

Plan Overview

A Data Management Plan created using DMPTool

DMP ID: <https://doi.org/10.48321/D18H0M>

Title: The Role of Horses in the Rise of Social Inequality in Northern Eurasia

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Funder: National Science Foundation (nsf.gov)

Template: NSF-SBE: Social, Behavioral, Economic Sciences

Project abstract:

The project aims to document alterations in social complexity in northern Eurasia during the Bronze Age (ca. 4200–3000 BP) by exploring the spread and social impact of domestic horses in early steppe pastoral societies with radiocarbon dating of organic materials from graves with horses and two-wheeled chariots, analyzing the osteological and biomolecular analysis of domesticated horses, and use wear analysis of antler and bone-made parts of ancient horse bridles (cheekpieces). Research activities of the proposed project include Bayesian statistical chronological and geographic modeling of samples ($n=104$) from archaeological complexes ($n=47$) with documented cultural horse-related contexts. The further advance in bone pathology studies is needed for distinguishing chariot horses from riding horses, leading to the study of horse skeletal remains from various Bronze Age contexts from the Republic of Kazakhstan ($n\geq 13$). Moreover, use-wear analysis of cheekpieces ($n=34$) will provide a better understanding of the dynamic of horse use by tracing the transition from chariotry to horseback riding and a mass spectrometry study (ZooMS) of sampled cheekpiece specimens ($n=26$) will help to trace the supposed transition from wild to domestic faunal resources to produce them. Finally, horse bone samples will also be submitted for ancient DNA analyses ($n=41$) to determine whether horses from various regions of the Eurasian Steppe can be traced to common ancestry.

Start date: 08-01-2023

End date: 08-01-2025

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The Role of Horses in the Rise of Social Inequality in Northern Eurasia

Roles and responsibilities

The DMP should outline the rights and obligations of all parties as to their roles and responsibilities in the management and retention of research data. It should also consider changes to roles and responsibilities that will occur should a principal investigator or co-PI leave the institution or project. Any costs should be explained in the Budget Justification pages.

The project's radiocarbon and related isotopic data, ZooMS, and paleo-DNA data will be stored online through the Center for Comparative Archaeology at the University of Pittsburgh. Chechushkov will be responsible for preparing the data to be stored at the Comparative Archaeology Database, maintained by the Center for Comparative Archaeology, and submitting the data. Ebert will take over this responsibility should Chechushkov leave the project.

The remaining physical materials will be preserved at the University of Colorado Museum of Natural History for future research. Chechushkov will be responsible for collection transfer to the Museum. Taylor will take over this responsibility should Chechushkov leave the project.

Expected data

The DMP should describe the types of data, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project. It should then describe the expected types of data to be retained.

The expected dataset will consist of a set of radiocarbon and stable isotope measurements of samples ($n=104$) from 47 archaeological complexes. ZooMS data identifying the biological origin of bone and antler from which cheekpieces were made ($n=34$) and paleo-DNA data on ancient horses ($n=41$).

The remaining collection of physical materials will consist of 43 animal teeth specimens, 17 bone specimens, and nine human teeth.

Period of data retention

SBE is committed to timely and rapid data distribution. However, it recognizes that types of data can vary widely and that acceptable norms also vary by scientific discipline. It is strongly committed, however, to the underlying principle of timely access, and applicants should

address how this will be met in their DMP statement.

The period of data retention is not limited. In addition to online storage, data will be published in scientific journals as supplementary materials to ensure its preservation.

Data format and dissemination

The DMP should describe data formats, media, and dissemination approaches that will be used to make data and metadata available to others. Policies for public access and sharing should be described, including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements. Research centers and major partnerships with industry or other user communities must also address how data are to be shared and managed with partners, center members, and other major stakeholders.

Data will be disseminated as open source under Creative Commons Attribution 4.0 International Public License

Data storage and preservation of access

The DMP should describe physical and cyber resources and facilities that will be used for the effective preservation and storage of research data. These can include third party facilities and repositories.

The primary cyber resource is the Comparative Archaeology Database, maintained by the Center for Comparative Archaeology at the University of Pittsburgh. The Database publishes primary archaeological data to complement more traditional means of publication. The Database thus works toward the preservation and dissemination of primary data recovered in fieldwork, a fundamental ethical responsibility in archaeology. Beyond serving as a data repository, the Comparative Archaeology Database collaborates with researchers in pursuit of two particular objectives: 1) accessible presentation of comprehensive metadata without which data are uninterpretable and thus useless (see Roche et al. 2015); and 2) exploration of the potential of digital information technology for presenting the multi-faceted data of archaeology in ever more useful ways that are at the same time resistant to software and hardware obsolescence. Both objectives contribute to permanent preservation of irreplaceable primary archaeological data and facilitate the solidly empirical comparative analysis.

Additional possible data management requirements

More stringent data management requirements may be specified in particular NSF solicitations or result from local policies and best practices at the PI's home institution. Additional requirements will be specified in the program solicitation and award conditions. Principal Investigators to be supported by such programs must discuss how they will meet these additional requirements in their Data Management Plans.

Planned Research Outputs

Data paper - "The Role of Horses in the Rise of Social Inequality in Northern Eurasia"

The project aims to document alterations in social complexity in northern Eurasia during the Bronze Age (ca. 4200–3000 BP) by exploring the spread and social impact of domestic horses in early steppe pastoral societies with radiocarbon dating of organic materials from graves with horses and two-wheeled chariots, analyzing the osteological and biomolecular analysis of domesticated horses, and use-wear analysis of antler and bone-made parts of ancient horse bridles (cheekpieces). Research activities of the proposed project include Bayesian statistical chronological and geographic modeling of samples ($n=104$) from archaeological complexes ($n=47$) with documented cultural horse-related contexts. Further advance in bone pathology studies is needed for distinguishing chariot horses from riding horses, leading to the study of horse skeletal remains from various Bronze Age contexts from the Republic of Kazakhstan ($n \geq 13$). Moreover, use-wear analysis of cheekpieces ($n=34$) will provide a better understanding of the dynamic of horse use by tracing the transition from chariotry to horseback riding, and a mass spectrometry study (ZooMS) of sampled cheekpiece specimens ($n=26$) will help to trace the supposed transition from wild to domestic faunal resources to produce them. Finally, horse bone samples will also be submitted for ancient DNA analyses ($n=41$) to determine whether horses from various regions of the Eurasian Steppe can be traced to common ancestry.

Planned research output details

Title	Type	Anticipated release date	Initial access level	Intended repository(ies)	Anticipated file size	License	Metadata standard(s)	May contain sensitive data?	May contain PII?
The Role of Horses in the Rise of Social Inequality ...	Data paper	Unspecified	Open	None specified	10 MB	Creative Commons Attribution 4.0 International	None specified	No	No