

## **Phylogenetic analysis of recent giant water scavenger beetles allows the character-based study of fossil record of the group (Coleoptera: Hydrophilidae: Hydrophilina)**

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The majority of the Tertiary hydrophiloid fossils is represented by large and strongly sclerotized aquatic forms of the subtribe Hydrophilina. Five recent genera are recognized (*Hydrophilus*, *Hydrobiomorpha*, *Hydrochara*, *Tropisternus* and *Sternolophus*) and two additional are to be described or up-graded to generic level based on the phylogenetic revision using 80 morphological characters of adults. The analysis supports the monophyly of the subtribe Hydrophilina and all recent genera except of *Hydrochara* and defines synapomorphies of the clades allowing a character-based study of fossil record of the subtribe. Based on this phylogenetic background, fossil material of the subtribe Hydrophilina was studied on selected Tertiary localities in Germany (Grube Messel, Enspel, Seifhennersdorf) and Czech Republic (Bílina mine). Three genera were recorded: *Hydrophilus* from most localities examined, recent pan-tropical genus *Hydrobiomorpha* from all Eocene to Oligocene localities, and the genus *Hydrochara*, which is reliably recorded only from the Eocene locality of Grube Messel so far. All recorded genera belong to the monophyletic "greater hydrophilines clade" characterized by the seventh antennomere divided into lobes, disorganized field of clypeal systematic punctures, ultimate maxillary palpomere shorter than penultimate and two characters of ventral morphology not seen in fossil material.. Simultaneous occurrence of all three mentioned genera in locality of Grube Messel proves that the diversification of the clade had to pre-date middle Eocene and took place most probably during the Paleocene.