Photo: Andreas Schuck

'I+ Manager' User Manual

I+ Technical Report No.1

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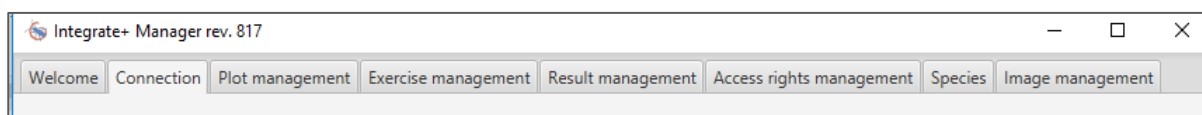
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1. What is the I+ Manager used for?

This software was developed as a data management tool for Marteloscope sites. Thus the software is accessible mainly to Marteloscope managers. It runs on a desktop/laptop and allows the *I+ Manager* to administrate sites. They can load new Marteloscopes, update data of uploaded sites, manage metadata, create training exercises, analyse and export them (e.g. .csv format) and manage access rights. This tutorial will take you through the different tabs of the I+ Manager and explain available functionalities.

Integrate+ Manager rev. 817	— □ ✕
Welcome | Connection | Plot management | Exercise management | Result management | Access rights management | Species | Image management	

2. Access and Installation of the I+ Manager

I+ Manager access

The I+ Manger software is available only on request from the IT- Team of the European Forest Institute. The I+ Manager software was developed for managing individual Marteloscope sites. As it also allows to change/update datasets/data only Marteloscope managers or assigned persons are eligible to install the software. Once permission has been granted you will be sent the software by the IT team. Please find in Chapter 10 **'Help Desk'** contact details. You can also visit the I+ Software website for more information (http://iplus.efi.int/software-store.html).

Requirements for installation

The I+ Manager is a cross-platform desktop application written in **Java**. The graphical user interface has been implemented using JavaFX. Requirements to run the I+ Manager software are that Oracle Java environment (**minimum version 8**) is installed on your computer.

In case you are unable to use Oracle Java, another Java engine can be used, such as Amazon Corretto and Azul Zulu Community edition. The IT team has tested to a limited extent the I+ Manager on those OpenJDK implementations. They are available from:

- https://aws.amazon.com/corretto/
- https://www.azul.com/downloads/zulu-community/ (Please be sure to download a package with 'FX' in the name)

Installation guide

The I+ Manager installation package is provided as a **zip archive**. It includes the folder named **'lib'**, the executable java file **'IplusManagerHibernate.jar'** and the text file **'settings.txt'**. The file **'settings.txt'** includes the connection parameters and the preferred language.

The installation process is as follows:
- Create a new directory in your preferred location
- Unzip the archive into the directory you just created (see screenshot)

- Create a new directory named '*iplus*' in your home directory
  - On Windows this is usually *C:\Users\<your username>*
- Copy the file *'settings.txt'* into the newly created *'iplus'* directory
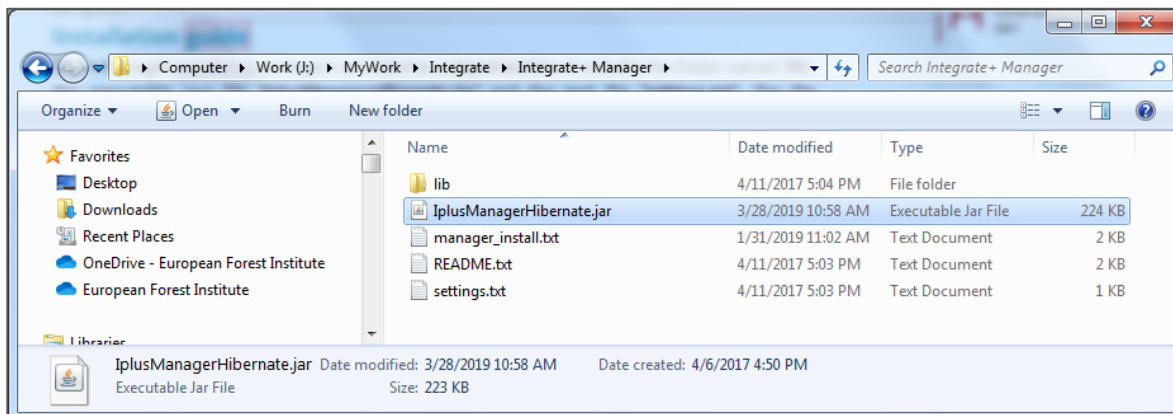
Running the application

Go back to the folder where you have filed *'IplusManagerHibernate.jar'*. Double click the *'JAR file'* in order to launch the application. In case it does not launch there is a second, advanced, way to run the application.

Advanced option: To do this open the command line and navigate to the directory which contains the above JAR file (see screenshot). Then run it with the command:

java -jar IplusManagerHibernate.jar

This approach is more demanding but can be useful, as it prints some useful information about the execution process into the command line window. It can be used also in the rare case that problems should occur while running the application. By analysing the error messages displayed in the command line window most of the problems can be resolved. This can include copying the error messages and sending it to the I+ IT team who can then support with the problem resolving.
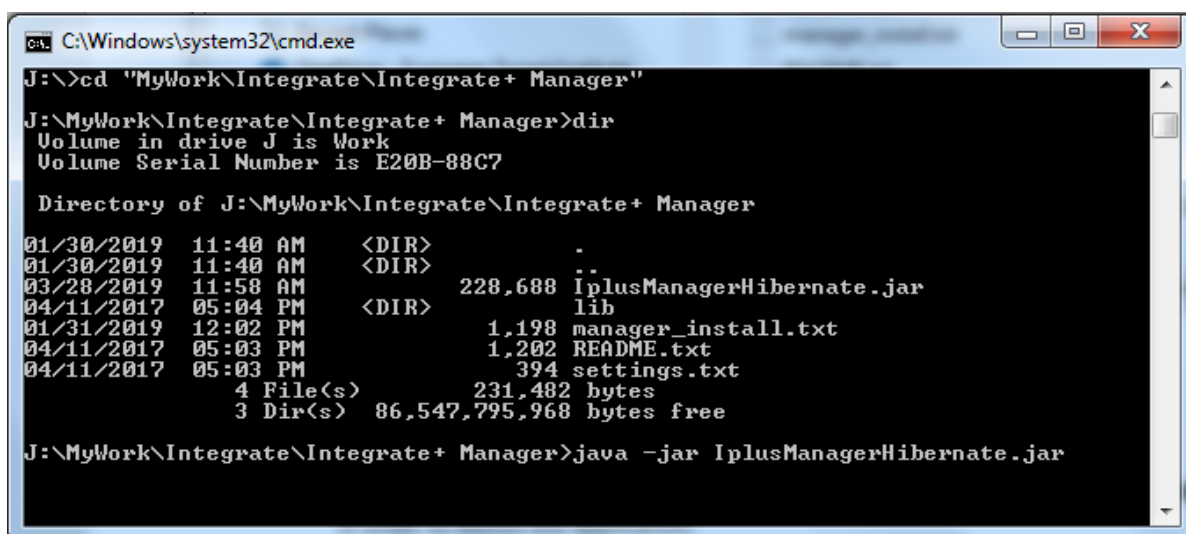
3.Tab 'Connection'

When you start the *I+ Manager* application you will be asked which language you would like to use. You can currently choose from English, German and French.

After you select the preferred language, the main window of the I+ Manager will be displayed. It is a tabbed window, where each tab allows the user to perform different actions with Marteloscope data stored in the I+ Repository. By default, the first tab is the *'Welcome'* tab, where basic information of the application is provided. To continue your work with the I+ Manager a network connection with the I+ Repository needs to be established. Usually the user will have to specify two fields: '*Manager Username*' and '*Manager Password*'. Every user of the I+ Manager will have an own username and password allowing to edit data related to Marteloscopes managed by this person. This information for the two fields will be saved on the user's computer. There should then be no need to re-enter them when the user re-starts the application. All other fields may be subject to change. Those changes are linked to the I+ Repository and managed by the IT team.

You will receive '*Manager Username*' and '*Manager Password*' from the IT team with the I+ Manager software package. If there are questions, contact the IT team (See: Chapter 10 *'Help Desk'*)*.*
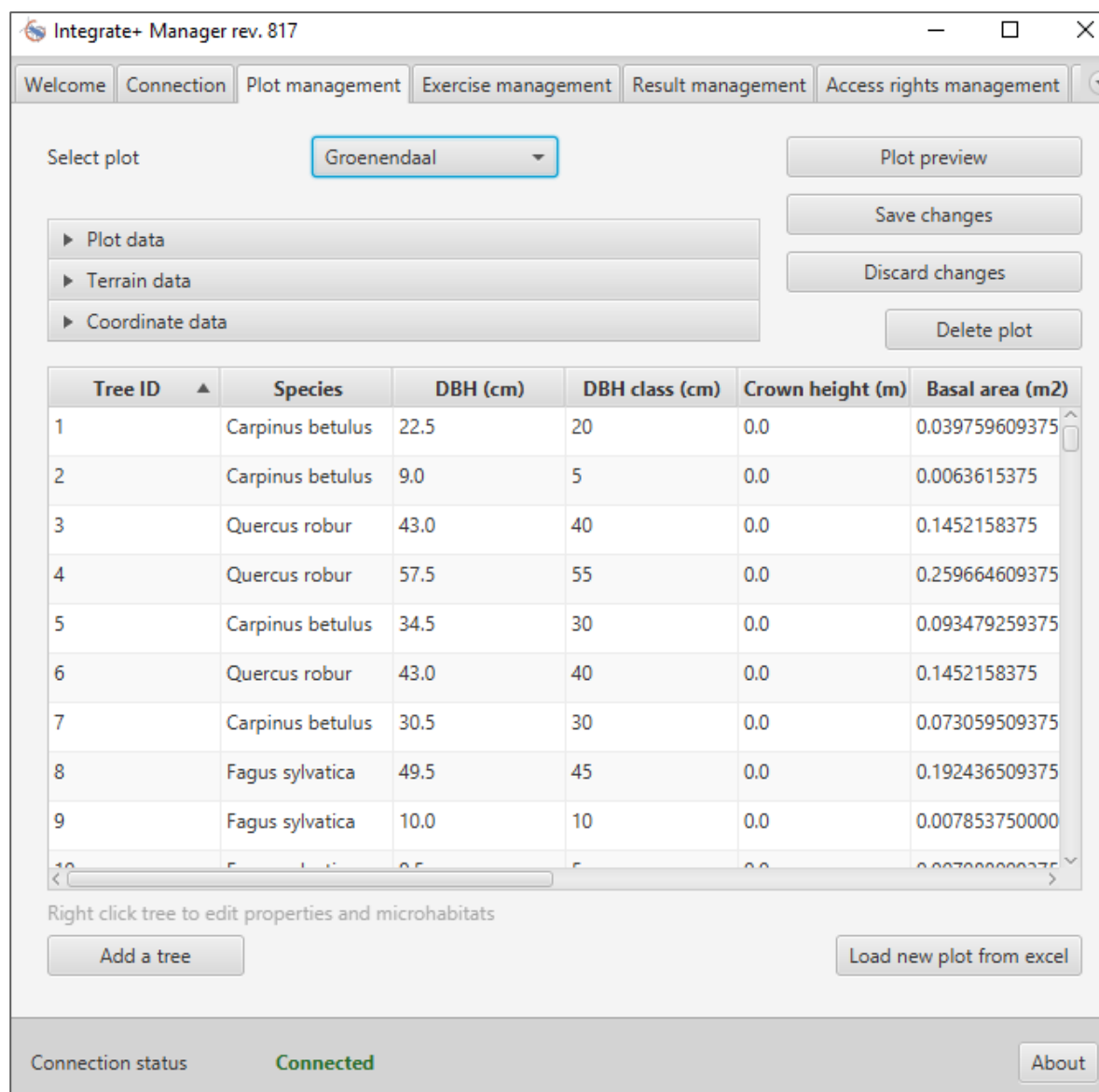
4. Tab 'Plot Management'

Plot management is one of the central components of the I+ Manager software. It allows to manually upload a new Marteloscope, enter and manage metadata for Marteloscope sites, and update data records of an already loaded Marteloscope site. Further it also displays the basic information (plot map; total values as tables and graphs for each site. This allows the Manager to check entered data on correctness.

Load new plot from Excel
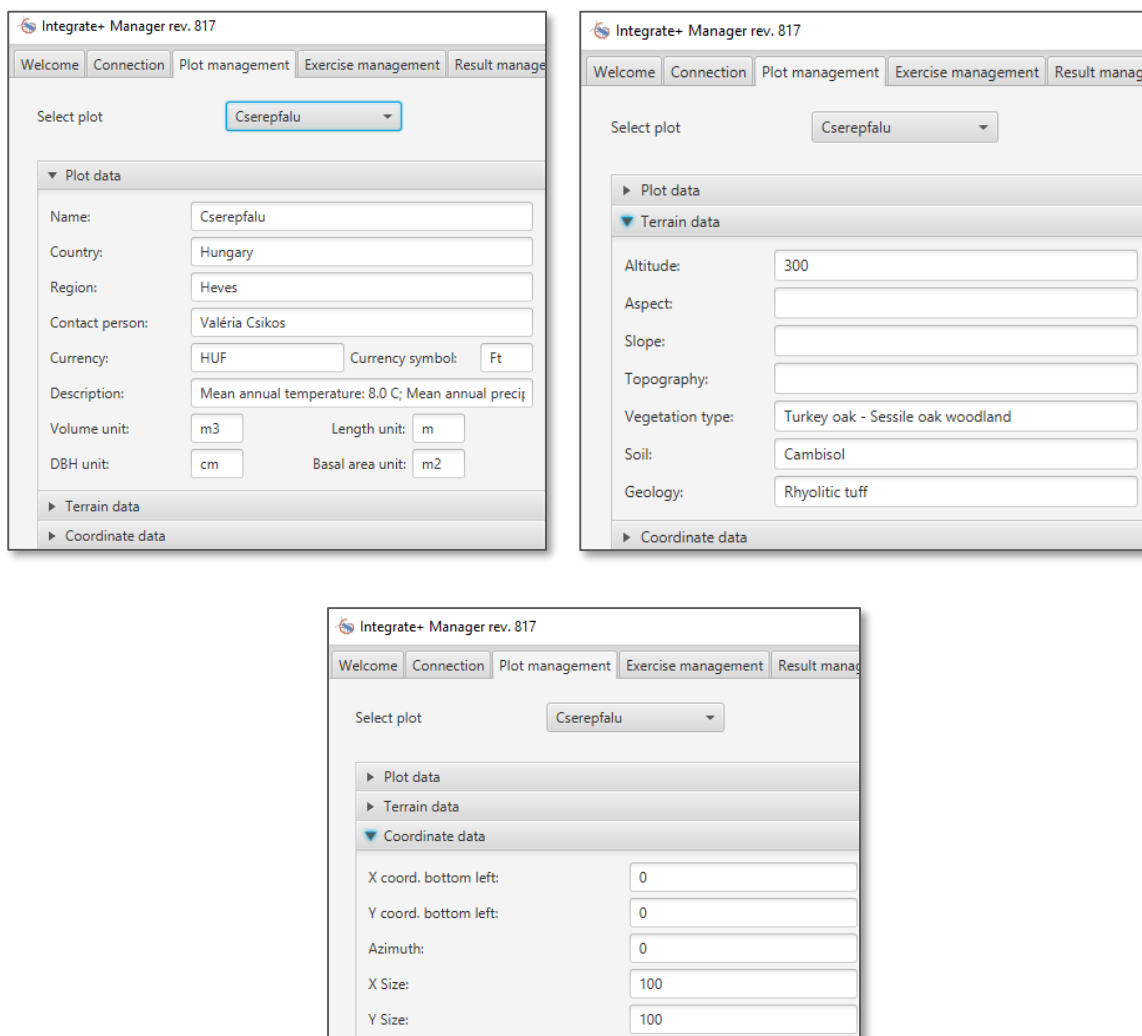
First you should copy/enter all requested Marteloscope data to the *'Excel Marteloscope Data Template'* (see separate document). This will ensure easy and correct upload to the I+ Repository. Once the Excel file is prepared press *'Load new plot from Excel'* (bottom right corner) and select the file you want to load.

You will be guided through several steps to map the sheets and respective columns of your Excel table with tree variables and properties (dbh, tree height, volume, tree microhabitats, etc.). At the same

time the system performs general integrity tests against possible errors in the data. In addition, a mapping of tree species provided in your Excel sheet is performed against those available in the internal species table of the I+ Repository. You can then add missing tree species to the I+ Repository. In a final step you are asked to provide metadata for your plot (see next chapter).

Enter and manage metadata for Marteloscope sites

You have a number of drop-down menus for entering metadata. Note that some metadata will be pre-filled. Please check those on correctness and update where needed. Especially the menus *'Plot Data'* and *'Terrain Data'* are important to complete.


The basic set of metadata you should provide is listed in an example table below. We prefer the metadata to be in English but you may also use national language. Note that the headings will remain in English. Be aware that some of this metadata is displayed via the tablet software.

Name (site)	Jägerhäuschen
Country	Germany
Region (geographic and/or forest ecological region)	North Rhine-Westphalia, Ville-Kottenforst / Niederrheinische Bucht, Ville
Contact person	Name and email (email optional)
Description	*Note: here we usually add the following information*:

	· Mean annual temperature: 9.4 C
	· Mean annual precipitation: 650 mm
	· Ownership: State forest, North Rhine-Westphalia
	· Establishment year of Marteloscope: 2017
Altitude (m a.s.l.)	180
Vegetation type	Stellario - Carpinetum
Soil	Surface water gley (Pseudogley)
Geology	Aeolian silt deposit over Rhine gravel terrace

When saving your entries/changes you will see a pop-up window. Do not mark the tick box '*Recalculate Competitors*'. It is not relevant when entering/changing and saving metadata. This function is used if changes are made to individual trees (e.g. changing tree height, dbh or tree coordinates; adding/removing individual trees etc.). So only press either *'OK'* for saving or *'Cancel'* if you wish not to save the metadata you entered. Remember to always save your changes before you move from one tab (e.g. *'Plot Data'*) to another tab (e.g. *'Terrain Data'*). If you do not press *'Save Changes'* and accept by pressing *'OK'* your changes in that tab are not accepted/saved.
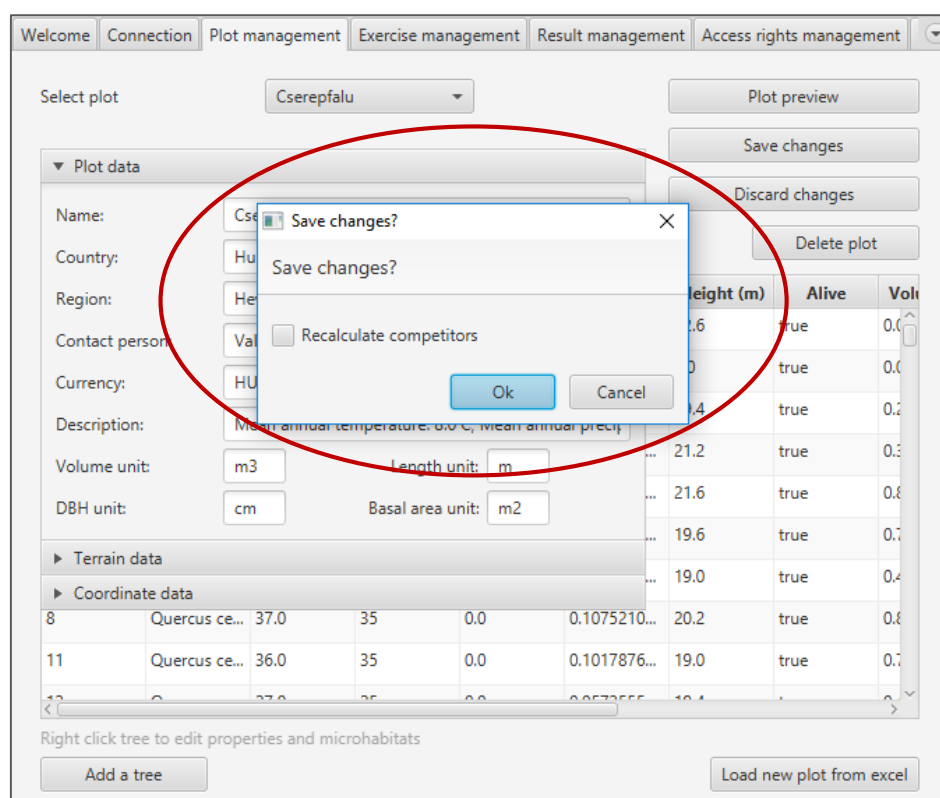
Update data records of a loaded Marteloscope

It may become necessary to update Marteloscope data. This can be the case if e.g. a tree parameter has been faultily entered, a tree is knocked down by a storm or was removed, new tree microhabitats have been identified etc. This function is thought for making small adjustments and not for changing values for the whole data set (e.g. re-measurement of a plot) or a complete data series (update of all economic values using new wood prices). If this becomes necessary, it is recommended to reload the whole data set again. In such case we ask you to go to the chapter *'Load new plot from Excel'* or contact the I+ IT team for support.
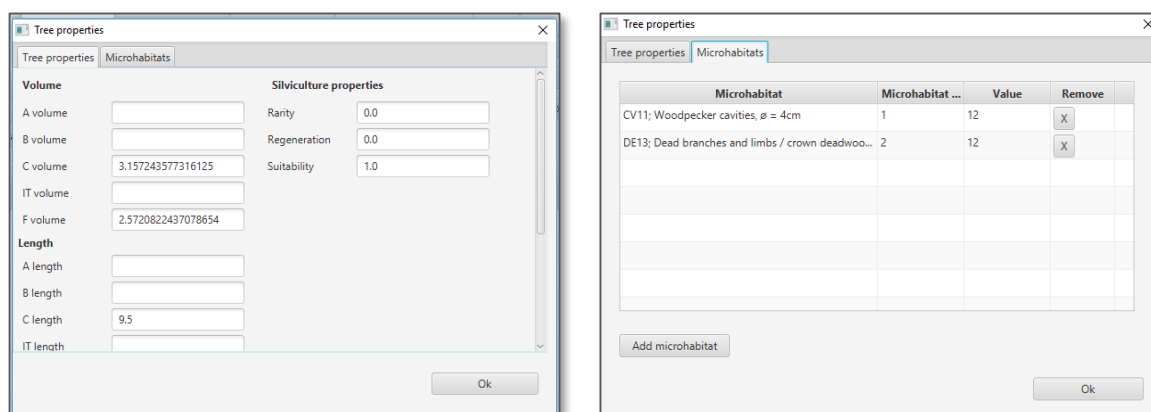
What can I change and how?

You can click on individual figures such as: t*ree ID, species, dbh (cm), crown height (m), basal area, height (m), alive, volume (m3), X and Y coordinates* and change values manually. Some will give you a drop-down menu (e.g. *'species'* and *'alive'*).

When you highlight a tree (e.g. tree ID 101) and then click the right mouse button the tab **'Show Properties'** will appear. Click it and a window will open with '***Tree Properties***' and ***'Microhabitats'.***

Tree Properties: you can make changes (or add data if not yet available) for each quality section (length in m; volumes in m^3; prices in € or national currency).

Microhabitats: you can edit microhabitat data (add a new microhabitat type; change the number of occurrences for an existing type; delete a microhabitat type if not present anymore). To add your entry press **'Add Microhabitat'**, to delete use the **'X'** button). You cannot change microhabitat values as those are calculated automatically.

To accept all your changes press ***'OK'.***

Plot preview

View plot map

This window allows you to view the plot map and some basic data for each Marteloscope. Looking at the plot map serves as a quick check if the trees are properly displayed and in the right locations. You also have access to data by individual tree species in the bottom right menu. You can retrieve those by clicking on the tree species name.

The initial colours for tree species are automatically assigned by the I+ Manager software. You can however make adjustments to colour schemes (e.g. if you have designated colour codes at regional/national level for tree species or if colours are difficult to distinguish).

- Select the tree species for which you want to change the colour (*upper right menu*).
- Then go to the tab which displays the colour with code (*e.g.#0099ff*). In the drop-down menu you find a palette from which you can choose an appropriate colour. Select it and press '***Change Colour***'.
- You can also go to '***Custom Colour***' with more options (provide colour codes e.g. in RGB). Once the RGB is entered press '***Use***' (or if you want to save this colour scheme press '***Save***'). To effectively make the change in your plot map press '***Change Colour***'.
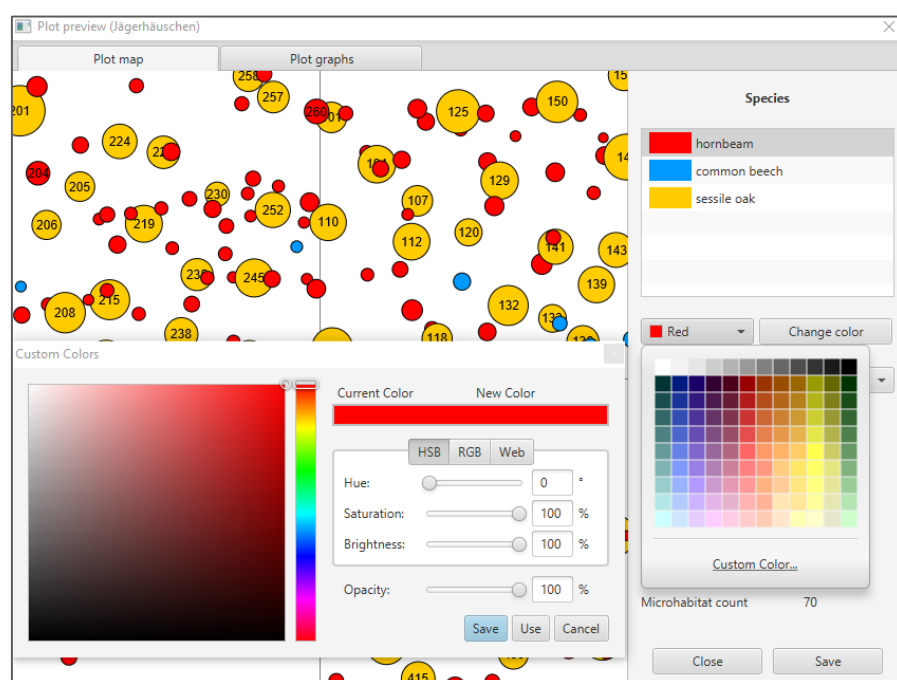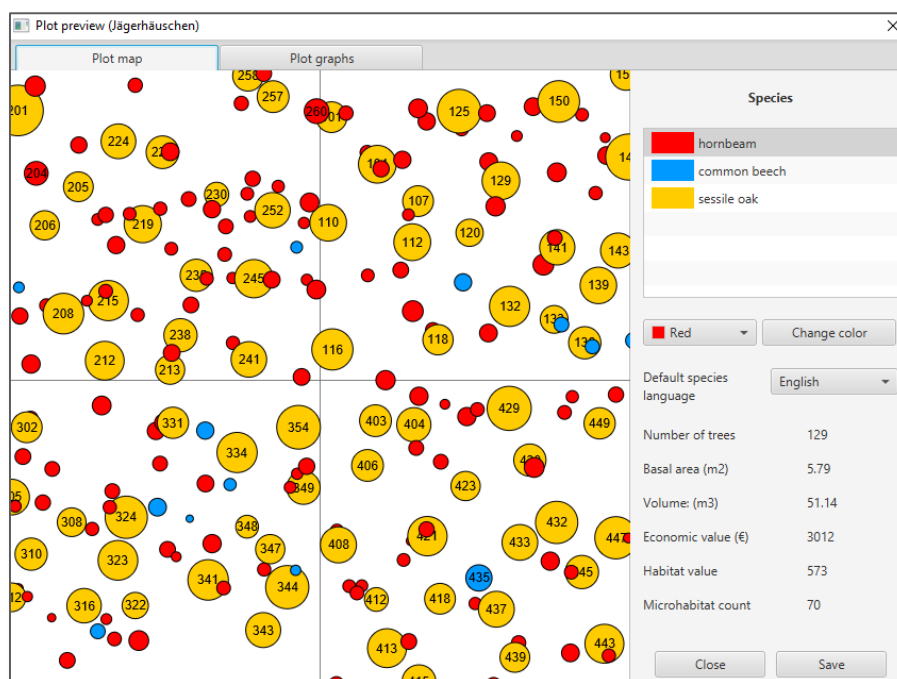
Default species language: The default language for species names is English. If local species names have been entered e.g. in German / French, you can choose the language in which you want species names displayed in the I+ Trainer software. This will only be possible for those languages available. Currently available are English, Czech, French and German.

Close button: This will close the window. You will be asked if you want to keep any unsaved changes. If not, the new colours you have selected as well as the language for species names will not be saved to the I+ Repository.

Save button: This will close the window and save all your changes also to the I+ Repository.

View plot graphs

This window provides further summary data and graphs of the entered Marteloscope plot: summarized plot statistics, dbh class distribution, volume by species. This again gives you a quick overview if the uploaded data corresponds with your original data entry sheet in the Excel sheet.
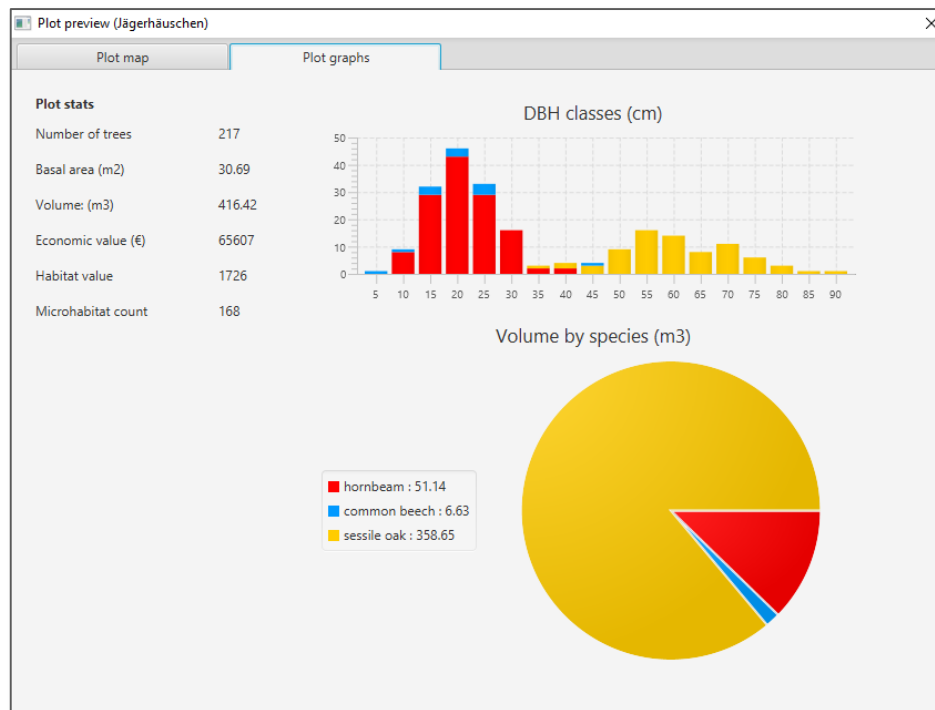
Delete a Marteloscope plot

Be very careful not to delete a plot by accident. You will be asked several times if you really want to delete a whole Marteloscope plot. In case you wish to remove a complete plot we recommend you to contact the IT team prior to deletion.

5. Tab 'Exercise Management'

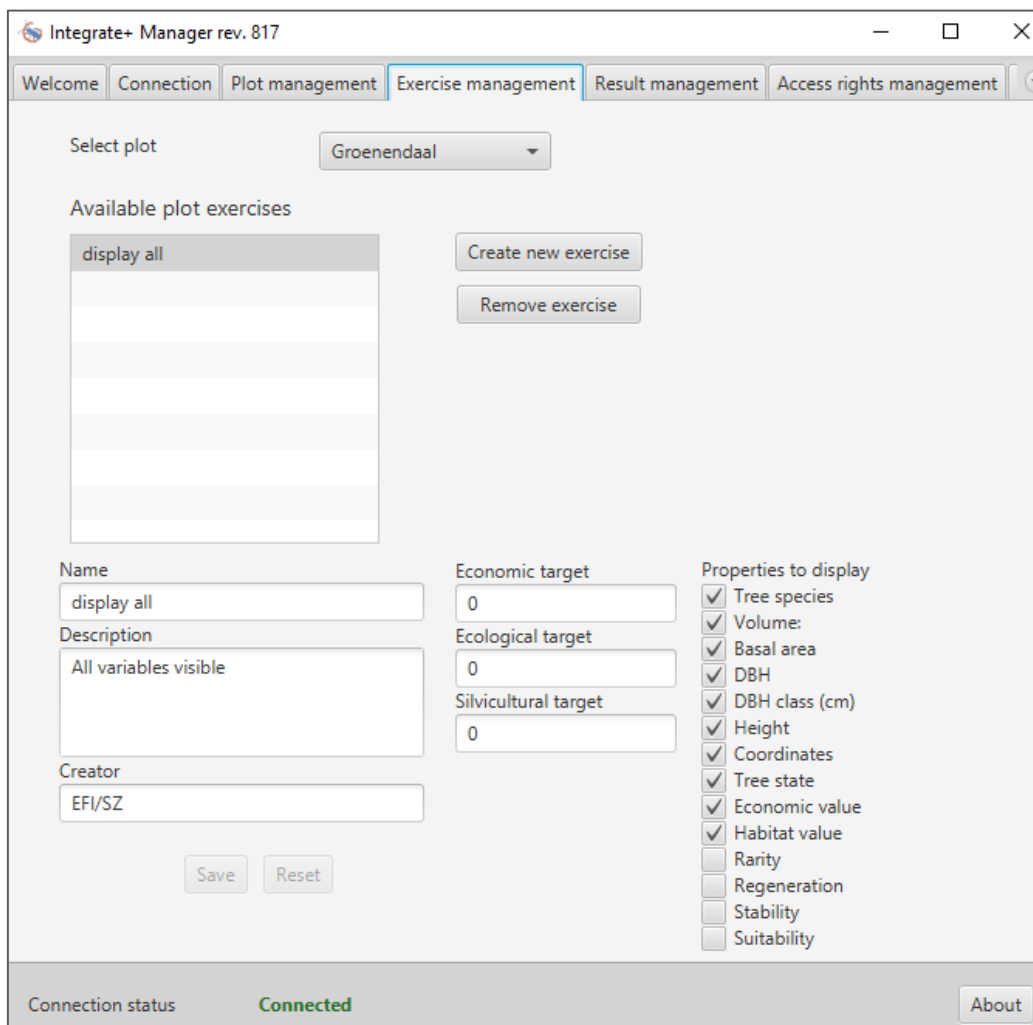This tab is used for designing Marteloscope exercises. You have the following options:

1. **Select plot:** Select the Marteloscope to which you want to add an exercise
2. **Create new exercise:** Press the tab if you want to create a new exercise
3. **Remove exercise:** This allows you to permanently remove an exercise

Create a new exercise

For creating a new exercise press the tab *'Create New Exercise'.* The following steps are required:

- **Name:** Enter a name for your exercise
- **Description:** Provide a description of your exercise. Detail will depend on the exercise type you plan to create:
    - **Example 1:** Exercise name '*Display all*'; Exercise description '*All properties are displayed*'
    - **Example 2:** Exercise name '*Stand development*'; Exercise description '*Removal of 50m³ of wood (few trees only of which 10 % should be high quality timber), promotion of habitat trees (e.g. 10 trees)*'

Note that exercise name and description for each exercise are displayed in the I+ Trainer software.

- **Creator:** Enter your name/initials and/or organisation
- **Boxes: economic target, ecological, target, silvicultural target:** Those boxes are under development and not yet available for exercise use. A separate explanation will follow once they are fully operational.
- **Properties to display:** Here the you can set which variables are made visible to exercise participants via the I+ Trainer software. The default setting is that all properties are marked and so also displayed on the tablet. By unticking one or more boxes they become hidden for exercise participants during the tree selection exercise. Note that the properties '*rarity, regeneration, stability, suitability*' should be used only (marked) if a Marteloscope plot has such data available. If not make sure to untick them.
- **Save:** Once all actions have been performed press save and wait for the notification that the exercise is saved.
- **Reset:** If you want to erase the entries that you made for an exercise press reset. You can then start again with entering an exercise.
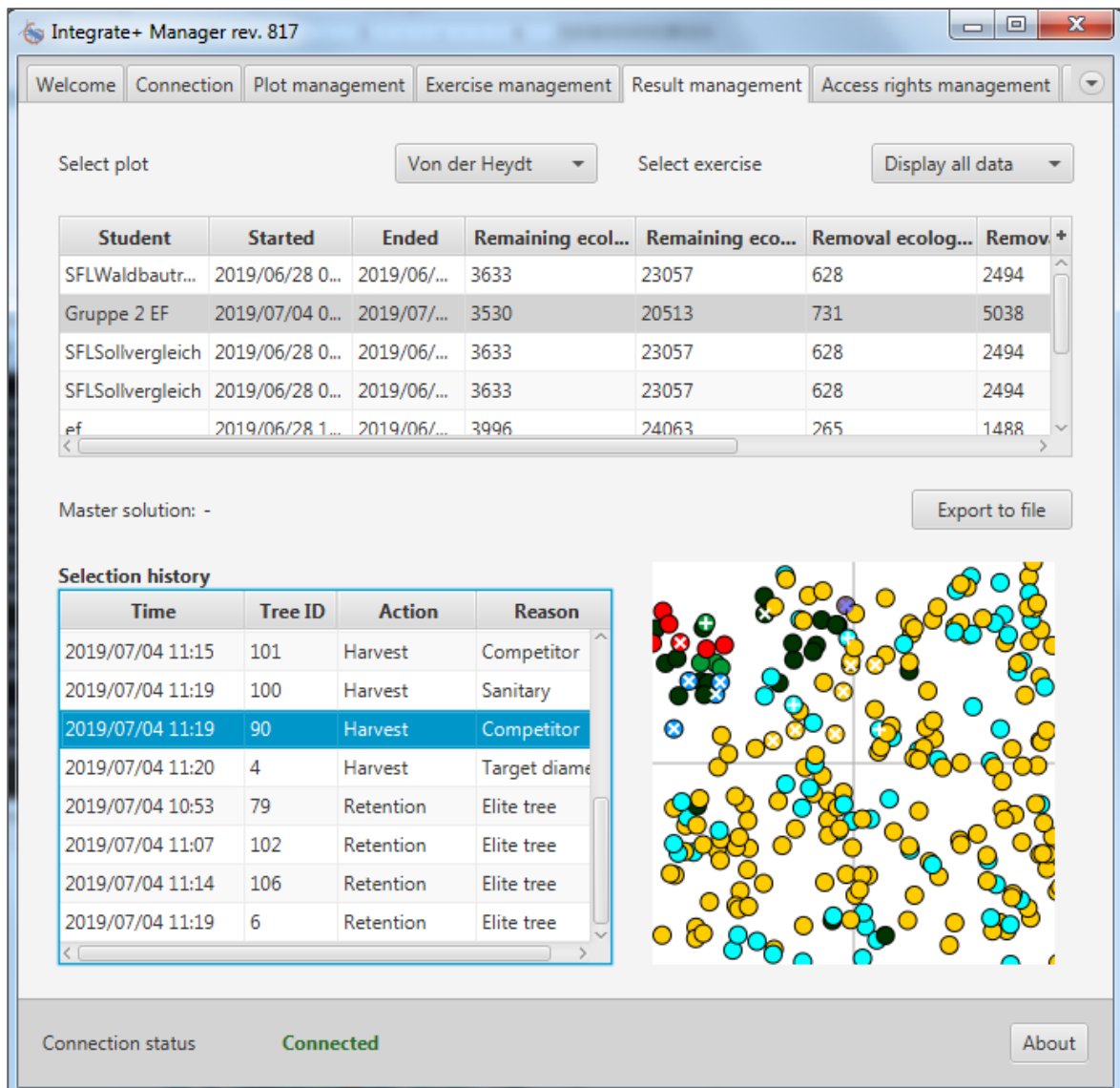
Make changes to an existing exercise

You can also make changes to or update an existing exercise. The following steps are required:

- **Select plot:** Select the Marteloscope to which you want to make changes
- **Available plot exercises:** Select the exercise to which you want to make changes
- **Text and tick boxes:** Make changes to text and tick boxes
- **Save:** Press save and wait for the notification that the changes to your exercise have been accepted.

6.Tab 'Results Management'

This tab is for displaying exercise results which have been uploaded to the I+ Repository. Once you select a plot for which exercise results have been uploaded, you will see the list of results displayed by student name, date/time performed and additional information related to economic and ecological parameters for removed/retained trees. In the tab '*Selection History*' you can see details for an available exercise at two levels: (1) name of group/individual, date/time when exercise was implemented, summary of actions; (2) tree ID, date/time of tree selection, action applied for each tree and the reason for selection. On the bottom right corner, you have a mini-map. There the trees marked for removal are displayed with a *'X'* symbol while those retained show a *'+'* symbol. If you select a tree in the *'Selection History'* list, this tree will be highlighted in the mini-map. This gives you the possibility to analyse the temporal/spatial history of the trees that were selected.

The button *'Export to File'* allows you to save the results of exercises to CSV. You can then use those files for further processing and analysis. If more than one group has performed the same exercise task you can export them one by one.

Note on exported file (example: Excel)
The columns **'O'** and **'P'** are those displaying if a tree has been subject to selection during an exercise.

tree_id	species	x_coord	y_coord	dbh	height	BA	volume	status	eco_val	economic_val	action	reason
22	Picea abies	39.83	45.43	62	26	0.3	3.69	alive	0	166.02	2	10
118	Fraxinus excelsior	10.41	21.32	61	28	0.29	3.85	alive	0	211.05	2	10
94	Picea abies	22.68	46.8	61	24	0.29	3.3	alive	4	169.95	2	10
100	Fraxinus excelsior	12.92	39.64	59	28	0.27	3.6	alive	0	206.91	2	9
223	Picea abies	20.36	81.81	56	27	0.25	3.13	alive	24	143.42	2	9
270	Picea abies	3.43	51.45	56	28	0.25	3.24	alive	24	166.62	-1	-1
165	Picea abies	39.62	50.27	55	25	0.24	2.79	alive	24	142.98	1	4
125	Picea abies	10.34	51.35	52	28	0.21	2.8	alive	24	143.39	-1	-1
208	Picea abies	24.56	56.66	51	26	0.2	2.5	alive	0	128.69	1	3
153	Picea abies	45.85	93.16	51	25	0.2	2.4	alive	24	123.78	2	10
85	Picea abies	24.01	9.11	51	27	0.2	2.59	alive	0	133.19	2	8
202	Fraxinus excelsior	24.6	91.85	51	28	0.2	2.69	alive	24	167.1	2	7
147	Picea abies	45.58	60.73	50	27	0.2	2.49	alive	0	128.3	2	10
155	Picea abies	43.14	87.25	49	26	0.19	2.3	alive	0	118.95	1	1

Column 'O' ('Action') gives you the type of activity performed for a particular tree: 'no action' 'retention' or 'removal'. **Column 'P' ('Reason')** lists the corresponding reason for removal or retention. Find below the corresponding numbering codes for 'Action' and 'Reason'.

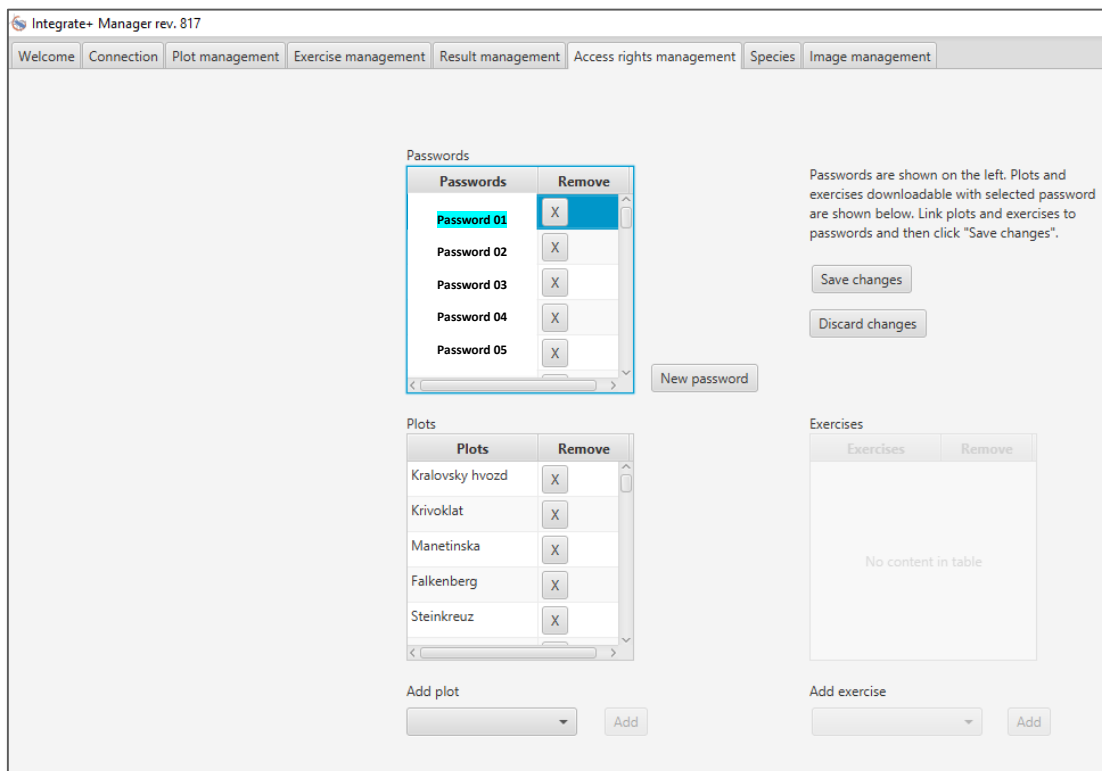| Column 'O' - Action	Column 'P'- Reason
No action: '-1'	**No reason: '-1'**
Tree selected and again unselected: '0'	**Trees selected and again unselected: 'null'**
Tree removal = '1'	**Reason**
	'1' = Target diameter
	'2' = Competitor
	'3' = Structure
	'4' = Regeneration
	'5' = Sanitary
Tree retention = '2'	**Reason**
	'6' = Elite tree
	'7' = Seed tree
	'8' = Diversity
	'9' = Veteran tree
	'10' = Habitat tree.

7.Tab 'Access Rights Management'

This tab allows you to:

1. Set *'Passwords'* if you wish to protect access to your Marteloscope site(s) or grant access to a particular Marteloscope for a specific user group. If you manage more than one site, they will normally be placed under the same password. All sites listed under your password(s) are then available for download to the tablet under the option '*Download new Marteloscope*'.
2. You can *'Add a plot/plots'* to which you have been granted access
3. You can attach one or more *'Exercises'* to a particular Marteloscope site. To activate a Marteloscope on the I+ Trainer software you must have created at least one exercise. The default exercise is usually *'Display All'* where all data is shown in the I+ Trainer software. If there are no other exercises available and you wish to add additional ones go to the tab '*Exercise Management*' and follow instructions on how to create new exercises.

Setting passwords

Setting passwords is important for allowing the download of a Marteloscope plot or a set of plots to the tablets. Only then can they be used for exercises in the field. The password will then allow e.g. training participants to download the needed Marteloscope for field exercises at home/office where Internet access is available. If you want to introduce a new password to the system, you should use the *'New Password'* button. After clicking that a new entry will appear and is highlighted in the *'Passwords'* listing box. Type the desired password (in our example '*Password 01*') and, **important**, press the '*Enter Key*' on your keyboard. Before adding Marteloscope plots to your new password save your new password entry by using '*Save changes'*. After confirmation that changes were saved you can add permissions for plots listed under that password. *'Discard Changes'* will discard all entries you have made.

Adding Marteloscope plots

In our example the Manager using *'Password 01'* has access to numerous sites. One or more sites can be added. Once selection(s) is/are made e.g. *'Betchat'* and at least one exercise is attached the site it will be available via the I+ Trainer. The *'X'* button allows you to remove a password.
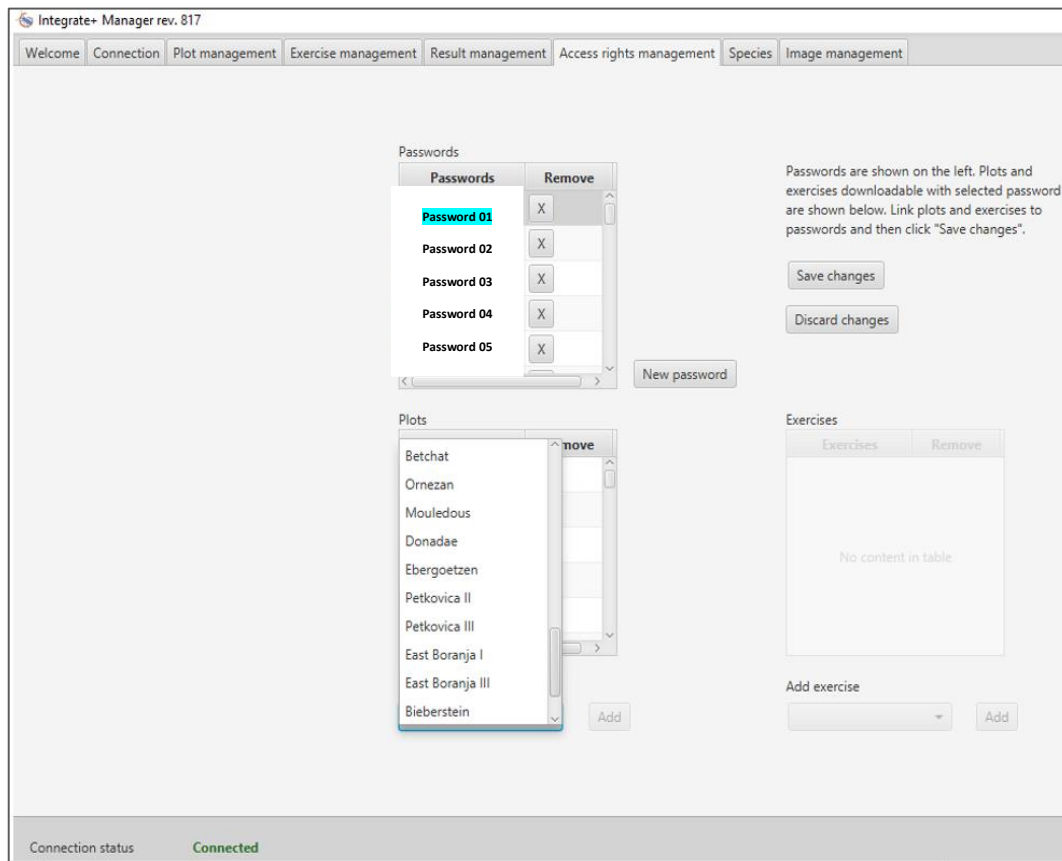
Attaching an exercise / exercises to a plot

First step is to select from the list of plots the Marteloscope site to which you wish to add an exercise.

Example 1
Screenshot E1: A Marteloscope was selected for which a number of exercises have already been created and linked. Marteloscope '*Jägerhäuschen*' has four exercises attached.
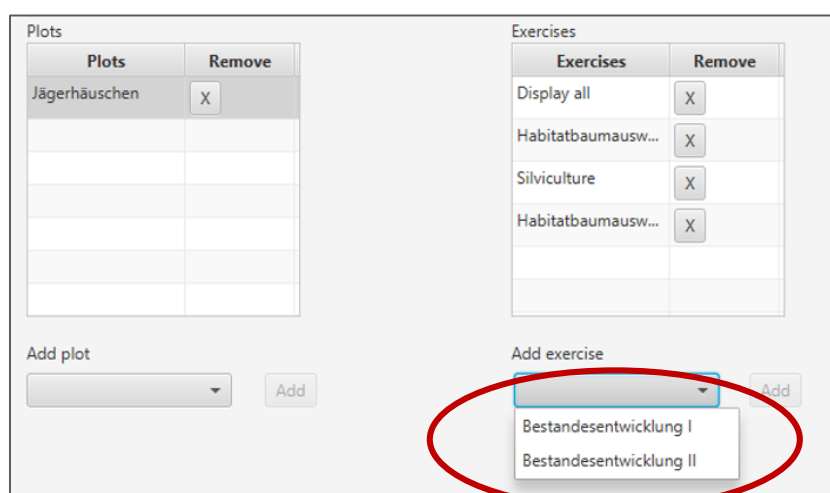**Screenshot E2:** Two new exercises for the Marteloscope '*Jägerhäuschen*' have been created under the 'Exercise Management' tab. They can now be selected one at a time under *'Add Exercise'*. By pressing **'Add'** they are moved to the exercise list above.

Example 2
Screenshot E3: Here we see a Marteloscope site with only the default exercise *'Display All'*. If a Marteloscope is not loaded by the site manager but was loaded by the IT team the default exercise *'Display All'* is pre-installed.
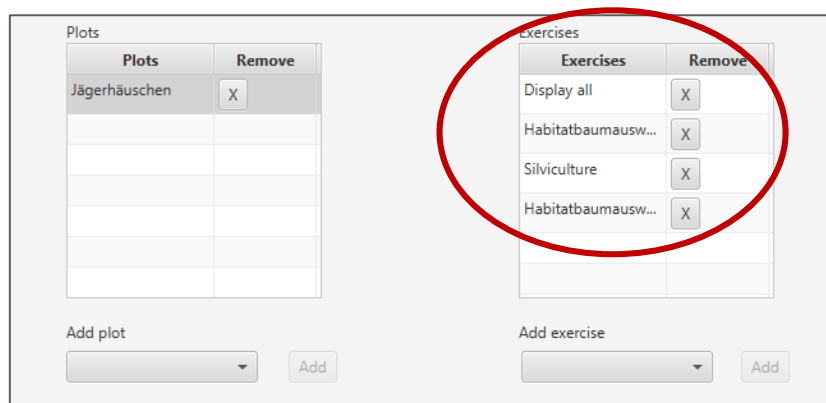
Screenshot E1. Marteloscope '*Jägerhäuschen*' has 4 exercises available via the I+ Trainer software

Screenshot E2. Adding 1 or 2 new exercises to the Marteloscope site '*Jägerhäuschen*'
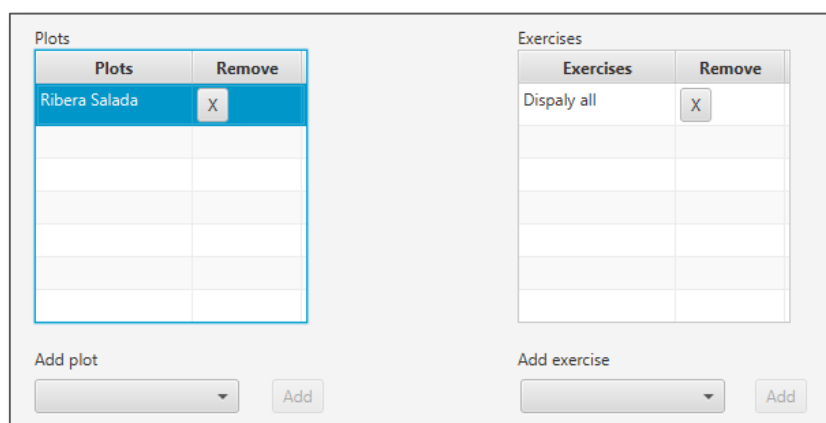
Screenshot E3. The exercise 'Display all' is available as default (here for Marteloscope '*Ribera Salada*').
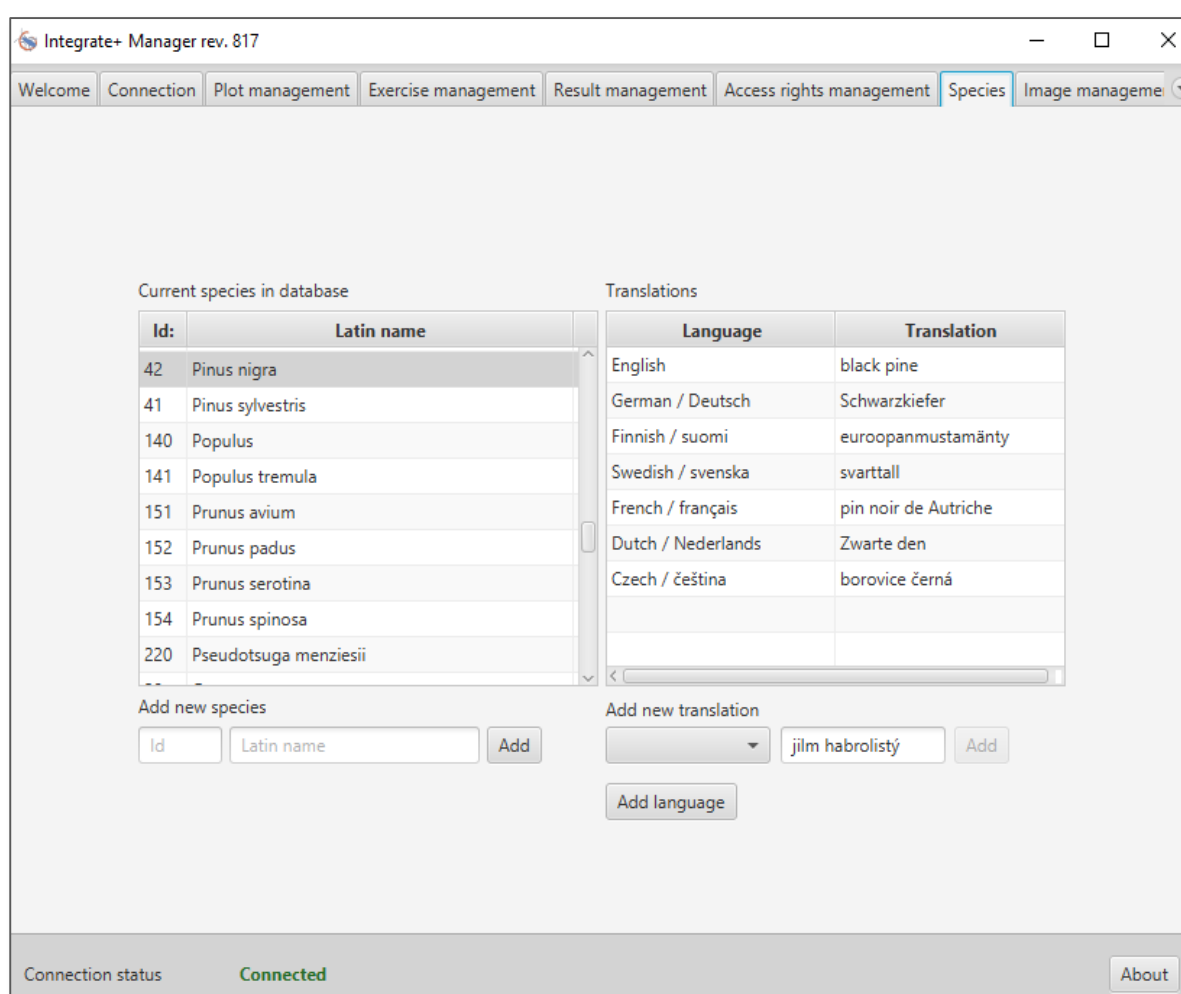
Important!

If there is no exercise visible in the '*Exercise*' box, then you need to create one! This is done under the '*Exercise Management*' tab. **Once exercise is created remember to activate it here!** Only then it will be possible to open and run that Marteloscope plot on the I+ Trainer software.

The '*X*' button allows you to remove either a Marteloscope from your accessibility list or remove an exercise/exercises.

8. Tab 'Species'

This tab allows to (1) add new tree species (scientific name), (2) add a new language for local tree species names and (3) enter local names in a particular language.

1. **Scientific species:** go to *'Add New Species'*, add scientific name and press *'Add'*.
2. **New language:** go to *'Add Language'* and enter the new language name in the following format: e.g. German/Deutsch, Finnish/Suomi etc. Then add the ISO 639-2 country code (three letter code e.g. eng for English). Then press **'Add'**.
3. **Add new translation:** Check if the desired language is already listed in the drop-down menu. If not, you have to follow the steps under *'New Language'*. Once you see the language, select it (e.g. German/Deutsch). Then add local species name in the text box (e.g. Stieleiche as German name for Quercus robur). Then press *'Add'*.

9. Tab 'Image Management'

Under this tab photos can be uploaded. Those are displayed in the I+ Trainer under *'Site Conditions'* together with other site information (see second screenshot). Prepare your photo beforehand to a *'strip'* format (see example) so it will later display nicely on your tablet. Please use .*'jpg format'*.

Steps:

- Select the Marteloscope for which you want to add a photo.
- Press **'Add Image'**. That will open the file manager on your computer. Select the image you want to load and press *'Open'*. The image is saved to the I+ Repository and will appear on the upper right.
- An ID number (our example ID 128) is created automatically. The term *'Description'* will appear next to the ID number. Double-click on *'Description'*. You can then add a name for your image (in our example 'Cerepfalu').
- After the name is added, **important**, press the *'Enter Button'* on your keyboard! Your image and image name are then saved.
- If you have entered more than one image you can set under *'Main Image'* the one you wish to be displayed on the tablet (in our example it is the photo with ID 128).
- Press *'X'* if you wish to remove an image.
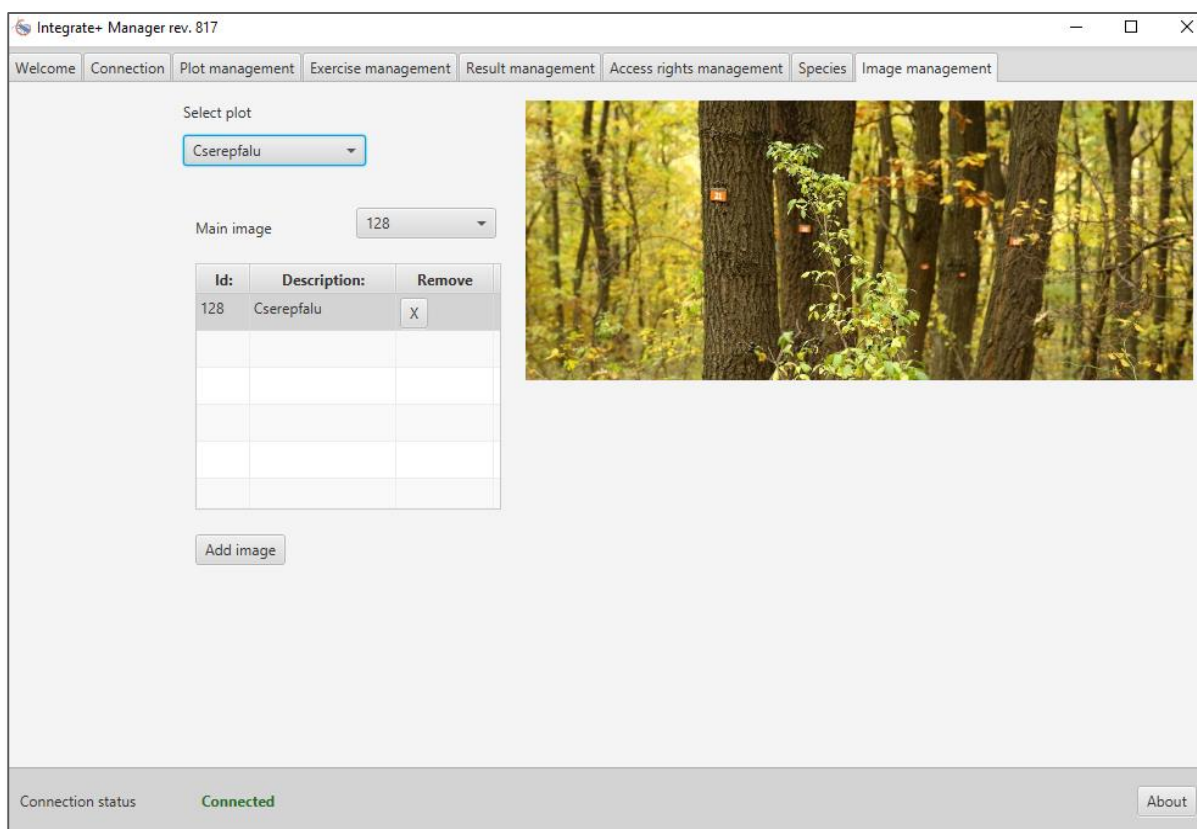
10. Help Desk

In case you, (1) would like inquire if you have permission to the download the I+ Manager software, (2) need assistance e.g. in installing or applying the software or (3) have any other questions, please contact either the EFI Bonn Office or the EFI IT team directly under the following email addresses:

- EFI-Bonn Office: adminbonn@efi.int
- IT Team (represented by Sergey Zudin): Sergey.Zudin@efi.int