

# DEEMY

## An Information System for DEtermination and Characterisation of EctoMYcorrhizae

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"Pseudotsugaerhiza" spec.



Russula fellea



"Quercirhiza" spec.



Sarcodon imbricatus

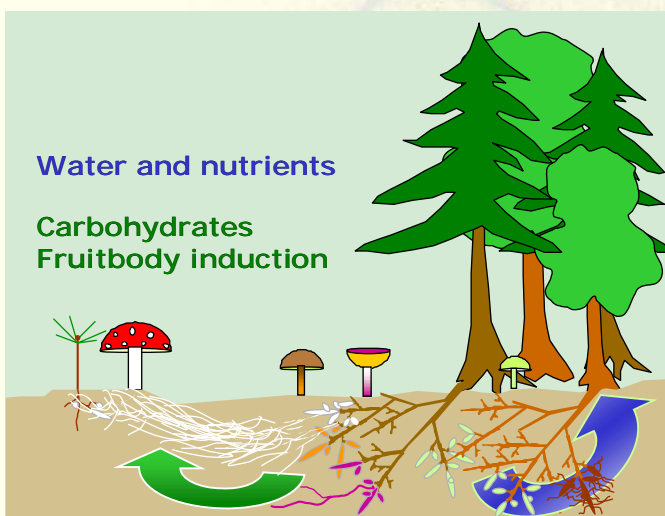


Tuber puberulum



Lactarius subdulcis

### Ecology of Mycorrhizae



Ectomycorrhizae are mutualistic structures formed by fungi and the roots of forest trees. Without them, trees would not be able to take up water and minerals. Ectomycorrhizae show a wide range of anatomical diversity which represents their possible function in tree nutrition and ecology. Their anatomical data, in general, allow a quick determination and provide at the same time ecologically important information.

### The Information System DEEMY

DEEMY was started as a DELTA-based information system in 1996 (Rambold & Agerer 1997). It is collecting descriptive data on ectomycorrhizae, including extant character descriptions and definitions, a lot of original hand drawings and photographs as well as elaborated identification tools. DEEMY was expanded over the years comprising now more than 300 types of ectomycorrhizae characterized by 352 characters. As it was issued as CD-ROM (Agerer & Rambold 1996 onwards) and commercially distributed, the aim of this project is the optimization of DEEMY and its transfer to a freely accessible web-based database system using the Diversity Workbench modules. So, the user will be able to identify about 400 types of mycorrhizae by ca. 420 characters and ca. 850 descriptive drawings and photographs (see fig. 1, 2).

As first part of the project, the list of morphological, anatomical and ecological characters (descriptors) in DEEMY was reviewed and expanded by 60 new entries. Then the descriptive data were transferred from DELTA to the Diversity Workbench database module *DiversityDescriptions*. In accordance with LIAS, descriptors were renamed due to the concept of structure-property-state (Diederich et al. 1997) and reorganised in hierarchical order (see fig. 2). For preview and database-control purposes, ColdFusion web-documents were developed.

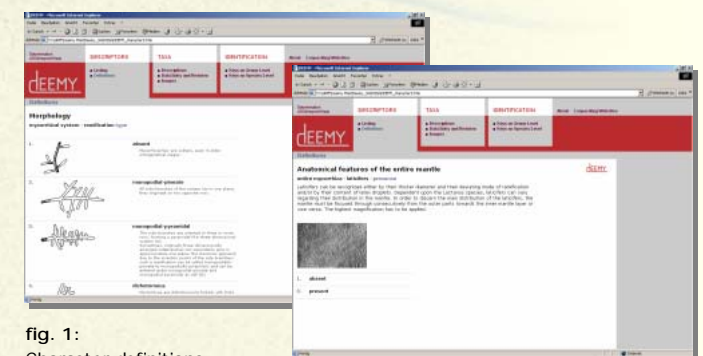
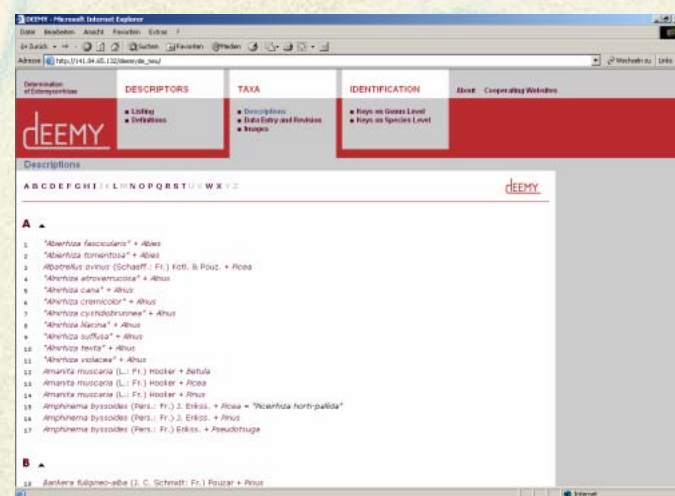
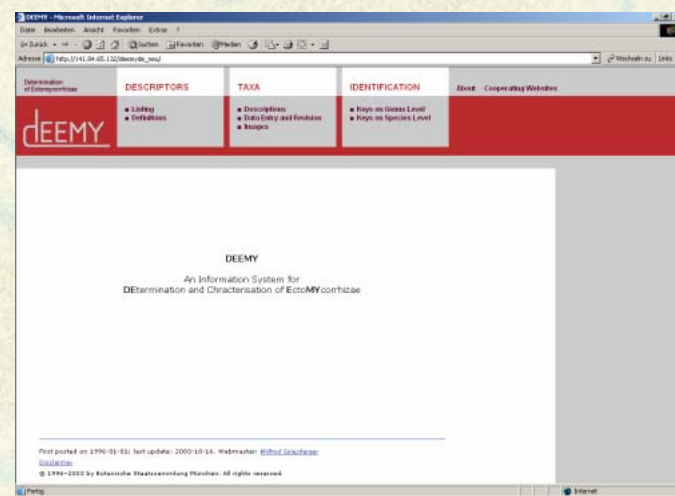


fig. 1: Character definitions

### DEEMY Features

- descriptions of 318 ectomycorrhizae
- morphological images of each included taxon
- about 420 characters (descriptors)
- characters follow the concept of structure-property-state
- explicative images and/or drawings for each character and character state (see fig. 1)
- easy character navigation enabled by hierarchical character design (see fig. 2)
- natural language descriptions generated directly from the database
- interactive identification

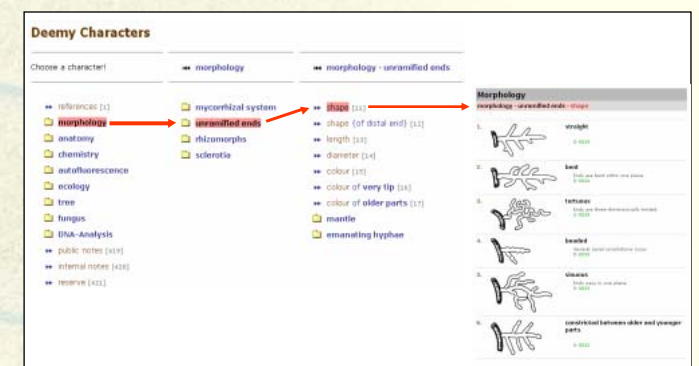
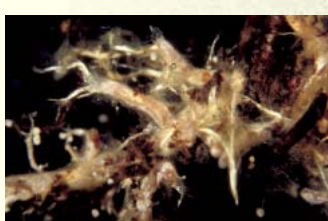


fig. 2: Easy navigation within the characters is provided by their hierarchical structure.

Within the next future, new descriptors, character states, and additional taxa of ectomycorrhizae will be entered, including new image data as well. Cooperating with the web programmer of the GBIF-D Node for Mycology and a graphic designer, the website [www.deemy.de](http://www.deemy.de) will be built up. The functional web-interface *Navikey* will be optimized to facilitate the web-based identification of ectomycorrhizae. The database client *DiversityNavigator* will be used to edit descriptive data and display images.



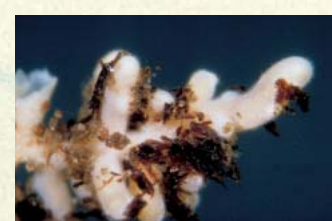
Cortinarius odorifer



Russula ochroleuca



Lactarius scrobiculatus



"Fagirhiza globulifera"



Lactarius spec.



"Pseudotsugaerhiza baculifera"

### References

- Agerer R, Rambold G (1996). DEEMY, a DELTA-based system for characterization and Determination of EctoMYcorrhizae (ver. 1.0). CD-ROM. München.  
 Diederich J, Fortuner R, Milton J (1997). Construction and integration of large character sets for nematode morpho-anatomical data. *Fundamental Appl Nematology* 20: 409-424.  
 Rambold G, Agerer R (1997). DEEMY – the concept of a characterization and determination system for ectomycorrhizae. *Mycorrhiza* 7: 113-116.