



EUROPEAN FOREST INSTITUTE

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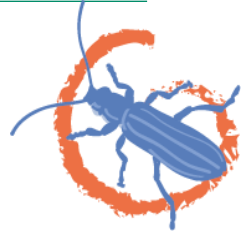
INTEGRATE+ **software**

Integrate+ Conference 2016

www.efi.int



The team

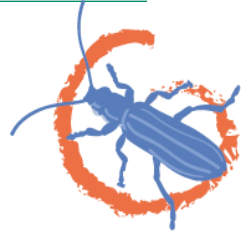


- Tommi Suominen
- Ville Immonen
- Petteri Kauhanen
- Janne Kiljunen
- Simo Varis
- Elena Zudina
- Sergey Zudin

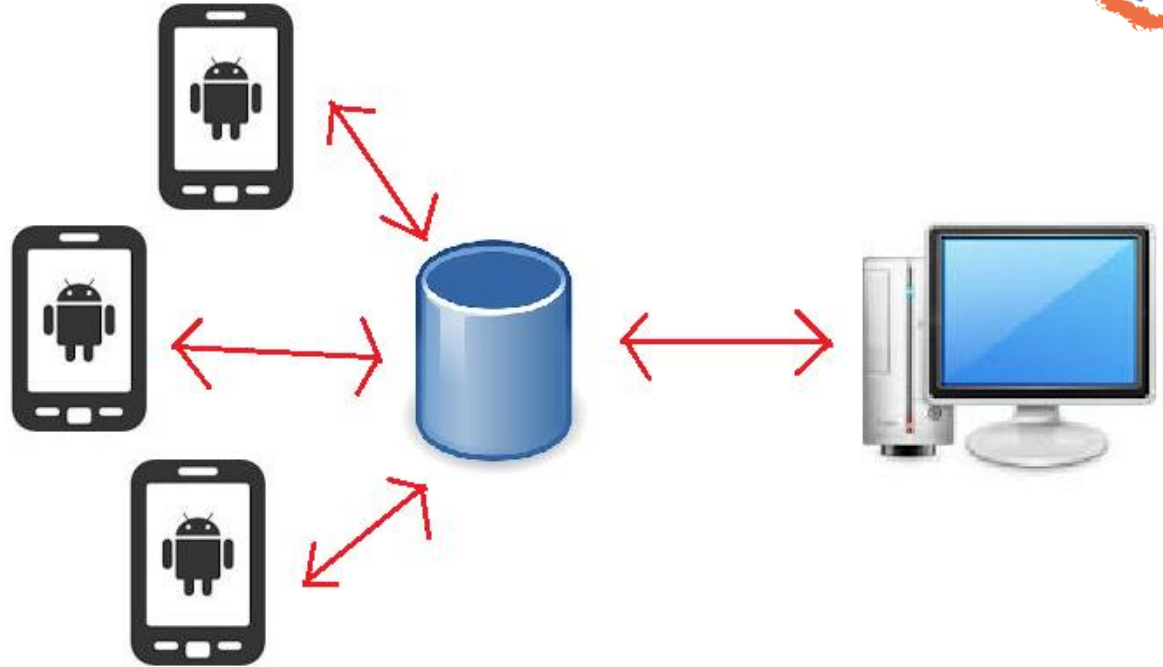




Software components

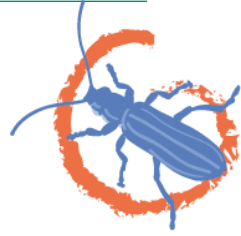


- Integrate+ Database
- Integrate+ Trainer
- Integrate+ Manager





Software components

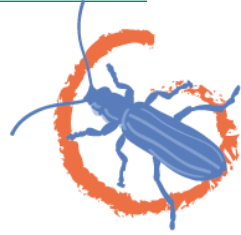


Database:

- Marteloscope inventory data (plot metadata, trees inventory, trees properties)
- Microhabitats info
- Exercises
- Exercises results
- Access rights management
- Tree competition indices



Software components

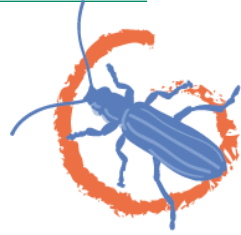


Trainer

- Field exercises
- Communication with Database
- Results analysis
- PDF reporting



Software components



Manager

- Load Marteloscope info into Database
- Marteloscopes management
- Exercises management
- Results management and analysis



Software components

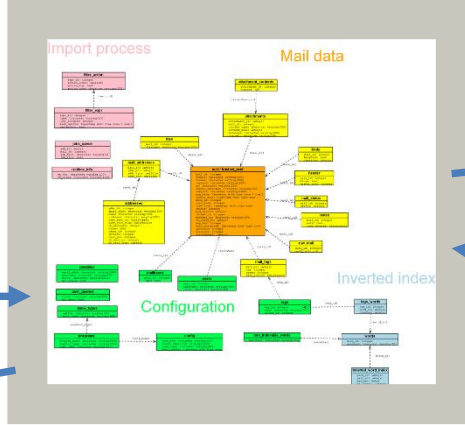


Steinkreuz, Germany 100% 100 x 100 m

Removed trees (8)
Volume: 13.8 m³
Basal area: 1.2 m²
Economic value: 1208 €
Ecological score: 59

Remaining stand
Volume: 313.36 m³
Basal area: 28.9 m²
Economic value: 29566 €
Ecological score: 3744

Retention trees (8)
Volume: 12.2 m³
Elite trees: 2
Habitat trees: 3
Economic value: 1051 €
Ecological score: 113



Integrate - Manager rev. 509

Welcome Connection Plot management Exercise management Result management Access rights management

Load new plot from excel Select plot Sihwald NEW Plot preview

Save changes Discard changes Delete plot

Plot data

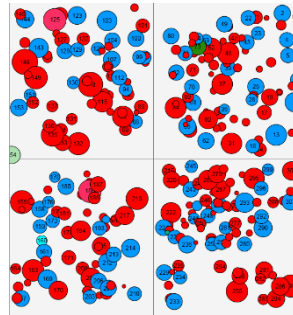
Name: Sihwald NEW
Country: Switzerland
Region: Birnboden right Status 1
Contact person: info@wildnispark.ch 1
Currency: CHF Currency symbol: Fr. 1
Description: The Sihwald is one of the largest continuous beech (or main) 1

Terrain data
Coordinate data 1

6	Fir	78.304232...	75	0.0	0.4815710...	35.0	1
7	Beech	8.9126768...	5	0.0	0.0062388...	9.0	1
8	Beech	7.6394372...	5	0.0	0.0045836...	11.0	1
9	Ash	8.9126768...	5	0.0	0.0062388...	12.0	1

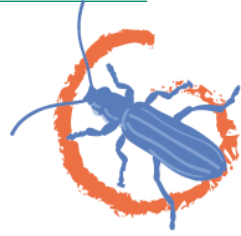
Add a tree

Connection status Connected About





I+ Trainer



Menu Marteloscope name 100 % 100 x 100 m

Removed trees (0)
Volume:
Basal area:
Economic value:
Ecological score:



Remaining stand
Volume:
Basal area:
Economic value:
Ecological score:

Retention trees (0)
Volume:
Elite trees:
Habitat trees:
Economic value:
Ecological score:

Marteloscopes

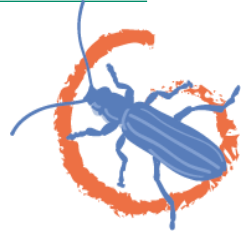
[Download new marteloscope](#)

Downloaded	Select a plot
Ettenheim	Select a plot from the left to load or delete
Falkenberg	
Groenendaal	
Groenendaal NEW	
Idarwald	
Lauerholz	



I+ Trainer



Site conditions

Altitude:	340 m.a.l.
Forest ecological region:	Franken Keuper and Alb foothills, Steigerwald
Geology/ Bedrock:	Middle Keuper (Unterer Burgsandstein, Heldburgstufe)
Soil types:	Pseudogley-Brown earth
Mean annual temperature:	10.5 °C
Annual precipitation:	850 mm
Natural forest community:	Luzulo-Fagetum

Mesic moist silt above clay (carbonate in lower soil) (Site code 857)





I+ Trainer



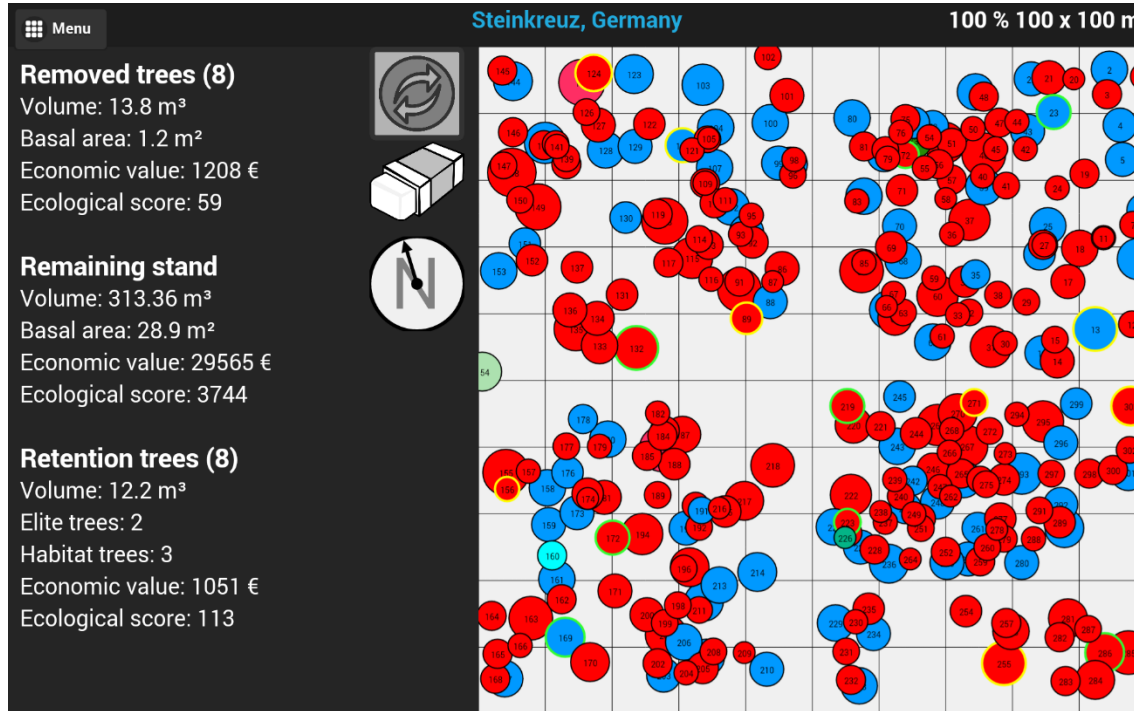
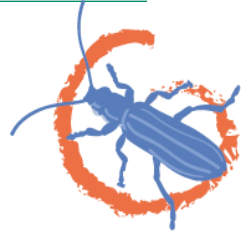
Economic and ecological values



Tree Species	Ecological value			Economic value		
	All trees [Score]	% of total [%]	Ø Value per tree [Score]	All trees [Kč]	% of total [%]	Ø Value per tree [Kč]
Beech	1347	35.4	6	13827	44.9	65
Pine	0	0	0	162	0.5	162
Oak	2349	61.8	29	15385	50	188
Larch	80	2.1	40	1173	3.8	586
Birch	20	0.5	20	193	0.6	193
Spruce	0	0	0	32	0.1	32
Hornbeam	7	0.2	7	1	0	1
Total	3803	100.0	102	30773	100.0	1227

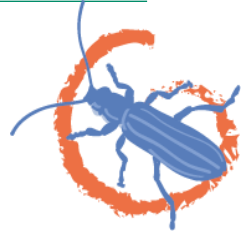


I+ Trainer





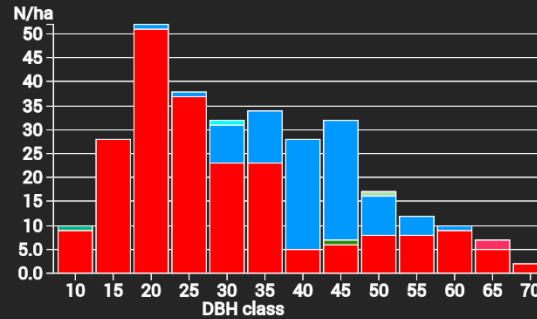
I+ Trainer



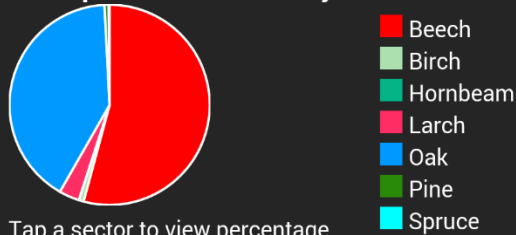
Stand data

Tree species	N/ha [#]	BA/ha [m ²]	V/ha [m ³]	Econ [€]	Ecol [Points]	TReMs [#]
Beech	214	17.68	177.32	13826.9	1347	1347
Birch	1	0.19	2.54	192.5	20	20
Hornbeam	1	0.01	0.02	1.3	7	7
Larch	2	0.64	10.78	1172.8	80	80
Oak	82	11.31	133.86	15385.3	2349	2349
Pine	1	0.17	2.23	161.9	0	0
Spruce	1	0.07	0.45	32.2	0	0
Total	302	30.06	327.2	30772.9	3803	3803

DBH distribution after removal



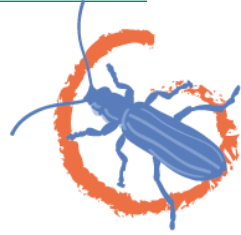
Tree species distribution by volume



Tap a sector to view percentage



I+ Trainer



Analysis of results

Removed trees (8)

Volume: 17.8 m³
Basal area: 1.5 m²
Economic value: 1411 €
Ecological score: 0



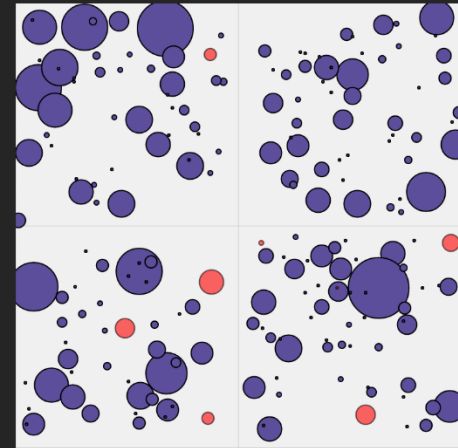
Remaining stand

Volume: 309.38 m³
Basal area: 28.6 m²
Economic value: 29362 €
Ecological score: 3803

Retention trees (6)

Volume: 8.15 m³
Elite trees: 2
Habitat trees: 2
Economic value: 798 €
Ecological score: 233

Economic [EUR]

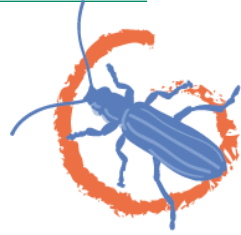


[View next map: Ecological](#)





I+ Trainer



Analysis of results

Removed trees (8)

Volume: 17.8 m³
Basal area: 1.5 m²
Economic value: 1411 €
Ecological score: 0

Remaining stand

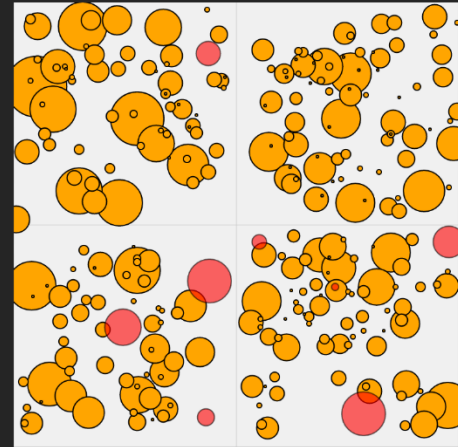
Volume: 309.38 m³
Basal area: 28.6 m²
Economic value: 29362 €
Ecological score: 3803

Retention trees (6)

Volume: 8.15 m³
Elite trees: 2
Habitat trees: 2
Economic value: 798 €
Ecological score: 233



Basal Area [m²]

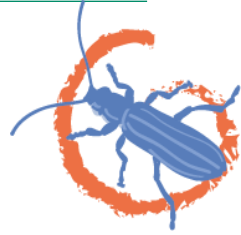


[View next map: Volume](#)





I+ Manager



The screenshot shows the 'Integrate+ Manager rev. 509' application window. It features a tabbed interface with the following tabs: 'Welcome', 'Connection', 'Plot management', 'Exercise management', 'Result management', and 'Access rights management'. The 'Welcome' tab is active, displaying a 'Welcome to Integrate+ manager application' section. Below this, there are four sub-sections: 'How to use', 'Plot management', 'Exercise management', and 'Access rights management', each with a brief description of its function. At the bottom left, the 'Connection status' is shown as 'Connected'. An 'About' button is located at the bottom right.

Integrate+ Manager rev. 509

Welcome Connection Plot management Exercise management Result management Access rights management

Welcome to Integrate+ manager application

How to use

Start by forming a new connection to the Integrate+ database from the "Connection" -tab. Note that you will not be able to save your work if you disconnect from the database, so make sure that you will be able to stay connected to the internet for the duration of your session.

Plot management

Plot metadata and treedata can be edited from the "Plot management" -tab. Right click an individual tree to edit its properties and microhabitats. You can also use this tab to add a new plot to the database from an excel file.

Exercise management

Exercises for a plot can be managed from the "Exercise management" -tab. After selecting a plot you can edit current exercises attached to the plot, make a new ones, and remove unnecessary.

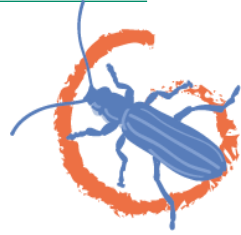
Access rights management

From this tab you will be able to control who can see and edit your data.

Connection status **Connected** About



I+ Manager



Integrate+ Manager rev. 512

Welcome | Connection | Plot management | Exercise management | Result management | Access rights management

Load new plot from excel | Select plot | Steinkreuz | Plot preview

Save changes
Discard changes
Delete plot

Plot data

Name: Steinkreuz
Country: Germany
Region: Franken Keuper and Alb foothills, Steigerwald, Bavaria
Contact person: info-ebrach@baysf.de
Currency: EUR | Currency symbol: €
Description: Mesic moist silt above clay (carbonate in lower soil) (Site code)

Terrain data

Coordinate data

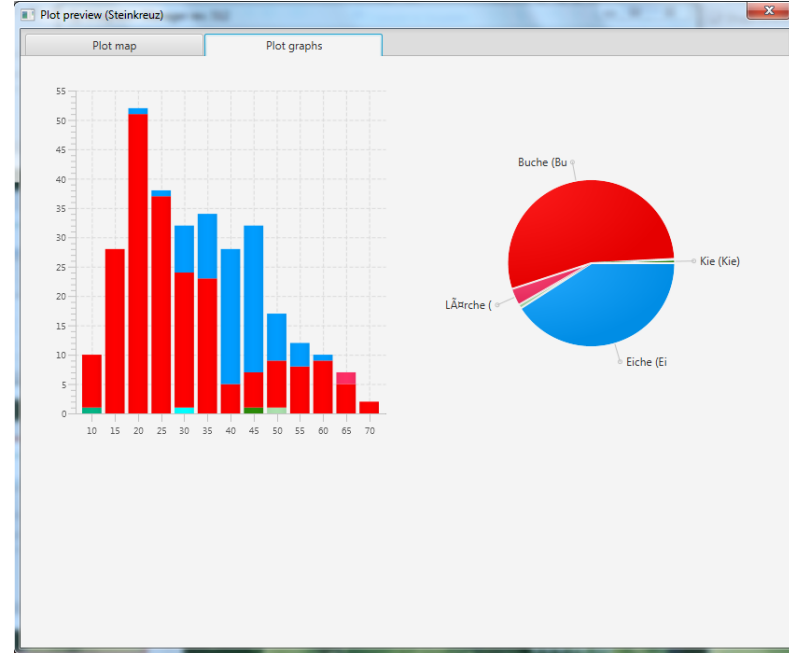
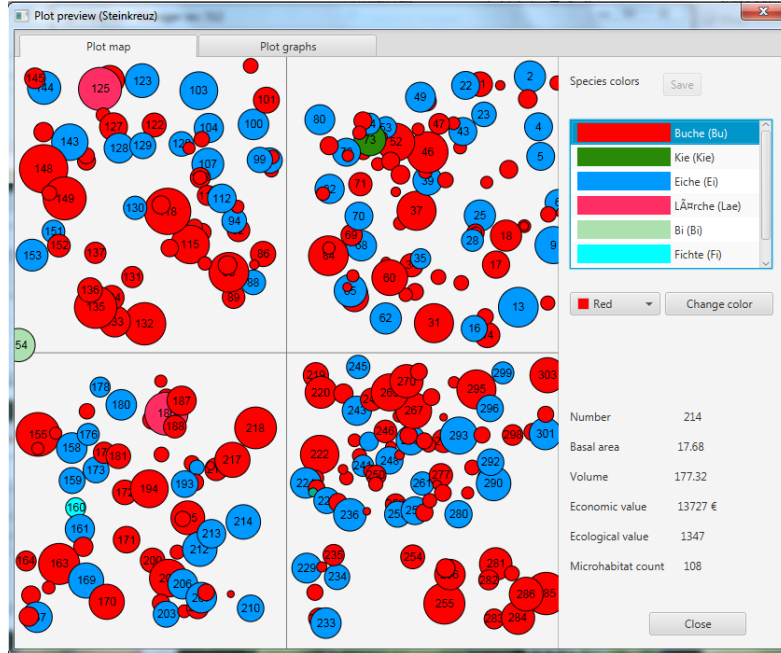
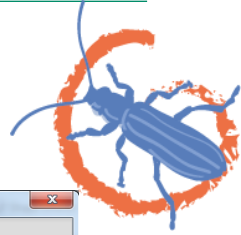
							eight	Status
6	Oak	38.0	40	18.9	0.1122	31.9	1	1
7	Beech	22.0	20	11.6	0.0391	21.3	1	1
8	Beech	12.0	10	6.4	0.0109	20.5	1	1
9	Oak	55.0	55	14.3	0.2341	29.9	1	1

Add a tree

Connection status: **Connected** | About

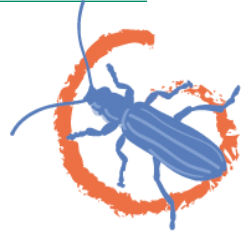


I+ Manager





I+ Manager



Integrate+ Manager rev. 512

Welcome | Connection | Plot management | Exercise management | Result management | Access rights management

Select plot: Steinkreuz

Exercises for the plot

- Test exercise[id=3]
- All enabled[id=4]
- Hide dbh[id=43]
- Hide height[id=44]
- Hide basal area[id=45]
- Hide volume[id=46]
- Hide economic[id=47]**
- Hide ecological[id=48]
- Hide species[id=49]

Create new exercise

Remove exercise

Name: Hide economic

Description: Hides economic

Creator: VI

Economic target: []

Ecological target: []

Silvicultural target: []

Properties to display:

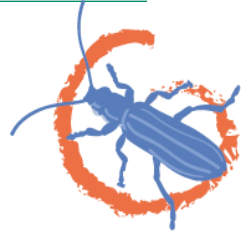
- Tree species
- Volume
- Basal area
- DBH
- DBH cm
- DBH class
- Height
- Crown height
- Tree state
- Economic value
- Ecological value

Save | Reset

Connection status: **Connected** | About



I+ Manager



Integrate+ Manager rev. 512

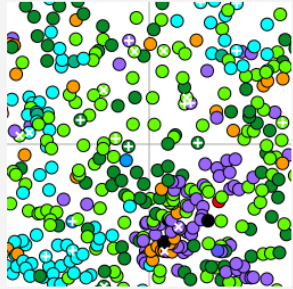
Welcome | Connection | Plot management | Exercise management | Result management | Access rights management

Select plot: Sihlwald | Select exercise: test6 [id=42]

Student	Started	Ended	Ecological score	Economic score
Mina	22/06/2016 16:16	22/06/2016 16:30	1092	615328
sv	23/06/2016 16:13	23/06/2016 17:02	1083	579079

Selection history

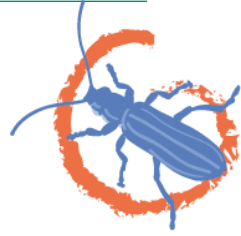
Time	Tree ID	Action	Reason
23/06/2016 16:11	293	Harvest	Competitor
23/06/2016 16:11	191	Retention	Veteran tree
23/06/2016 16:14	42	Retention	Diversity
23/06/2016 16:15	63	Retention	Habitat tree
23/06/2016 16:15	92	Harvest	Competitor
23/06/2016 16:15	64	Retention	Habitat tree
23/06/2016 16:15	100	Retention	Habitat tree
23/06/2016 16:15	272	Harvest	Structure



Connection status: **Connected** | About



Software components (perspectives)



- I+ Database
 - More Plots
 - Public access
- I+ Trainer
 - iOS
- I+ Manager
 - More properties
 - Science

