

Rare karren features indicate a previously unknown Pleistocene landslide-dammed lake (Lower Austria)

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Numerous enigmatic tube-shaped holes in the limestone ceilings of overhangs and small caves in a restricted area north of the village St. Aegydt am Neuwalde (Lower Austria) have been known at least since 1933 when they have been declared Natural Monument. So far, no detailed study concerning their origin has been conducted. The vertical holes occur in Middle Triassic limestone and they are almost perfect cylinders tapering gently to a rounded apex. Their diameters are up to 5.5 cm and their depths reach 45 cm. They occur on both sides of the Unrechtraisen valley located in the north-eastern part of the Northern Calcareous Alps. Almost identical features were described from the shores of lakes in western Ireland and termed röhrenkarren or tube karren (Simms, 2002). According to Simms's model, they have formed by condensation corrosion within air pockets trapped in limestone overhangs by rising water levels during floods. The occurrence of these features is surprising, because presently, there is no lake and so far, no palaeolake has been known from this area. Based on high-resolution airborne laser scanning data and detailed field observations, a landslide deposit was identified in a narrow section of the valley, downstream of the röhrenkarren sites. Additionally, fine-grained, partly laminated sediments with abundant dragonfly (Anisoptera) or flatworm (Turbellaria) eggs, indicative of lacustrine sediments, were documented up to ca. 100 m above present riverbed. These data indicate that a previously unknown landslide had dammed the Unrechtraisen River resulting in a ca. 100 m deep lake. The röhrenkarren have formed due to fluctuations of the lake level, resulting from differences in river run-off and seepage through the landslide dam. Since $^{230}\text{Th}/\text{U}$ -dating of calcite crusts covering some röhrenkarren was not successful, the age is not well constrained.