

Genesis of limonite ores in the “Röda Jordan” area from a hydro-geological perspective

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It has been found that bloomery iron making commenced in Sweden already during the Middle Bronze Age. During the latter part of the Late Bronze Age, iron production sites began to appear in areas relatively distant from settlements and burial sites. An example of such an area is “Röda Jordan” (the Red Soil) near Riddarhyttan in the province of Västmanland. Among archaeologists it is considered obvious that organized prospecting activity took place in connection with iron making. Skilled people were searching for abundant iron deposits in the form of various types of limonite ore. In addition, abundant access to fuel was important (cf. Hjärthner-Holdar et al. 2018).

The “Röda Jordan” is considered an “area of national interest for cultural heritage” in Sweden and is subject to re-examination in terms of geographical demarcation (Jensen, 2019). Within an area of approx. 5 km², the oldest remains of iron production in Sweden have been found. Carbon-14 dating shows that operations have been ongoing from the 7th century BC until the 1st century AD (Grandin et al., 2000). Sixteen sites of bloomery furnace remains for iron production have been found.

The scientific background descriptions of the “Röda Jordan” area are archaeological studies of the individual remains with an emphasis on archaeometallurgy, industrial history and past social context (see e.g., Berglund (ed), 2015;). However, there is no rigorous geoscientific description of the red soil genesis, which should be an important knowledge basis for proposing the area bounds seen from a community planning perspective.

A project is currently being carried out with the aim of investigating the geoscientific conditions. Two survey sites, with ongoing red soil creation, have been established in the area. Geological mapping and groundwater surveys with e.g., water sampling in observation wells make it possible to describe the geo-scientific conditions in more detail. Initial project results show that several hydrogeochemical processes in combination with area-specific hydrogeological conditions are of decisive importance for the extensive past and ongoing red soil formation.

References

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