

## NATIONAL REVIEW AUSTRIA 2009 – TAXONOMY, EPBRS-meeting Pruhonice (CZ)

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### 1-Taxonomic Information: Strategy and Methods

#### Inventory and Identification: “What is it, and how does it fit among its relatives?”

##### 1.1 Does your country use taxonomy-based tools for biodiversity assessments and policy making? What are these tools?

- Monitoring of common breeding birds: The results of this monitoring are part of the national sustainability report. Tools: Farmland Bird Index etc.
- Systematic monitoring of plants and birds (1998 and 2003) to assess the effectiveness of the Austrian agri-environmental schemes (Wrbka et al. 2008). Main result: wide and shallow measures are not efficient, while targeted measures have positive effects (but the uptake of those measures is poor). For the moment a continuation of this evaluation is not funded.

##### 1.2 Does your country have a national species checklist?

NO, but for some taxonomic groups actual checklists are published (mosses, molluscs, Palpigradi, collembola, dragonflies, heteropterans, othopterans, coleopterans, neuropterans, lepidopterans, Vespidae, vertebrates)

A checklist of the Austrian bryophytes will soon be published online (by Köckinger, H., Schröck, C., Zechmeister, H. - in the framework of GSPC).

##### When was it last revised and updated?

The mentioned actual checklists have been compiled mostly after the year 2000. Additionally some older checklists for other organism groups exist.

##### Is there any national assessment of which taxonomic groups in particular lack taxonomic information?

Partly, in the context of the feasibility study of GBIF (Götzl et al. 2003) some needs were detected.

##### Did you submit a response to the GTI questionnaire on these issues?

Yes, in the year 2004 (Andrea Nouak).

## **Understanding Patterns and Change: “Where is it, what’s happening to it, and where is it going?”**

Describe 1-2 flagship projects related to bullet points below and suggest some recommendations useful for meeting as a result from these projects:

### 1.3 Please outline any national taxonomy-based monitoring or surveys designed to establish the distribution, status and trends of any taxonomic group.

Vascular plants: since the 1970ies, but not yet published; plants are mapped applying a grid of 5' x 3' geographical minutes (appr. 35 km<sup>2</sup>); Austria has a share of 2566 grid units.

Breeding birds: Atlas was published by Dvorak et al. (1993)

Dragonflies: Atlas was published by Raab et al. (2006)

Orthopterans: work in progress (Zuna-Kratky et al., in prep.)

Zoological recording is based on a 1' x 1' minutes system.

### 1.4 Is there any coordinated effort in your country regarding bar-coding for identification or the assessment of biodiversity?

NO, only rare use (e.g. Bodner & Fiedler: Geometridae in Ecuador).

### 1.5 Are you aware of any major efforts (or projects) in your country to integrate morphological and molecular taxonomy?

In the (former) Botanical Institute of Vienna (now Faculty Centre of Biodiversity) the integration of morphological and molecular taxonomy has a long tradition (Prof. Ehrendorfer, Prof. Stuessy, Prof. Hesse). Studies have been published or underway on e.g. *Ranunculus* (Hörandl 2006), *Veronica*, *Orobanch*e, *Achillea* (Ehrendorfer & Guo 2006), Lemnaceae and Araceae (Hesse 2006).

The research group lead by Elisabeth Haring and Anita Gamauf in the Museum of Natural History Vienna has a research focus on the integration of morphological and molecular taxonomy regarding the buteonine hawks (Kruckenhauser et al. 2004), honeybuzzards (Gamauf & Haring 2004) and other birds of prey especially in the Philippines (Gamauf et al. 2005).

## **2-Taxonomy as a Basis for Ecological Research and Sustainable Management of the Biodiversity Ecological Functions and Services: “What does it do, and what does it interact with?” How does taxonomic research contribute to better understanding of the functions and attributes of species, and to the management of biodiversity?**

### 2.1 Do you know projects involving taxonomists in the understanding of ecological functioning, or the assessment of ecosystem services?

Some examples:

- Integrated Monitoring of air pollution effects on ecosystems (Umweltbundesamt Vienna, <http://www.umweltbundesamt.at/en/umweltschutz/oekosystem/im/>): experts for lichens, bryophytes and vascular plants have been involved.
- Wolfgang Wanek & Anton Weissenhofer (University of Vienna, Faculty Centre of Biodiversity): Terrestrial litter-trapping plants: Significance of above-ground nutrient scavenging by tropical understorey plants (Costa Rica); taxonomists and ecophysiologists are working together
- BIOSERVE (University of Vienna, IFF Klagenfurt, University of Applied Life Sciences Vienna, University of Sopron): Assessment of actual and potential landscape

functions (nature conservation, agriculture, tourism) in the Pannonian lowlands involving experts of botany and zoology

2.2 What is the contribution of taxonomy in your country to the management of biological invasions?

We are currently not aware of any major project.

A recent and comprehensive synopsis of invasive species was published by Essl & Rabitsch (2002).

2.3 What is the contribution of taxonomy in your country to efforts to understand the status and trends of key functional groups such as pollinators?

- There is an active group of entomologists in the biology center in the Upper Austrian State Museums (head: Fritz Gusenleitner) with a special focus on the taxonomy of bees and wasps including their ecological functions as pollinators.
- At the University of Vienna some research groups have a focus on taxonomy and evolution of pollinators (Hannes F. Paulus, Tod F. Stuessy, Anton Weber). An example for a recent study is Schlüter et al. (2009).

**Taxonomy, biodiversity and its conservation: “How to manage it in sustainable way?”**

Describe 1-2 flagship projects related to bullet points below and suggest some recommendations useful for meeting as a result from these projects:

2.4 Are there also non-professional organisations recording biodiversity data collections (e.g. ornithologists) involved in the decision process of landuse planning etc.?

BirdLife Österreich (<http://www.birdlife.at/>)

Österreichischer Naturschutzbund (<http://www.naturbeobachtung.at>)

(Austrian Orchid Network (<http://www.austrianorchids.org/>) )

2.5 Are there some indicators (or red-list species) either for monitoring Natura 2000 sites or for delimitation and management of nature reserves used in your country?

A programme for monitoring Natura 2000 sites in Austria with indicators is close to finalisation (Umweltbundesamt Vienna).

2.6 Which taxonomy-related research (standardized taxonomic metadata, delivery of checklist building tools, building expertise network) in developing non-European biodiversity-rich countries is supported by policy-makers from your country based on your national expertise and experience?

Building expertise network: Hans Malicky founded research groups studying caddisflies (Trichoptera) in Thailand and Indonesia.

Christian Schulze (Faculty Centre of Biodiversity, University of Vienna) conducts an annual 3 week field course in Indonesia. Indonesian and Austrian students are investigating

biodiversity pattern (mainly birds and butterflies) along gradients of altitude and land use. Several Master and PhD thesis have emerged in both countries.

Martin Wiemers (Faculty Centre of Biodiversity, University of Vienna) initiated a digitization project for biodiversity data in Papua New Guinea. The project was funded by GTI.

Walter Hödl (Department of Evolutionary Biology, University of Vienna) is cofounder and board member of the Tropical Biology Association (TBA) and directs plenty of taxonomy related research in mixed field courses, mainly about neotropical and African amphibians.

The GLORIA project (Global Observation Research Initiative in Alpine Environments) led by Georg Grabherr (Faculty Centre of Biodiversity, University of Vienna) is related to mountain vegetation diversity and climate-change-related shifts in plant communities. The network contains 63 active study sites in 5 continents, and the project includes capacity building regarding methodological and taxonomical aspects.

See: [http://www.gloria.ac.at/res/gloria\\_home/](http://www.gloria.ac.at/res/gloria_home/)

2.7 Is there a National Needs Assessment of GTI in your country? If yes, what are your specific needs, e.g. for conservation, protected areas, CITES/customs, dealing with invasive species etc?

Not yet, but under development (Umweltbundesamt, Wolfgang Rabitsch).

### **3- Taxonomy, Potential Users and Capacity Building of Experts**

**Open Access to Information: “How to find out about it?” How does taxonomic information get from where it resides to where it is needed elsewhere in the world?**

3.1 To what extent is taxonomic research in your country contributing to international biodiversity initiatives and projects (e.g. GTI, GBIF, PESI, EOL)

GBIF-Austria provides currently about 3 million records describing the distribution of 40 000 native species of fauna and flora (incl. lichens) and fungi. The information is obtained by 16 Austrian databases. The available amount of records increases with a rate of about 100 000 data sets per year.

Regarding the Global Strategy on Plant Conservation (GSPC) two workshops have been organised by Michael Kiehn in the year 2008 (University of Vienna, Faculty Centre of Biodiversity). In total 16 aims were formulated regarding documentation, conservation and sustainable use of plant diversity.

Digitization of Botanical Collections in Austria (managing institution: University of Vienna) with an emphasis on selected plant groups, that are highly relevant for ongoing international projects (Flora Hellenica, Fl. Iranica, Fl. of China, Fl. Neotropica).

3.2 What is the state of the art in biodiversity informatics in your country? e.g. etaxonomy and e-science tools)

Recently there has been some progress. At least three homepages are now in function: ZOBODAT (mostly insects; <http://www.zobodat.at/D/runD/D/cacheD/>); Mycological database<sup>1</sup>; GBIF Austria (<http://www.gbif.at/>).

<sup>1</sup> Austrian Mycological Society, 2008: Database of fungi in Austria. Edited by Dämon, W., Hausknecht, A., Krisai-Greilhuber, I. - [ <http://www.austria.mykodata.net> ]

3.3 Has there been a national assessment of best practices for taxonomic data quality and validation?

NO!

3.4 Do you have any national guidelines on how to approach the proof of absence?

NO!

3.5 What are the taxonomic standards used in the databases (TDWG, Darwin core, COL, PESI, etc.)?

Not known.

3.6 Could you identify the major digitization efforts for biodiversity data (e.g. collections, observations, species checklists)?

The digitization efforts (Table 1) were assessed by Götzl et al. (2003) :

*Tab. 1. Digitization efforts in Austrian collections after Götzl et al. (2003)*

<b>Specialised field</b>	<b>Number of surveyed collection objects</b>	<b>Number of digitally recorded data records</b>
Agricultural living collections	10 842	52 040
Botanical living collections	271 117	29 806
Botanical specimen collections	10 631 000	3 356 459
Live animal collections in zoos	46 882	18 653
Zoological specimen collections	35 543 710	5 248 721
Microbiological living collections	27 473	7 286
<b>Total</b>	<b>46 531 024</b>	<b>8 712 965</b>

(compare also 2.6. for a digitization project in Papua New Guinea)

3.7 Is there any effort in your country to make taxonomic information especially identification services easily accessible and useful to practitioners?

We are not aware of any particular effort that goes beyond conventional field guides, etc. The most convenient field guides in German language are usually published in Germany.

## **Capacity Building in Biodiversity-rich Countries and Worldwide: What is the state of training and education in systematics and are there any gaps in capacity?**

### 3.8 Are there any policy initiatives in your country to orient capacity building in taxonomy?

See 2.6.

### 3.9 Are there any sources of finance or policy actions in your country dedicated to applied taxonomy (e.g. identification tools, training for parataxonomists, i.e. field-trained biodiversity collection and inventory specialists recruited from local areas)?

See 2.6

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