



Milestone M4.22

BiolFlor Data as semantic web

(D4.2 - Ontology Tools)

Leading partner: JKI

Compiled by: Andreas Plank, Gregor Hagedorn

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Introduction

Biological and ecological traits of the flora of Germany are stored in the BioFlor dataset¹ publicly readable in the Internet. In collaboration with the Center for Environmental Research (UFZ) in Leipzig (Germany) it was the aim to provide these data as “onscreen” content, making it part of the semantic web.

Prologue

By the original deadline of this milestone, a full BioFlor data set was loaded in a local database, analysed and ready to go. The mapping to semantic representation was, however, unfinished and it was clear we should benefit from the SKOS approaches, including the use of DwC (not in SKOS yet). Therefore the extension of this milestone required additional time. In addition, it was relevant to wait for a new version of BioFlor, because 20% of the data are changed. The update to the nomenclature was delayed several months and reached JKI only in November 2012. Strictly spoken this is not part of the BioFlor dataset, it is a separate dataset of the updated plant taxonomy, since the creation of the BioFlor data, which are based on the standard list of 1998, almost 10% of the 3600 species in Germany had systematic or name changes. It does not make sense today to publish the semantics of the old taxonomy, so we should merge these data.

Results

On <http://offene-naturfuehrer.de/bflor/BioFlor> these data sets are currently integrated into a Wiki extended by Semantic MediaWiki software. Thus these data are now structured as properties, which can be read, browsed or exported to computer machine reasoners by providing an export format like RDF. In the Wiki all-semantic data can be browsed (Fig 1) and the Wiki also allows a species pages to be edited by forms (Fig 2).

¹ <http://www.ufz.de/index.php?en=14718>

The top screenshot shows the 'Semantisches Browsen' page for the species *Alnus incana* (L.) Moench. The page features a navigation menu on the left and a search bar at the top. The main content area displays a table of properties related to the species:

Anzahl besiedelter Florenzonen	3	+ 🔍
Anzahl der Blühphasen	0	+ 🔍
Anzahl der Hemerobiestufen	2	+ 🔍
Anökophytie (Natürlichkeit der Sippengese)	n	+ 🔍
Art der Belohnung für Blütenbesucher	1	+ 🔍

The bottom screenshot shows the search results for 'Blüten-Grundfarbe br'. It lists 20 results, including:

- Alnus glutinosa* (L.) P. Gaertn. + 🔍
- Alnus incana* (L.) Moench + 🔍
- Aquilegia atrata* W. D. J. Koch + 🔍
- Asarum europaeum* L. + 🔍
- Atropa bella-donna* L. + 🔍
- Bidens connata* H. L. Mühl. ex Willd. + 🔍
- Bidens frondosa* L. + 🔍
- Bidens radiata* Thuill. + 🔍
- Bidens tripartita* L. + 🔍

Figure 1: Browsing data of properties related to species *Alnus incana* (L.) Moench. Above all properties of the species are shown and below all species are listed, that have a color of the flower being brown (i.e. value: "br")

The screenshot shows the 'Bearbeiten' (Edit) page for the species *Alnus incana* (L.) Moench. The page is titled 'Bearbeite Artinformation BioFlor: Alnus incana (L.) Moench' and includes a navigation menu on the left. The main content area contains several fields for editing the species' information:

- Überschrift:** Artinformationen (Name und Status)
- Familie:** Betulaceae
- Wissenschaftlicher Name:** *Alnus incana* (L.) Moench
- Synonyme:** *Betula alnus* var. *incana* L.
- Deutsche Namen:** Grau-Erle
- Literatur:** [[Kühn & Klotz 2002]]

The 'Merkmal' section is expanded, showing the following details:

- Merkmal:** Primärer floristischer Status in Deutschland
- Wert:** I
- Wert und Bezeichnung:** I (indigen)

Figure 2: Editing biological and ecological traits of species *Alnus incana* (L.) Moench using forms provided by MediaWiki extension Semantic Forms.

Using forms as a tool to input data it helps to avoid input errors e.g. by providing autocompleting for input values or validate a form ensuring mandatory values.

Furthermore, also the “Dictionary of Invertebrate Zoology” from Maggenti et al. (2005)² was included in a Wiki on <http://species-id.net/zooterms/>.

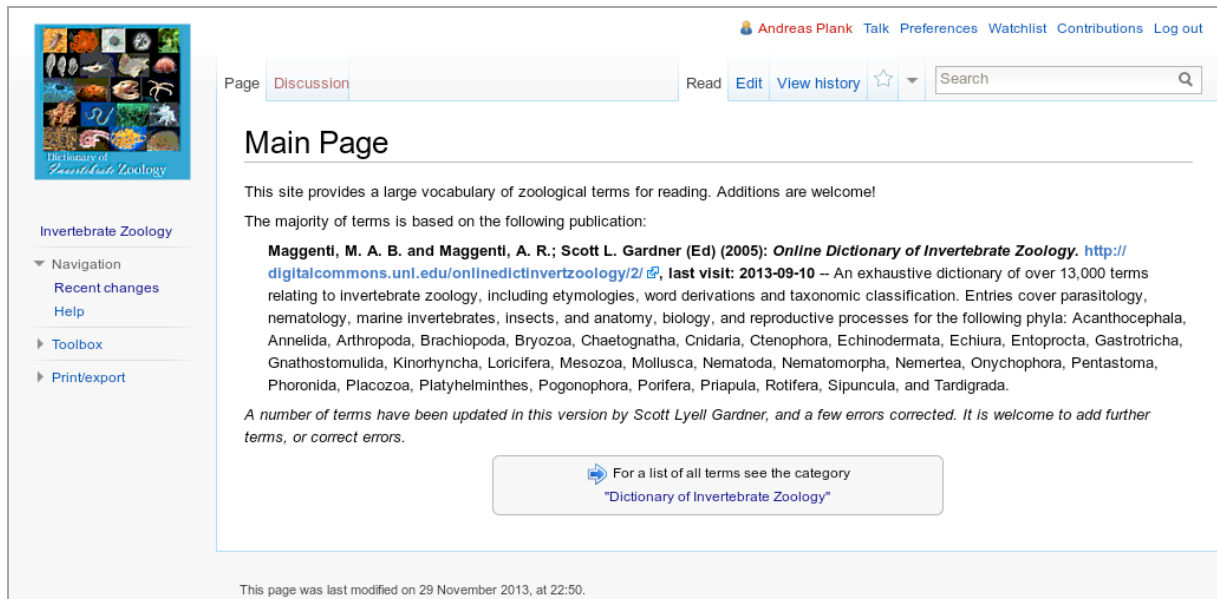


Figure 3: Wiki of “Dictionary of Invertebrate Zoology” extended by Semantic MediaWiki

Providing the same interfaces as for BiolFlor this Wiki is intended for reading but also for correcting or adding terms in the research field of invertebrate zoology.

Summary

Using MediaWiki software and their extensions, such as Semantic MediaWiki, any contribution or correction of data can be seen in a transparent way. Furthermore, Semantic MediaWiki provides suitable tools (forms, browsing interfaces) that make contribution to the semantic web a task that can be done.

The import of the BiolFlor dataset into a semantic content management system is done and hopefully it will contribute to the semantic web to be used in the future.

² <http://digitalcommons.unl.edu/onlinedictinvertezoology/>