

## THE ELEMENTAL COMPOSITION AND CHRONOLOGY OF THE SICKLES FROM THE SOSNOVAYA MAZA HOARD OF THE LATE BRONZE AGE

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The hoard near the village of Sosnovaya Maza in the Saratov region in the Lower Volga was found in 1901. The Sosnovaya Maza hoard mostly contains sickles (44 in total) but also celts, daggers and fragments. Practically all artifacts of this assemblage are kept in the State Historical Museum in Moscow, several items from the assemblage are now in the Saratov local lore museum and the Khvalynsk local lore museum.

The technological and chemical analyses of the sickles from the Sosnovaya Maza hoard which is one of the largest hoards found in eastern Europe of the final stage of the Bronze Age, application of the ICP-MS method to study metal elemental composition, the examination of artifacts referred to the block of cultures dating to the final stage of the Late Bronze Age that share typological similarities with the hoard artifacts, research experiments to melt copper-iron alloys similar to those of the Sosnovaya Maza helped connect the sickles from the Sosnovaya Maza hoard discovered by chance in the Lower Volga region early in the 20th century without any archaeological context with the sickle from a closed cultural assemblage, which is pit-house 4 at the Alekseyevka settlement attributed to the Alekseyevka-Sargary culture of northern Kazakhstan. In contrast to the sickles from the hoard, the Alekseyevka sickle was found inside pit-house 4, which is a closed archaeological context, among other things, including carbon-containing animal bones. The  $^{14}\text{C}$  date of the cattle bone retrieved from pit-house 4 can be regarded to be a chronological benchmark for the Sosnovaya Maza type sickles and the entire Sosnovaya Maza hoard enabling us to narrow down the time interval during which such sickles made from iron-containing copper were used and date the hoard to 1400-1300 calBC.

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