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A geo-referenced database for Pan-European Neogene freshwater mollusk-bearing localities

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In 2013 a new project was launched to assess the freshwater gastropod biodiversity in Miocene to recent lake systems. This involved the setup of a new database to store all the relevant information about localities, taxonomy, and distributions. Locality information includes GPS-coordinates, revised stratigraphical age, and affiliation to a (paleo-)lake. Information on taxonomy covers a full reference of a taxon's first description as well as the currently accepted combination. Additionally, type localities can be indicated if known. The distribution data, *i.e.*, the links between taxa and localities, is provided as presence-absence data.

The main aim of this project is a pan-European reconstruction of the evolution of lake faunas from the Miocene to present, hence over the last 23 million years. Although the faunas have been investigated in taxonomic studies for over 150 years, potential similarities and differences were rarely compared statistically. Even for the modern faunas literature on large-scale freshwater gastropod diversity is scarce and lacks a statistical approach. The here presented part focuses on the Neogene period, hence the Miocene and Pliocene. During this interval Europe's lake faunas showed a particularly higher degree of provincialism compared to the extant distribution patterns.

Another main outcome of this project is a revised stratigraphical attribution of many of the localities. The last overview of Cenozoic localities with records of freshwater gastropods is older than 80 years. Since then a great number of new localities have been discovered, substantial changes occurred in regional stratigraphy and dating methods have been refined. In the past year we have created a fully georeferenced dataset for almost all published Miocene and Pliocene freshwater gastropod localities (2,887), including updated stratigraphic data where possible. This basic update will serve as an essential fundament for any future work on these deposits, not only related to the freshwater faunas.

The database will be made permanently available to the public as an online source, providing all collected data on localities, faunal distributions, and taxonomy. Intermediate products, such as checked and annotated lists of Neogene freshwater gastropod localities, are published as data papers and thus made accessible to the whole scientific community.