

# EBONE



## European Biodiversity Observation Network: Design of a plan for an integrated biodiversity observing system in space and time

D7.2: Tested web portal for data access based on technical and functional specification and tested with the EBONE field data and EO data

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# Cooperation by sharing and viewing data and joint outputs

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<http://www.ebone.wur.nl>

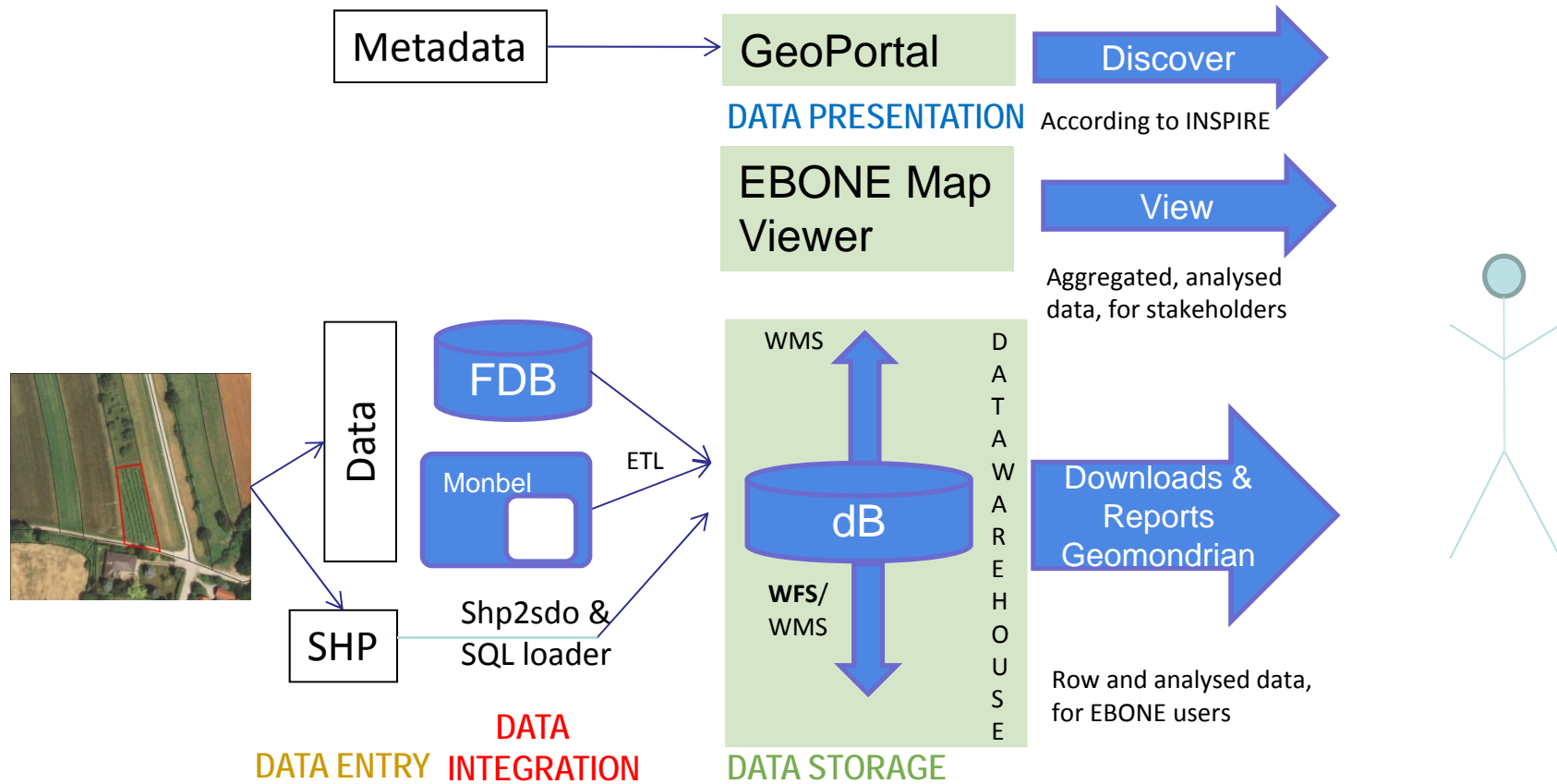
# Overview

EBONE data management:

- the field database
- the data warehouse
- data analysis with Geomondrian
- meta data presentation: GeoPortal
- data presentation
  - EBONE service WFS
  - map viewer web portal

<http://www.ebone.wur.nl>

# Data Management EBONE

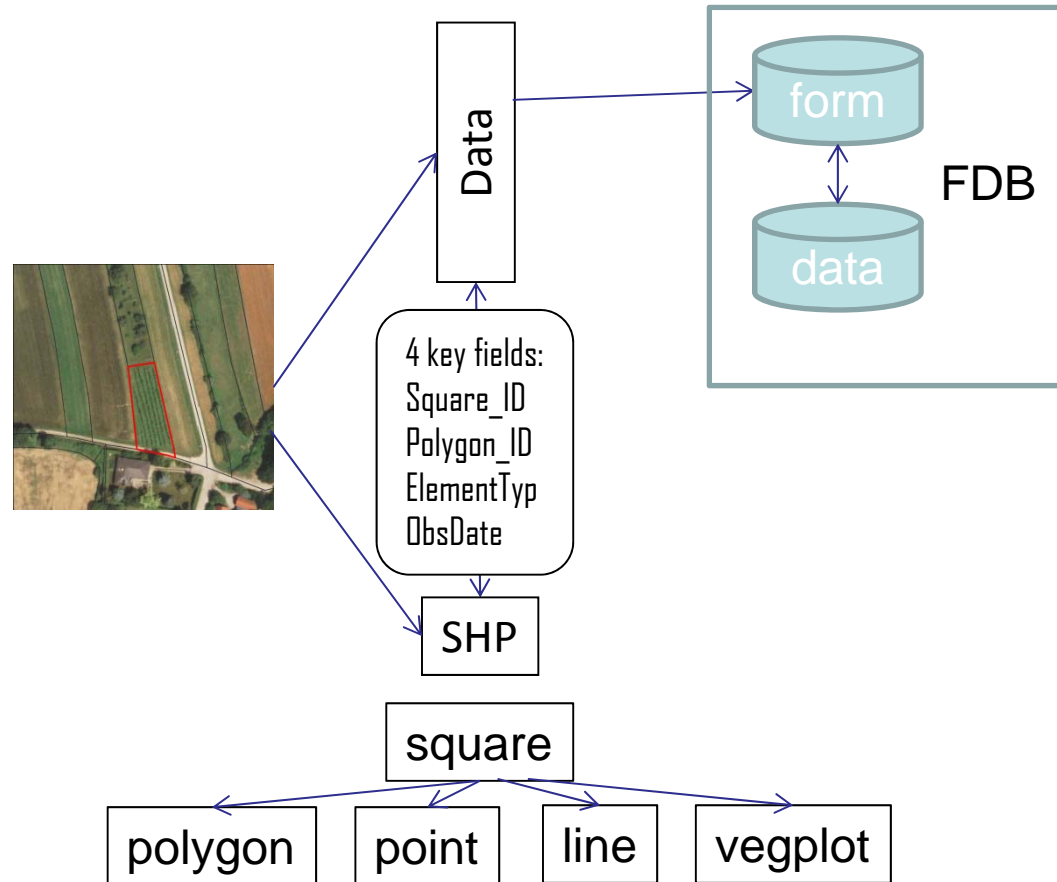


<http://www.ebone.wur.nl>

EBONE developed a prototype with freeware and existing components

- components are not fully integrated at the moment but consistent workflow is developed
- file upload and file check done by the central data management
- no complete framework for the implementation of the consistent data flow

# The EBONE field database



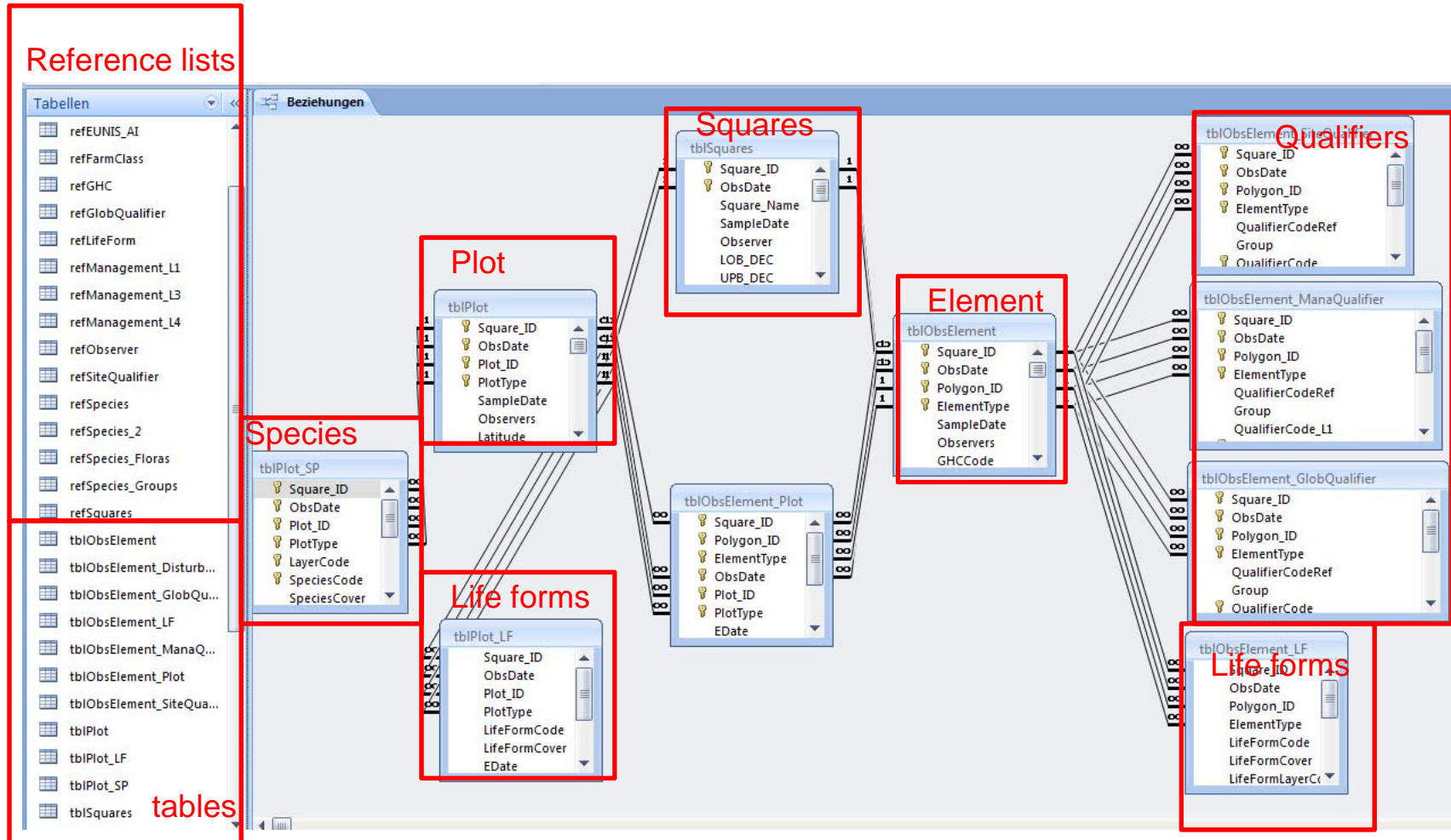
<http://www.ebone.wur.nl>

# The form database

<http://www.ebone.wur.nl>

# The data database ERM

<http://www.ebone.wur.nl>





# The field database

1. *Draw the element on the photo*
2. *Label the element*
3. *Record the element*
  - *In the shapefile*
  - *In the database*



AREAL



EBONE FieldDatabase V0.8.6

Start Erstellen Externe Daten Datenbanktools Acrobat

Ansicht Einfügen Zwischenablage

Filtern

Ausschneiden Kopieren Format übertragen

Aufsteigend Absteigend Sortieren entfernen

Auswahl Erweitert Filter ein/aus

Neu Speichern Löschen

Summen Rechtschreibung

Ersetzen Gehe zu Markieren

Suchen

Textformatierung

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Observed Elements Square: AEA5 ObsDate: 201006

Polygon ID: C12 Observers: Prinz, Martin

ElementType: A (Area) Date: 29.06.2010

Field 1 GHC Code: WOC Reference: GHC2010

Field 6 FFH Annex I

Field 7 FarmClass Code: 1 (Fields managed on) FarmClass2010


Field 7 Regional Habitat Classification

Field 8 Phytosociological Class.

Vegetation Plot ID   **Edit Plot**

Comment:

Polygon picture



**Field 2: Global & Environmental Qualifier**

Group	Qualifier	RefListe	Comment	Add	Delete
new Env. Qualifiers	new 5.3	Environmental qualifiers			

**Field 3: Site Qualifiers**

Group	Qualifier	RefListe	Comment	Add	Delete
new Geology	new 2.7	SiteQualifier2010			

**Field 4: Management Qualifiers**

Group	L1	L3	L4	RefListe	Com	Add	Delete
new Agricultural	new A	new 1.12	new 500	Management			

**Field 5: LifeForm\_Species**

Life Forms	Bird view	in Layer	Species	SP Cove
WOC (Woody Cr)	40		Vitis vinifera s. vinifera	100
CHE (Caespitose He	20		Trisetum flavescens	60
LHE (Leafy Hemicry	40		Taraxacum species	50

Datensatz: 1 von 137 Ungefiltert Suchen

Identifiant Polygone

Num

**BACK TO SQUARES**



ht

# The field database

Software interface for "Observed Elements" in the "Ebony field base v0.8.6".

**Observed Elements** Square: **AEA5** ObsDate: **201006**

Polygon ID: **C12** Observers: **Prinz, Martin**  
 ElementType: **A (Area)** Date: **29.06.2010**


**Field 1: Field Data**

Field 1 GHC Code	WOC	Reference	GHC2010
Field 6 FFH Annex I			
Field 7 FarmClass Code	1 (Fields managed onl)		FarmClass2010
Field 7 Regional Habitat Classification			
Field 8 Phytosociological Class.			

Vegetation Plot ID: [ ] [ ] **Edit Plot**

Comment:

**Polygon picture**



**Field 2: Global & Environmental Qualifier**

Group	Qualifier	RefListe	Comment
new	new		
Env. Qualifiers	5.3	Environmental qualifiers	

**Field 3: Site Qualifiers**

Group	Qualifier	RefListe	Comment
new	new		
Geology	2.7	SiteQualifier2010	

**Field 4: Management Qualifiers**

Group	L1	L3	L4	RefListe	Com
new	new	new	new		
Agricultural	A	1.12	500	Management	

**Field 5: LifeForm\_Species**

Life Forms	Bird view	in Layer	Species	SP Cove
WOC (Woody Crc)	40		Vitis vinifera s. vinifera	100
CHE (Caespitose He	20		Trisetum flavescens	60
LHE (Leafy Hemicryp	40		Taraxacum species	50
*				

Datensatz: 1 von 3 | Kein Filter | Suchen

**BACK TO SQUARES**

Datensatz: 55 von 137 | Ungefiltert | Suchen



# The field database

Ebone field base v0.8.6   Squares   frm\_ObsElement

## Observed Elements

Square: **AEAS**   ObsDate: **201006**


Polygon ID: **C12**   Observers: **Prinz, Martin**  
 ElementType: **A (Area)**   Date: **29.06.2010**

Field 1 GHC Code: **WOC**   Reference: **GHC2010**  
 Field 6 FFH Annex I:      
 Field 7 FarmClass Code: **1 (Fields managed onl)**   **FarmClass2010**  
 Field 7 Regional Habitat Classification:      
 Field 8 Phytosociological Class.:   

Vegetation Plot ID:       **Edit Plot**

Comment:

**Polygon picture**



**Field 2: Global & Environmental Qualifier**

Group	Qualifier	RefListe	Comment	Add	Delete
new	new				
Env. Qualifiers	5.3	Environmental qualifiers			

**Vegetation layers**

- Only in forests (FPH)
- Any layer with more than 30% cover is to be recorded
- The layers are recorded using the TRS life forms categories
- The cover of the layer is irrespective of what is above it

**Field 5: LifeForm\_Species**   **Delete LifeForm Entry**

Life Forms	Bird view	in Layer	Species	SP Cove
WOC (Woody Crc)		40	Vitis vinifera s. vinifera	100
CHE (Caespitose He)		20	Trisetum flavescens	60
LHE (Leafy Hemicryf)		40	Taraxacum species	50
*				

Datensatz: **1 von 3**   **Kein Filter**   **Suchen**

Datensatz: **55 von 137**   **Ungefiltert**   **Suchen**

**Full list of habitats**

**Dominant species**

# The field database

Observed Elements Square **AEA5** ObsDate **201006**

Polygon ID **C12** ElementType: A (Area)

Field 1 GHC Code  
Field 6 FFH Annex I  
Field 7 FarmClass Code  
Field 7 Regional Habitat Classif  
Field 8 Phytosociological Class.

Vegetation Plot ID

Comment:

Polygon picture

**Plot** Square **AEA5** ObsDate **201006**

Plot ID **AEA5\_5** PlotType: X Observers **Prinz, Martin** Date **29.06.2010**

**Geographical Info**

Coord South-East Corner X Y SpatialUnit:  
SpatialRefSystem: SpatialRef:  
Altitude m Slope ° Topography

**Vegetation Structure**

Mean Shrub height (m) 0 Mean Tree height (m) 0  
0-0,5m 3 0,5-2m 2 2-5m 5-30m over 30m

**Global Cover**

Bare soil 10% Gravel 0% Vegetation 90%  
Litter 0% Rocks 0%

**Life Forms**

Life Form	LF cover
WOC	3
CHE	2
LHE	3
*	

Datensatz: 1 von 3

**Vegetation releev**

SpeciesList Central Europe

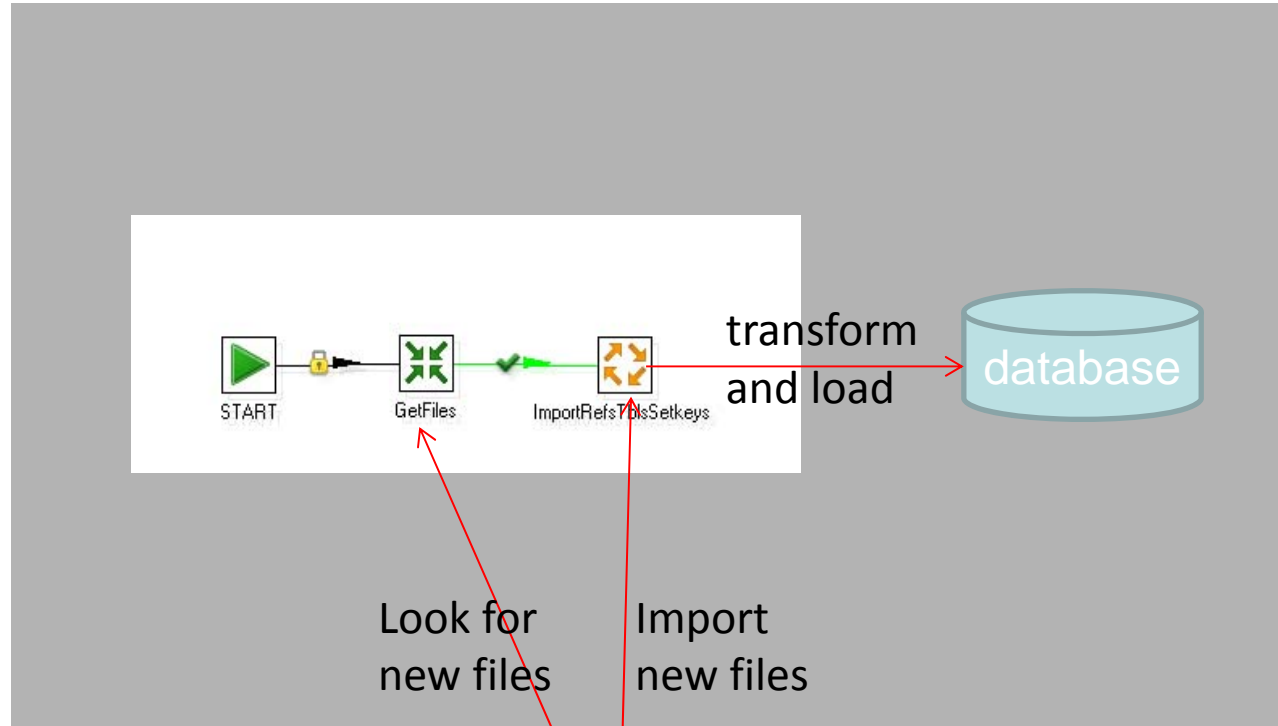
Area:	Layer	Genus	Species	Cover	Comment
100	TOT	Anagallis	arvensis	1	
100	TOT	Geranium	pyrenaicum	1	
100	TOT	Stellaria	media	2	
25	TOT	Capsella	bursa-pastoris	5	
25	TOT	Chenopodium	album	1	
25	TOT	Convolvulus	arvensis	5	
25	TOT	Veronica	arvensis	1	
4	TOT	Anthemis	arvensis	2	
4	TOT	Cirsium	arvense	5	
4	TOT	Hordeum	murinum	15	
4	TOT	Lolium	perenne	5	
4	TOT	Plantago	major	5	
4	TOT	Poa	annua	20	
4	TOT	Rumex	obtusifolius	30	
4	TOT	Taraxacum	species	5	
4	TOT	Vitis	vinifera s. vinifera new	40	

SQUARES

Datensatz: 1 von 3

Datensatz: 55 von 137

# Elements of Datawarehouse

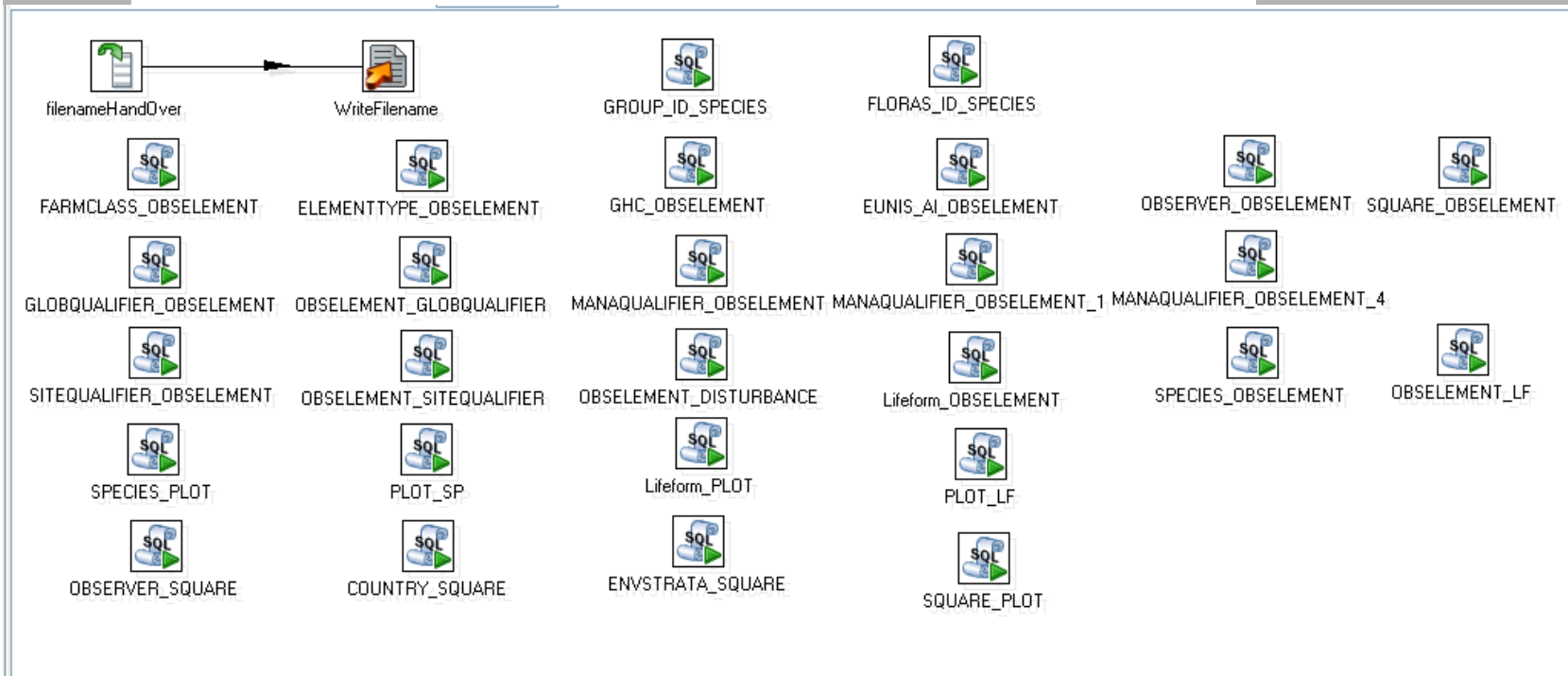
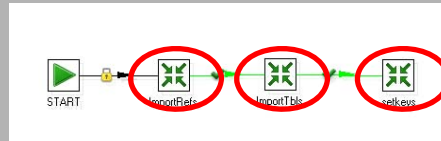


Upload Directory

prepared for remote upload

<http://www.ebone.wur.nl>

# Elements in Detail



<http://www.ebone.wur.nl>



## Quickstart Page



**Reminder:** GeoMondrian examples require that the simple\_geofoodmart.sql has been previously loaded in a PostgreSQL/PostGIS instance running on your localhost as detailed in the installation notes.

### Ebone Oracle examples:

- [EBONE Area Statistics](#)

**GeoMondrian is an Open Source Spatial Online Analytical Processing Server, a spatially-enabled version of Pentaho Analysis Services**

### GeoMondrian examples:

- [JPivot pivot table with simple\\_foodmart cube](#)
- [JPivot pivot table with simple\\_geofoodmart spatial cube \(without geometry properties\)](#)
- [JPivot pivot table with simple\\_geofoodmart spatial cube](#)
- [Basic interface for ad hoc GeoMDX queries](#)

**Note:** simple\_foodmart is a simplified version of the GeoMondrian's Foodmart cube. Simple\_geofoodmart is a spatialized version of the simple\_foodmart cube.

### Mondrian examples:

- [JPivot pivot table](#)
- [JPivot pivot table by XMLA](#)
- [JPivot with 4 hierarchies](#)
- [JPivot with role 'California Manager' set](#)
- [JPivot with arrows](#)
- [JPivot with colors](#)



Address <http://localhost:8080/geomondrian/testpage.jsp>

### Test Query uses EBONE data with Oracle connection

	Measures				
Squares	Total Area	Mean Area	Minimum Area	Maximum Area	Counts of Area
-AT	7,999,592	4,944	0	185,545	1,618
+ALS3	1,000,009	6,173	65	140,959	162
+CON2	999,583	5,778	0	175,071	173
+CON7	1,000,000	3,067	0	38,984	326
+PAN2	5,000,000	5,225	15	185,545	957

Slicer:

Slicer:

■ Total Area. 
 ■ Mean Area. 
 ■ Minimum Area. 
 ■ Maximum Area. 
 ■ Counts of Area.



http://www.ebone.wur.nl

[Manage](#) [Add](#)  
**Metadata Editor**

Metadata service for discovering data resources according to the INSPIRE implementing rules for Metadata

**GEMINI (Data)**

Metadata **Identification** Distribution Quality

**Identification**

Citation Abstract Contact Maintenance Thumbnail Keywords Constraints Resource

**Resource Title**

Alternate Title

**Resource Date** + - < >

**Date**

**Date Type**

▾

**Unique Resource Identifier**

URI  ID Plus Code Space

**Code**

## EBONE field data AT01 Pamhagen, Austria

**Metadata****File Identifier:** EBONE.AT01.201008.MD**Metadata Language:** English**Resource Type:** Dataset**Responsible Party:****Organisation Name:** Umweltbundesamt GmbH**Role:** Point Of Contact**Contact Info:****E-Mail Address:** [barbara.magaqna@umweltbundesamt.at](mailto:barbara.magaqna@umweltbundesamt.at)**Metadata Date:** 2012-03-07**Metadata Standard Name:** UK GEMINI**Metadata Standard Version:** 2.1**Data Identification**

**Abstract:** Habitat mapping data based on life forms collected during the EBONE field campaign 2010/2011. The method is based on the General Habitat Category (GHC) concept where a habitat is defined as an element of land that can be consistently defined spatially in the field in order to determine the principal environments in which organisms live. The GHC approach is mainly based on Life Forms (Raunkiaer, 1934), qualifiers on environment, site, management and species composition, 140 GHC containing Life Form and Non-Life Form habitats e.g. sparsely vegetated land, rocks, bare ground, ...) and a lowest common denominator for each mapped unit.

**Language:** English**Citation:****Title:** EBONE field data AT01 Pamhagen, Austria**Date:****Date:** 2010-06-01**Date Type:** Creation Date**Identifier:** EBONE.AT01.201006.D**Point Of Contact:****Individual Name:** Prinz, Martin**Organisation Name:** University of Vienna**Role:** Originator

# EBONE: OGC Spatial WFS

- Mapping data are published as OGC WFS (web feature service)
  - which can be used in any standard GIS client, e.g. Quantum GIS, ArcGIS, or web portal
- WFS provides spatial data as vector format. Spatial operations can be applied (e.g. intersect).
- Specification
  - Server: ArcGIS Server 10.0
  - Version: OGC WFS 1.1.0
  - Supported operations
    - GetCapabilities – summarises the content of the WFS service (e.g. possible operations and defined layers)
    - DescribeFeatureType
    - GetFeature

<http://www.ebone.wur.nl>

## EBONE OGC Spatial WFS

Data provided via .../ebone/mapping/... - mapping results during the field campaign 2010/2011

- **Basic spatial data**

- EBONE\_SQUARES: outline of the mapped squares
- EBONE\_POLYGON: mapped elements only with identifier information
- EBONE\_LINE: mapped linear elements only with the identifier information
- EBONE\_POINT: mapped point elements only with the identifier information

- **Thematic data**

- EBONE\_OBSELEMENT\_LF\_POLYGON, \_LINE, \_POINT: observed characteristics on the level of the landscape element (e.g. GHC, EUNIS, FarmClass, etc.) including the LifeForm information (cross tabulated)
- EBONE\_GLOBQUALIFIER\_POLYGIN, \_LINE, \_POINT: observed global qualifiers for the landscape element (cross tabulated)
- EBONE\_SITEQUALIFIER\_POLYGON, \_LINE, \_POINT: observed site qualifiers for the landscape element (cross tabulated)
- EBONE\_MANAQUALIFIER\_POLYGN, \_LINE, \_POINT: observed management qualifiers for the landscape element (cross tabulated)

# Connection to the EBONE Spatial WFS

<https://secure.umweltbundesamt.at/spatial-ws/ebone/mapping/GeoDataServer/WFSServ>

<http://www.ebone.wur.nl>

The screenshot shows the Quantum GIS 1.6.0-Copiapó interface. A dialog box titled "WFS-Layer des Servers hinzufügen" is open, displaying a list of server connections. The "Serververbindungen" dropdown is set to "EBONE". The dialog includes buttons for "Verbinden", "Neu", "Bearbeiten", and "Löschen". Below this is a table of layers:

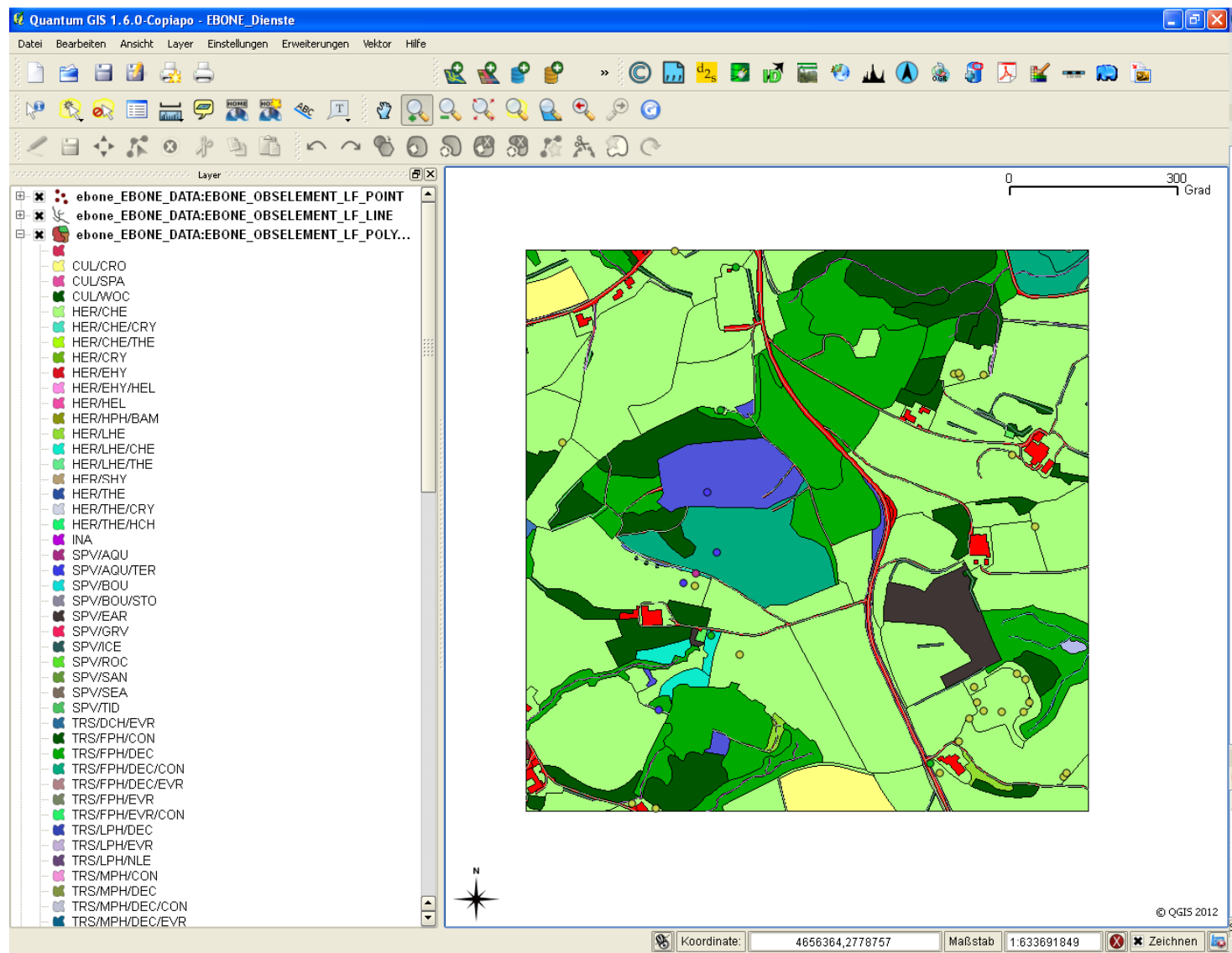
Titel	Name	Zus
EBONE_GLOBQUALIFIER_POLYGON	ebone_EBONE_DATA:EBONE_GLOBQUALIFIER_POLYGON	
EBONE_MANAQUALIFIER_POLYGON	ebone_EBONE_DATA:EBONE_MANAQUALIFIER_POLYGON	
EBONE_OBSELEMENT_LF_POINT	ebone_EBONE_DATA:EBONE_OBSELEMENT_LF_POINT	
EBONE_OBSELEMENT_LF_LINE	ebone_EBONE_DATA:EBONE_OBSELEMENT_LF_LINE	
EBONE_SITEQUALIFIER_POLYGON	ebone_EBONE_DATA:EBONE_SITEQUALIFIER_POLYGON	
EBONE_MANAQUALIFIER_POINT	ebone_EBONE_DATA:EBONE_MANAQUALIFIER_POINT	
EBONE_POLYGON	ebone_EBONE_DATA:EBONE_POLYGON	
EBONE_GLOBQUALIFIER_POINT	ebone_EBONE_DATA:EBONE_GLOBQUALIFIER_POINT	
EBONE_SITEQUALIFIER_POINT	ebone_EBONE_DATA:EBONE_SITEQUALIFIER_POINT	
EBONE_OBSELEMENT_LF_POLYGON	ebone_EBONE_DATA:EBONE_OBSELEMENT_LF_POLYGON	
EBONE_SITEQUALIFIER_LINE	ebone_EBONE_DATA:EBONE_SITEQUALIFIER_LINE	
EBONE_POINT	ebone_EBONE_DATA:EBONE_POINT	
EBONE_LINE	ebone_EBONE_DATA:EBONE_LINE	
EBONE_GLOBQUALIFIER_LINE	ebone_EBONE_DATA:EBONE_GLOBQUALIFIER_LINE	
EBONE_MANAQUALIFIER_LINE	ebone_EBONE_DATA:EBONE_MANAQUALIFIER_LINE	
EBONE_SQUARES	ebone_EBONE_DATA:EBONE_SQUARES	

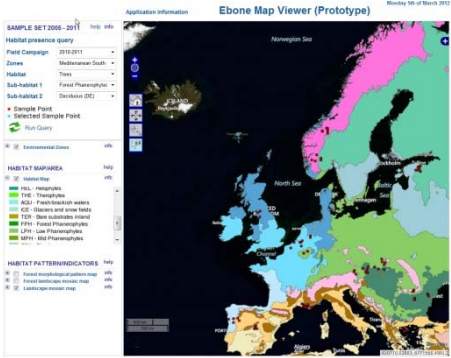


The dialog also shows the "Koordinatenbezugssystem" set to "EPSG:3035" and a checkbox for "Nur Objekte, die den aktuellen Ausschnitt schneiden laden". The background map shows a geographical area with various colored polygons and lines.

# Connection to the EBONE Spatial WFS

<https://secure.umweltbundesamt.at/spatial-ws/ebone/mapping/GeoDataServer/WFSServ>

<http://www.ebone.wur.nl>



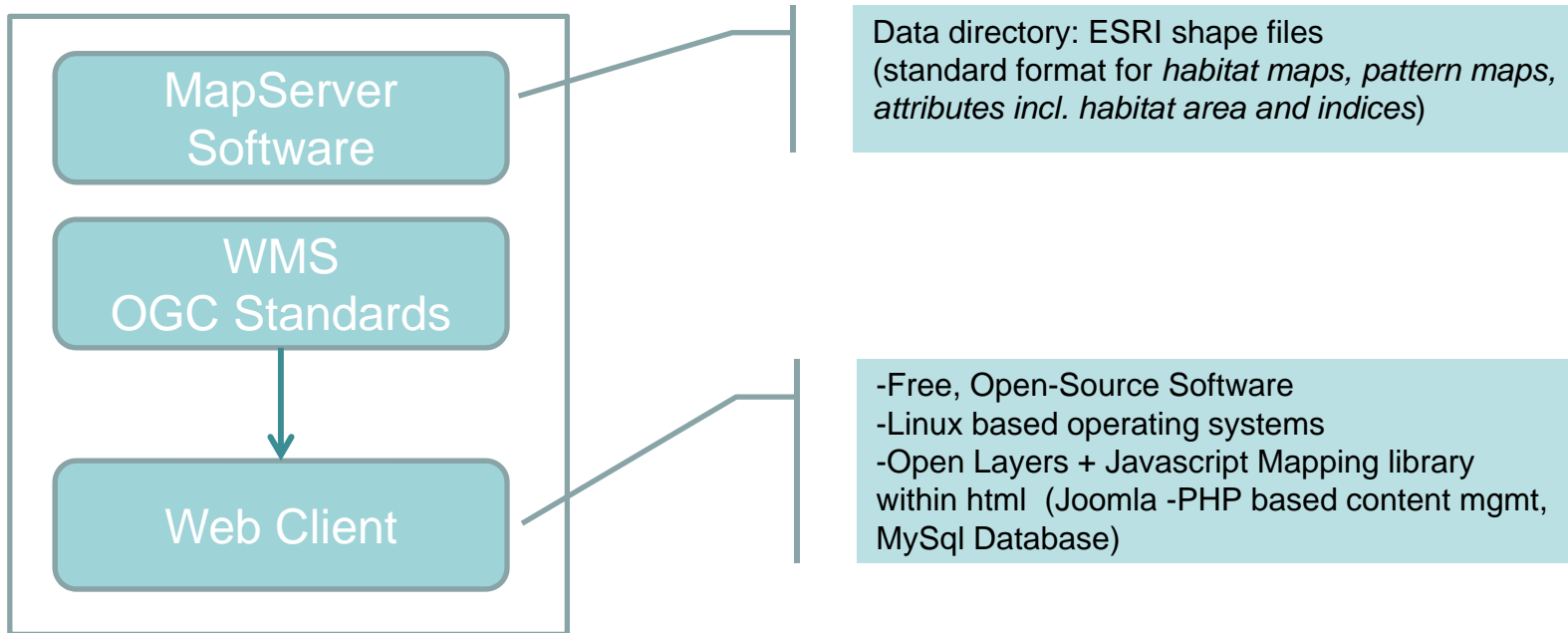
**Data presentation component  
of the EBONE data management system**

**C. Estreguil, C. Whitmore, G. Caudullo**  
European Commission - DG Joint Research Centre  
Institute for Environment and Sustainability  
Forest resources and Climate Unit  
<http://forest.jrc.ec.europa.eu>



Prototype map viewer web portal (beta version): <http://forest.jrc.ec.europa.eu/ebone> allows to

- view the location of EBONE field squares ('historical' campaign -66 samples- and 2010-11 new campaign 91 samples)
- view habitat maps and query the presence and extent (area) of habitats per sample and per environmental zones,
- view habitat pattern maps and query indices on pattern and connectivity.



# Ebone Map Viewer (Prototype)

http://www.ebone.wur.nl

**SAMPLE SET 2005 - 2011** help info

**Habitat presence query**

Field Campaign: 2010-2011

Zones: Mediterranean South

Habitat: Trees

Sub-habitat 1: Forest Phanerophytes

Sub-habitat 2: Deciduous (DE)

● Sample Point  
● Selected Sample Point

Run Query

---

Environmental Zones info

---

**HABITAT MAP/AREA** help info

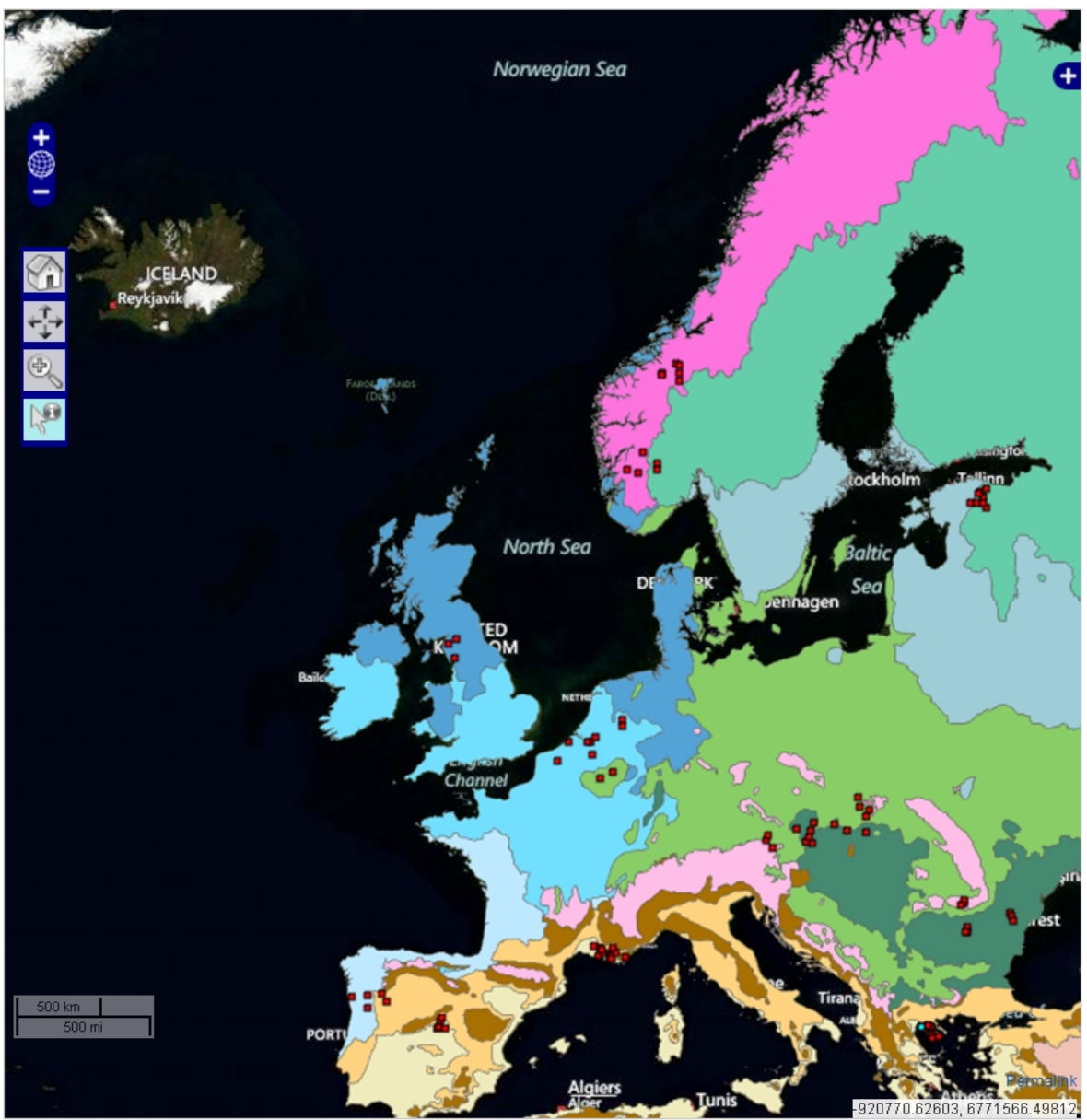
Habitat Map info

- HEL - Helophytes
- THE - Therophytes
- AQU - Fresh/brackish waters
- ICE - Glaciers and snow fields
- TER - Bare substrates inland
- FPH - Forest Phanerophytes
- LPH - Low Phanerophytes
- MPH - Mid Phanerophytes

---

**HABITAT PATTERN/INDICATORS** help

- Forest morphological pattern map info
- Forest landscape mosaic map info
- Landscape mosaic map info



Habitat presence query and view habitat maps

Application information **Ebone Map Viewer (Prototype)**

SAMPLE SET 2005 - 2011 help info

Habitat presence query

Field Campaign 2005-2010

Zones Mediterranean North ( )

Habitat Trees

Sub-habitat 1 Forest Phanerophytes

Sub-habitat 2 Coniferous (CO)

Sample Point Selected Sample Point Run Query

Environmental Zones info

HABITAT MAP/AREA help

Habitat Map info

- AQU - Fresh/brackish waters
- ICE - Glaciers and snow fields
- TER - Bare substrates inland
- FPH - Forest Phanerophytes
- LPH - Low Phanerophytes
- MPH - Mid Phanerophytes
- SCH - Shrubs
- TPH - Tall Phanerophytes

HABITAT PATTERN/INDICATORS help

- Forest morphological pattern map info
- Forest landscape mosaic map info
- Landscape mosaic map info

DESC_GHC_1	AREA	AREA_GH_EN
Caespitose Hemicryptophytes	522614.0	6268902.0
Forest Phanerophytes	291325.0	6563603.0
Herbaceous in gardens/parks	23543.0	961237.0

Environmental Zones

- 1km sq samples location
- Landscape mosaic map
- Forest morphological pattern map
- Forest landscape mosaic map
- Habitat map

View habitat pattern maps

Sub-habitat 2 Deciduous (DE)

Sample Point Selected Sample Point Run Query

Environmental Zones info

HABITAT MAP/AREA help

Habitat Map info

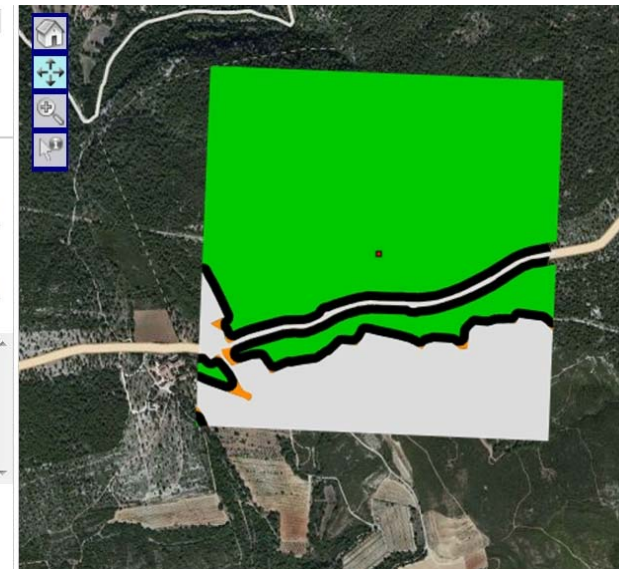
HABITAT PATTERN/INDICATORS help

Forest morphological pattern map info

- Background
- Branch
- Boundary
- Islet
- Core
- Connector

Forest landscape mosaic map info

Landscape mosaic map info



Sub-habitat 2 Deciduous (DE)

Sample Point Selected Sample Point Run Query

Environmental Zones info

HABITAT MAP/AREA help

Habitat Map info

HABITAT PATTERN/INDICATORS help

Forest morphological pattern map info

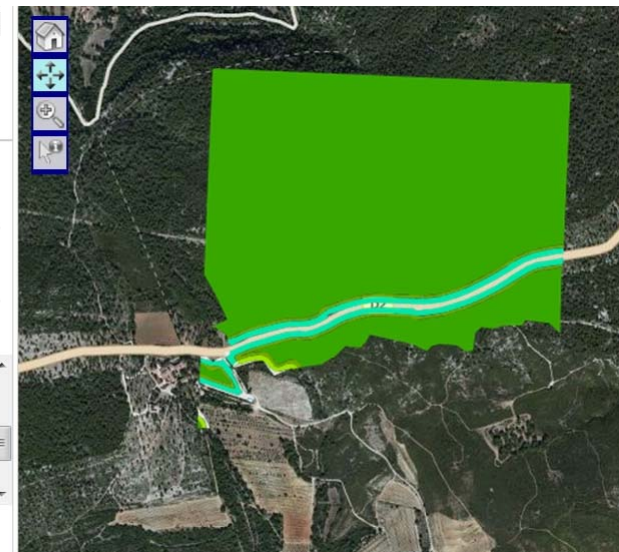
Forest landscape mosaic map info

Forest in mixed landscape

- NN - Forest in natural land (N=100%)
- N - Forest in mainly natural land (N>80)
- Na - Forest in mixed natural (N>60%) &
- Nua - Forest in mixed natural (N>60%),
- Nu - Forest in mixed natural (N>60%) &

Forest in mixed landscape

Landscape mosaic map info



http://www.ebone.wur.nl

View the 'forest landscape mosaic' pattern map and click on HABITAT PATTERN/INDICATOR help

Thursday 21st of April 201

viewer (Prototype)

Application help

### INDICATOR CODES AND MEASURES FOR FOREST HABITAT PATTERN

The user is interested in the pattern of one specific habitat type in a sample.

First, the user can overlay the three available habitat pattern maps: the landscape mosaic pattern map, the forest mosaic map and the forest morphological pattern map (see respective info layer files). To do so, zoom in one sample and select the (all) habitat pattern map(s) in the overlay map layers list on the right side of the viewer (click on "+").

Second, indicator measures related to the pattern of a focal habitat can be viewed. They are currently available only for the Trees/Forest Phanerophyte (TRS/FPH) habitat category. Please use the information pointer tool and click on a forest habitat polygon in any of the available maps. A table will appear to inform on the forest habitat extent (AREA in sample (unit: m<sup>2</sup>), AREA\_GH\_EN in all samples of the Environmental zone) and on forest habitat pattern indicators. Please note that pattern measures are available when the GHC\_IL column field is TRS/FPH, otherwise they are 0.00. The codes and associated pattern measures are described in the table below. Connectivity measures (IsoSI, APC) are based on the forest habitat map. Other measures are derived from the forest morphological pattern map (ISP, LIP). The overlay of the later with the forest mosaic pattern map enables to translate the pre-dominance of natural along each forest edge pattern types (boundaries, connectors and branches, islets) (SI-BQ, SI-CB, SI-IS) and to delineate forest interior areas (IFP).

Run query

- Sample Point
- Selected Sample Point

- Boundary
- Islet
- Core
- Connector

#### FOREST LANDSCAPE MOSAIC MAP

info

Forest in predominantly artificial landscape

- U - Some forest in artificial land (U)
- Un, Ua, Uan - Some forest in mixed

Forest in predominantly agricultural landscape

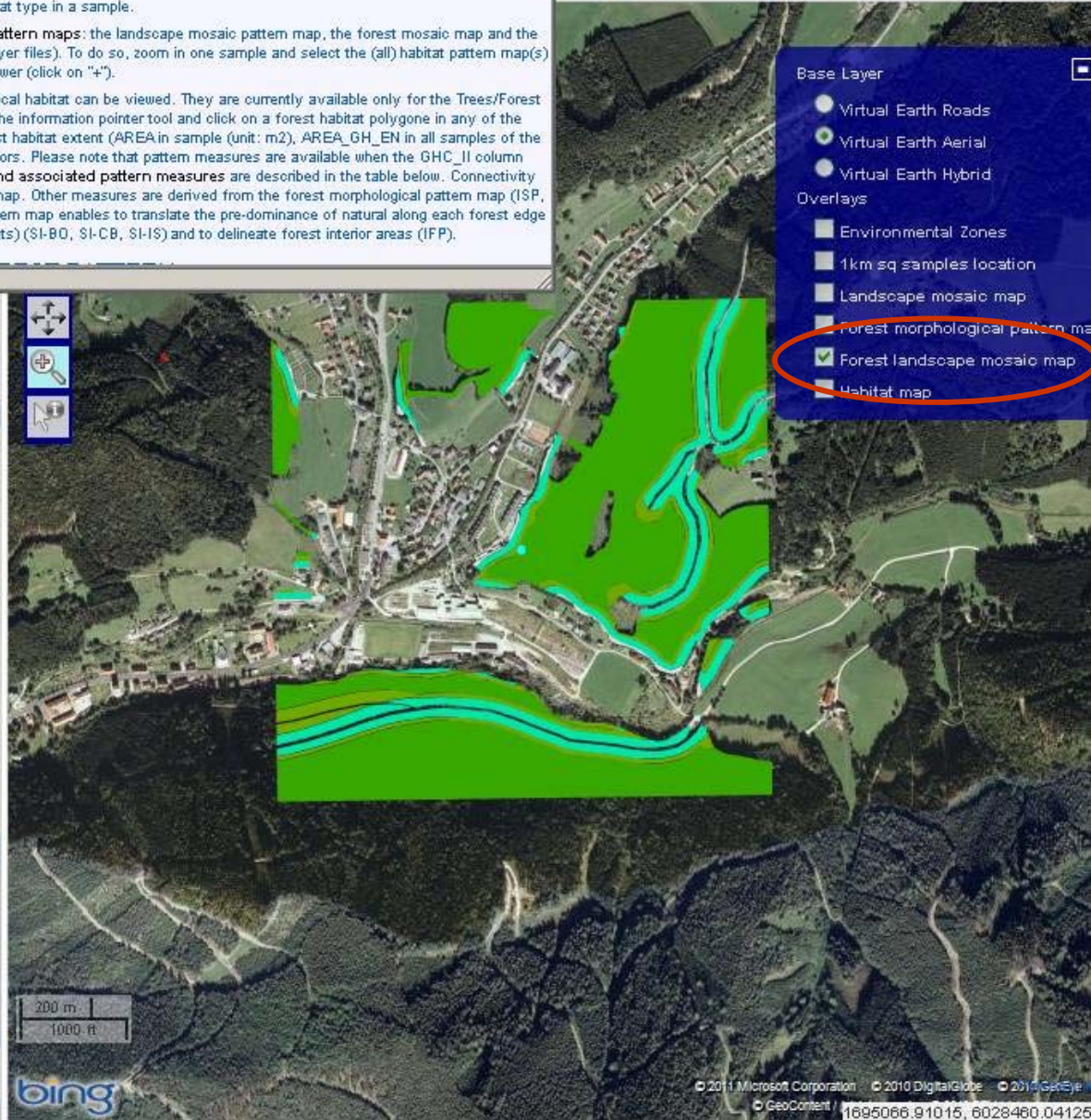
- A - Some forest in agricultural land (A)
- An, Au, Aun - Some forest in mixed

Forest in predominantly natural landscape

- NN - Forest in natural land (N=100%)
- N - Forest in mainly natural land (N>60%)
- Na - Forest in mixed natural (N>60%)
- Nua - Forest in mixed natural (N>60%)
- Nu - Forest in mixed natural (N>60%)

Forest in mixed landscape

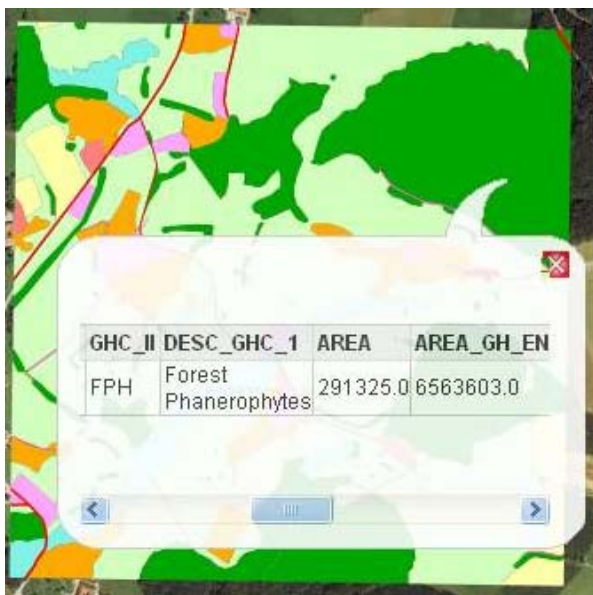
- Mix - Forest in mixed land (N-U-A<60%)
- Mix vln - Forest in mixed (U-A<60%)



<http://www.ebone.wur.nl>



View habitat map and query (FPH) habitat area and pattern indices



Habitat area in sample (m2)  
Habitat area in samples of Environmental Zone (m2)

Application information

### Ebone Map Viewer (Prototype)

SAMPLE SET 2005 - 2011 help info

Habitat presence query

Field Campaign: 2005-2010

Zones: Mediterranean North ( )

Habitat: Trees

Sub-habitat 1: Forest Phanerophytes

Sub-habitat 2: Coniferous (CO)

• Sample Point  
• Selected Sample Point

Run Query

Environmental Zones info

HABITAT MAP/AREA help

Habitat Map info

HABITAT PATTERN/INDICATORS help

Forest morphological pattern map info  
Forest landscape mosaic map info  
Landscape mosaic map info

FP	0.239160
NP	0.998136
NODES	6.000000
ISO500	0.105300
APC	0.439847
SI-BO	0.757159
SI-IS	0.000000
SI-CB	0.641321
IFP	0.837443
ISP	0.012086
LIP	0.059569

FP: forest share in sample  
NP: natural habitat share  
NODES: Number of forest patches

Connectivity (species dispersal 500m)  
IsoSI500: inter and intra-patch connectivity, matrix friction  
APC: inter-patch landscape permeability (proxy)

Habitat morphology and landscape mosaic surroundings  
SI-BO, SI-IS, SI-CB: forest boundaries along natural/semi-nat habitats  
IFP, ISP, LIP: forest in interior area of patches, in islets, in linear elements

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