking on plus sign located near the *Optional fields* label. In doing so, the module for *Optional fields* is loaded, which is shown below.



The *Optional fields* module represents a list of additionally available data entry fields [1]. Moreover, there are two items for creating entirely new optional fields to the list. Two types of fields are available for creation: *single line fields* [2] and *multiple line fields* [3].

For instructions on how to add available fields, how to delete them and how to create new fields, please see below.

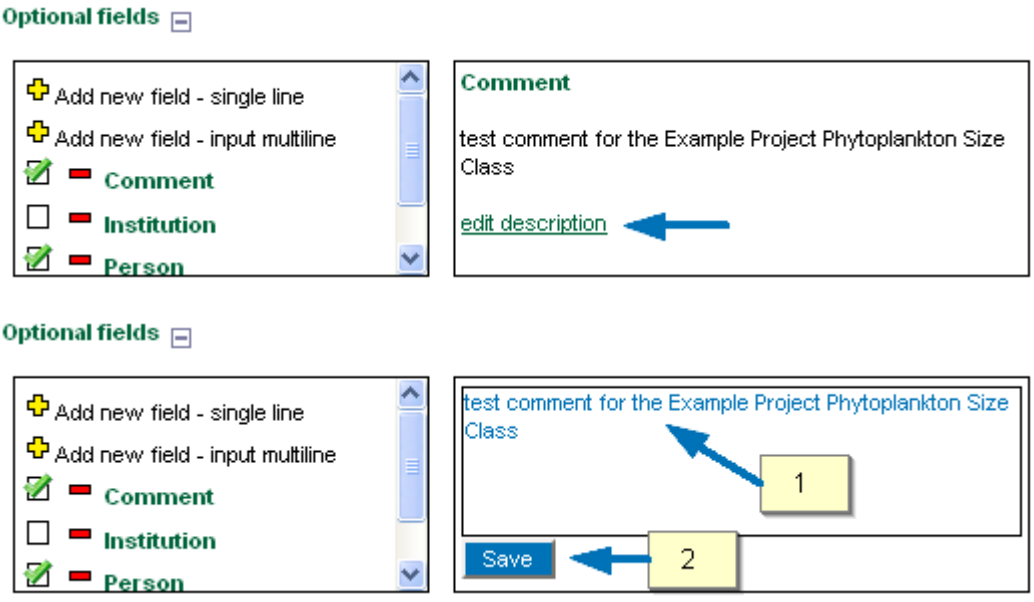
Adding Available Optional Fields to a Data Entry Form



In order to add an additional field from the list of optional fields to your current data entry form, click on the check box located to the left of the desired item, as shown above [1]. A relevant text box will be loaded beneath the list of optional fields [2], into which you can now enter the information. To remove any of the additional optional fields displayed from the textbox, click on the red *minus* sign located to the left of the relevant input field's name.

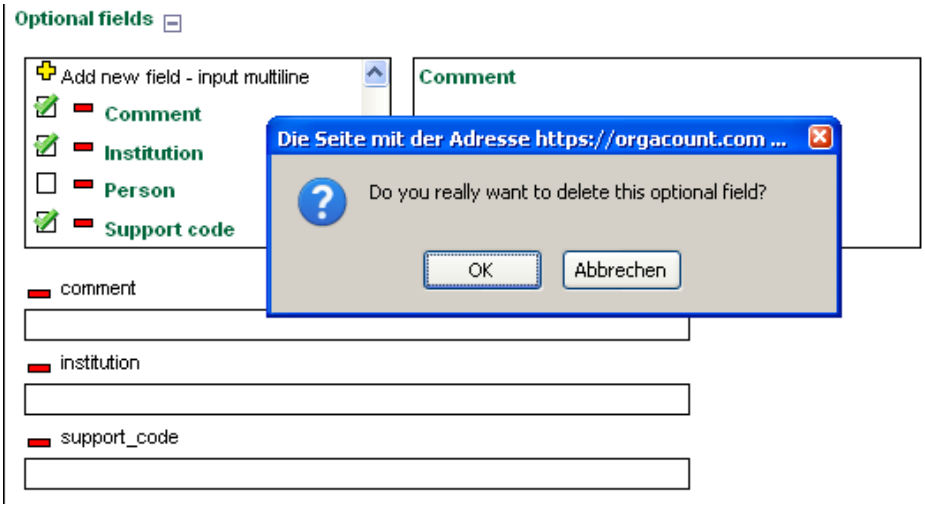
Please note that this operation only affects the current data entry form.

For each optional field you can also edit the optional field description. Just click on *edit description*, edit the text [1] and save [2].



Deleting Optional Fields from the List

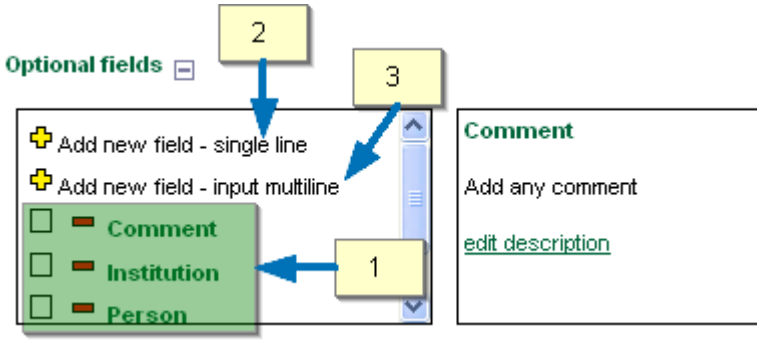
To remove an optional field from the list of available fields, click on the red *minus* sign located to the left of the item name you wish to delete. A message will appear asking you to confirm the operation. Please note that this item may be used by other users in your team! Deleting it, you may deprive others of this optional field. Therefore, only delete your own fields, or those clearly showing a mistake.



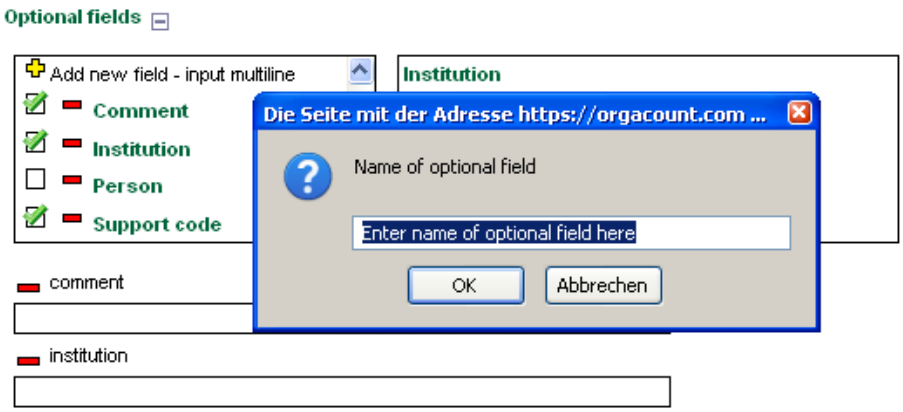
Creating a New Optional Field

You have two options for creating and adding new optional fields: either *single-lined* or *multiple-lined* fields.

As displayed below, either click on *add new field – single line* [2] or on *add new field - multiline* [3].



In both cases, a message box will appear into which you can now enter the name of the new field, as shown below.



After entering a relevant name, click on *OK* (or click on *Cancel* if you wish to end the procedure without creating a new data entry field).

The field is stored in the OrgaCount database, and it is available to all users of the installation. You can access it via the list of optional fields (see → *Adding Available Optional Fields to a Data Entry Form* in this chapter).

8. Managing Counting Lists

The *Counting* (species) *list* module serves to populate the counting layout with items (usually taxa and/or size classes). Taxa selections for the counting layout are kept in virtual containers called *Counting lists*. OrgaCount allows the management of multiple *Counting lists*, including the creation of new lists and the modification of existing lists. In OrgaCount, it is possible to switch to another *Counting list* during one and the same counting session. This extends the number of taxa (and size classes) that can be counted. *Counting lists* may also be reused from sample to sample.

One of the most versatile features of OrgaCount is its ability to include both taxa and size classes in the counting layout; thus allowing for an increased number of items. One and the same taxon item may relate to several size classes. If one of these is counted during a counting session, a size class popup appears by which you can select a size class. (Please note that this popup is only available in modes with predefined size classes). The counting process consists of two steps. At first, a relevant key is pressed to count a particular taxon. Secondly, a relevant key is pressed for the size class. Therefore, the size class popup is highly useful for counting taxa that are not found often in samples, but occur in a wide variety of size classes.

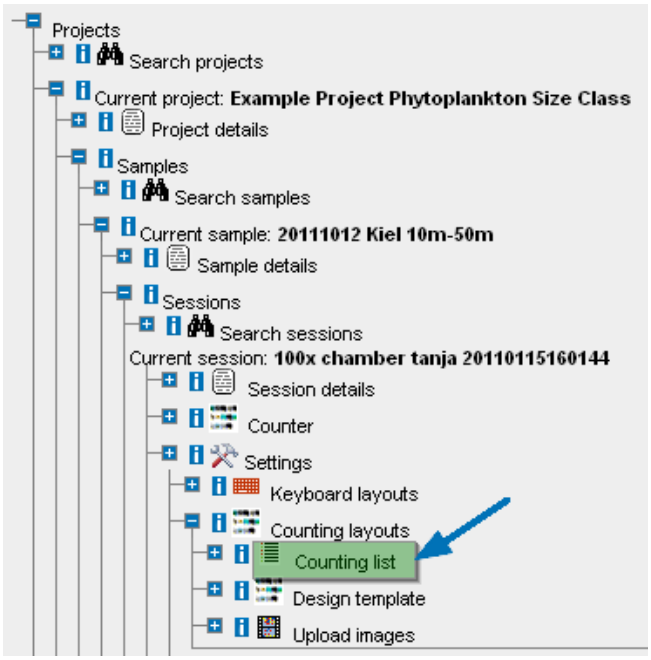
Counting Lists as Templates

Counting lists work as templates which can be used for several sessions. However please note that these templates change immediately when items are added or deleted. This is in contrast to what you are used to with other software working with templates. Therefore, if you want to create a modified counting list, save the existing counting list first by giving it another name (use the *Save counting list as* option). Then add or delete items from the new list. This way, your original list remains untouched.

A useful tip: In order to be on the save side; create a 'master template' as a backup and use this for setting up new lists, which you can then use for counting sessions.

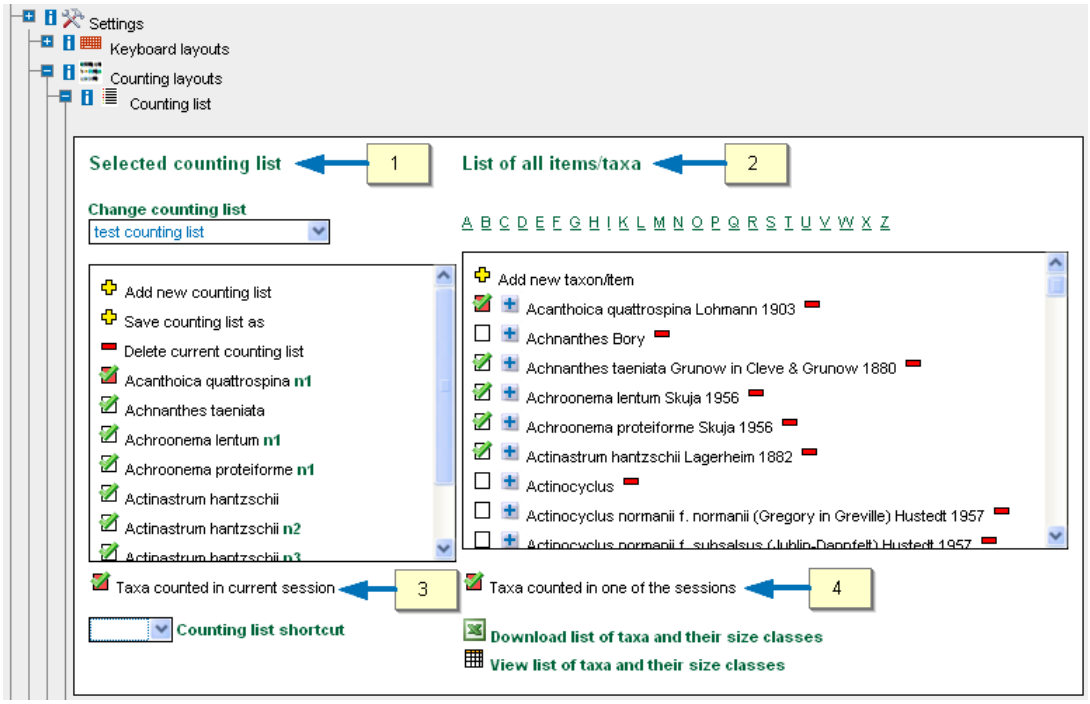
Accessing the 'Counting List' Module

The *Counting list* module may be accessed by expanding the following branches in the *Current session* branch: *Settings* → *Counting layouts* → *Counting list*. The entire path to the species list is displayed in the image below.



Elements of the Counting List Module

The *Counting list* module is organized in two major sections:

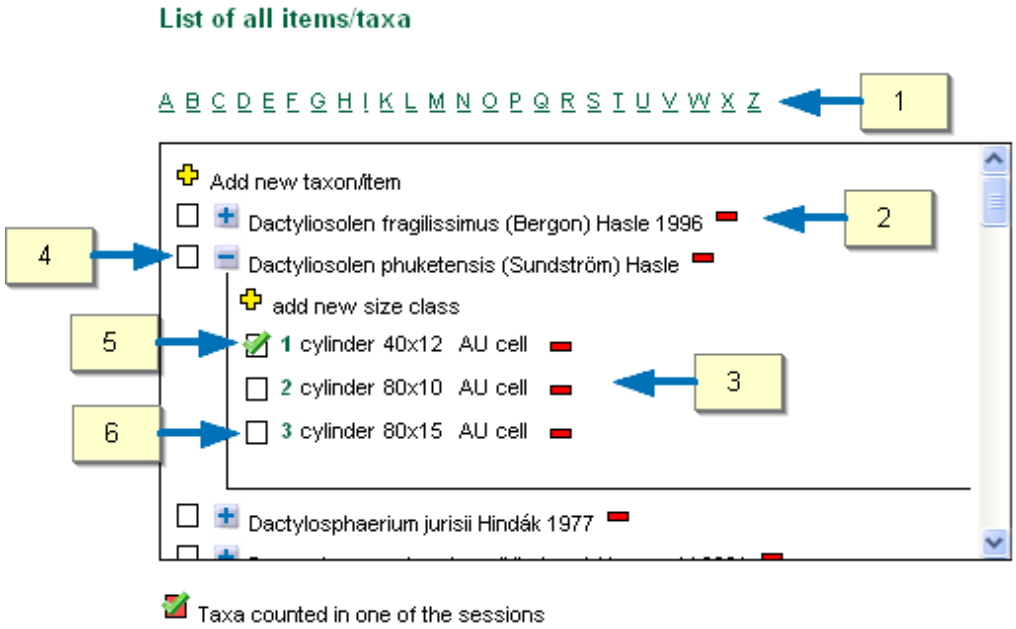


[1] A list of taxa selected for counting is located on left side of the module.

[2] A list of all species available for the current counting domain is located on right side of the module (see image above). This list includes both taxon names and their authorship, and has a search function which you can use to search for taxa by alphabetical order (see image and explanations below).

In all of the lists in this module, the checkboxes with a red background indicate those items that have been used previously in counting session – either in the current session [3], or, in other sessions, [4]. An explanation of these checkboxes for each of the lists is available at the bottom of the module.

Please note that if you remove one of the items from the counting layout, this does NOT affect previous counts of the taxon which will still be reflected as they are in your final report. To eliminate a taxon entirely, i.e. delete it from your reports as well; you should change its counts to 0; then remove the item from your counting layout.



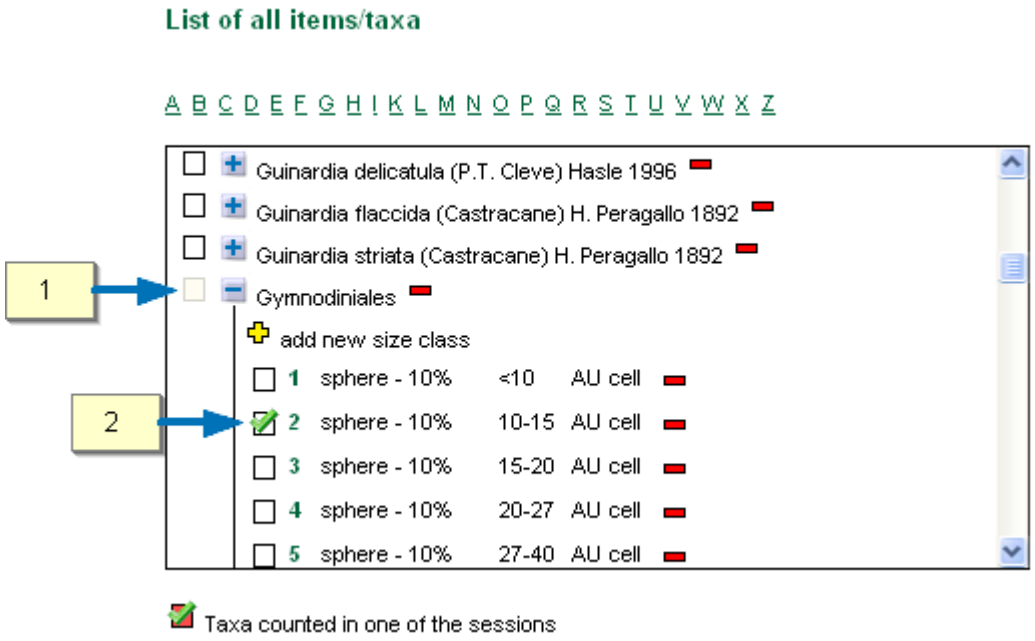
[1]+[2] The list of all available taxa displayed above (located on right side of the *Counting list* module) includes both the taxon name and its authorship. You can search this list for taxa by alphabetical order.

[3] When using predefined size classes, each taxon has a sub-list of associated size classes. Items in each of these sub-lists supply information on the size class code, range, trophy tag, unit counted etc. (see also *chapter 6: Counting* → *Counting Modes & Domains*).

[4] If you wish to include an item in the selected counting list and your counting layout, check this box.

[5] This is how a selected size class is indicated.

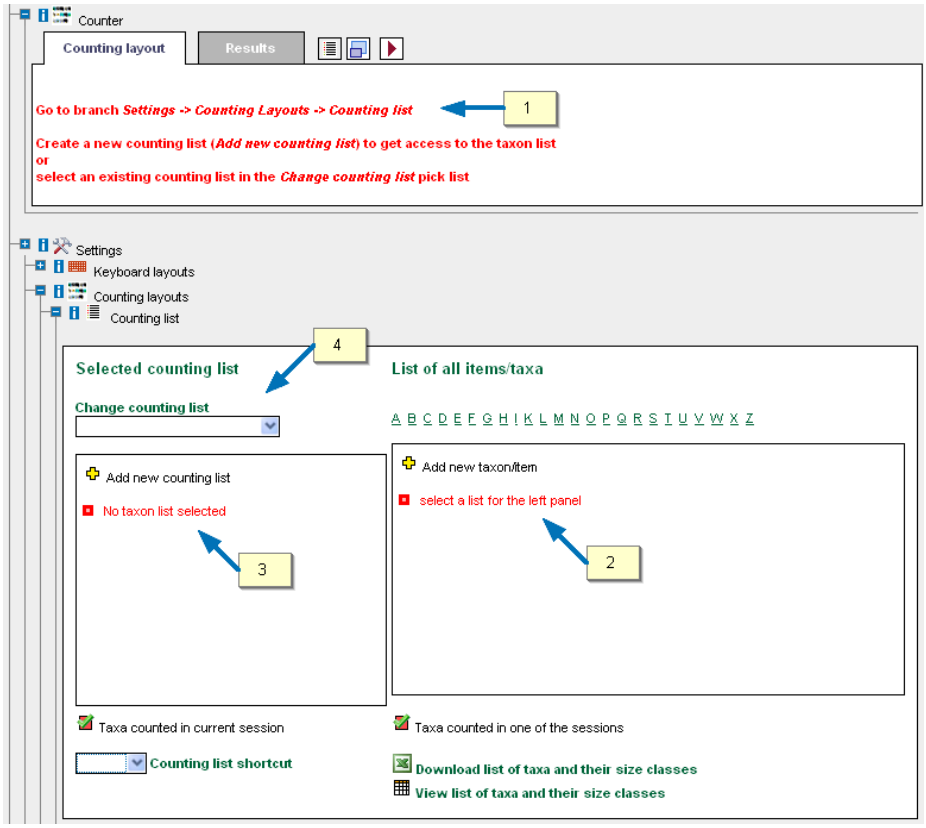
[5] + [6] represent checkboxes for the addition of a taxon size class to the selected counting list and the counting layout.



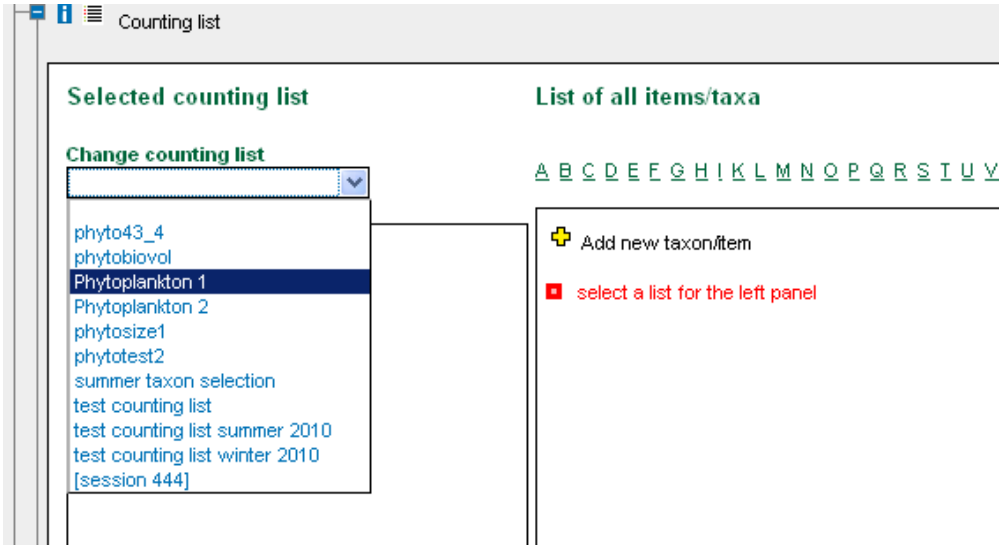
In some cases, for instance if the number of size classes recorded exceeds the number of keys on your keyboard, the checkbox for the addition of taxa to the selected counting list and counting layout is disabled, as in the image above [1]. In this case, only size classes may be added to the counting layout [2].

Selecting an Existing Counting List

When a session is initiated, no counting list is associated to it automatically. This fact is clearly indicated in the counting layout by a red warning message including some instructions, as shown in the image below [1]. The *Counting list* module also displays a warning text in both panels [2]+[3]. By creating a new counting list (click on 'add new counting list' and enter a name), or by selecting an existing one from the pick list [4], you can access the counting list.



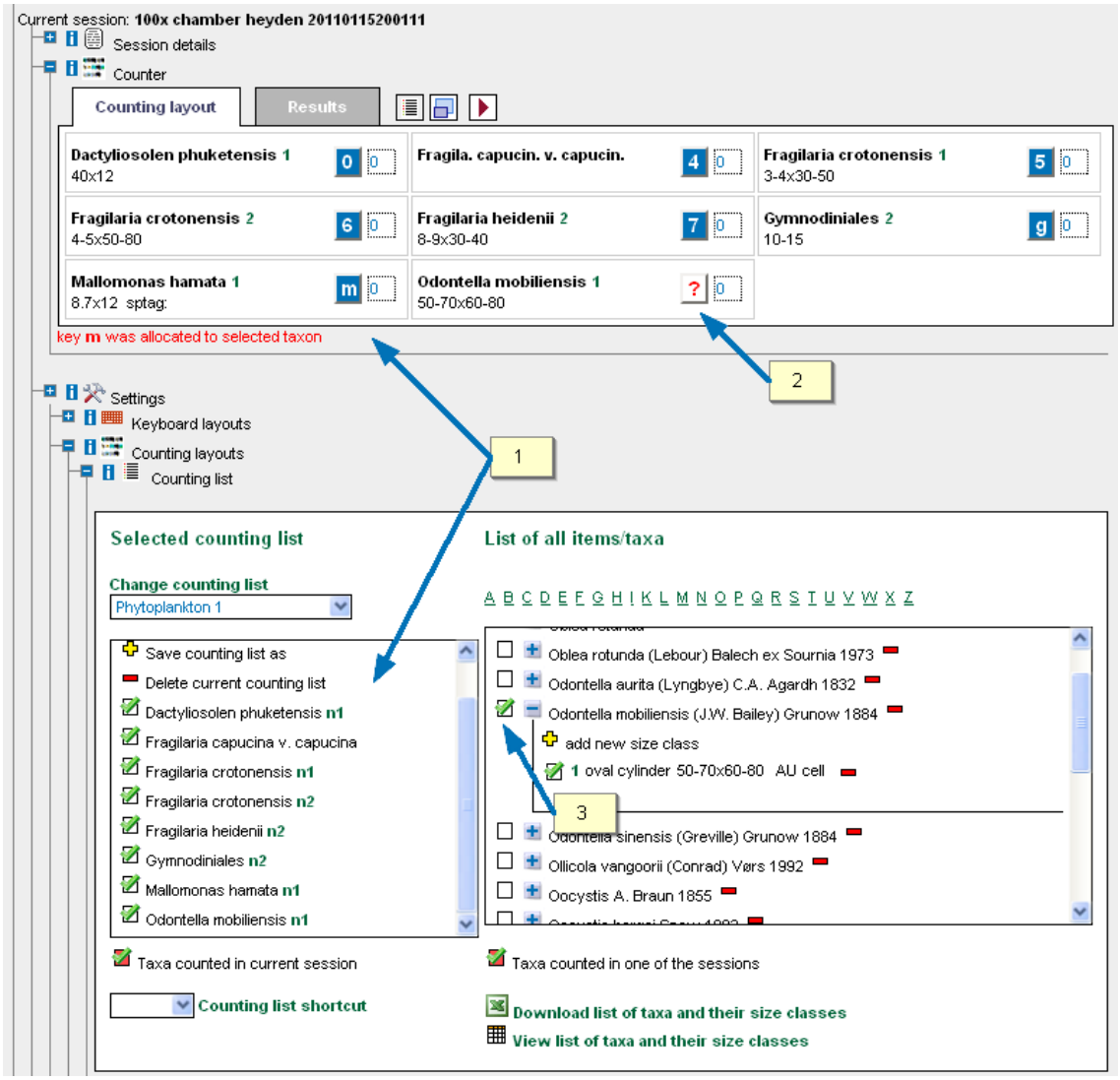
If any counting lists have previously been defined, they can now be selected from the list at the top of the left panel, as shown below.



If you have selected one of the counting lists from the pick list, OrgaCount will load the items into your counting layout as well as to the left side of the panel of the *Counting list* module (see [1] in the image below).

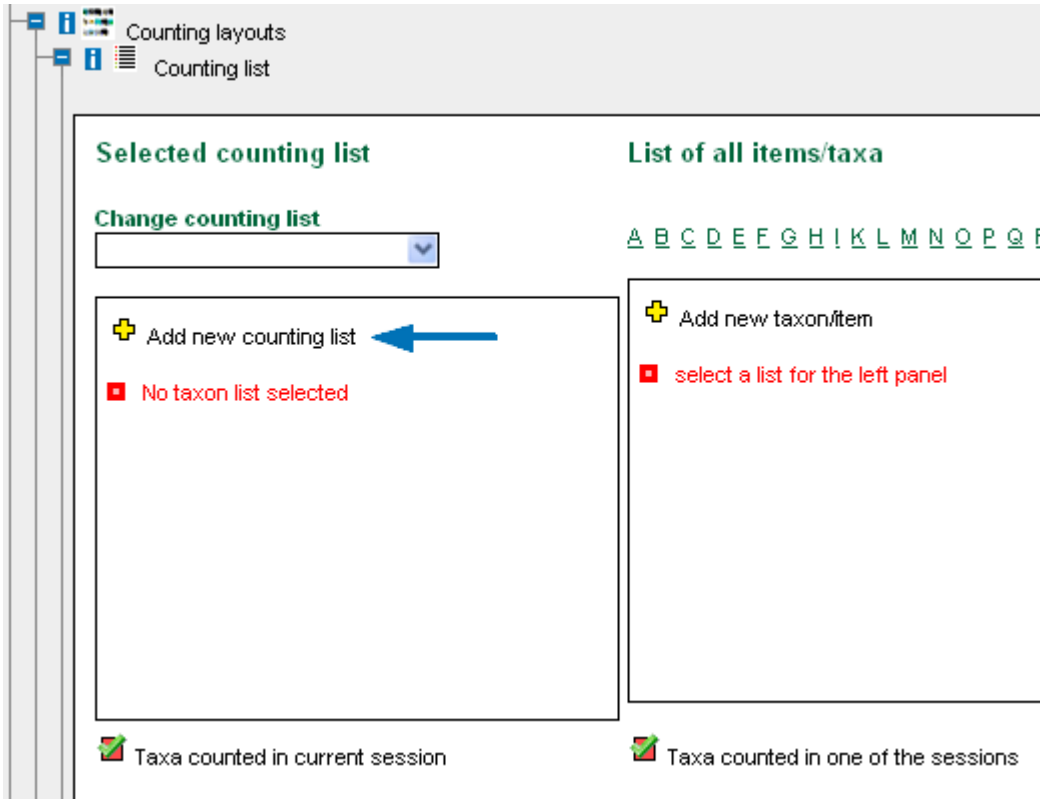
If the list is newly defined, the items in the counting layout do not yet have any associated keyboard keys, which is indicated by a red question mark beside each item (see [2] below). In this case, please set the keyboard keys in the item popup window (see *chapter 6: Counting → Popup Windows→ The Item Popup Window*). If the taxa from the list have been counted in previous sessions, the items in the counting layout are most probably already associated to keyboard keys for counting purposes.

Items used in the selected counting list are marked by a checked box beside them in both sides of the panel (see [3] below).



Creating a New Counting List

To create a new counting list, click on ✚ *Add new counting list* located on the left side of the *Counting list* panel (see the blue arrow in the image below).

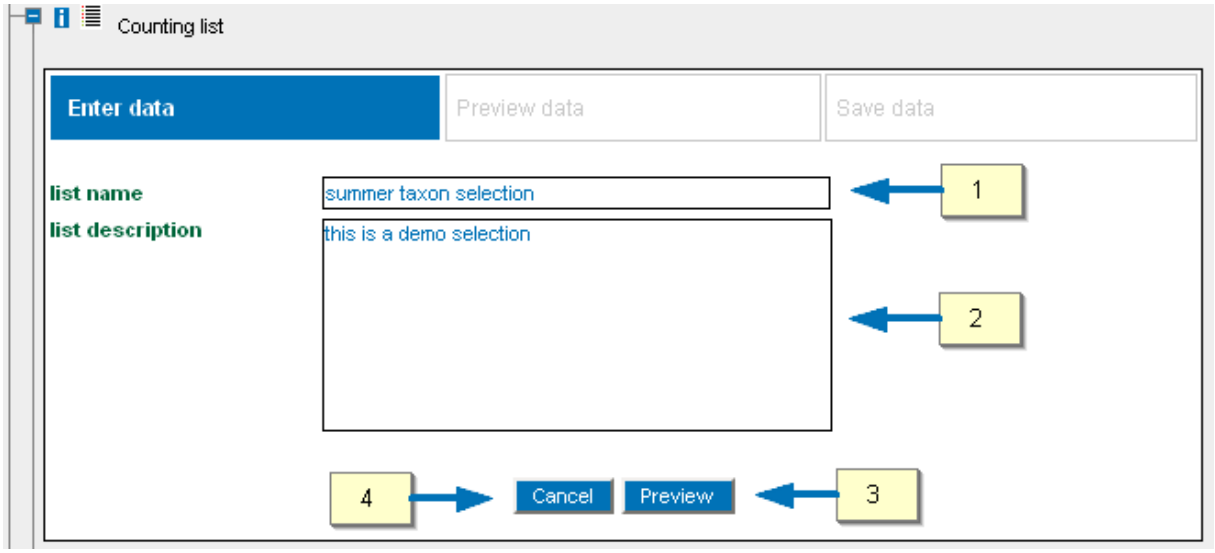


A data entry form will open (see image below) which includes two fields:

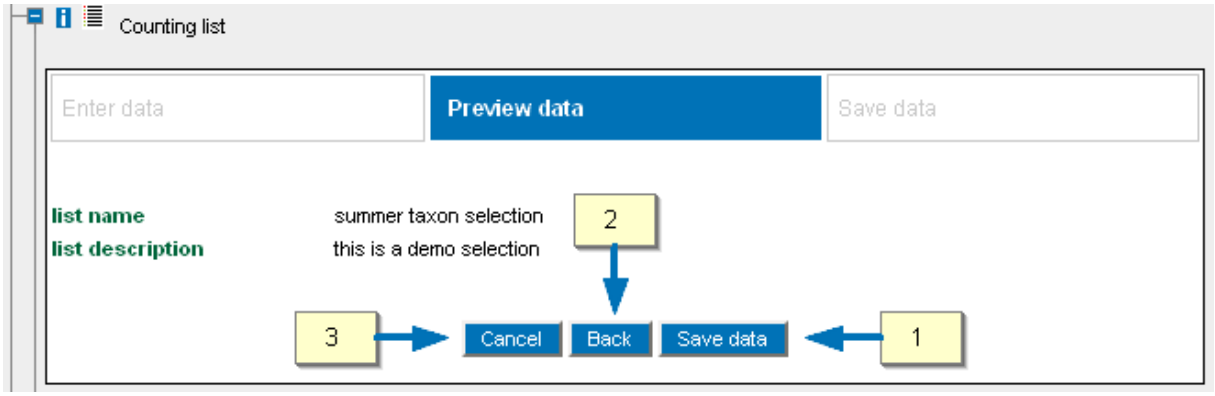
[1] *list name* (optional);

[2] *list description* (mandatory).

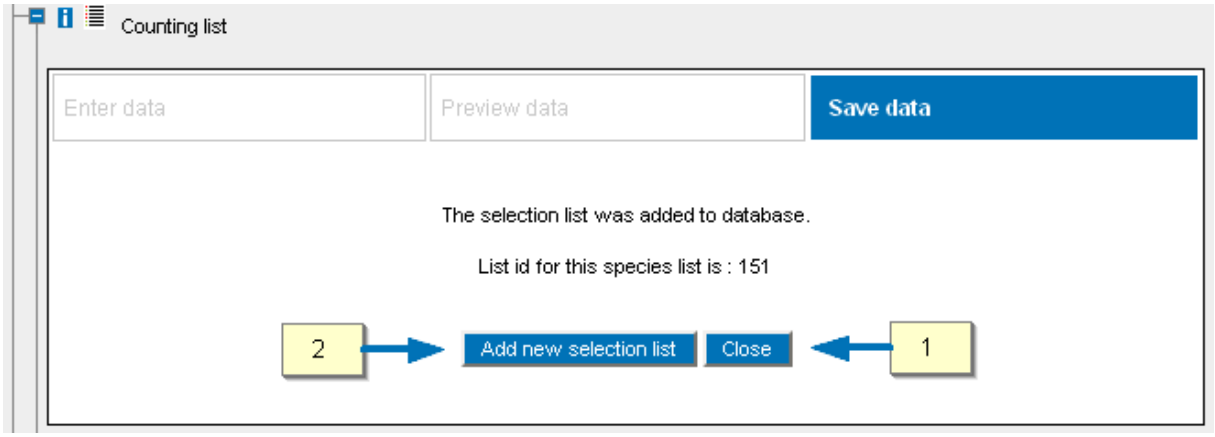
Fill in relevant information to these two fields, then click on *Preview* [3], or abandon the process by clicking on *Cancel* [4].



In the preview mode, you can inspect the information entered. Click on the *Save data* button (see [1] in the image below) to create the counting list, or click on *Back* [2] to change some of the information entered. If you wish to abandon the process without saving the list, click on *Cancel* [3].



After saving the list, close the module by clicking on the *close* button (see [1] in the image below), to reload the *Counting list* module. If you wish to create another new counting list, click on *Add new selection list* [2]. To add items to the newly created counting list, please see → *Populating a New Counting List* in this chapter.

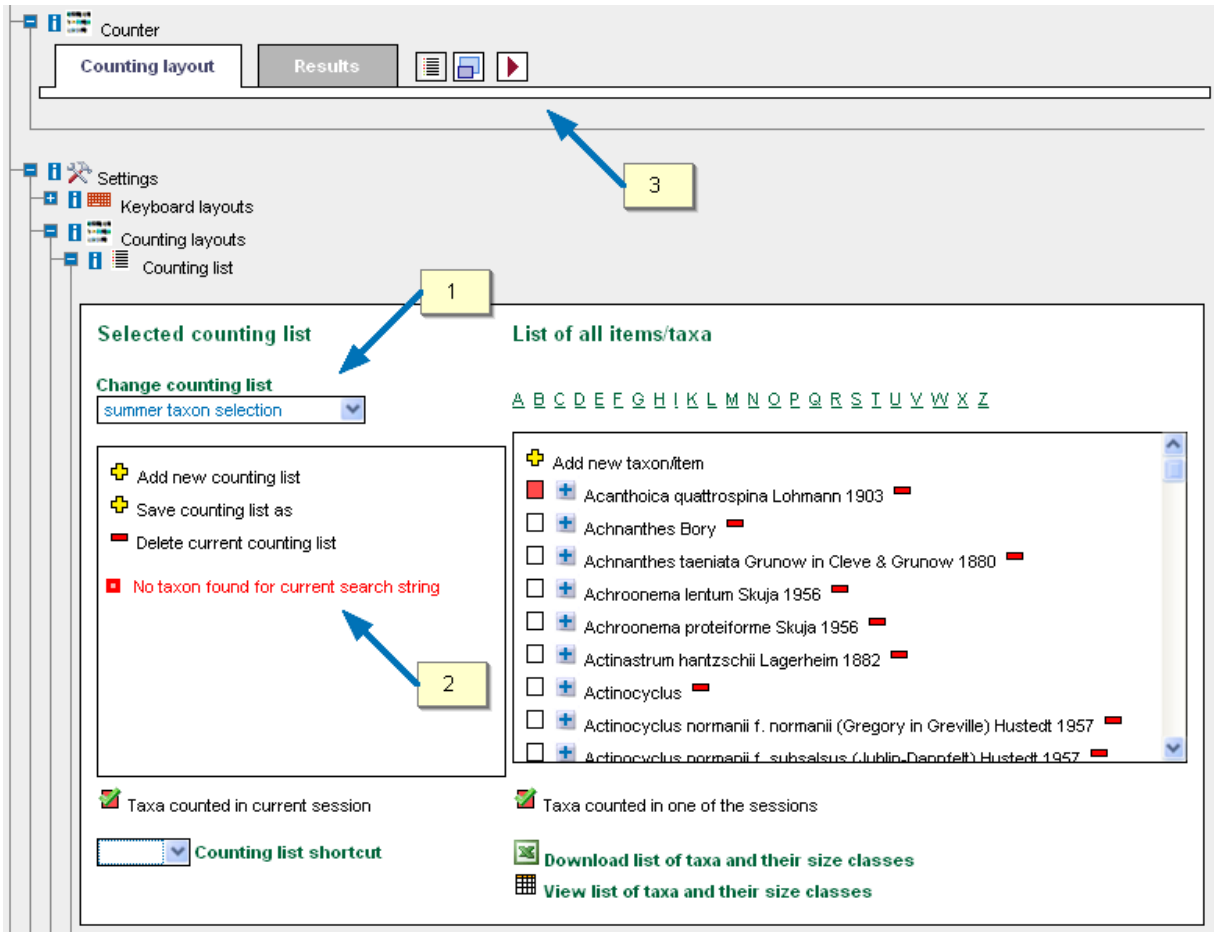


Populating, Duplicating and Modifying Counting Lists

Populating a New Counting List

After creating a new counting list (for instructions on how to do so please see → *Creating a New Counting List* in this chapter), this is still empty as you can see in the Counting layout as well [3] and needs to be populated. This status is indicated by a red text which appears in the left side of the *Counting list* module (see [2] in the image below).

Select the newly created list from the assembly of existing counting lists [1]. You can now search for taxa and/or size classes in the right side of the *Counting list* module; adding these to the new list by clicking on the *plus* sign next to the individual items.

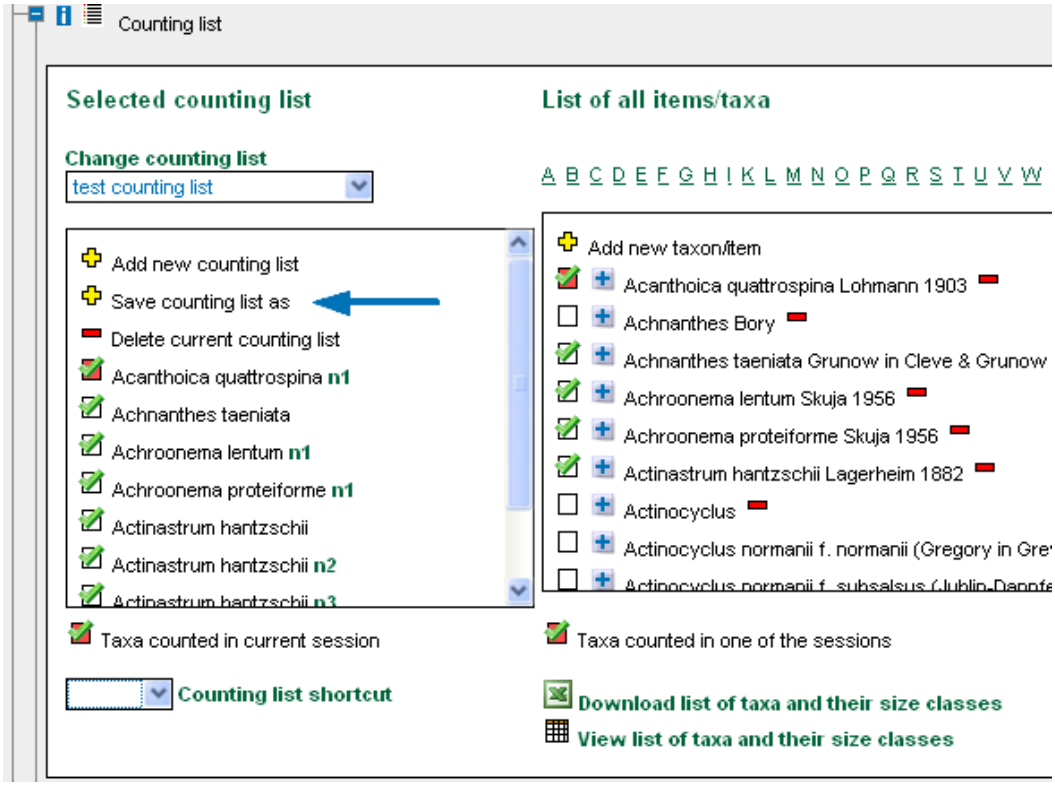


Modifying Existing Counting Lists

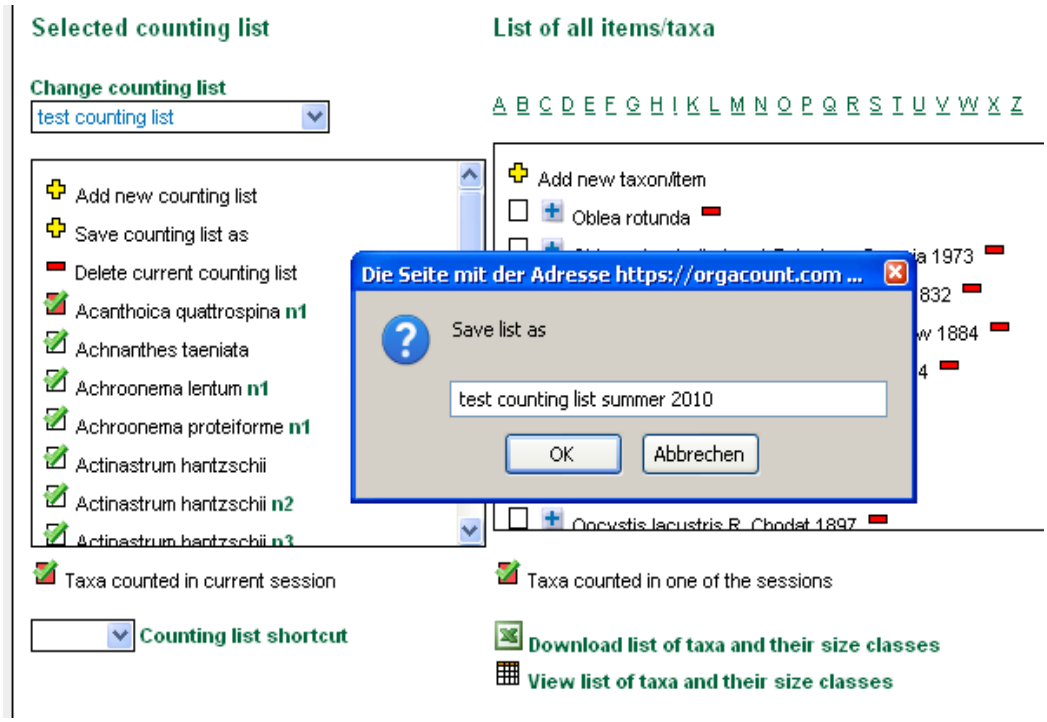
OrgaCount allows for the modification of existing counting lists. This means that any selection of taxa can be enriched by additional items, or cleared of those unused during a counting session. For instructions on how to do so, please refer to the principles described in → *Populating a New Counting List*.

Duplicating Individual Counting Lists

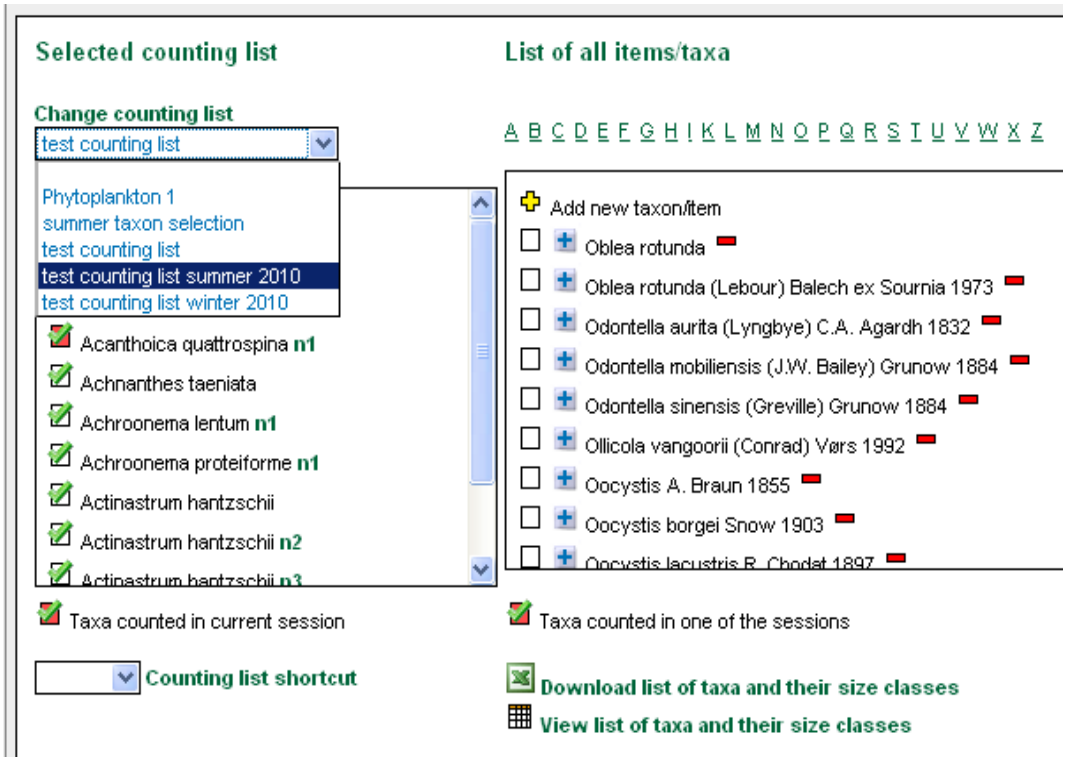
OrgaCount has a special feature for duplicating counting lists; including any selection of taxa which the list holds. If you wish to duplicate an existing list, please select it from the *Change counting list* pick list, located at the top left in the *Counting list* module (see image below). Click on the item *Save counting list as* (see blue arrow below).



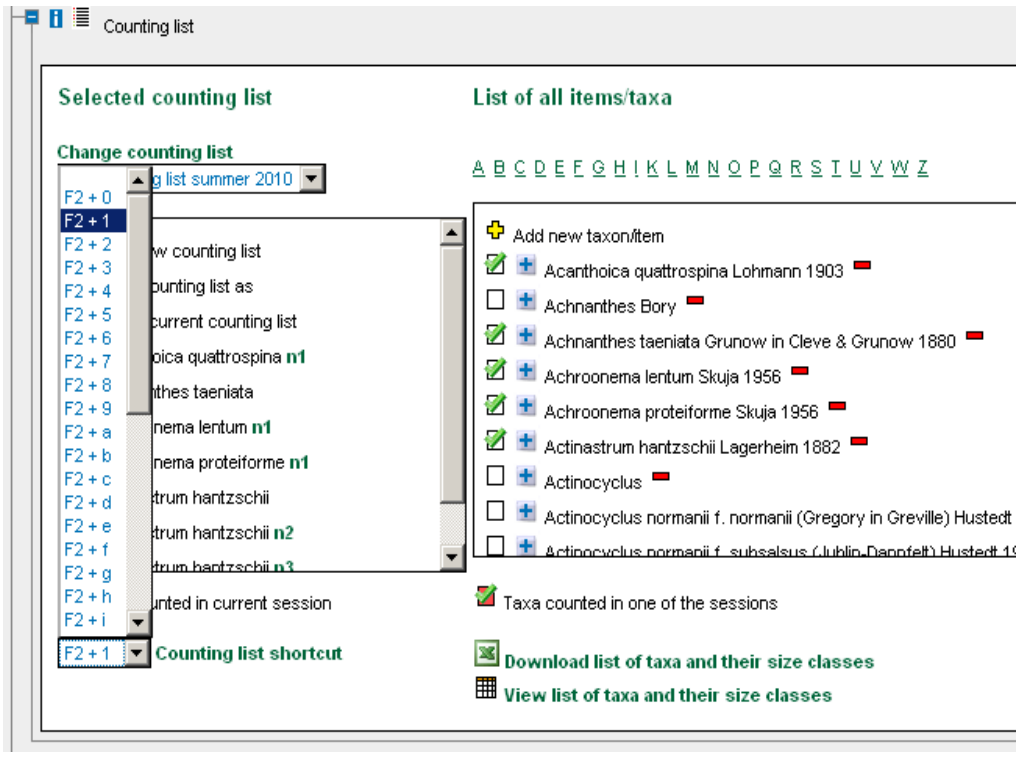
An input box opens up and asks you to enter a name for the new list (see image below). Enter a name and click on *OK* or click on *Cancel* to abandon the process of duplicating a counting list.

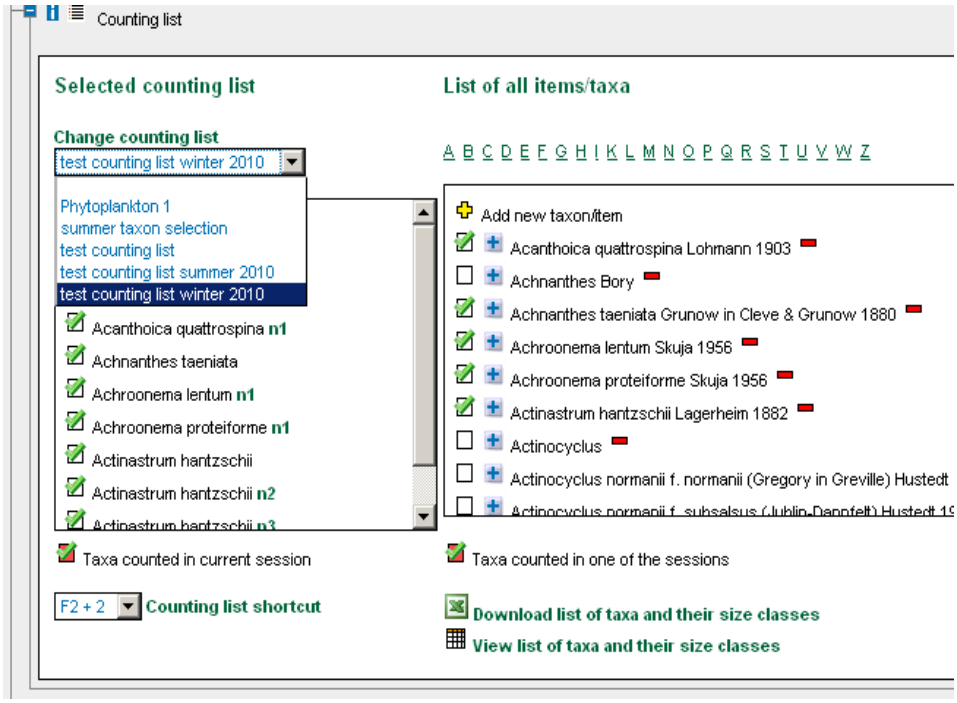


The new list can now be opened through the *Change counting list* pick list (see below).



After the counting list has been saved you can add or delete taxa as you wish. If you have more taxa to count than the keyboard has keys you can work with two counting lists at the same time. This could be useful also to distinguish different net hauls of a sample or specify seasonal variation The counting list shortcut function gives the possibility to change between lists easily (see image below). You can pick a shortcut from the list (F2+1 was selected for the summer list; and F2+2 for the winter list in this example) and use these keys to alternate between them.



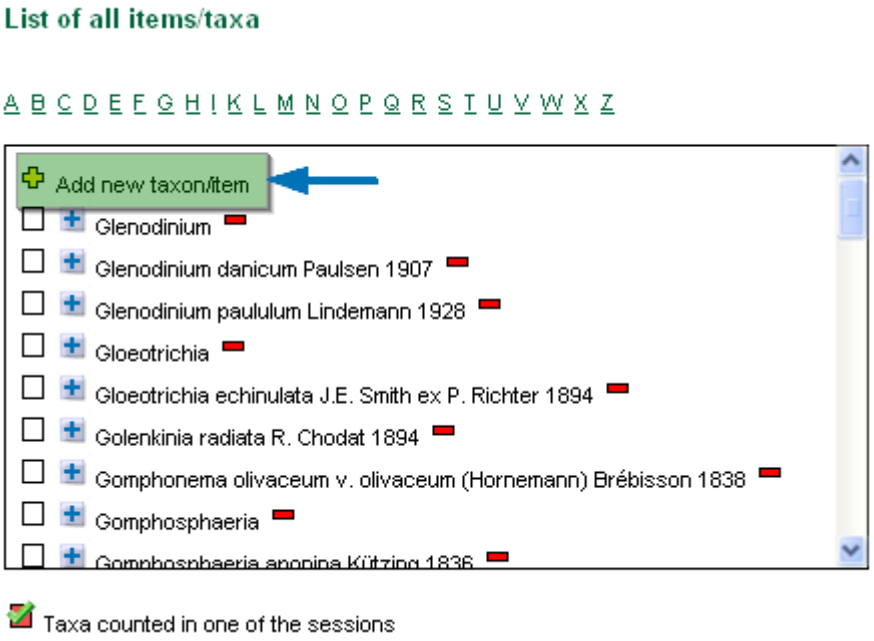

Counting list
Selected counting list
List of all items/taxa
Change counting list
test counting list winter 2010
A B C D E F G H I K L M N O P Q R S T U V W Z
Phytoplankton 1
summer taxon selection
test counting list
test counting list summer 2010
test counting list winter 2010
Add new taxon/item
Acanthoica quattrospina n1
Achnanthes taeniata
Achroonema lentum n1
Achroonema proteiforme n1
Actinastrum hantzschii
Actinastrum hantzschii n2
Acanthoica quattrospina Lohmann 1903
Achnanthes Bory
Achnanthes taeniata Grunow in Cleve & Grunow 1880
Achroonema lentum Skuja 1956
Achroonema proteiforme Skuja 1956
Actinastrum hantzschii Lagerheim 1882
Actinocyclus
Actinocyclus normanii f. normanii (Gregory in Greville) Hustedt
Taxa counted in current session
Taxa counted in one of the sessions
F2 + 2
Counting list shortcut
Download list of taxa and their size classes
View list of taxa and their size classes

Adding a New Taxon to the Database (Single Entry)

OrgaCount allows for the management of the master taxon database, for taxa may be added one by one using the controls in the *Counting list* module. You can also add groups of taxa using the → *ListImporter* plugin described in chapter 10.

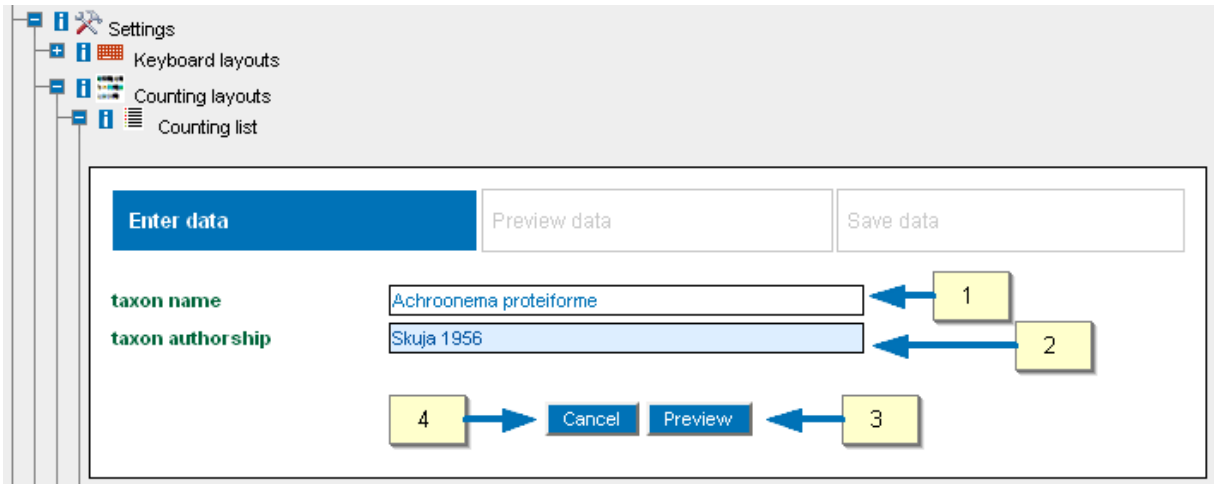
To add a new taxon to the master database, please load the *Counting list* module by expanding the following branches under *Current session*: *Settings* → *Counting layouts* → *Counting list* (see also → *Accessing the 'Counting List' Module* in this chapter).

In the *Counting List* module, click on *Add new taxon/item*, located at the top of the *List of all items/taxa* (see image below).

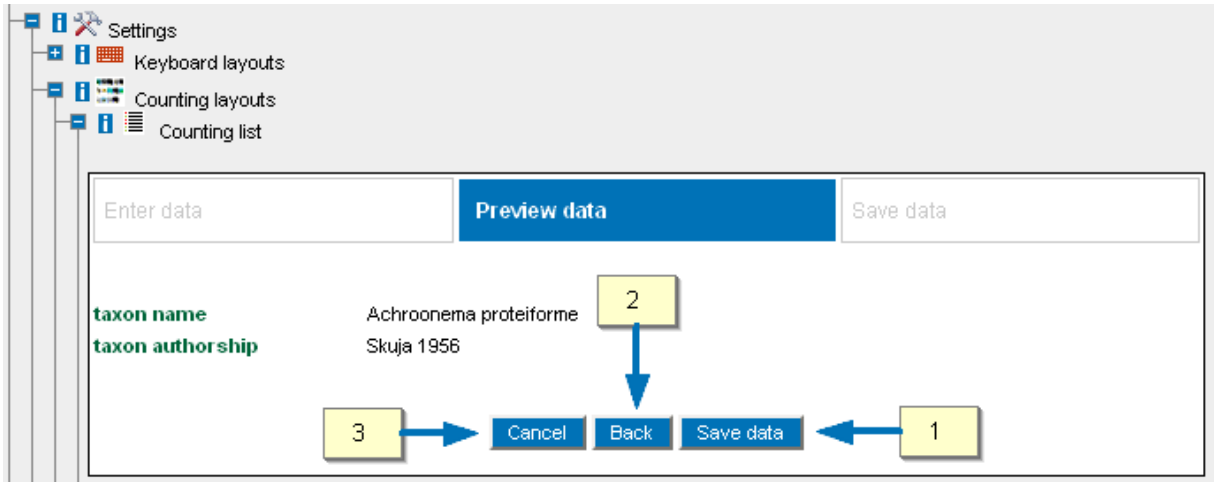


A data entry form appears, asking you to enter the taxon's name [1] and authorship [2] (see image below). The field *taxon name* is mandatory and should always be filled in; whilst the *taxon authorship* is optional and can remain empty.

Click on the *Preview* button [3] to inspect the entered data, or click on *Cancel* [4] if you wish to abandon the process.



When clicking on *Preview* in the data entry form, the preview module is loaded (see image below). Inspect the data you have entered; then click on *Save data* [1] to save the taxon to the master database. Or, click on the *Back* button [2] to change some of the information you have entered, or click on *Cancel* [3] to abandon the process of adding a new taxon without saving.



Adding a New Size Class to the Database

Occasionally, specimens of new size classes are found within samples, and there is a need to add them to an existing master size class list. OrgaCount provides a function for adding these size classes. However, please note that this operation applies to predefined size class counting like Phytoplankton Size Class, Zooplankton and Macrozoobenthos only (see *chapter 6: Counting → Counting Modes & Domains →* *Size Classes: Predefined Size Classes and Ad-hoc Counting*).

To add a new size class to an existing taxon, follow these steps:

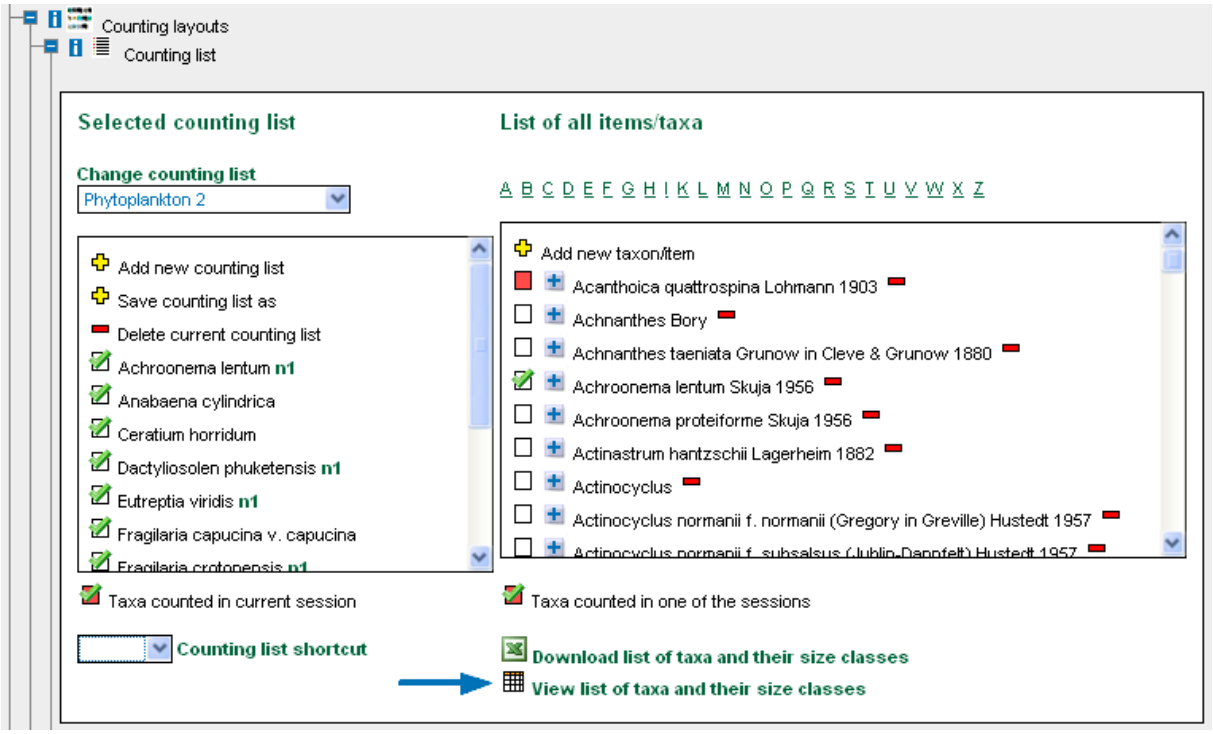
1. Load the *Counting list* module by expanding the branches *Settings* → *Counting layouts* → *Counting list*.
2. In the *Counting list* module look for the *list of all taxa/items,* located on the right side of the panel.
3. Search for the taxon to which you wish to add the new size class by using the alphabetical list located on the top of the list.
4. Expand the list of size classes for the selected taxon by clicking on the  sign located to the left of the taxon's name.
5. Click on *Add new size class,* which is the first item in list of taxon size classes. (This item – as in related modules – has a  sign to its left). The *Add new size class* module is loaded.
6. Enter relevant information relating to the size class.
7. Click on the *Preview* button to proceed by inspecting the entered information, or click on *cancel* to abandon the process without saving the data.
8. When clicking on *Preview*, a module for reviewing the data is loaded. Click on *Save* to save the new size class in the database, or click on *Back* to change the data, or click on *Cancel* to abandon the process without saving the new size class.

The new size class which you have just added can now be accessed in the list of size classes for the relevant taxon. (For instructions on how to count using different size classes please see *chapter 6: Counting → Counting Modes & Domains →* *Counting in a Domain with Predefined Size Classes*).

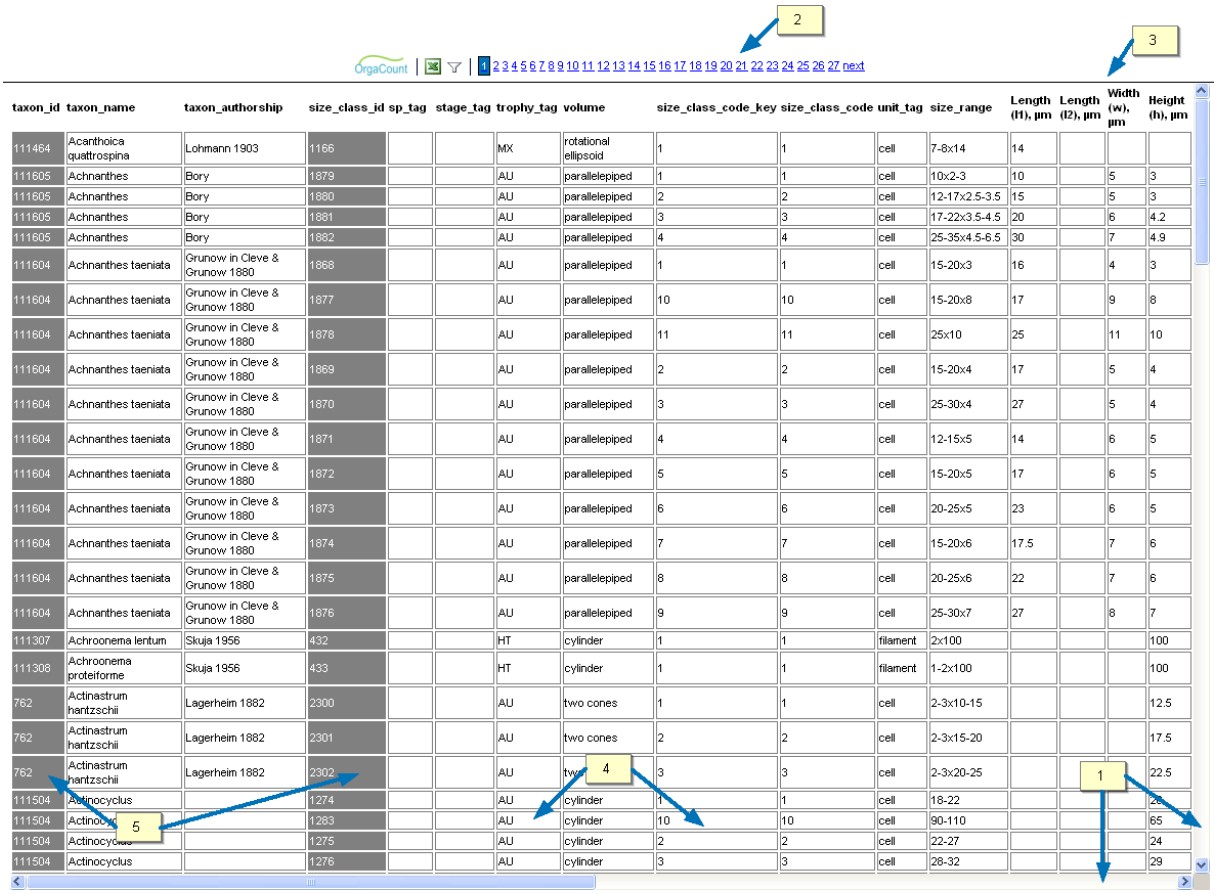
Managing the Master Size Class Table

A master table of taxa and their size classes may be opened through the link  *View list of taxa and their size classes* which is located in the *Counting list* module. The *Counting list* module can be accessed by expanding the following branches under *Current session* branch: *Settings* → *Counting layouts* → *Counting list*.

In the image below, the counting list module is displayed. The blue arrow indicates the link to the master list table.



In order to maximise the display, the master size class table (see image below) will be loaded in a separate browser window.



taxon_id	taxon_name	taxon_authorship	size_class_id	sp_tag	stage_tag	trophy_tag	volume	size_class_code_key	size_class_code	unit_tag	size_range	Length (l1), µm	Length (l2), µm	Width (w), µm	Height (h), µm
111464	Acanthoica quattrospina	Lohmann 1903	1166			MX	rotational ellipsoid	1	1	cell	7-8x14	14			
111605	Achnanthes	Bory	1879			AU	parallelepiped	1	1	cell	10x2-3	10		5	3
111605	Achnanthes	Bory	1880			AU	parallelepiped	2	2	cell	12-17x2.5-3.5	15		5	3
111605	Achnanthes	Bory	1881			AU	parallelepiped	3	3	cell	17-22x3.5-4.5	20		6	4.2
111605	Achnanthes	Bory	1882			AU	parallelepiped	4	4	cell	25-35x4.5-6.5	30		7	4.9
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1868			AU	parallelepiped	1	1	cell	15-20x3	16		4	3
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1877			AU	parallelepiped	10	10	cell	15-20x8	17		9	8
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1878			AU	parallelepiped	11	11	cell	25x10	25		11	10
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1869			AU	parallelepiped	2	2	cell	15-20x4	17		5	4
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1870			AU	parallelepiped	3	3	cell	25-30x4	27		5	4
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1871			AU	parallelepiped	4	4	cell	12-15x5	14		6	5
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1872			AU	parallelepiped	5	5	cell	15-20x5	17		6	5
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1873			AU	parallelepiped	6	6	cell	20-25x5	23		6	5
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1874			AU	parallelepiped	7	7	cell	15-20x6	17.5		7	6
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1875			AU	parallelepiped	8	8	cell	20-25x6	22		7	6
111604	Achnanthes taeniata	Grunow in Cleve & Grunow 1880	1876			AU	parallelepiped	9	9	cell	25-30x7	27		8	7
111307	Achroonema lentum	Skuja 1956	432			HT	cylinder	1	1	filament	2x100				100
111308	Achroonema proteiforme	Skuja 1956	433			HT	cylinder	1	1	filament	1-2x100				100
762	Actinastrum hantzschii	Lagerheim 1882	2300			AU	two cones	1	1	cell	2-3x10-15				12.5
762	Actinastrum hantzschii	Lagerheim 1882	2301			AU	two cones	2	2	cell	2-3x15-20				17.5
762	Actinastrum hantzschii	Lagerheim 1882	2302			AU	two	3	3	cell	2-3x20-25				22.5
111504	Actinocyclus		1274			AU	cylinder	1	1	cell	18-22				
111504	Actinocyclus		1283			AU	cylinder	10	10	cell	90-110				65
111504	Actinocyclus		1275			AU	cylinder	2	2	cell	22-27				24
111504	Actinocyclus		1276			AU	cylinder	3	3	cell	28-32				29

When working with the master size class table (represented in the image above), the following may be useful to know:

[1] use the scroll bars to explore further columns and rows that are not displayed due to the size of the window.

[2] Size classes are paginated in groups of hundreds per page. To inspect all pages, use the page number links at the top of the table.

[3] The first row of the table contains the names of columns.

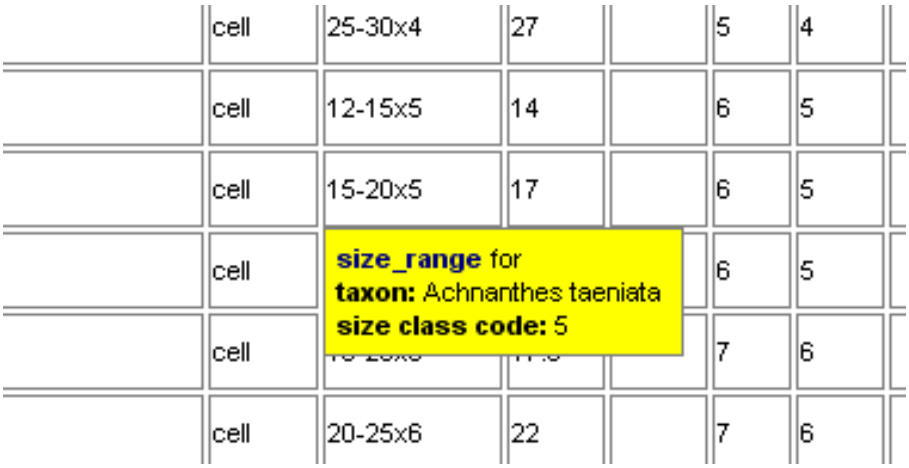
[4] All records with a white background are editable, but

[5] columns with a gray background cannot be edited.

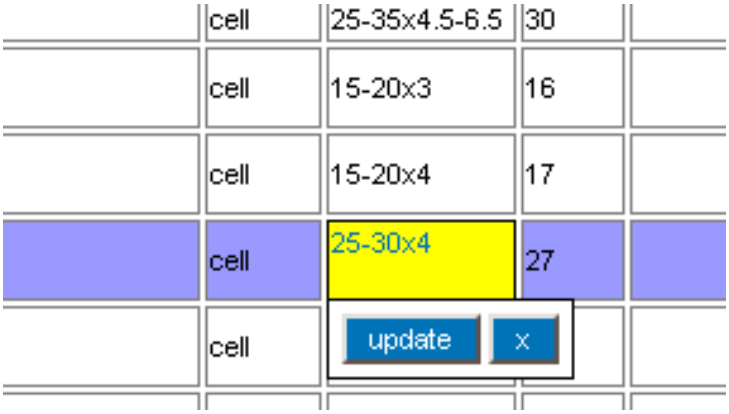
In order to reducing the number of records per page or per a number of pages in table, you can use several query criteria combinations in the filter form (see → *Filtering Records in the Master Table of Taxa* in this chapter).

Editing Individual Cells in the Master Table of Taxa

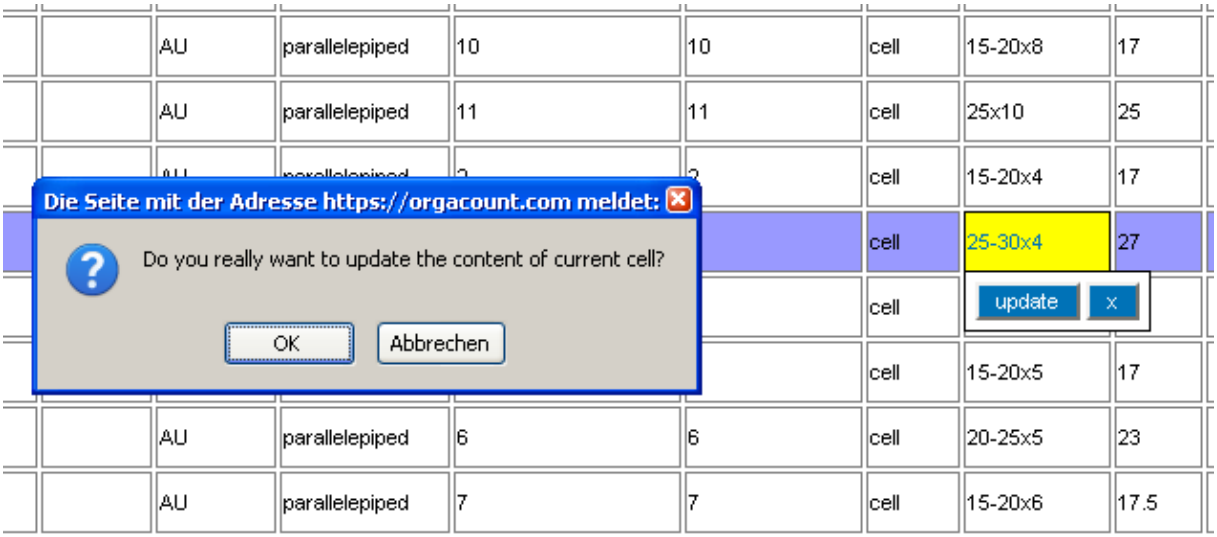
If you remain on a cell with the mouse for more than 5 seconds, a tooltip with some information on the taxon name & size class, as well as the column name appears; as shown below. This is to help localising values in table cells, and works to avoid excessive scrolling.



To edit a cell, click on it. An editing form will open near the cell. Change the value in the form and click on the *update* button, as in the image below.



A warning message will appear that prevents any unwanted edits (see below). Click on OK to change the content of the cell; then click on the *x* button to close the edit form.

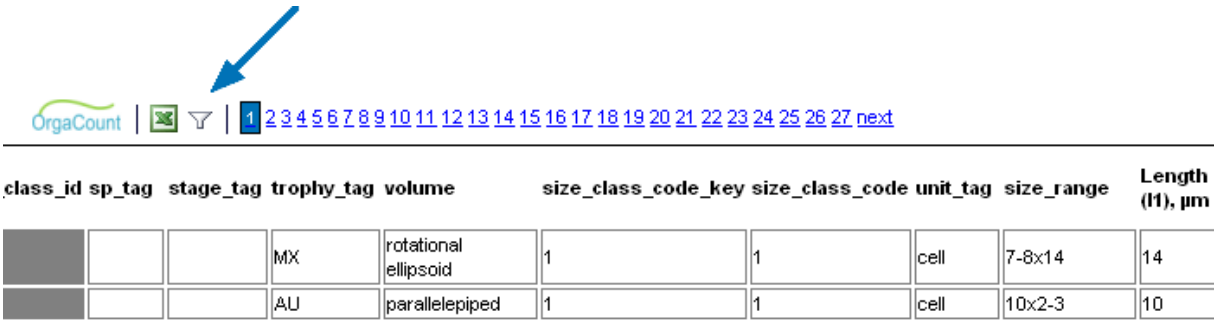


Please note that although all white cells in the table can be edited, be careful about what you change. Please do not change the values in the *size class code key* column. If you do wish to add your own size class identifiers, please edit the cells in the column *size class code*.

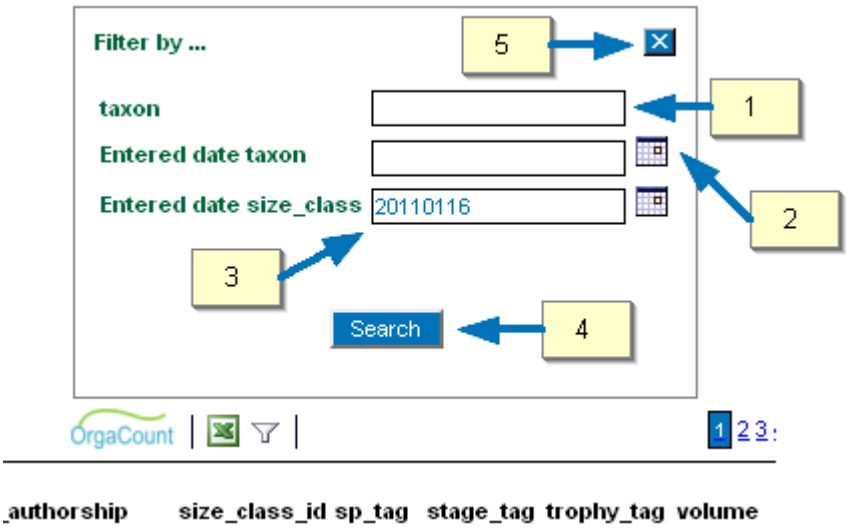
In case you wish to edit a taxon name, please note that the changes apply to all size classes of this taxon. Changes made to one specific size class column apply to the relevant size class only.

Filtering Records in the Master Table of Taxa

OrgaCount offers several ways for filtering records in the master table of taxa and size classes. To access these functions, please click on the *filter* button at top of the table (indicated by a blue arrow in the image below).



A filter form will appear, as shown in the image below.



The form above can be used to localise records. The more selection criteria you indicate, the less page numbers will be displayed.

There are several ways of filtering records:

[1] You can either filter by taxon name;

[2] or by the date on which the taxon was added to the database (please note that only those records entered after the specified date will be displayed in the table);

[3] or by the date on which the size class was added to the database (please note only those records entered after the specified date will be displayed in the table).

After entering the relevant selection criteria, click on *Search* [4]. To close the filter form, click on the *X* button [5].

Please note that all dates should be entered by numbers only. The format is year (four digits) month (two digits), and day (two digits). For instance, 24 Feb 2011 is 20110224.

9. Reports

Any counting data produced with OrgaCount is assembled in reports. These reports may be obtained at a session and sample level, and can be viewed any time during or after counting. You can obtain the reports by clicking on the *Results* tab in the *sample details* branch, or in the *Counter* branch. Additionally, easing the export of sample reports for entire projects, reports can also be obtained under the *Project details* branch (tab *Results*).

Because the data used for a report is calculated dynamically, modifications are possible over time (for instance, changes in coefficient, biovolume and carbon values, taxon names, etc.). The output file format of reports may be Excel (*.xls), plain text with data separated through tabs (*.csv), or html (which may be printed directly from interface).

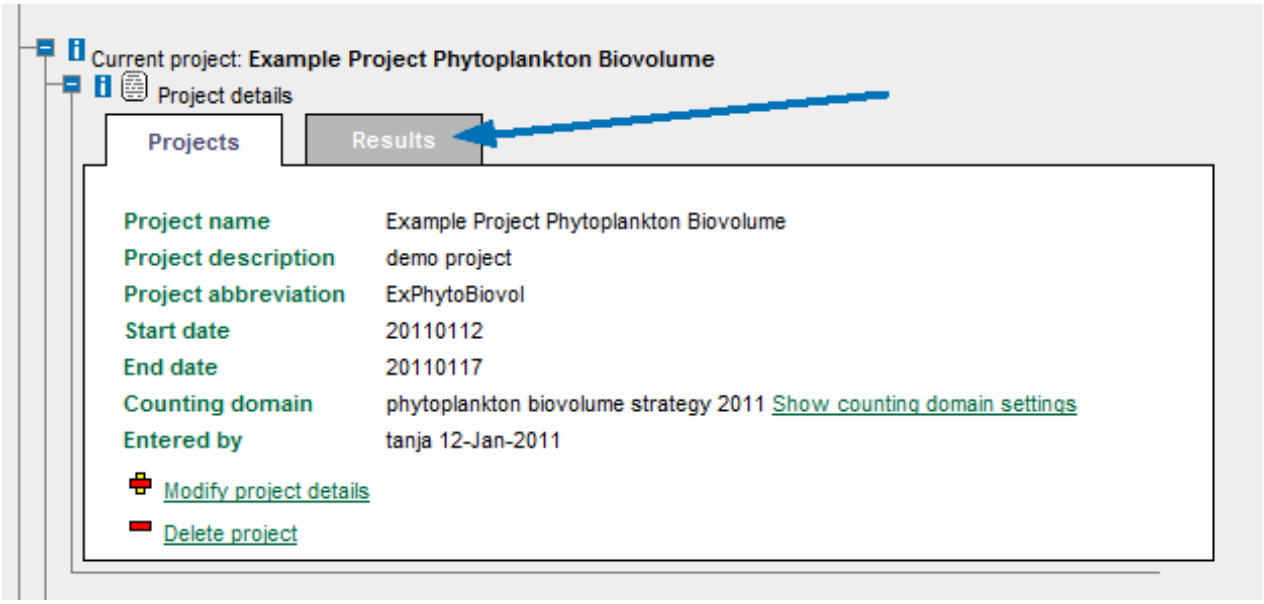
The default phytoplankton report formats included in OrgaCount have a header region containing various information on the project, sample, and counting sessions. The body of data includes columns relating to the taxon name, size range, counting coefficient factors, units counted, biovolume and carbon statistics as well as summaries of higher taxa or trophy tags. Each counting domain may have its own report format. These can be prepared to fit the needs of individual projects or labs.

OrgaCount provides a default report format for each counting domain. However, → *The Plugin 'ReportSHP'* (*chapter 10)* may be included in the system. It allows you to control the formatting and types of data included in a custom report, by giving you a maximum of control over the output styles.

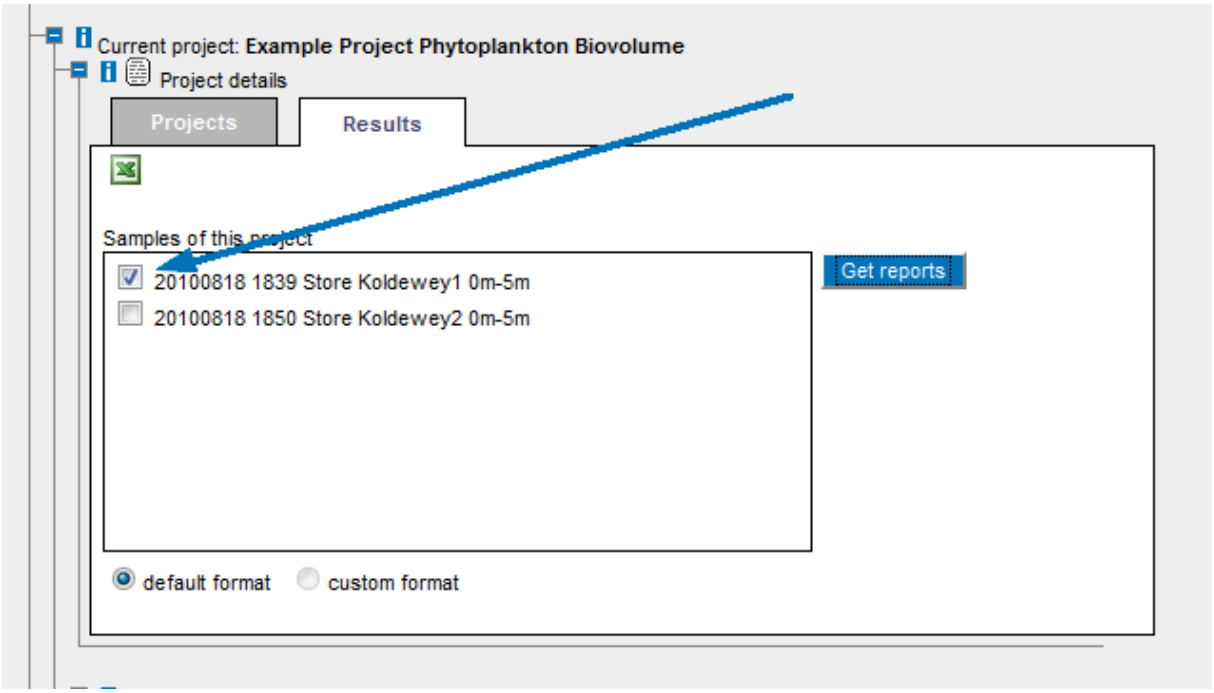
Generating Reports

To generate reports in OrgaCount, please follow these steps:

Expand the *Project details* branch and click on the *Results* tab (as indicated by the blue arrow in the image below).

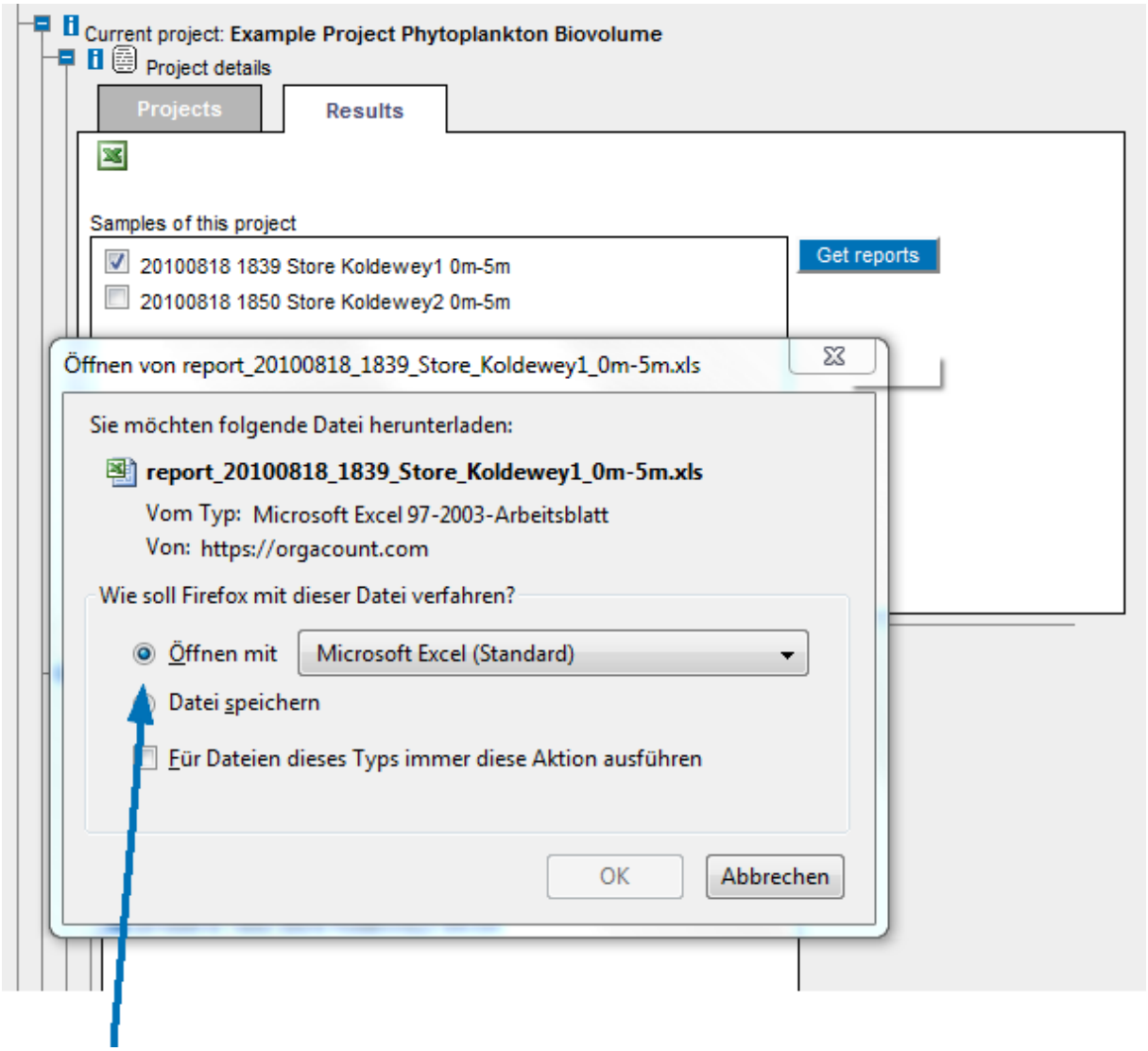


Check the sample(s) you would like to have in your report.



Choose an output format; if you haven't licensed the respective ReportSHP Plugin, only the 'default format' option will be available. Otherwise, you will be able to customise your report individually (see *The ReportSHP Plugin* described in *chapter 10*).

To receive the actual report, just click on the 'Get reports' button. In the macrozoobenthos mode, you can also use the Excel button, in order to save more than one samples being exported to a **single** Excel file.

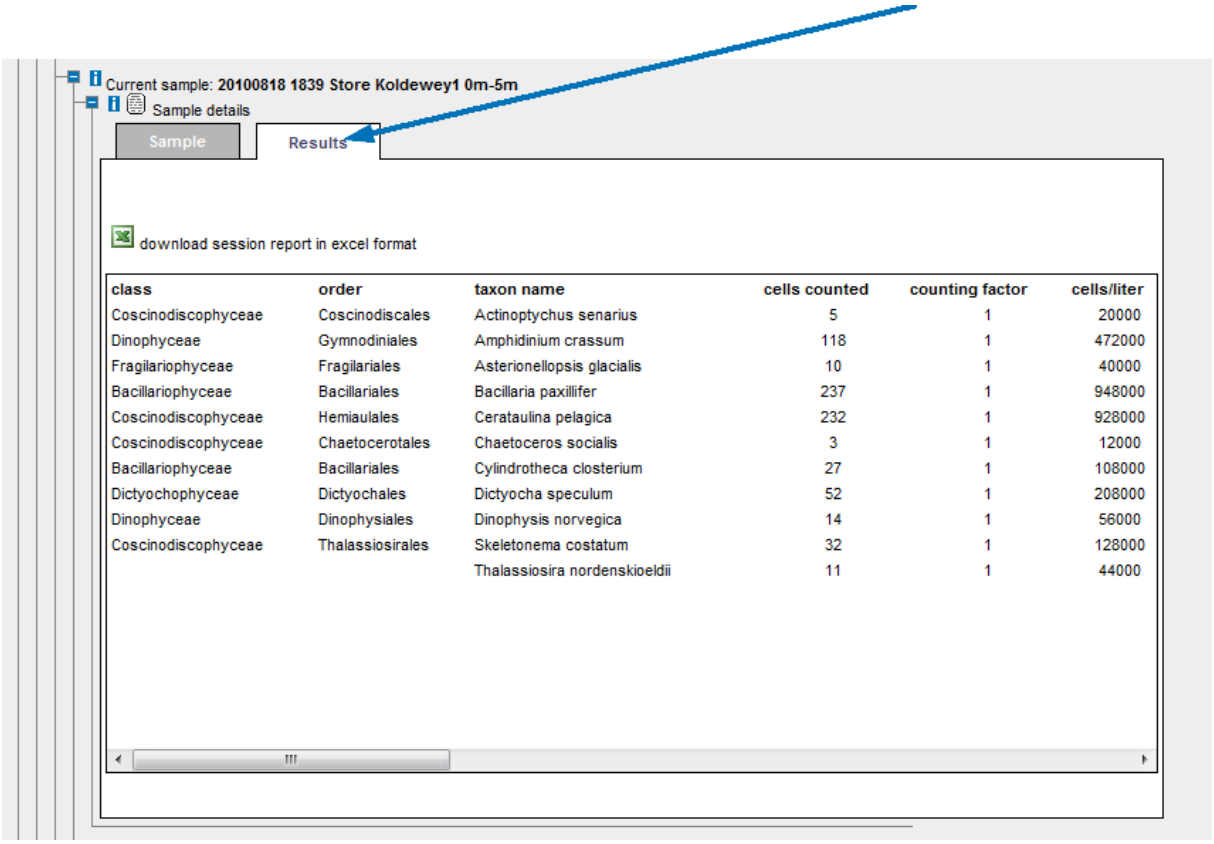


After confirming a short security message, you can choose either to directly open the report with Microsoft Excel or to save the report as an Excel file to your computer.

Sample Reports

Sample reports display data for an entire sample combining counting data from one or more counting sessions.

On-screen sample reports may be easily obtained by clicking the *Results* tab in *Sample* branch (see arrow on image below). If you click on the Excel symbol, you will additionally obtain an Excel table as a download file. For returning to sample details, just click on the *Sample* tab.

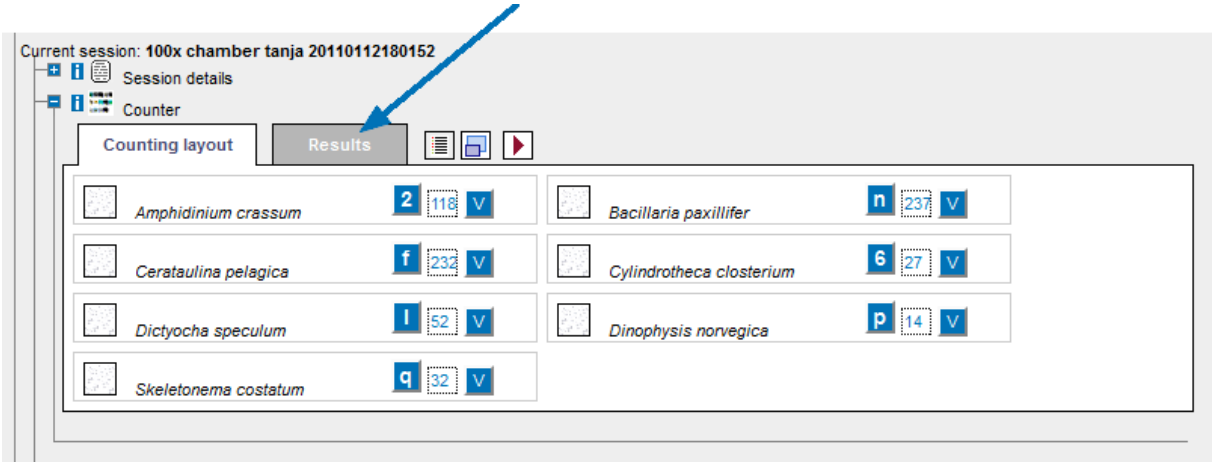


class	order	taxon name	cells counted	counting factor	cells/liter
Coscinodiscophyceae	Coscinodiscales	Actinoptychus senarius	5	1	20000
Dinophyceae	Gymnodiniales	Amphidinium crassum	118	1	472000
Fragilariophyceae	Fragilariales	Asterionellopsis glacialis	10	1	40000
Bacillariophyceae	Bacillariales	Bacillaria paxillifer	237	1	948000
Coscinodiscophyceae	Hemiaulales	Cerataulina pelagica	232	1	928000
Coscinodiscophyceae	Chaetocerotales	Chaetoceros socialis	3	1	12000
Bacillariophyceae	Bacillariales	Cylindrotheca closterium	27	1	108000
Dictyochophyceae	Dictyochales	Dictyocha speculum	52	1	208000
Dinophyceae	Dinophysiales	Dinophysis norvegica	14	1	56000
Coscinodiscophyceae	Thalassiosirales	Skeletonema costatum	32	1	128000
		Thalassiosira nordenskioeldii	11	1	44000

Session Reports

Session reports display counting data that refers to a selected session only. In case a sample was counted using several sessions, compiling session reports may be useful to localising counts of specific items under various microscope magnifications. If the entire counting was done in a single session, the session report is identical to the → *Sample Reports*.

As for Sample reports, Session reports can easily be obtained by clicking on the *Results* tab in the *Counter* branch (see blue arrow in the image below). If you wish to return to the Counting Layout, please click on the *Counting layout* tab.



10. Optional Plugins

OrgaCount offers a number of optional tools, which are shortly described in this chapter. When suitably licensed, the plugins can be accessed by selecting the menu item *plugins* under the *Control panel* header. A panel 'List of plugins' opens up which lists all additional tools available. In this list, simply pick the tool you wish to work with.

The optional tools currently available in OrgaCount are:

1. *The Plugin 'ReportSHP'* for building templates to shape the appearance of reports.
2. *The Plugin 'Classifications'* which can be used for exploring and managing information on the classification of organisms.
3. *The Plugin 'ClassificationImporter'* which enables the user to import his own classification tables in a defined format.
4. *The Plugin 'ProjectExplorer'* for exploring sample data as structured in a tree with branches for project, year, and station.
5. *The Plugin 'ListImporter'*, which can be used for importing lists of items with or without size classes to the OrgaCount master taxon and size class database.
6. *The Plugin 'SetCountingDomain'* for setting up new counting domains that can be based on various counting strategies. New counting domains can be used to generate sets of projects organized by year, geographic location, focus etc.
7. *The Plugin 'MicroscopeParametersEditor'* will help the user to edit the parameters for the miscroscope being used for analysis.
8. *The Plugin 'VolumeFormulaEditor'* is a plugin for editing geometric shape formulas and association of taxa with geometric shapes.

The Plugin 'ReportSHP'

ReportSHP is an application for building templates that can be used to shape the appearance of reports.

Often, the data produced with OrgaCount needs to be exported to other databases or printed on paper for various reports. The report formats currently available in OrgaCount may be suitable for a limited scope only. Hence, the ReportSHP was created in order to allow for a greater number of formats. Anyone can modify and use the report templates with this plugin, regardless of their programming skills.

The ReportSHP application may be embedded in OrgaCount as a plugin, or used as a stand-alone tool supplementing any other database system.

Some features of ReportSHP worth noting:

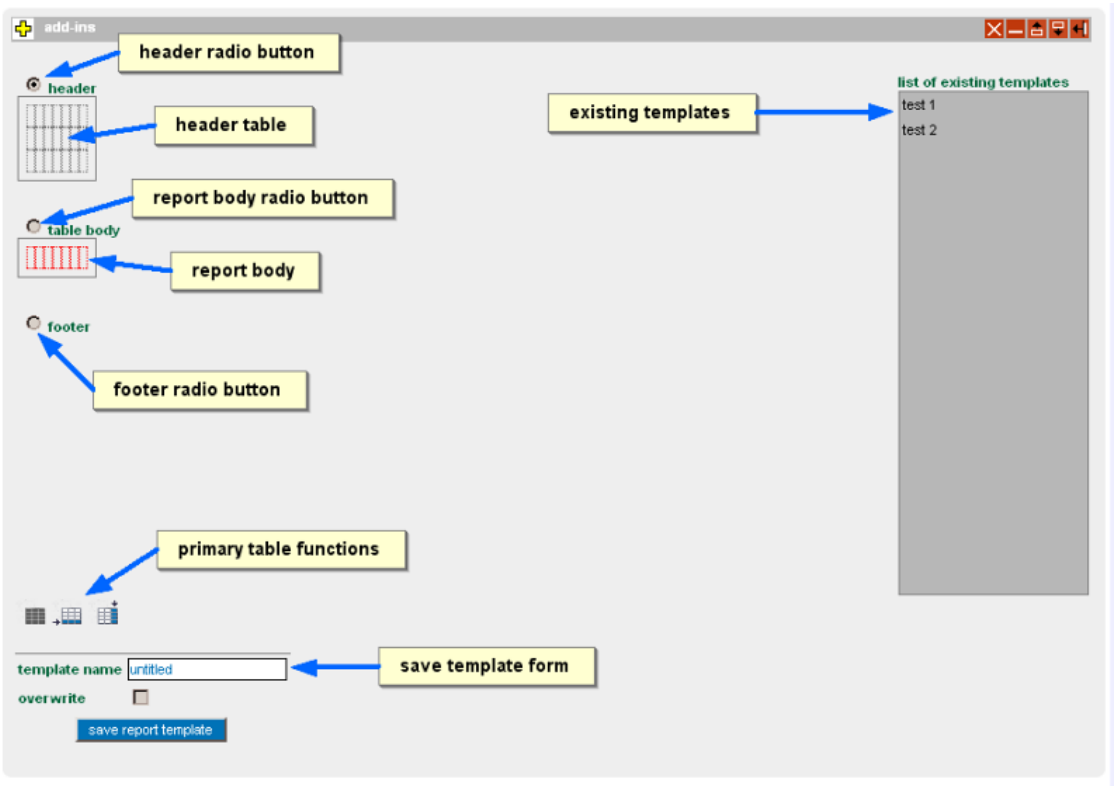
- The plugin includes a user interface for building report templates.

- It produces templates for exporting data in HTML and CSV.
- For HTML format, you can modify the style of labels, values and tables. These styles may be controlled:
    - Fonts: font family, style, weight, size, and color.
    - Text: underline and alignment.
    - Table borders: style, width, and color.
    - Table cells: background color.
- Reports may contain three distinct regions: a header, a report table body, and footer. Header and footer may include labels and metadata saved in project, sample and session details. The report table body may contain one or more arrays of data, as well as labels, and other metadata from project, sample and session details.
- Each section of a report is organized in the form of a table. Within these tables, it is possible to add new rows and columns, change their position in the table, or delete these in the creation of a report template.
- Each table cell in a report may contain labels as well as one or more variables (metadata or report values).
- Report templates may be created, modified and used as a design basis for other templates.

Please note that ReportSHP for OrgaCount currently does not produce additional queries of the OrgaCount database. It only allows building additional report templates, more or less comparable in content with those included in the default setting for reports in OrgaCount. However, a future edition of ReportSHP will allow for the building of further queries and statistics.

Elements of the ReportSHP Plugin

The ReportSHP interface includes only one panel. The general elements of this panel are described in the image below.



All editing actions for each of the sections in a report (header, body, footer) are started by selecting its radio button. After selecting a radio button, the section can be initiated by using buttons of primary table functions. A template may be saved using the template form at the bottom of the ReportSHP panel. All existing templates are listed on the right side of the panel. A click on an item in this list will load the relevant template for editing.

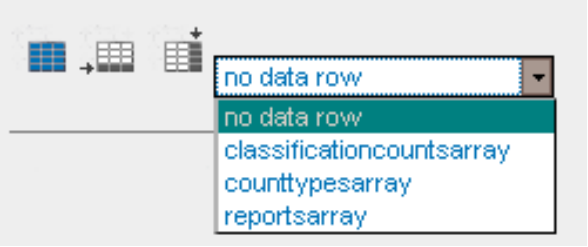
Creating a New Template Section

Before creating a new template, decide which sections the template is supposed to include, and what type of data shall be presented in each of these sections. A template blueprint on paper will help organizing the data. Alternatively, knowing the number of rows and columns in a section may also speed up the creation process.

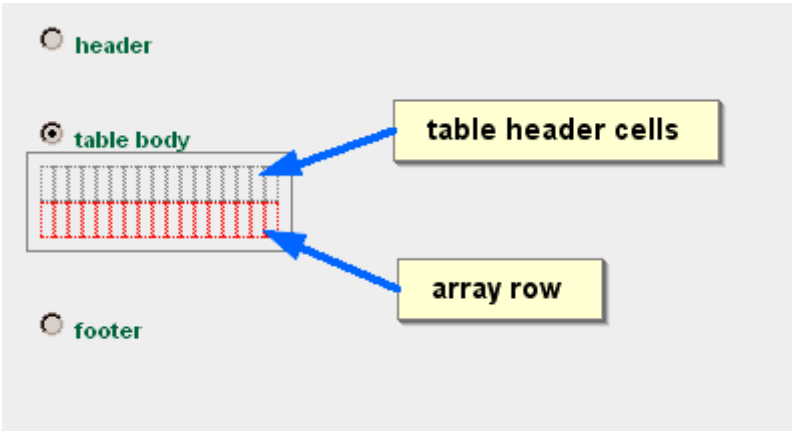
To create a template section, please follow these steps:

- Select the relevant radio button.
- Click on *create table*  (which is the first button among the primary table functions). This will create a table containing one cell. The color of the *create table* button will now turn to gray. Please note that the gray version of this button indicates that the function is not available anymore for the current section. By deleting the table of a section, the *create table* button will reappear in blue, and become active again.
- Click on the *append row*  or *append column*  button to increase the number of rows and columns in the current section until the desired number has been reached.

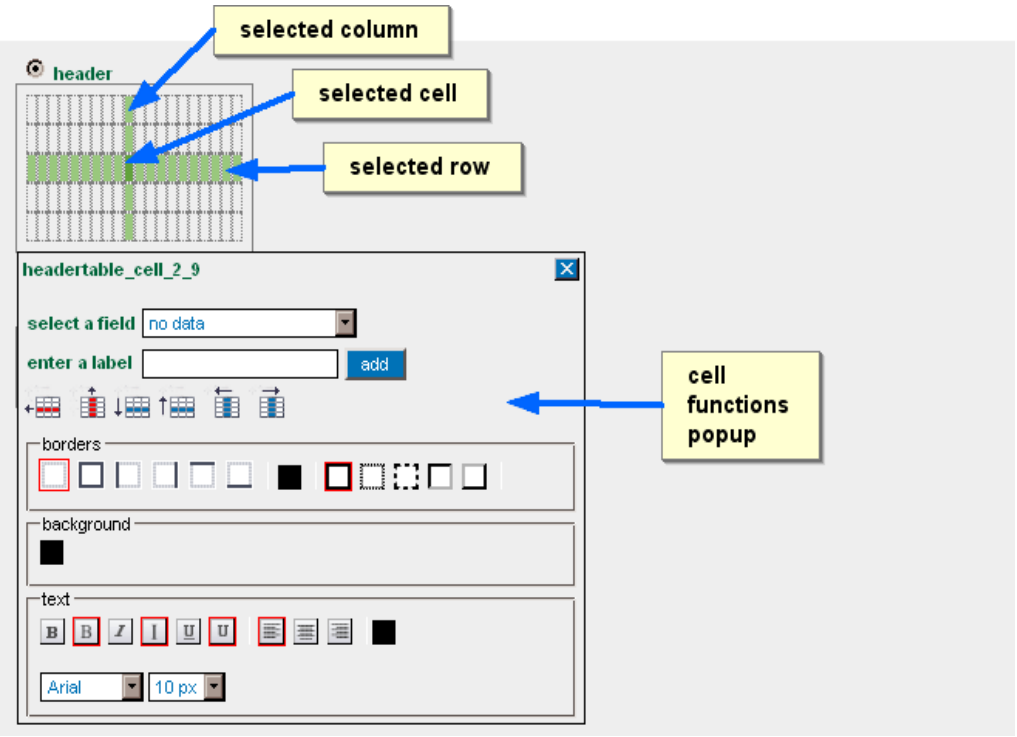
- In case the report body section is selected, please note that in the primary table functions area, a drop-down list appears. Rows in the report body may be of two types:
    - Headers or rows with non-repetitive data fields and labels (in the drop down list represented by the item *no data row*).
    - Array of rows containing data of report. Any labels or fields included in a row here will repeat matching the data in the in report. In OrgaCount, the arrays provided are
        - Report arrays with a list of species counted in a sample, their counts and other statistics and size class information (in the drop-down list, this is the item *reportsarray*);
        - Classification arrays with a list of statistics by higher taxa (in the drop down list, this item is called *classificationcountsarray*);
        - Count type arrays with total counts (in the drop down list this is the item *counttypearray*).



- In case of a report body section, select from the drop-down list in the primary table functions the relevant type of row (header or array). If an array row type is selected, the cells in this row will be outlined by a dotted red line (see image below). In case of header rows (no repetitive data), the cells are by default outlined by a dotted gray line.



- Each of the cells in a section may be selected using the mouse (see image below). After selecting a cell, further editing functions become available in a popup that opens up automatically (for these options see → *Cell Styles* in this chapter). The background of the selected cell is dark green. The rest of the cells in the row and column relating to the selected cell are light green.



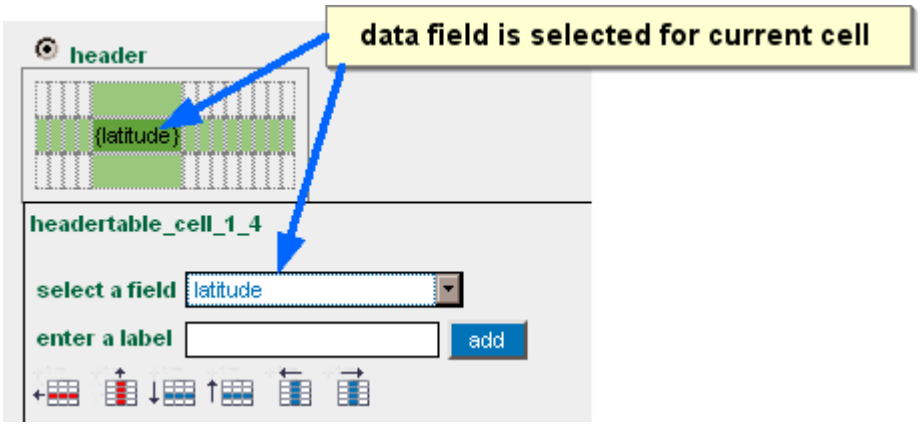
Each of the sections of a template may be re-edited at any time later.

Cell Styles

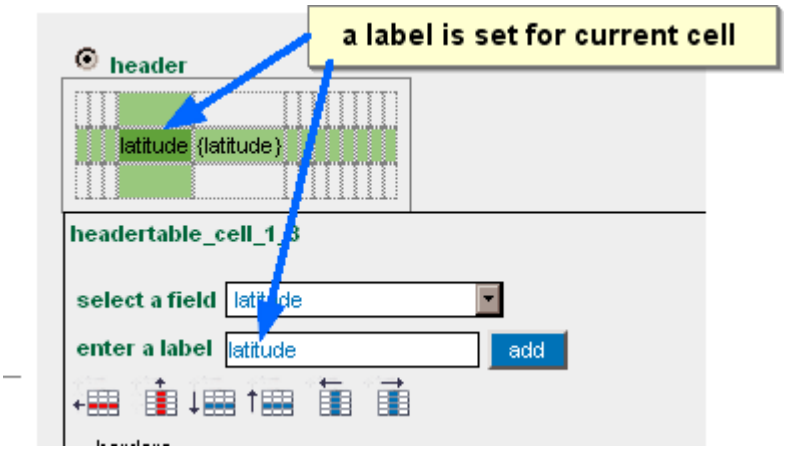
Each table cell in any of the three sections (header, report body, or footer) may be formatted in terms of its content and styling. Additionally, the position of a cell in a table may be re-adjusted, or its column or row removed. Clicking on a cell in the table, the *cell functions popup* appears displaying further editing functions.

Changing The Content of a Cell

A data field may be selected from a drop down list. After selecting it, the name of the field is visible inside the selected cell (see image below). Note that the data fields' name is placed in brackets. Please do not remove these.

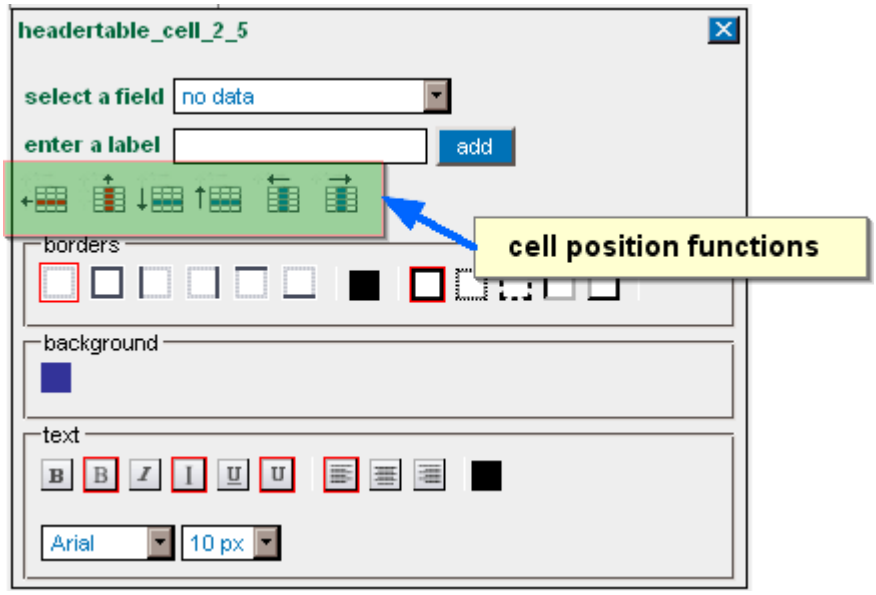


A label may now be set through entering a string in the field *enter a label*, and clicking on the *add* button.



Changing the Position of the Cell

The position of each cell may be adjusted by using the functions for sortening or deleting rows and columns in any of the template sections. These functions are located on the cell function popup (see image below), which appears every time a cell is selected.



The cell position functions are as follows:

 delete current column.

 delete current row.

 move one row to bottom.

 move one row to top.

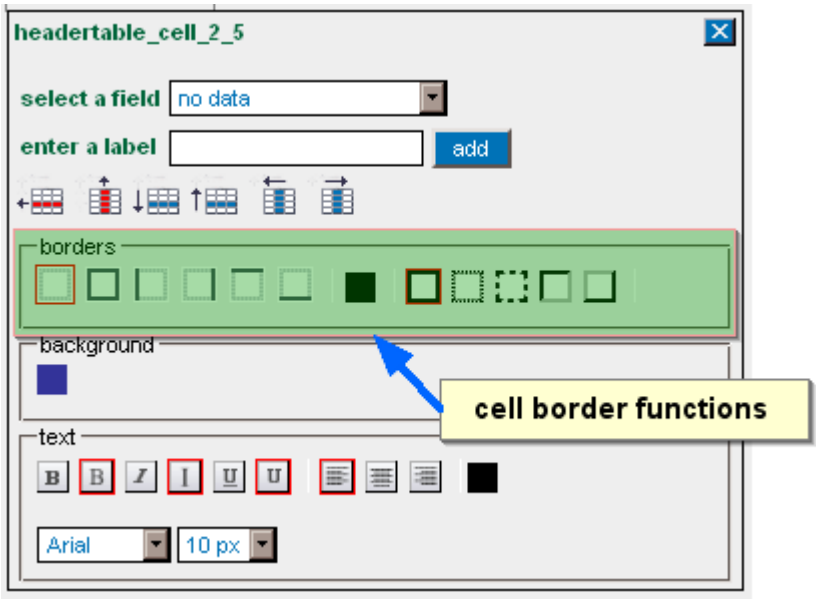
 move one column to left.

 move one column to right.

Changing the Style of a Cell

For each cell in a report template, it is possible to format its borders, background color, and text styles. These functions are available in the cell function popup which appears every time a cell is selected.

Border styling functions are accessible as a set of buttons inside the borders panel (see image below). Current settings are indicated by a red outline around the relevant button.

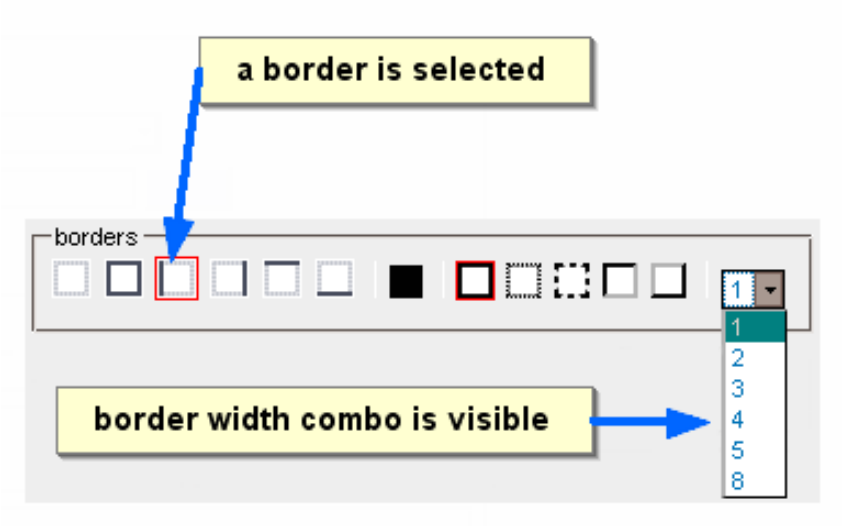


The border functions are as follows:

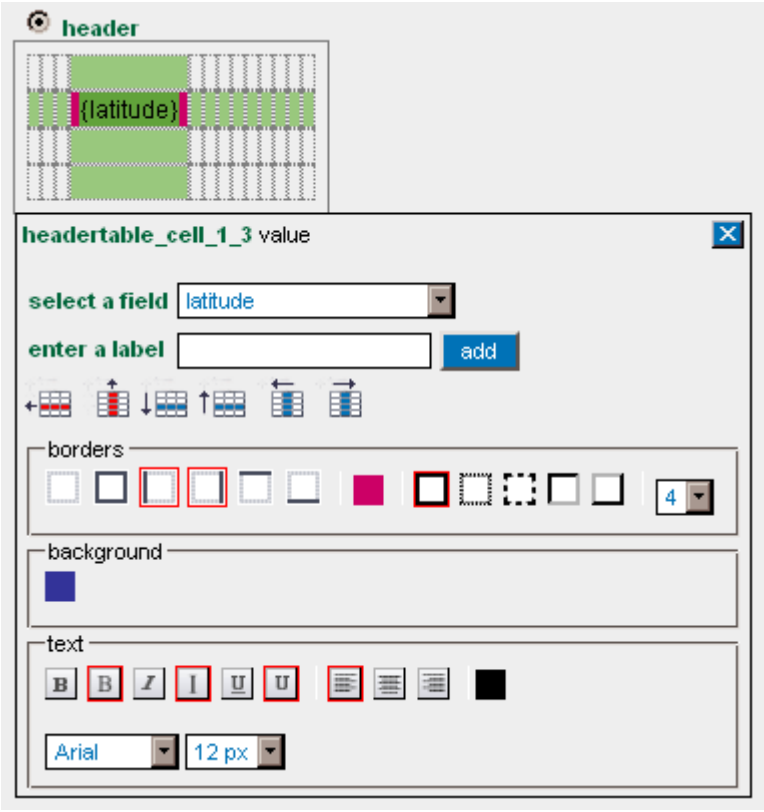
no borders are visible.
all borders are visible.
left bornder is visible.
right border is visible.
top border is visible.
bottom border is visible.

solid border.
dotted border.
dashed border.
inset border.
outset border.

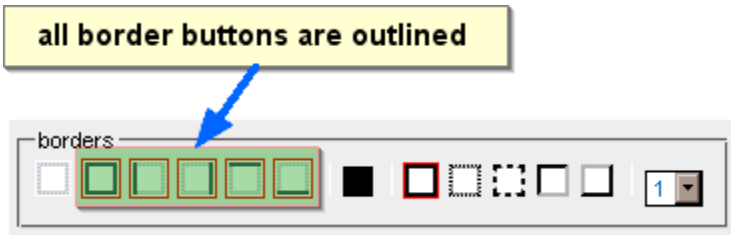
If you select any of these buttons, the style of the current cell will immediately be changed. When selecting any of the border types, a combo box appears at the end of the panel (as in the image below). This may be used to set the width of the border line. Values are given in pixels.



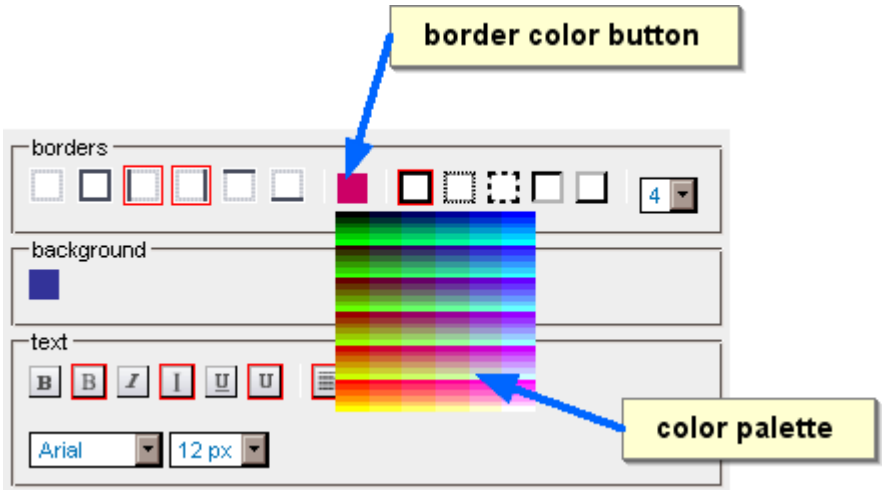
It is also possible to select more than one border button (e.g. top, bottom, or left, right etc, see image below.



If all borders are set as visible, the relevant buttons are outlined in red (see below).



The colour of the border may be set by clicking on the border color button, and selecting a colour from the colour palette (see below).



The cell text style functions are accessible as a set of buttons inside the text panel (see below). The current settings are signal.ed through a red outline around the relevant style buttons.

The availale text functions are as follows:

B bold font.

B normal font.

I italic font style.

I normal font style.

U text underlined.

U text not underlined.

text aligned to left.

text aligned to right.

text aligned to center.

Saving Templates

The templates created can be saved using the *save template* form at bottom of the ReportSHP plugin (see image below). In order to save a template, enter a name in the *template name* text box, and click on *save report template*. If the template already been saved previously, check the *overwrite* check box. The template will be saved under the same name. If you want to change the name of a template, just type in another title and click on the *save report template* button.

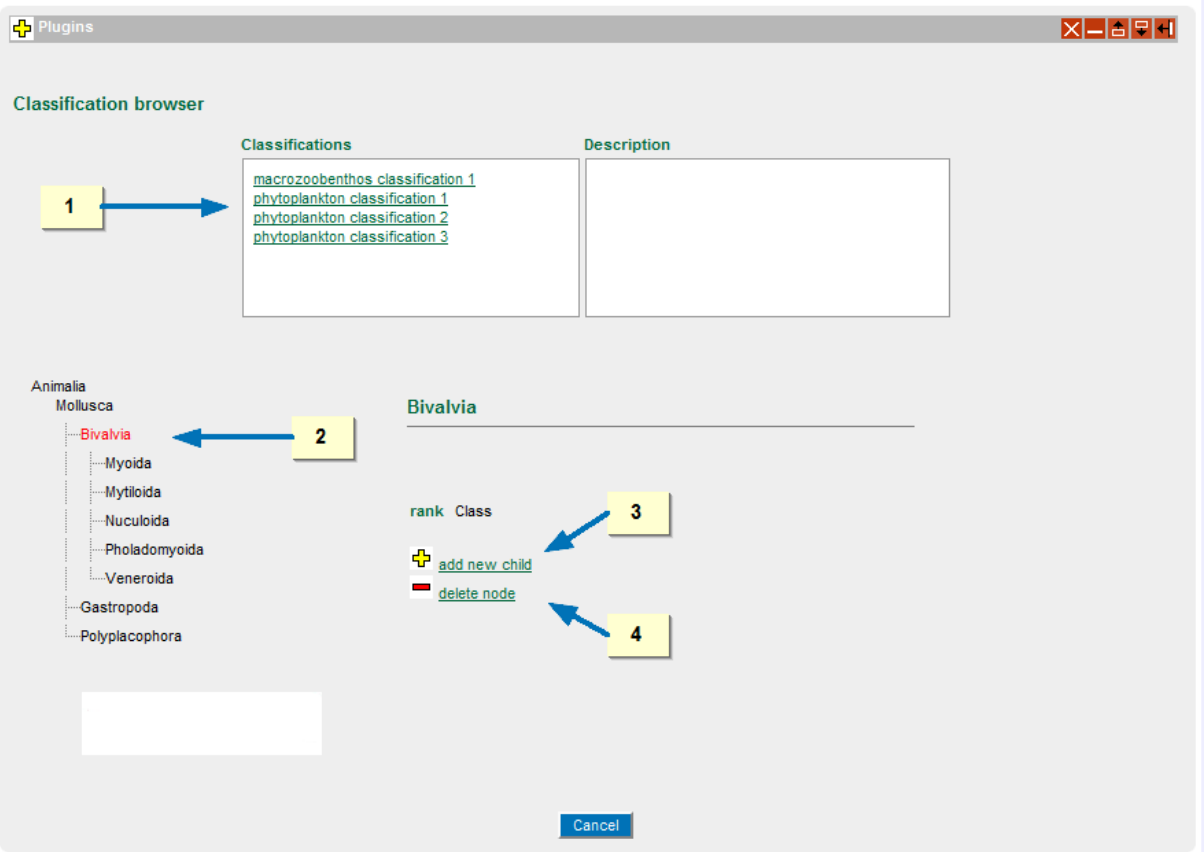
The Plugin 'Classifications'

For the sake of summarizing organism count statistics by a higher taxon, OrgaCount can include information on the classification of organisms. The database may include one or more classifications. Each counting domain is associated with a classification, and one classification may be shared among counting domains (e.g. Phytoplankton Size Class North Sea and Phytoplankton Size Class Baltic Sea or Phytoplankton Biovolume 2010 and Phytoplankton Biovolume 2011).

Classification trees can be explored by selecting the menu item *Plugins* under the *Control panel* header. This will open the plugins panel which lists all available plugins. From this list choose the link *classifications*. A module will open within the same panel that can be used to explore and manage classifications.

Working with Classification Trees

By clicking on one of the names listed in the *classifications* module (see [1] in the image below), the relevant tree is loaded. You can navigate within this classification tree by clicking on one of the taxon names in the tree. The current taxon (referred to as 'node') in the tree is displayed in red (see [2] in the image below).

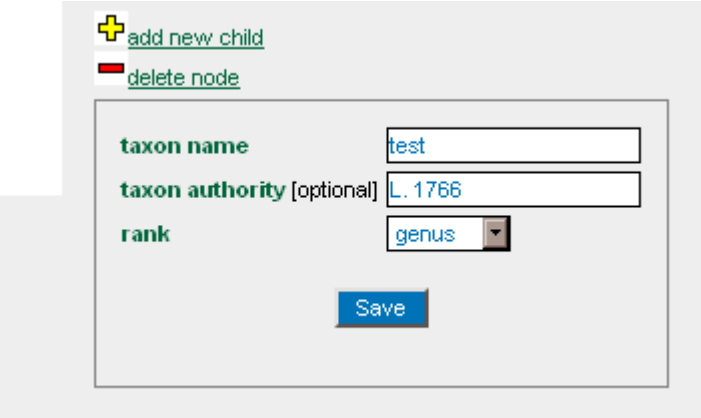


The lowest rank stored for a classification is the genus. OrgaCount links the taxon names in the size class master lists with the name of taxa in the classification table. Occasionally, new taxa are added to master tables which do not have a corresponding link to the classification tree. For such cases, OrgaCount includes two editing functions (*add new child* and *delete node*) in the classification module.

'Add new Child'

If a taxon is selected from a classifications tree, you will see the name of the node on right side of the tree, together with two links labelled *add new child* (see [3] in the image above) and *delete node* (see [4] in the image above).

The *Add new child* link is not visible if the rank of the selected taxon is genus. To add an infra-taxon to a selected taxon, click on the *add new child* link. This will open a data entry form (as you can see in the image below).

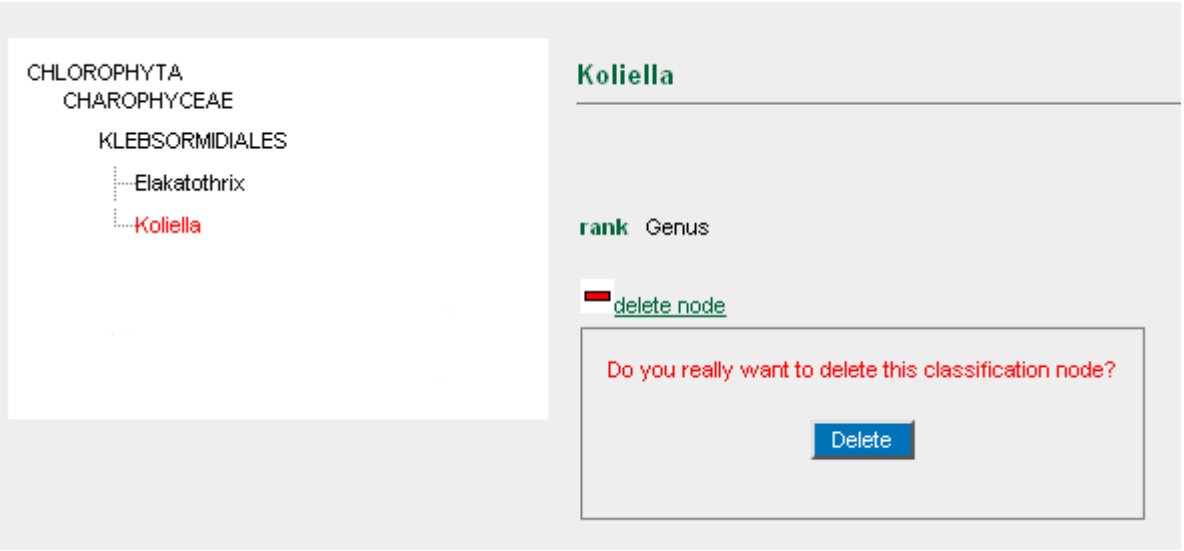


Fill in the name of the taxon, its authorship (optional), and select its classification rank. Then click on the *Save* button. The taxon will be saved in the database, and the classification tree will display the new taxon.

'Delete Node'

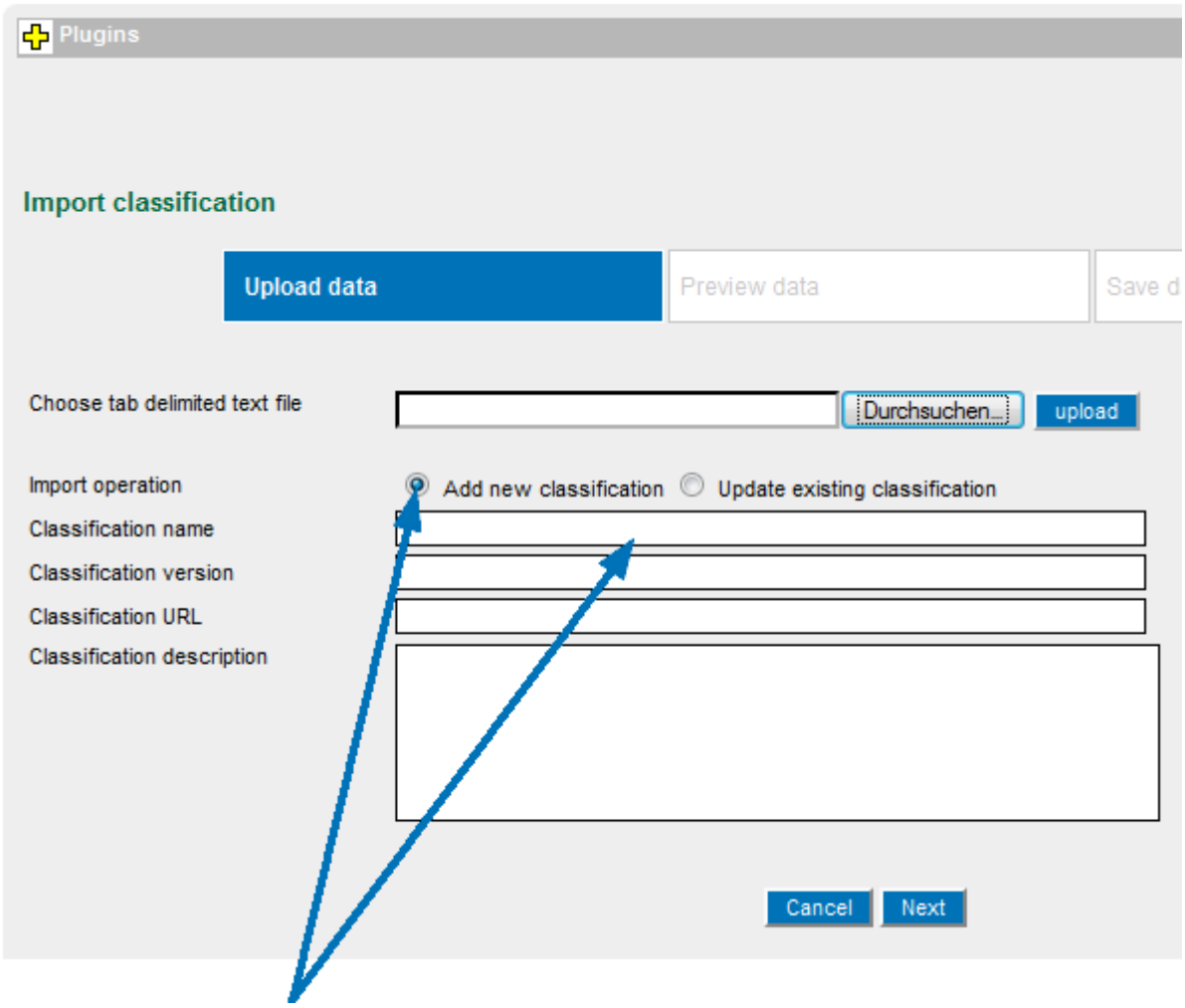
To delete a taxon from a classification tree, select it in the tree and click on *delete node*. You will have to confirm the deletion before the node will be removed (see image below). After deleting the node, the tree will display the parent of the deleted node.

Please note that when a node is deleted from a classification tree, this means that all its children are also removed from the database! Because this process could affect the counting reports (missing higher taxa will affect counts in reports for those taxa), please use this function with care.

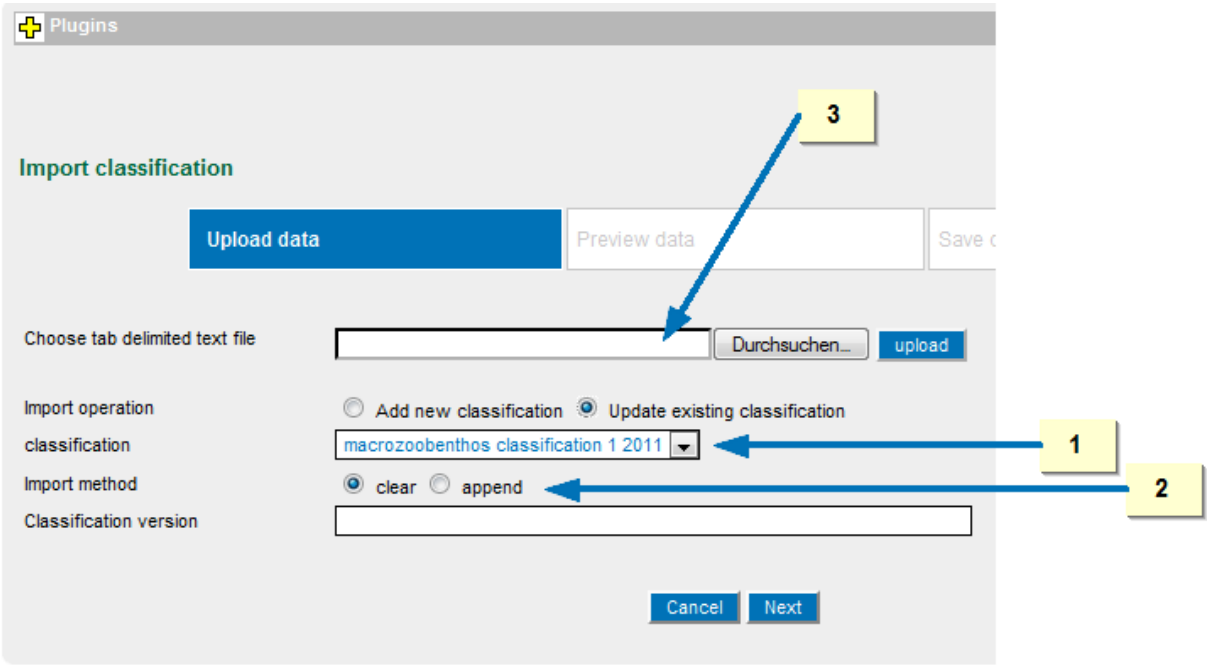


The Plugin 'ClassificationImporter'

The 'ClassificationImporter' is a very useful tool that enables the user to import a new classification or to append data to an existing classification:



When you choose 'Add new classification', a name for the classification may be entered as well as some additional information on that classification (blue arrows). By checking 'Update existing classification', a different window will appear:



As indicated by the blue arrows, you can then select an existing classification as basis [1] and decide whether you would like to completely reset and update this classification or to append data to this existing classification [2].

To complete the process, a tab delimited text file in a pre-defined format has to be uploaded and by doing this the data will be inserted into the database.

The format of the tab delimited text file for the **classification** should be as follows:

childid	[column is mandatory - it can be a number, or string; it can be identical to what is in taxon names field]
parentid	[column is mandatory - it can be a number, or string; it can be identical to what is in taxon names fields - but then in the parent and not in the current row]
taxonname	[column is mandatory]
taxonrank	[name of rank, genus, family, order etc.; column is optional but recommended]
taxonauthority	[name of author and year; column is optional]
dataset	[this is reserved for internal tests, please leave this column blank or enter just the name of the classification in short; it will be read but not added to the database]

The text file should be simple text *Unicode UTF-8* encoded without text delimiters (i.e. no quotes around string fields, be cautious with Excel generated files, because Excel will partly do this automatically – use rather alternative free software like Notepad or OpenOffice).

You can obtain compatible files by following these steps:

From Excel:

- Select the *Save as...* option in the *File* menu, and choose the file type as *text (tab delimited)*.

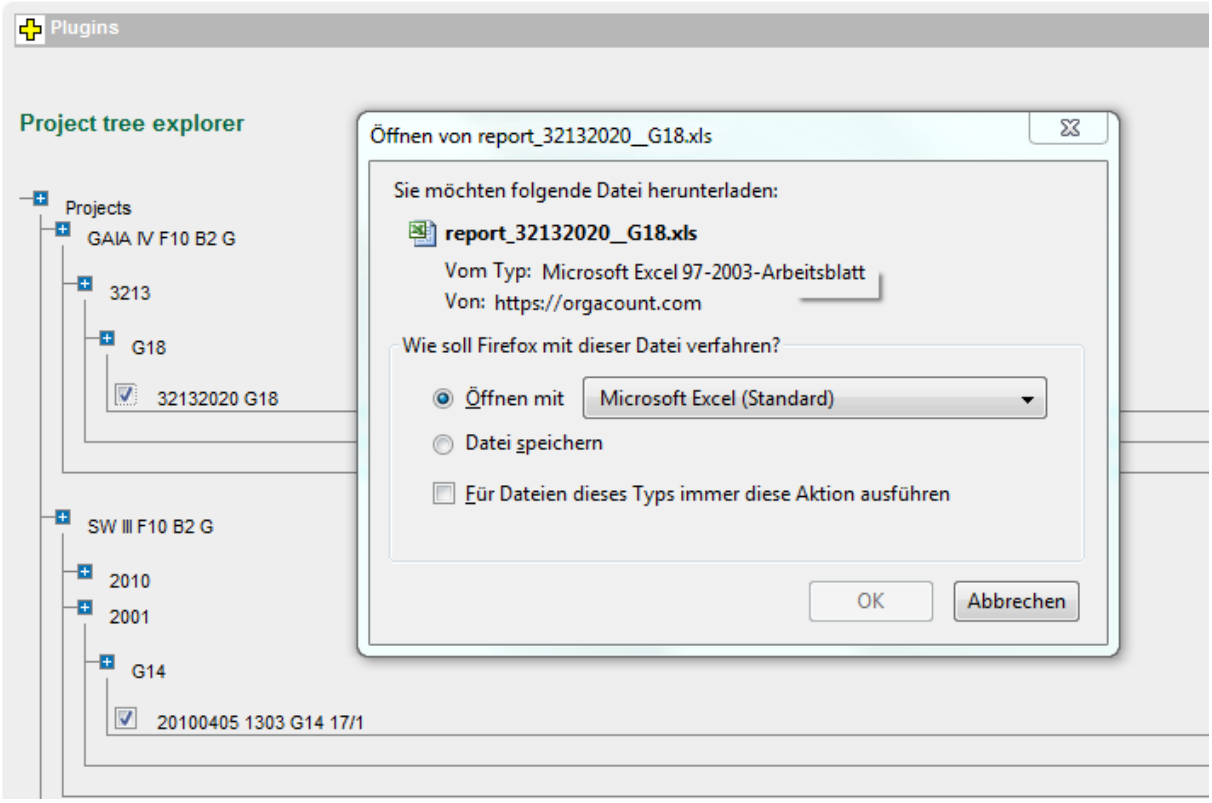
- Open the exported file in Notepad, and save it again with UTF8 character encoding: select the *Save as...* option in the *File* menu, and choose character encoding UTF8 (if other encoding is listed).

From OpenOffice:

- Select the *Save as...* option in the *File* menu, and choose the file type as *text CSV (.csv).*
- Choose *Keep Current format* in the next popup window.
- In the popup window labelled *Export of text files,* set the following:
    - *Character set* to *Unicode (UTF-8).*
    - *Field delimiter* to *{Tab}.*
    - *Text delimiter* to nothing (select quotes and delete them from box).

The Plugin 'ProjectExplorer'

The 'ProjectExplorer' is an optional tool for exploring sample data structured in a tree with branches hierarchised by project, year, and station. A basic export sample data function is also included:



The Plugin 'ListImporter'

This optional tool can be used for importing lists of items with and without size classes to the OrgaCount master taxon and size class database. Although by 'items', we normally mean taxa (i.e. species or higher taxa), the tool is not limited to these types of items.

The *ListImporter* may be used both for creating new lists to be used in new counting domains, and for updating existing ones. Currently, the *ListImporter* supports the following mode: Phytoplankton Size Class, Phytoplankton Biovolume, Macrozoobenthos, Zooplankton, Taxon & Simple Size Class and Taxon Only.

Issues worth knowing when using the ListImporter:

- The *ListImporter* only works with plain text files (e.g. csv, txt etc.).
- The tables stored in text files should have values separated by tabs.
- Text files should only be encoded in UTF-8 character encoding.
- In file formats, optional fields should be available even if they do not contain data.
- The order/position of fields in imported files should be kept as indicated below.
- In most cases, the header of columns may be kept for reference in import files.
- The text files for the *ListImporter* may be generated both by using simple text editors (such as Notepad, Bluefish, PSPad, etc.) and by using spreadsheet applications (such as Excel or OpenOffice).

You can obtain compatible files by following these steps:

From Excel:

- Select the *Save as...* option in the *File* menu, and choose the file type as *text (tab delimited).*
- Open the exported file in Notepad, and save it again with UTF8 character encoding: select the *Save as...* option in the *File* menu, and choose character encoding UTF8 (if other encoding is listed).

From OpenOffice:

- Select the *Save as...* option in the *File* menu, and choose the file type as *text CSV (.csv).*
- Choose *Keep Current format* in the next popup window.
- In the popup window labelled *Export of text files,* set the following:
    - *Character set* to *Unicode (UTF-8).*
    - *Field delimiter* to *{Tab}.*
    - *Text delimiter* to nothing (select quotes and delete them from box).

*The file format for **taxon & size class** lists is as follows:*

- taxon_name - name of taxon or item (mandatory)

- taxon_author - name the of author of the taxon (optional). May include years, too. Leave blank if not applicable. **Please keep the formatting consistent, in order to avoid creating duplicates in database.**
- code - any unique code used to identify the size class. You may use one or more alpha-numeric characters (mandatory)
- size_range - any short string to depict the size range of an organism or item (optional).
- stage_tag - any short string to depict the life stage of an organism (optional).
- sp_ tag - any informal nomenclature tag (optional).
- unit_tag - any short string to depict part of the item, if the entire item/organism is not recorded (e.g. head, fins, scales, etc.) (optional).

*The file format for **taxon/item** lists is as follows:*

- taxon_name - name of a taxon or item (mandatory)
- taxon_author - name of the author of a taxon (optional). May include years, too. Leave blank if not applicable. **Please keep the formatting consistent in order to avoid creating duplicates in the database.**

*The file format for **phytoplankton size class** lists is as follows:*

- Division
- Class
- Order
- Species
- SFLAG (sp., spp., cf., complex, group)
- STAGE (cyst, naked)
- Author
- Trophy
- Geometric shape
- FORMULA
- Size class No
- Unit
- size range
- Length (l1), µm
- Length (l2), µm
- Width (w), µm
- Height (h), µm
- Diameter (d1), µm
- Diameter (d2), µm
- No. of cells/ counting unit

- Calculated volume, µm3
- Comment
- Filament: length of cell (µm)
- Calculated Carbon pg/counting unit (Menden-Deuer & Lessard 2000)
- Comment on Carbon calculation
- CORRECTION / ADDITION for year

Please note:

- This file format entirely respects the Excel table structure of the HELCOM-PEG 2009. All data is stored in the OrgaCount database; therefore, additional fields that are not currently visible in the OrgaCount interface may be used in future versions, if requested.
- Fields should not contain new lines (= returns).
- The classification fields are ignored in this version of the *ListImporter*. In other words, these are not imported in the classification table. The information needs to be built separately using classifications plugin. However, it is **recommended** to create a new counting domain each year. Old counting data is preserved without any alteration or loses.

The Plugin 'Set Counting Domain'

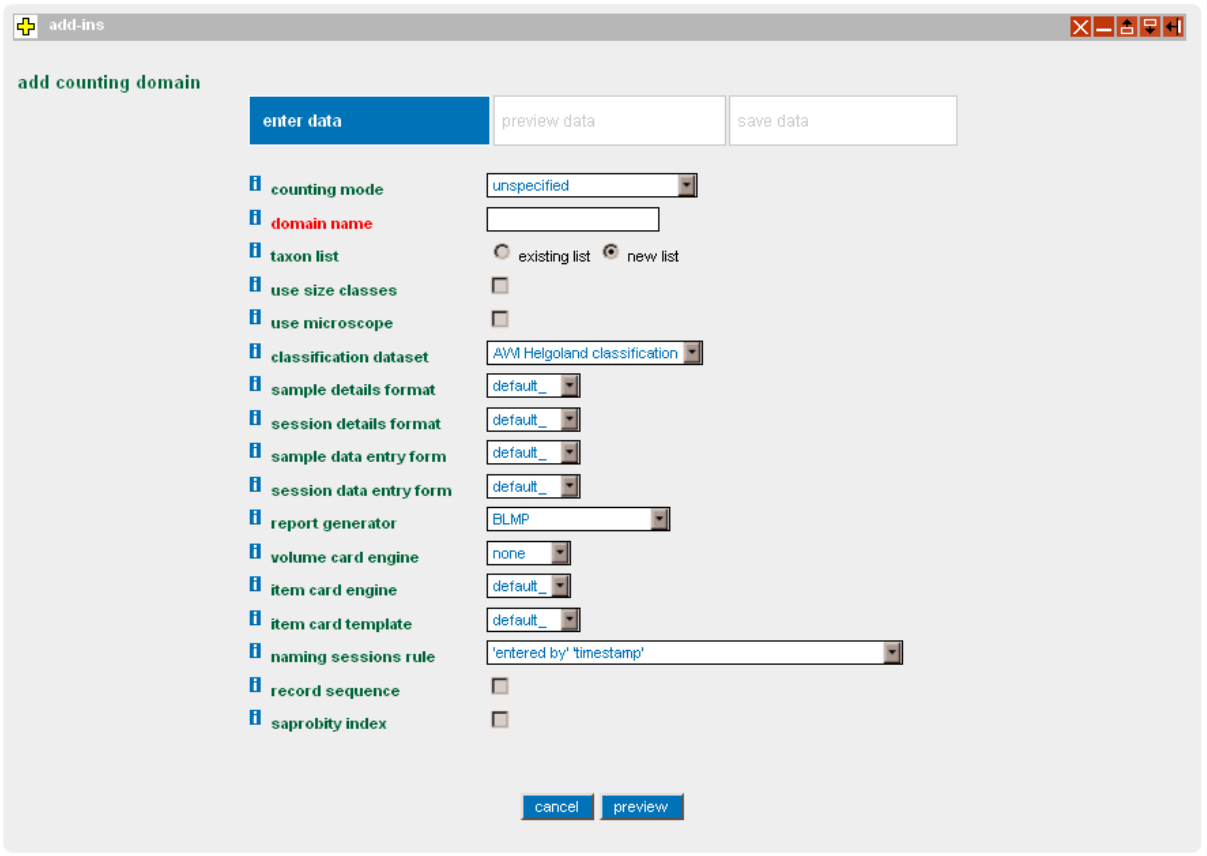
The *Set Counting Domain* module represents an optional tool for the setting up of new counting domains. These can be based on various counting strategies (Phytoplankton Biovolume, Phytoplankton Size Class, Zooplankton, Macrozoobenthos, Taxon Only, Taxon & Simple Size Class, etc.). New counting domains may be used for generating sets of projects organized by year, geographical location, focus, etc.

The variables that can be controlled when defining a new counting domain are:

- The underlying counting mode as a basis, e.g. Phytoplankton Biovolume, Phytoplankton Size Class et al.
- Domain name (e.g. Phytoplankton Biovolume 2011, Phytoplankton Size Class 2011, or any freely chosen name).
- Defining whether size classes are used or not.
- Defining whether predefined size classes are used or not.
- Defining what size classes table is used (can be several alternatives in time).
- Defining what classification is used.
- Defining if cells are counted in filaments.
- Defining if a microscope will be used.
- If a microscope will be used, defining what set of microscope optic parameters will be used (necessary for calculating counting factors).
- Defining what taxon list will be used (new taxon and size classes lists may be defined with a the *ListImporter* plugin).
- Defining what geometric shape theme will be used (these themes contains sets of formulas for geometric shapes; more than one set can be stored in database). The same geometric shape theme may be used by several counting domains.
- Station themes: Sets of predefined stations may be stored in database. A correct setting here will allow displaying the right station list in sample entry form (for example the station list will show only stations for Baltic and not those for Nord Sea).
- Defining session naming rules: These rules for naming sessions may be easily defined in database and can be selected when defining a counting domain. This will show a pattern when listing sessions in search sessions module.
- Setting what template file will be used for:
- Item card popup (this appears when clicking on a taxon name in counting interface). In time, distinct templates may be created and OrgaCount will use these customized files for rendering the interface.
- Volume card popup (this appears in BLMP mode when clicking on "V"olume buttons in counting interface). Alternative templates may be developed.
- Session details module template.
- Sample details module template.
- Session data entry forms template.
- Sample data entry forms templates.

- Adding size class data entry forms.
- Setting engine (php file that generates or processes data) file for
    - Item card popup.
    - Volume card popup.
    - Set report generator file.
    - Set if sequence of counted items is recorded.

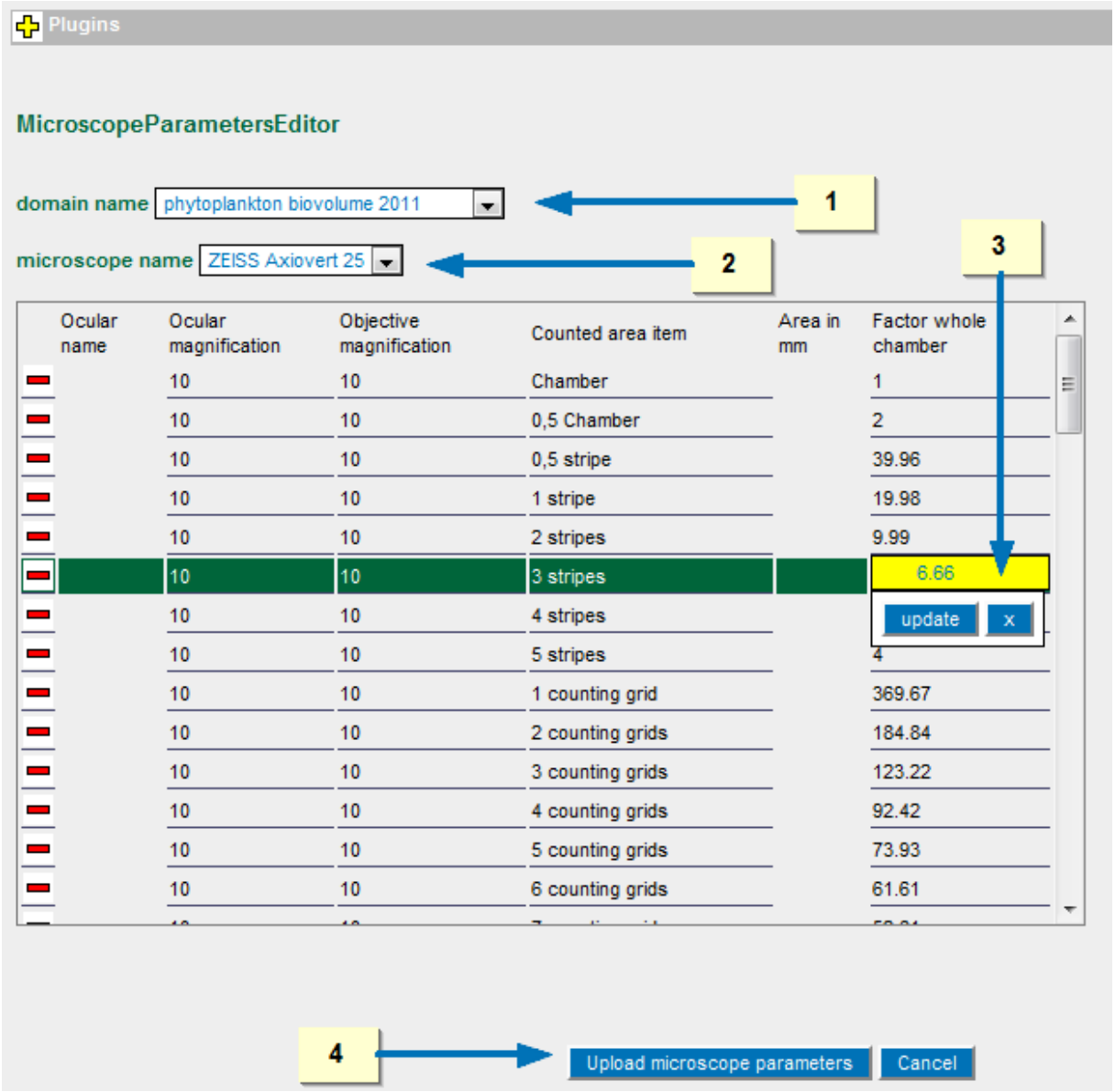
On selecting a *counting mode* in the *add counting domain* form, OrgaCount automatically shows all relevant values in the form (the best selection of variables from the above options is selected; see image below).



The Plugin 'MicroscopeParametersEditor'

The *MicroscopeParametersEditor* module represents an optional tool for storing sets of parameter settings of various microscopes used for counting. These sets of microscopes are based on the existing counting domain and the underlying counting modes (Phytoplankton Biovolume, Phytoplankton Size Class, Zooplankton, Macrozoobenthos, Taxon & Simple Size Class, etc.).

Accessing the *MicroscopeParametersEditor*, the user can select a counting domain [1] and a microscope name [2] and will then be provided with a list of microscope settings including the counting factor for the whole counting chamber. This table can be edited right away [3].



Furthermore, it is possible to upload an individual or customised list from a file on your computer [4]. You can obtain compatible files by following these steps:

From Excel:

- Select the *Save as*... option in the *File* menu, and choose the file type as *text (tab delimited)*.
- Open the exported file in Notepad, and save it again with UTF8 character encoding: select the *Save as*... option in the *File* menu, and choose character encoding UTF8 (if other encoding is listed).

From OpenOffice:

- Select the *Save as*... option in the *File* menu, and choose the file type as *text CSV (.csv)*.
- Choose *Keep Current format* in the next popup window.
- In the popup window labelled *Export of text files,* set the following:
    - *Character set* to *Unicode (UTF-8)*.

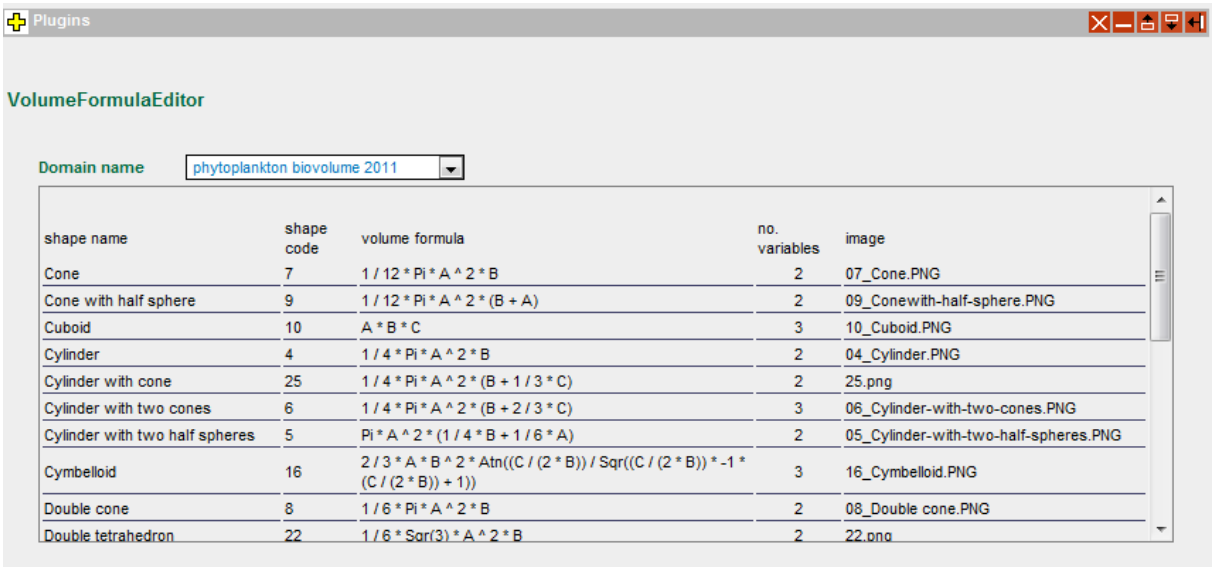
- *Field delimiter* to *{Tab}*.
- *Text delimiter* to nothing (select quotes and delete them from box).

*The file format for **microscope parameter** lists is as follows:*

- Microscope name
- Ocular name
- Ocular magnification
- Objective magnification
- Counted area item
- Area in mm
- Factor whole chamber

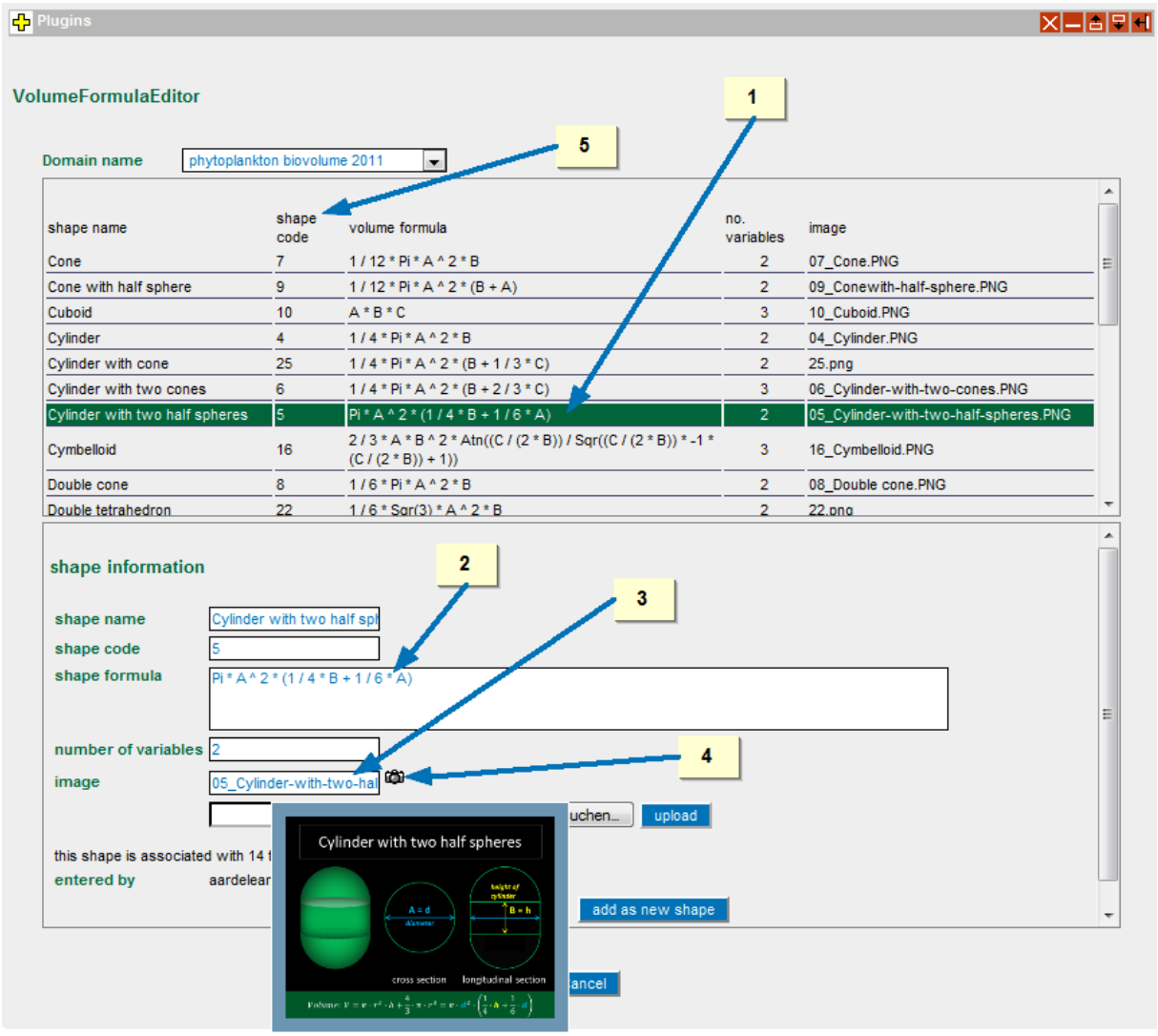
The Plugin 'VolumeFormulaEditor'

The *VolumeFormulaEditor* enables the user to administrate lists of geometric shapes for phytoplankton biovolume calculations. For each domain, an individual list of datasets can be set up:



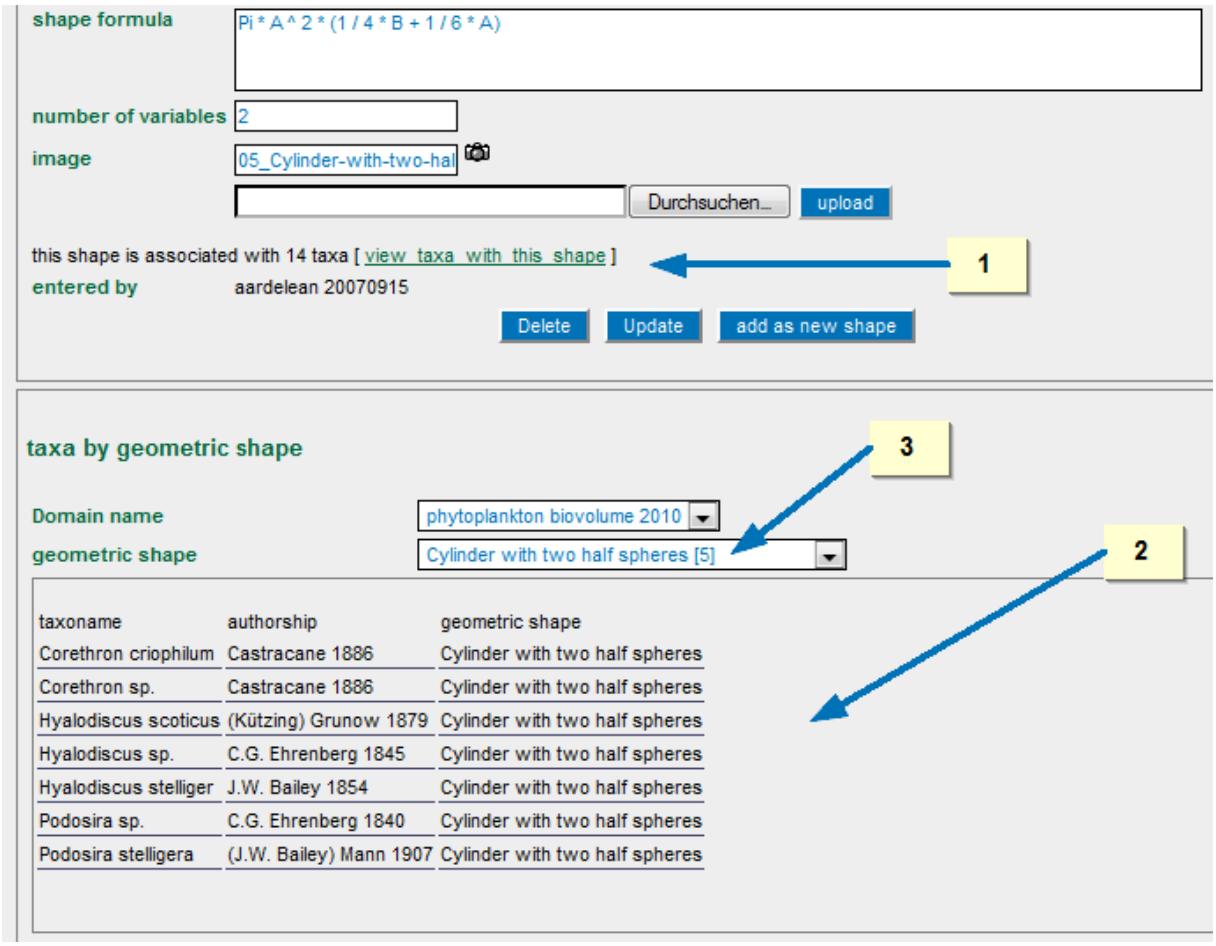
shape name	shape code	volume formula	no. variables	image
Cone	7	1 / 12 * Pi * A ^ 2 * B	2	07_Cone.PNG
Cone with half sphere	9	1 / 12 * Pi * A ^ 2 * (B + A)	2	09_Conewith-half-sphere.PNG
Cuboid	10	A * B * C	3	10_Cuboid.PNG
Cylinder	4	1 / 4 * Pi * A ^ 2 * B	2	04_Cylinder.PNG
Cylinder with cone	25	1 / 4 * Pi * A ^ 2 * (B + 1 / 3 * C)	2	25.png
Cylinder with two cones	6	1 / 4 * Pi * A ^ 2 * (B + 2 / 3 * C)	3	06_Cylinder-with-two-cones.PNG
Cylinder with two half spheres	5	Pi * A ^ 2 * (1 / 4 * B + 1 / 6 * A)	2	05_Cylinder-with-two-half-spheres.PNG
Cymbelloid	16	2 / 3 * A * B ^ 2 * Atn((C / (2 * B)) / Sqr((C / (2 * B)) * -1 * (C / (2 * B)) + 1))	3	16_Cymbelloid.PNG
Double cone	8	1 / 6 * Pi * A ^ 2 * B	2	08_Double cone.PNG
Double tetrahedron	22	1 / 6 * Sqr(3) * A ^ 2 * B	2	22.png

By clicking on a dataset within the table [1], the window will expand, and you will be enabled to edit the datasets:



It is possible to change the entries, such as the volume formula [2] and other information, and you can also add new shapes here. Furthermore, images illustrating the geometric shapes as well as the used formulas can be uploaded [3] and will we displayed as a thumbnail when the mouse rolls over the camera icon [4].

The shape code [5] is used to link the volume information to existing taxon lists. When you click on 'view taxa with this shape' [1], as shown in the following screenshot, the window will further expand and display a list of taxons [2] that are already associated with the chosen geometric shape within the selected domain. In a drop-down menu [3], you can choose further geometric shapes, in order to look up all taxa being related to the respective shape.


shape formula
Pi * A ^ 2 * (1 / 4 * B + 1 / 6 * A)
number of variables
2
image
05_Cylinder-with-two-hal
Durchsuchen...
upload
this shape is associated with 14 taxa [view taxa with this shape]
entered by
aardelean 20070915
Delete
Update
add as new shape
1
taxa by geometric shape
3
Domain name
phytoplankton biovolume 2010
geometric shape
Cylinder with two half spheres [5]
2
taxoname
authorship
geometric shape
Corethron criophilum
Castracane 1886
Cylinder with two half spheres
Corethron sp.
Castracane 1886
Cylinder with two half spheres
Hyalodiscus scoticus
(Kützing) Grunow 1879
Cylinder with two half spheres
Hyalodiscus sp.
C.G. Ehrenberg 1845
Cylinder with two half spheres
Hyalodiscus stelliger
J.W. Bailey 1854
Cylinder with two half spheres
Podosira sp.
C.G. Ehrenberg 1840
Cylinder with two half spheres
Podosira stelligera
(J.W. Bailey) Mann 1907
Cylinder with two half spheres