Eutaxa User Manual V 3.0

Contents

This Manual exclusively displays images from the Key to Ephemeroptera Larvae of Central Europe (V. 2023)

1. What has changed in Version 3.0

The first edition of the Eutaxa software 1.0 was developed in 2005 and updated to version 2.0 a few years later. Due to older program components, the software could be installed on Windows operating systems up to Windows 8, but was no longer compatible with later operating systems. To solve the resulting installation problems, a new version 3.0 of the Eutaxa software was developed. As in the previous versions 1.0 and 2.0, 3.0 is completely installed on the computer; the database and image archive are operated via the Microsoft SQL server.

It was our intention to retain the program structure and its functionality. The interface was modified and given a modern look. The design of the buttons has been changed, but not their function. Compared to the previous versions, some operating modes have been improved, others work less satisfactorily. For example, starting the sub-applications can take longer than in previous versions (depending on the processor speed) and some functions (e.g. copying or moving images in the Gallery) have had to be omitted.

Desktop Icon

The installed products are opened via a single Eutaxa icon on the desktop. To select a product, double-click on the icon and select the desired application in the menu bar.

Images – Higher Resolution and Rotatability

Images produced after 2015 were taken in a higher resolution and are thus bigger than older versions. They can easily be distinguished by the presence of a scale bar, placed in the right lower corner. Moreover, pictures can now be rotated forward and backward in an angle of 90, 180, 270 and 360 degrees by rotation keys, placed near the zoom buttons in the upper left corner of each viewport.

Query Key – Improvement of Matrix

When building groups in the data Matrix of versions 1.0 and 2.0, the column headers dragged into the grouping bar retained their height, so that headers and the contained texts had to be as short as possible, which affected the readability. This problem could be fixed in version 3.0. Now, the dragged column headers rotate 90 degrees and remain narrow, so that texts can be longer and easier readable. In addition, groups and subgroups may be combined to a single group to shorten the group hierarchy.

Compared to previous versions, the position and the width of columns cannot be modified.

Gallery – Individual Setting of Sort Order

In previous versions, species or details in some Gallery cards were automatically sorted in the logical order and this sorting could not be changed either. In the new Gallery version, both the data in the combo boxes and in the selection panels can be ordered "alphabetically" or "logically", depending on the user's requirements.

Shifting and copying images from one to another viewport is not possible in the new version.

2. Starting the Program

To start the Eutaxa software, double-click on the Eutaxa desktop icon (Eutaxa V3).

The Eutaxa software starts with the following image (Fig. 01).

Fig. 01: Eutaxa Start Page

2.1 Menu bar

The menu bar contains the Application button, to select the wished product, the Groups button, to choose a taxonomic unit or a development stage (depending on product), a series of buttons of product-specific sub-applications (D-Key, Q-Key, Gallery, Morphology and Ecology), and the buttons Info, Tools, Windows and Help.
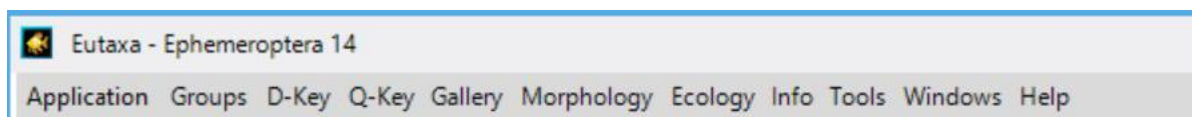
Fig. 02: Menu bar

2.2 Applications

Hitting the Application key opens a list of the currently installed products. Select the wished product to start the program. If you wish to run several products at the same time, start the Eutaxa software via desktop icon once again and select another product, etc.

Fig. 03: Application button: Selecting one of the installed products

Each program starts with the product interface, containing the menu bar, a row of shortcut-keys, title, author, ISBN number and the year of the current version (e. g. 2023).

Fig. 04: Product interface of *Ephemeroptera 2023*

2.3 Groups

Fig. 05: Menu bar – active and inactive buttons

Some of the sub-applications are group-specific and their buttons are set inactive. To enable the buttons, hit Groups and select one of the items (depending on product, this may be a development stage (e. g. larvae, pupae, etc.) or a systematic unit (e. g. order, family, etc.).

Fig. 06: Selecting one of the groups

Fig. 07: After selecting a group the inactive buttons are set active

This procedure must be repeated when switching to another group or sub-application. All selected sub-applications remain active until their windows or the program are closed. To switch between the active sub-applications, enter the Windows button in the Menu bar and select the wished item (fig. 11).

2.4 Sub-Applications

D-Key

The sub-application contains a Dichotomic Key for the identification of organisms up to family-, genus- or species-level.

Q-Key (or Q-Key Family)

This sub-application offers a multi-criteria approach to identify species or to aggregate taxa, resembling in morphological or ecological characteristics. The Query Key includes a series of cards with lists of features that can be individually checked when testing for concordance. After running a calculation, the query results can be transferred to the Gallery in order to compare images of the listed species. In addition, the morphological and ecological criteria of each species are tabulated in a data Matrix, where species may be grouped, compared or individually checked by the presence or absence of features.

Gallery

Entering the Gallery sub-application allows access to thousands of images from an extensive picture database. Each species is precisely documented by numerous illustrations of the most important morphological details. This sub-application allows the simultaneous arrangement of images in various size and number. If needed, several features from a single species or identical characteristics from different species can be arranged adjacently. This makes it possible to separate and allocate species according to their morphological criteria and similarities or differences may be compiled by the user.

Morphology

The Morphology sub-application offers information about the morphological characteristics of the respective group. All structures relevant for identification are shown in numerous illustrations and labelled in detail.

Ecology

The Ecology contains information about ecology and biology of all species, their classification, geographic distribution and lists of synonyms. Contrary to other sub-applications, this button remains always active and does not require the preselection of a group.

2.5 Info

This button offers information about the Eutaxa project, a description of the current product, the Eutaxa E-Mail and web addresses and a preview of other products.

2.6 Tools
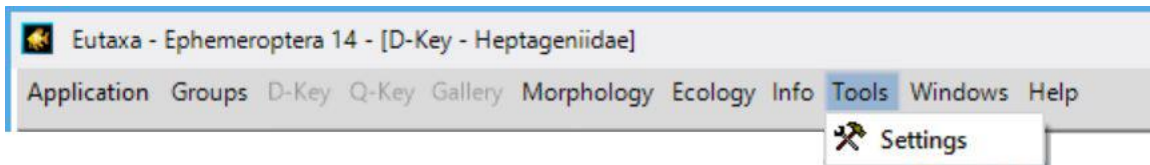
Fig. 08: Tools button

When clicking on the Tools/Settings key a dialog box opens; the panel allows changing the application settings, according to the user's requirement.

User System Settings
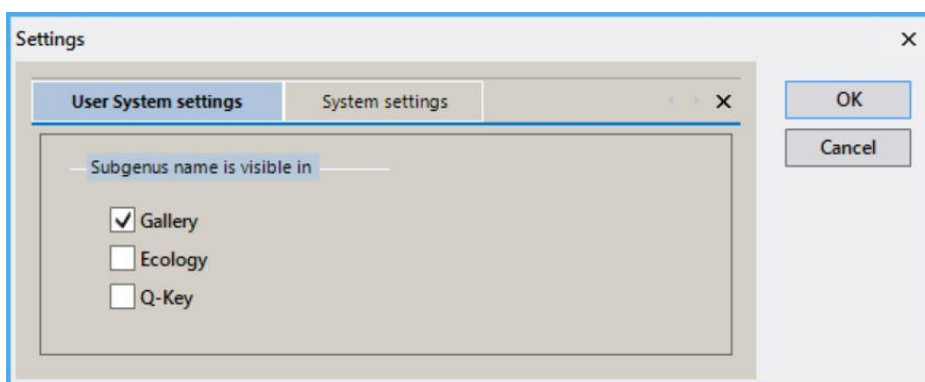
Fig. 09: Tools – Settings: User System Settings

When selecting a check box, the subgenus names will be displayed in all species lists of the selected sub-application. When unmarking a check box, the subgenus names is blanked and only the genus and species names remain visible.
Note: This function does not affect species names of the following products: Trichoptera 23, Pisces 23.

System Settings

Attention: It is recommended not to change these settings!
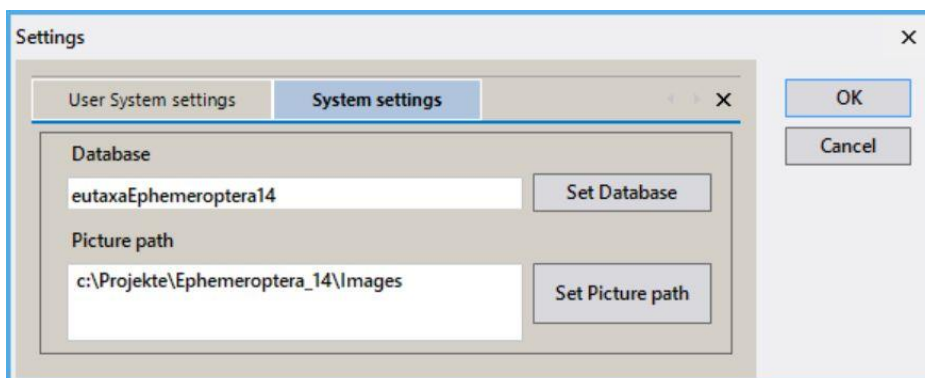
Fig. 10: Tools – Settings: System Settings

Set Database

This button can be used to allocate the correct eutaxa database (if it has been cancelled by mistake).
Attention: Do not change this setting! When selecting a wrong database, the program does not work!

Set Picture path

The button is used to change the picture-path (for example when separating and storing the picture data base in another directory or another storage medium).
Attention: When allocating a wrong picture-path, the images cannot be displayed!

2.7 Windows

This button shows a list of the currently opened sub-applications and enables the user to switch between them. It can also be used to close all windows or to tile and to align windows simultaneously (expedient when using a second monitor).
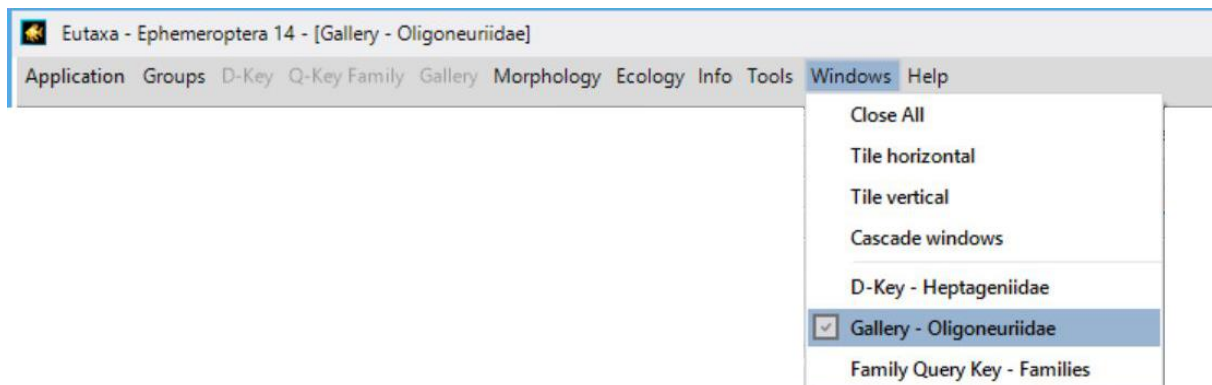
Fig. 11: Menu bar: Windows button

2.8 Help (User Manual)

Offers a detailed description of structure and function of the software.

2.9 Shortcut Keys

This command enables the user to compile a group of up to five Shortcut Keys, allowing to switch between desired groups and sub-applications.

Fig. 12: Shortcut bar: Selecting the first Shortcut Key
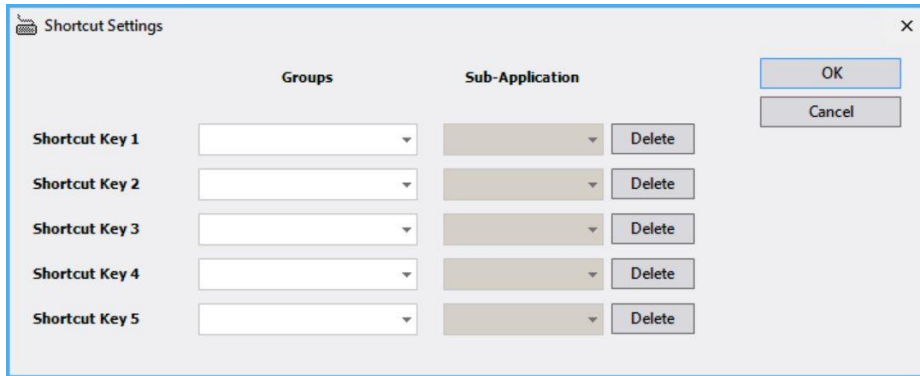
Fig. 13: Shortcut Keys - dialog box

To compile a Shortcut Key, click with the right mouse button on a key (fig. 12) and enter the wished Group, sub-application and position in the dialog box (fig. 13, 14). After confirming the setting with **OK**, the appropriate Shortcut Key will be displayed (fig. 15).

To remove a Shortcut Key, enter the dialog box, select the corresponding **Delete**-button and confirm with **OK**.
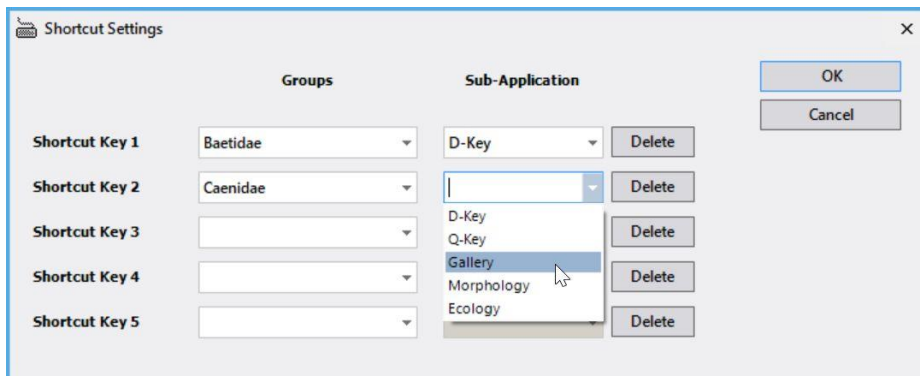
Fig. 14: Shortcut Keys – dialog box: Selection of groups and sub-applications

Fig. 15: Shortcut bar: Compiled Shortcut Keys

3. Dichotomic Key (D-Key)

3.1 Toolbar

The configuration of the buttons and combo boxes changes, according to the type of the currently used card (Dichotomic Key, Species Profile or Species Description).
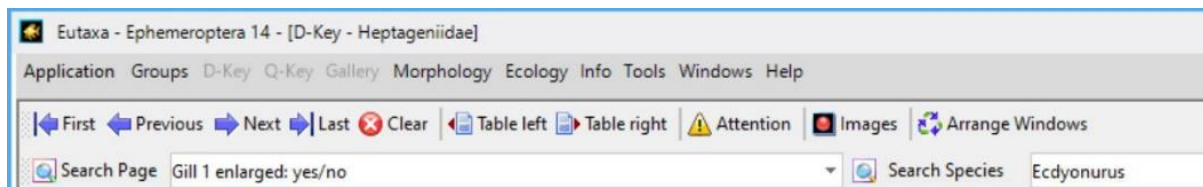
Fig. 16: Toolbar – configuration of buttons when using the Dichotomic Key Card

3.2 Buttons

Navigation Keys

Browsing the pages in the D-Key is usually done by hitting the blue arrow keys on the left and right lower corner (see fig. 29). The Navigation Keys in the menu bar are additional tools to navigate between already visited pages of the Dichotomic Key Card or to browse the images in the Species Profile Card.
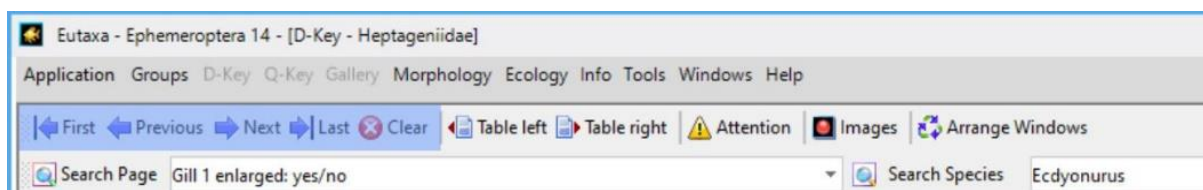
Fig. 17: Toolbar: Navigation Keys: First, Previous, Next, Last

First: Return to the first page/image
Previous: Return to the previous page/image
Next: Move to the next page/image
Last: Move to the last selected page/last image
Clear: Button to clear the History

Function of the Navigation Keys in the Dichotomic Key Card: After starting the D-Key, all Navigation Keys are disabled. When browsing the pages via arrow keys, the buttons **First** and **Previous** are set active, the keys **Next** and **Last** remain inactive, until hitting the **First** or **Previous** key.

The path of the visited pages is stored in the History and may be retraced by pressing the Navigation Keys to move between the visited pages forward and backward. When reaching the last visited page, the History is cleared and the **Next** and **Last** buttons are disabled. To clear the History manually, hit the **Clear** button.

Table left, Table right

Tables consist of a series of up to six images, each showing a specific feature of the morphological character currently displayed in the Viewport of the Dichotomic Key Card. **Table left** refers to the picture displayed on the left, **Table right** to the picture displayed on the right Viewport. These images shall demonstrate the variability or conformity of the described feature in those species, which can be identified on one of the following pages.
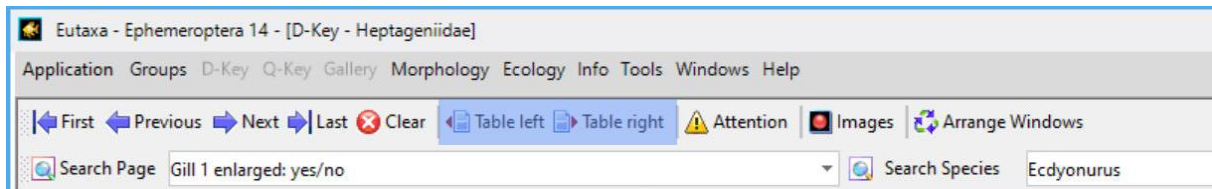
Fig. 18: Toolbar: Table left, Table right

Both Tables can be arranged at the same time or displayed separately. They may be displaced by moving the title bar with the mouse cursor and can be reset to their initial position by clicking the Arrange Windows button.
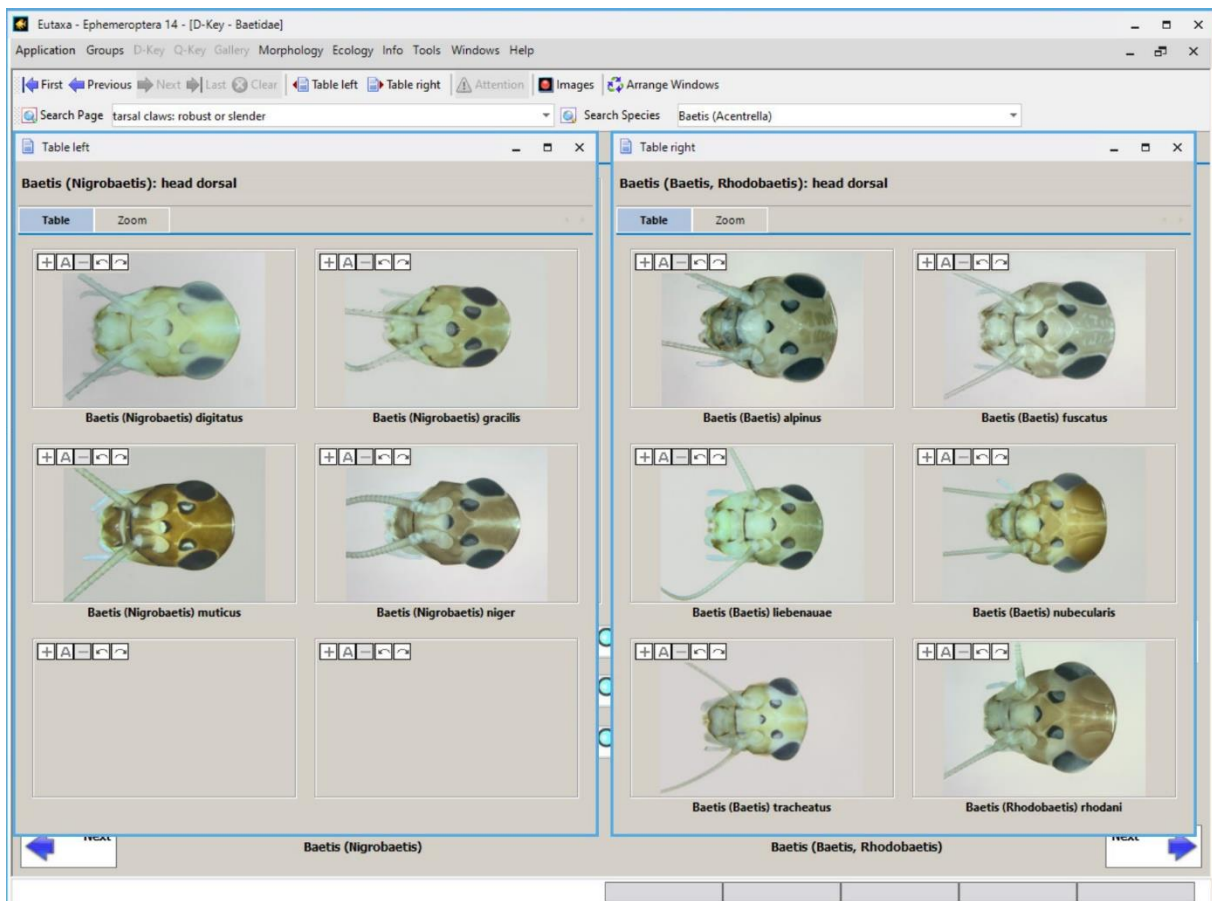
Fig. 19: D-Key Card: Table Windows Left and Right, both arrayed at the same time

Each table consists of two tabs, named **Table** and **Zoom**. When selecting the **Zoom** tab, all images are displayed in a bigger size and may be queried in sequence by clicking the Navigation Keys in the lower bar of the tab forward or backward. To close a table, click on the **X**-setter or press **Escape**.

Note: When accidentally minimizing a table, move the mouse cursor to the Eutaxa icon in the task bar of the PC and click on the thumbnail picture of the table to maximize, or on the **X**-button to close it.
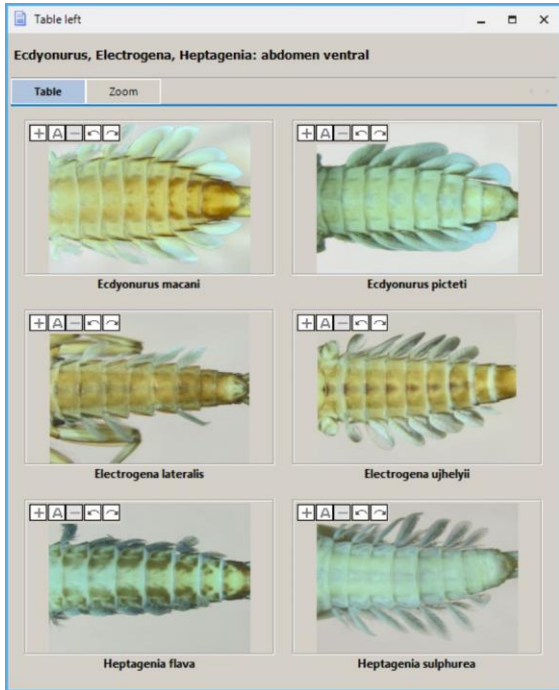
Fig. 20: Table Window: Table tab
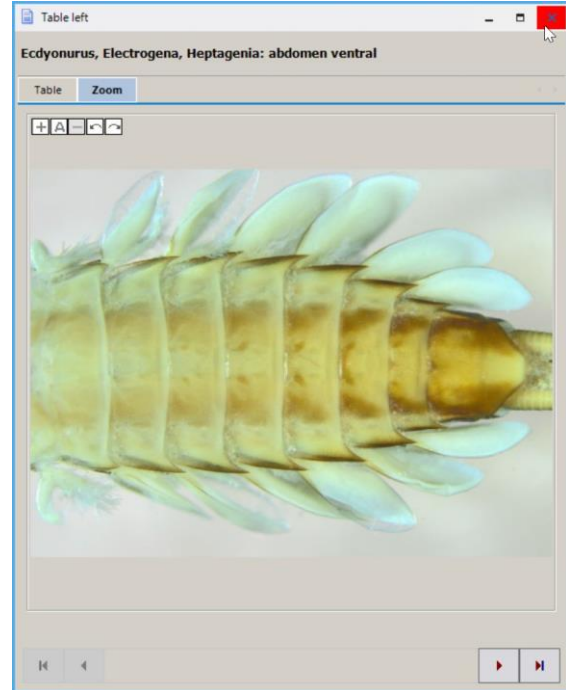
Fig. 21: Table Window: Zoom tab

Attention

When this button is set to active, a window may be opened, offering specific information about identification problems or confusion of species. The size of the window can be modified by moving its lower margin with the mouse cursor down- or upward. To close the Attention Window, click on the **X**-button in the title bar or hit **Escape**.
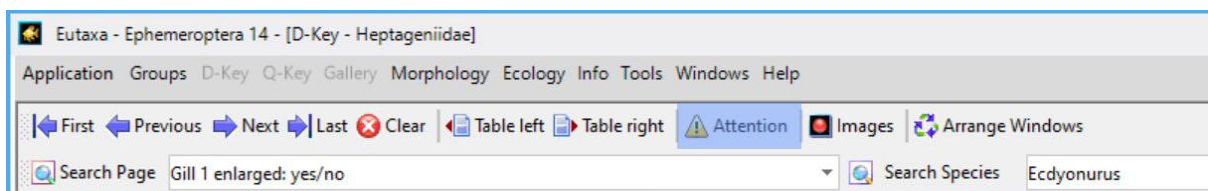
Fig. 22: Toolbar: Attention Window button
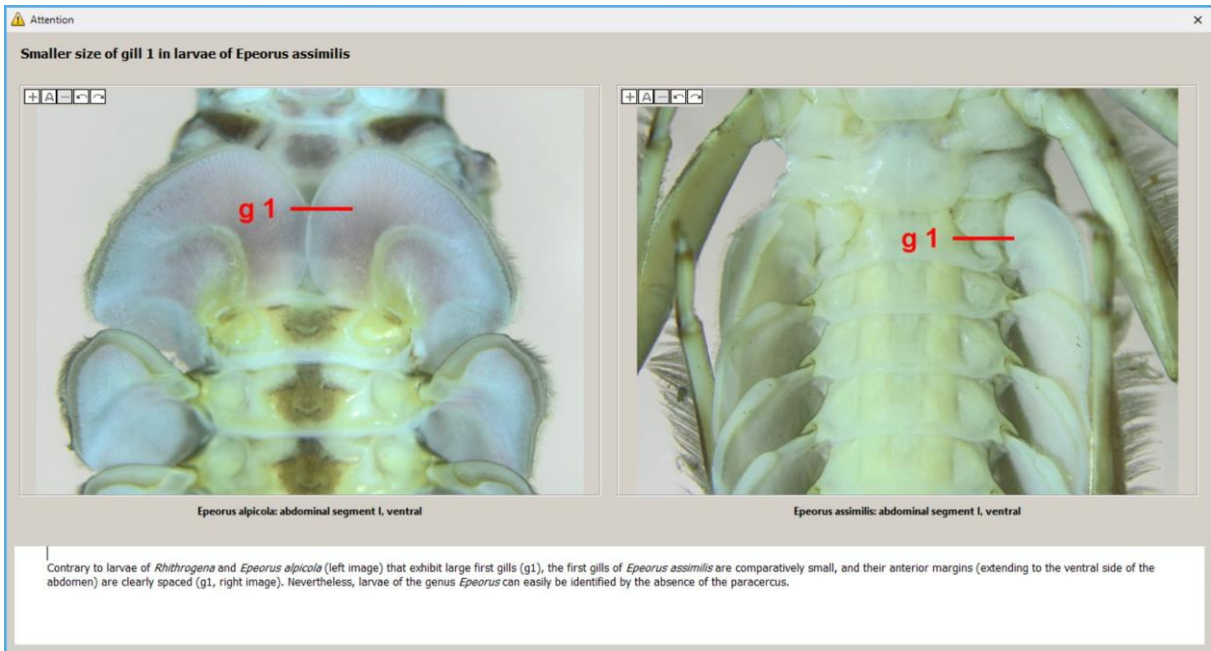
Fig. 23: D-Key Card: Attention Window

Images

This button opens a desired number of windows to display pictures stored in the Gallery Archive. Each Image Window consists of the selection bar (including a preselection field and four combo boxes) and of a single Viewport. To display an image, first select "Group" or "Family", and subsequently group, genus, species and detail in the combo boxes. To browse the images, just move the cursor over one of the boxes and scroll the jog dial of the mouse. To change the size of a window, drag the margins in a desired position. To close the window, click on the **X**-button in the title bar. When accidentally minimizing an image window, move the mouse cursor to the Eutaxa icon in the task bar of the PC and click on the thumbnail picture of the window to maximize, or on the **X**-button to close it.
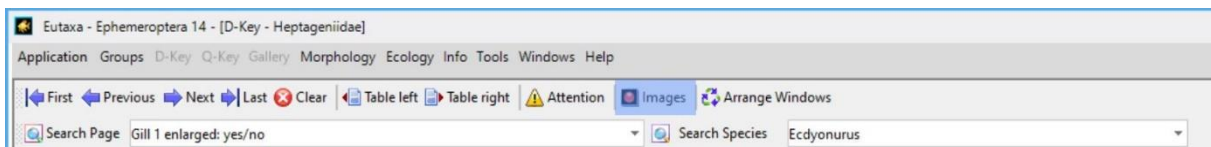
Fig. 24: Images button
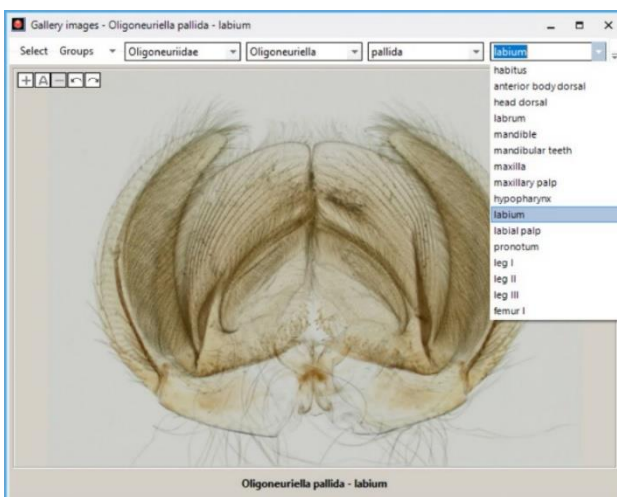
Fig. 25: Image Window – selecting a detail

Arrange Windows

Button to restore the size and alignment of Tables and Attention windows.
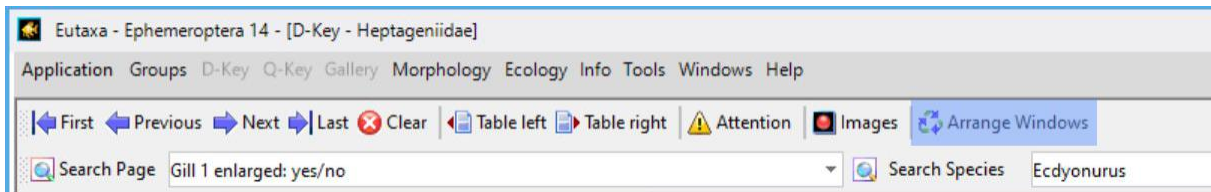
Fig. 26: Toolbar: Arrange Windows

3.3 Combo Boxes

Search Page

This command field is used to select a certain page of the D-Key Card. Each line shows a page number (**Search Page**) and a short summary (**Search Text**), indicating either the systematic level or a prominent feature. The lines are sorted by the page number but the order may be changed by clicking on the respective column header. After selecting a record, the associated page will be displayed.
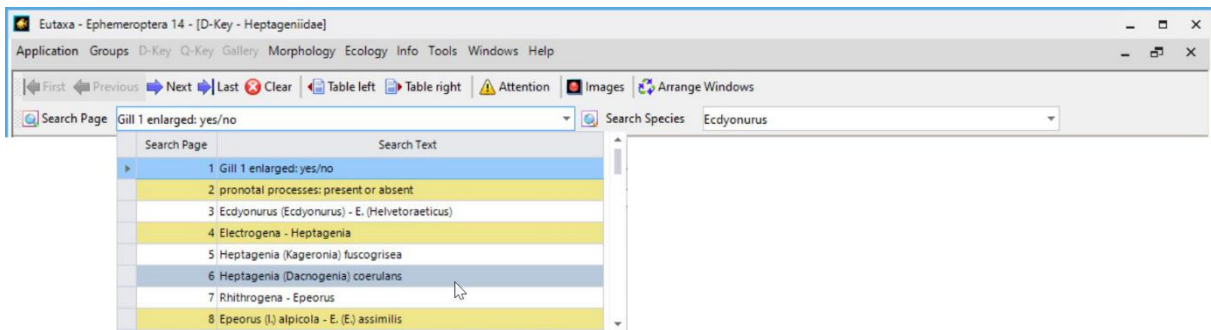
Fig. 27: Toolbar: Search Pages – expanded list of pages

Search Species

This command field is used to search for a certain taxonomic unit (a genus, species or species group). After selecting a name, the associated page will be displayed. The taxa are sorted in an alphabetical order and may be sorted in an ascending or descending row by clicking on the column header.
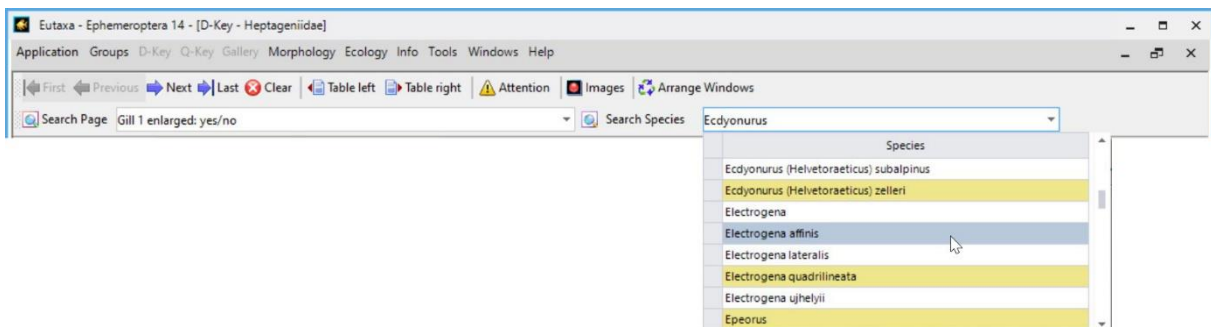
Fig. 28: Toolbar: Search Taxa – expanded list of species

3.4 Dichotomic Key Card

The Dichotomic Key card shows a pair of pictures, each described in one of Text Fields below, that have to be compared and distinguished. Each half of the card contains a single Viewport (1), a row of up to four Text Fields (3), an Arrow Key (5) and the current Systematic Level (4). Both halves are separated by a series of Lens Buttons (2), allowing the user to switch between the text fields and to display the correspondent images.
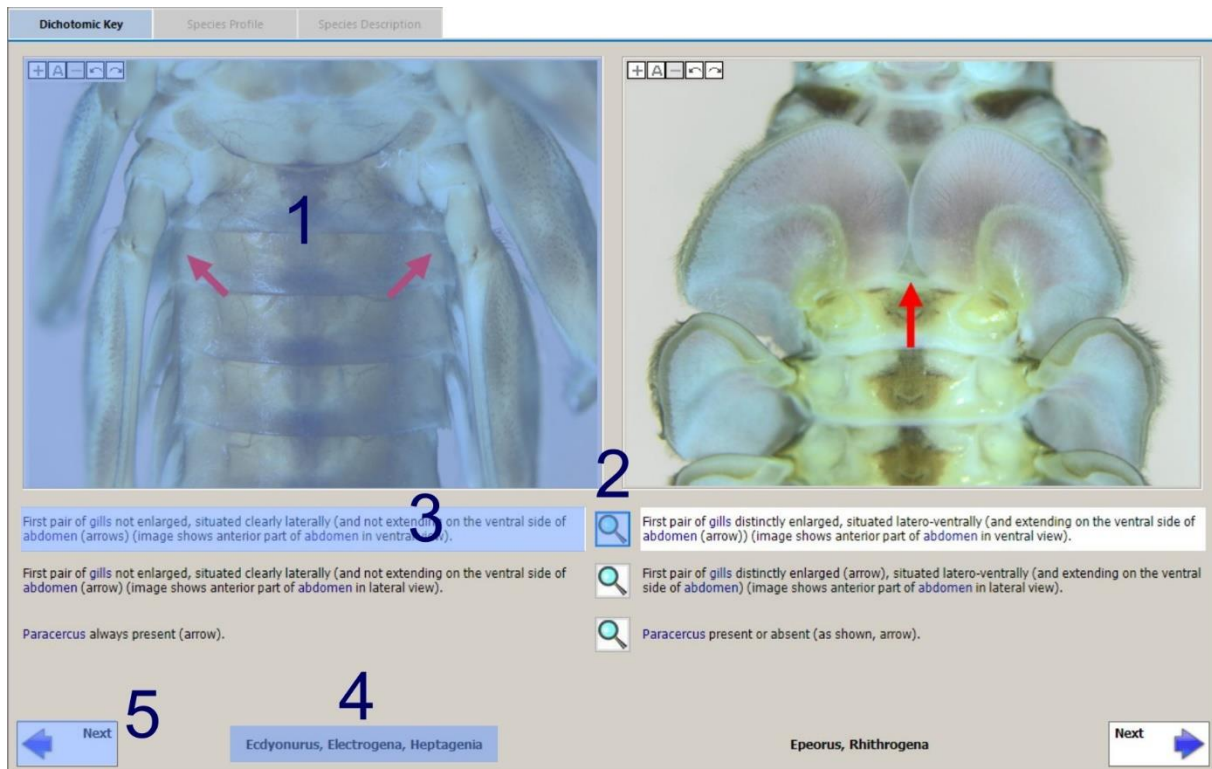
Fig. 29: D-Key Card: Configuration and description

Viewport

Each half of the card contains a Viewport (1) with a picture of a relevant morphological feature. Both pictures can be compared to each other and are described in the appropriate Text Field (3) below. A maximum of four pairs of images (and correspondent Text Fields) can be viewed on one page.

Each Viewport shows a series of five Image Keys, placed in the left upper corner, that are used to zoom (+, -) or to rotate (arrows) an image. When clicking the **A**-Key (Autosize), the image size is adjusted to the Viewport and the rotation is reset to 0°. A detailed description is given on page 59 ff. (Gallery).
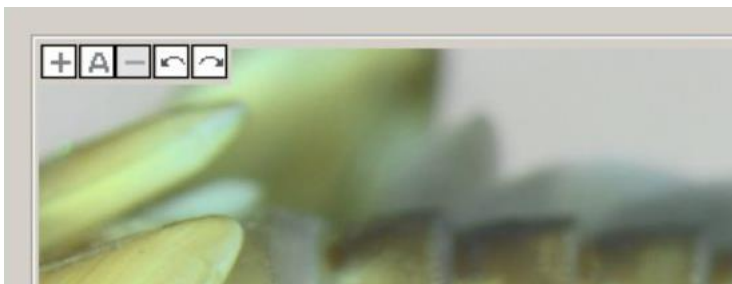
Fig. 30: Image Keys

Magnified pictures can be aligned either with the scroll bars or by moving the image with the mouse cursor (when dragging the image, the cursor symbol changes from an arrow to a hand).

Text Fields

Each half of the card contains a vertically arranged row of up to four Text Fields (3) with a description of the appropriate image, currently displayed in the Viewport (1).

Morphology Window

Most Text Fields include a variable number of blue-coloured detail names. When moving the cursor over the blue text, the cursor changes to a hand symbol (fig. 31). When clicking on the link, a window of the Morphology sub-application opens (fig. 32), indicating the position of the described detail. This information shall facilitate the finding of morphological features, relevant for identification. The window can be displaced and its size may be adjusted by scrolling the margins with the mouse cursor. To close the window, click on the **X**-setter in the title bar or hit **Escape**.
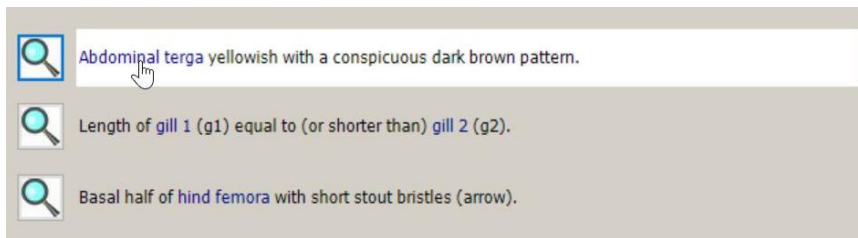
Fig. 31: Blue-coloured links
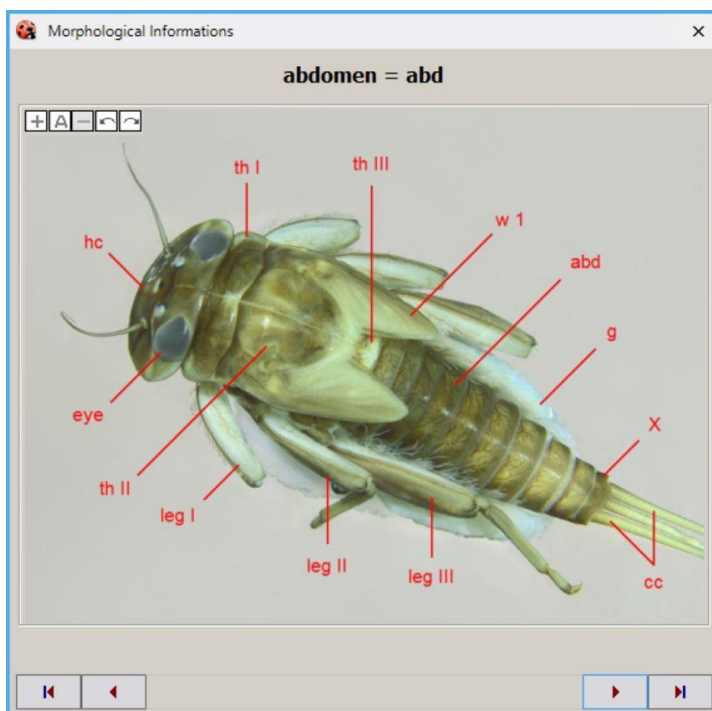
Fig. 32: Morphology Window

Lens Buttons

Up to four Lens Buttons (2) may be arranged in a vertical row in the middle of the card, each associated with a pair of Text Fields (3). When clicking on one of these buttons the adjacent Text Fields are set to active (with the background colour changing to white) and the appropriate pictures are displayed in the Viewports.

Arrow Keys

The blue-coloured Arrow Keys (5) (fig. 33) are navigation keys to move to the next page. For example, the left Arrow Key is pressed in case of concordance with those images, shown in the left Viewport. If the species level is reached (or a further separation of taxa is not possible), the respective Arrow Key is set inactive and appears in a grey colour (fig. 34).
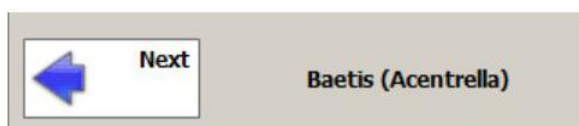
Fig. 33: Arrow Key active (genus-/subgenus-level)   Fig. 34: Arrow Key inactive (species level)

3.5 Species Profile Card

When the final systematic level is attained, this card is set active and provides images of those species, displayed in the Systematic Level fields (4) on the Dichotomic Key Card. The Species Profile Card consists of an Image Panel, including all available pictures of the species, and of a single Viewport. Images can be displayed individually by selecting a specific thumbnail, or in sequence by switching the Navigation Keys **First**, **Next**, **Previous** and **Last** in the Toolbar (Fig. 17).
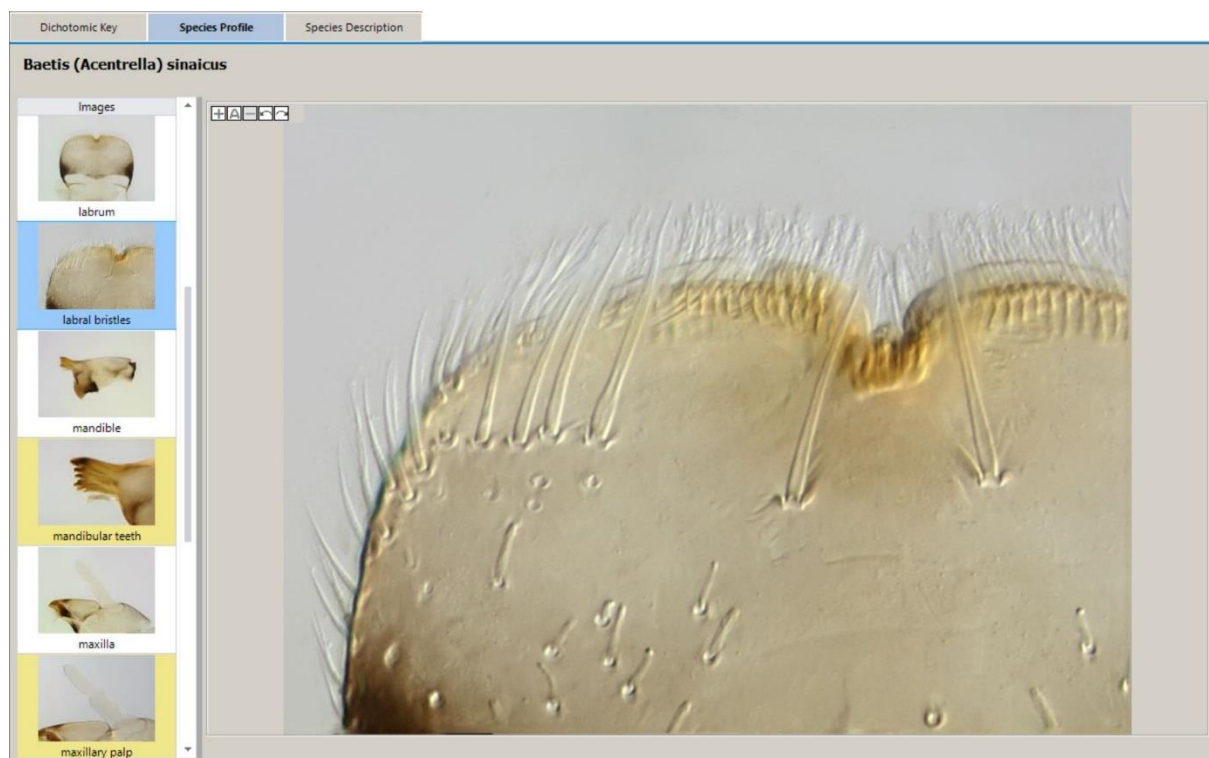
Fig. 35: Species Profile Card
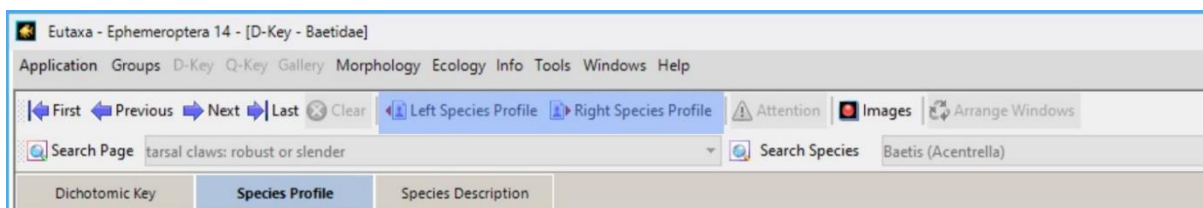
Fig. 36: Species Profile Card: Toolbar

The buttons **Left Species Profile** and **Right Species Profile** (fig. 36) in the Toolbar of the D-Key Card are set on active when the final systematic level is reached and can be used to display images of the left or right identified taxon.

3.6 Species Description Card

This card is activated when the final systematic level is reached and offers information about systematic, biology, habitat conditions, classification, synonyms and the distribution of the identified taxon.

This card consists of three sections: the Information Panel, a Viewport to display a map, descriptions, charts or a list of synonyms, and a field with Systematic Data.
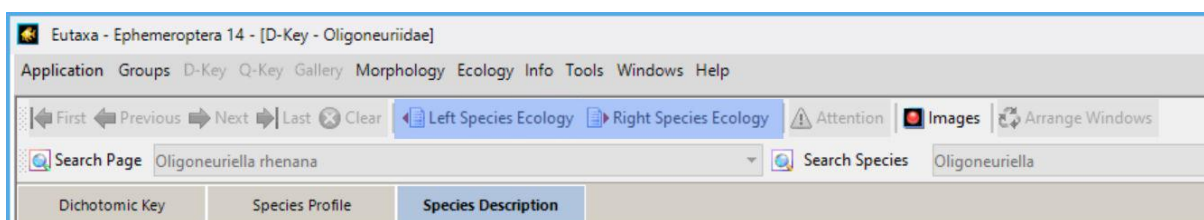
Fig. 37: Species Description Card: Toolbar

Information Panel

The panel contains a series of buttons to query information about an identified taxon.
Note: When moving the mouse cursor over a button, the colour changes to blue (as shown in Fig. 38), but the blue colour disappears as soon as the cursor departs. The colour of selected button does not change.

Ecology

Button to display a description of the biology and ecology of the identified taxon.

Classification

Button to display charts of the longitudinal distribution (habitat preference) and the saprobic valence of the identified taxon.

Synonyms

Button to open a list of synonyms, authors and the years of the published description.
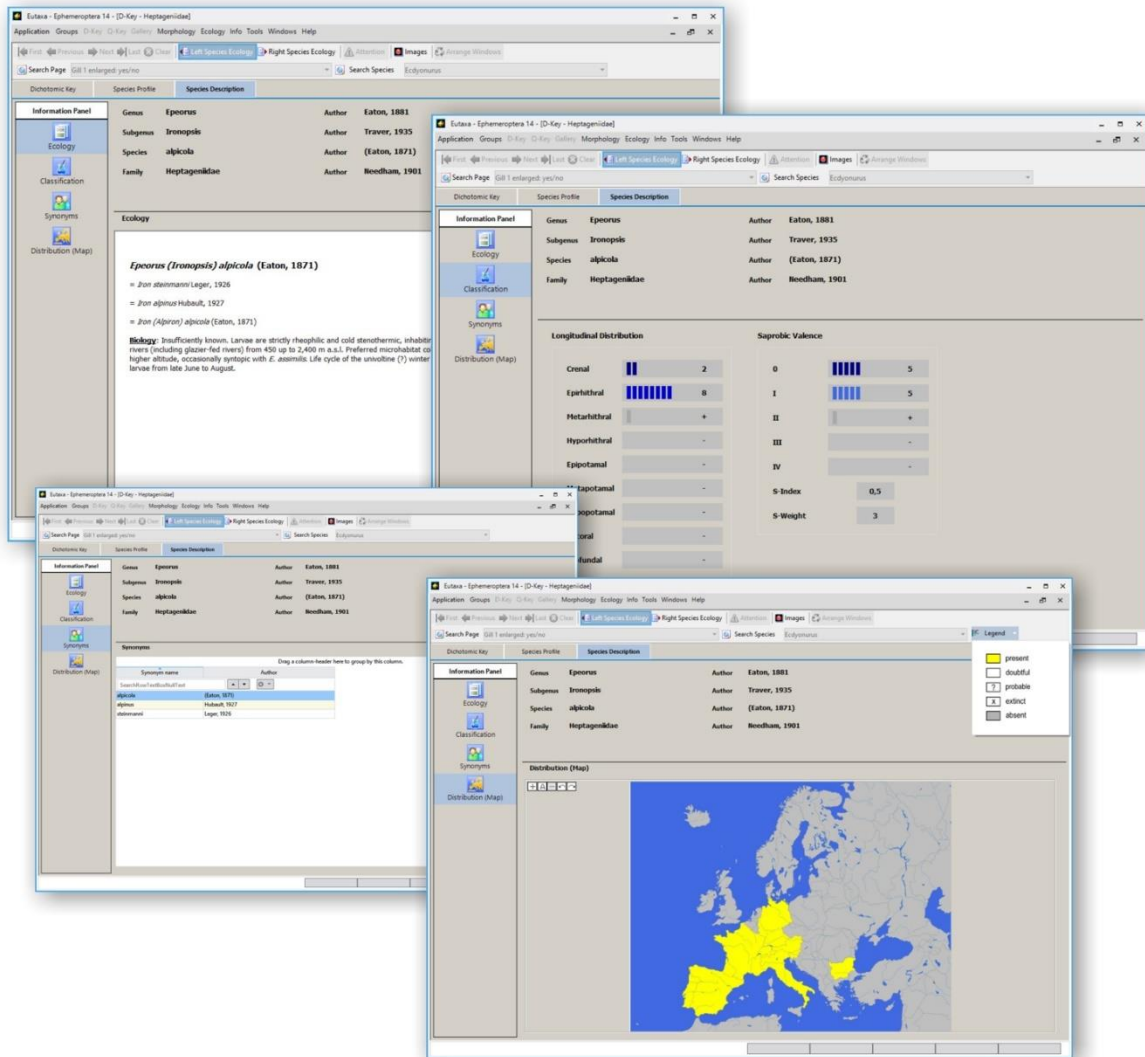
Fig. 38: Species Description Card: Ecology, Classification, Synonyms and Distribution

Distribution (Map)

Button to display a map of a geographic region, showing the distribution area of the identified taxon.

Systematic Data

This field displays a series of systematic data, including names, authors and the years of description.

4. Query Key (Q-Key)

4.1 Overview

The Query Key interface includes a Toolbar (1) and a series of Query Key Cards (2).
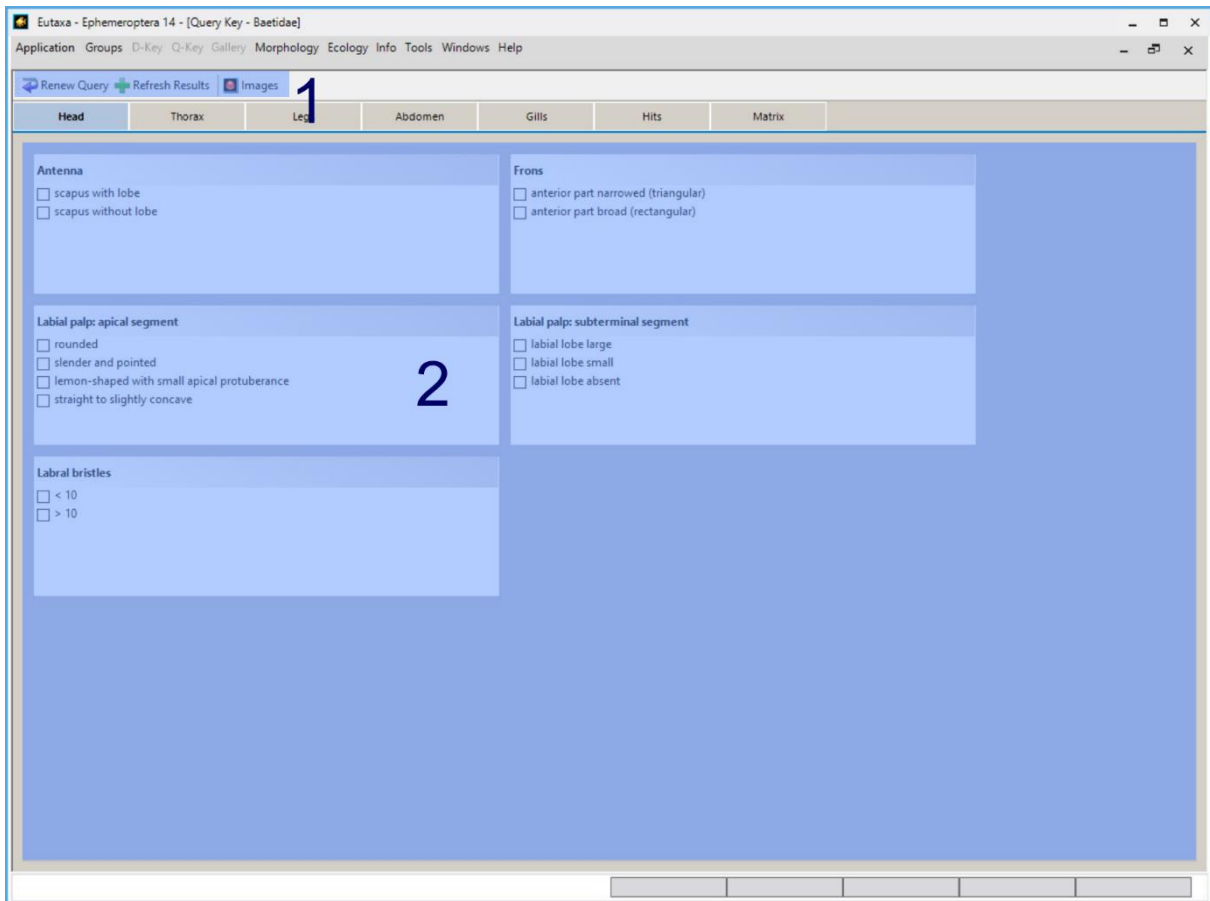
Fig. 39: Query Key interface: Toolbar and Query Key Cards

4.2 Toolbar – Query Cards, Hits Card (except Matrix Card)

After starting the Query Key, the following buttons in the Toolbar are displayed:
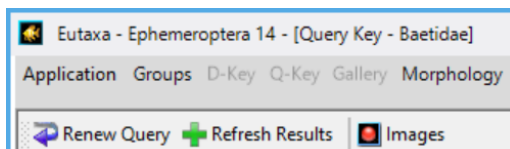
Fig. 40: Toolbar: Query Cards, Hits Card

The following buttons are used to run a calculation after selecting features in the Query Cards, and to display the results in the Hits Card:

Renew Query

This button is used to clear all checks in the boxes of the Query Cards before running a new calculation.
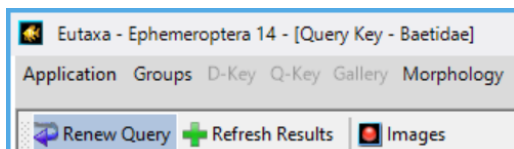
Fig. 41: Toolbar – Query Cards: Renew Query

Refresh Results

The button is hit to run a calculation and to display the results in the Hits Card. Moreover, it is used to refresh the Matrix results in the Hits Card, according to the last sorting or grouping of data (species) in the Matrix Card.

Note: Hitting this button is necessary before transferring the results into the Gallery, in order to display images of the concordant species in the sequence of the last calculation.
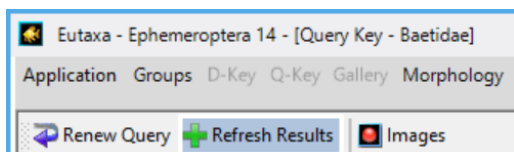
Fig. 42: Toolbar – Query Cards: Refresh Results

Images

This button opens a desired number of windows to display pictures stored in the Gallery Archive. Each Image Window consists of the selection bar (including a preselection field and four combo boxes) and of a single Viewport. To display an image, preselect a group or family and subsequently choose group, genus, species and detail. To browse the images, move the cursor into one of the combo boxes and scroll the jog dial of the mouse. To close the window, click on the **X**-button in the title bar.
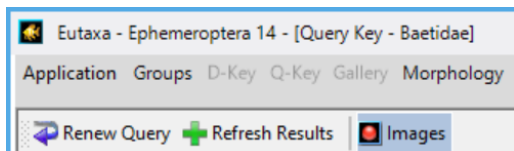
Fig. 43: Toolbar: Images

4.3 Toolbar – Matrix Card
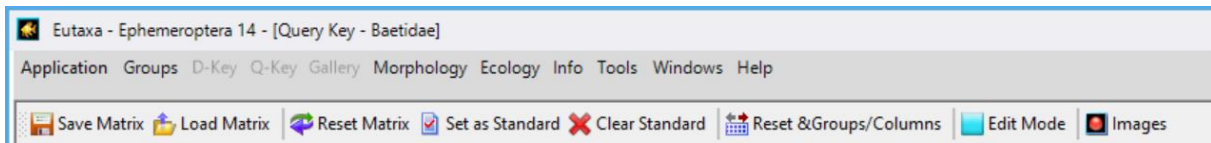
Save Matrix

This button stores user-defined Matrix changes. When clicking this button, the current modified version of the Matrix can be saved under a new name (*.qkxml) in any directory of the PC.
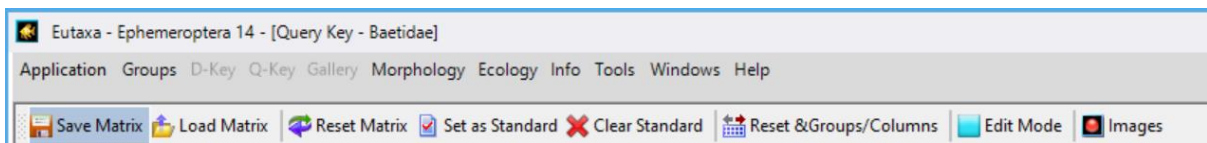
Fig. 45: Toolbar – Matrix Card: Save Matrix

Load Matrix

This button is used to load a stored version of the Matrix (*.qkxml).
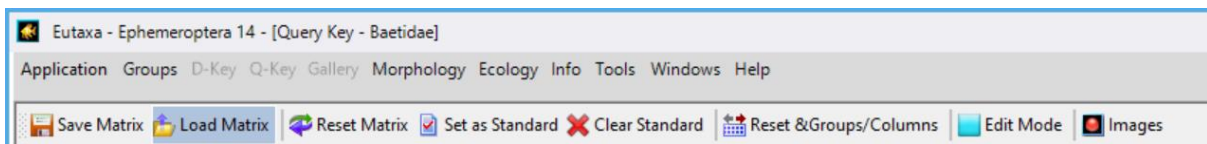
Fig. 46: Toolbar – Matrix Card: Load Matrix

Reset Matrix

Enabling this button clears all entries in the column Compare and all current changes in the Matrix, which had not yet been set as a standard.
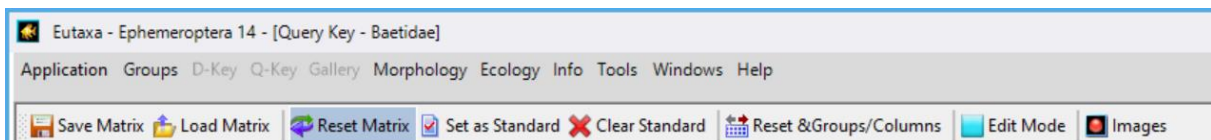
Fig. 47: Toolbar – Matrix Card: Reset Matrix

Set as Standard

Button to save all user-defined changes in the Matrix. When enabling this button, all current changes (added or removed checks) are stored and can be applied to the following calculations.
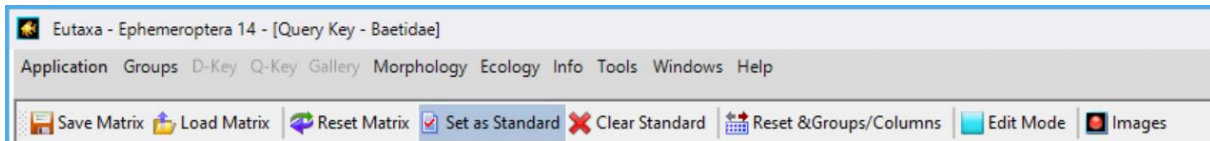
Fig. 48: Toolbar – Matrix Card: Set as Standard

Clear Standard

Button to cancel the current settings. To reset the original Matrix and to clear all user-defined changes, press the buttons Clear Standard and Reset Matrix in sequence.
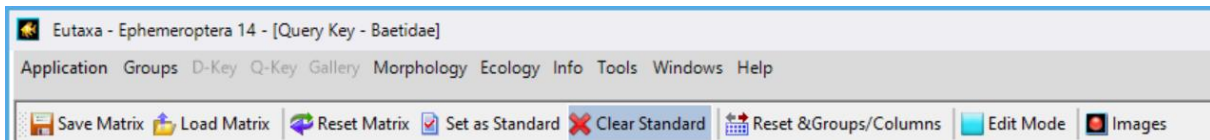
Fig. 49: Toolbar – Matrix Card: Clear Standard

Reset Groups/Columns

This button is used to cancel groups and to reset lines and columns to their initial position.
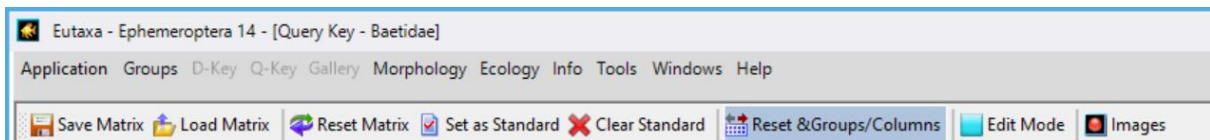
Fig. 50: Toolbar – Matrix Card: Reset Groups/Columns

Edit Mode

When enabling the Edit Mode, the checks in the Matrix can be changed individually. When disabling the Edit Mode, the checks are fixed and cannot be added or removed.
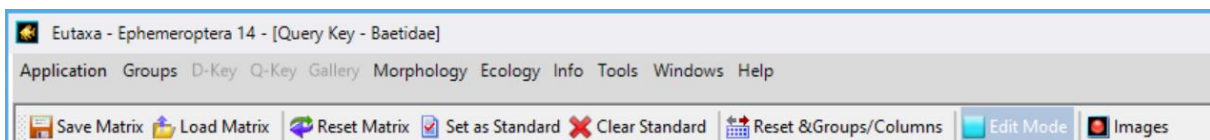
Fig. 51: Toolbar – Matrix Card: Edit Mode

Images
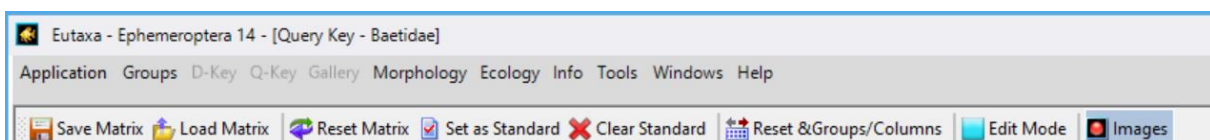
Fig. 52: Toolbar – Matrix Card: Image button

4.4 Query Cards

Query Cards contain check lists of morphological or ecological criteria, grouped according to specific parts of the body or ecological criteria (fig. 53). Every card contains a series of **Feature Panels** (1, fig. 54), arranged in alphabetical order, each indicating a specific morphological or ecological characteristic.

Fig. 53: Query Card: Morphological features of the head

Every **Feature Panel** includes a header (2) and a list of several features (3) with check boxes (4), which may be selected in case of concordance. Only one feature can be marked per field. Selected features are highlighted in blue (fig. 55).

Fig. 54: Query Card: Feature Panel (1), header of a Feature Panel (2), features (3) and the corresponding check boxes (4)

Fig. 55: Selection of features in different panels, each highlighted in blue

For a single query, features in desired number and combination can be selected on different cards.
To run the calculation (query) press the Refresh Results button. To clear all checks before starting a new calculation, press the Renew Query button and confirm the dialog with **OK**.

4.5 Hits Card

After running a calculation, the results will be displayed automatically on the Hits Card. This card contains a species list, the number of hits, pursuant to the number of concordant criteria, and the current position of species in the Matrix Card. The records can be sorted or grouped, either by **Species Name**s or by the values in the **Hits**- or **Matrix**-list. To sort species or values, click on the header of the column to sort in an ascending or descending row. To group species according to the number of hits (as shown in figures 57 and 58), drag the column header of the **Hits**-list into the Grouping bar (labelled: "Drag a column header here to group by this column", as shown in figure 56). A detailed description how to group species is offered in chapter "Grouping of Records".

Fig. 56: Hits: Species sorted by the number of hits

Head	Thorax	Legs	Abdomen	Gills

Grouped by: Hits ✕

Species Name	Hits	Matrix
⌄ Hits: 0		
⌃ Hits: 1		
Baetis digitatus	1	5
Baetis gracilis	1	7
Baetis muticus	1	14
Baetis niger	1	16
Centroptilum luteolum	1	28
⌃ Hits: 2		
Baetis atrebatinus	2	2
Baetis calcaratus	2	4
Baetis tricolor	2	23

Fig. 57: Hits: Species grouped by the number of hits (ascending row)

Head	Thorax	Legs	Abdomen	Gills

Grouped by: Hits ✕

Species Name	Hits	Matrix
⌃ Hits: 2		
Baetis atrebatinus	2	2
Baetis calcaratus	2	4
Baetis tricolor	2	23
⌃ Hits: 1		
Baetis digitatus	1	5
Baetis gracilis	1	7
Baetis muticus	1	14
Baetis niger	1	16
Centroptilum luteolum	1	28
⌄ Hits: 0		

Fig. 58: Hits: Species grouped by the number of hits (descending row)

After grouping the hits, the groups are automatically sorted in an ascending row, beginning with null hits (fig. 57). To change the sort order and to place the highest number of hits on top of the list, just click on the dragged header in the Grouping bar (as shown in figure 58).

Tip: The list of hits and the Matrix order can be transferred to the Gallery sub-application and viewed in the QKR tab. Pay attention that all changes of the Matrix order previously must be refreshed by hitting the Refresh Results button.

Note: The values in the list of **Hits** exclusively indicate the number of congruent characters. To gather information, which of the tested criteria correspond to a species, you have to analyse the check lists in the Matrix Card.

4.6 Matrix Card

The Matrix Card is a tool to compare, sort or group species by the conformity or non-conformity with morphological or ecological criteria.

Construction of the Matrix Table

The card consists of the following parts: The Matrix Table (1), the list of species = Species Name (2), a column to select species = Compare (3), the column headers (4) and the Grouping bar (5).

Fig. 59: Matrix Card

Data in the Matrix Table or Matrix Grid (1), arranged in the horizontal row, refer to an individual species, those in the vertical row to an individual morphological or ecological character. Each cell of the grid contains a check box that displays the presence (marked) or absence (unmarked) of a specific character. The names of the characters are labelled on the header of a column (4), each in form of a brief description. When pointing at any cell of the column, the full length of the description will be displayed automatically in a Tool tip. The names of species are listed in the column Species Name (2). To facilitate an optical separation of adjacent columns in the Matrix Table, the vertical rows are alternately coloured blue and white.

Browsing the grid

To view all rows and columns of the Matrix Grid, move the horizontal and vertical scroll bars. The column headers (4) and the first two columns Compare (3) and Species Name (2) remain fixed.

Sorting of records

Within a single column, records may be sorted by clicking on the header to align the checks alternately in an ascending or descending row, indicated by a small white arrow on top of the header. That way species can be sorted by their names (**Species Name**) or by the presence or absence of characters. The header of the currently sorted column is displayed in a blue colour. When clicking the header a third time, the column is reset, the white arrow disappears, the colour of the header changes to grey and the species are ranked in the alphabetical order.

Fig. 60: Sorting of a single column in a descending row (arranging the checks in the upper section of the grid)

To sort species by the presence of more than one character, select the desired headers while hitting the **Shift** key. All currently selected headers will be displayed in blue. Whenever pressing the **Shift** key, these columns can be rearranged and other characters (columns) may be added. To unmark the selected headers, click on the **Species Name** header (without hitting the **Shift** key).

Fig. 61: Sorting of two columns in a descending row, both highlighted in blue

Sorting by "Species Name"

The Species Name column contains the names of all species, sorted alphabetically in an ascending row. The sort order can be changed by clicking the header to rank the species in a descending row or to reset the column and to remove the selection by hitting the header a third time (as described on the previous page).

Tip: The list of species may be displayed with or without the subgenus name, depending on the User System Settings in the command field Tools/Settings of the Menu bar.

Fig. 62: Sorting of species by "Species Name"

Sorting by "Compare"

This procedure allows the alignment of species in a user-defined order. After marking the desired check boxes in the Compare column (fig. 63), click on the header to sort the checks in a descending row (fig. 64). The selected species will be arranged in sequence in the upper section of the table and may be compared by the presence or absence of characters.

Fig. 63: Selection of species by marking the corresponding check boxes in the "Compare" column.

Fig. 64: Sorting the selected species in a descending row by hitting the "Compare" header

Grouping of Records

Species may be aggregated in groups, according to the presence or absence of features (**checks**). The procedure of grouping is simply done by dragging the header of a column into the Grouping bar on top of the Matrix (fig. 65). After releasing the mouse button, the header is stored in the bar and appears in a grey colour, the header of the grouped column changes to green (fig. 66). This operation divides the Matrix in two sections: the first (**False**) includes the non-concordant criteria (unmarked check boxes), the second (**True**) contains the concordant criteria (marked check boxes). When clicking on the dragged header in the Grouping bar, the checks will be sorted in an ascending or descending row and both groups, **True** and **False**, will be replaced accordingly. To rank the records, being concordant with the selected criteria (= **True**) first, the checks must be ordered in a descending row (with the arrow pointing downward).

Fig. 65: Dragging a header into the Grouping bar (indicated by a pair of red arrows)

Fig. 66: Insertion of the header, resulting in a separation of marked and unmarked check boxes and a subdivision of the Matrix in "False" and "True"

Mind that the sections **True** and **False** are always collapsed (fig. 66). To expand the group, click on the small arrow on the left side of each section (fig. 67). To collapse a group, repeat hitting the arrow. Or hit the right mouse button and select a command to expand or collapse groups (fig. 71).

Fig. 67: Hitting the header in the Grouping bar to sort the records in a descending order, placing the concordant records ("True") on top of the sections.

Grouping by species names

To build a species group, first select the check boxes in the Compare column and drag the column header to the Grouping bar (fig. 65). After releasing the mouse button, the Matrix will be divided in two sections – the upper, which contains the group of the unselected species, named **Compare: False**, and the lower, which includes the selected species, named **Compare: True** (fig. 66). To displace both groups and to set the selected species on top of the list, click on the header in the Grouping bar to sort the data in a descending row (fig. 67).

To cancel a group, hit the **X**-button on the grouped header or press the Reset Groups/Columns button in the Toolbar. To remove the checks in the Compare list, press the Reset Matrix button and confirm the dialogue with **OK**.

Adding, Replacing or Removing Species

To modify Compare groups by adding, replacing or removing species, select or unmark the desired check boxes in the respective sections **True** or **False**. For example, when unmarking a check box in the section **True**, the species will automatically be transferred to the **False** section. Contrariwise, the selection of a check box in the section **False** results in a transfer of the species to the **True** section.

When all checks in the Compare column have been removed, the **True** section disappears and only the **False** section persists. After selecting a species name in the Compare column, the **True** section will be constituted automatically.

Grouping by more than one Characters

Species can be grouped, pursuant to the presence or absence of several morphological or ecological criteria. This can be done by dragging a desired number of column headers into the Grouping bar (as shown in fig. 68), resulting in a splitting of the sections into sub-sections. Each sub-section indicates the conformance (**True**) or non-conformance (**False**) with the selected character. The grouped headers are stored in the Grouping bar and the colour of the column header changes to green (fig. 69).

Fig. 68: Grouping of species by "Compare" and adding a second group

Fig. 69: Grouping species by "Compare" and by the feature "frons: triangular"

After dragging a second header into the Grouping bar, the second group (e.g. "frons: triangular") will be constituted as a subgroup of the first group (Compare), both combined by a connecting line (fig. 69). To change the order of the sections and sub-sections **False, True** to **True, False**, click on the respective header in the Grouping bar (fig. 70).
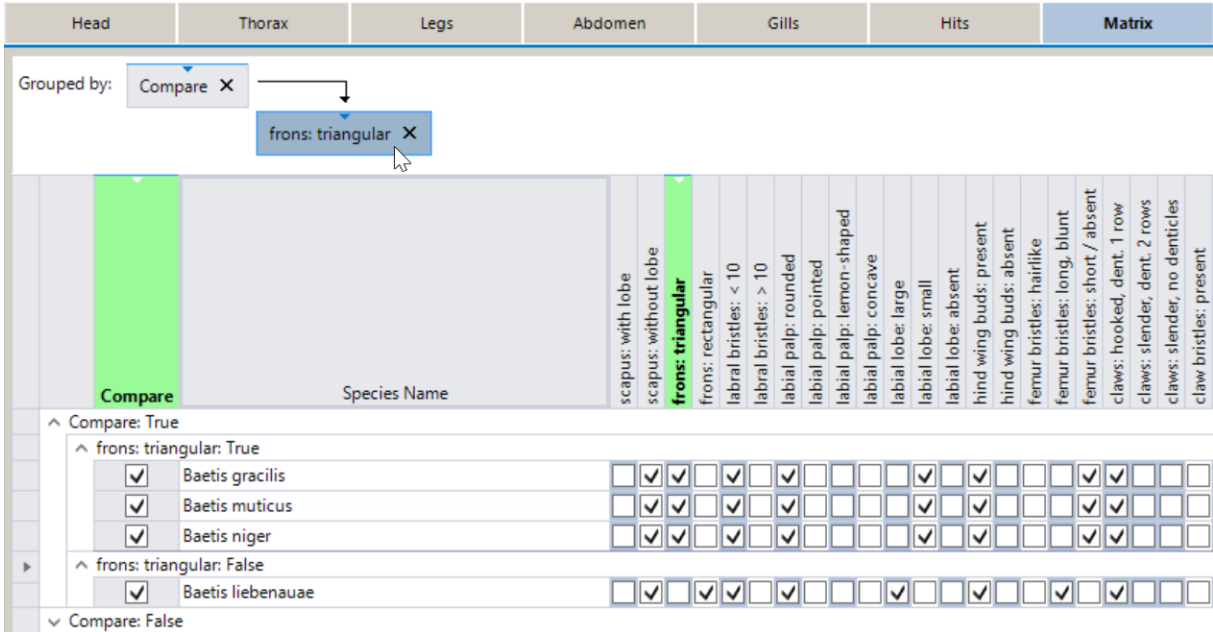
Fig. 70: Changing the order of the sections and sub-sections to "True-False"

To expand the groups, click on the small arrow on the left side of each section (fig. 70). To collapse the groups, repeat hitting the arrow. Or hit the right mouse button and select the respective command to expand or collapse groups, as shown in figure 71.
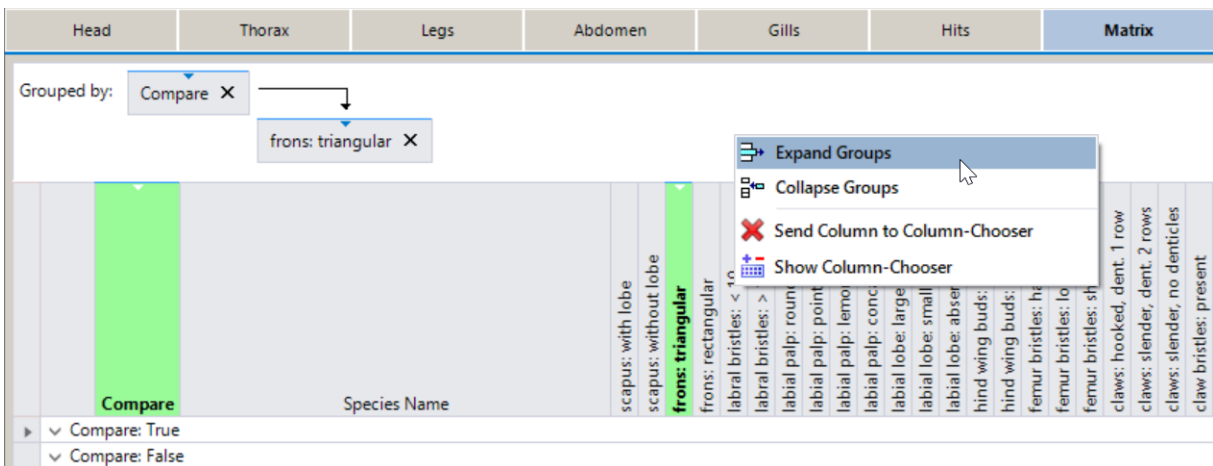
Fig. 71: Expanding or collapsing groups via command field (right mouse button)

Changing the Sequence of Groups

The succession of sections and sub-sections in the grid depends on the hierarchy of headers in the Grouping bar. This sequence may be changed by dragging a header in the Grouping bar to another position (indicated by a red arrow in the following figures).

To replace groups, just drag the first header in a vertical direction below the position of the second header (as shown in figure 72). When releasing the mouse button, both headers have changed their position and the sections and sub-sections will be automatically adapted, pursuant to the group hierarchy.
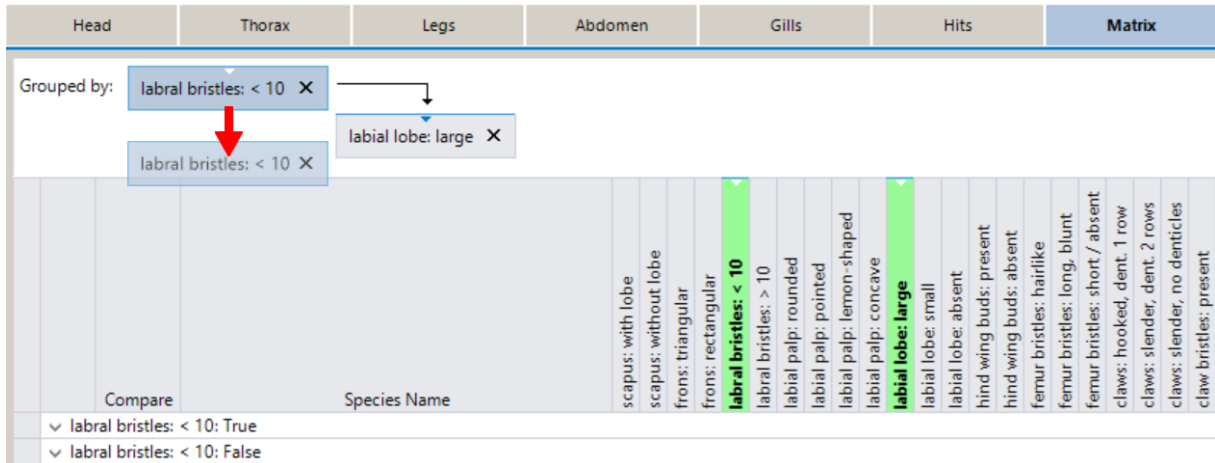
Fig. 72: Changing the group hierarchy by dragging the first group below the sub-group (red arrow).

To change the group hierarchy and to set groups and subgroups on a same level, move the header of the subgroup over the header of the first group (as shown in figure 73). After releasing the mouse button, both groups are set parallel (fig. 74), combined by a horizontal line with the arrows pointing in both directions, and sections and sub-sections are fused to single groups, e. g. **True, True**, including all species that are concordant with both criteria (fig. 74).
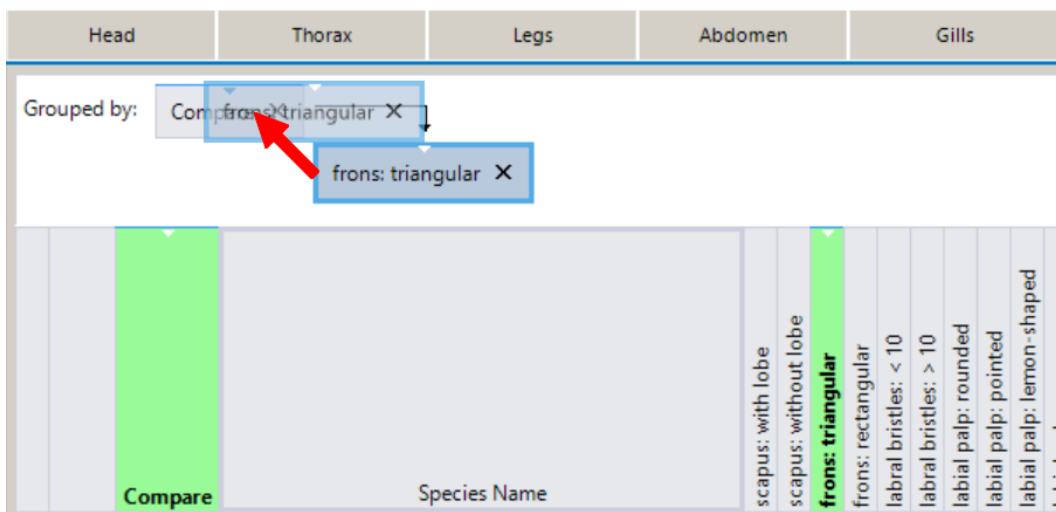
Fig. 73: Dragging the header of the subgroup over the first header to set them parallel

Fig. 74: Synchronizing main- and subgroups

To change the order of the synchronized groups, drag the left header in the Grouping bar beyond the right header (fig. 75), and both headers will change their position (fig. 76). Accordingly, the order of the criteria changes.

Fig. 75: Displacing both headers to change the order of the criteria in the Matrix table.

Fig. 76: After displacing both headers the sort order of the sections is modified accordingly.

The number of groups is not limited and criteria may be arranged in form of subgroups, dragging a new header below the last header in the Grouping bar, or in form of synchronized groups by dragging the new header on the last synchronized header in the Grouping bar. Figure 77 shows an example of groping by three criteria, with all headers arranged parallel – constituting a section **True, True, True** that contains those species that are concordant with all three criteria.

Fig. 77: Grouping of species by three criteria and synchronizing the groups to constitute a single section .

Cancelling Groups

Groups may be cancelled either by hitting the **X**-buttons of the headers in the Grouping bar, by dragging the header from the Grouping bar to any point of the Matrix grid, or by pressing the Reset Groups/Columns in the Toolbar.

Column-Chooser

The Column-Chooser is a tool for temporarily removing columns from the Matrix Card. This function can be applied to all columns, except for Compare and Species Name.

To remove one or several columns, move the mouse cursor over the header, hit the right mouse button and select the command **Send Column to Column-Chooser** (fig. 78). Subsequently, the column is blanked and stored in the window of the Column-Chooser.
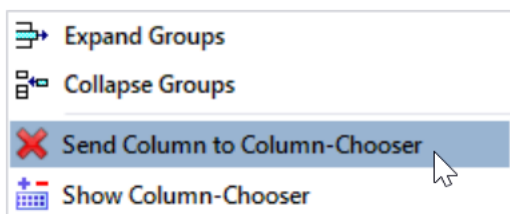
Fig. 78: Command to remove a column

Another method to blank columns is to open the Column-Chooser by hitting the right mouse button and selecting the command **Show Column-Chooser** (fig. 79).
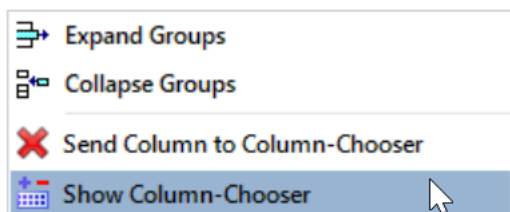
Fig. 79: Command to open the Column-Chooser

When the Column-Chooser opens, drag the desired headers from the Matrix table into the window, as shown in figure 80. As soon as the headers are added to the Column-Chooser, the columns are removed from the grid. After finishing the procedure, the Column-Chooser can be closed by clicking the **X**-setter in the title bar and recalled later by repeating the command.

To replace a column, either drag the header from the Column-Chooser to any point of the table grid and the column will be restored automatically. Or simply double click on the column header in the Column-Chooser.

To replace all columns and to reset the Matrix grid hit the Reset Groups/Columns button in the Toolbar.
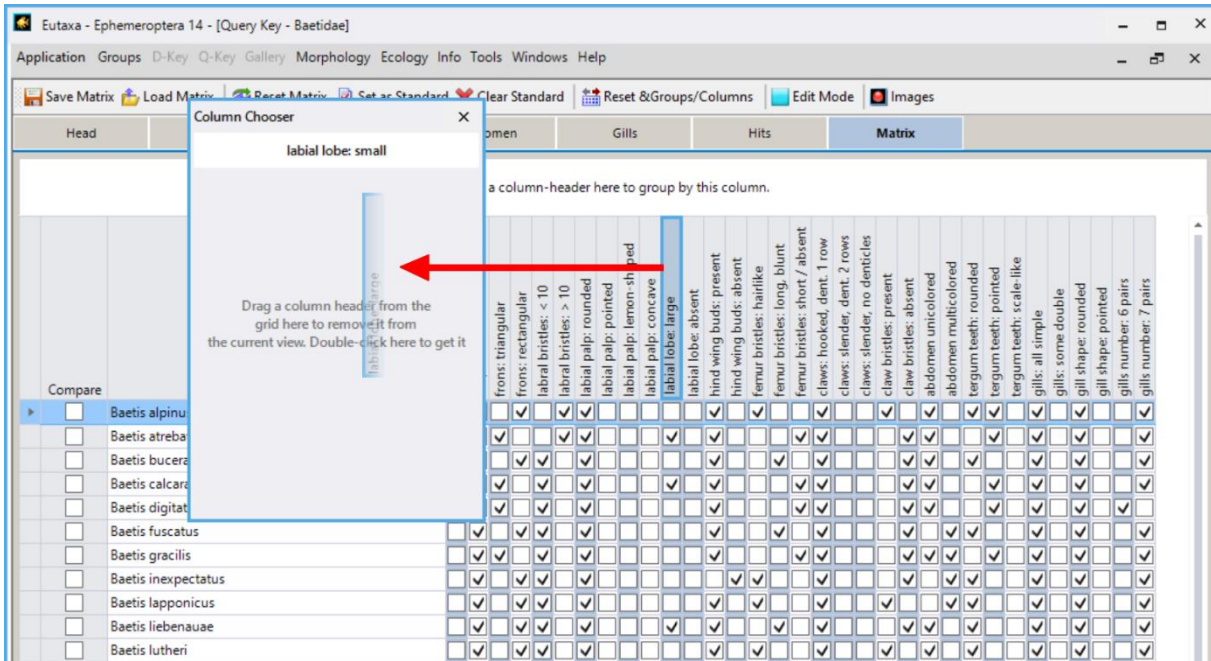
Fig. 80: Dragging headers from the Matrix table to the Column-Chooser

Modification of the Matrix

Enabling the Edit Mode button in the Toolbar allows the user to modify the Matrix Grid and to add or to remove checks, according to the user's requirement. As soon as records are changed, the affected boxes are highlighted in red. In addition, the name of the Matrix Card changes from **Matrix** to **Matrix – changed** (fig. 81). All further calculations are run with these modified settings as long as the Query Key is active. If these changes are not saved, they will be cleared after closing the sub-application. When disabling the Edit Mode, no more checks can be added or removed.
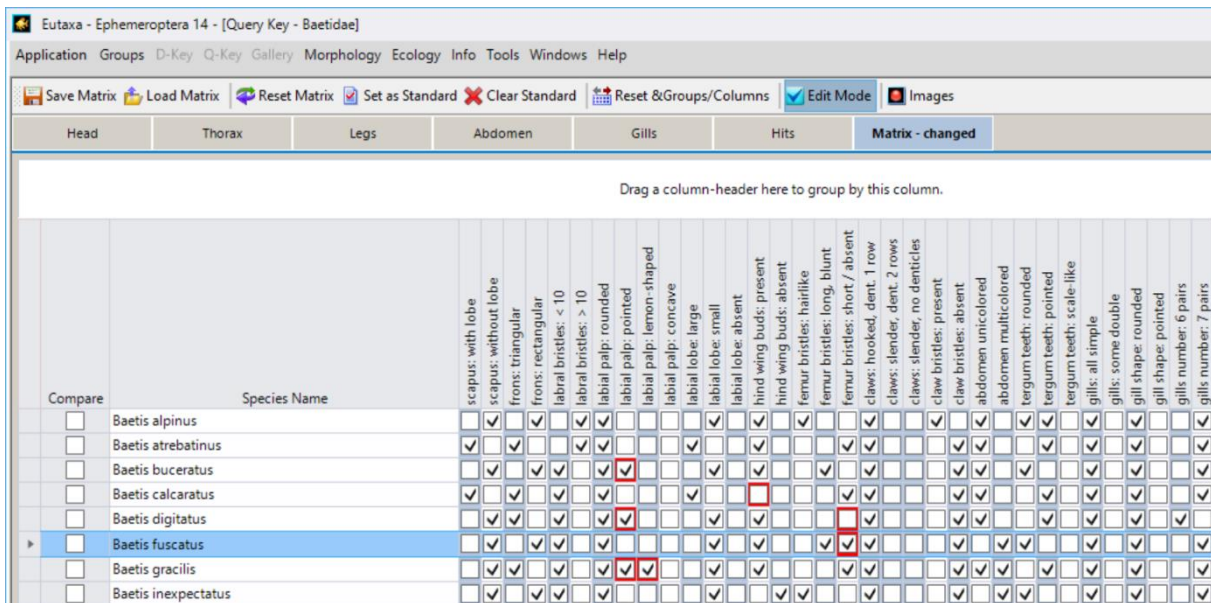
Fig. 81: Changes of the Matrix settings, highlighted in red; the Edit Mode button in the Toolbar is set to active

Resetting the Matrix

To clear all changes and to restore the original Matrix Grid, press the Reset Matrix button in the Toolbar. After carrying out this command, all checks are reset to their initial position and all red marks disappear.

Setting a modified Matrix as Standard

To save the current changes in the Matrix Grid, enable the Set as Standard button in the Toolbar (fig. 82) and conform the dialog with **OK** (fig. 84). After carrying out this command, all modifications are stored and will not be removed when clicking the Reset Matrix button or after closing the Query Key. Subsequent changes, which are not saved by a repeated click on the Set as Standard button, can be cancelled by the Reset Matrix command further on.

To reset the Matrix Grid and to reverse all changes, hit the Clear Standard button and subsequently the Reset Matrix button. Confirm the dialogue with **OK** (fig. 84). The Matrix Grid will be restored automatically and the name of the card changes from **Matrix – changed** to **Matrix**.

Note: Setting the Edit Mode button on active is only used to change the Matrix Grid and to add or remove checks. Enabling the button is not necessary to reset the Matrix, to store or clear the settings or to save or load a Matrix version. Disable the button after finishing the modification, because every accidentally click on the grid will change your settings while the Edit Mode button remains active.

Examples of Saving and Cancelling User-defined Settings

The following images show some instructions how to change and to restore the Matrix Grid.
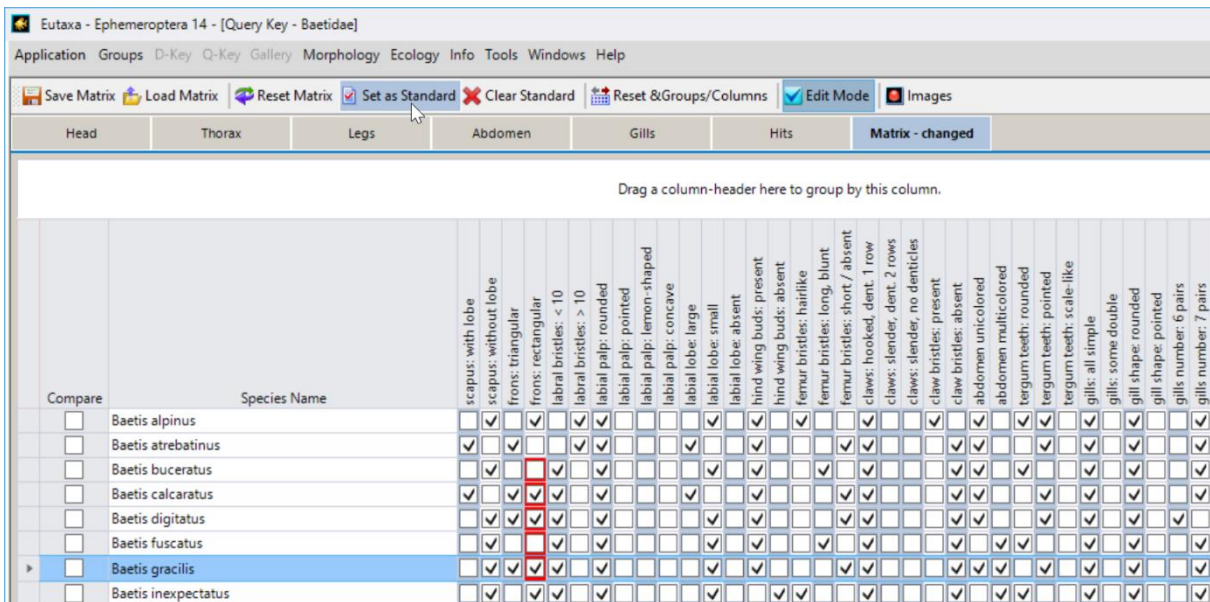
Fig. 82: Enable the Edit Mode, insert or remove checks and save these settings by pressing the "Set as Standard" button in the Toolbar
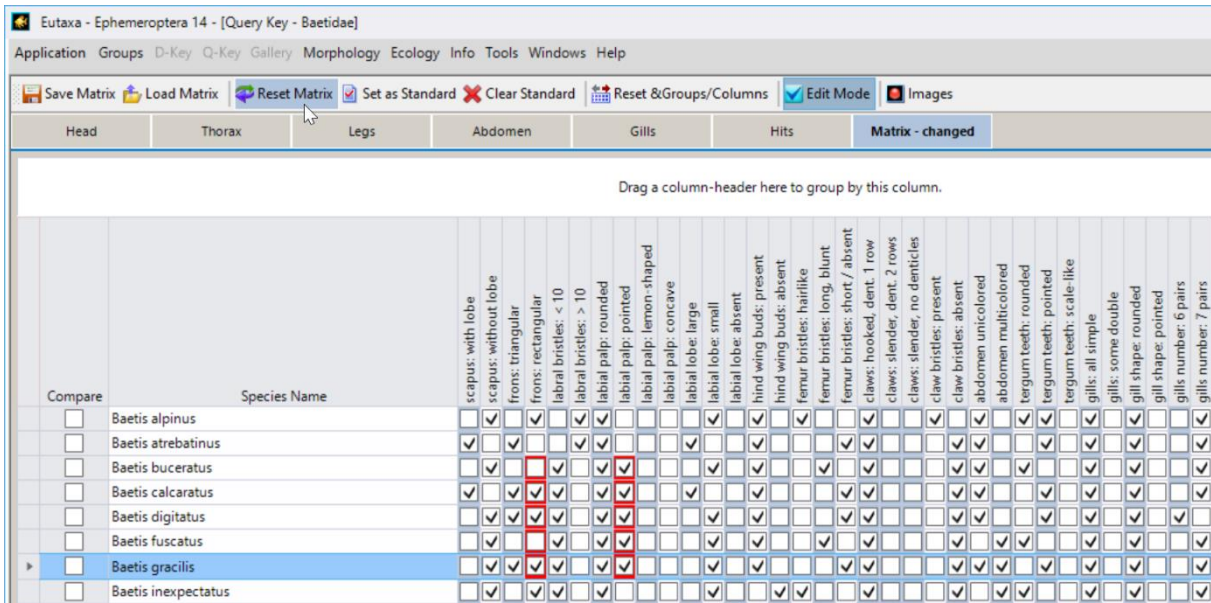
Fig. 83: Add new modifications, but desist from saving these new changes. Accordingly, click the "Reset Matrix" button to clear all new changes
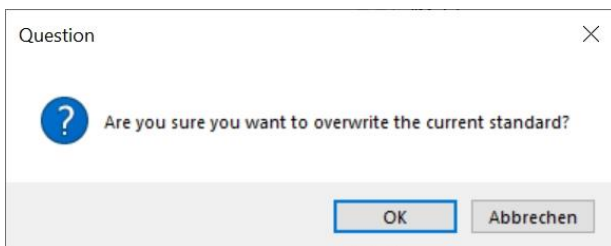
Dialog "Set as Standard"
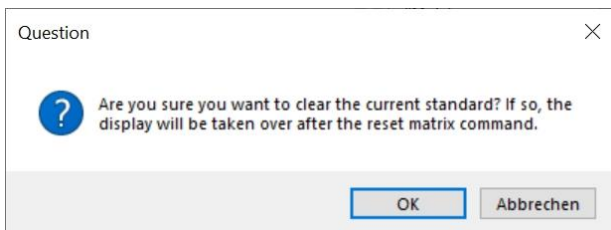
Dialog "Clear Standard"
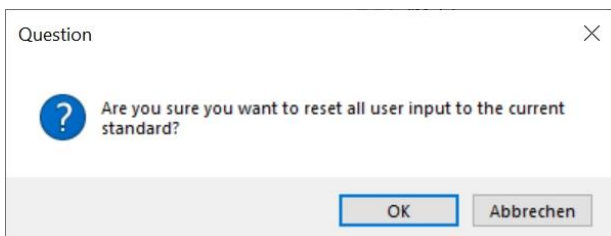
Dialog "Reset Matrix"

Abb. 84: Dialogs after pressing the "Set as Standard", "Clear Standard" and "Reset Matrix" buttons
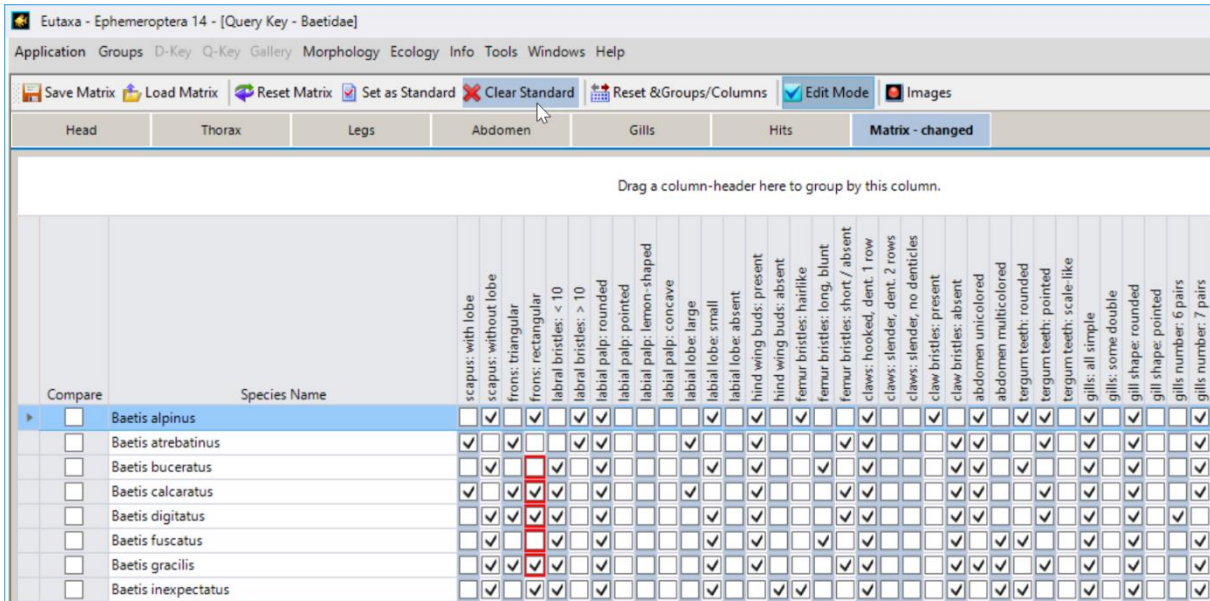
Fig. 85: To remove the saved modifications and to restore the original Matrix grid, first enable the "Clear Standard" button and subsequently the "Reset Matrix" button. After carrying out this procedure, all user-defined settings are cancelled
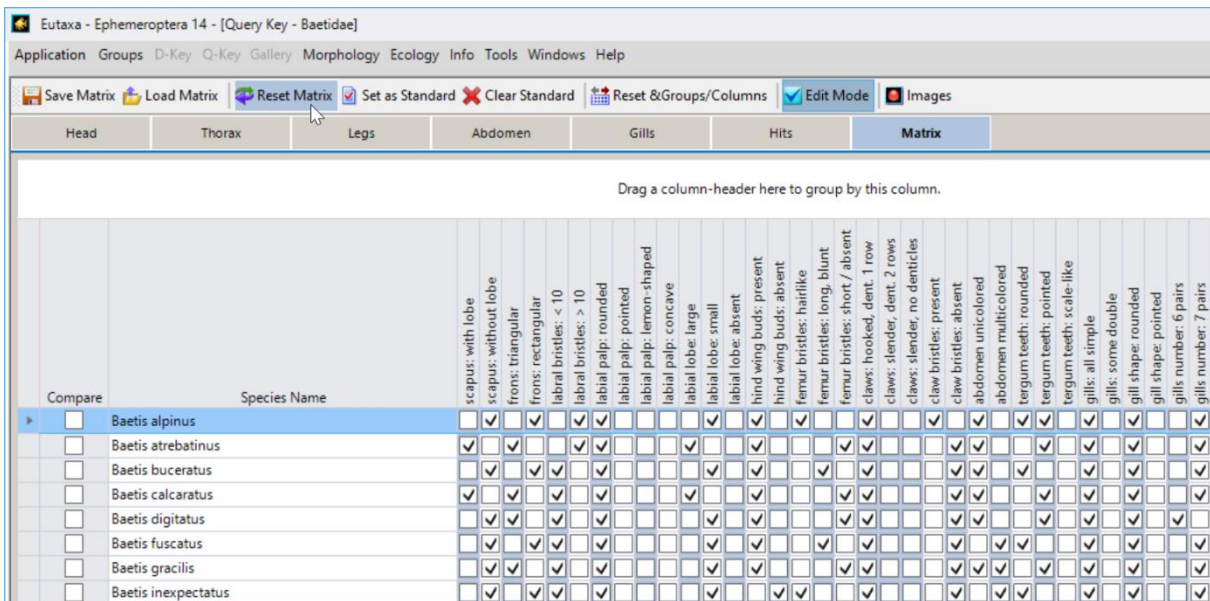
Fig. 86: After restoring the original grid, the label of the Matrix Card changes from "Matrix – changed" to "Matrix"

Storing a modified Matrix on the PC

Every modified Matrix Grid can be stored in any directory on the PC under a user-defined file name ("*".qkxml). To store a qkxml-file, enter the command Save Matrix in the Toolbar, browse the directory to the desired folder and memorise the file.
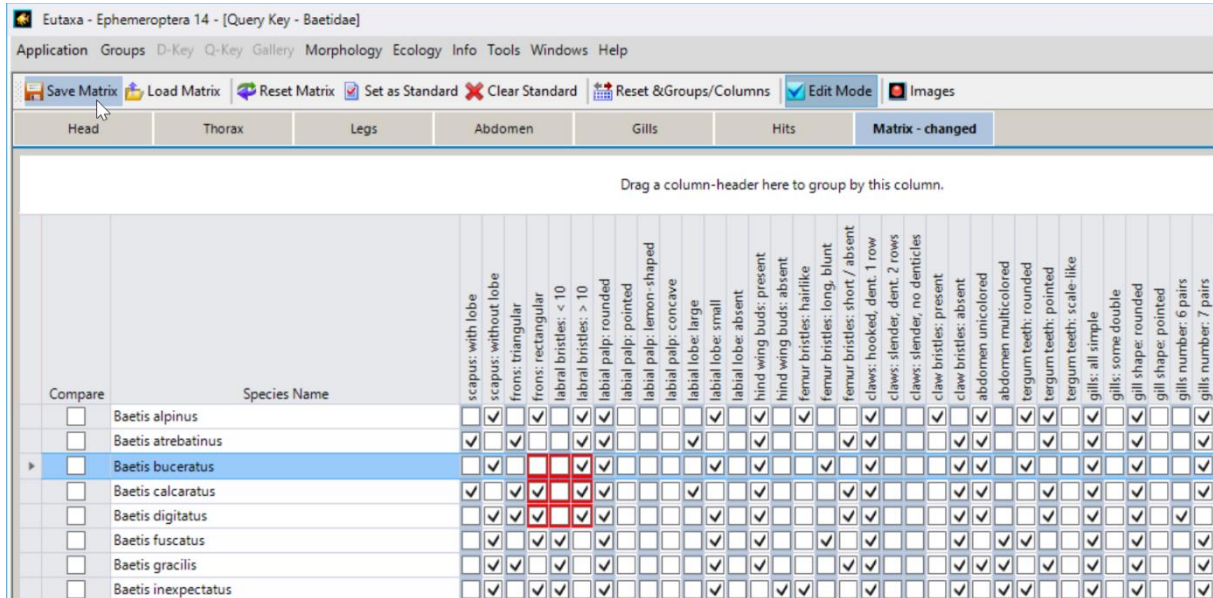
Fig. 87: Enabling the "Save Matrix" button
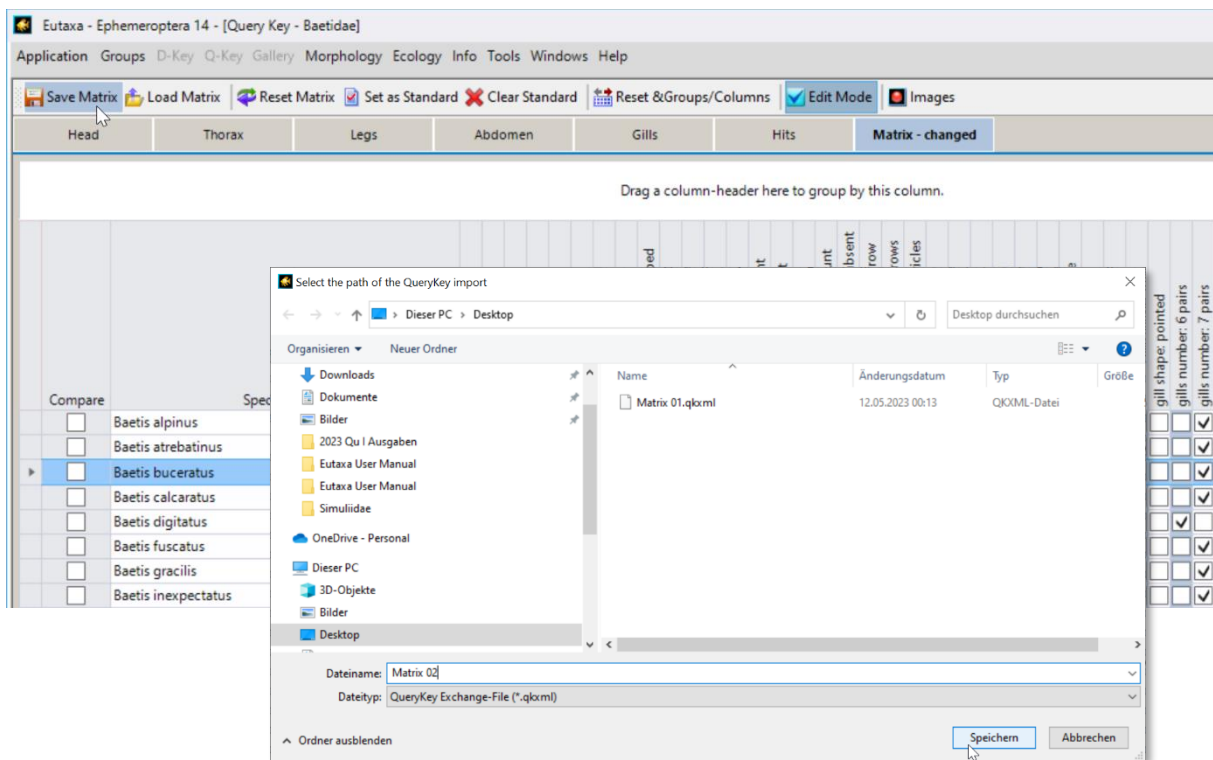
Fig. 88: Browsing the user's directory to store a modified version of the Matrix

Loading a stored modified Matrix

To load a stored version of the Matrix click on the Load Matrix button in the Toolbar and select the desired qkxml-file (fig. 62).
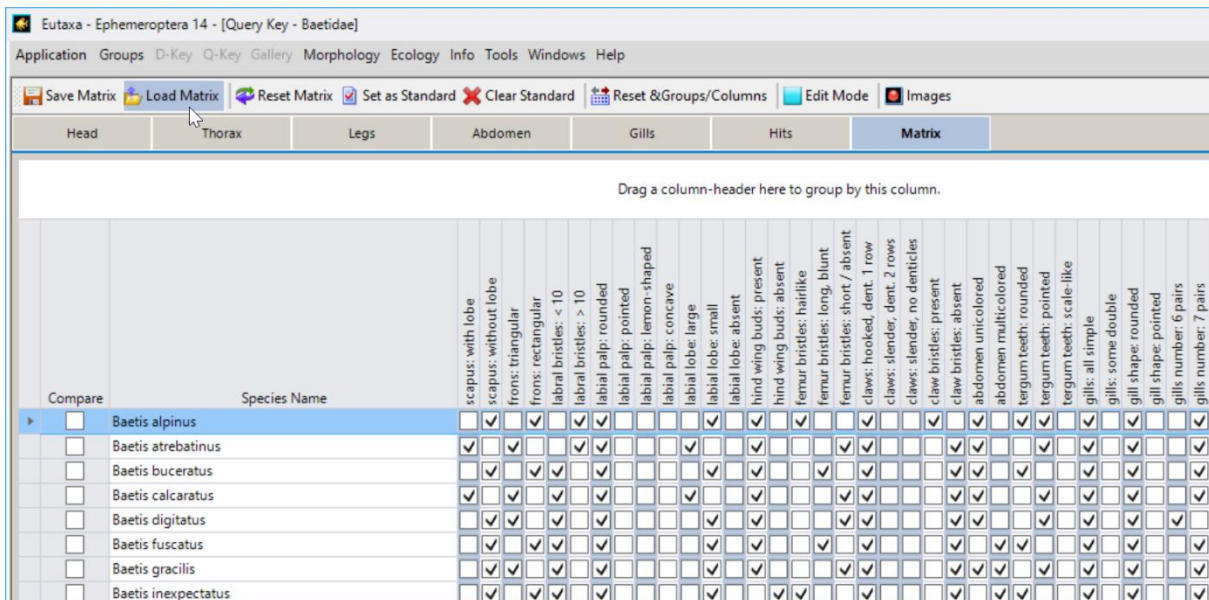
Fig. 89: Pressing the "Load Matrix" button
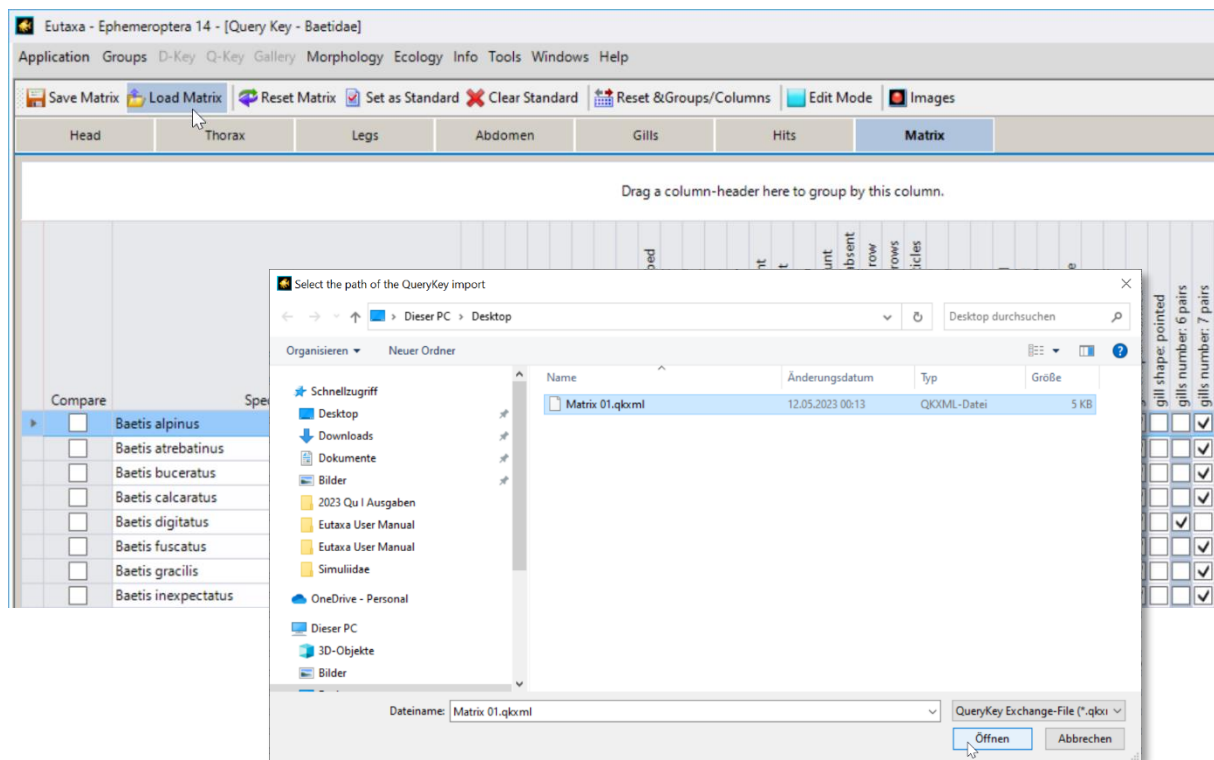
Fig. 90: Browsing the user's directory to select and to insert a stored version of a modified Matrix

After selecting the stored qkxml-file, the user may choose between two ways of insertion (fig. 91):

1. to merge the modified settings of the loaded version with those of the currently used Matrix, or
2. to replace the currently used Matrix by the loaded version.
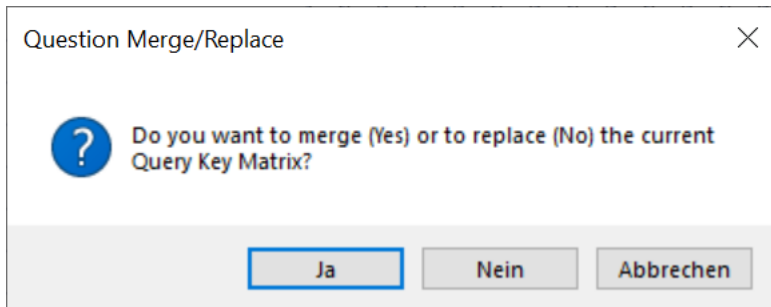
Fig. 91: Dialogue to merge or replace the current Matrix version

When choosing the first mode (confirming with **Yes**), all user-defined settings, those of the current and those of the stored version will be merged, resulting in a new, extended Matrix version. When choosing the second mode (confirming with **No**), the current grid will be replaced by the loaded version.

Examples of replacing or merging a Matrix table

Fig. 92: Hit the "Load Matrix" button after modifying the Matrix grid
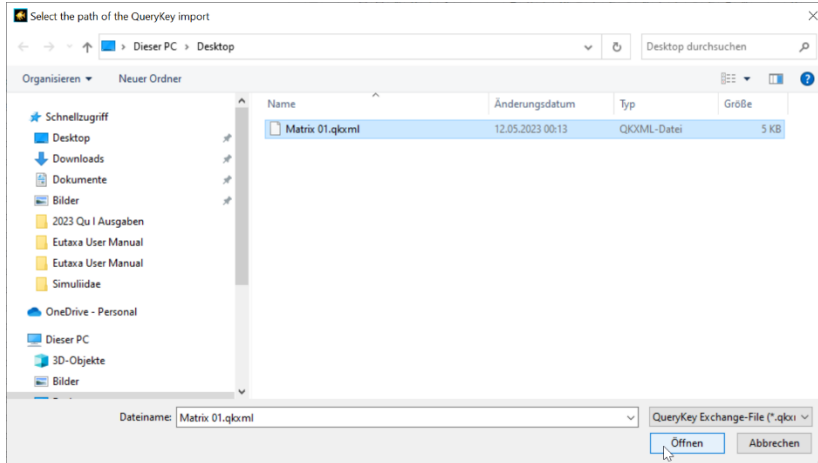
Fig. 93: Select the stored qkxml-file of the Matrix version 01, displayed in figure 94, and hit the "Open" key
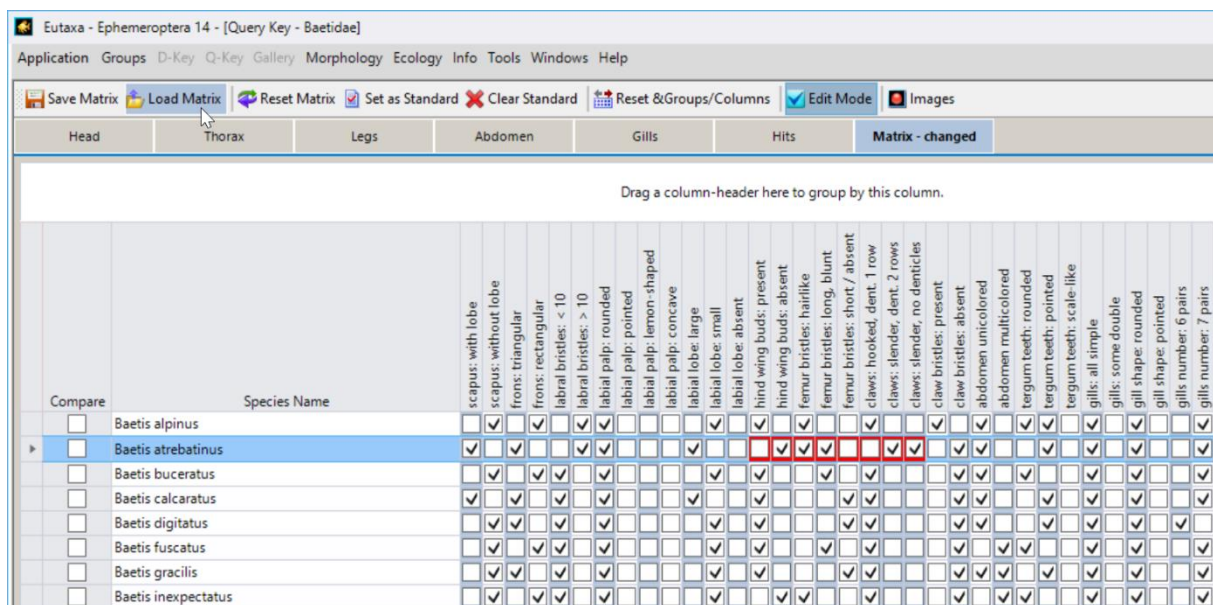
Fig. 94: Stored Matrix version "Matrix 01.qkxml
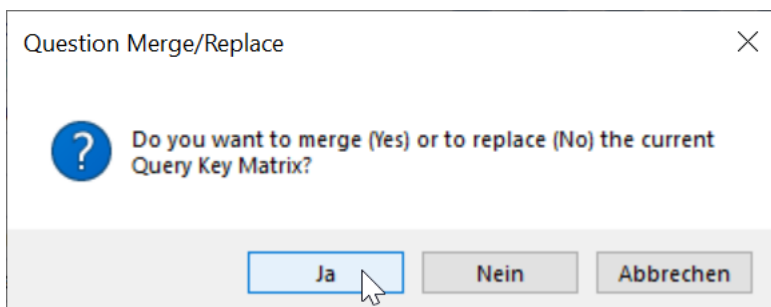
Fig. 95: Confirm the dialogue with "Yes" to merge the loaded and the current versions
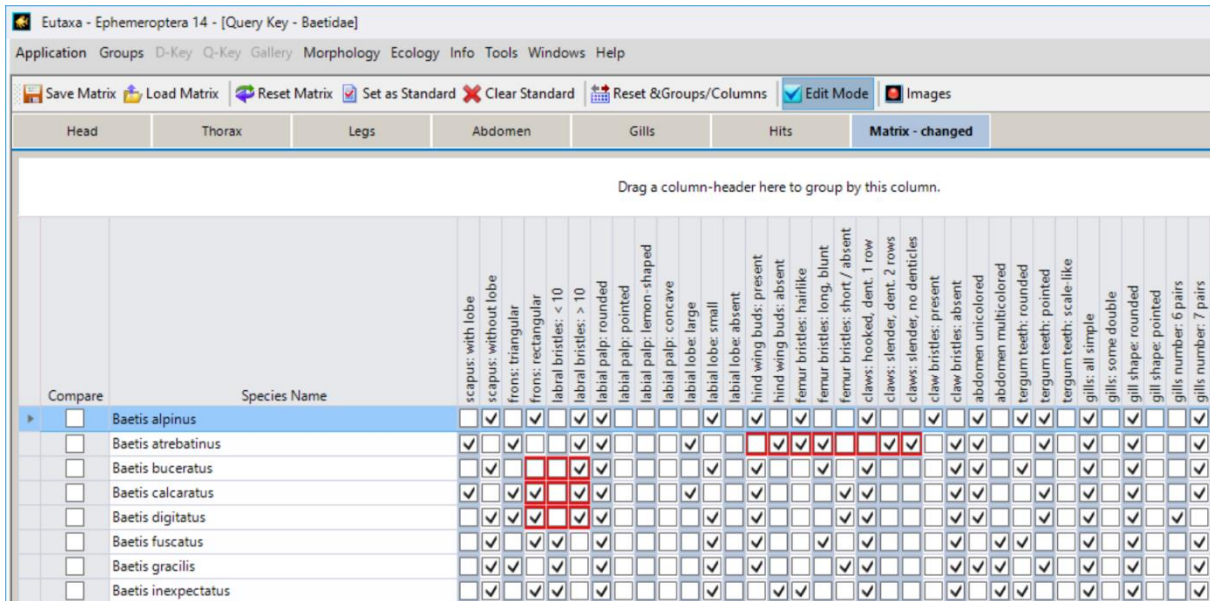
Fig. 96: Now both versions, shown in figures 92 and 94 have been merged.

To replace the current Matrix by a stored version, load the stored file and select **No** in the dialogue (fig. 97). Accordingly, the current version will be replaced by the loaded version.
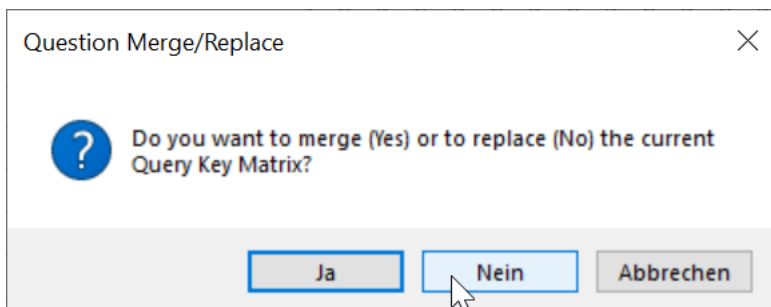
Fig. 97: Click the "No"-button in the dialog field to replace the loaded Matrix

After loading the Matrix, it may be useful to hit the Set as Standard button in order to save the new version and to use it for all following calculations.

Tip: Stored qkxml-files can be exported and transferred to any other PC to allow other users to load and apply these modified settings.

Restoring the original Matrix

To restore the original Matrix Grid and to remove all changes of a modified version that had been set as a standard, press the Clear Standard button and the Reset Matrix button in sequence.

5. Gallery – Reference Collection

5.1 Overview
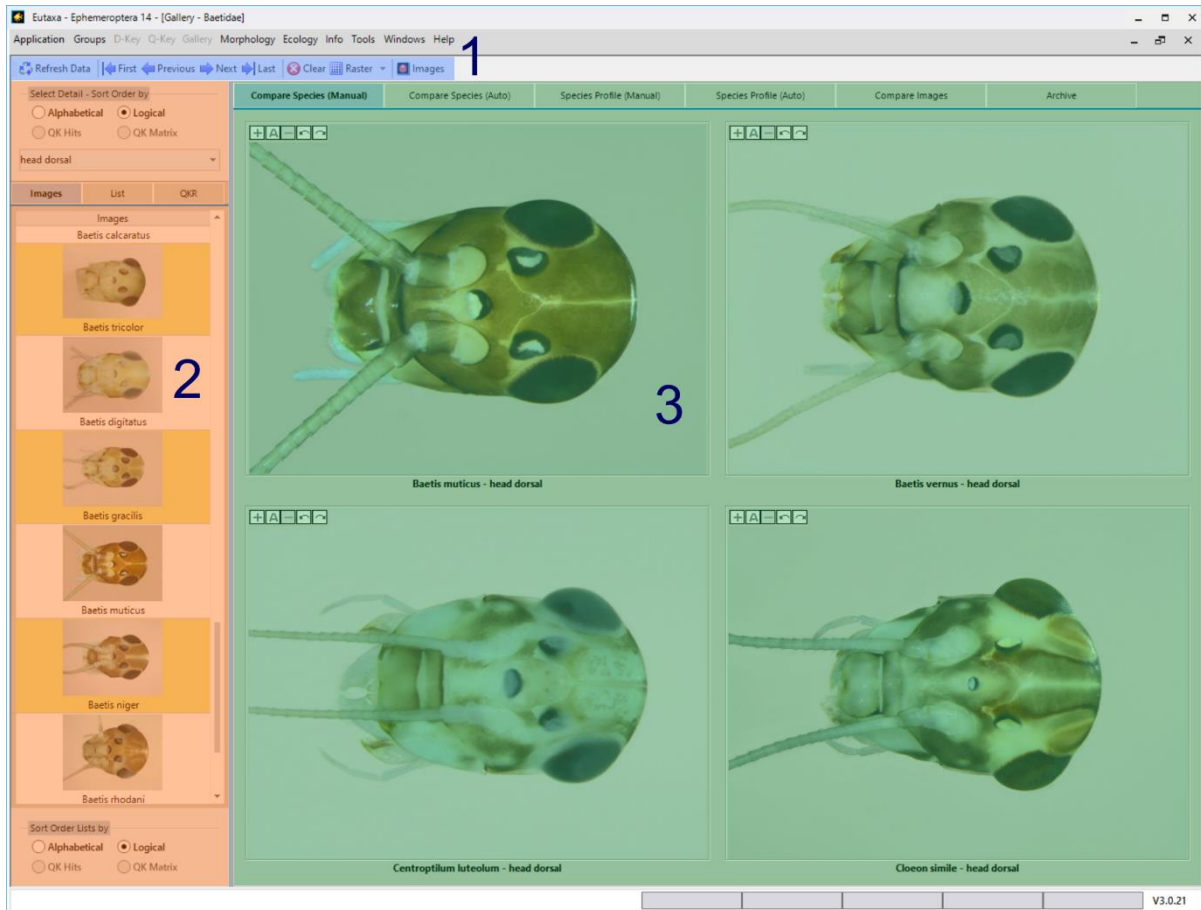
Fig. 98: Gallery interface: Toolbar (1), Selection Panel (2), Gallery Cards (3)

The Gallery interface consists of the Toolbar (1), the Selection Panel (2), used to sort and select species and detail names, and a series of Gallery Cards (3), each containing a Picture Screen to arrange a desired number of Viewports and to display images.

5.2 Toolbar

The Toolbar buttons are used to load and to cancel images, to browse the pages of a Gallery Card, to set the number of Viewports and to import the species list of the last Query Key calculation. The combination and activation of the buttons depends on the selected Gallery Card.
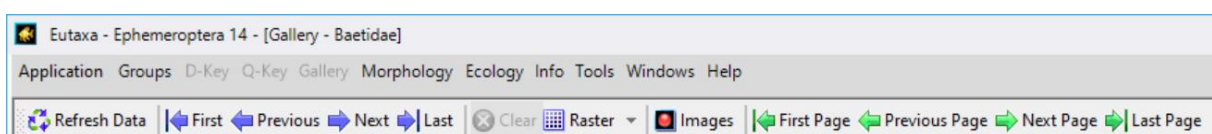
Fig. 99: Toolbar: Buttons

Refresh Data

Button to import the results of the last Query Key calculation into the QKR tab.
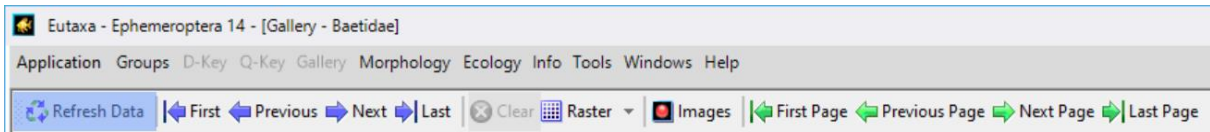
Fig. 100: Toolbar: Refresh Data

Navigation Keys

These buttons relate to the Combo Box in the Selection Panel and are used to query images of species or details listed in the box (depending on the selected Gallery Card).
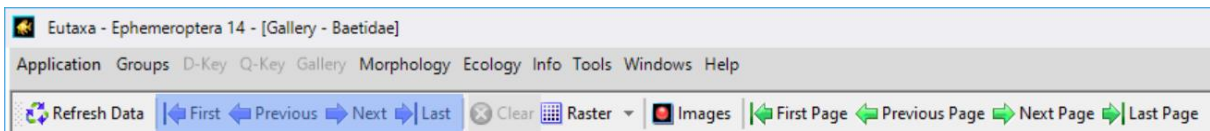
Fig. 101: Toolbar: Navigation Keys

First: Return to the first record, listed in the box Select Species/Details.
Previous: Return to the previous record, listed in the box Select Species/Details.
Next: Move forward to the next record, listed in the box Select Species/Details.
Last: Move forward to the last record, listed in the box Select Species/Details.

Clear

Button to remove all images currently displayed on the Screen. This button is exclusively activated in the Toolbar of Manual-Cards and of the Compare Images Card.
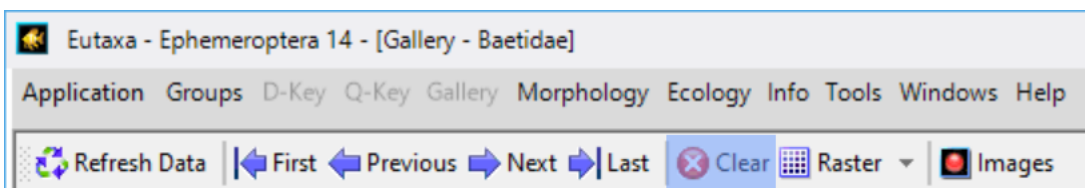
Fig. 102: Toolbar: Clear

Raster

Button to set the number and configuration of Viewports displayed on the Screen. Hitting the button opens a grid, in which the number and arrangement of up to 25 Viewports may be defined. The marked tiles of the grid are highlighted in blue. After the selection is approved by a mouse click, the Viewports are arranged accordingly (fig. 104).
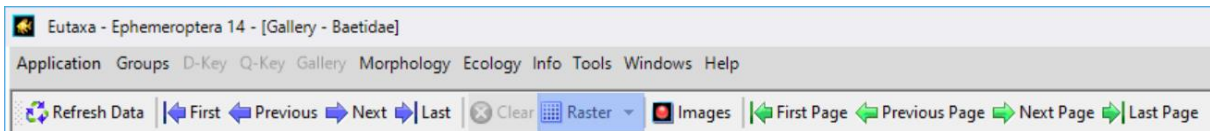
Fig. 103: Toolbar: Raster button.
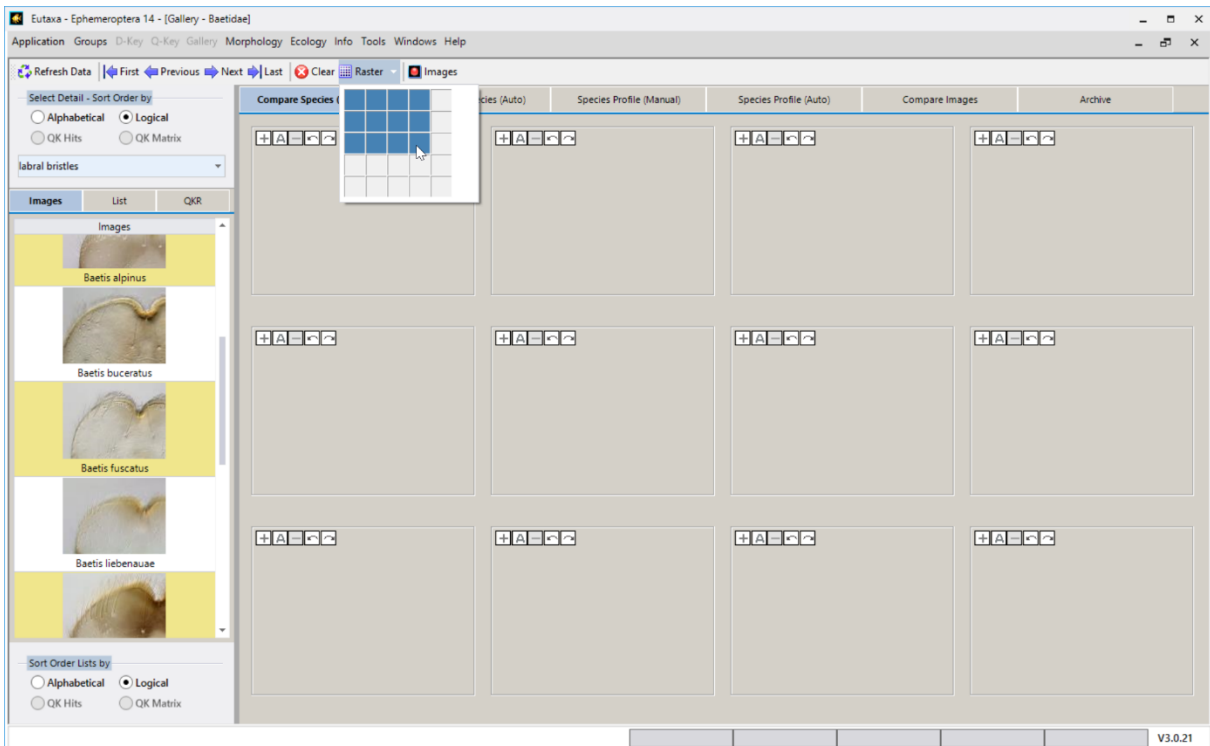
Fig. 104: Toolbar: Raster button – selection of a number of 12 Viewports.

Images

This button allows to open a variable number of windows in order to display pictures stored in the Gallery Archive.
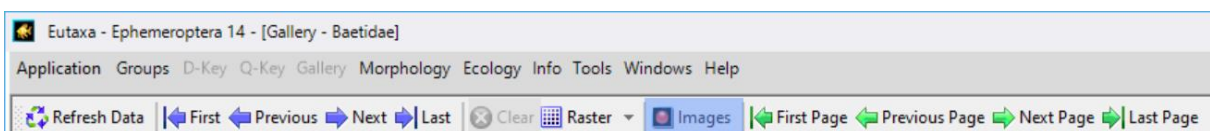
Fig. 105: Toolbar: Images

Each Image Window includes a selection bar, consisting of a preselection field (fig. 106) with a series of four combo boxes and of a single Viewport. To display an image, first adjust the range of pictures by choosing **Group** or **Family** in the preselection field. Subsequently select group, genus, species and detail name in the boxes of the selection bar. Images may be changed individually or queried in sequence by marking one of the boxes and scrolling the jog dial of the mouse. Note that the pictures are always sorted in the logical order (starting with photos of the habitus).
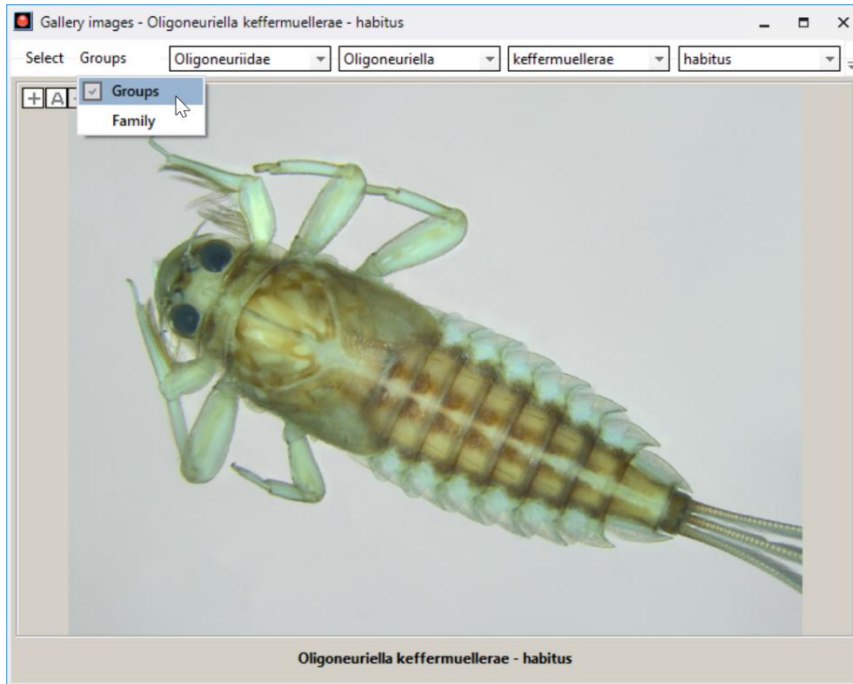
Fig. 106: Selection field – selecting "Groups"
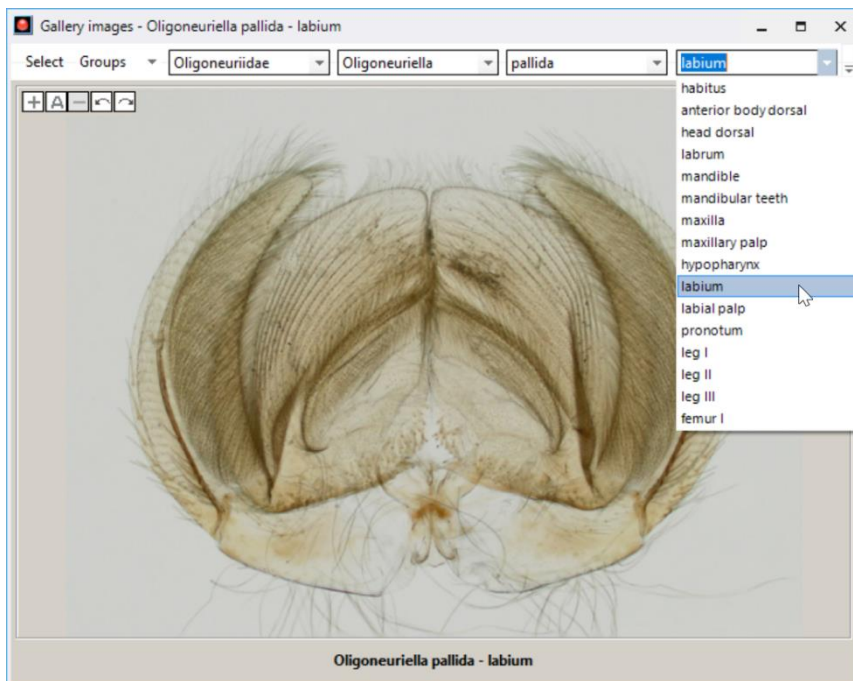
Fig. 107: Image Window – selecting a detail in the list box

Analogue to the function of Gallery Cards this method allows viewing of either the same details of different species or of different details of one species. For example, when clicking on the species name and scrolling the jog dial, the selected genus and detail retain unchanged and images of a specific detail of various species can be queried in sequence. That way pictures may be displayed in any number and combination and compared with each other.

Note: The species list of the Image Window contains the names of all species covered by the D-Key. When selecting a species without any available images, the Viewport remains blank.

Image Windows are versatilely applicable and may even be used to array images of different groups on the screen or to display pictures of the Gallery in combination with other programs. For example, when working on a Word document, Image Windows may be arranged at any place on the screen and used as a template for the description of species or details. This is possible because the window always remains in the foreground, irrespective of the currently opened program. Note that Image Windows generate an own button in the task line.
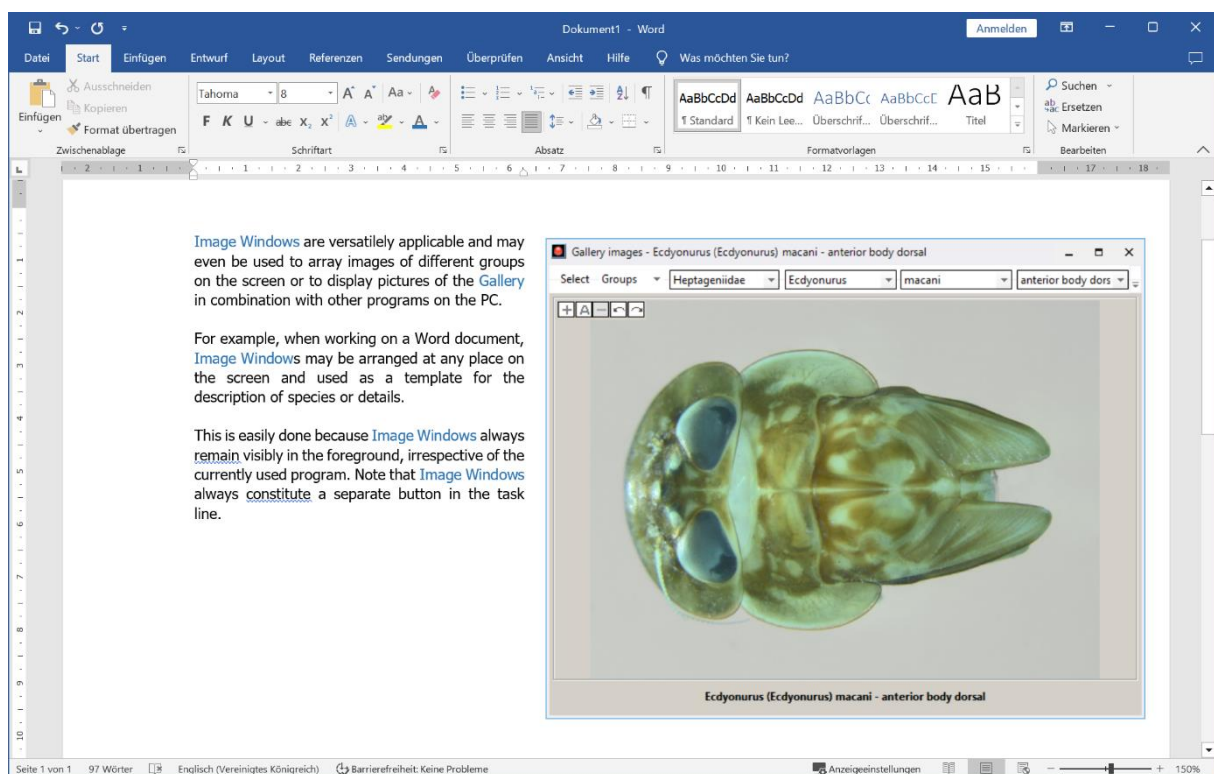
Fig. 108: Image Window used as a template in a Word document

Page Keys

These buttons are exclusively displayed in the Toolbar of Compare Species or Species Profile "Auto" Cards. If the number of Viewports is too high and not all images can be displayed on one Screen, these buttons enable the user to browse the pages in sequence to view all shown images of a species or detail by clicking the respective buttons **First Page**, **Previous Page**, **Next Page** or **Last Page**.
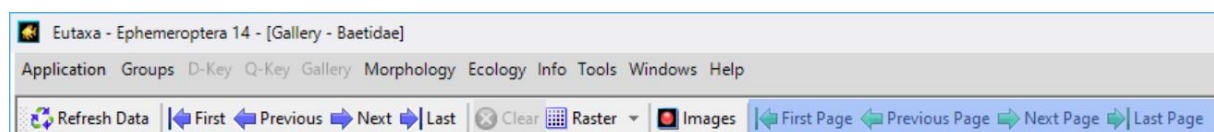
Fig. 109: Toolbar – Auto-Card: Page Keys

Table View/Card View

This button is exclusively shown when entering the Archive Card. It allows switching between a Card View, where images are displayed in form of thumbnails, and a Table View, where image records are listed in form of a table. When opening the Archive Card, the Card View is always preset.
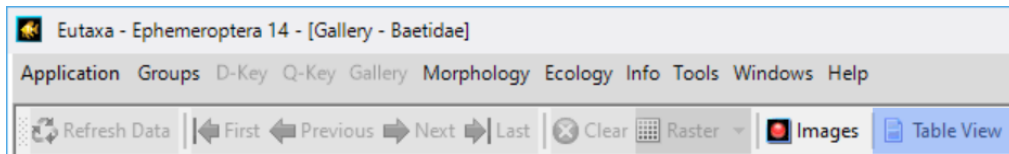
Fig. 110: Toolbar: Table View button
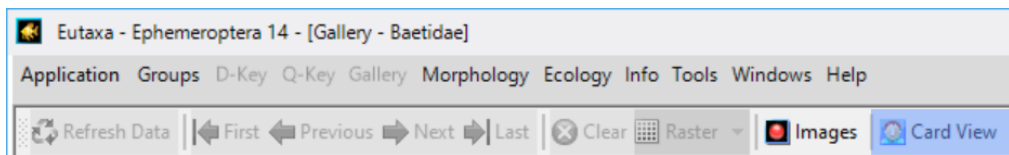
Fig. 111: Toolbar: Card View button

Card-specific Toolbars

The combination and activation of buttons varies, depending on the selected Gallery Card:
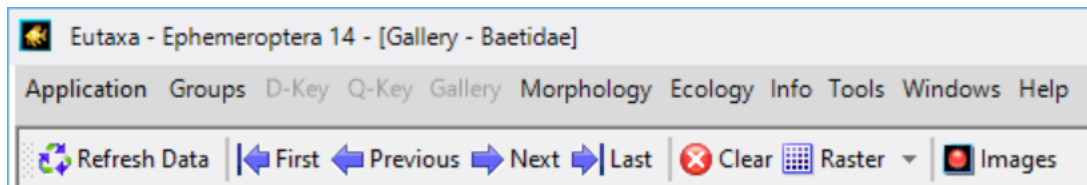
Fig. 112: Toolbar of Compare Species and Species Profile Manual Card: Page Keys are absent
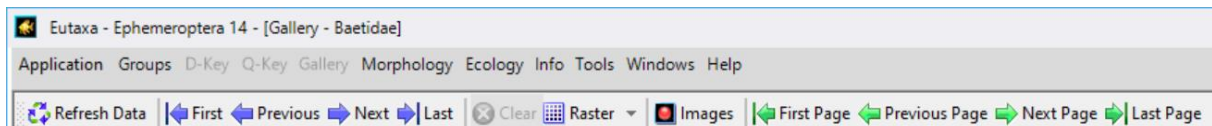
Fig. 113: Toolbar of Compare Species and Species Profile Auto Card: Page Keys are present, Clear button is inactive
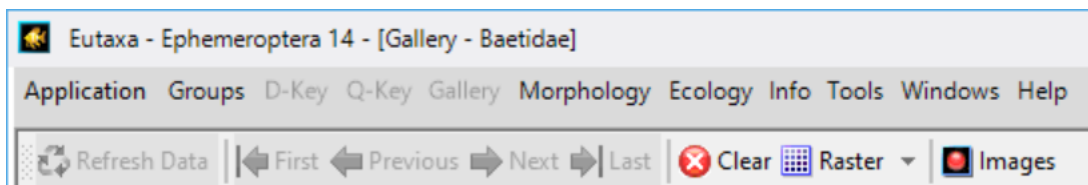
Fig. 114: Toolbar of Compare Images Card: "Refresh Data" and Navigation Keys are disabled, Page Keys are absent
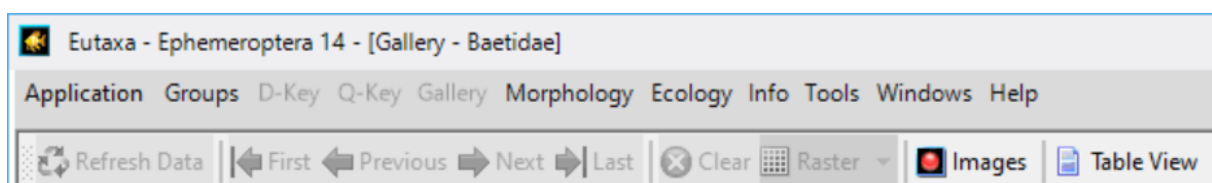
Fig. 115: Toolbar of Archive Card: Only the images button and the Table View / Card View buttons are set active

5.3 Selection Panel

The Selection Panel includes three Selection Tabs with a list of species or details (2), and two selection fields, each containing four buttons to change the sort order of the displayed images: the Upper Radio-Buttons with a Combo Box (1) and the Lower Radio-Buttons (3). The Selection Panel is used to select species or detail names and to display the corresponding images in the Viewports. The name of each image record consists of two partitions, a species name and a detail name. Both partitions are displayed separately, one in the Combo Box of the Upper Radio Buttons and the other one in the lists of the Selection Tabs. To display an image on a Viewport, the selection of both partitions is necessary.
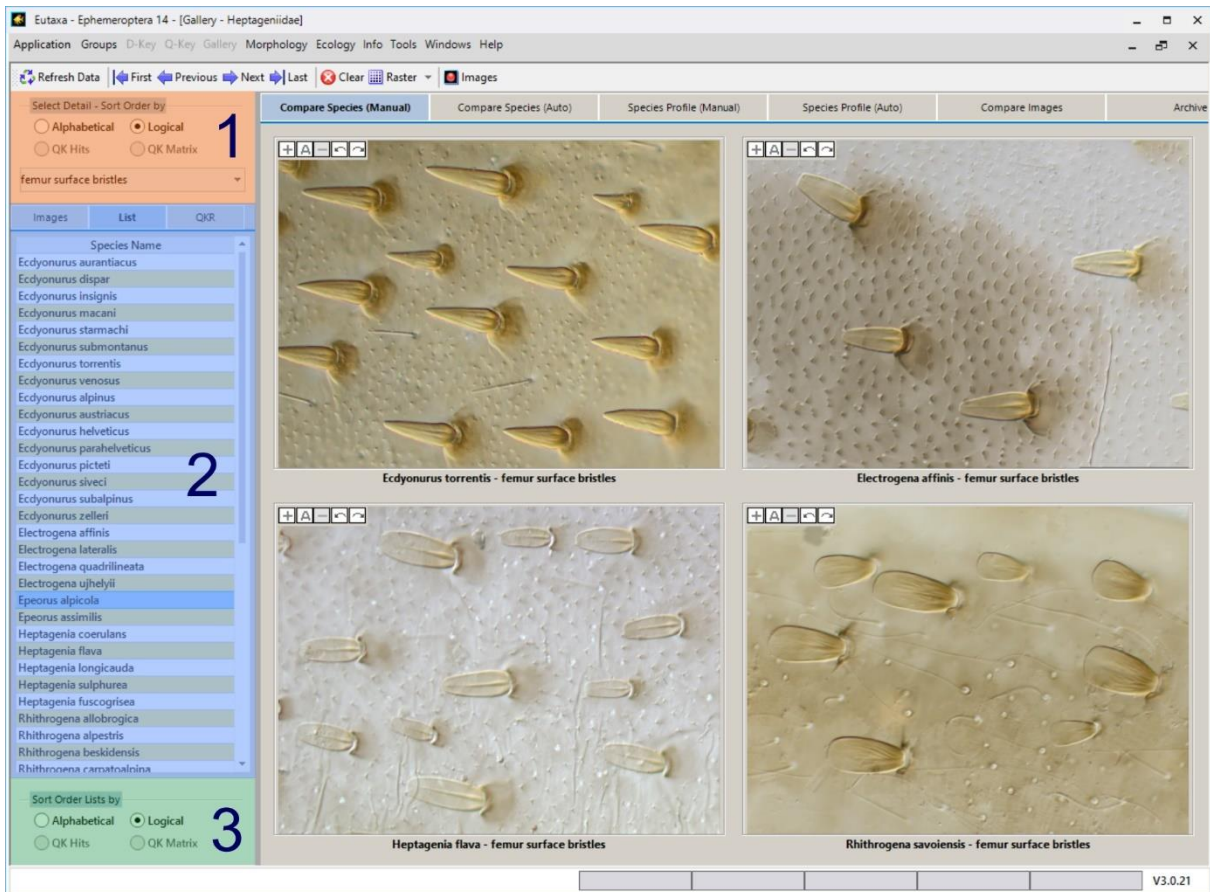
Fig. 116: Selection Panel: Upper Radio-Buttons with Combo box (1), Selection Tabs (2), Lower Radio-Buttons (3)

Upper and Lower Radio-Buttons and Combo Box (Select Species/Detail)

Depending on the type of the currently opened Gallery Card, the Combo Box contains a list of either species or detail names. The records listed in this box may be referred as "first order"-records, as selections or changes affect all images currently displayed on the Screen. When selecting a specific detail or species name in the box (depending on the Gallery Card) this detail or species will be displayed in all Viewports of this card. In Compare Species Cards, the Combo Box includes a list of details, In Species Profile Cards or in the Compare Images Card, the box includes a list of species names.

Records of the Combo Box may be selected individually (fig. 117) or queried in sequence by switching the Navigation Keys forward or backward (fig. 118, 119).
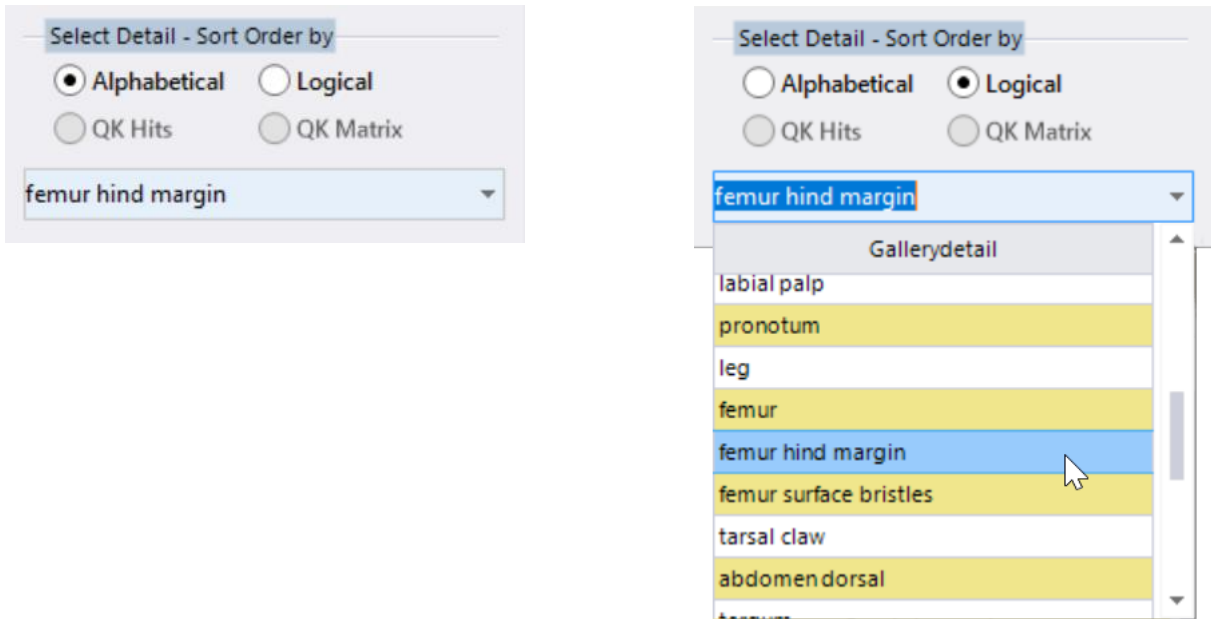
Fig. 117: Selection of the detail "femur hind margin" in the Combo box of the Upper Radio-Buttons (Compare Species Cards).
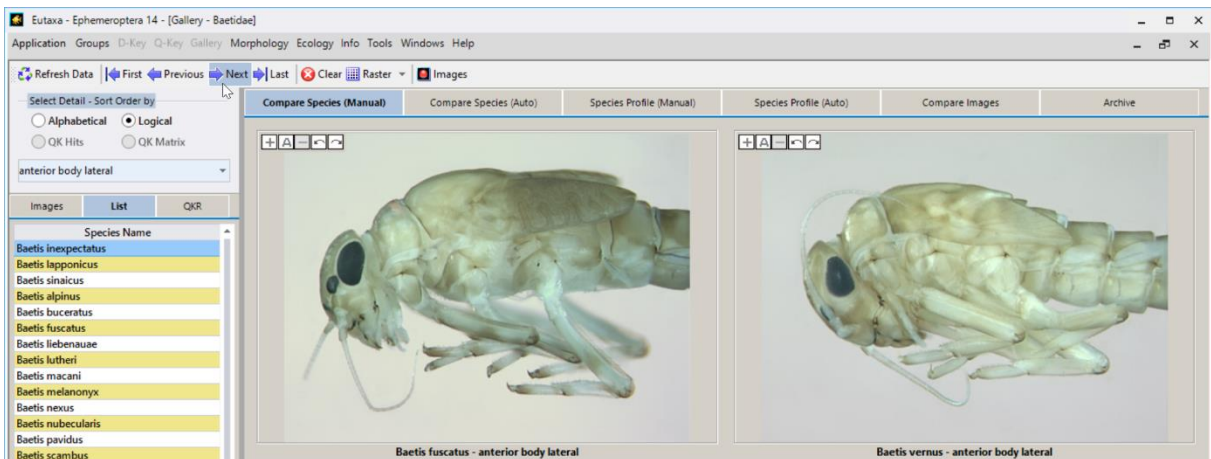
Fig. 118: The selection of the detail "anterior body lateral" in the Combo Box results in the display of the feature of different species in all Viewports (Compare Species Cards)
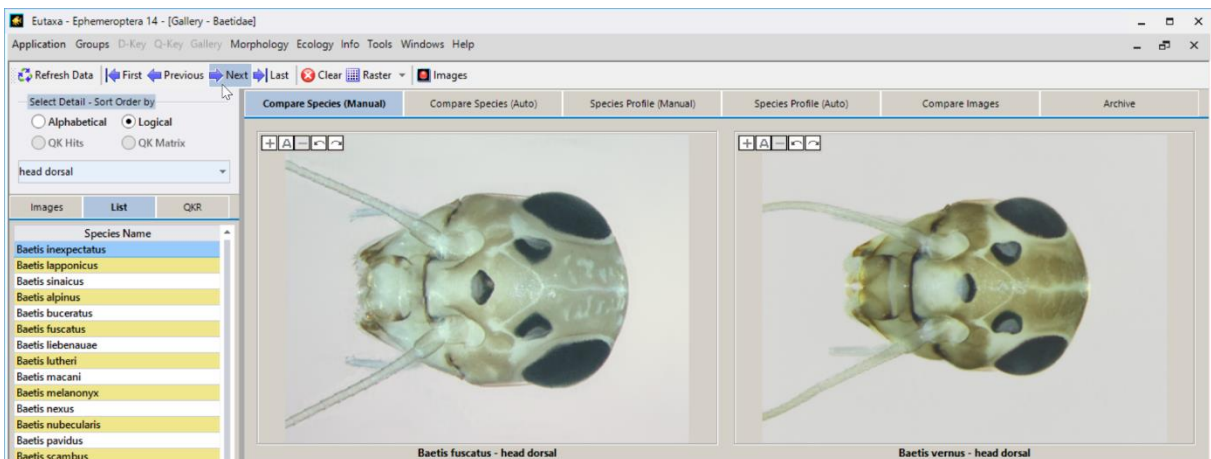
Fig. 119: When clicking the Navigation key "Next", the images of the next record "head dorsal" are loaded

The sort order of records, listed in the Combo Box, depends on the setting of the Upper Radio-Buttons (1). When entering a Compare Species Cards, the Combo Box contains a list of detail names. When enabling the Radio-Button **Alphabetical**, the detail names are arranged in the alphabetical order (fig. 120). When selecting **Logical**, the records are listed in the "logical" order (fig. 121), starting with an overview of the body (habitus), proceeding with head, thorax and legs and ending with images of the abdomen.
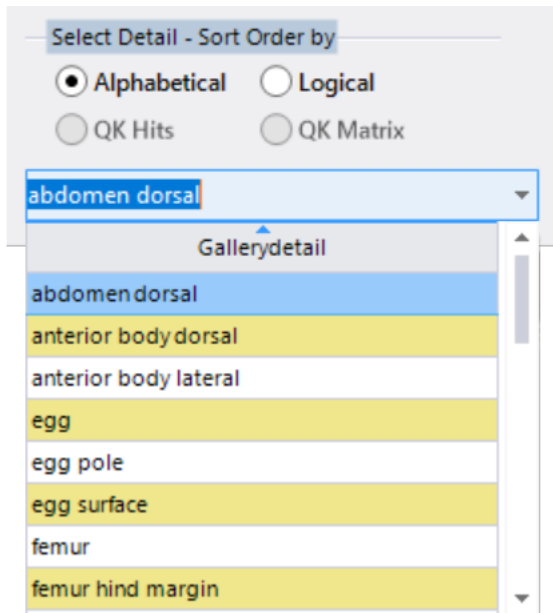
Fig. 120: Compare Species Card, Alphabetical order
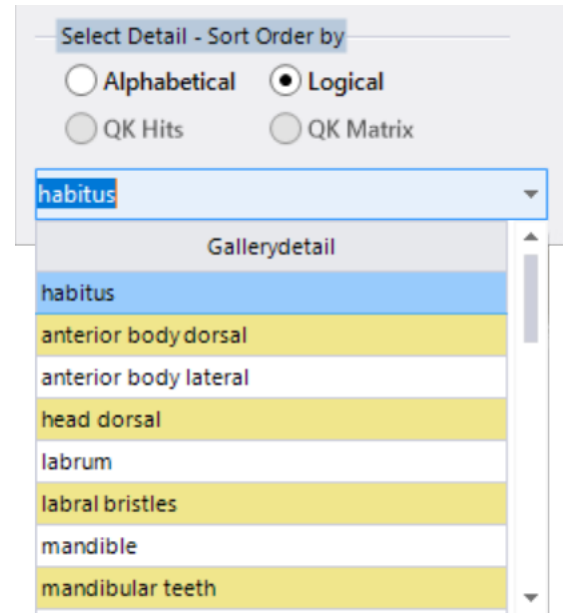
Fig. 121: Compare Species Card, Logical order

When working with Species Profile Cards or with the Compare Images Card, the Combo Box contains the species list. Enabling the **Alphabetical**-button sorts the names in the alphabetical order (fig. 122), selecting the **Logical**-button, sorts the names in a "logical" order, which means that species are sorted according to systematic groups, e. g. by considering the subgenus name, as shown in figure 123.
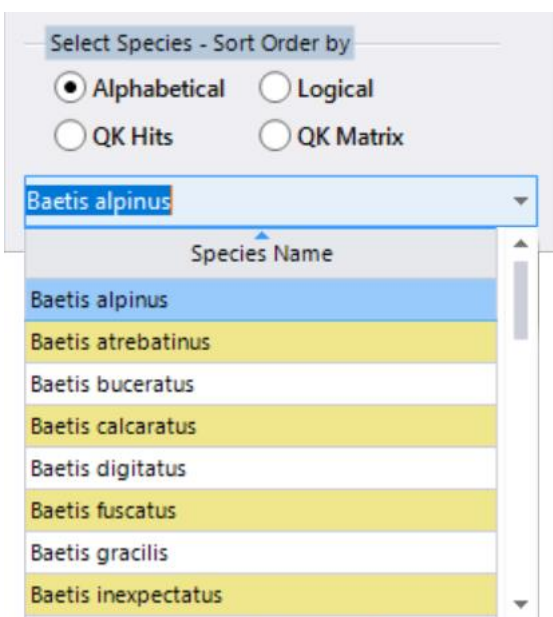
Fig. 122: Species Profile Card, Alphabetical order
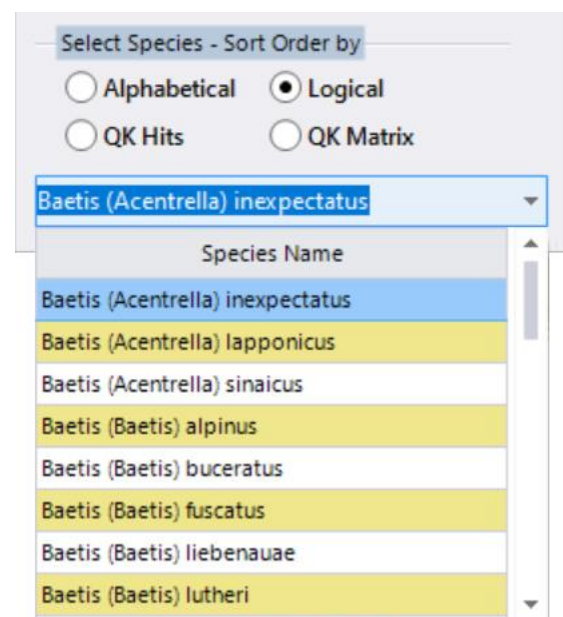
Fig. 123: Species Profile Card, Logical order

Selection Tabs

Depending on the type of the Gallery Card, Selection Tabs contain a list of either species or detail names. The user may choose from a series of three tabs, named Images, List and QKR (fig. 124). In the Images tab all image records are displayed in form of thumbnails, which facilitate the finding of the wished picture. In the List tab all records are displayed in form of species or details names. Description, number and arrangement of image records are identical in both tabs.

The QKR (Query Key Results) tab contains the results of the last Query Key calculation, including a list of species, the appendant number of hits and the range of species in the Matrix Table. Values of the last calculation or of the order or species in the Matrix can be imported by clicking the Refresh Data button in the Toolbar. To arrange the species names alphabetically or according to the number of hits or to their position in the Matrix Table, click on the header of the wished column and sort the records in an ascending or descending row.

Attention: First confirm every change of settings in the sub-application Query Key by a hit of the Refresh Results button, before importing the sort order into the QKR tab via Refresh Data button.

Note: Mind that the Hits and Matrix list, shown in the Selection Tab, are exact copies of the Query key results. To display the concordant taxa in the **True**-section of the Matrix results on top of the table, set the sort-order of the Matrix grid accordingly, ranking the **True**-values first. Otherwise, the concordant taxa may be placed at the end of the list (if the **False**-section is placed on top of the table).

Tip: The names of species arranged in the combo box or in the Selection Tabs can be displayed with or without the subgenus name, depending on the selection of the User System Settings in the command field Tools/Settings in the Menu bar.
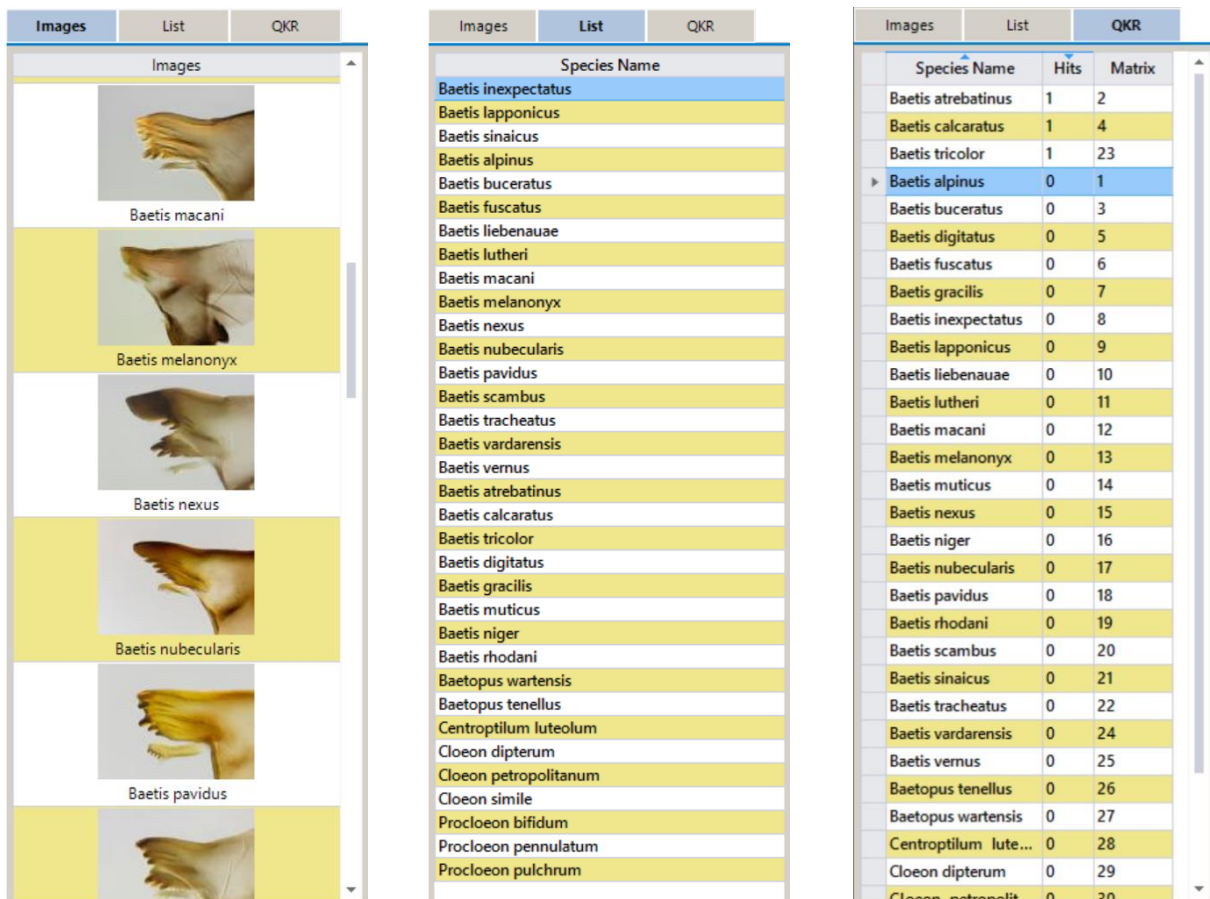
Fig. 124: Selection Tabs: Images, List and QKR (species sorted according to the order in the Hits column)

The sorting of the species or detail names listed in the Selection Tabs may be set to **Alphabetical** or **Logical** via Lower Radio-Buttons (analogous to the function of the Upper Radio-Buttons). Just as the Lower Buttons affect the sorting of the data in the Combo Box, the Lower Buttons affect the order of the data records in the Selection Tabs (fig. 125).

By activating **QK Hits** or **QK Matrix**, the images are sorted according to the last Query Key calculation, either according to the results of the Hits Card or to the sorted or grouped Matrix. The ranking can be checked in the respective column of the **QKR** list.

Attention: The results in the Query Key must first be sorted in a **descending** order and all calculations must be updated by pressing the Refresh Results button. Further information on preparing the data in the Query Key can be found on page 26.
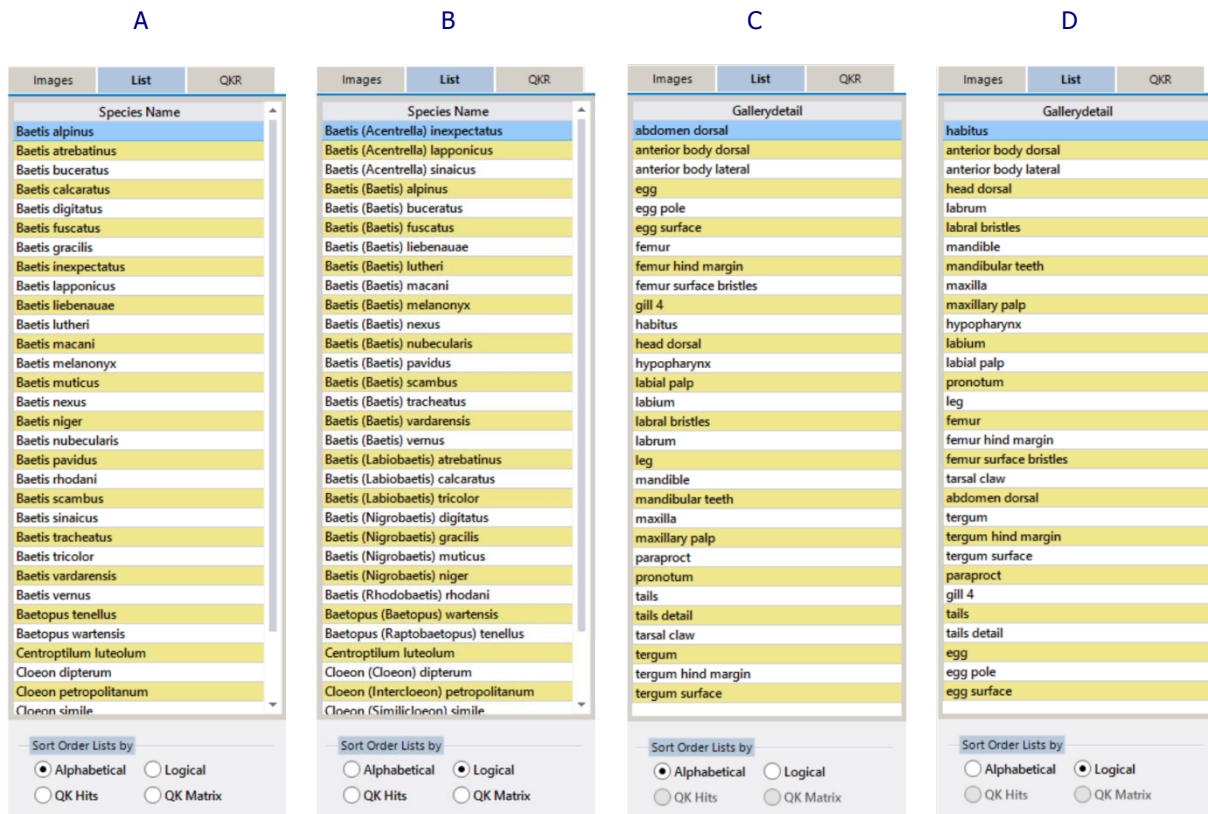
Fig. 125: Selection Tabs: Sort order of records (alphabetically or logically) in Compare Species Cards (A, B), containing species names, and in Species Profile and Compare Images Cards (C, D), containing detail names. Figure B shows the species list after adding the subgenus name in Tools/Settings/User System Settings.

5.4 Picture Screen

Manual Import of Images

Selection Tabs can be used to select and to drag images from the tabs into the Viewports arranged on the Screen. To insert an image manually, select a thumbnail in the Images Tab or a species or detail name (depending on the used Gallery Card) in the List Tab and drag the record into one of the Viewports while holding the mouse button down (fig. 126). After releasing the button, the image will be displayed immediately in the selected Viewport (fig. 127). The image description, consisting of the species and detail names, appears on the lower side of the Viewport and may be displayed in a tool tip when moving the mouse cursor over the image (as shown in figure 127).

Note: This operation is only applicable in "Manual" Cards and in the Compare Images Card. It cannot be used when working with an "Auto"-Card, where images are loaded automatically and not manually.
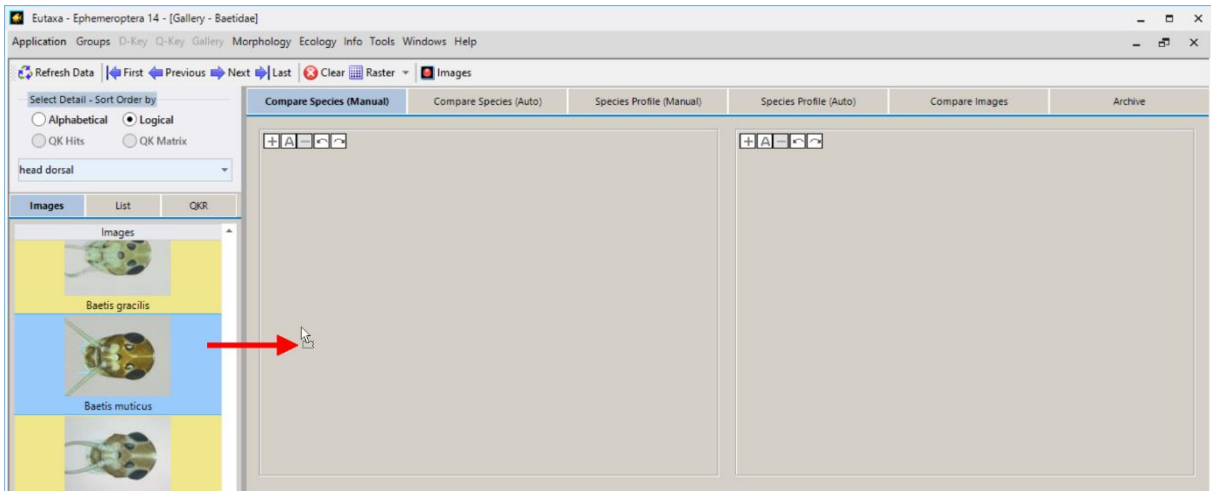
Fig. 126: Display of an image in the Gallery "Manual"-Card: Selection of the species name in the Images Tab and dragging it into a Viewport
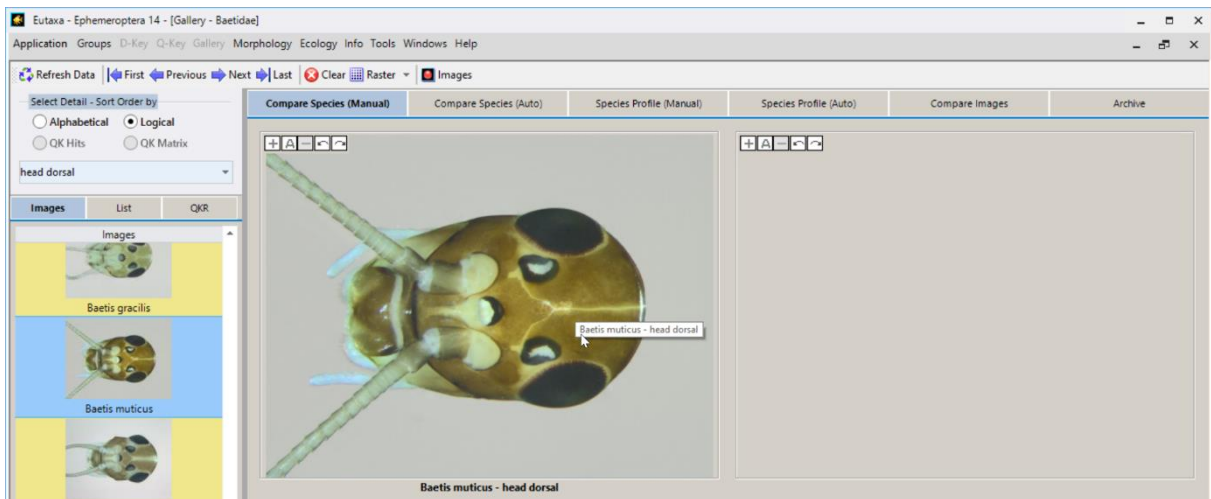
Fig. 127: After releasing the mouse button the appropriate image will be displayed automatically.

Screen

The Screen is that part of a Gallery Card where Viewports and images are displayed. Before starting to import pictures, first assess the number and arrangement of Viewports by clicking the Raster button in the Toolbar and define the number of tiles in the grid (fig. 128).
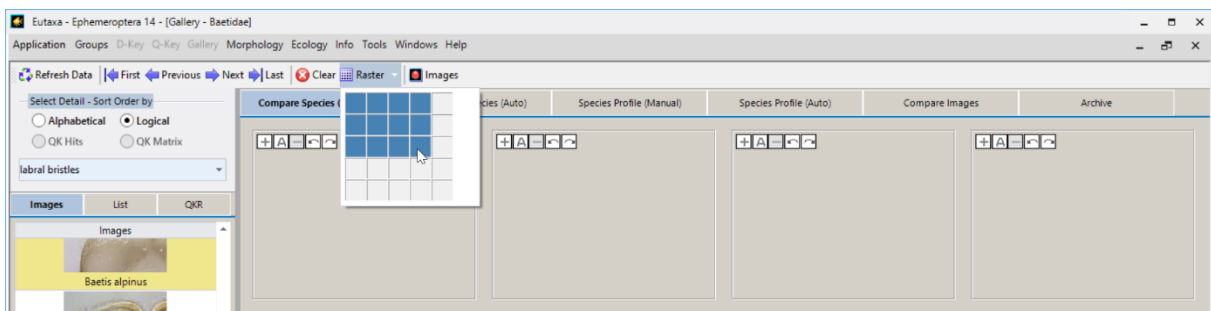
Fig. 128: Defining the number and arrangement of Viewports via Raster button.

Viewports

A Viewport is a frame where an image can be displayed. Up to 25 Viewports may be arrayed on the Screen simultaneously. The number and configuration can be defined via Raster button in the Toolbar. When opening a Gallery Card, their number is preset to four. Viewports can be arranged in several rows and columns, but also in a single row or column. This is useful when viewing longitudinal structures at higher magnification.

Image Keys

Each Viewport contains a series of five small Image Keys, placed in the left upper corner. These keys are used to change the size of a picture or to rotate the image in a clockwise or counter-clockwise direction.

+	Zoom in
A	Autosize (adjust to Viewport)
–	Zoom out
↤	Rotate 90° counter clockwise
↦	Rotate 90° clockwise
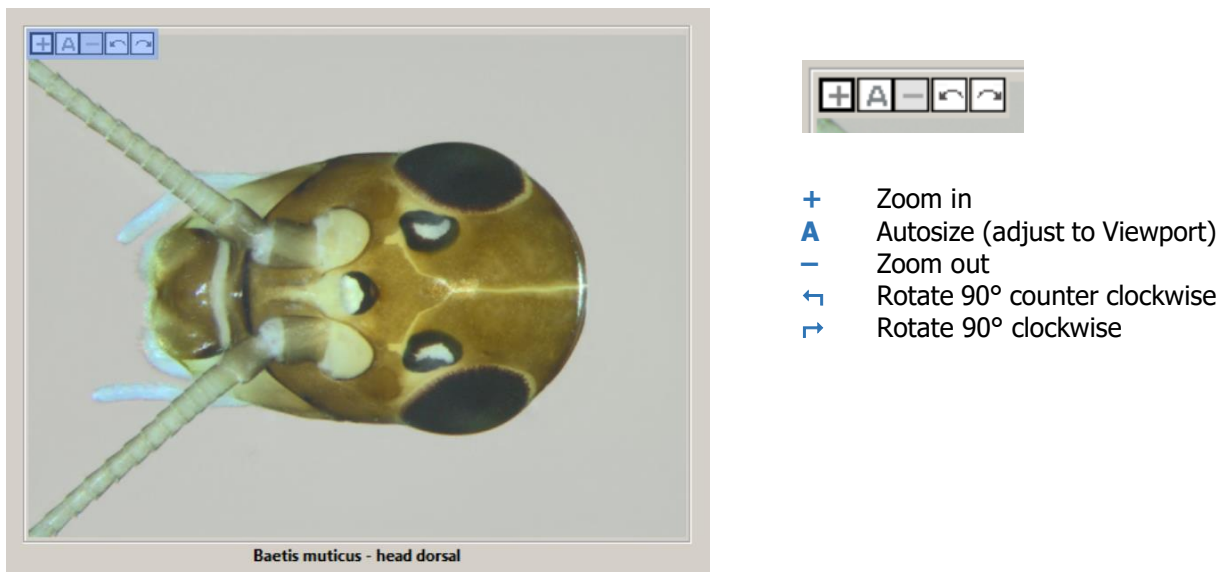
Fig. 129: Image Keys

To increase or decrease the size of a picture, hit the **Zoom in** (**+**) or **Zoom out** (**-**) button. The highest magnification is attained at a size of 400 % of the original picture, the smallest when the images is adjusted to the size of the Viewport (**Autosize**). The magnification (percentage of the original size) is displayed on the right side of the Image Keys.
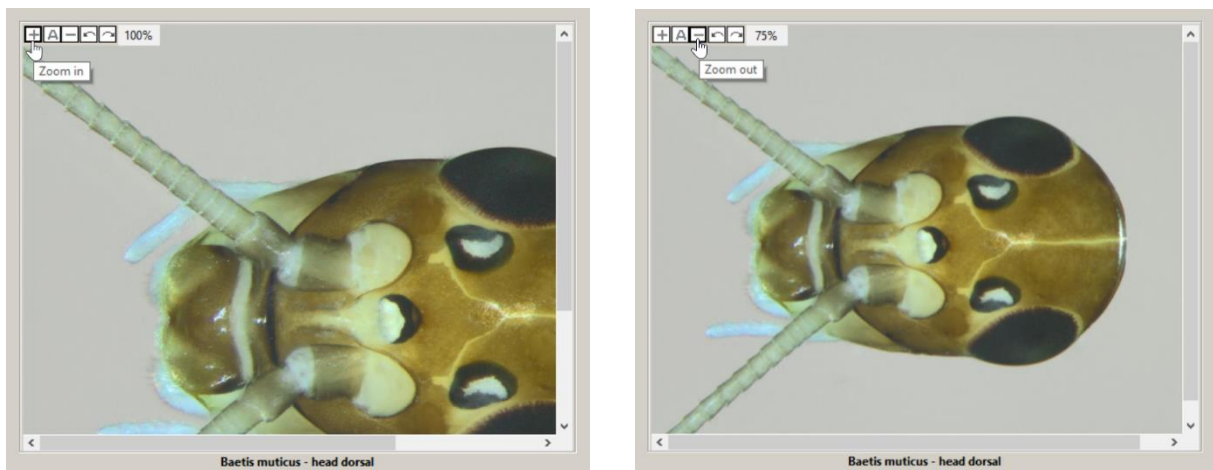
Fig. 130: Zoom in (+) and Zoom out (-) buttons to increase or decrease the size of an image. The left image is zoomed at 100 %, the right reduced to 75 % of the original picture size.

Magnified images can be aligned either with the scroll bars or by displacing the image with the mouse cursor (when dragging the image, the symbol of the mouse cursor turns into a hand).

To reset the size and alignment of an image, hit the **Autosize** button ("**A**") (fig. 131).
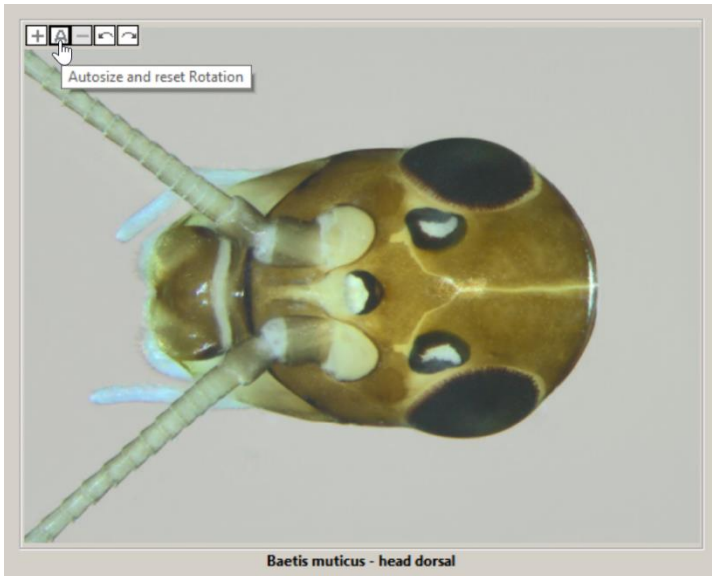
Fig. 131: Autosize button
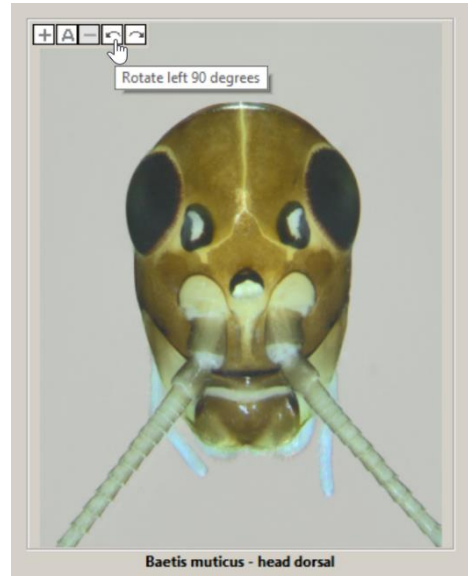
Fig. 132: Rotation (90 ° counter clockwise)
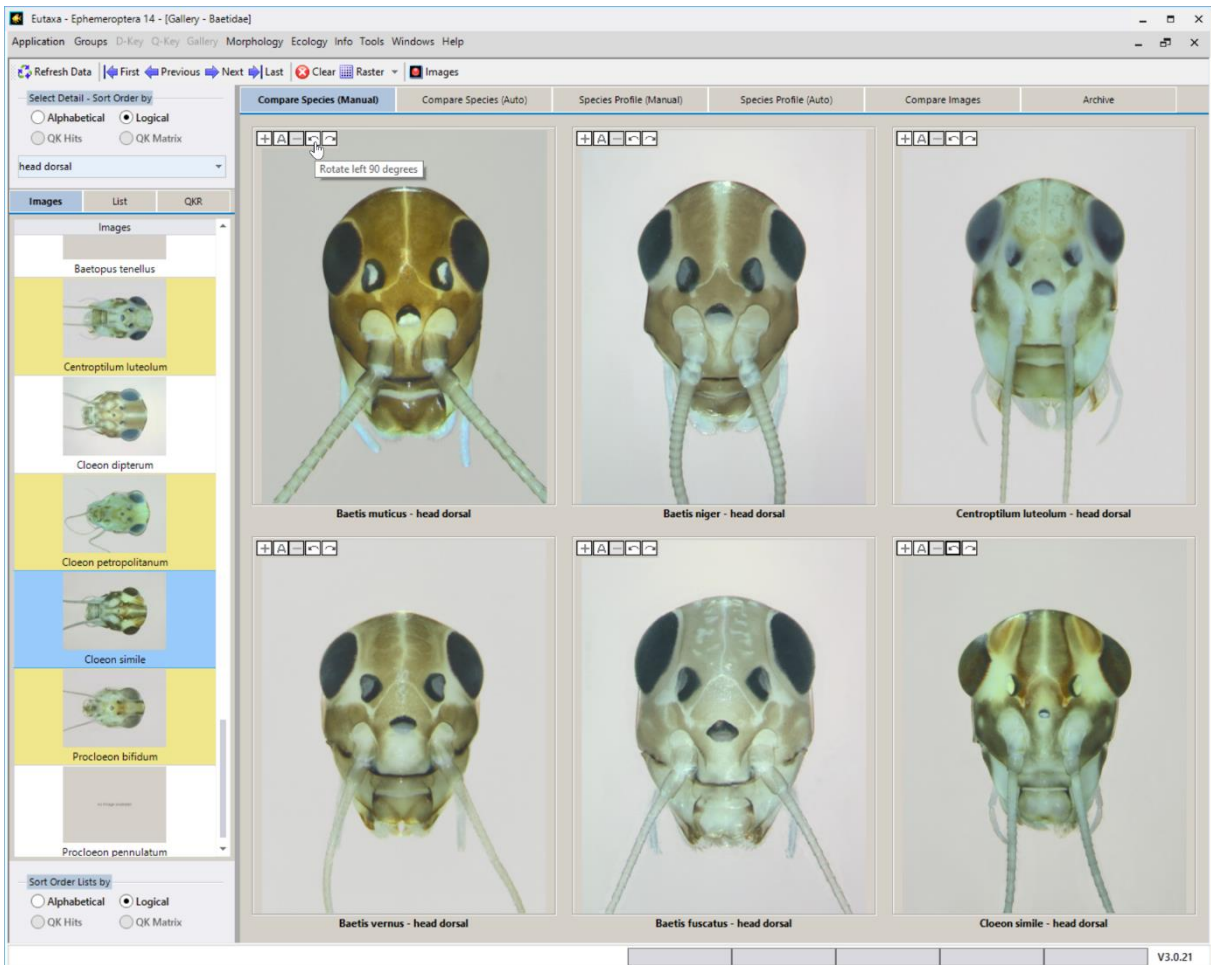
Fig. 133: Rotated images – detail "head dorsal"

To rotate an image in steps of 90° clockwise or counter clockwise, hit the appropriate **arrow key** (fig. 132). The size of rotated images can be modified by the **Zoom in** and **Zoom out** buttons (fig. 134).

Note: When decreasing the size of a zoomed rotated image, the degree of the rotation is retained until the initial size (adjusting the size to the Viewport) is attained and the **Zoom out** button is set inactive. Then, the rotated image automatically jumps to the initial position (fig. 135). When hitting the **Zoom in** button again, the image returns automatically to the rotated position, according to the last setting (as shown in figure 136).

To restore original size and alignment of a modified image, hit the **Autosize** button (**A**) (fig. 131).
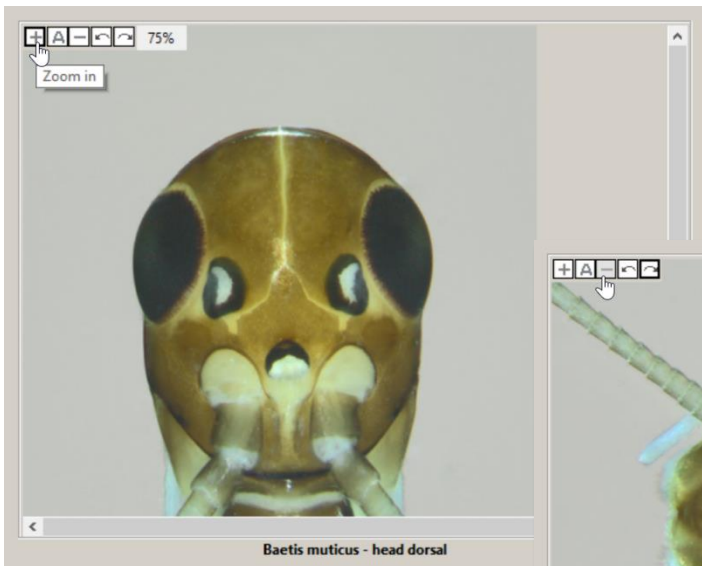
Fig. 134: Increasing the size of a rotated image
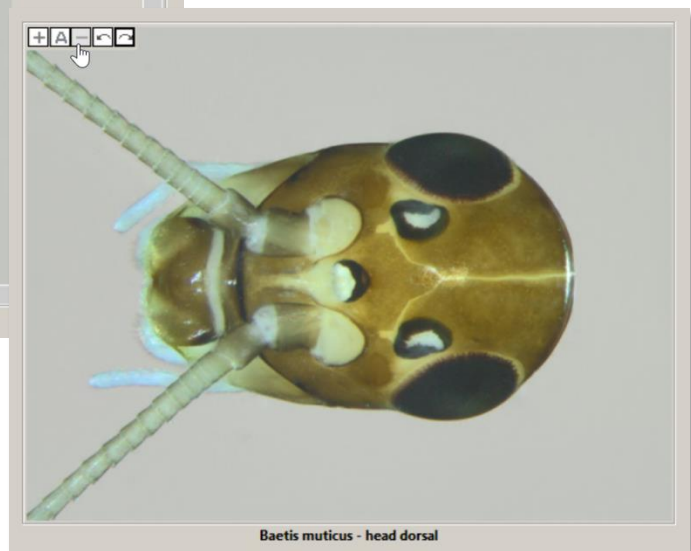
Fig. 135: Autosize position after decreasing the size of a rotated image and adjusting it to the Viewports size
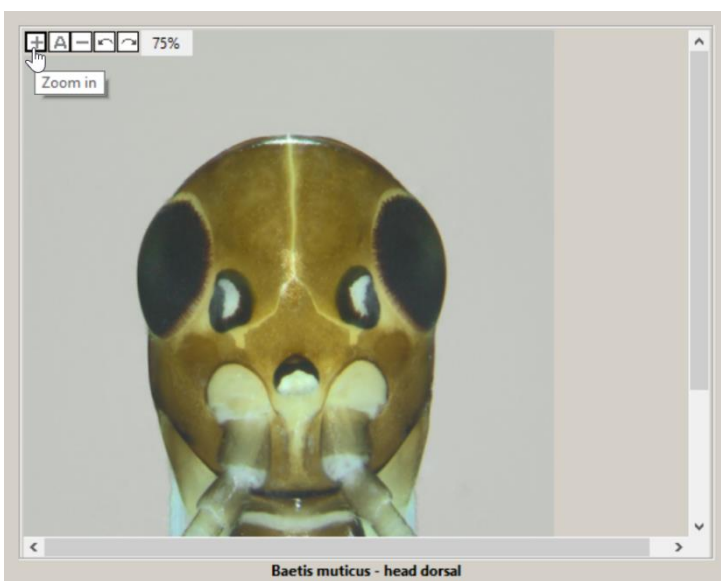
Fig. 136: Restoring the rotation after hitting the Zoom in button (+)

Image Information

To gather information about an image (date and source of the collection, magnification values, etc.), click the right mouse button and select the Info command to open a small **Info** window (fig. 137). To clear the table, press the **X**-setter in the title bar of the window or hit **Escape**.
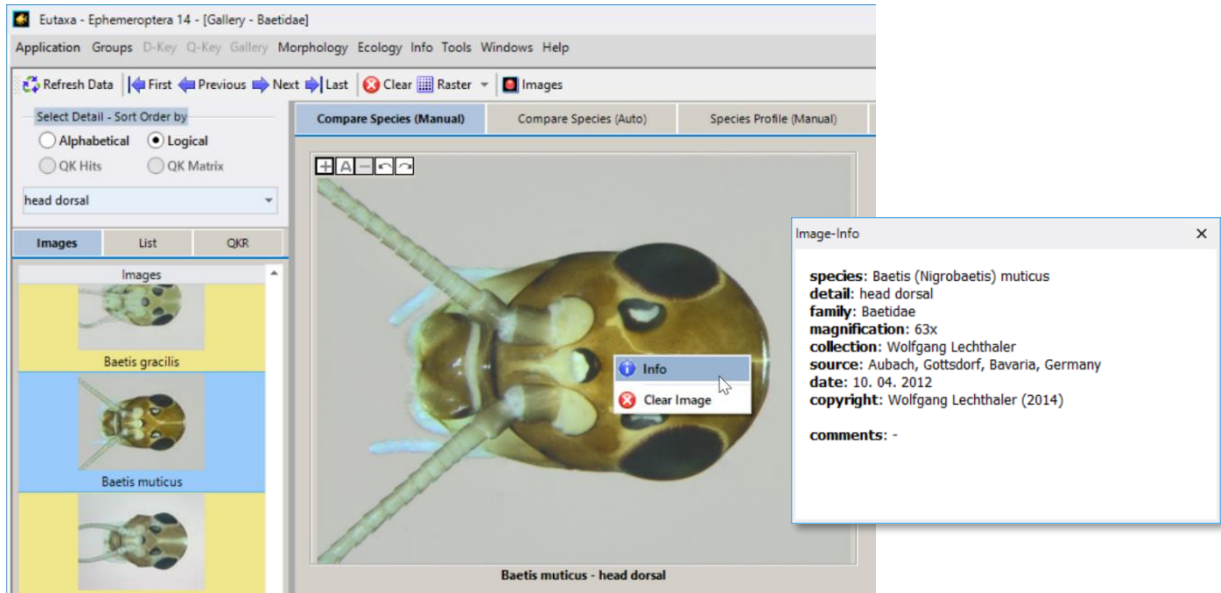
Fig. 137: Selecting the command "Info" to display a window with image descriptions

Clear Images

To remove an image from a Viewport, either delete all images currently displayed on the Screen via Clear button in the Toolbar, or cancel a single image by moving the cursor to the Viewport, clicking the right mouse button and selecting the **Clear Image** command (as shown in figure 138).
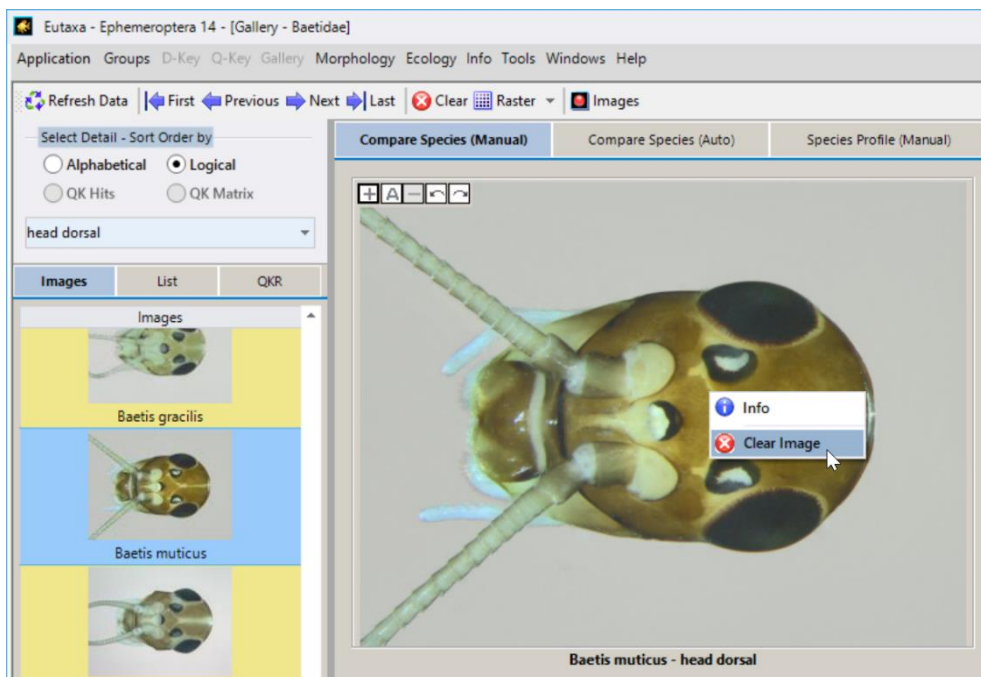
Fig. 138: Removing a picture with the command "Clear Image"

5.5 Gallery Cards

Compare Species Cards

Compare Species Cards are used to arrange and to match images that show identical details of different species. The names of details are listed in the Select Detail combo box, those of species in the Selection Tabs.

All Viewports display the detail currently shown in the Select Details combo box. The program offers two methods to display images of another detail: First, open the Select Details combo box and select the desired record; this command affects all Viewports on the Screen and the appropriate images are replaced automatically. Secondly, switch between the Navigation Keys in the Toolbar to insert images in sequence, starting with the first name in the combo box and ending with the last.
The order of detail names can be changed in the Upper Radio-Buttons between **Alphabetical** and **Logical**, those of the species names in the Lower Radio-Buttons.

Compare Species (Manual)

When using this card, images of various species can be displayed on the Screen by selecting the wished species name in the Selection Tabs and dragging it into the Viewport. Number and combination of species and their position on the Screen can be altered more individually, according to the user's requirements. Unlike other Gallery Cards all QK Order buttons are disabled.
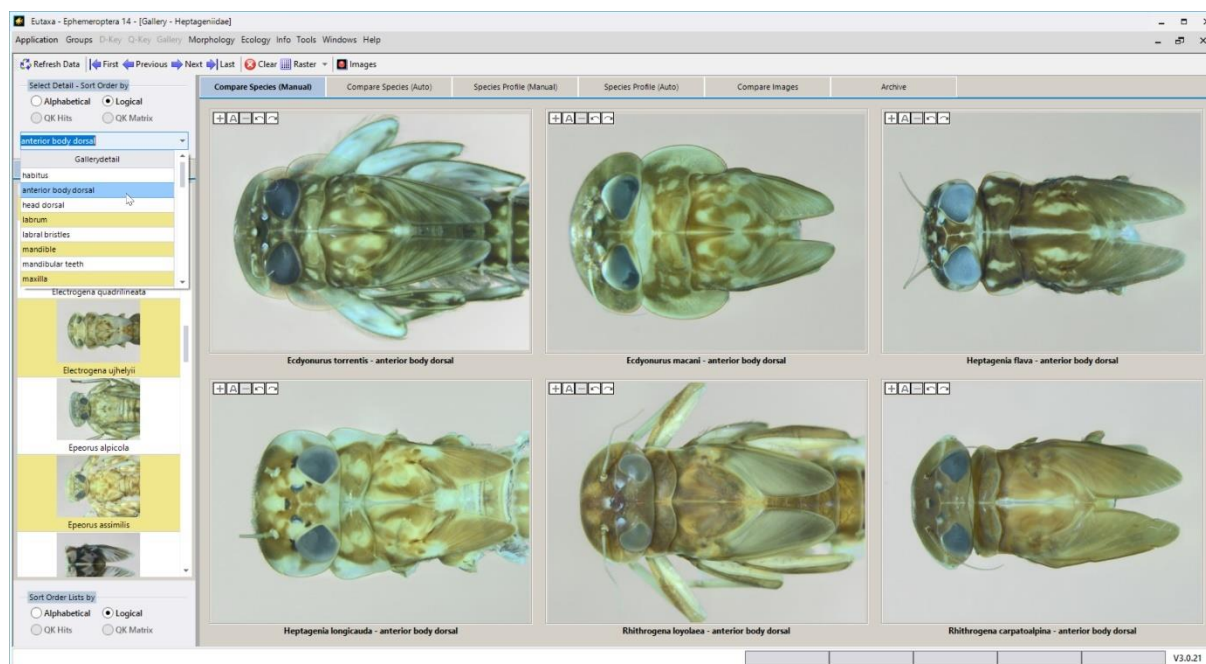
Fig. 139: Compare Species (Manual): Identical detail (anterior body dorsal) of six different species.

Compare Species (Auto)

In this card, images of all species are displayed automatically, each showing the same detail. To change the detail, just select the desired record in the Combo Box. To view all images of all species, displayed on the Screen, either increase the number of Viewports by changing the setting in the Raster grid (fig. 141), or browse the pages forward or backward by hitting the Page Keys (fig. 109) in the Toolbar. The latter method is more comfortable because it allows the viewing of images in a convenient size.
Unlike "Manual"-Cards, the individual insertion or the cancelling of images is not possible.
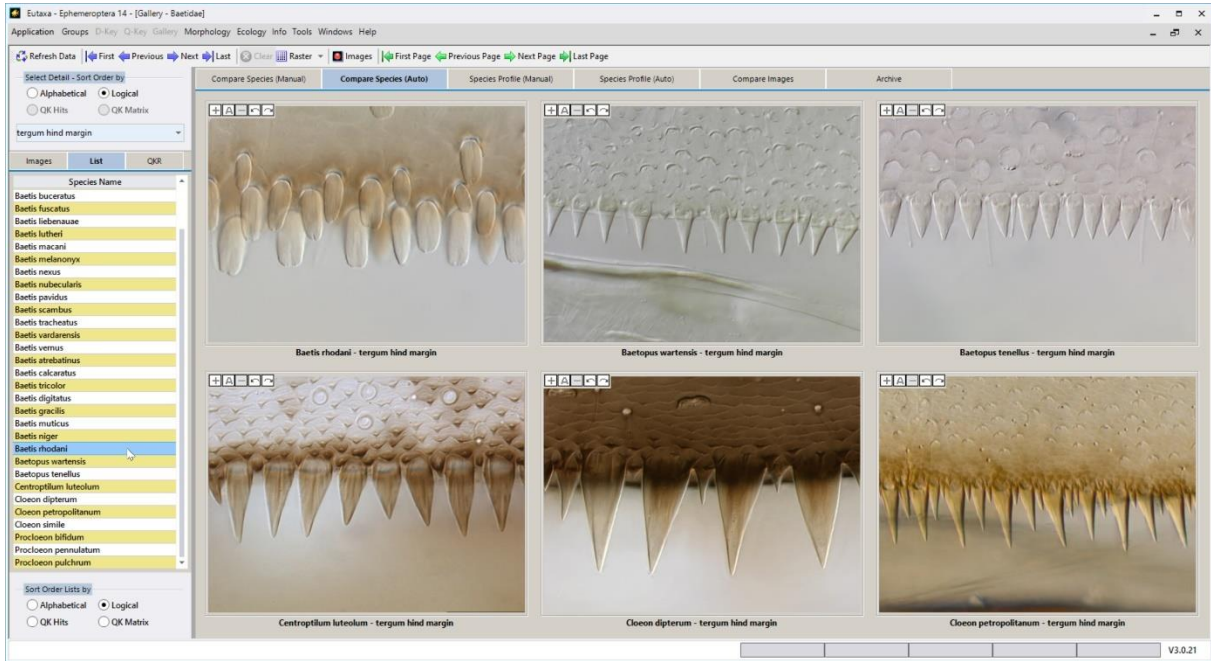
Fig. 140: Compare Species (Auto): Identical detail of 6 different species
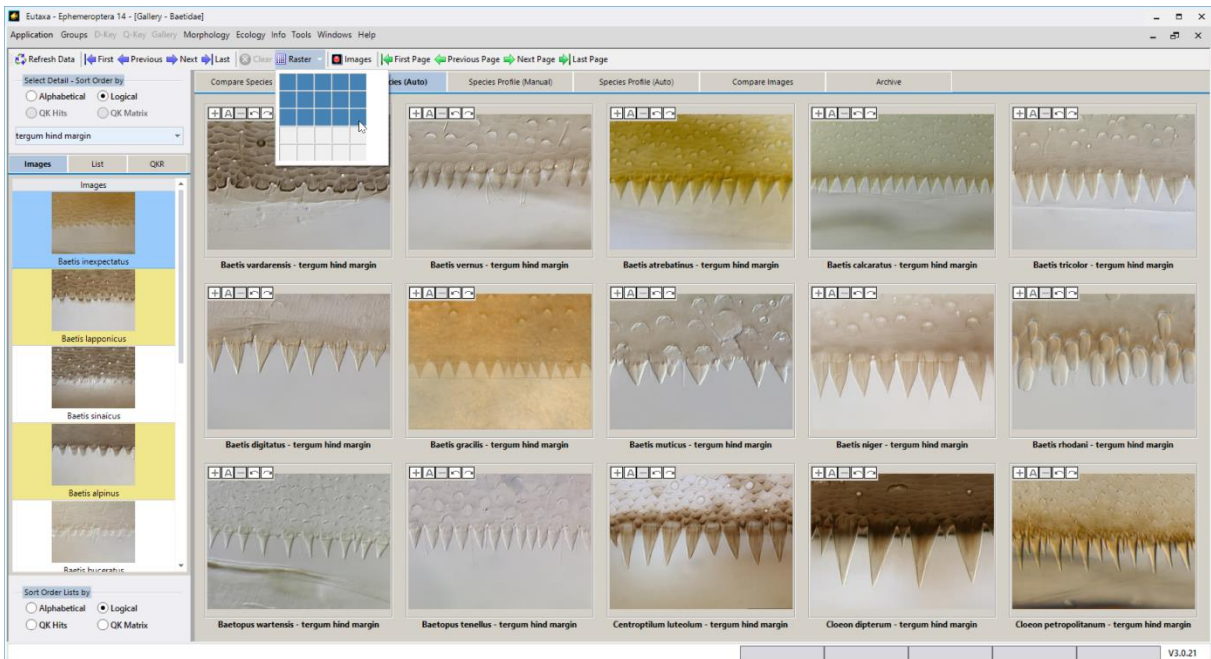
Fig. 141: Compare Species (Auto): Changing the number of Viewports from 6 to 15

Contrary to the Manual-Card, the lower QK Radio Buttons are set active, allowing to sort the species according to the last Query Key calculation. To import the Query Key sort order of the species, hit the Refresh Data button in the Toolbar. When selecting the **QK Hits** button, the species are sorted according to the results in the Hits Card, when selecting the **QK Matrix** button, according to the ranking or grouping of species in the Matrix Grid. To survey the correctness of the sort order, enter the QKR tab and compare the order of the records with the order of species shown in the Viewports.

Species Profile Cards

Species Profile cards are used to arrange and match images that show various details of the same species. The species names are listed in the Select Species combo box, those of the details in the Selection Tabs **Images** and **List**.
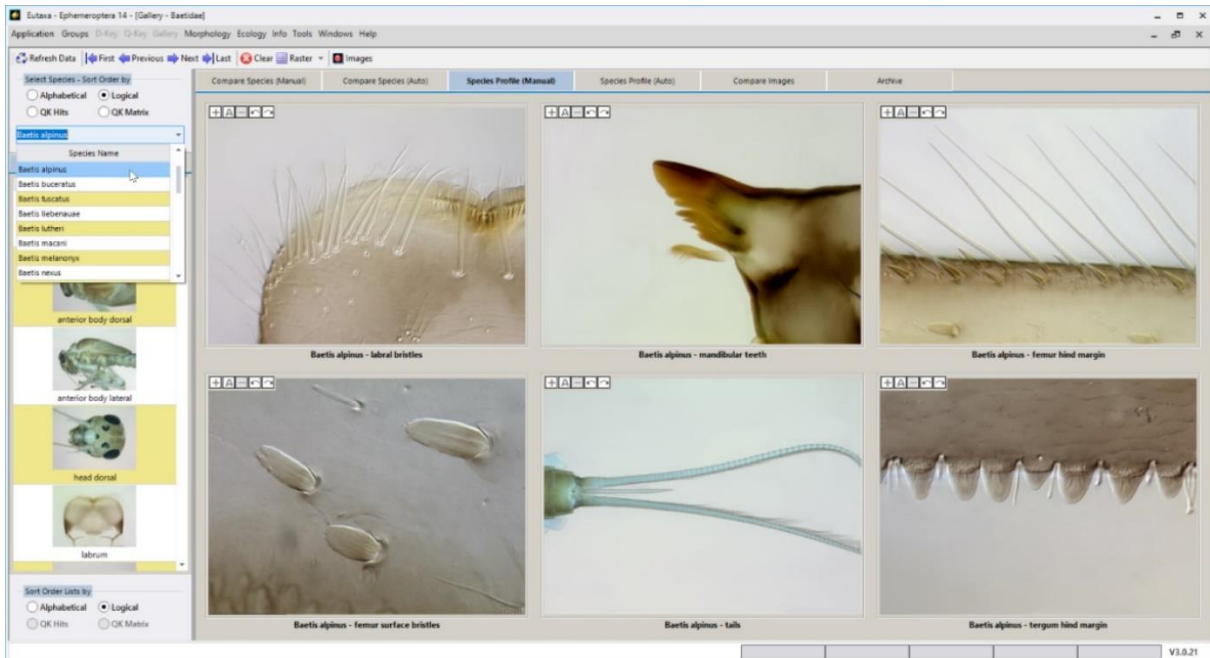
Fig. 142: Species Profile (Manual): Displaying different details of one species.
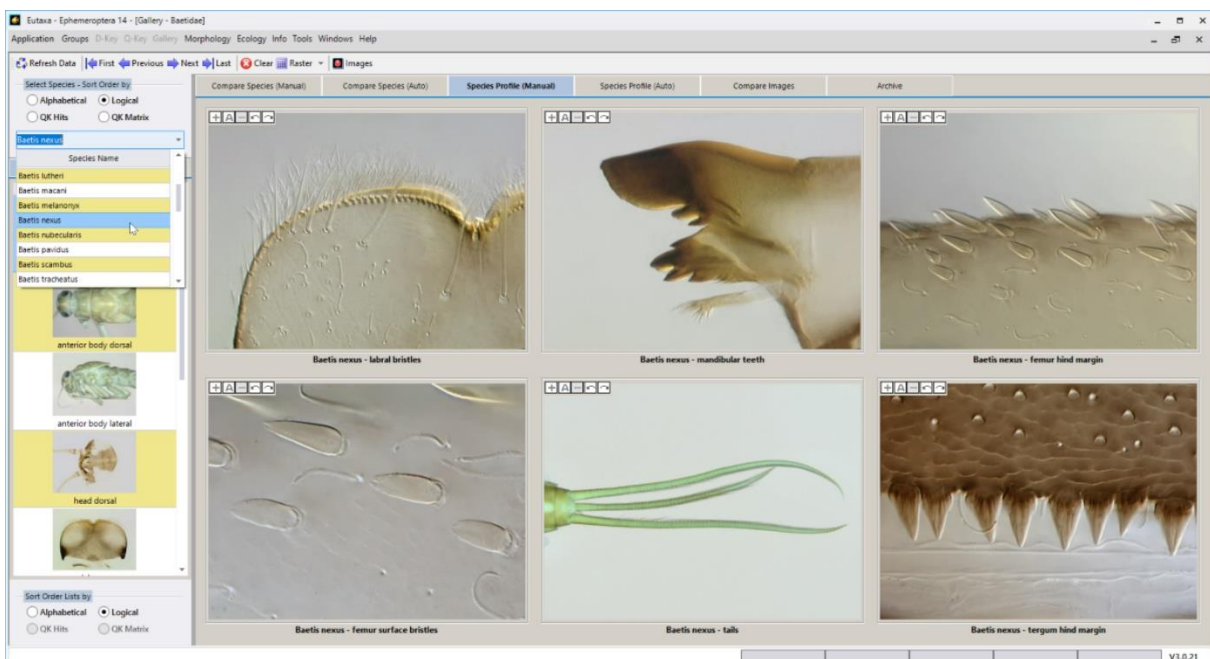
Fig. 143: Species Profile (Manual): Selecting another species in the combo box, while the details remain unchanged.

All Viewports display details of the species currently selected in the Combo Box. The program offers two methods of switching to another species: First, open the Combo Box and select the desired name; this command affects all Viewports on the Screen and the appropriate images are replaced automatically. Secondly, switch between the Navigation Keys in the Toolbar in order to query species in sequence.

Species Profile (Manual)

In this card, images of different details of one species can be displayed by selecting the details name in the Images or List tab and dragging it into a Viewport. The detail and its position on the Screen are assessed by the user; the arrangement and content of images can be altered individually, according to the user's requirements.

The upper QK Radio Buttons are set on active and the list of species in the Combo Box may be sorted according to the results of the last Query Key calculation. For example, when selecting the **QK Hits** button, the species list is sorted accordingly and the species can be changed in sequence by hitting the Navigation Keys in the Toolbar, or individually by selecting the species name in the Combo Box (fig. 142, 143) or, as a third method, in the QKR tab.

Species Profile (Auto)

In this card, images of all details of one species are displayed automatically.
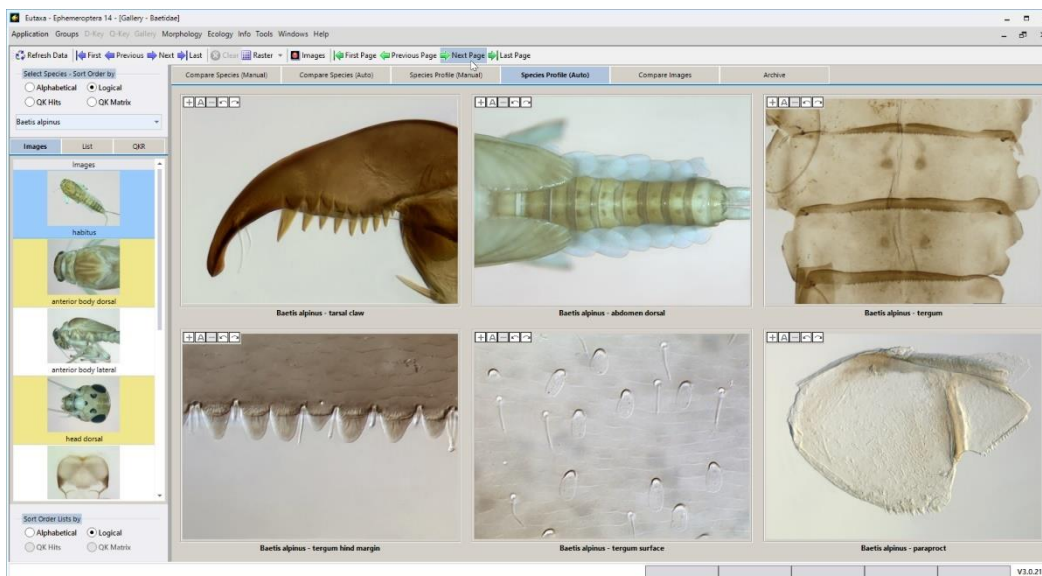
Fig. 144: Species Profile (Auto): Viewport show different details of one species
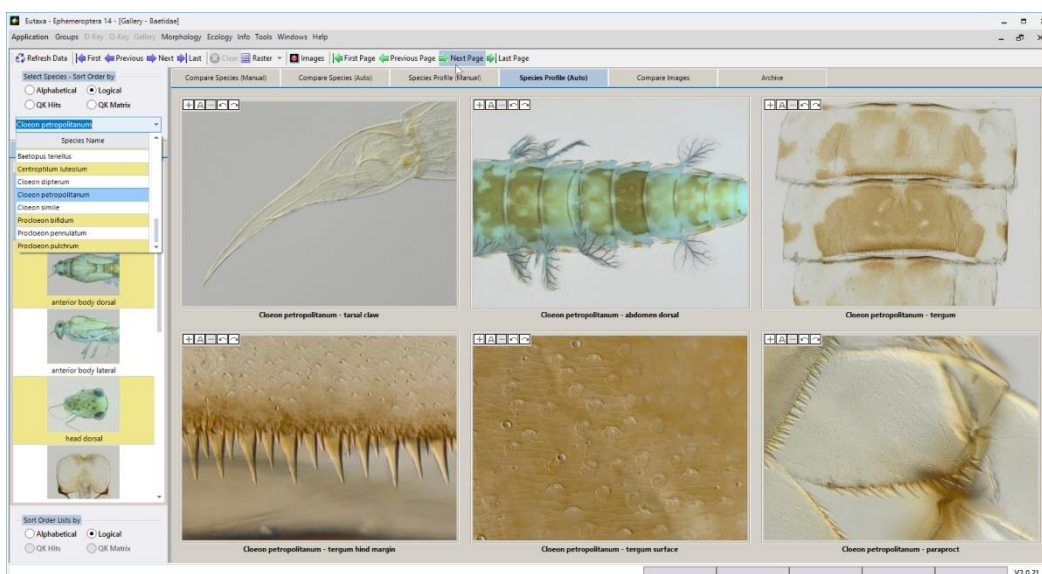
Fig. 145: Species Profile (Auto): Selecting another species in the Combo Box

To change the species, just select the desired name in the Combo Box. To view all details of a species, either increase the number of Viewports, by changing the setting in the Raster grid (fig. 146), or browse the pages forward or backward by hitting the Page Keys (fig. 109) in the Toolbar. The latter method is more comfortable because it allows the viewing of images in a convenient size.
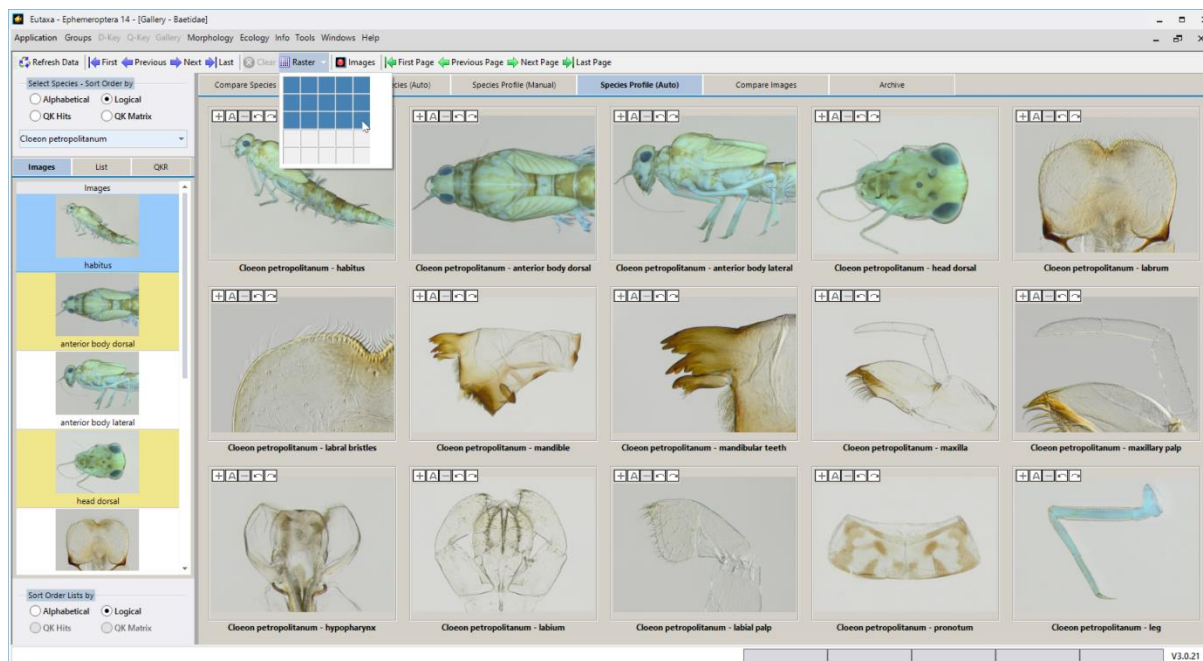
Fig. 146: Species Profile (Auto): Increasing the number of Viewports from 6 to 15.

Similar to Species Profile (Manual) Card, the upper QK Radio Buttons are set on active and the list of species in the Combo Box may be sorted according to the results of the last Query Key calculation. For example, when selecting the **QK Hits** button, the species list is sorted accordingly and the species can be changed in sequence by hitting the Navigation Keys in the Toolbar, or individually by selecting the species name in the Combo Box (fig. 144, 145) or, as a third method, in the QKR tab.

Unlike Manual cards, the individual insertion of images, using drag-&-drop, is not possible, and images cannot be cleared.

Compare Images

This card is used to combine images of both different species and different details. The species names are listed in the Select Species combo box, those of the details in the Images and List tabs (the species list in the QKR tab cannot be selected). Pictures are imported manually, using drag-&-drop, as described in the previous chapters.

This card may also be used to view any pictures stored on the computer. To import an image either hit the right mouse button, select the Open File command (fig. 148), browse the directory of your PC or notebook, choose a picture and click the **Open**-button (fig. 149). Or simply drag the thumbnail of the image from the Explorer into the Viewport.
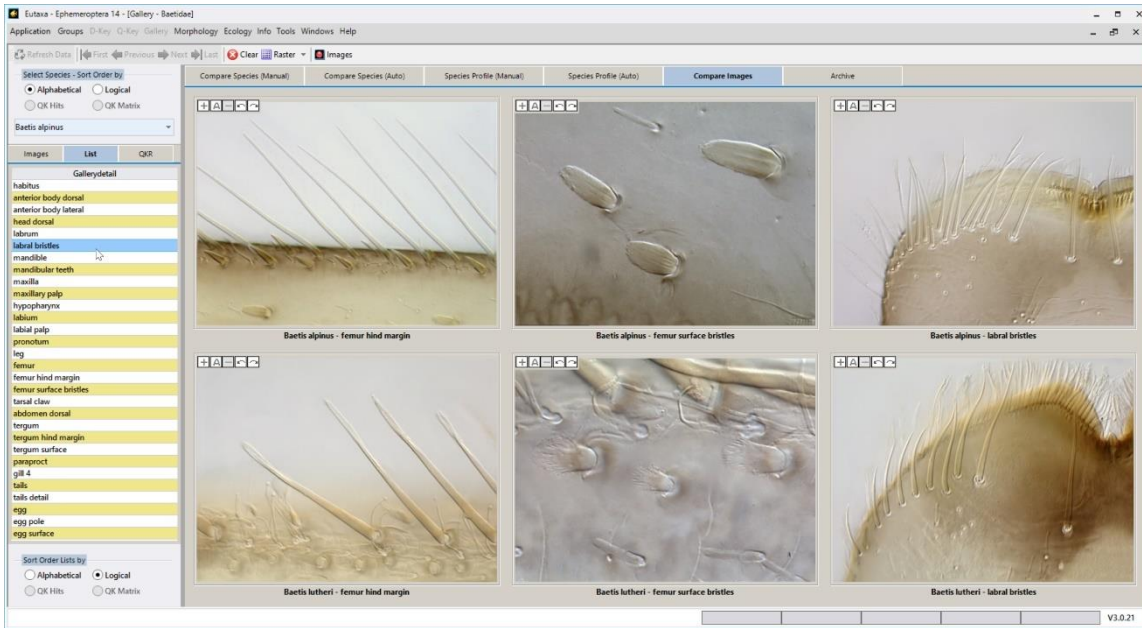
Fig: 147: Compare Images: Images of different details from different species
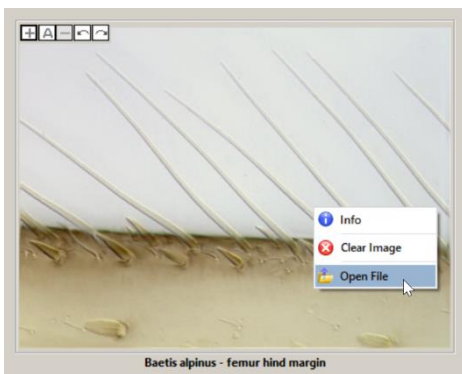
Fig. 148: Enabling the command "Open File"
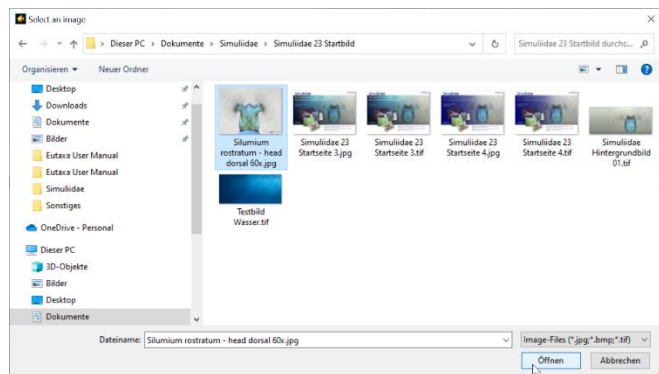
Fig. 149: Browsing the directory and selecting an image

Fig. 150: Display of the loaded user image

Archive

Card View

The Archive card shows all images of the currently selected group, stored in the picture database. This card is useful to offer a survey of the range of available images. Each image record is displayed in form of a thumbnail and labelled with the file path, the names of species and detail and a check box that indicates the correctness of the file path.
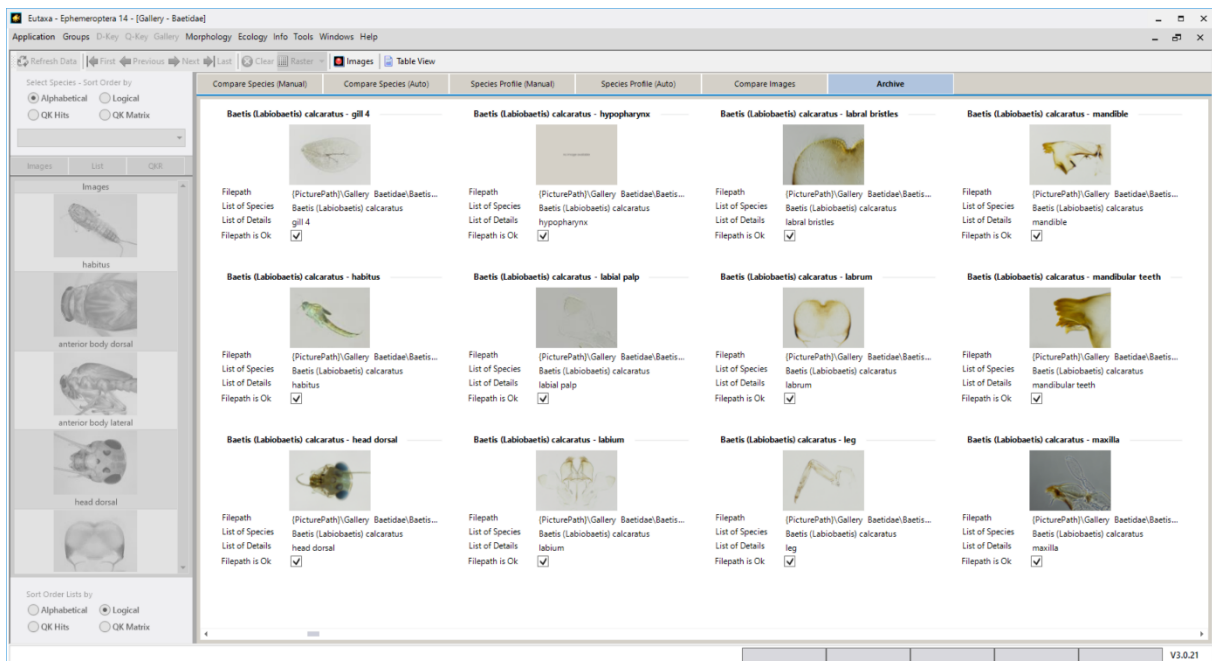
Fig. 151: Archive – Card View

Table View

To switch to the Table View, enable the homonymous button in the Toolbar. In this viewing mode the image records are listed in a table and can be sorted, according to the image description, the correctness of the file path and the species or detail name, by clicking one of the column headers (fig. 152).

In addition, the records may be grouped by dragging the header into the Grouping bar, placed on top of the table (as shown in figure 153). To cancel the group, drag the header from the Grouping bar to any point of the table or hit the **X**-setter of the group.
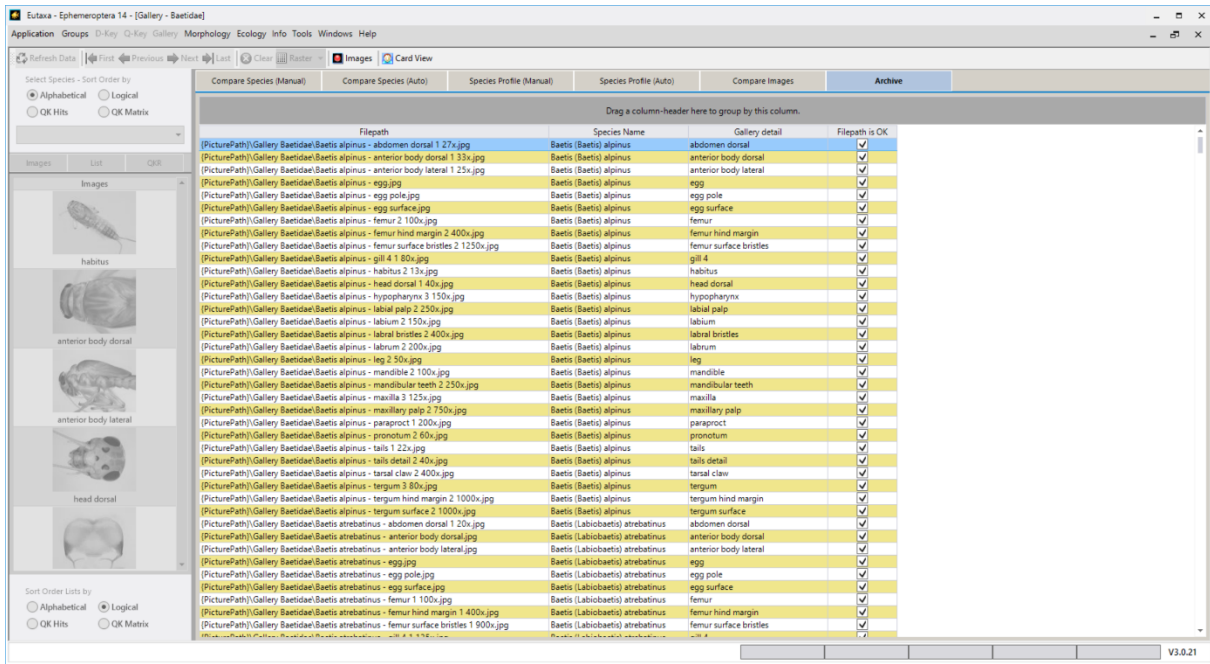
Fig. 152: Archive – Table View: Records sorted by the species name
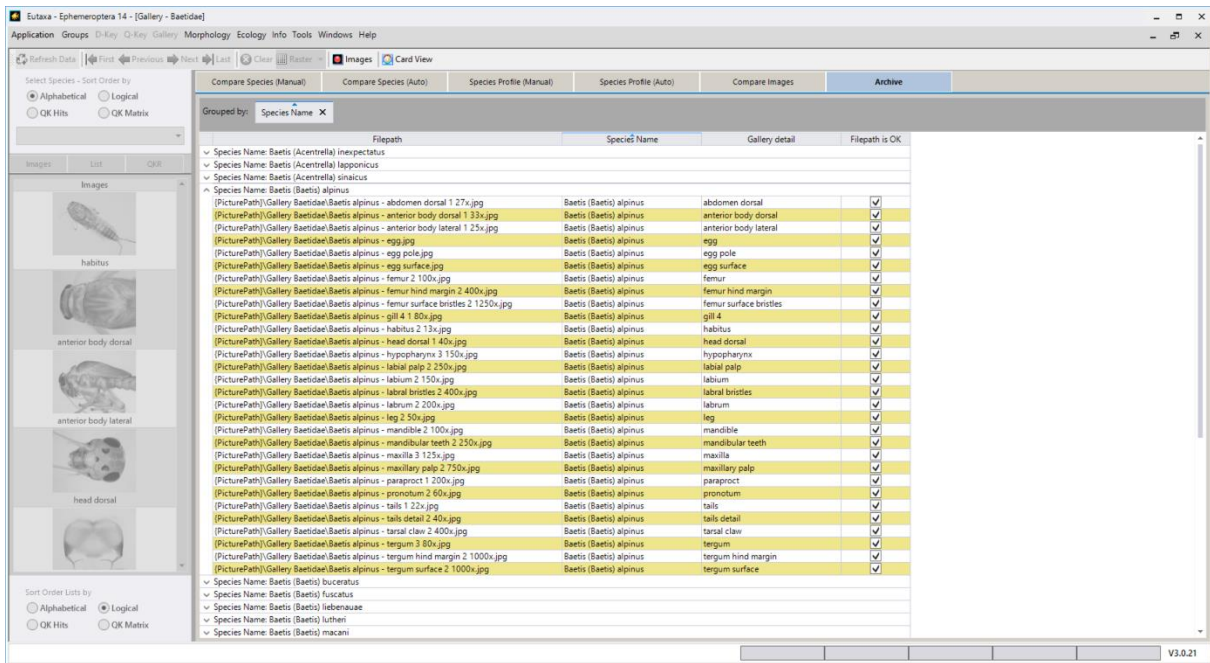
Fig. 153: Archive – Table View: Records grouped by the species name

6. Morphology

The Morphology interface consists of the Toolbar (1), the Image Panel (2), a series of Morphology Cards (3) and a Screen (4), containing the Viewports to display pictures.
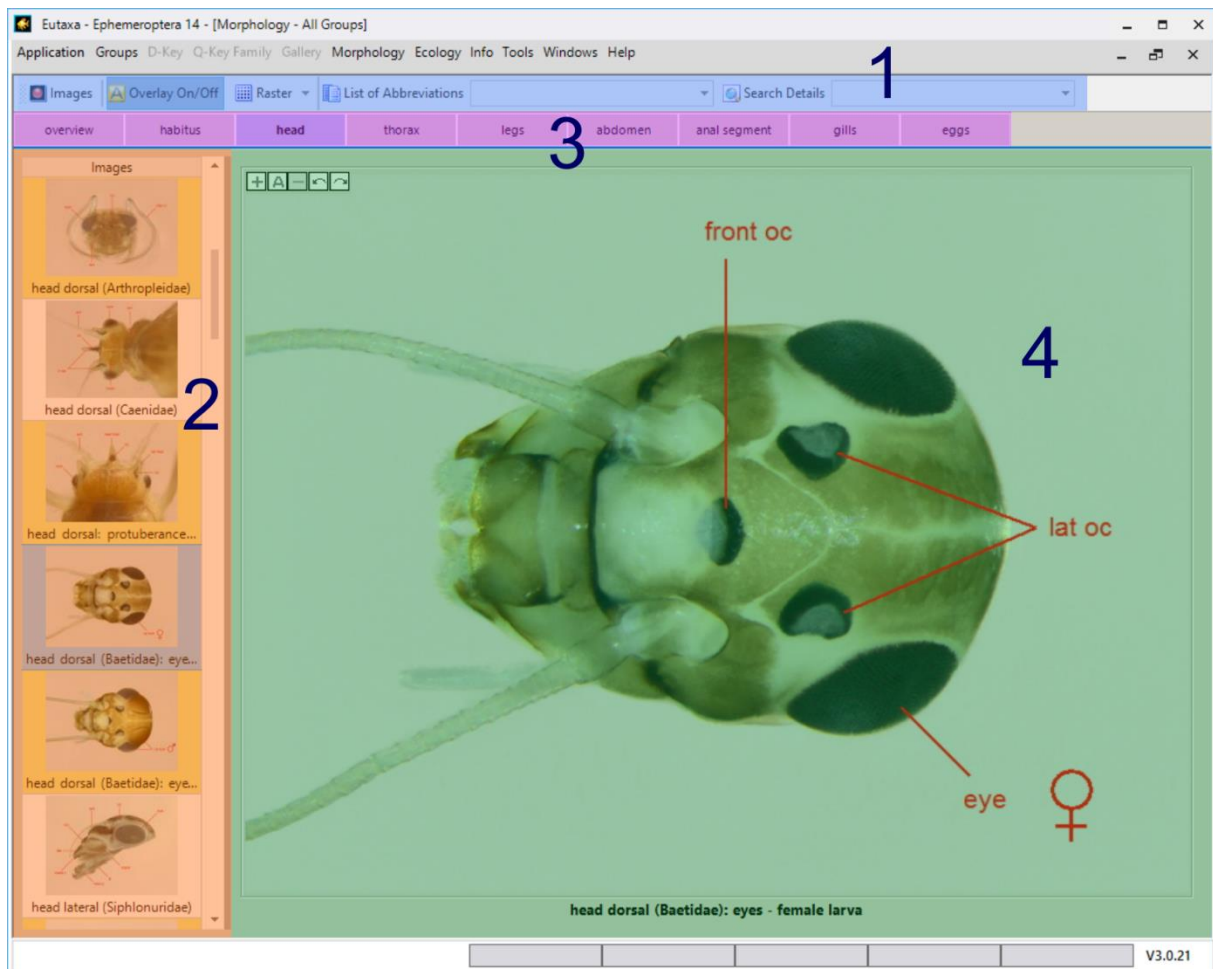
Fig. 154: Morphology: Toolbar (1), Image Panel (2), Morphology Cards (3) and Screen (4)

6.1 Toolbar

The Toolbar shows a series of buttons (Images, Overlay On/Off and Raster) and two combo boxes to open a list of abbreviations and to search for a detail.
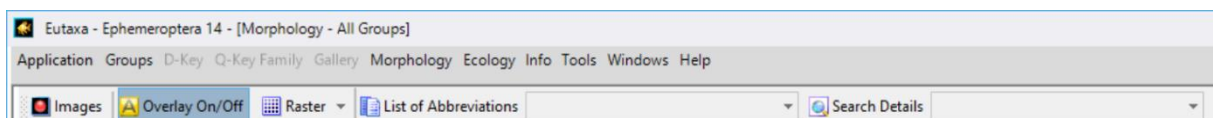
Fig. 155: Toolbar: Buttons and combo boxes

Images

This button is used to display pictures stored in the Gallery Archive. A detailed description is given in chapter 5 (Gallery).
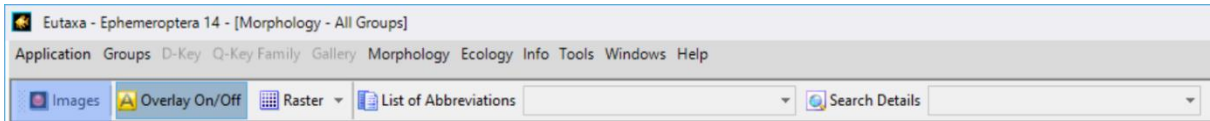
Fig. 156: Images

Overlay On/Off

Button to display or clear the image descriptions. The button is preset on **Overlay On**.
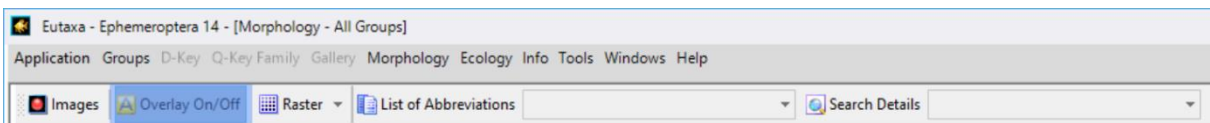
Fig. 157: Overlay On/Off
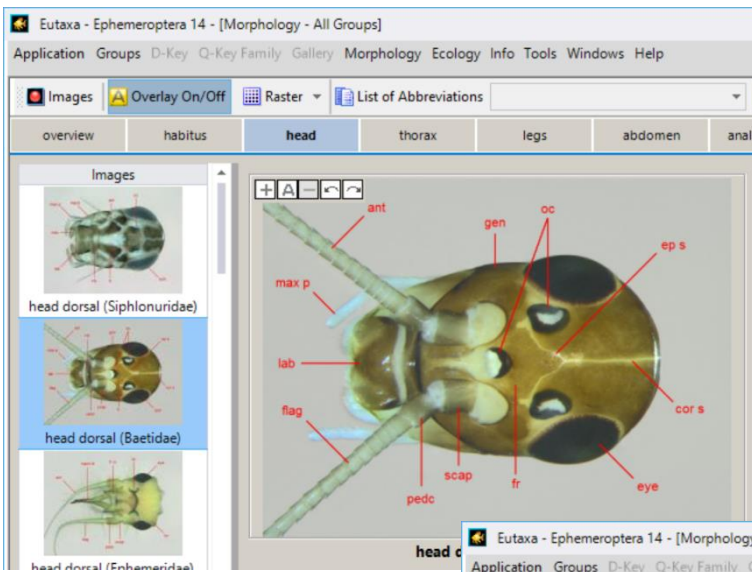
Fig. 158: Overlay On/Off: enabled
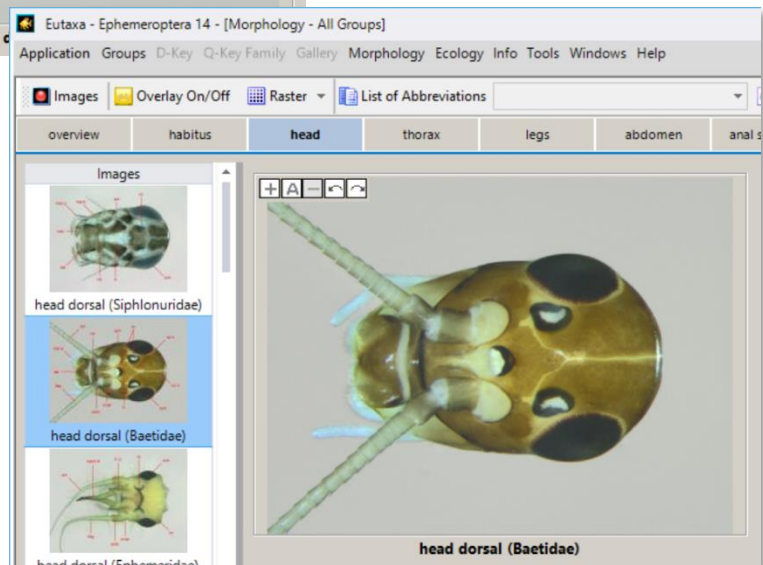
Fig. 159: Overlay On/Off: disabled

Raster

Button to assess the number and arrangement of Viewports, displayed on the Screen. Enabling this button opens a grid where number and configuration of up to six Viewports can be selected. Confirm the choice with a mouse-click to arrange the Viewports accordingly.
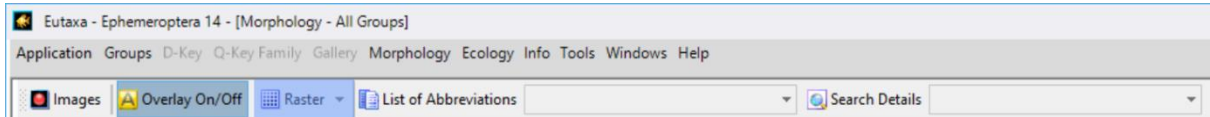
Fig. 160: Raster: Selection of four Viewports
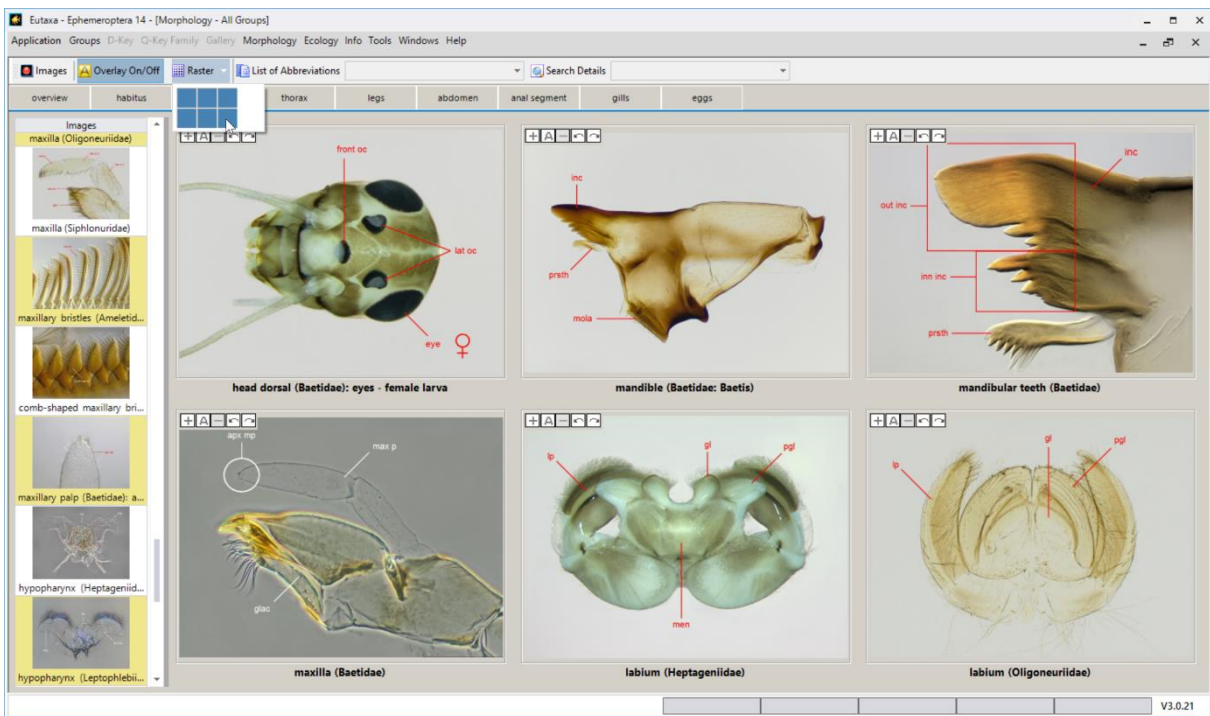
Fig. 161: Raster: Selection of six Viewports

List of Abbreviations

The combo box contains a register of image descriptions, including a list of abbreviations (**Shortcut Text**) and the full names of the details (**Structure Text**). The lines can be sorted in an ascending or descending row by hitting the respective column headers. This table is used to decode the shortcut text displayed in most of the pictures.
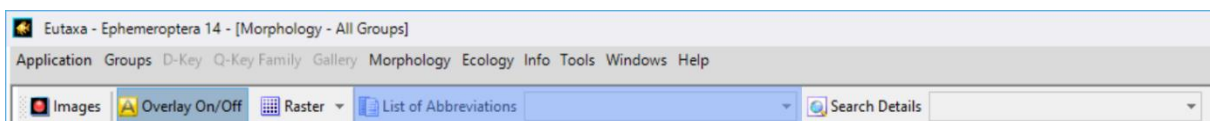
Fig. 162: Combo box "List of Abbreviations": Lines sorted by "Shortcut Text"
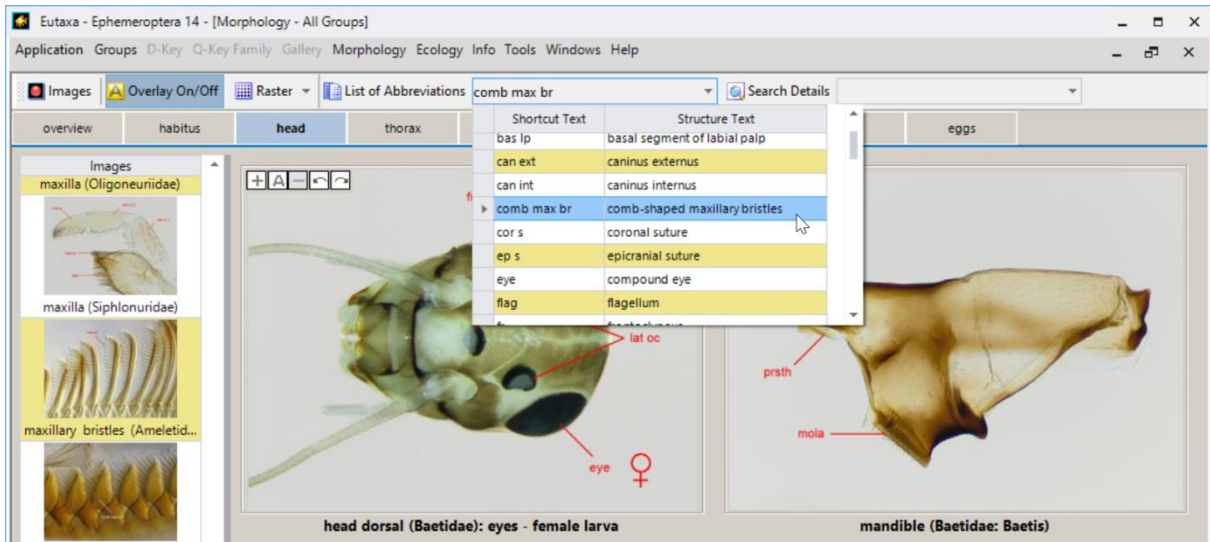
Fig. 163: Expanded list of abbreviations. Lines sorted by "Shortcut Text"

Search Details

The combo box includes a list of details, shown in at least one of the pictures on the Image Panel. When selecting one of the records, the appropriate picture is automatically displayed on the Screen (when containing a single Viewport, as shown in figure 165). If more than one Viewports are arranged on the Screen then only the appropriate thumbnail in the Image Panel is highlighted in blue (fig. 166, arrow).
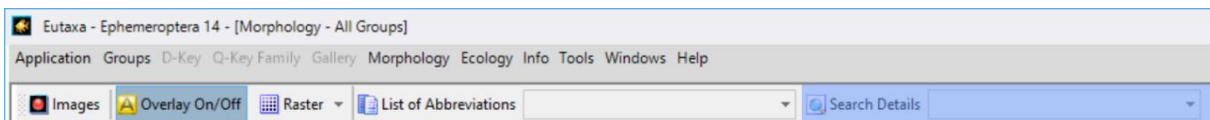
Fig. 164: Combo box "Search Detail": Selection of a detail to display the adequate image on the Screen
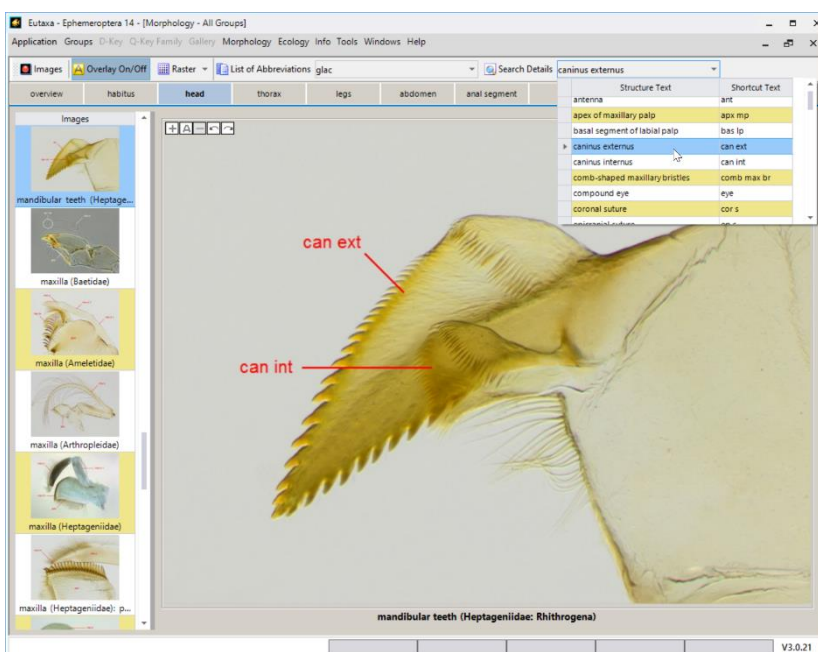
Fig. 165: Selection of a detail when viewing a single Viewport on the Screen
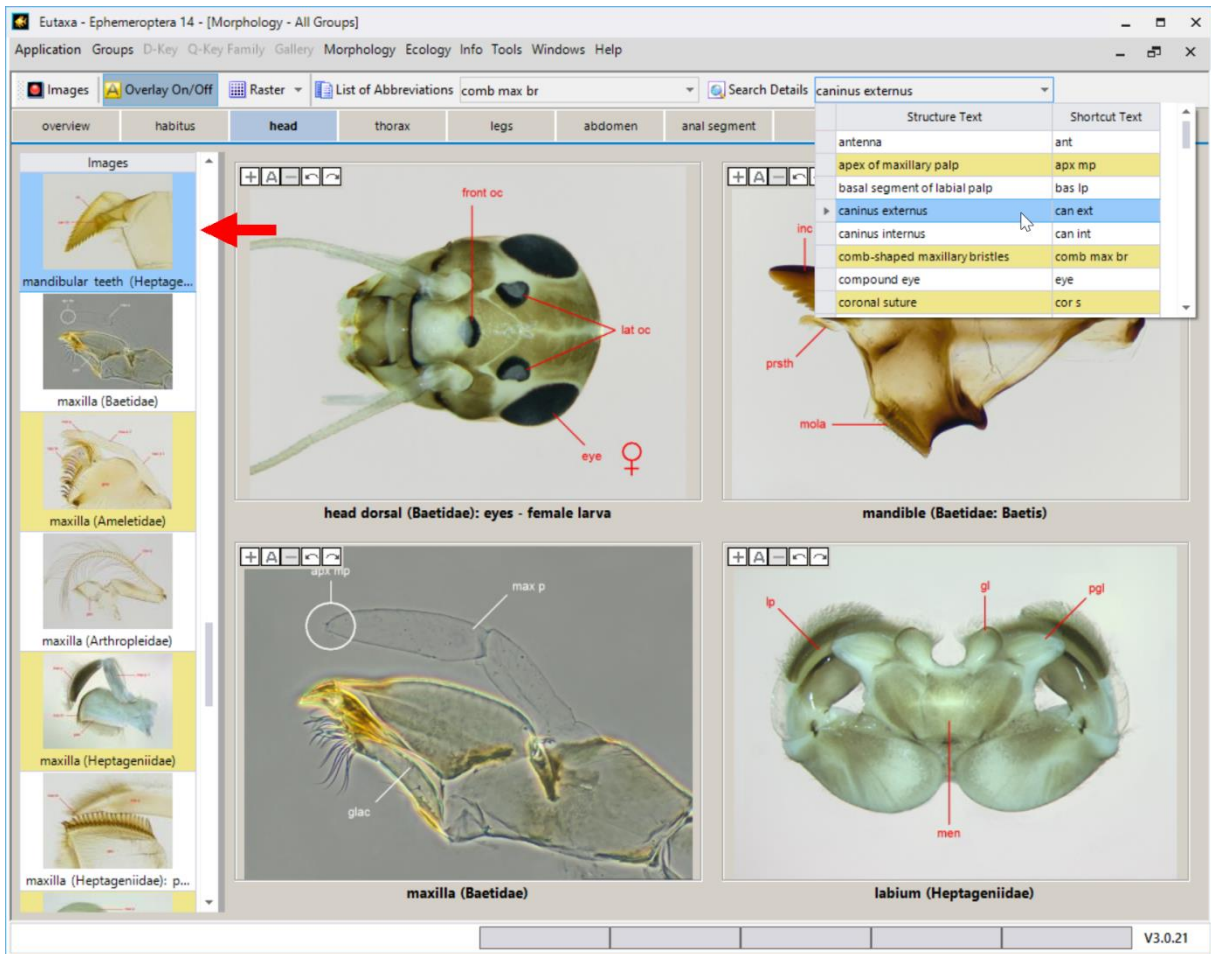
Fig. 166: Selection of a detail when viewing multiple Viewports on the Screen

6.2 Morphology Cards

This sub-application offers a series of cards, each treating a specific part of the body. The first card (**overview**) gives a survey of the habitus, subdividing it into sections, which are described in detail on one of the following Morphology Cards (fig. 167).
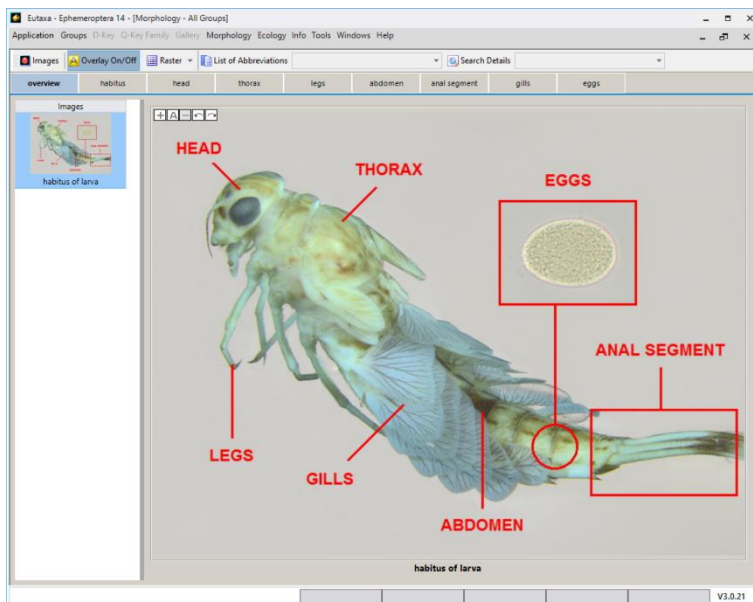
Fig. 167: Overview card
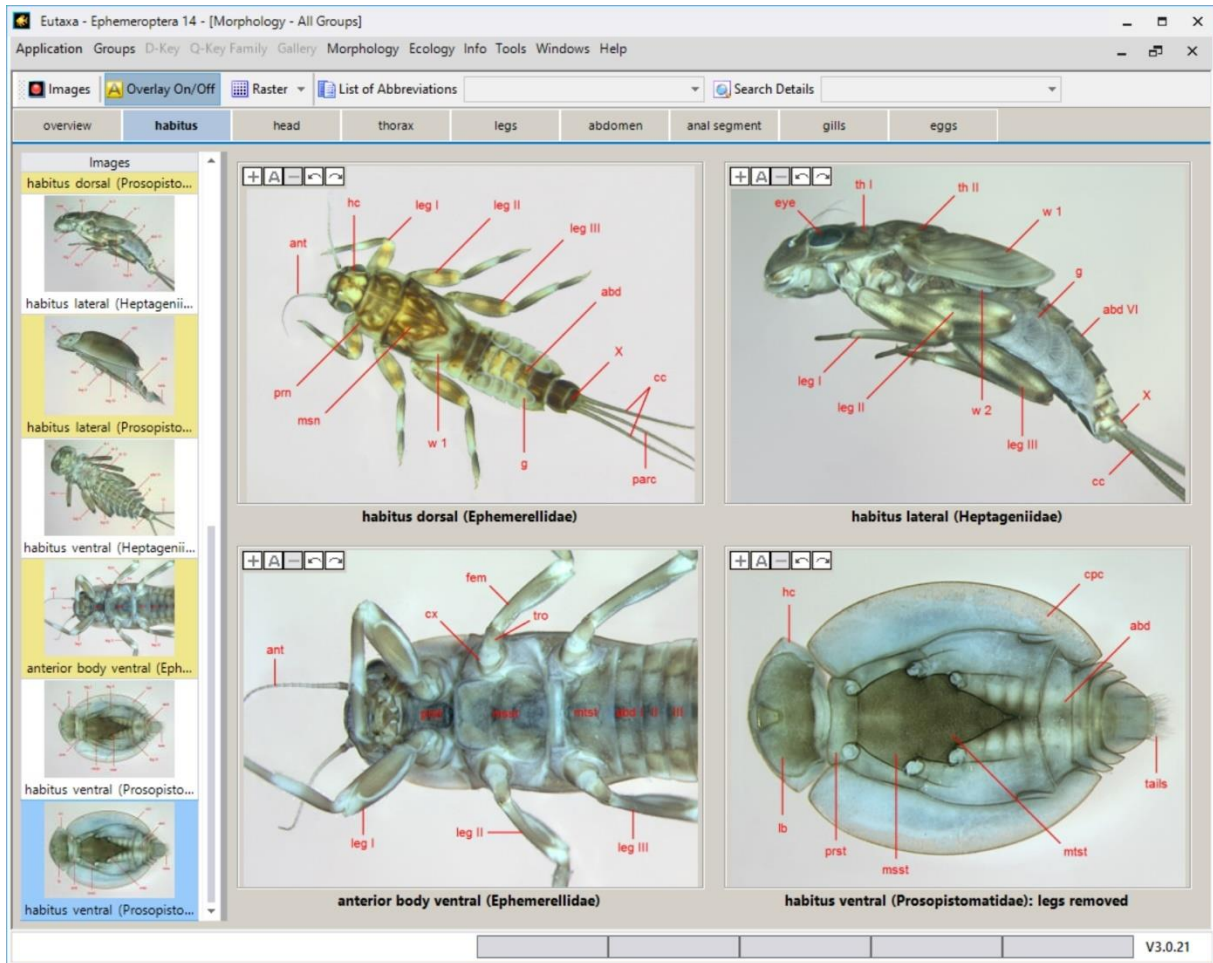
Fig. 168: Morphology Cards: Habitus
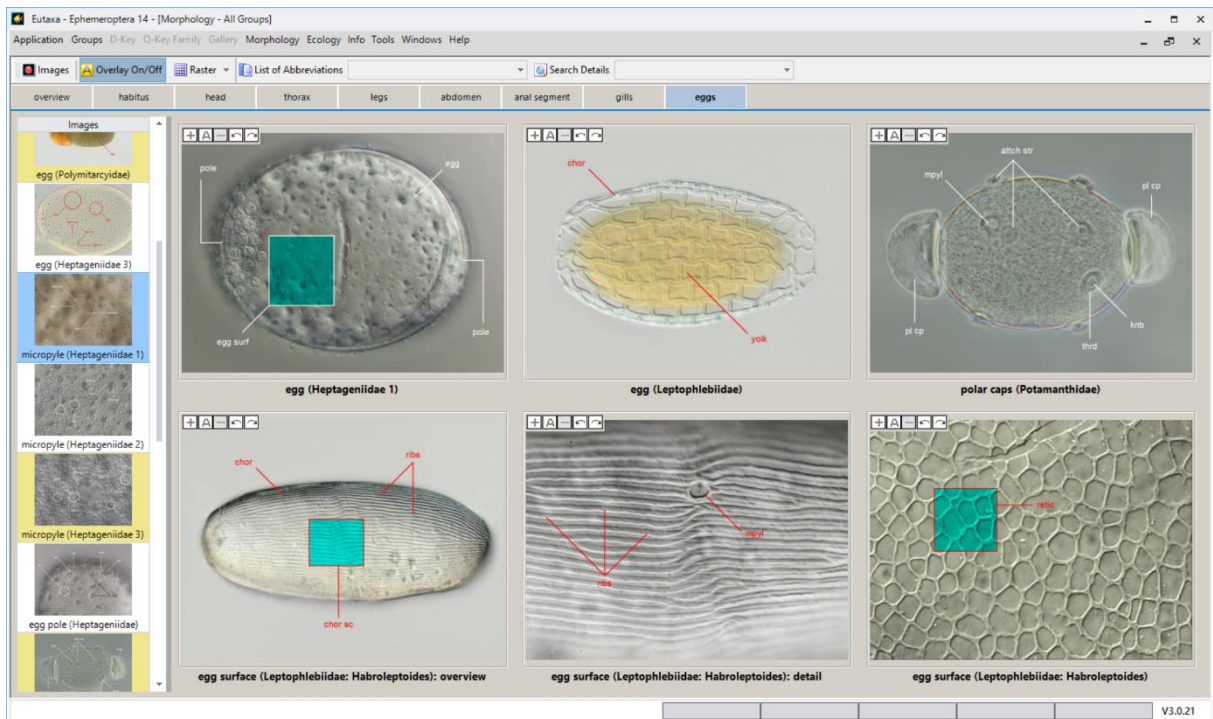
Fig. 169: Morphology Cards: Eggs

Display and Cancelling of Images

The Image Panel contains a series of thumbnails of images that can be displayed on the Screen. When the Screen consists of a single Viewport, simply click on the thumbnail in the panel, and the picture will be displayed automatically. When arranging multiple Viewports, drag the thumbnail from the Image Panel into the wished Viewport (figure 170). To clear an image, hit the right mouse button and select **Clear Image** (figure 171).
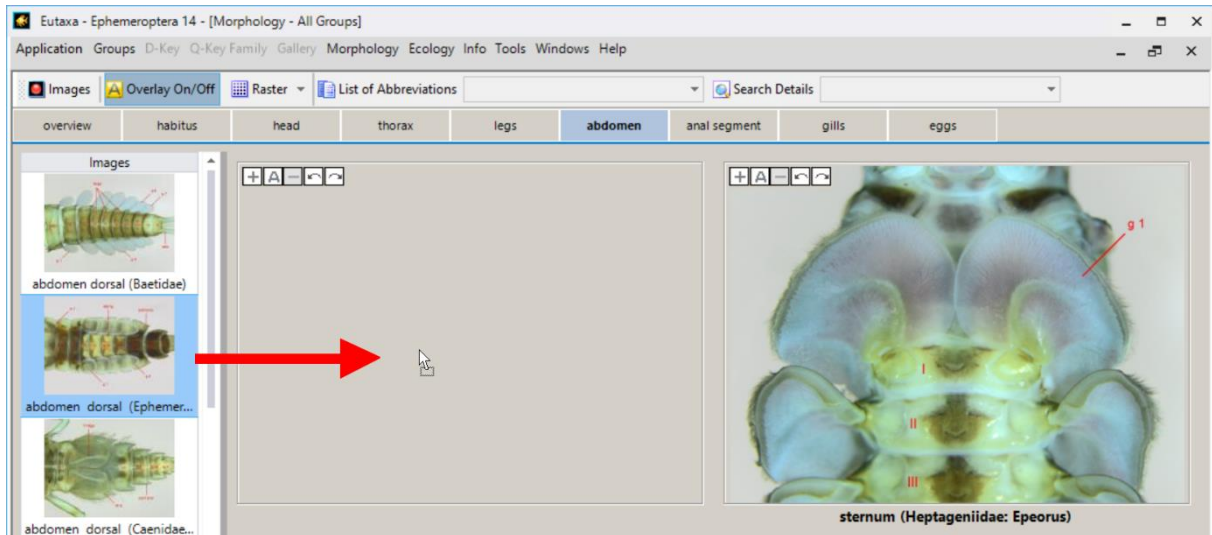
Fig. 170: Selecting a thumbnail and drawing it into a viewport
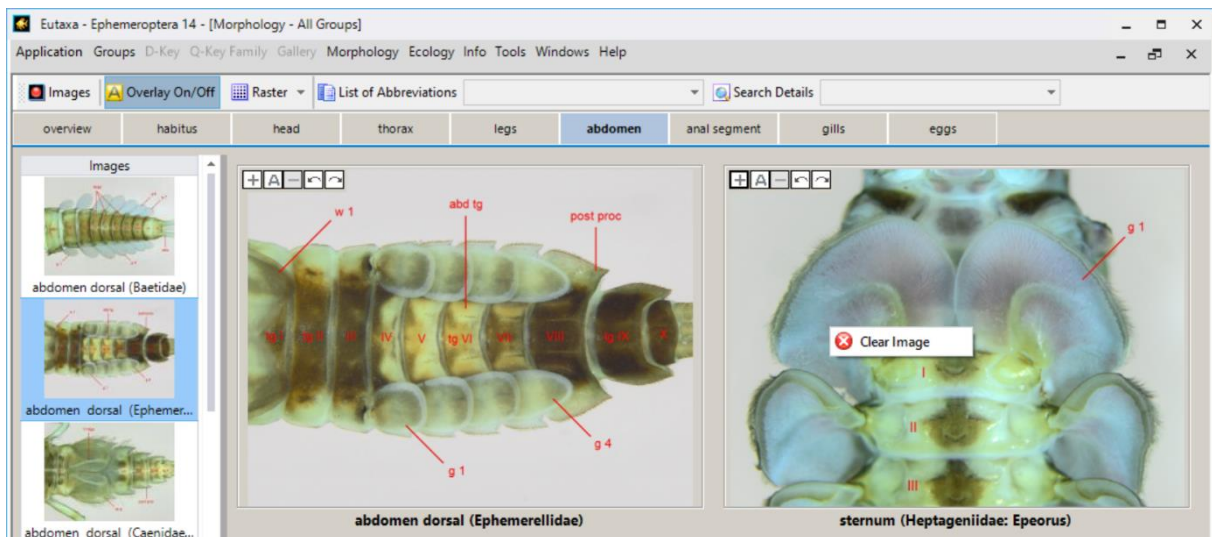
Fig. 171: Display and cancelling of images

7. Ecology

7.1 Overview

The Ecology interface consists of the Toolbar (1), a field with Systematic Data (2), the Selection Panel (3) and a series of Ecology Cards (4) (fig. 172).

The configuration of the interface depends on the currently selected card. When entering the Distribution Card, a few Toolbar buttons are added, and when shifting to the Multiple Maps viewing mode, the Systematic field is blanked out and the size of the Distribution Card is expanded, allowing the arrangement of up to 9 maps on the screen (figures 190-192).
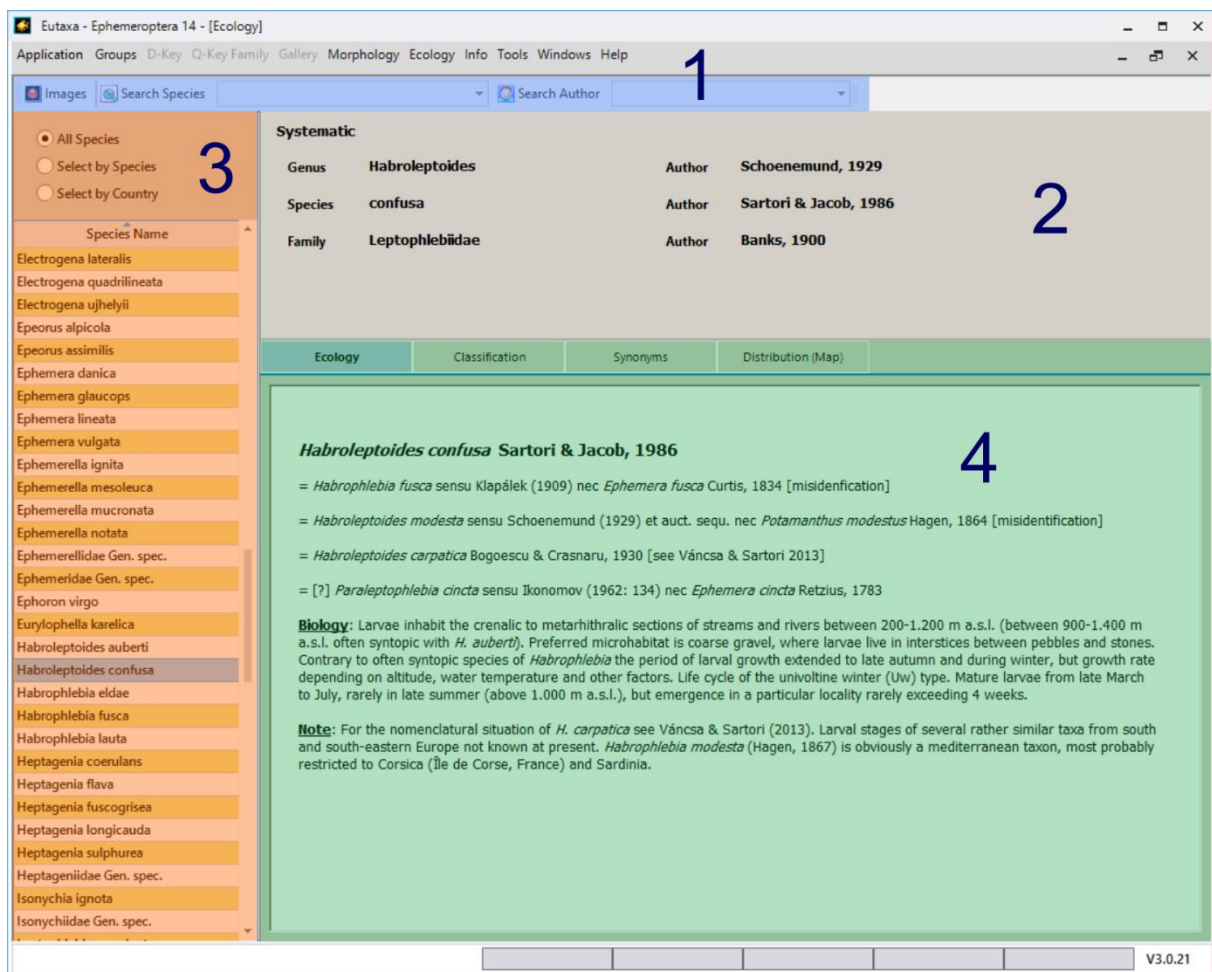
Fig. 172: Ecology interface: preselected "Ecology" card

7.2 Toolbar (Ecology/Classification/Synonyms)

This configuration of buttons is visible when entering the Ecology, Synonyms or Classification Card.
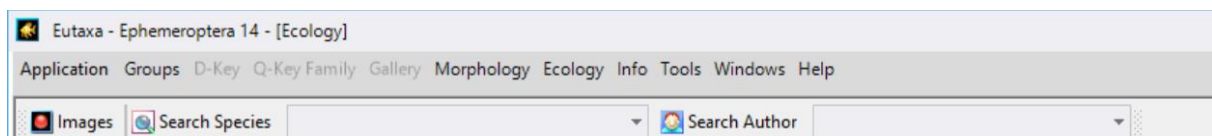
Fig. 173: Toolbar –"Multiple Maps" viewing mode: Buttons and combo boxes

Images

This button allows to open a variable number of windows to display pictures stored in the Gallery Archive. A detailed description about the function is given in chapter Gallery/Images.
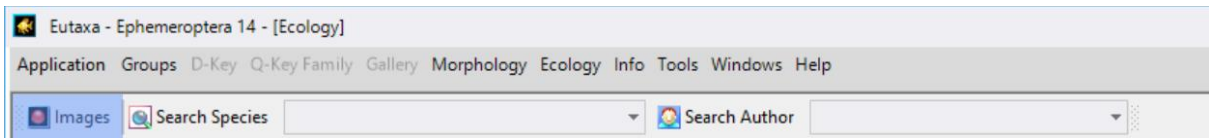
Fig. 174: Toolbar: Images

Search Species

Combo box to select the name of a species or a synonym.
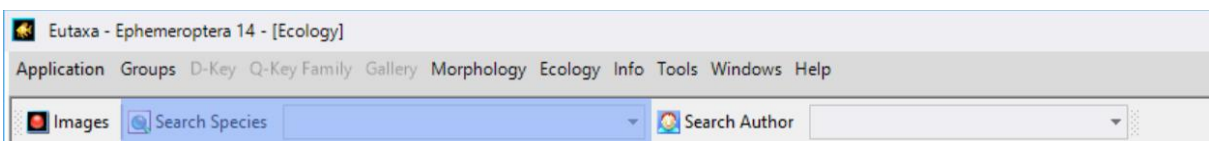
Fig. 175: Toolbar: Search Species
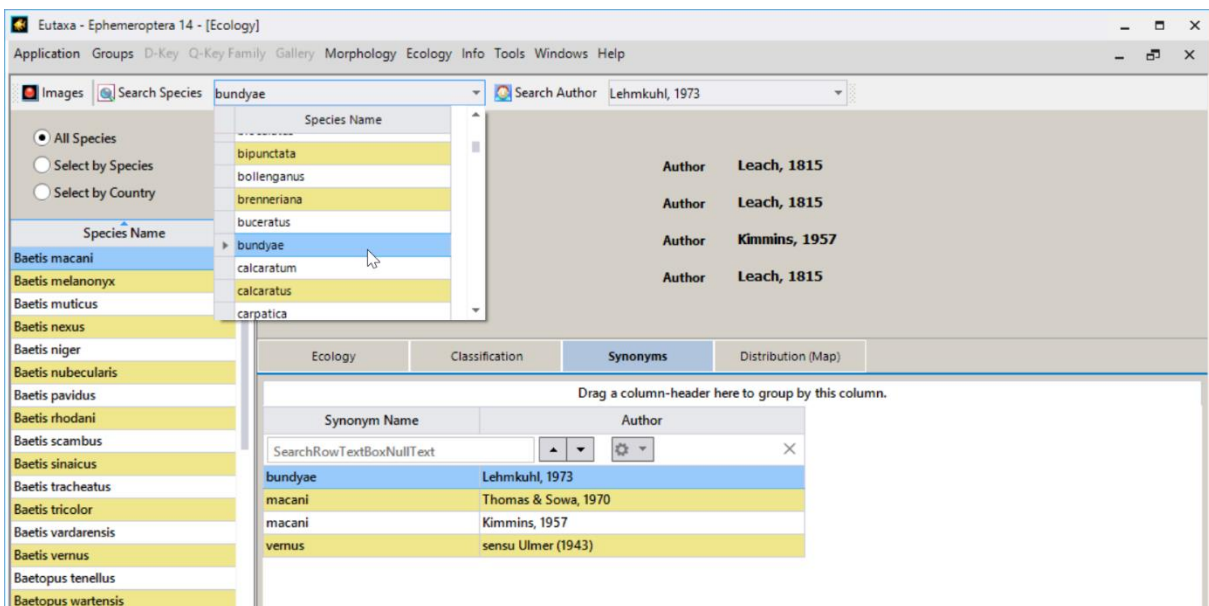
Fig. 176: Toolbar: Selection of species name (synonym name)

Search Author

Combo box to select the corresponding author, including the year of the published description.

The records listed in both boxes are interrelated, so that they can only be selected jointly, by first selecting the species name in the Search Species box and subsequently the name of the author in the Search Author box. After choosing both records, the data of the appropriate species will be displayed in the currently opened Ecology Card and in the Systematic field. This selection mode is useful when searching for any species names, whether synonyms or valid species.
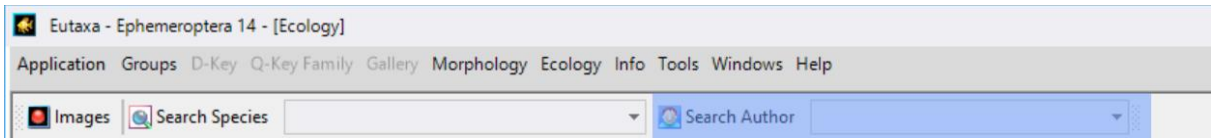
Fig. 177: Toolbar: Search Author
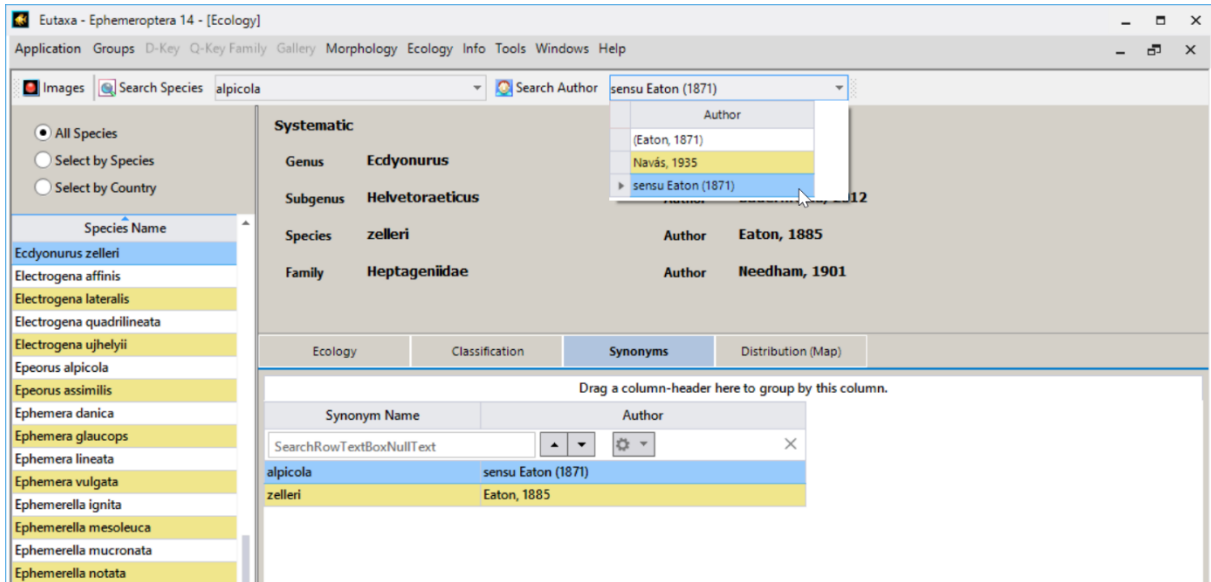
Fig. 178: Toolbar: Selection of synonym and author and display of valid species name

7.2 Toolbar (Distribution)

Multiple Maps (alternately with Single Maps)

This button is visible when entering the Distribution Card. When clicking the key, the card changes to the Multiple Maps viewing mode, allowing the simultaneous arrangement of up to nine maps.
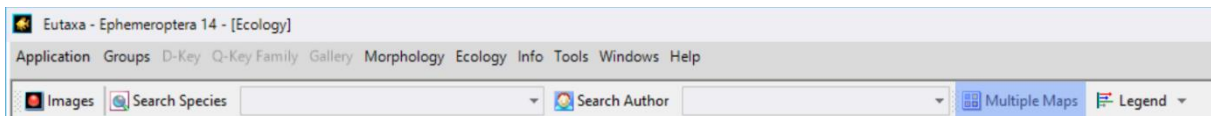
Fig. 179: Toolbar of Distribution card: Multiple Maps

Single Map (alternately with Multiple Maps)

Button of the Distribution Card to switch from the Multiple Maps to the Single Map viewing mode.
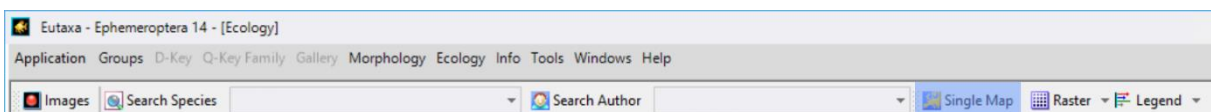
Fig. 180: Toolbar of Distribution card: Single Map

Raster

This button is visible when entering the Multiple Maps viewing mode of the Distribution Card. It allows to arrange between one and nine Viewports on the card. Enabling this button opens a grid where the number (up to nine) and configuration of Viewports can be selected.
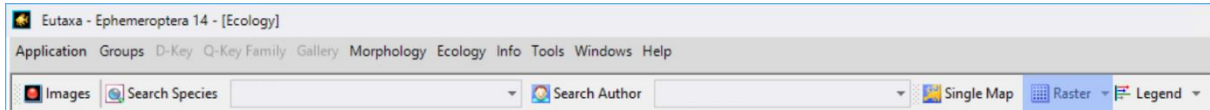
Fig. 181: Toolbar: Raster button to arrange a number of up to nine Viewports (maps)

Legend

This button opens a window, containing a description of the map colouration.
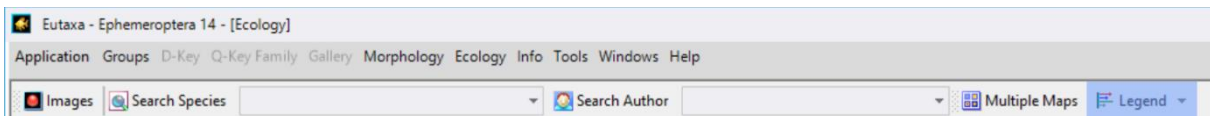
Fig. 182: Toolbar: Legend
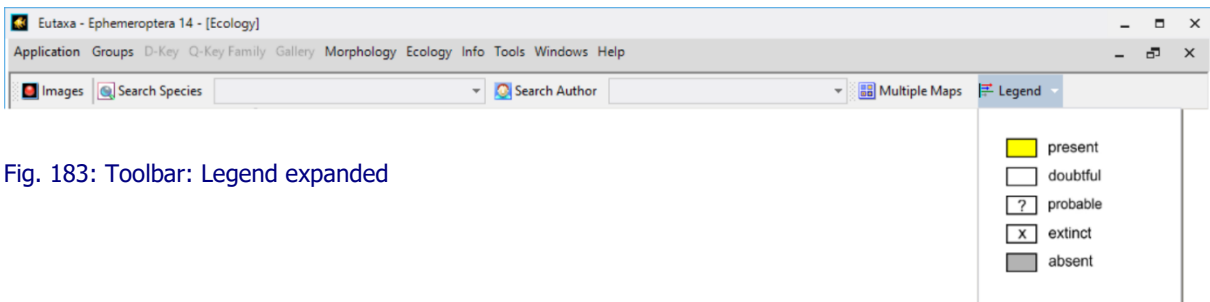
Fig. 183: Toolbar: Legend expanded

7.2 Systematic Data

The field displays a series of systematic data, including names, authors and the years of description.

Fig. 184: Systematic field

7.3 Selection Panel

The panel includes a series of Radio Buttons and a Selective List with the names of species or countries (depending on the enabled Radio Button).

Selective List

This table shows a list of species or countries, pursuant to the setting of the Radio Buttons, and offers a simple way to query information about a species (in case of the Distribution Card only in the Single Map viewing mode): When selecting a name in the list, the information about the species will be displayed automatically in the Ecology Cards.

Tip: The names of species may be displayed with or without subgenus name, depending on the setting in the command field Tools/Settings/User System settings in the Menu bar.

Fig 185: Selection Panel: Radio-Buttons and Selective List.

Radio-Buttons

This field contains three buttons, All Species, Select by Species and Select by Country. Changing the settings affects the type and arrangement of the records in the Selective List.

All Species

This button is preset and displays a list of species, arranged in the alphabetical order. When selecting a species name, the appropriate data are shown in the Systematic field and on every Ecology Card.

Select by Species

Enabling this button, opens a list of species, each including a series of country names, representing the distribution area of the selected species (fig. 86 B).

Select by Country

This button opens a list of countries, each including a list of the occurring species. The lists may be expanded or collapsed by the small arrow keys, placed on the left side of each name (fig. 86 C). If there no distribution data available, the arrow key remains inactive and the list cannot be expanded.
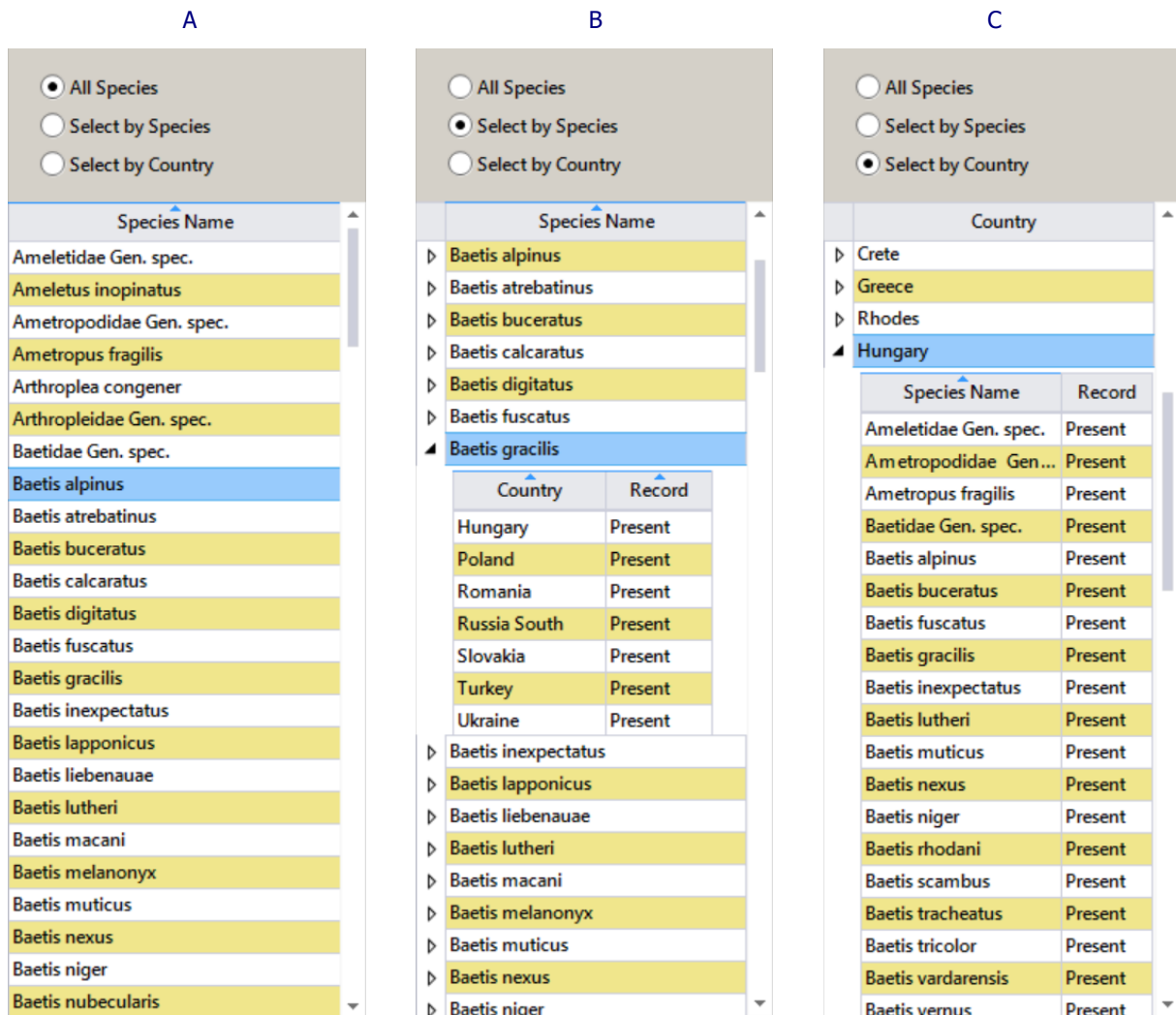
Fig. 186: Selective List, modified by Radio Button settings: A. All Species, B. Select by Species, C. Select by Country

7.4 Ecology Cards

Depending on product, the interface offers three or four cards, named Ecology, Classification, Synonyms and Distribution. Ecology Cards either contain text fields, tables, charts or Viewports.

Ecology Card

This card offers information about systematic, biology, ecology and/or distribution of a species.
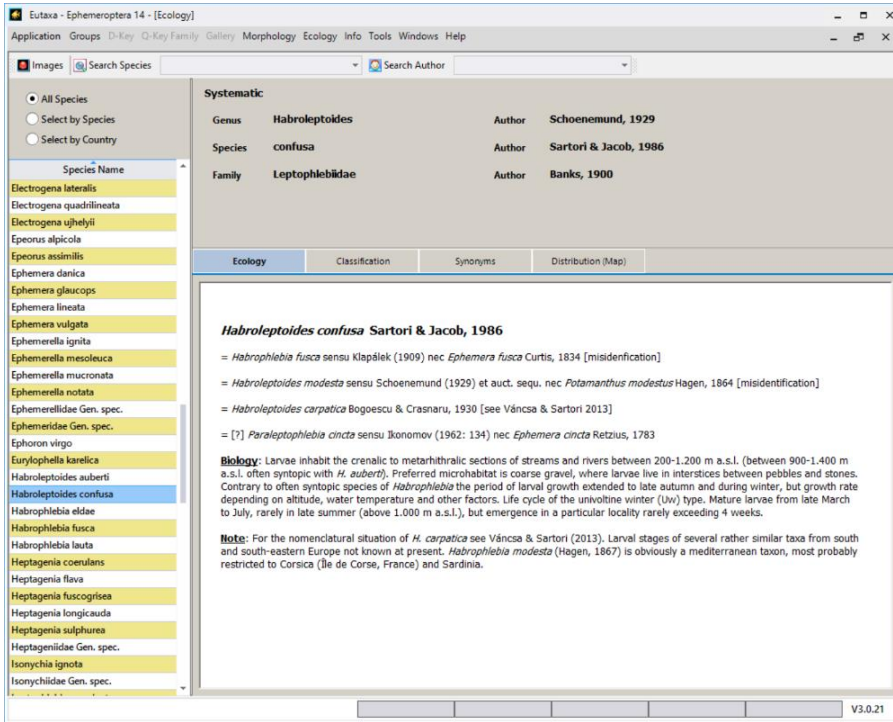
Fig. 187: Ecology Card

Synonyms Card

This card includes a list of synonyms of the selected species, the corresponding authors and the years of description.
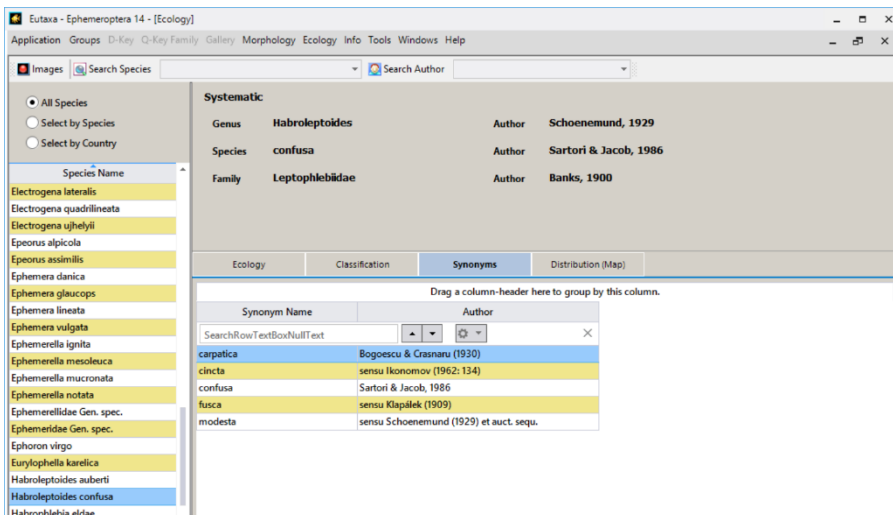
Fig. 188: Synonyms Card

Classification Card

The data, presented in this card, originate from the latest version of the Fauna Aquatica Austriaca.

Longitudinal Distribution

This application provides information about the distribution of species in stagnant and in longitudinal sections of running waters, ranging from the crenal to the hypopotamal. The values displayed in the fields assess the probability of the occurrence in every section (the sum of the values is always 10).

Saprobic Valence

This application provides information about the saprobic valence of species, reflecting the degree of tolerance to organic contamination. The Roman numerals indicate the degree of pollution, ranging from levels 0 (xenosaprobic), to I (oligosaprobic), II (β-mesosaprobic), III (α-mesosaprobic) and IV (polysaprobic). The values displayed in the adjacent fields weight the tolerance to each level of organic contamination (the sum of the values is always 10).

S-Weight:

The **Saprobic Weight** valuates the suitability of a species to act as a good (5) or bad (1) indicator. Species found in all saprobic classes, from the xeno- to the polysaprobic level, are bad indicators and are therefore given a weight value of "1". Species found in only one saprobic class are good indicators and show a high value of "5".

S-Index:

The **Saprobic Index** is calculated by multiplying the saprobic valence of a species with the number of the saprobic class (0 to IV) and dividing the sum by 10.

For example: Calculation of the S-Index of the species *Baetis alpinus* (Baetidae)

Saprobic Class	Saprobic Valence
0	2
I	4
II	4
III	-
IV	-

Calculation of the S-Index: $2\times0 + 4\times1 + 4\times2 + 0\times3 + 0\times4 = 12$, divided by 10 $\rightarrow$ S-Index: 1,2

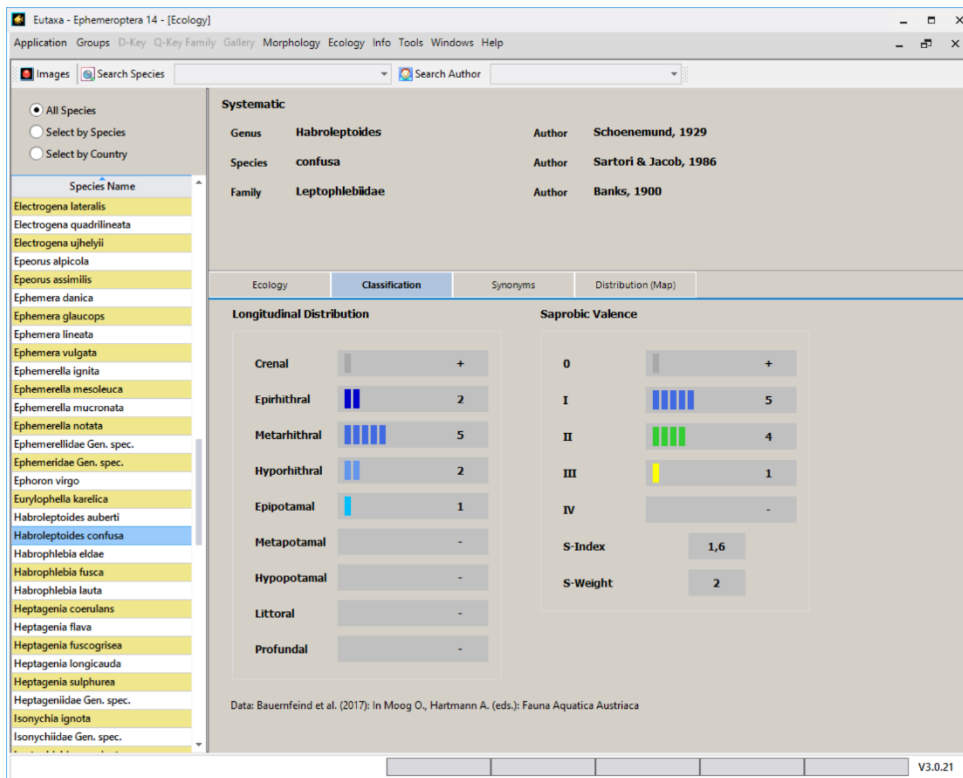**Note:** The Classification Card is not available in all Eutaxa products.

Fig. 189: Classification Card

Distribution Card

When entering the card, the viewing mode is preset on Single Map, showing a single distribution map of the currently selected species.
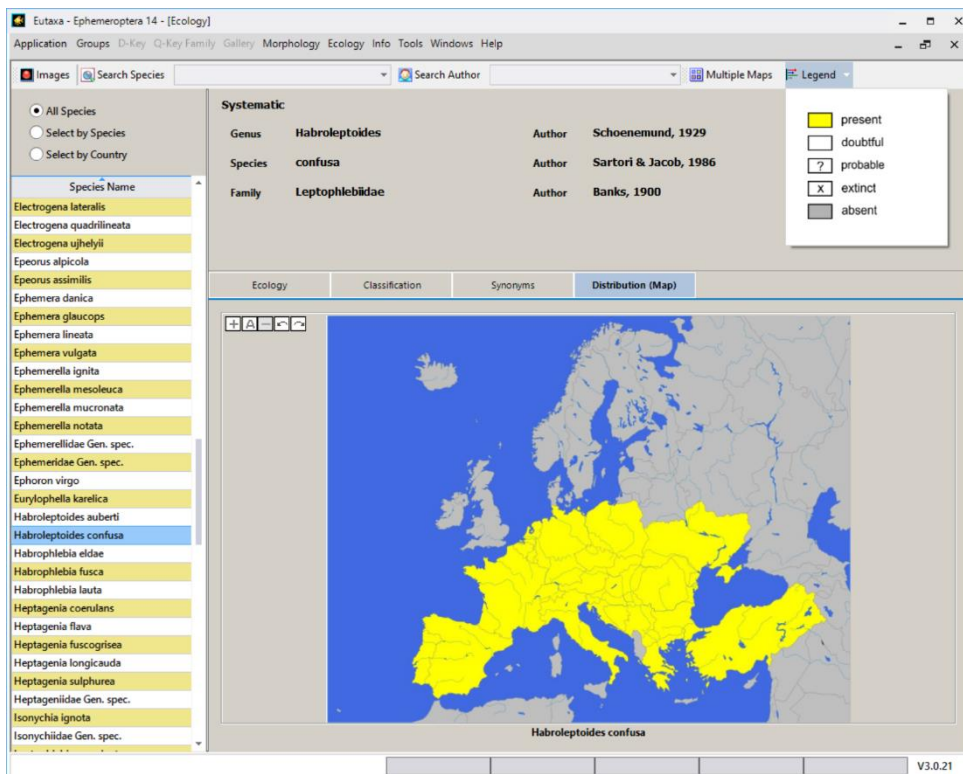

Fig. 190: Distribution Card (Single Map viewing mode)

To arrange multiple Viewports on the card, press the Multiple Maps button in the Toolbar and select the desired number of Viewports via Raster button (up to nine) (fig. 191). Map images can be displayed by selecting the desired species name in the Selective List and dragging it into a Viewport while holding the left mouse button down (fig. 192).

To cancel an image, click the right mouse button and select **Clear**. Or select **Info** to gather additional information about the distribution area.

To switch back to the Single Map viewing mode, hit the Single Map button in the Toolbar.
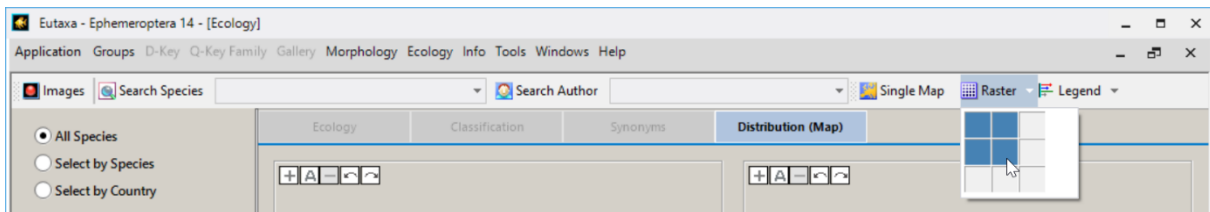

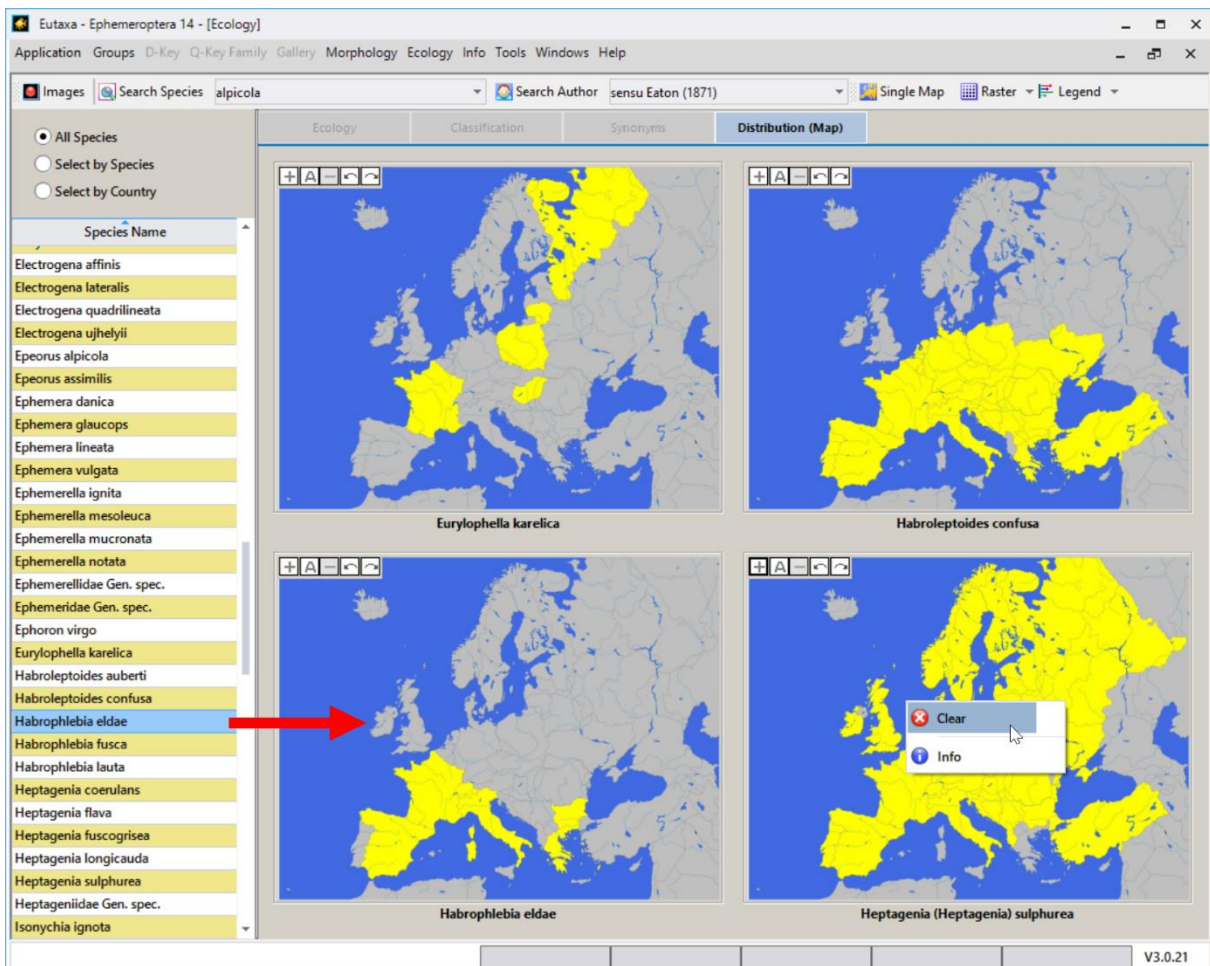Fig. 191: Multiple Maps viewing mode: Selection of four Viewports

Fig. 192: Multiple Maps viewing mode: Dragging a map image from the species list into a Viewport; cancelling an image with the Clear button