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# The formation of River Motala Ström – the beginning of a river landscape and human presence in the early Holocene

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## Abstract

In conjunction with the extensive archaeological projects conducted at the current outlet of Sweden's second largest lake, Lake Vättern, macrofossil-, pollen- and diatom data have been studied from <sup>14</sup>C-dated lake- and river sediments from River Motala Ström in Motala and Lake Boren. These investigations have revealed sedimentary evidence of the Yoldia Sea regression, the Ancient Lake Vättern transgression, and the following stepwise river formation process. Around 9000 cal a BC, two small kettlehole basins at Strandvägen and Kanaljorden became isolated from the Yoldia Sea. As the ice sheet retreated further north, the isostatic uplift isolated the Vättern basin from the Yoldia Sea. Due to the uneven isostatic uplift, the basin tilted toward the south and the Ancient Lake Vättern transgression started in Motala. The threshold in Motala at 92.5 m asl was reached around 7200 cal a BC, and River Motala Ström was formed. <sup>14</sup>C-dated diatom records from Lake Boren, and shoreline deposits in Motala, confirm this event. The water level in Lake Vättern initially fell around 1.5 m, and around 5800 cal a BC a second erosional event cut down the threshold to modern day level. At this time, the settlements at Strandvägen and Kanaljorden were established and expanded.

**Keywords:** River Motala Ström, Lake Vättern, river formation process, Strandvägen, Kanaljorden

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