

Towards a European vegetation database and a parameterized overview of European vegetation

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Zygmunt Kącki, Balázs Kevey, Daniel Krstonosić,
Flavia Landucci, Tatyana Lysenko, Vassiliy Martynenko,
Ladislav Mucina, John Rodwell, Joop Schaminée,
Jozef Šibík, Urban Šilc, Alexey Sorokin, Zvjezdana
Stančić, Wolfgang Willner & Sergei Yamalov



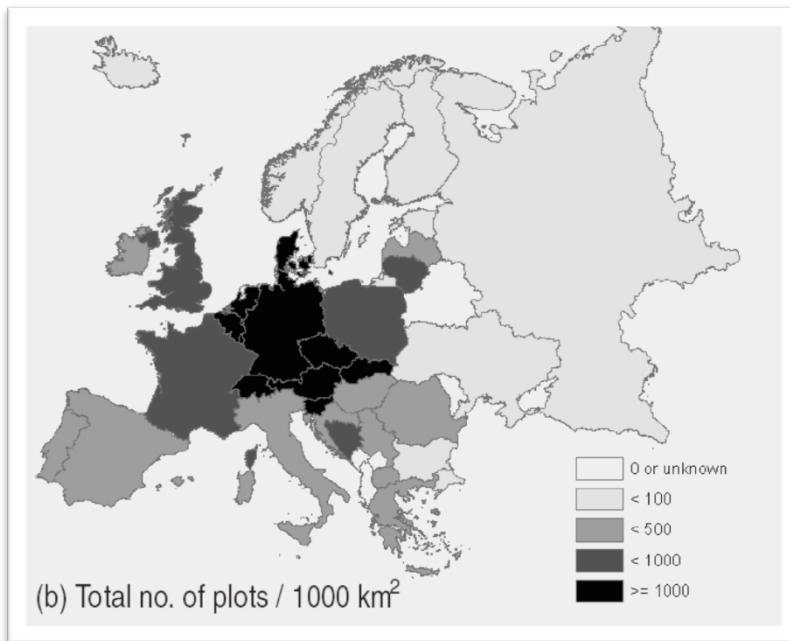
* borja@sci.muni.cz



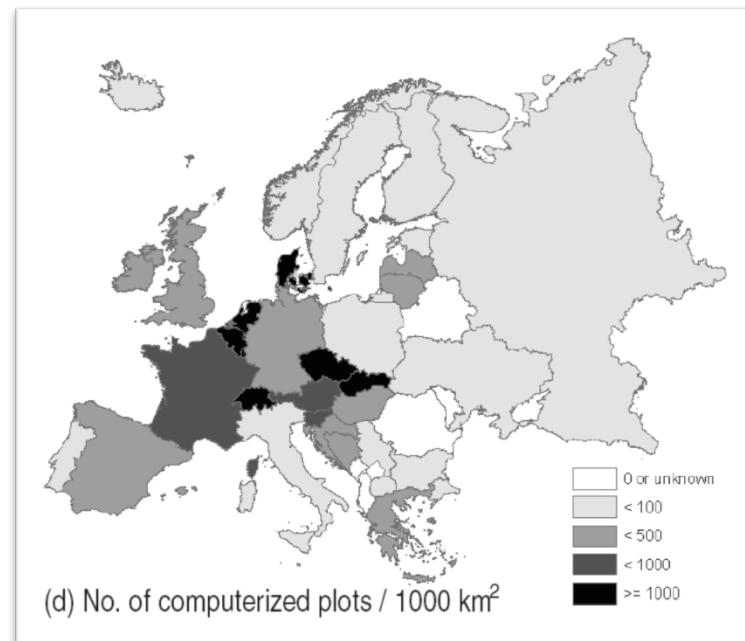
European vegetation databases

- Questionnaire 2008-2009 (Schaminée et al. 2009, *Preslia* 81: 173–185)

Density of **all** relevés
(> 4.3 million relevés)

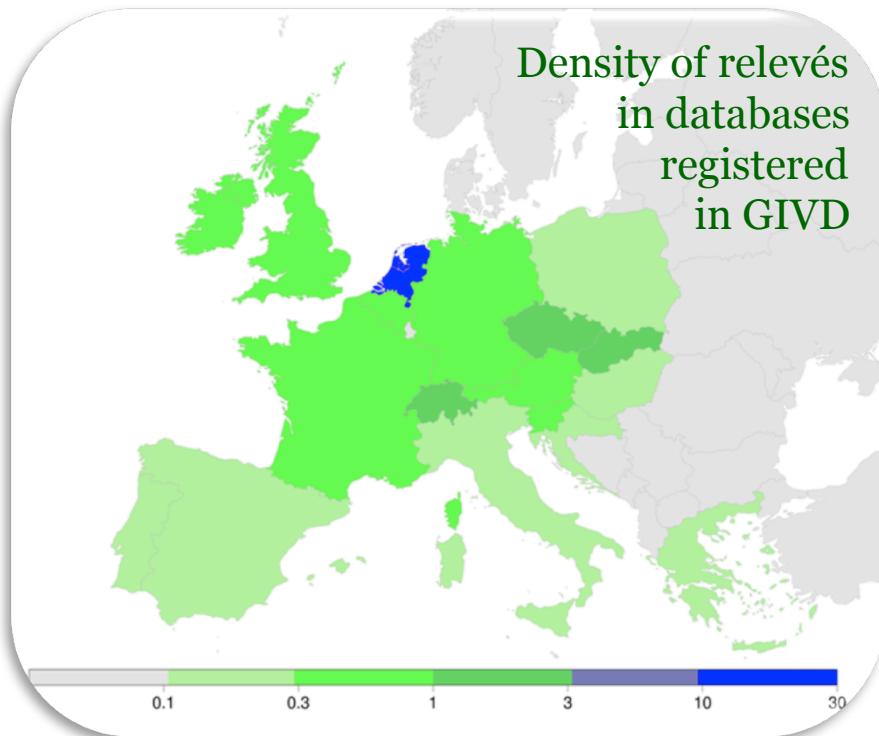


Density of **computerized** relevés
(> 1.8 million relevés)

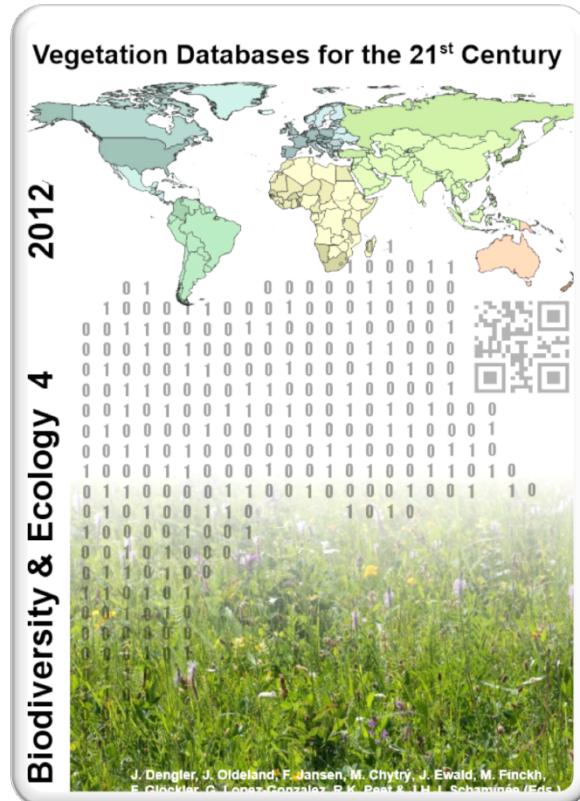
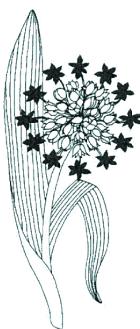


European vegetation databases

- **GIVD:** Global Index of Vegetation-plot Databases (www.givd.info)
Dengler et al. 2011, *Journal of Vegetation Science* 22: 582–597

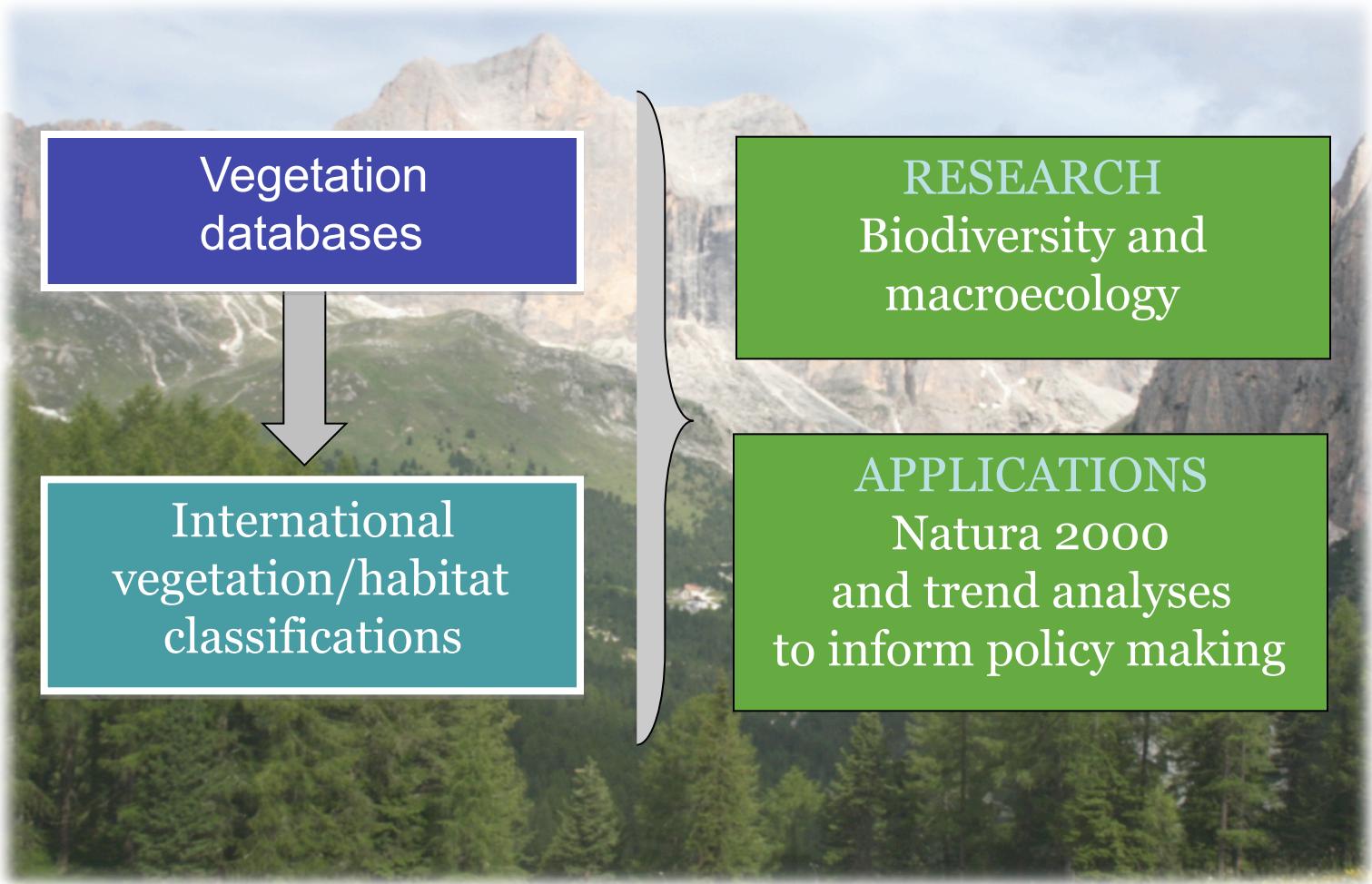


1.9 million plots in 123 European databases
0.9 million plots in the rest of the World
Jansen et al. 2012



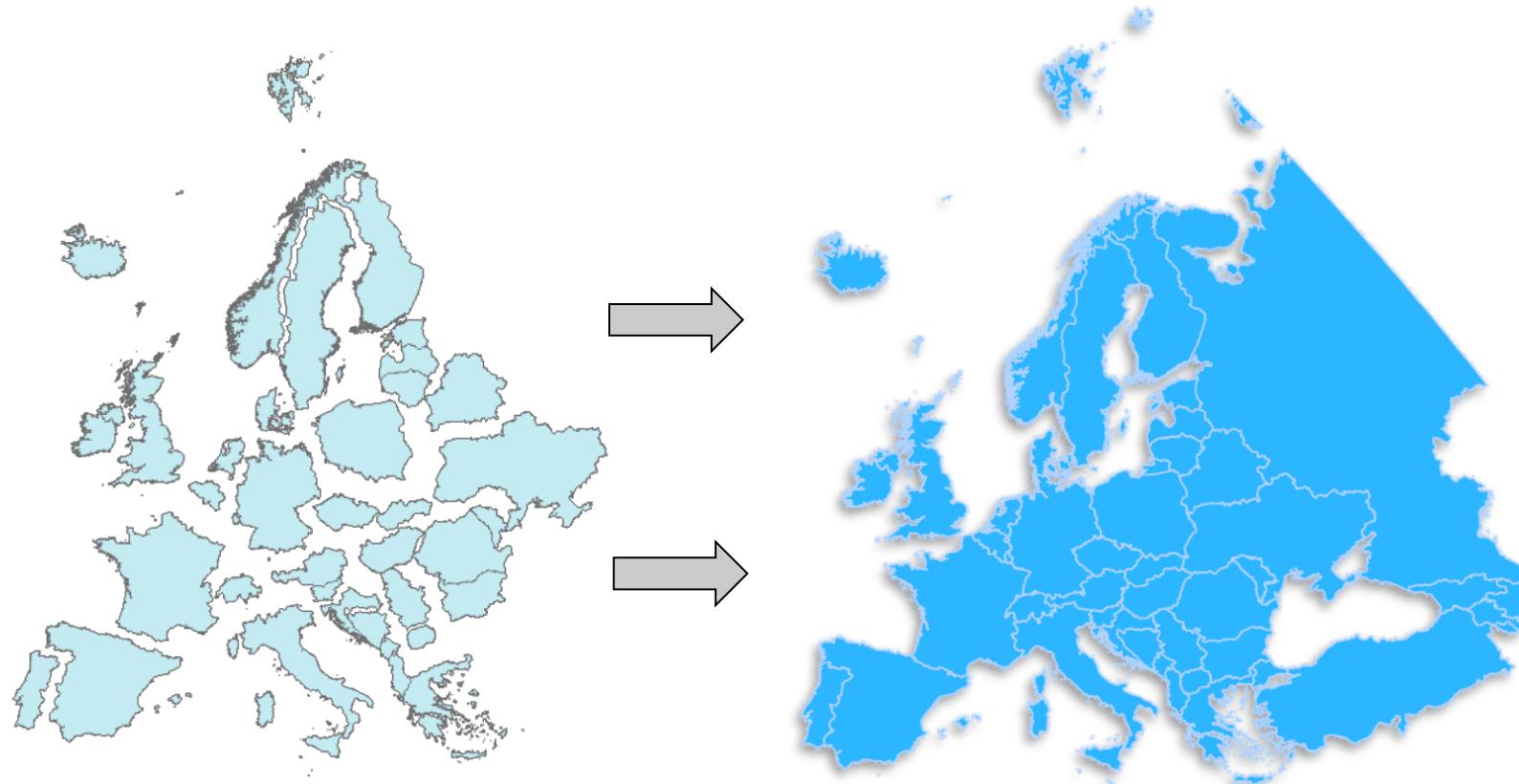
Challenges

- Current amounts of electronic vegetation plots already enable continental analyses of vegetation diversity



Challenges

- To achieve these goals, it is necessary to develop international synergies addressing supra-national scales



National DB approach

International DB approach



Two initiatives



- a) Infrastructure for European vegetation-plot data

European Vegetation Archive (EVA)

- b) Data analysis projects

The 'Braun-Blanquet' project



EVA - European Vegetation Archive



- | Home
- | News
- | History
- | Bylaws
- | Meetings
- | EVA Database
- | Projects
- | Annual reports
- | Contact
- | Links

European Vegetation Archive (EVA)

The European Vegetation Archive (EVA) is an initiative of European Vegetation Survey aimed at establishing and maintenance of a single data repository of vegetation-plot observations (i.e. records of plant taxon co-occurrence at particular sites, also called phytosociological relevés) from Europe and adjacent areas and to facilitate the use of these data for non-commercial purposes, mainly academic research and applications in nature conservation and ecological restoration.

The initiative follows the [EVA Data Property and Governance Rules](#).

An agreement was reached among several of the largest European national or regional vegetation databases in 2012. Currently we are developing technical procedures needed for EVA, which will be

<http://euroveg.org/>

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Database 1

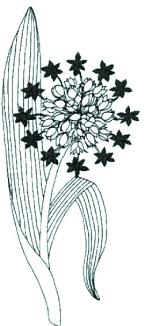
Database 2

Database 3

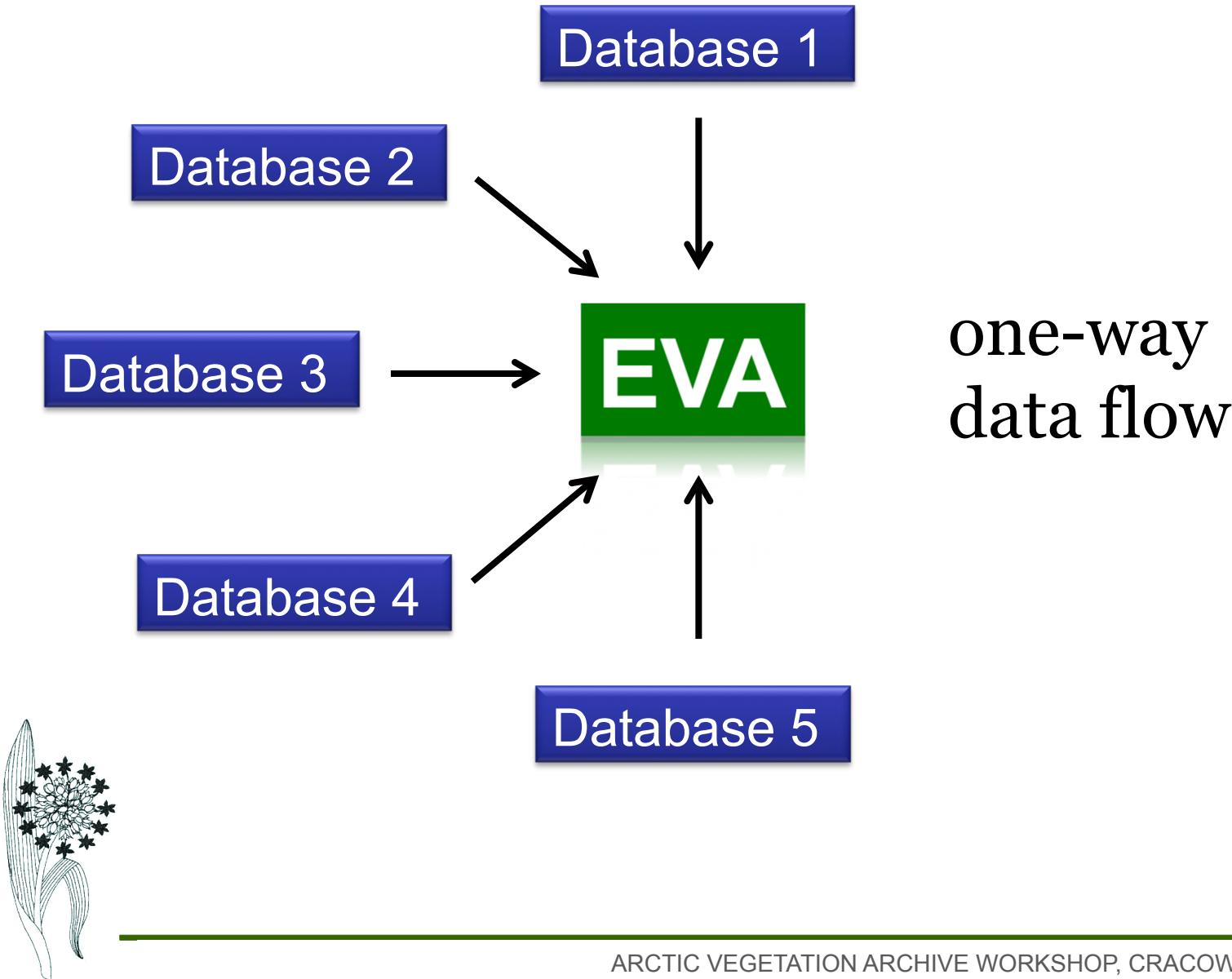
EVA

Database 4

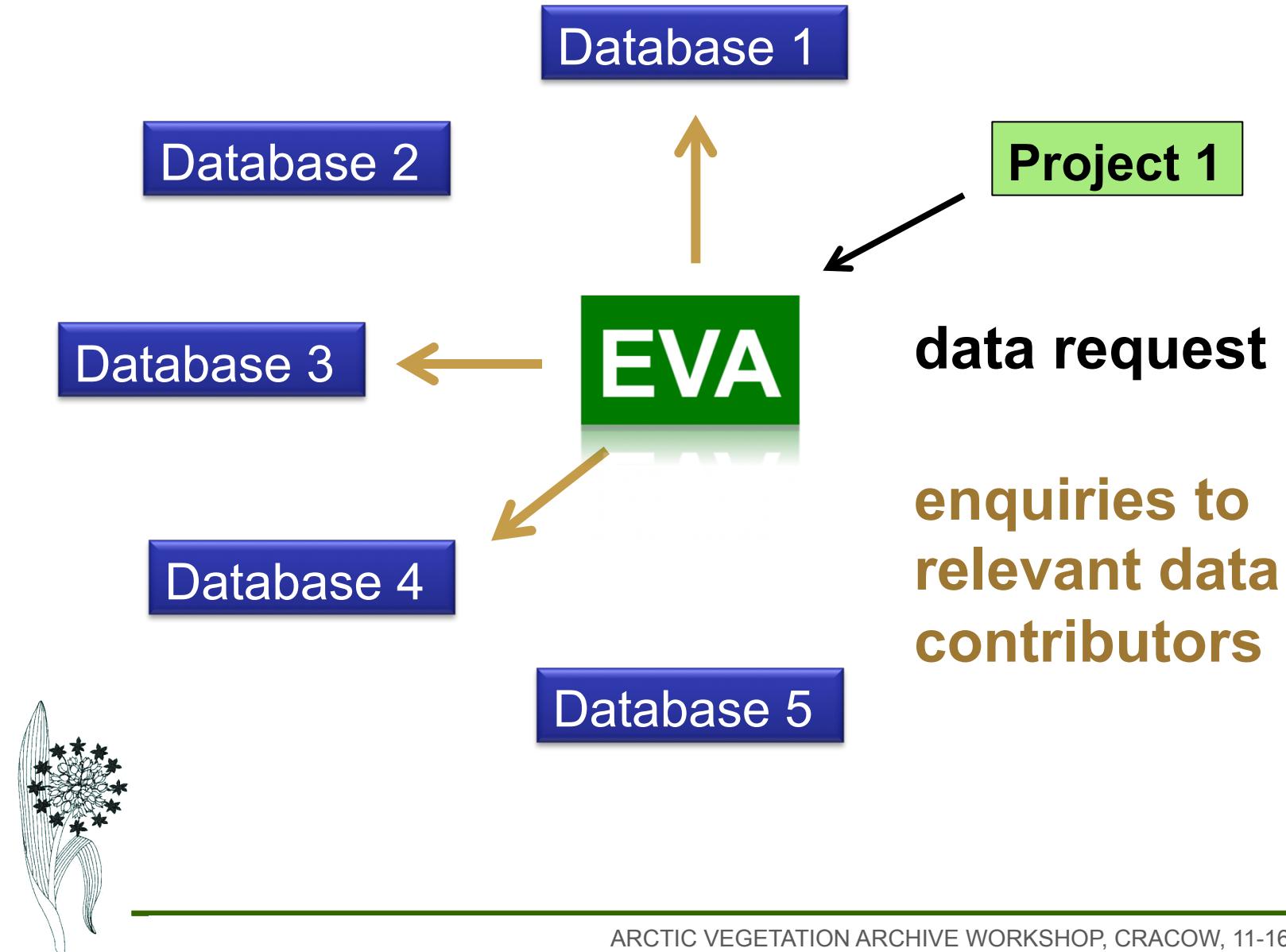
Database 5



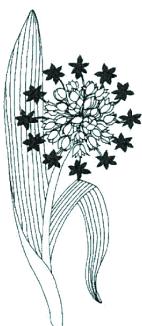
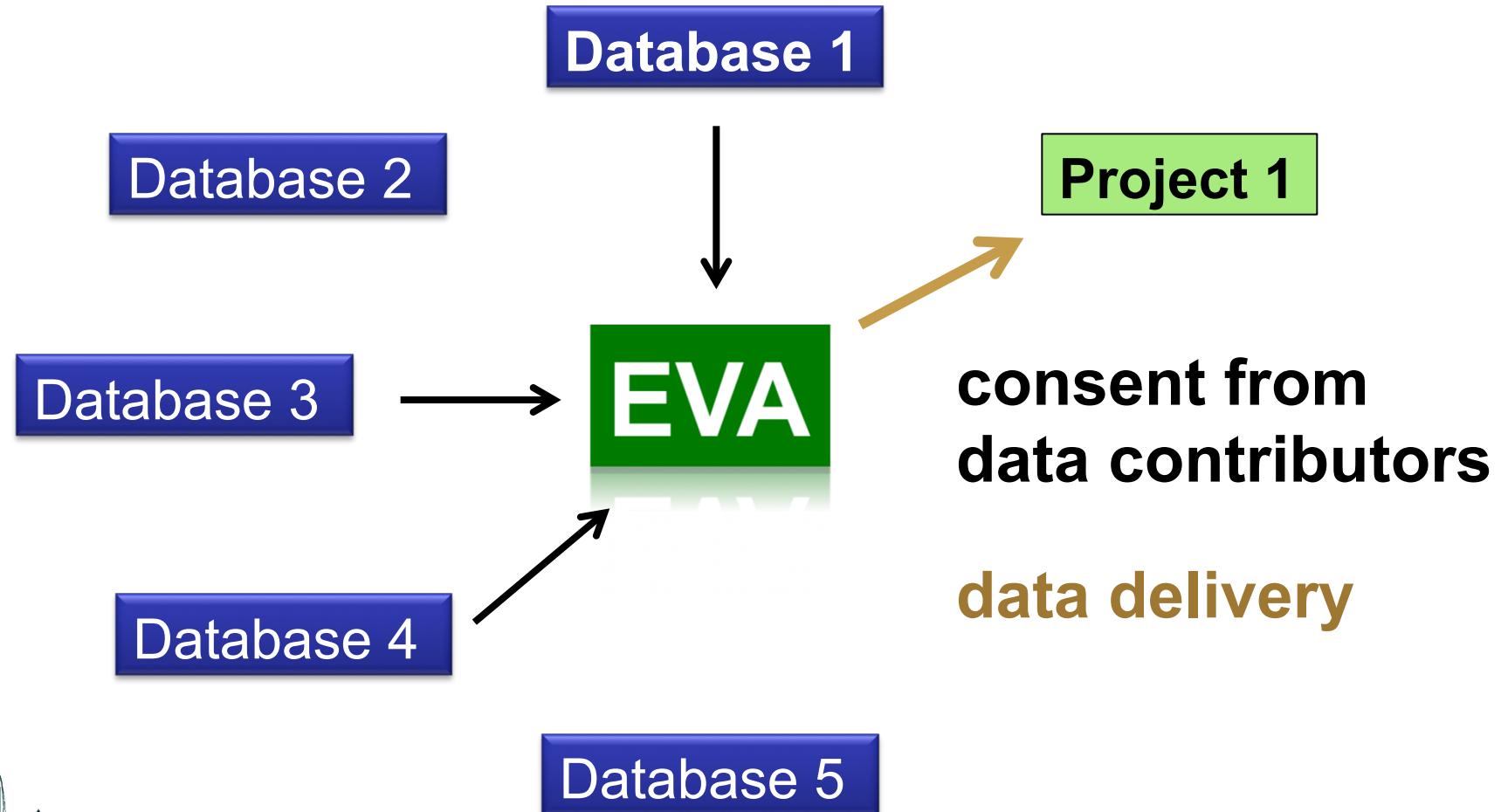
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Data availability regimes in EVA

Restricted-access data

Available only to data contributors

- **Restricted access *sensu stricto***
Consent and negotiations needed in each specific case
- **Semi-restricted access**
No consent and negotiations needed

Free-access data

Data in public domain, available to anybody

No negotiations needed

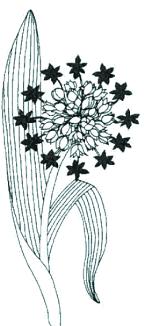


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Free-access data

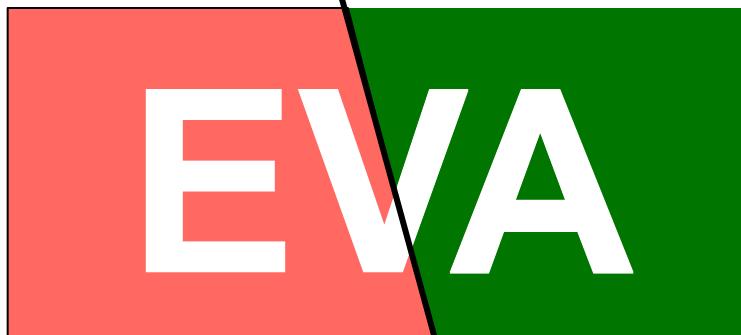


Restricted-access data

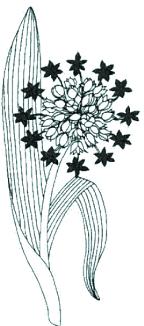


EVA - European Vegetation Archive

Free-access data



Restricted-access data

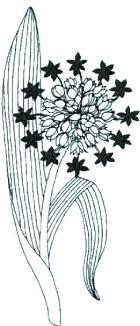


EVA - European Vegetation Archive

Free-access data



Restricted-access
data



EVA - European Vegetation Archive

- EVA Data Property and Governance Rules

European Vegetation Archive (EVA)

Data Property and Governance Rules

Discussed and approved during the European Vegetation Survey Workshop in Vienna on 26 May 2012.¹

1. The status and purpose of EVA

The European Vegetation Archive (EVA) is an initiative of the Working Group European Vegetation Survey (EVS) of the International Association for Vegetation Science (IAVS). The purpose of EVA is to establish and maintain a single data repository of vegetation-plot observations (i.e. records of plant taxon co-occurrence at particular sites, also called phytosociological relevés) from Europe and adjacent areas and to facilitate the use of these data for non-commercial purposes, mainly academic research and applications in nature conservation and ecological restoration.

2. Data contributions to EVA

Database owners or representatives who are willing to provide vegetation-plot observations from Europe can become members of EVA through application to the EVA Governing Board. Any database owner or representative can contribute all or just a subset of its vegetation-plot database to EVA. Databases contributing at least 5,000 vegetation-plot observations not previously included in EVA will be accepted if they meet the technical requirements specified by the EVA Coordinating Board; smaller databases may be accepted upon the discretion of the EVA Governing Board if they contain



EVA - European Vegetation Archive

Data Property and Governance RULES

- EVA is governed by a Council that includes one representative of each database and a small Coordinating Board dealing with everyday business
- Data contributors should be offered co-authorship if their data are particularly important for a given project/publication



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relevés

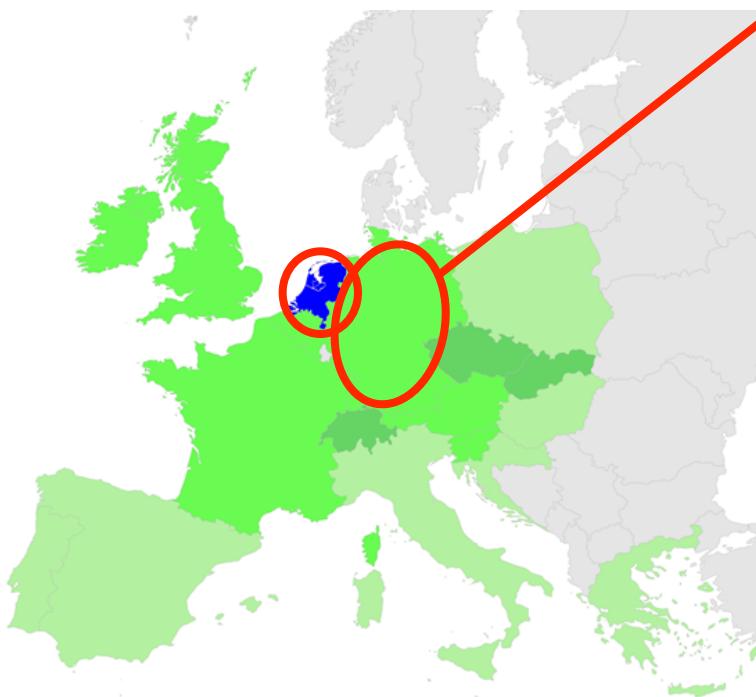
Dutch National Vegetation Database **600 000**



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relevés

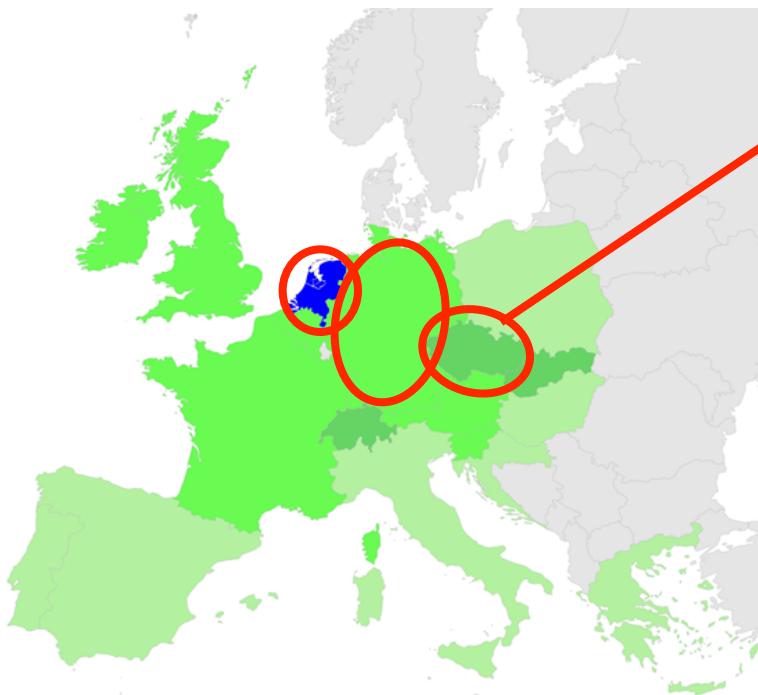
- Dutch National Vegetation Database 600 000
- German Reference Veget. Database 115 000
(incl. VegetWeb)



EVA - European Vegetation Archive

relevés

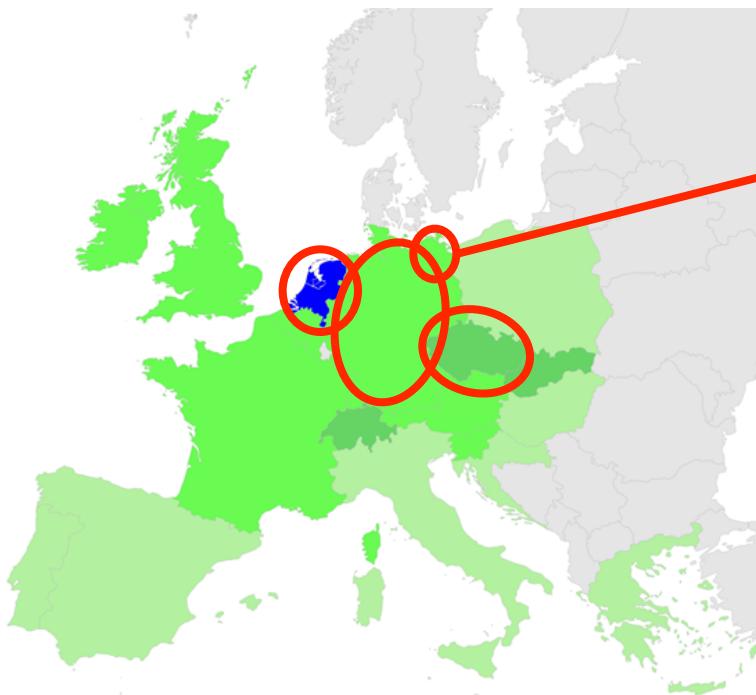
- Dutch National Vegetation Database **600 000**
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- Czech National Phytosoc. Database **102 000**



EVA - European Vegetation Archive

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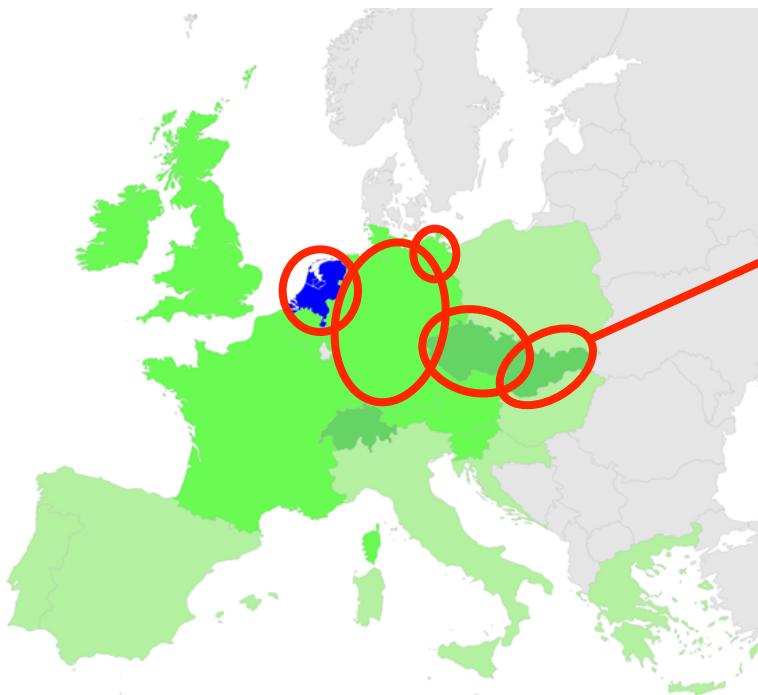
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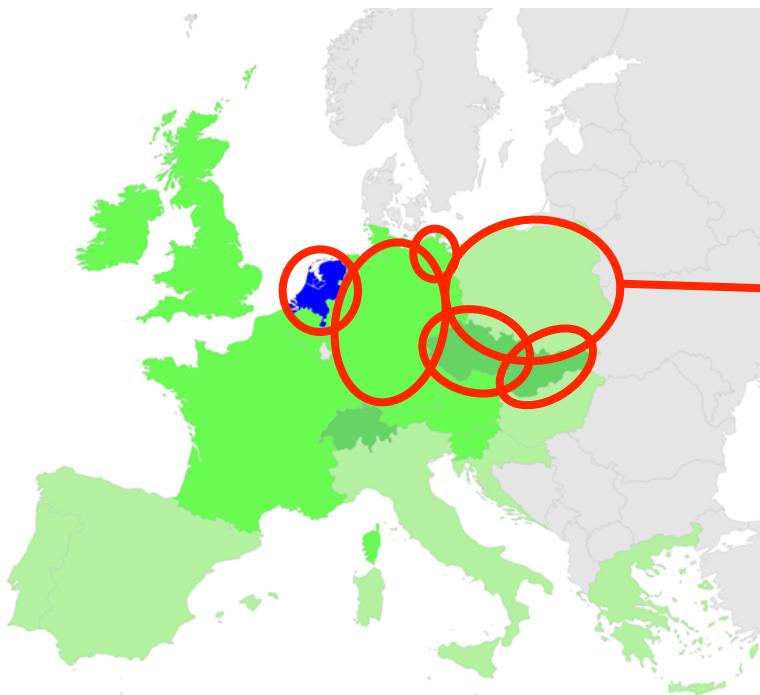
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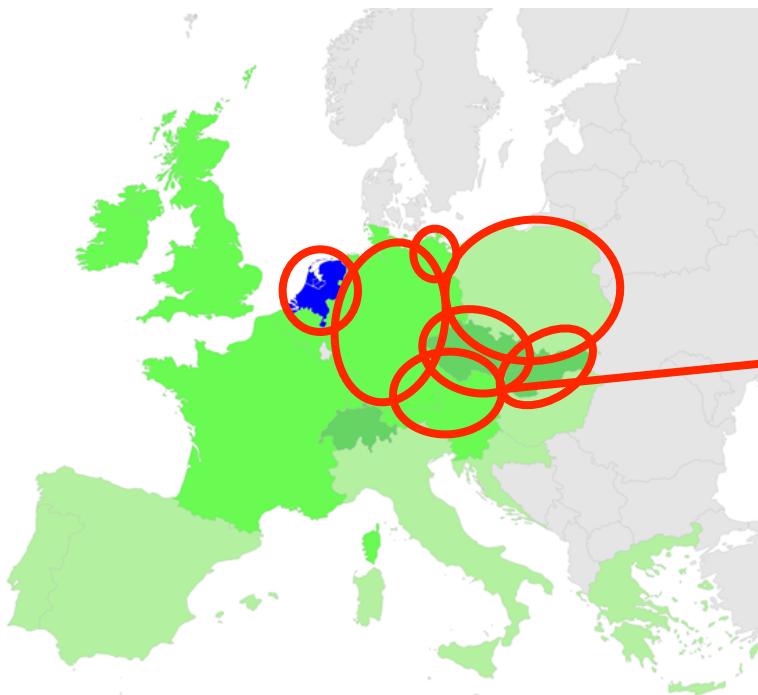
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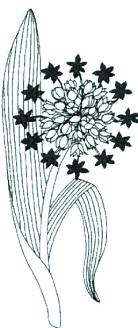
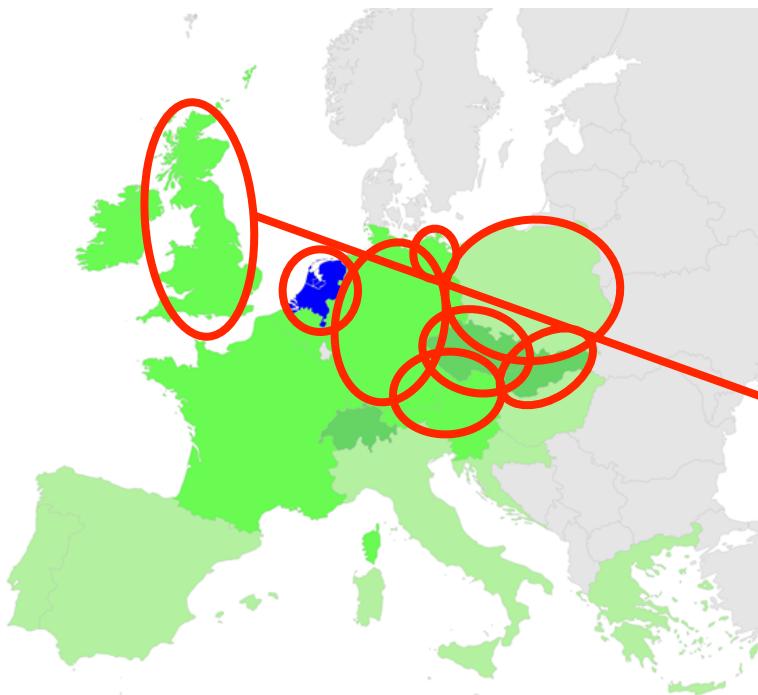
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EVA - European Vegetation Archive

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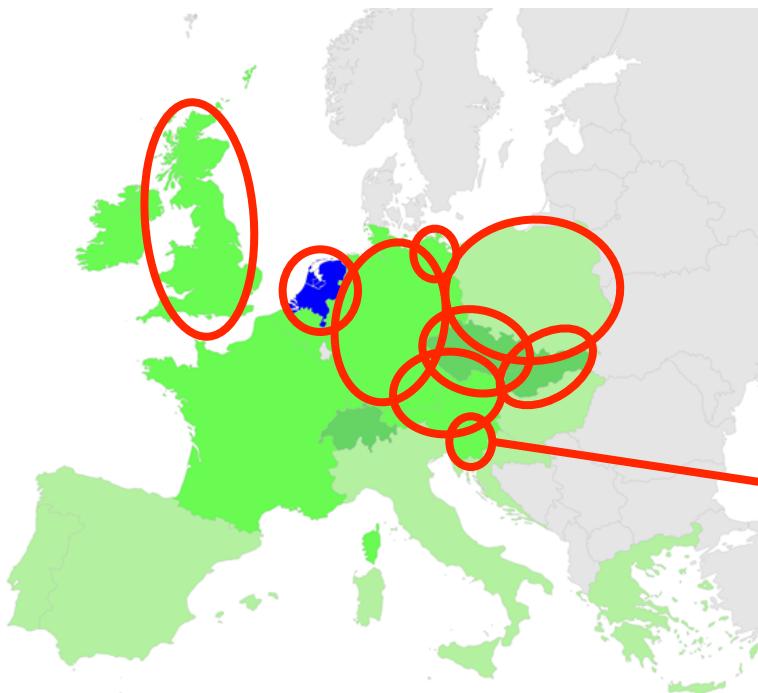
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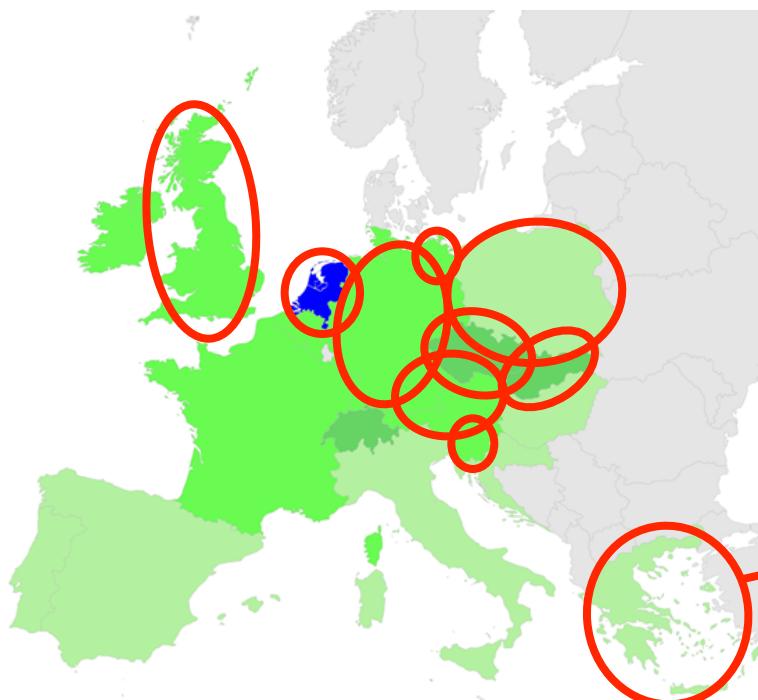
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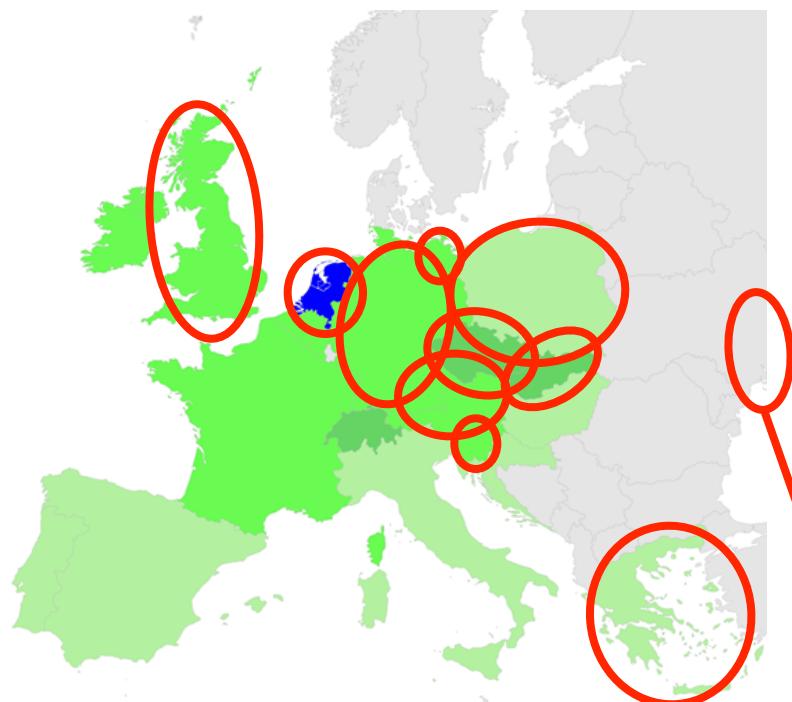
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- Hellenic Natura 2000 Database **14 000**



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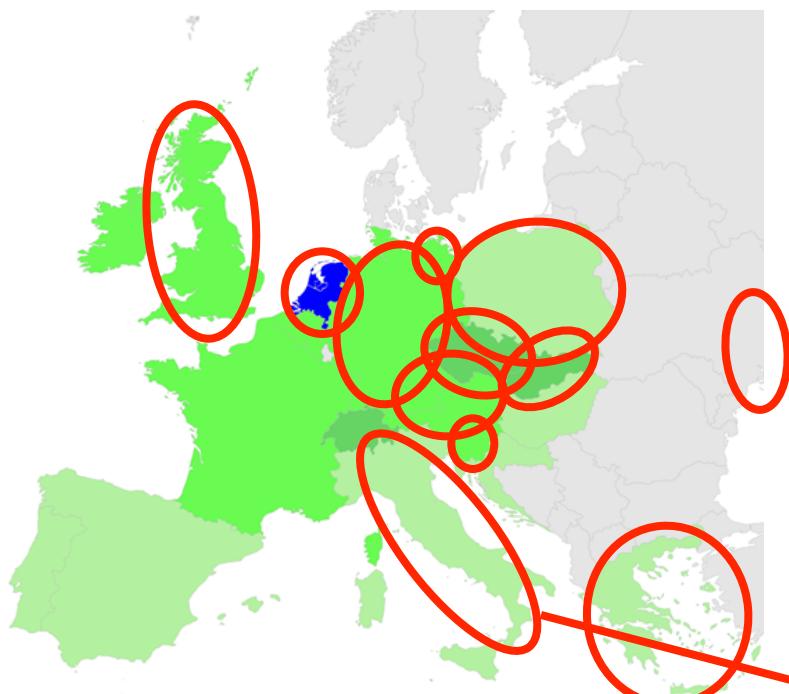


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EVA - European Vegetation Archive

relevés



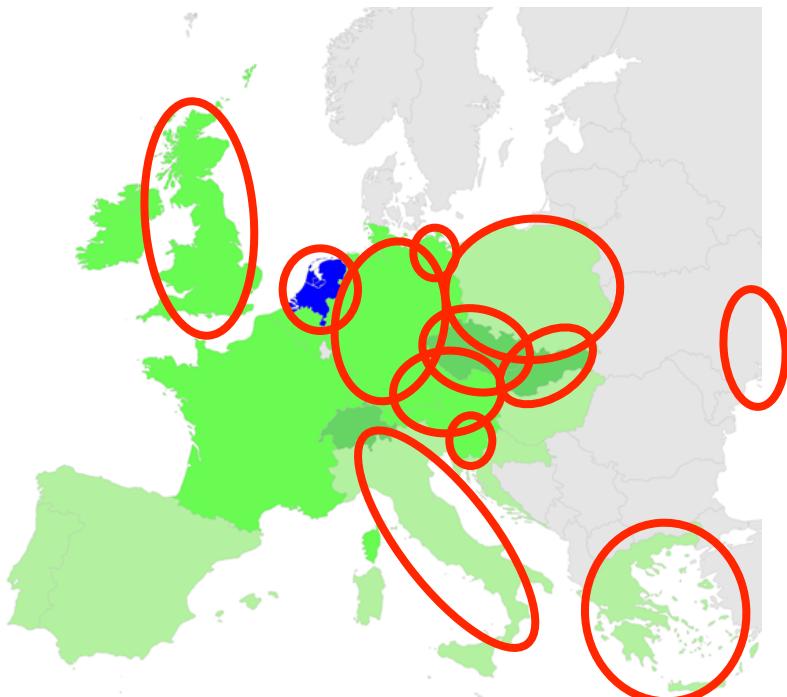
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- Lower Volga Valley Phytosoc. Database **13 000**
- VegItaly **11 000**



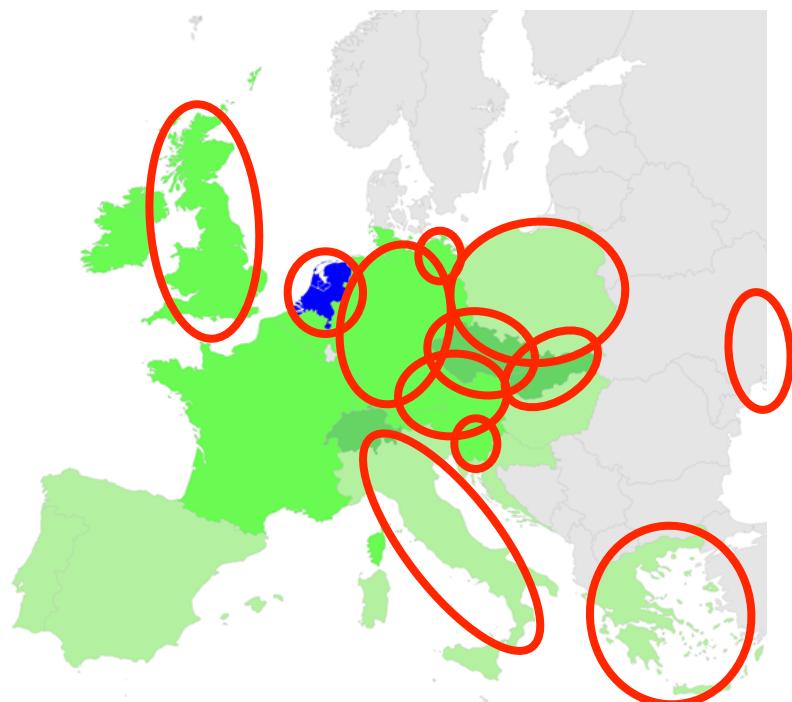
EVA - European Vegetation Archive

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- smaller databases **13 000**



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• smaller databases	13 000
	<hr/>
	1 115 000

Others are welcome!



The ‘Braun-Blanquet’ project

The screenshot shows the homepage of the European Vegetation Survey. The header features a stylized plant icon, the text "European Vegetation Survey", and a large green leaf image with a network of veins. The IAVS logo is in the top right corner. A navigation bar includes "Home", "News", "Projects", "SynBioSys", and "About". Below the navigation, a sidebar lists recent news items:

- 2013-01-07 Survey about Plot-based Vegetation Classification Methods: first results [See more »](#)
- 2012-12-05 56th IAVS Symposium, Tartu, Estonia, 26–30 June 2013 [See more »](#)
- 2012-12-05 10th European Dry Grassland Meeting, Zamość, Poland, 24–31 May 2013. [See more »](#)
- 2012-12-05 12th Meeting on Vegetation Databases, Leipzig, 4–6 March 2013. [See more »](#)
- 2012-12-05 22nd EVS Meeting, Rome, 9–11 April 2013. [See more »](#)
- 2012-11-24 EVS website has

The main content area is titled "Braun-Blanquet project: parameterization of European vegetation types". The text describes the project's purpose, methods, and expected outcomes.

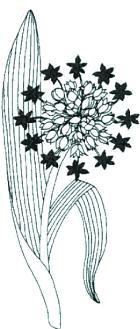
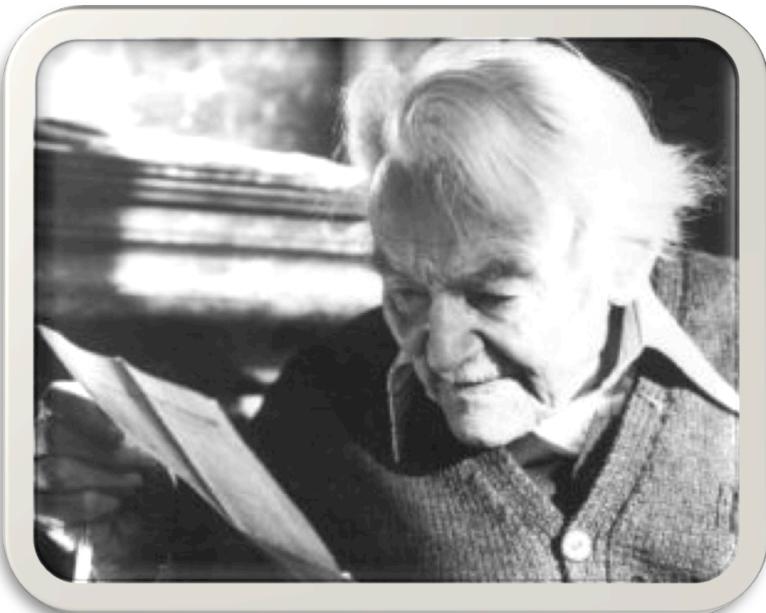
Braun-Blanquet project: parameterization of European vegetation types

Purpose: This project aims at the compilation and analysis of floristic and geographical information related to the phytosociological alliances from Europe. The project is dedicated to Josias Braun-Blanquet, whose legacy has been the inspiration for collecting most of the data that will be analyzed. Within this project, basic information on species composition of all phytosociological alliances occurring in Europe will be compiled in the form of constancy columns. A minimum data requirement for an alliance will be collecting at least one constancy column from one area in an electronic database, although the use of individual relevés from different countries or regions will be given a priority. The classification system will follow the EuroVegChecklist (Mucina et al., in preparation), the first critical list of European phytosociological units at the levels from classes to alliances. The results will be summarized within the SynBioSys Europe platform.

The ‘Braun-Blanquet’ project

Parameterization of vegetation types

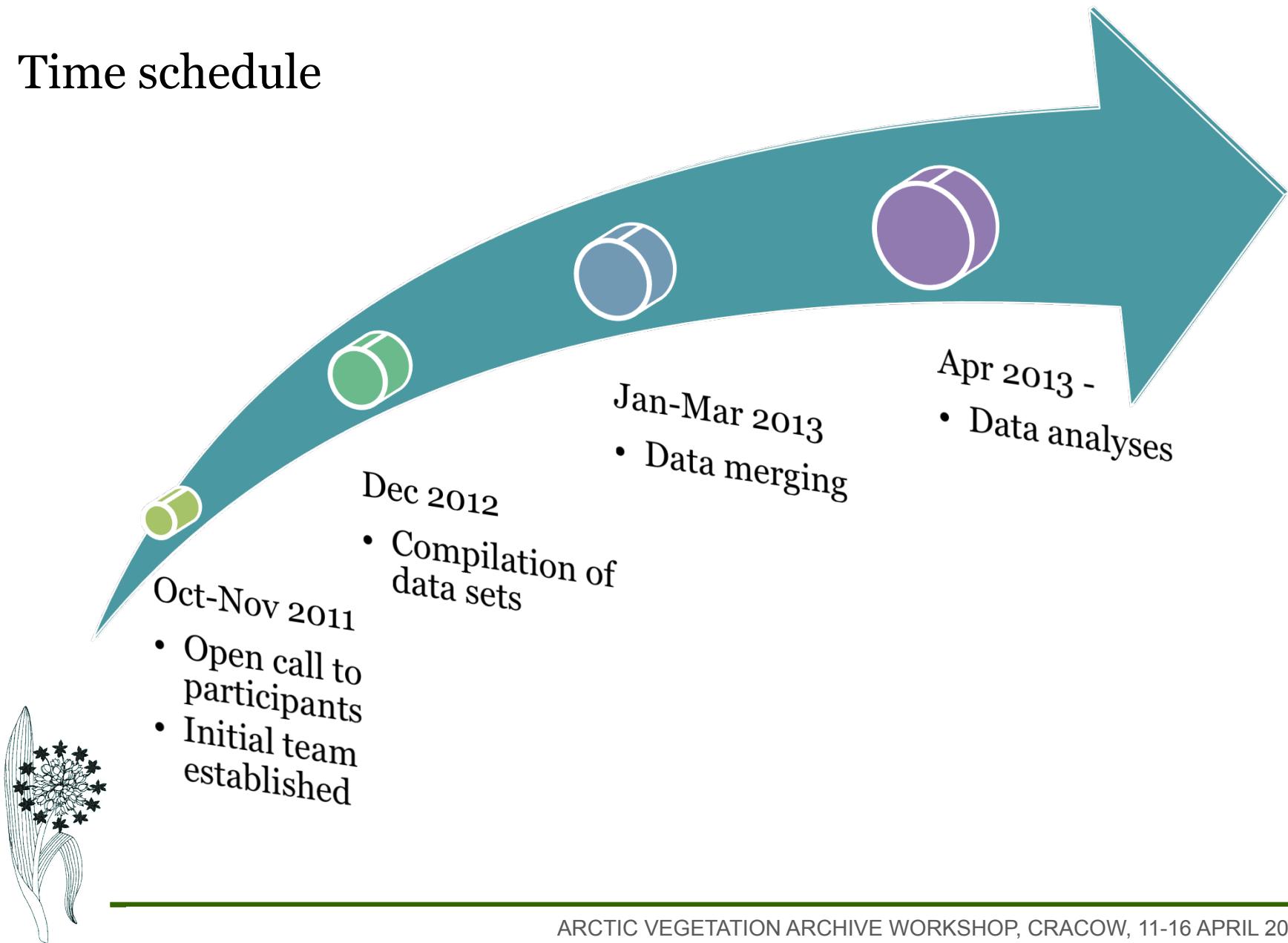
- Defining parameters => constancy columns
- Vegetation types => alliances



A first attempt to synthesize
vegetation-plot information
in Europe

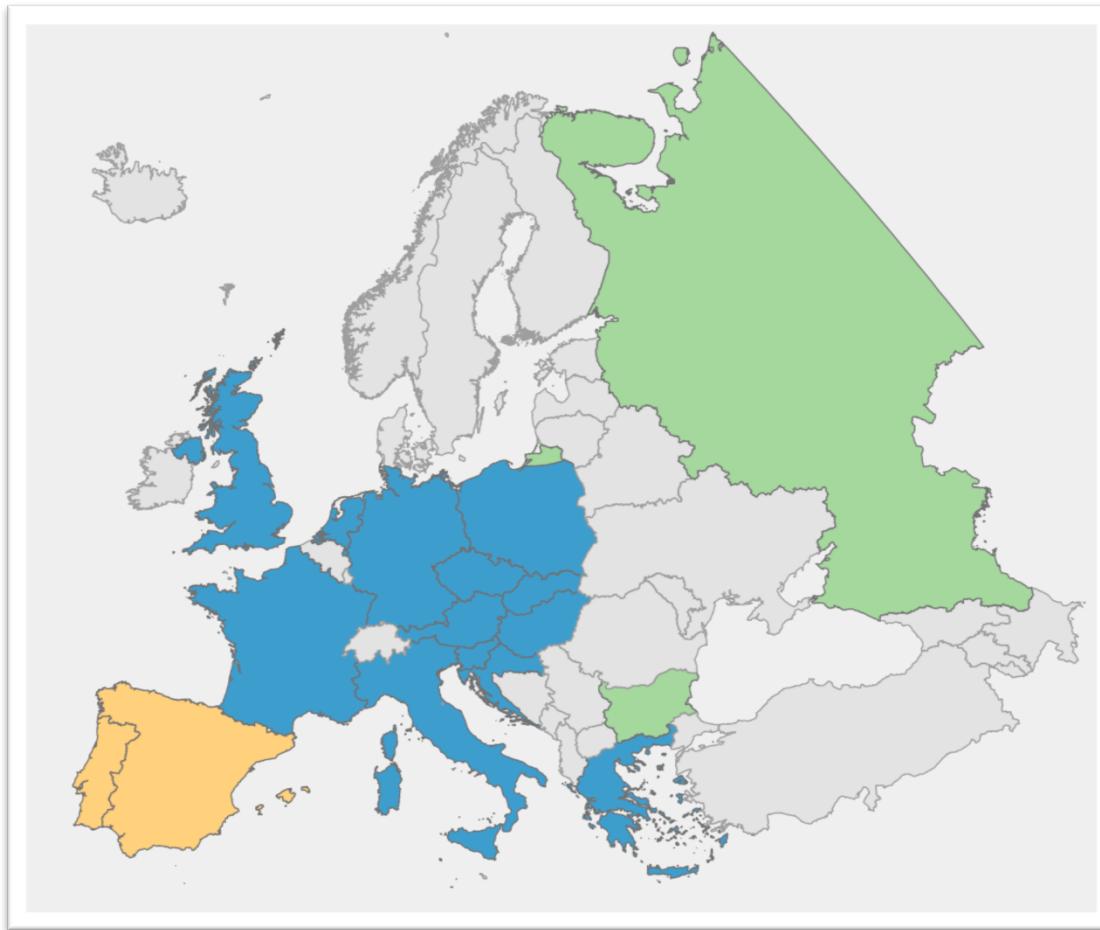
The ‘Braun-Blanquet’ project

Time schedule



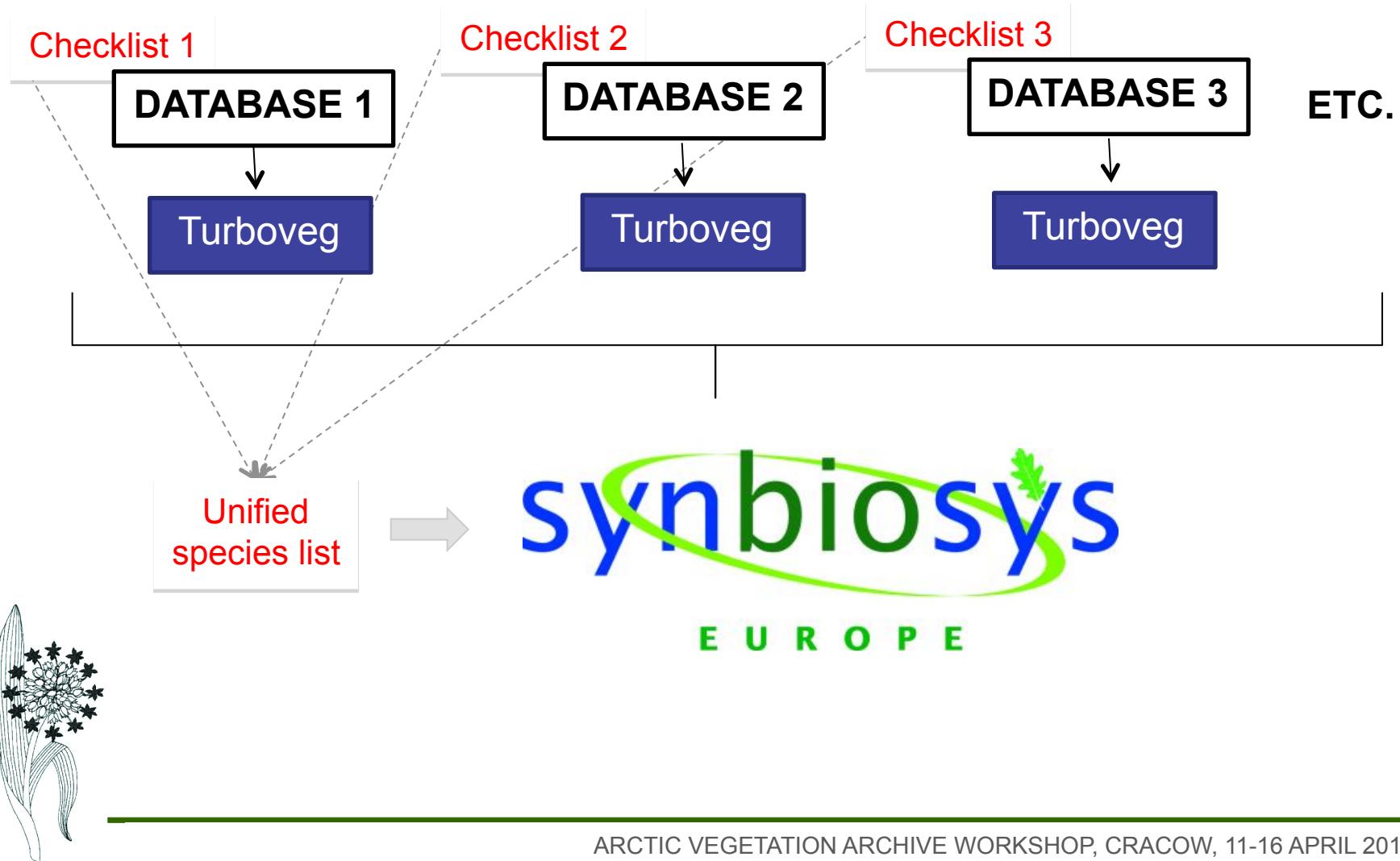
The ‘Braun-Blanquet’ project

Contribution from European databases
April 2013: 22 data sets, > 300.000 relevés



The ‘Braun-Blanquet’ project

Data management



Technical support



© Stephan Hennekens

- Data management
- SynBioSys ‘Europe’ multi-species list

The screenshot shows the SynBioSys Europe 0.8.14 software interface. The main window displays a list of 93 records for the species *Carex acuta*. The columns include: db_species_nr, Species, genus_name, species_name, family_nr, group_nr, flora_list, tv_species_nr, type, tv_syb, dbs_sy, provis, exclud, splitted, not_c, full_species_name, remarks, exclude & type record, type record, assigned, Turboveg synonym, changed_by, changed_on, and synri. The list includes various subspecies and synonyms such as *Carex acuta* L., *Carex acuta* subsp. *erecta* Kük., *Carex acuta* subsp. *intermedia* Célik., *Carex acuta* subsp. *gracilis* (Curtis) Fiori, *Carex acuta* subsp. *panormitana* (Guss.) Fiori, *Carex fuscovaginata* sensu V. Krecz., non Kük., *Carex acuta* subsp. *graciliformis* V. Krecz., *Carex acuta* subsp. *gracilis* Curtis, *Carex acuta* subsp. *intermedia* (Célik.) Soj., *Carex acutiflora* Boiss. & Reuter, *Carex acuta* L., *Carex acutiformis* Guss., *Carex acuta* L., *Carex sartorii* V. Krecz., *Carex acuta* L., and *Carex tricostata* Fries.

The left sidebar provides navigation links for Species, Literature, Associations, Synonyms, Pictures, Distribution syntax, Biotopes/Syntax cross, and Statistics. The bottom navigation bar includes links for Plant species, Vegetation, Landscape, Extra, and Maintenance, along with standard operating system icons.



8.14

Parameter < click arrow button to select a parameter >



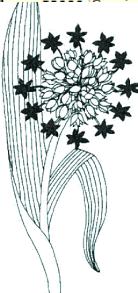
Welcome page | Help | [Maintain] species

Main Extra Species lists Distribution Help FloraWeb IPNI Google

Species Carex acuta | Retrieve Equal [=] New [+] Zero [0] Submit

 Show Turboveg synonyms Always show type records

sbs_species	rank	genus_name	species_name	family_nr	group_nr	flora_list	tv_species_nr	type_r	tv_syn	sbs_sy	provisi	exclud	splitted	not_cd	full_species_name	remarks
> 38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
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0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex graciliformis V. Krecz. = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex gracilis Curtis = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex gracilis subsp. gracilis = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex gracilis subsp. intermedia (Celak.) So1 = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex mauritanica Boiss. & Reuter = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex panormitana Guss. = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex sareptana V. Krecz. = Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Flora Europeaea+	38000	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex tricostata Fries = Carex acuta L.	
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	The Netherlands	211	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Bulgaria	1745	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Central Europe	2167	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Greece	1627	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Latvia	1992	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Lithuania	619	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Lithuania		619	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex gracilis Curtis = Carex acuta L.					
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Mecklenburg	903	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Poland	721	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
0	Carex	acuta	Cyperaceae	Vascular plants	Poland		721	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex fuscovaginata Sensu V. Krecz. non K?k. = Carex acuta					
0	Carex	acuta	Cyperaceae	Vascular plants	Poland		721	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex graciliformis V. Krecz. = Carex acuta L.					
0	Carex	acuta	Cyperaceae	Vascular plants	Poland		721	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex gracilis Curt. = Carex acuta L.					
0	Carex	acuta	Cyperaceae	Vascular plants	Poland		721	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex mauritanica Boiss. & Reuter = Carex acuta L.					
0	Carex	acuta	Cyperaceae	Vascular plants	Poland		721	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Carex sareptana V. Krecz = Carex acuta L.					
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Portugal	630	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Former USSR	5038	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Carex acuta L.	
38000	Species	Carex	acuta	Cyperaceae	Vascular plants	Scandinavia	1530	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		



Technical support



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- TURBOVEG 3 (under development)
- New capabilities for EVA and international DBs

The screenshot shows the Turboveg 3 software interface. On the left, there is a tree view of datasets under 'BRAUN-BLANQUET' and 'SOPHY'. Under 'SOPHY', there are further sub-folders for 'SOPHY' itself and countries: Austria, Czechia, Netherlands, Germany_gvrd_selection, and Slovenia. The main workspace displays a table titled 'Observation 6/10986'. The table has columns: ObsID, Country code, Nr. table in publ., Nr. relevé in table, and Cover abundance scale. The data rows show observations from Slovenia, with ObsID ranging from 34440 to 34452. The 'Nr. relevé in table' column is highlighted in blue, showing values from 1 to 14. The 'Cover abundance scale' column shows 'Braun/Blanquet (old)' for all entries.

ObsID	Country code	Nr. table in publ.	Nr. relevé in table	Cover abundance scale
34440	Slovenia	1	1	Braun/Blanquet (old)
34441	Slovenia	1	2	Braun/Blanquet (old)
34442	Slovenia	1	3	Braun/Blanquet (old)
34443	Slovenia	1	4	Braun/Blanquet (old)
34444	Slovenia	1	5	Braun/Blanquet (old)
34445	Slovenia	1	6	Braun/Blanquet (old)
34446	Slovenia	1	7	Braun/Blanquet (old)
34447	Slovenia	1	8	Braun/Blanquet (old)
34448	Slovenia	1	9	Braun/Blanquet (old)
34449	Slovenia	1	10	Braun/Blanquet (old)
34450	Slovenia	1	11	Braun/Blanquet (old)
34451	Slovenia	1	12	Braun/Blanquet (old)
34452	Slovenia	1	13	Braun/Blanquet (old)
34453	Slovenia	1	14	Braun/Blanquet (old)



Technical support

- SynBioSys Europe
- Basic parameters for alliances and export tools



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The screenshot shows the SynBioSys - Europe 0.8.14 software interface. On the left, a tree diagram of vegetation alliances is displayed, with several nodes expanded to show sub-alliances. The main window displays a 'Synoptic table' for alliance 25A01 - *Ericion tetralicis*. The table has columns for 'Column no.' (1 through 7) and various plant species, with numerical values indicating their presence or frequency in relevés. The species listed include *Agrostis canina*, *Agrostis capillaris*, *Agrostis stolonifera*, *Alopecurus geniculatus*, *Andromeda polifolia*, *Anthoxanthum odoratum*, *Arnica montana*, *Aster tripolium*, *Aulacomnium palustre*, *Betula nana*, *Betula pendula*, *Betula pubescens*, and *Brachythecium acutum*.

Column no.	1	2	3	4	5	6	7
No. of relevés	51	330	124	57	15	29	36
<i>Agrostis canina</i>	-	-	-	-	32	3	-
<i>Agrostis capillaris</i>	-	-	-	-	6	3	8
<i>Agrostis stolonifera</i>	-	-	-	-	-	7	-
<i>Alopecurus geniculatus</i>	-	-	-	-	-	3	-
<i>Andromeda polifolia</i>	-	-	-	8	-	-	-
<i>Anthoxanthum odoratum</i>	-	-	-	-	3	6	-
<i>Arnica montana</i>	-	-	-	-	-	3	-
<i>Aster tripolium</i>	-	-	-	-	-	3	-
<i>Aulacomnium palustre</i>	-	-	-	-	17	11	-
<i>Betula nana</i>	-	-	-	3	-	-	-
<i>Betula pendula</i>	-	-	-	-	19	33	-
<i>Betula pubescens</i>	-	-	-	-	24	36	-
<i>Brachythecium acutum</i>	-	-	-	-	-	-	2

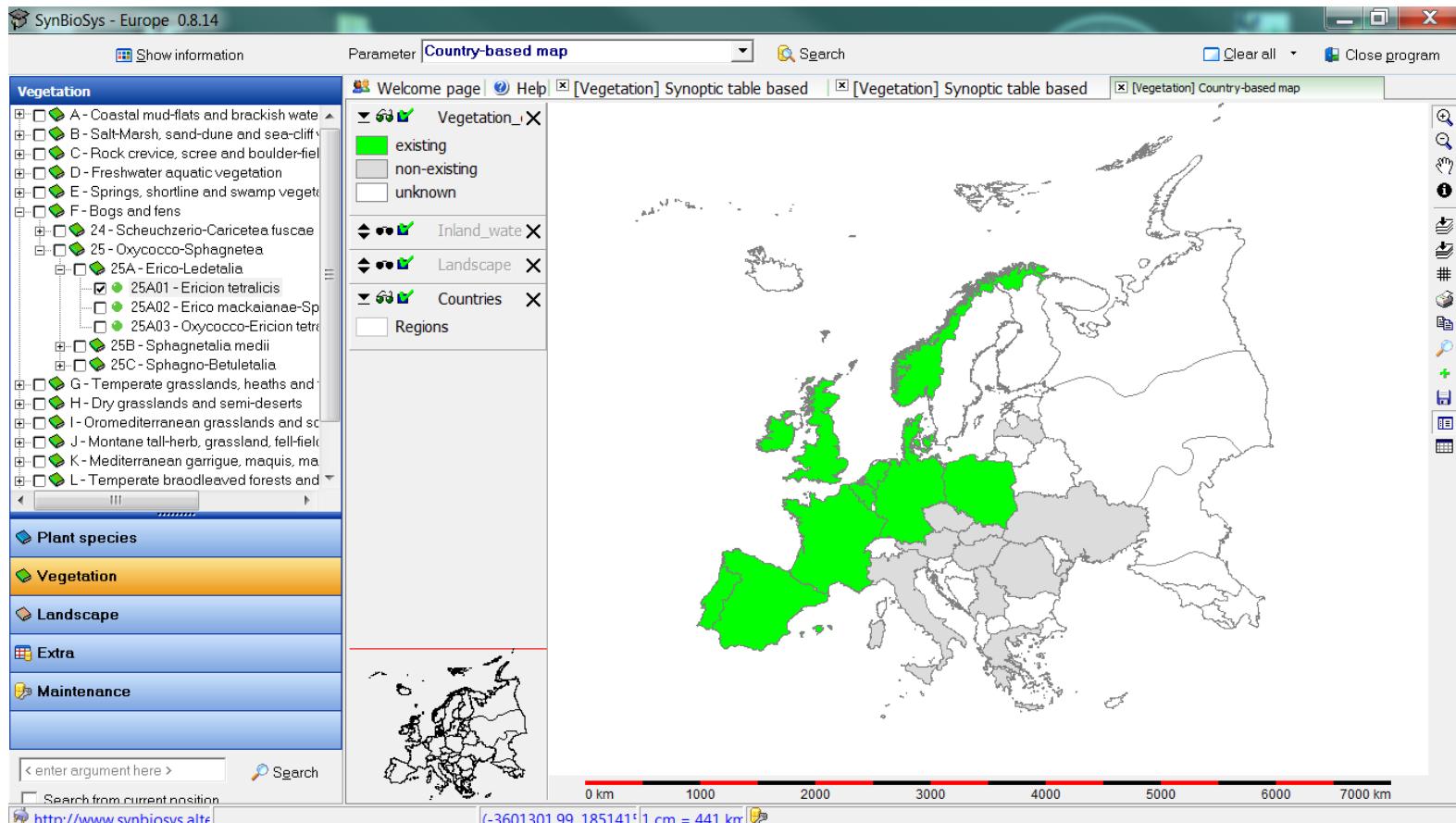


Technical support



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- SynBioSys Europe
- Web-based facilities for data exploration



Applications

European Environment Agency



- Supporting Europe nature conservation policy making
- EUNIS Habitat Classification: eunis.eea.europa.eu

The screenshot shows a Firefox browser window displaying the 'EUNIS - EUNIS habitat type hierarc...' page. The URL in the address bar is eunis.eea.europa.eu/habitats-code-browser.jsp?expand=D#level_D. The page title is 'EUNIS habitat type hierarchical view'. The main content area shows a hierarchical tree of habitat types, starting with category D (Mires, bogs and fens), which branches into sub-categories like D1 (Raised and blanket bogs) and D6 (Inland saline and brackish marshes and reedbeds). On the left sidebar, there are sections for 'EUNIS' (Species, Habitat types, Sites, Combined search, Interactive maps, References, Downloads and links), 'General information' (About EUNIS, How to, EUNIS Sitemap, Tutorials, Contact EUNIS, EUNIS Feedback, Copyright and Disclaimer, Accessibility statement), and 'User operations' (EUNIS Login, Services). The top navigation bar includes links for Environmental topics, Publications, Multimedia, Data and maps, Networks, Press room, and About EEA. The bottom status bar shows the Windows taskbar with various pinned icons and the date/time as 15:24 27.2.2013.



Applications

European Environment Agency



- Supporting Europe nature conservation policy making
- 2012 crosswalk vegetation alliances \leftrightarrow EUNIS Habitat types

EUNIS habitat types

Phytosociological alliances (EuroVegChecklist, Mucina et al. in prep.)

The screenshot shows the EuroVegChecklist software interface. On the left, a list of EUNIS habitat types is shown, with several entries circled in blue. On the right, a detailed view of a phytosociological alliance is displayed, with its name, synonyms, and descriptions. The overlapping area between the two windows is highlighted by a large black circle.

EUNIS habitat types

Adenostylium alliance Rivas-Mart. 1926 nom. conserv. propos.
Tal-herb communities on talus substrates of mountainous zone of Europe

Synonyms:

- Adenostylium firmi Krajina 1923
- Adenostylium alpinum Zeleník 1925 nom. ambig. propos.
- Adenostylium Lepic 1926
- Adenostylium pyrenaeicum Rivas-Mart. et al. 1984
- Adno-Adenostylium (Br.-Bl. 1926) Horvat 1962
- Adno-Adenostylium Br.-Bl. 1940
- Adno-Adenostylium Br.-Bl. et Tx. 1940

Substrates:

- **E5.5 - Schabine moist or wet tall-herb and fern stands**
Landscape with herb formations of loose, humus-rich soil, not inimical to shrubs, thickets of the higher mountains, with [Ceratodon purpureus], [Gentiana albovirens], [Crinum spicatum], [Cirsium heterophyllum], [Gilia spicata], [Grindelia spicata], [Hypericum perforatum], [Ranunculus peltatus], [Acetosella vulgaris], [Contum apiculatum], [Aconitum nevadense], [Adenostyles alpinae], [Senecio elodes], [Veratrum album], [Trollius europaeus], [Paeonia officinalis], [Doronicum austriacum], [Pedicularis folskae], [Eryngium alpinum], [Leuzea rhapontica] ([Centaurea rhaepontica]), [Valeriana pyrenaica], [Tuzia alpina].
- **E5.2 - Subalpine moist or wet tall-herb and fern stands**
Substrate scrubs of [Acer], [Betula], [Salix] and Rosaceae ([Armeniacae], [Potentilla], [Rubus], [Sorbus]), less than 5 m tall, often accompanied by tall herbs that in the absence of scrub would be classified as E5.5. Excludes dwarf [Salix] scrub (F2.1), which is composed of species that rarely exceed 1.5 m in height, and scrub on waterlogged soils (F2.2).



Development of vegetation syntaxa crosswalks to EUNIS habitat classification and related data sets



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John S. Rodwell
Lubomír Tichý

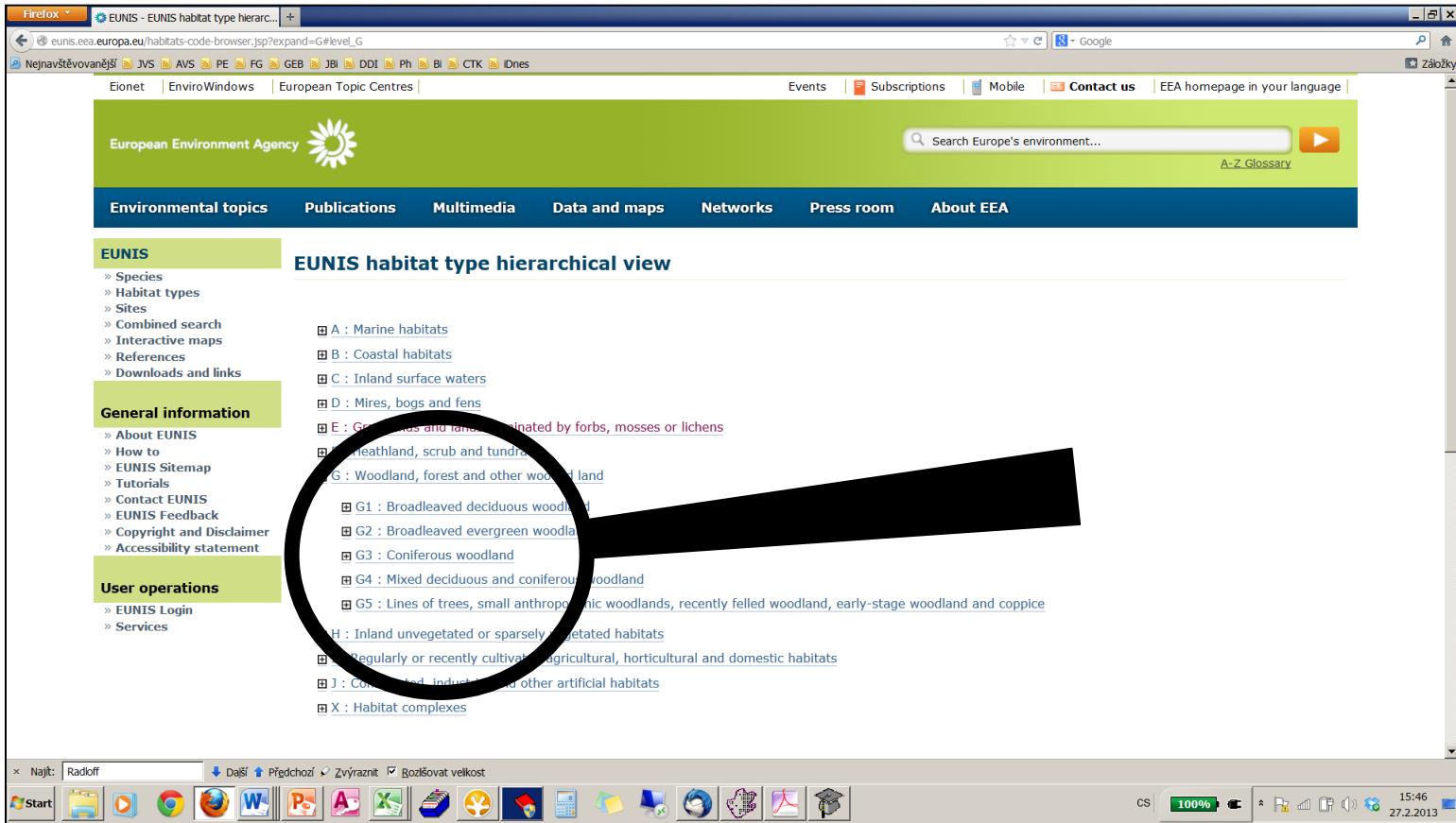
Final report EEA/NSV/12/001

Applications

European Environment Agency



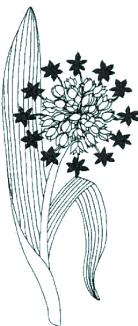
- Supporting Europe nature conservation policy making
- **2013** Parameterization /revision of EUNIS forest habitat types



A screenshot of a Firefox browser window showing the "EUNIS - EUNIS habitat type hierarchical view" page. The URL in the address bar is eunis.eea.europa.eu/habitats-code-browser.jsp?expand=G#level_G. The page has a green header with the European Environment Agency logo and a search bar. A large magnifying glass icon is overlaid on the right side of the content area, which lists habitat types from A to X. The left sidebar contains links for EUNIS, General information, and User operations.

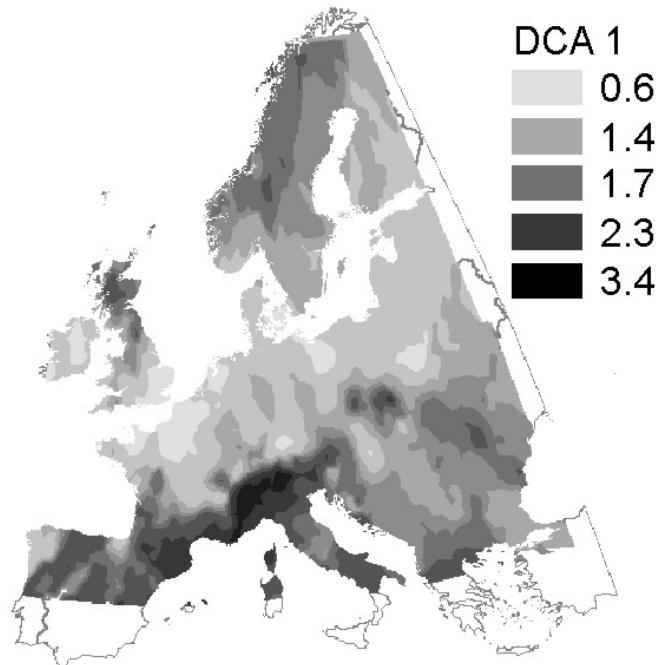
EUNIS habitat type hierarchical view

- A : Marine habitats
- B : Coastal habitats
- C : Inland surface waters
- D : Mires, bogs and fens
- E : Grasslands and land dominated by forbs, mosses or lichens
- F : Heathland, scrub and tundra
- G : Woodland, forest and other wooded land
 - G1 : Broadleaved deciduous woodland
 - G2 : Broadleaved evergreen woodland
 - G3 : Coniferous woodland
 - G4 : Mixed deciduous and coniferous woodland
 - G5 : Lines of trees, small anthropogenic woodlands, recently felled woodland, early-stage woodland and coppice
- H : Inland unvegetated or sparsely vegetated habitats
- I : Regularly or recently cultivated agricultural, horticultural and domestic habitats
- J : Constructed, industrial and other artificial habitats
- X : Habitat complexes



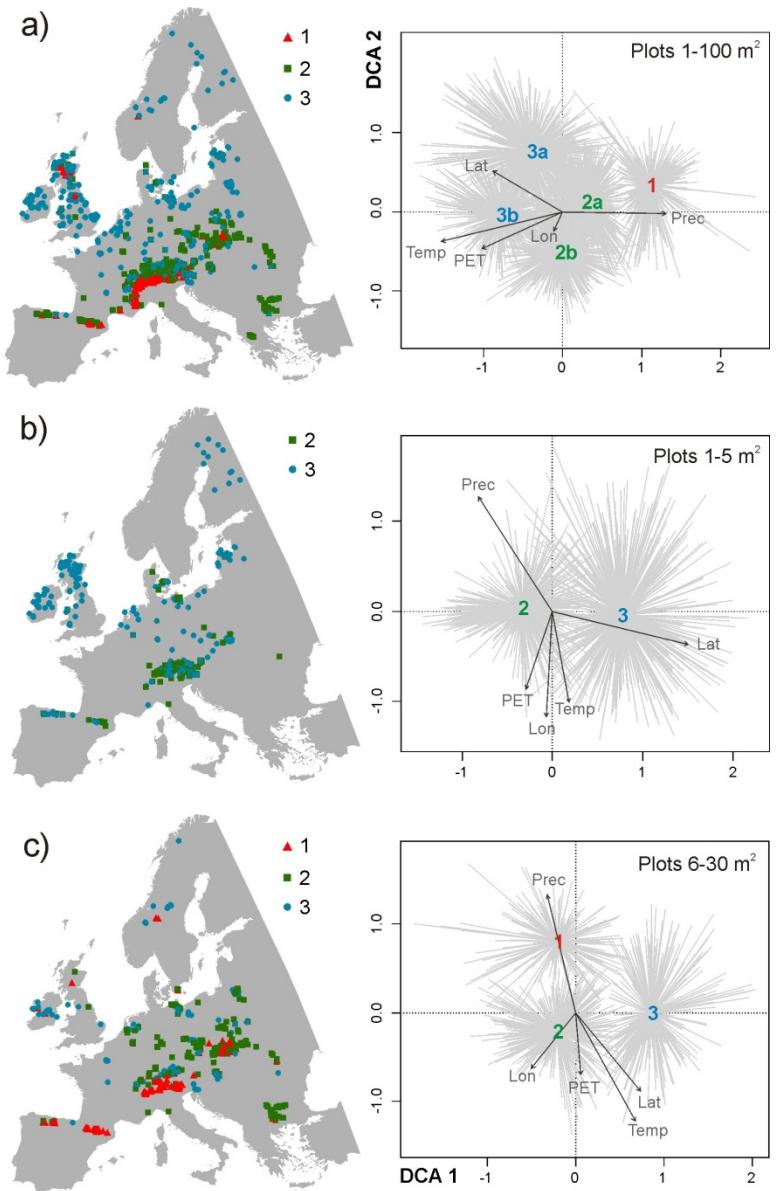
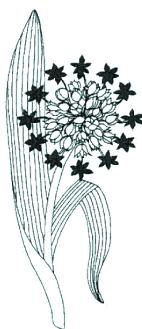
Research

- Large-scale biodiversity analysis



Biogeographical patterns of base-rich fen vegetation across Europe

Jiménez-Alfaro et al.
Applied Vegetation Science (under review)





Thank you!

