

I+ TRAINER TUTORIAL

Introduction

Integrate+ uses a well-designed software tool that runs on mobile devices (tablets and smartphones). Those can be used directly on the Marteloscope sites in the forest.

In advance of virtual tree selection or other exercises, the software facilitates pre-settings for the training in the field. In addition, it offers and displays a detailed description of individual tree microhabitats and their relevance for different biomes and species. During or after performing the training exercises, users receive direct feedback on all silvicultural decisions they have implemented on site both in qualitative and quantitative figures. These outputs serve for self- or group evaluation, comparison of results and education. An important aim of the software is that user groups can discuss based on objective data ecological and economic impacts of different silvicultural concepts and practical approaches on site. This way, participants can benefit from exchange with other training participants and eventually improve their own decision-making capacities. There are three software packages available and tailored for different user groups:

- **I+ Manager:** The I+ Manager software package allows the core users to enter new Marteloscope datasets, maintain existing Marteloscope information, introduce new variables, define Marteloscope exercises and to synchronize the local databases on the tablet computers. This package is reserved to the **software developers**.
- **I+ Database:** There are two major datasets which are co-located in one master database. One set contains all variables that have been assessed in a Marteloscope, while the second comprises of the data that is needed to conduct the tailored training sessions. The database is located on each mobile device (tablet computer). When the tablet is connected to the Internet, it will synchronize its 'local' database with that of the main server database and update with any new information. Also, training session results from the tablet are uploaded to the master database on the server. The database is manager by the **software developers**.
- **I+ Trainer:** This software package is applied when running exercises on the Marteloscope sites. The I+ Trainer is the package which is relevant for the **on-site user** of the software. In this tutorial, we will explain how to use the I+ Trainer step by step. It is typically used for:
 - ✓ selecting specific Marteloscope area and type of exercise (possibly automated)
 - ✓ performing exercises
 - ✓ computing and displaying initial results
 - ✓ revising of initial selections and rerun exercises
 - ✓ presenting and storing final exercise results

General instructions

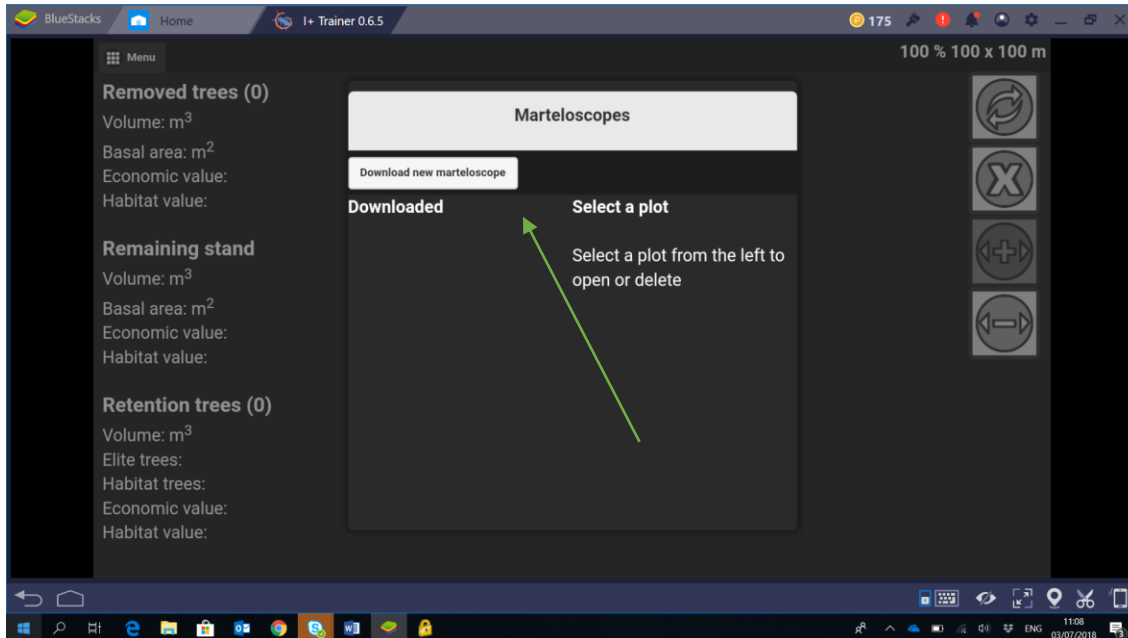
This section will introduce you to the general functioning of the I+ Trainer software. We will explain how to use the I+ Trainer step by step, from opening the program to analysing the results of the exercise.



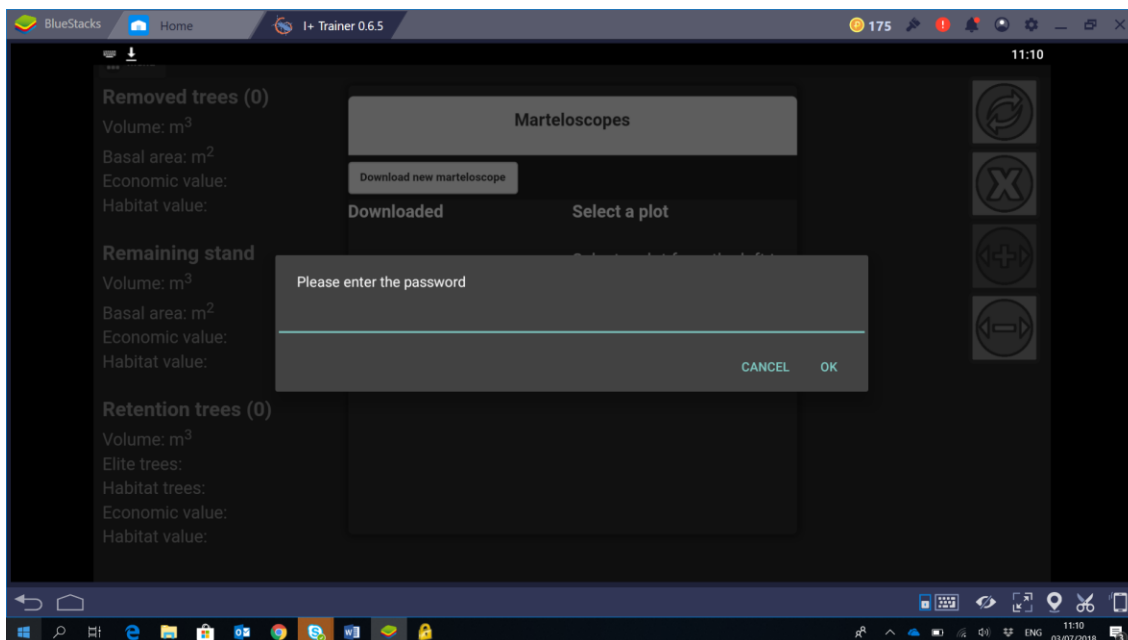
Step 1: installing the I+ Trainer software

The I+ Trainer can be downloaded through a non-public link. It is not available in the Google Play Store. There are currently three versions available. One is for ARM, one is for Intel and one is generic. The link can be obtained by contacting the INFORMAR team (<http://informar.eu/contact>). The software is designed for Android but also works with Windows. A Mac version is not available at the time.

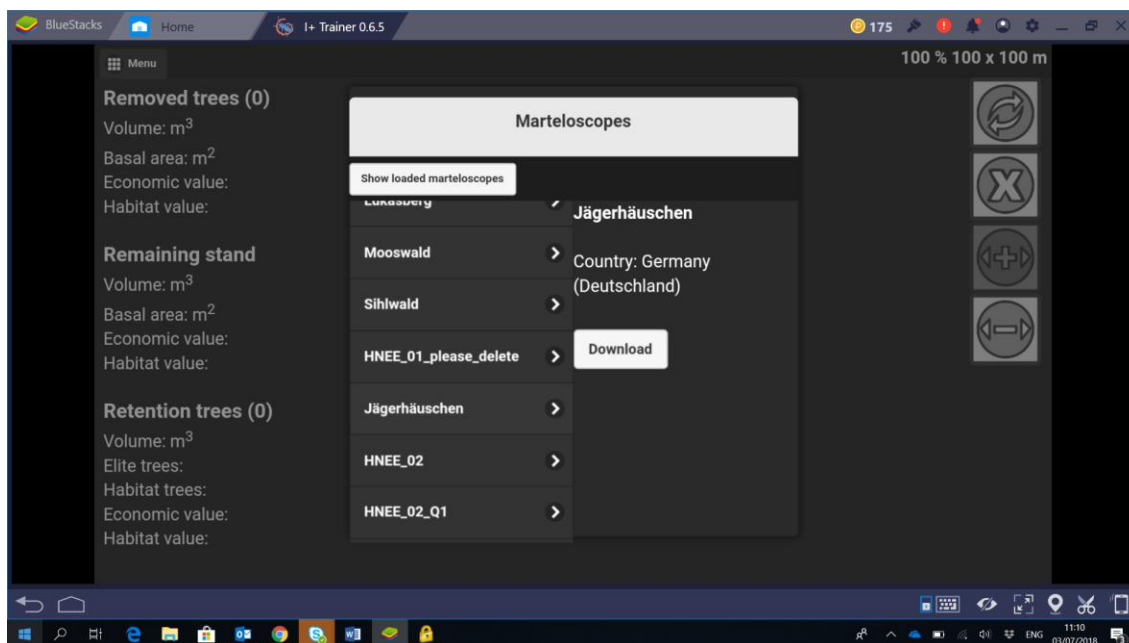
Once the software is installed, you can upload a Marteloscope by clicking 'Download new marteloscope'.



The program will ask you first for a password. You can also obtain this by contacting the INFORMAR team.

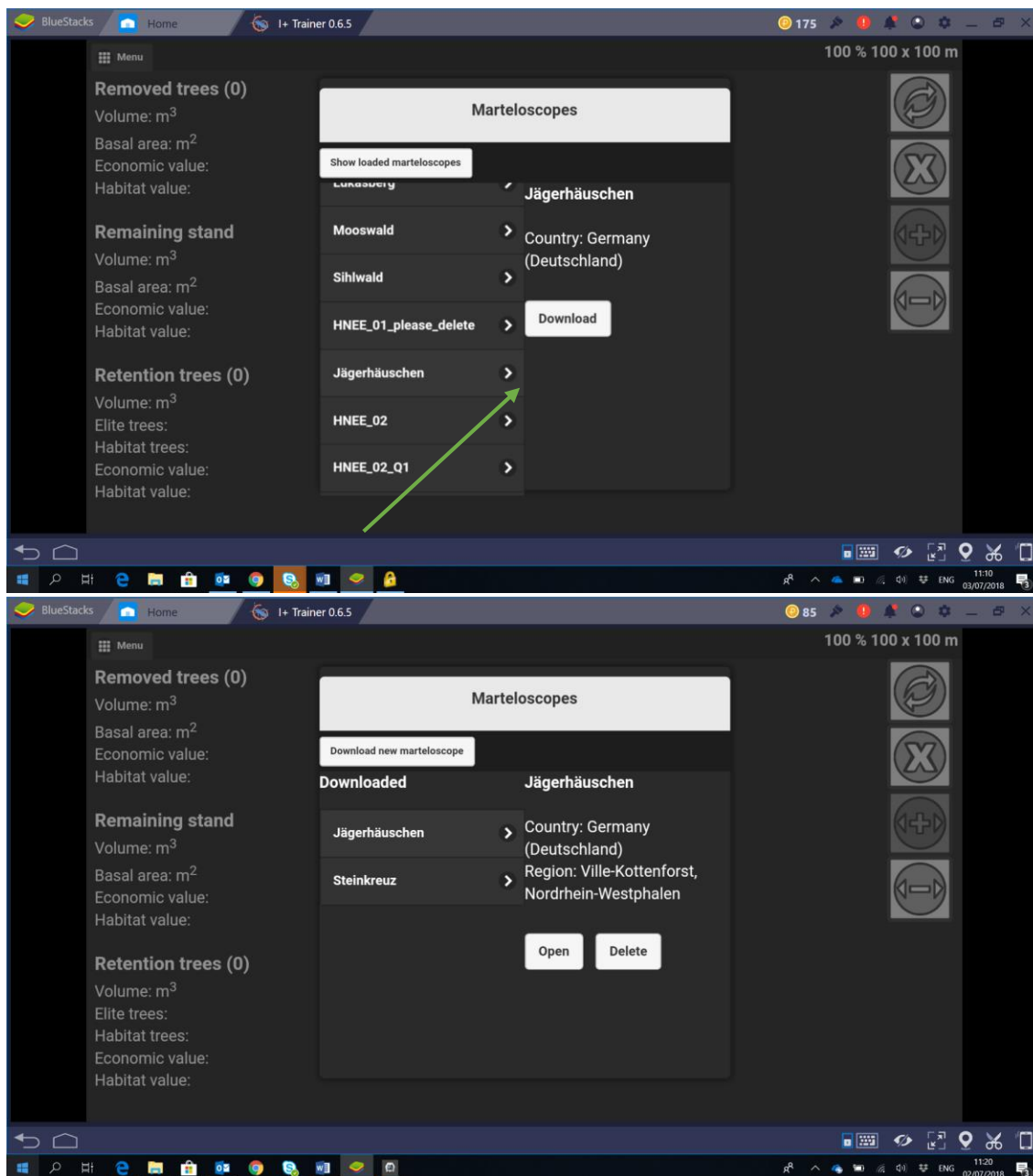


After inserting the password, scroll down to find the marteloscope you are looking for. Click 'Download'.

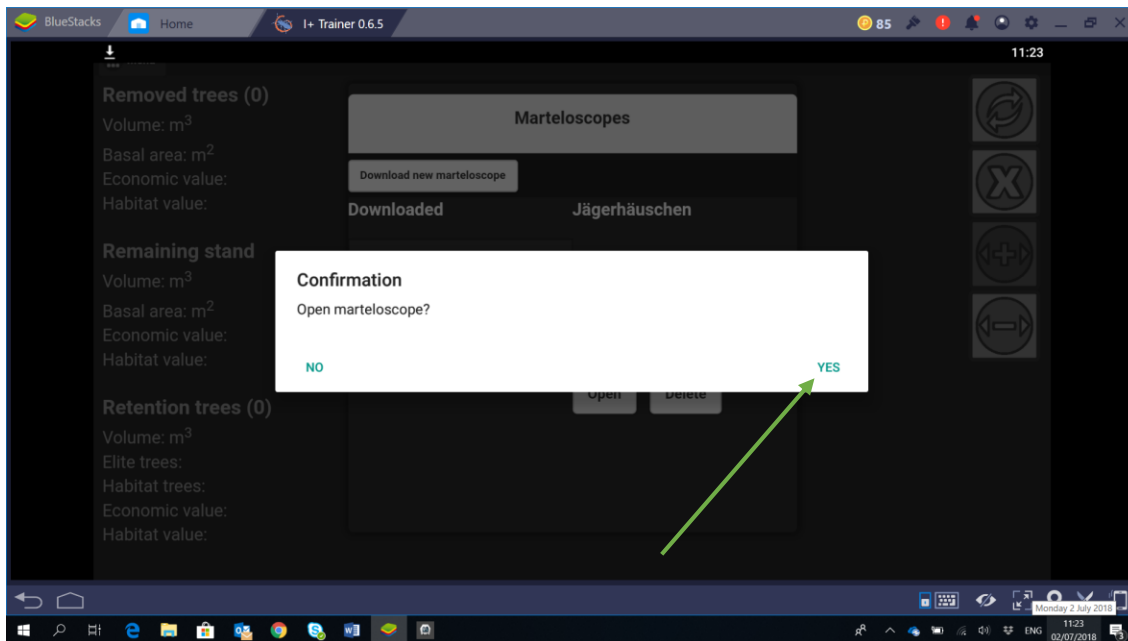


Step 2: selecting a Marteloscope

Open the I+ Trainer software. The program will show you an overview of downloaded Marteloscope sites that you can select for the exercise. Additional sites from the website can be downloaded only with an administrator password. In this case we select the Jägerhäuschen Marteloscope, located in the Kottenforst near Bonn, Germany.

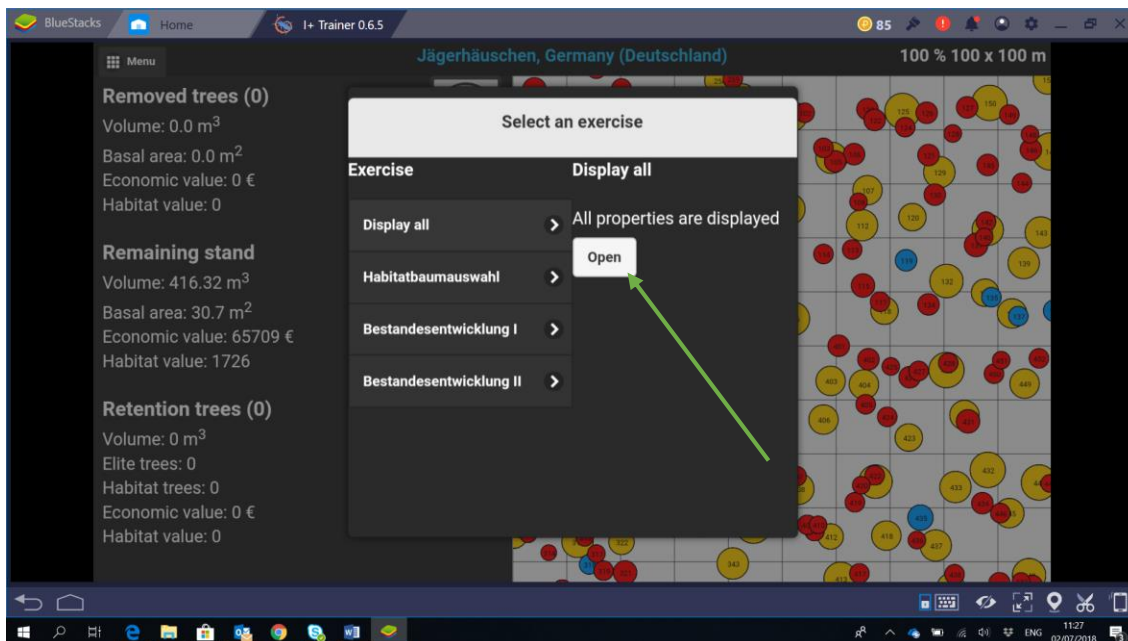


The program will ask for confirmation; click 'yes'.

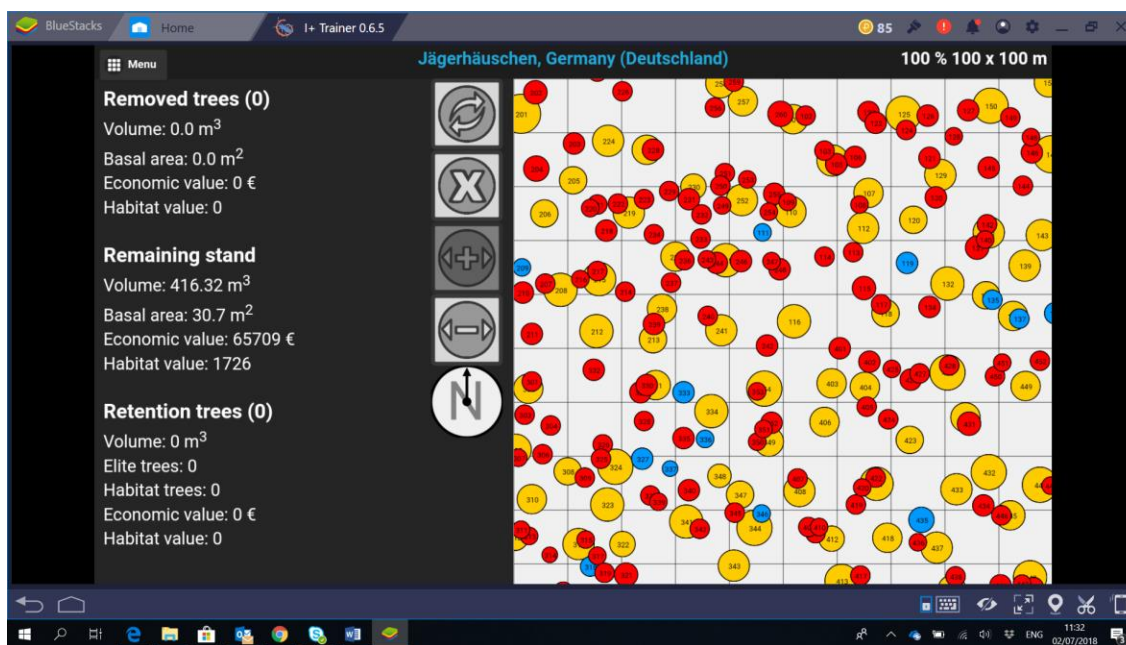


Step 3: opening an exercise

Select the desired exercise. Some marteloscopes have a set of predefined exercises, others don't. In the latter case, or if no particular predefined exercise is planned, choose 'display all' and click 'open'.

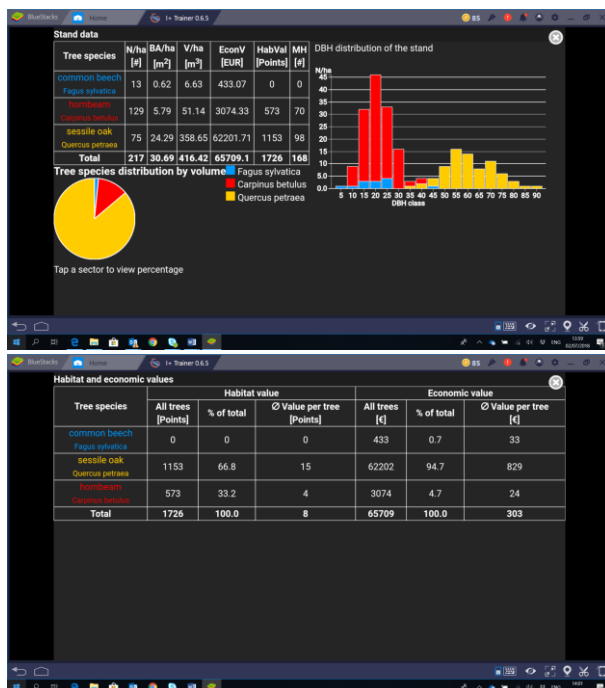
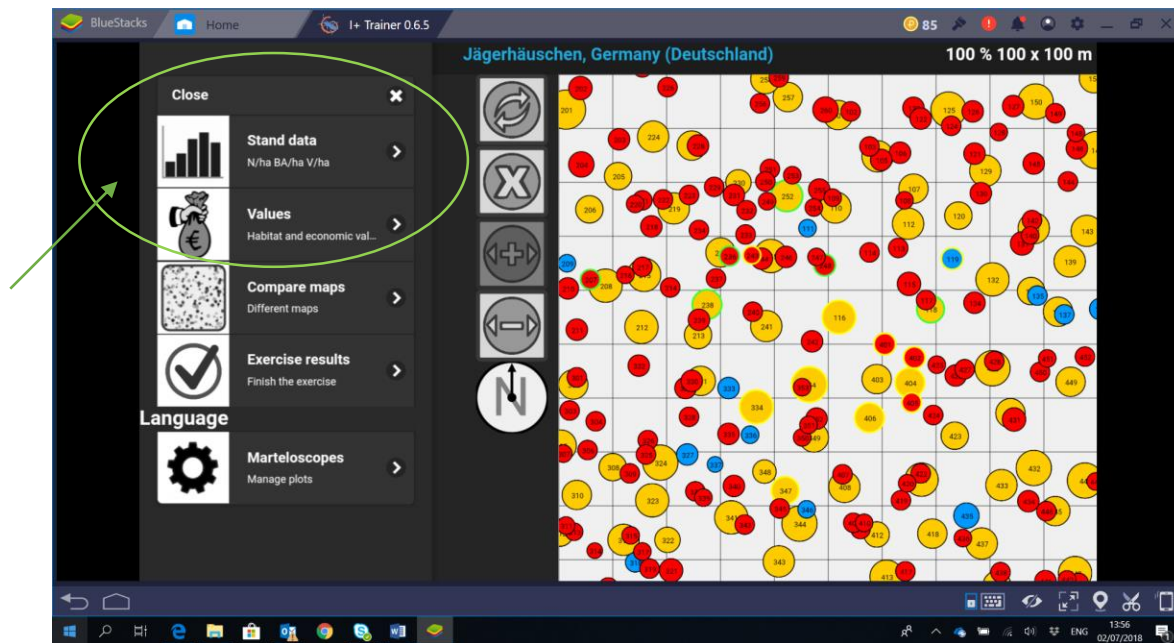


We now see a schematic areal overview of the stand, with circles representing the trees. Each individual tree has a number and a colour. The colour refers to the species. In this case, yellow is sessile oak (*Quercus petraea*), red is hornbeam (*Carpinus betulus*) and blue is beech (*Fagus sylvatica*). The diameter of a circle corresponds to the size of the tree. You can zoom in on the stand by using two fingers, as on any touch screen.



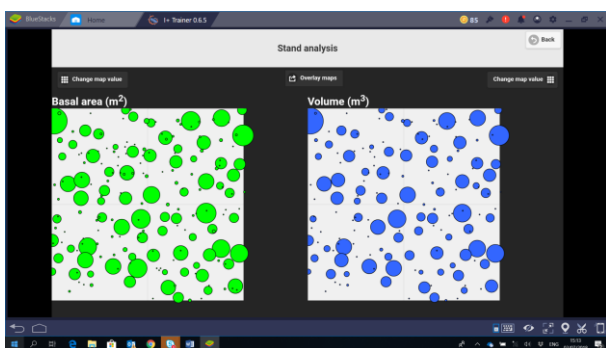
Step 4: stand information

If you click on 'Menu' in the left upper corner, you can access three types of overview information.



Stand data: This gives you an overview of the stand composition, tree number, basal area, economic value, habitat value and microhabitats

Stand value: more detailed overview of the economic and habitat value of the stand

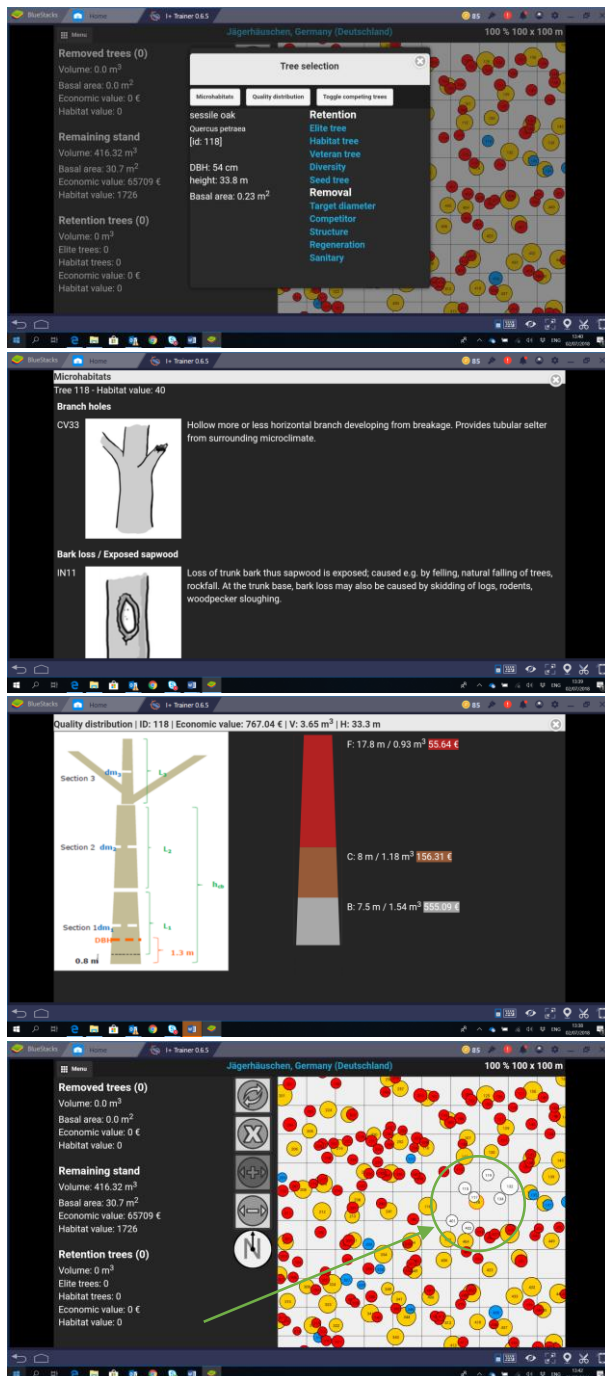


Compare maps: This tool allows you to get a visual view of the different attributes of the stand. The data include:

- habitat value
- volume (m^3)
- economic value (€)
- basal area (m^2)

Step 5: tree information

By selecting a circle, you get a lot of information about that tree. There are 4 categories of information, which are shown here by the example of tree 118.



Basic information: selecting the tree immediately informs you of its species, ID number, height and basal area

Microhabitats: overview of the recorded tree microhabitats, following the typology of the Catalogue of Tree Microhabitats

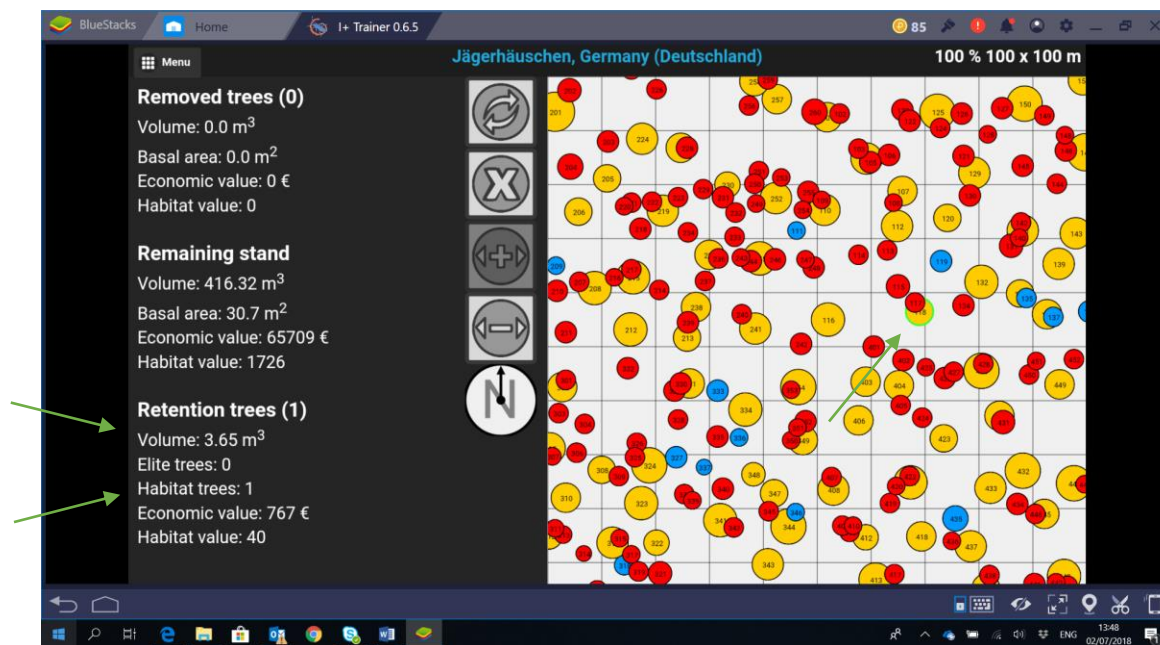
Quality distribution: overview of the wood quality classes of the stem. For each quality class, an estimation of the volume and the monetary value is provided

Toggle competing trees: the competitors of the selected trees are highlighted in white






Step 6: managing the stand

We can choose what to do with the tree, depending on the aim of the exercise. Typically, the goal is to perform a virtual thinning. When selecting a tree, the program gives us the choice between 'Retention' and 'Removal'. If we decide to keep tree 118 in the stand because of its existing and potential future microhabitats, the tree will show up in the pane on the left (volume: 3,65 m³; Habitat trees: 1). This happens to each tree that is selected for removal or retention. The trees that get no special selection or included under 'Remaining stand'.

Removed tree get a yellow outline, retention trees get green outline.

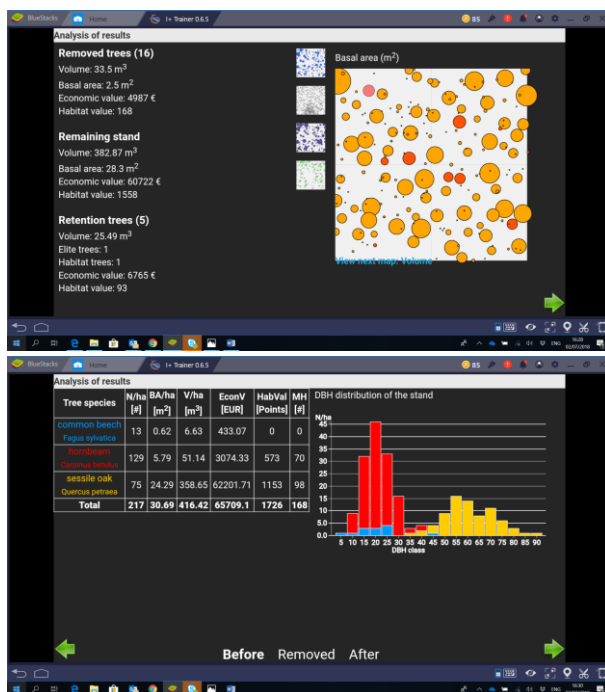
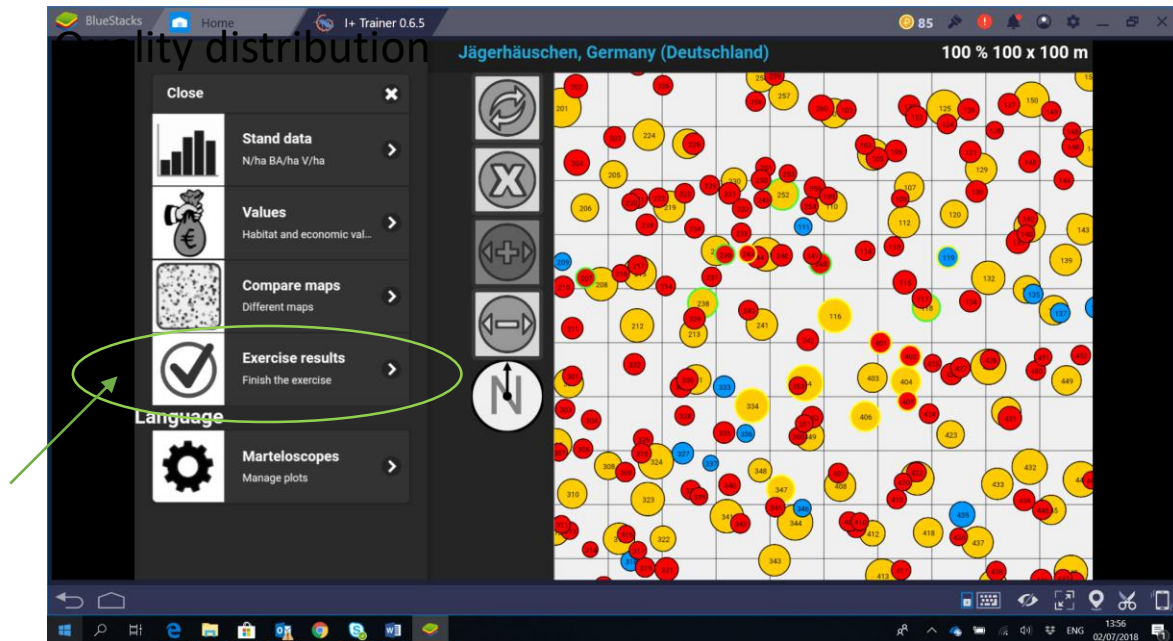


In the middle of the screen there are 5 symbols that you may need while operating the program. This is what they mean.

-  Visually eliminate all the trees selected for removal
-  Reset the selection (all trees get unselected)
-  Make circles bigger
-  Make circles smaller
-  North arrow. There is no integrated compass or GPS; the north arrow relates to the image of the stand on the screen

Step 7: seeing the results

After selecting all the desired trees, you can see the results and a summary of your virtual forest operation. If you click on the 'menu' in the left upper corner (cf. Step 3), you can access the 'Exercise results'.



Thinning maps: the first tool offers a map view of the harvested trees. There is a choice between four maps, picturing

- habitat value
- volume (m³)
- economic value (€)
- basal area (m²)


Value graphs: overview of the stand data after the thinning, to be compared with the initial situation (cf. step 3).



Number of trees with microhabitats: number of trees with microhabitats before and after thinning, classified according to the typology of the Catalogue of Tree Microhabitats.

Pie charts: graphic summaries of the results, with ten different variable that can be selected

Step 8: finishing the exercise

After analysing the results, the exercise can be saved by clicking the green button in the corner . Clicking 'Finish and save' will automatically upload your results to the central database, as well as creating a PDF for personal use. If you only want the latter, click 'Create PDF only'. If you want to continue the exercise without saving yet, press 'Edit selections'.

