1st EuroSL Workshop

Towards establishing an electronic taxonomic reference list of all European plant taxa for use in vegetation databases and other plant-related databases

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The need of a EuroSL, its requirements and specifications

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The background

- **Increasing number of vegetation databases becomes available**
  According to GIVD (www.givd.info):
  in Europe c. 90 databases with c. 1.6 million vegetation plots

- **Other plant taxon-related databases**
  - Distribution data from mapping projects
  - Distribution data from herbaria
  - Phylogenetic and taxonomic information
  - Plant trait databases
  - Red list databases and other conservation-related databases

- **New options for analyses**
  - Consistent supra-national vegetation classifications
  - Testing ecological and evolutionary theories
  - Analysing and forecasting the effects of global change

Dengler, J., Jansen, F., Glöckler, F., Peet, R. K., De Cáceres, M., Chytrý, M., Ewald, J., Oldeland, J., Finckh, M., Lopez-Gonzalez, G., Mucina, L., Rodwell, J. S., Schaminée, J. H. J., Spencer, N. (2011b): The Global Index of Vegetation-Plot Databases (GIVD): a new resource for vegetation science. – *Journal of Vegetation Science* 22: 582–597.

Why now?

- **GIVD made the huge amount of available vegetation-plot data visible**

- **IAVS Working Group *European Vegetation Survey* (EVS) will have strategic meeting of a core team on 13-15 February 2012 in Brno:**
  - Further development of SynBioSys Europe
  - Initiating exemplary case studies with supranational datasets
  - Exploring the possibilities for external funding

- **Planned Virtual Special Feature of *Applied Vegetation Science* on *Towards a consistent classification of European grasslands***
  - 20+ teams of authors will aim at supra-national or even continent-wide relevé-based vegetation classifications during the next 2 years
  - each of them will need to unify many different taxonomic views
  - it would be far more efficient to do this work once instead of 20+ times

What is the problem?

- **No uniform, complete, up-to-date, well-documented and easily applicable electronic reference list is available**

  – *Flora Europaea* is only for vascular plants and outdated at least 18 years (last volume published 1993)

  – Europe has approx. 50 countries and each of them has at least one recent flora or checklist, the taxonomic views of none of them matching

  – Different subsequent checklists from the same country (e.g. vascular plants in Germany: Wisskirchen & Haeupler 1998 > Buttler & Hand 2008) are not or insufficiently connected to each other

  – Plant names in vegetation-plot databases (and other plant-related databases) are normally not connected to taxon views

What is the problem?

- **Therefore, automatic joining of different databases is impossible or will lead to serious errors that likely will have strong confounding effects on analytical results**

    – Already the correct assignment of synonyms is a big task that cannot really be met by the existing tools

    – Much bigger and (in practice) completely unsolved is the problem of the correct assignment of different taxon views of the same taxonomic name: automatic assignment produces only "data rubbish" here

What is the problem?

Ascherson (1864)

F. ovina L.		
F. ovina ssp. vulgaris Koch		F. ovina ssp. duriuscula (L.) Ascherson
F. ovina ssp. vulgaris var. vulgaris	F. ovina ssp. vulgaris var. tenuifolia (Sibth.) Ascherson	

Jäger & Werner (2005)

F. ovina agg.		
F. ovina L.	F. filiformis Pourr.	F. brevipila Tracey
F. ovina ssp. ovina	F. ovina ssp. guestfalica (Boenn. ex Rchb.) K. Richt.	

Wisskirchen & Haeupler (1998)

F. ovina agg.			
F. ovina L.	F. guestfalica Boenn. ex Rchb.	F. filiformis Pourr.	F. brevipila Tracey

Jansen, F., Dengler, J. (2010): Plant names in vegetation databases – a neglected source of bias. – *Journal of Vegetation Science* 21: 1179–1186.

EuroSL: requirements

- **Production of a uniform, complete and up-to-date standard list of all European plant taxa (nickname EuroSL)**

- **To be functional, this EuroSL needs to be:**
  - connected to the recent taxonomic works in the various taxa
  - well-documented (everybody must be able to retrieve the meaning of each accepted name easily)
  - be freely available in electronic formats that meet the requirements of typical workflows
  - be correctly connected to as many as possible continental and national, present and past floras and checklists

- **To maintain usefulness in the future, this EuroSL needs to:**
  - be versioned (i.e. published in well-documented, retrievable versions whose taxon views are connected unanimously)
  - have efficient online tools for editing and updating taxonomic information through distributed experts (including quality checks)

EuroSL: specifications

- **Completeness**
  - **All taxonomic groups** of the vegetation in one uniform list, i.e. vascular plants, bryophytes, lichens & macro-algae

  - **All taxa of Europe** (and possibly some adjacent regions that can easily be incorporated, like the Canary Islands)

  - **Infraspecific and supraspecific taxa**

  - Not only native and naturalised taxa, but all taxa that occur in the vegetation, i.e. **non-naturalised neophytes and cultivated plants**

  - **Complete coverage of hybrids** (not only those with occurences independent from parental taxa)

EuroSL: specifications

- **Informal taxa**

  - **Aggregates are essential!!!**
    - they are used by many floras (Fl. Eur. e.g.) and even more by field botanists
    - old data often cannot be assigned at species level

  - Additional **informal taxa** are necessary to incorporate different (major) taxon views in one list

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F. ovina ssp. vulgaris Koch			F. ovina ssp. duriuscula (L.) Ascherson
F. ovina ssp. vulgaris var. vulgaris		F. ovina ssp. vulgaris var. tenuifolia (Sibth.) Ascherson	

Jäger & Werner (2005)			
F. ovina agg.			
F. ovina L.		F. filiformis Pourr.	F. brevipila Tracey
F. ovina ssp. ovina	F. ovina ssp. guestfalica (Boenn. ex Rchb.) K. Richt.		

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EuroSL: specifications

- **Appropriate handling of "cf." data**
  - Not necessarily within EuroSL, but essential within applications such as Turboveg or Juice

  - Preferably "cf." information should be retained at entry stage and handling of these entries only be decided at stage of analysis

- **Full hierarchy of taxa (up to classes or phyla)**
  - To allow aggregation and analyses at various levels

  - Presently in Turboveg only up to genus and informal aggregates are not in the hierarchy at all

- **Handling of regionally monotypic taxa**

EuroSL: specifications

- **Joining of names from different sources**

  – **Automatic assignment** only for names and synonyms where there are no problems such as different taxon views involved

  – When there are problems, a **manual assignment** has to be made by an expert:
    - the system can suggest different solutions based on available information
    - the assignment needs to be documented and reversible

EuroSL: specifications

- **Documentation**

  - The different versions of the EuroSL need to published in unchangeable and **complete print and/or pdf versions** that are accessible to any researcher and that are quotable, not only as online databases

  - To allow the understanding of the meaning of names in the EuroSL, they should be:
    - published with as much additional information as possible (such as synonyms, included names, distribution, ploidy)
    - supported by taxonomic standard works
    - be connected to major taxonomic views in other works

EuroSL: specifications

- **Versioning**

  – continuous, undocumented updates are not appropriate

  – we need different, clearly numbered and documented versions

  – older versions need to be retrievable at any later stage and be connected to the newer ones

EuroSL: specifications

- **Practical implementation**

  - The taxonomic communities need to be involved in the enterprise in order to ensure that EuroSL reflects up-to-date knowledge

  - However, we need to convince the taxonomic communities that their products will only then widely and correctly applied if they deliver them in a way that meets the need of many different purposes

  - EuroSL needs to become freely available in major electronic formats

EuroSL: specifications

- **Medium and long term**

  – We should develop a clear outline how EuroSL finally will look and when a final version will become available for the first time

  – However, we need also need to provide intermediate solutions in the nearer future that are not perfect but try to approach the EuroSL standard as far as possible with a limited effort and limited time

  – For continuous future updates of EuroSL, we need:
    - functional and efficient tools for distributed online editing
    - procedures for quality control, selection between competing views
    - integration of both the scientific communities of both the taxonomists and the manifold users to make the EuroSL really useful