

SNSB develops new diagnostic app for natural science objects

The IT Center of the Bavarian Natural History Collections (SNSB) presented its new app 'DiversityNaviKey' (DNK) – a tool for reliable identification of natural science objects. The application is based on scientific data sources managed by the established database system of the SNSB, Diversity Workbench.

The freely accessible software application DiversityNaviKey (DNK) is a generic tool primarily designed for identification of organisms. The tool was recently released in a new version by the SNSB IT Center. It now provides important additional functions of interactive identification and diagnosis of organisms and other specimens of natural history and culture collections.

„DiversityNaviKey is easy to use: The new application is realised as a Progressive Web Application (PWA). It is running on every common browser and is usable by each kind of device such as smartphone, tablet or PC. Currently six nature science data sources are open and freely available for diagnosis and identification purposes with use of DiversityNaviKey. These include, for example, large data sets of fungi and lichens, but also of chemical constituents of some organisms,” says Ariane Grunz, the developer of DiversityNaviKey.

The diagnosis in the app works text-driven. The system answers questions such as: “Which of more than 11,000 lichens has a yellow colour, grows on bark and has an ingredient known to be toxic?” Or, “Which of the five bacterial cultures described grows at over 25 °C and has a specific molecular signature?” Or, “Which of the approximately 200 medicinal plants from Bavaria has blue flowers, blooms in spring and has alkaloids?”

The new application is based on data repositories of natural science collections from the Diversity Workbench database system, also developed at the SNSB IT Center. “The app links biodiversity research and specialized data sources,” explains Dr. Dagmar Triebel, head of the SNSB IT Center “We develop innovative concepts in the field of biodiversity and environmental informatics. The freely available Diversity Workbench is a modular and well-documented database system for long-term data management. Standardized and long-term curated subject datasets and digital collections are a hallmark of the SNSB and its IT unit in the field of ‘Data Science’. The recording and archiving of digital collections of scientific name data, nature science classifications and terms are within our core competence.”

How can new data sources be generated and made publicly available for diagnostics and identification in the app? As a first step, researchers create a database consisting of organisms, minerals, or other collection objects and their characteristics. Phenological (microscopic, macroscopic, ecological or chemical), but also molecular features such as gene sequence data are diagnostically suitable. To use such data matrices without restriction, they have to be released under a Creative Commons license. The helpdesk team at the SNSB IT Center provides advice on all steps of the data management and publication process in cooperation with the NFDI4Biodiversity consortium and GFBio e.V.

The prototype of DiversityNaviKey was first presented to the research community in fall 2021 at the ‘Computer Science for Biodiversity’ workshop – an event organized by the German Informatics Society (GI) and co-chaired by the Bavarian Natural History Collections (SNSB). The DNK data pipelines at the SNSB are universally applicable and are offered together with technologies of the National Research Data Infrastructure (NFDI) and freely available datasets. DiversityNaviKey was developed by the SNSB IT Center and the University of Bayreuth

and funded by the Bavarian State Ministry of Science and the Arts.

Links:

Web App: <https://divnavikey.snsb.info/>

Background info:
<https://diversityworkbench.net/Portal/DiversityNaviKey>

Databases:

https://diversityworkbench.net/Portal/DWB_DiversityNaviKey_data_sources

DiversityNaviKey on CS4biodiversity Workshop:

<https://www.nfdi4biodiversity.org/de/cs4biodiversity/>

Publication:

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<https://dl.gi.de/handle/20.500.12116/37705>

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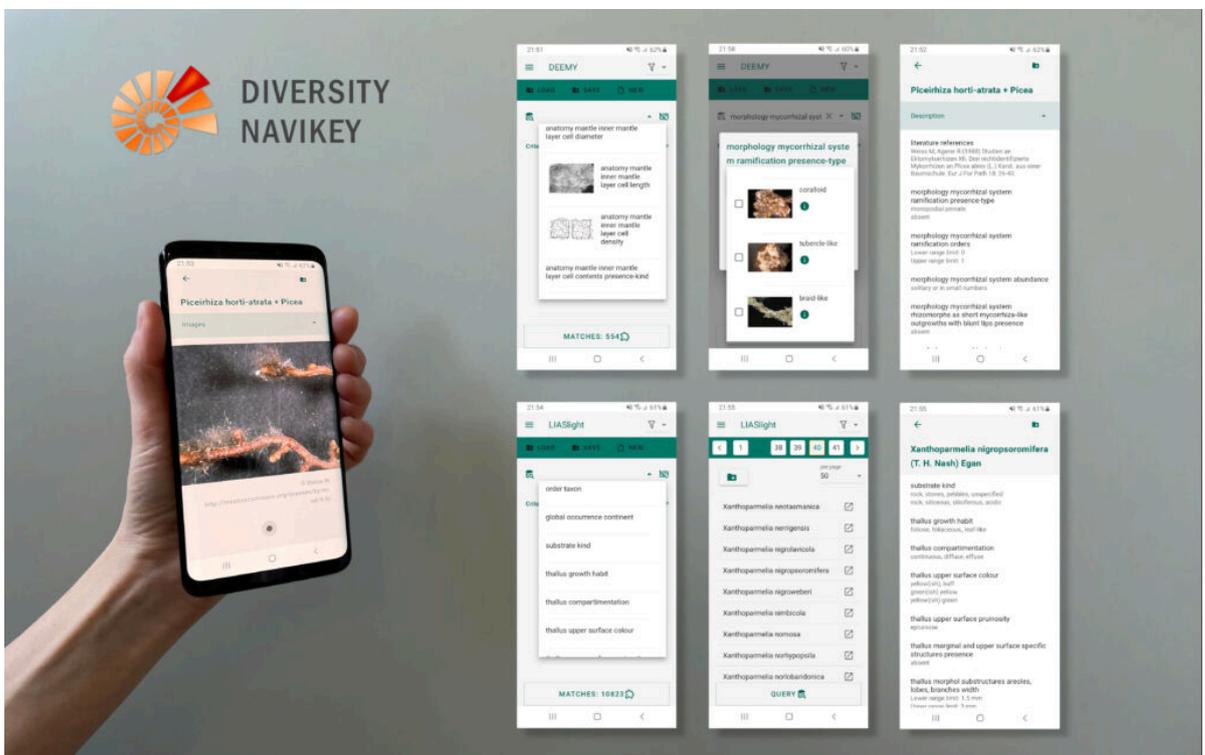
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The freely accessible software application DiversityNaviKey (DNK) is a generic tool primarily designed for identification of organisms. (Foto: A. Grunz, SNSB)