



Project Gallery

Yeghegis-1 rockshelter site: new investigations into the late Chalcolithic of Armenia

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Excavations at Yeghegis-1, a rockshelter in southern Armenia, reveal long-term human habitation from the late fifth to mid-fourth millennia BC. Here, the authors present a preliminary overview of the materials recovered from the site and highlight the potential of ongoing research to shed light on Chalcolithic human lifeways in the region.

Keywords: Lesser Caucasus, Late Chalcolithic, zooarchaeology, ZooMS, rockshelter, southern Armenia

Introduction

The Chalcolithic, also known as the Copper Age, is characterised by a move towards early extractive copper metallurgy, a technological revolution that prompted increased productivity, growth of social stratification and functional differentiation of societies and the development of long-distance trade. In the Lesser Caucasus the Chalcolithic covers the period c. 5200–3500 BC, prior to the appearance of the Kura-Araxes cultural complex (Bobokhyan *et al.* 2014; Sagona 2018). Recently intensified research in this region has shed light on the subsistence and economic strategies of Chalcolithic pastoral farming communities who specialised in domestic sheep, goat and cattle herding (Berthon *et al.* 2013, 2021; Samei 2019; Chataigner *et al.* 2020; Samei *et al.* 2020; Palumbi *et al.* 2021) with evidence of prevalent seasonal upland mobility as early as the sixth millennium BC (Berthon *et al.* 2021; Hirose *et al.* 2021; Janzen *et al.* 2023).

Despite growing research efforts in the region, questions related to subsistence dynamics, herding strategies, animal exploitation practices and adaptation to various environmental conditions during the Chalcolithic still remain to be fully elucidated. To complement

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existing knowledge and expand our understanding of lifeways during this key period of human history, we initiated the archaeological exploration of Yeghegis-1 rockshelter. Here, we provide an overview of the site and the results of the first field season.

Yeghegis-1

Yeghegis-1 (39051'52.72"N, 45020'41.52"E) rockshelter is situated on a slope in the Yeghegis Valley, Vayots Dzor Province, Armenia, discovered in 2020. Abundant stone tools were found scattered along the slope in front of the entrance (Figure 1). Additionally, a wall-like construction was identified in the western area of the rock shelter. The construction technique hinted at the antiquity of the wall, which we decided warranted further examination.

Two areas were targeted for test excavations in 2021: inside the shelter and near the entrance. Initial excavations were, however, unsuccessful and were terminated upon encountering massive (about 1–3m deep) basalt stone blocks that were part of the rockshelter's collapsed roof. In 2022, a trench (2 × 2m) situated on a relatively flat area near the entrance of the shelter was excavated to a depth of 2m. The excavations revealed a sequence of distinct, undisturbed occupational layers. Hearths with burnt animal bones, charcoal and ash were also recorded.

Animal bones from four occupational horizons were sent for radiocarbon dating (Figure 2) and returned dates of 5008±27 BP for Horizon 3 (sheep/goat phalanx, GU61230: 3814–3704 cal BC at 61%), 5138±27 BP for Horizon 4 (sheep/goat occipital, GU62951: 3991–3934 cal BC at 64%), 5190±27 BP for Horizon 5' (sheep/goat occipital, GU62953: 4047–3958 cal BC at 95.4%) and 5354±27 for Horizon 5 (sheep/goat phalanx, GU61231: 4136–4054 cal BC at 31.1%). The dates, modelled in OxCal v.4.4 and using the IntCal20 calibration curve (Bronk Ramsey 2009; Reimer *et al.* 2020), suggest at least 300 years of occupation.

Recovered material

The excavations in 2021 and 2022 yielded abundant animal bones (approx. 8000), lithic artefacts (approx. 2000), and earthenware sherds (approx. 700). Copper artefacts and slag were also recovered along with artefacts manufactured from animal bones, including bone points and beads (Figure 3).

The ceramic assemblage from the site belongs to two categories of pottery: Sioni ware and Chaff Faced ware. Ongoing analysis will allow an in-depth study of the pottery and existing parallels.

Lithic blades, scrapers, burins and borers were recorded, along with flakes and irregularly shaped tools manufactured mostly from obsidian. X-ray fluorescence analysis is ongoing to identify the source of the obsidian, which is not known to occur naturally in the Vayots Dzor Province.

Almost 80 per cent of the animal-bone assemblage is highly fragmented and not morphologically identifiable. The remainder is dominated by sheep/goat (Figure 4). Other ungulates, including cattle, pig/boar and deer, are less common and a small portion of carnivore taxa is identifiable, represented by bears and canids. A substantial proportion (>20%) of bones are

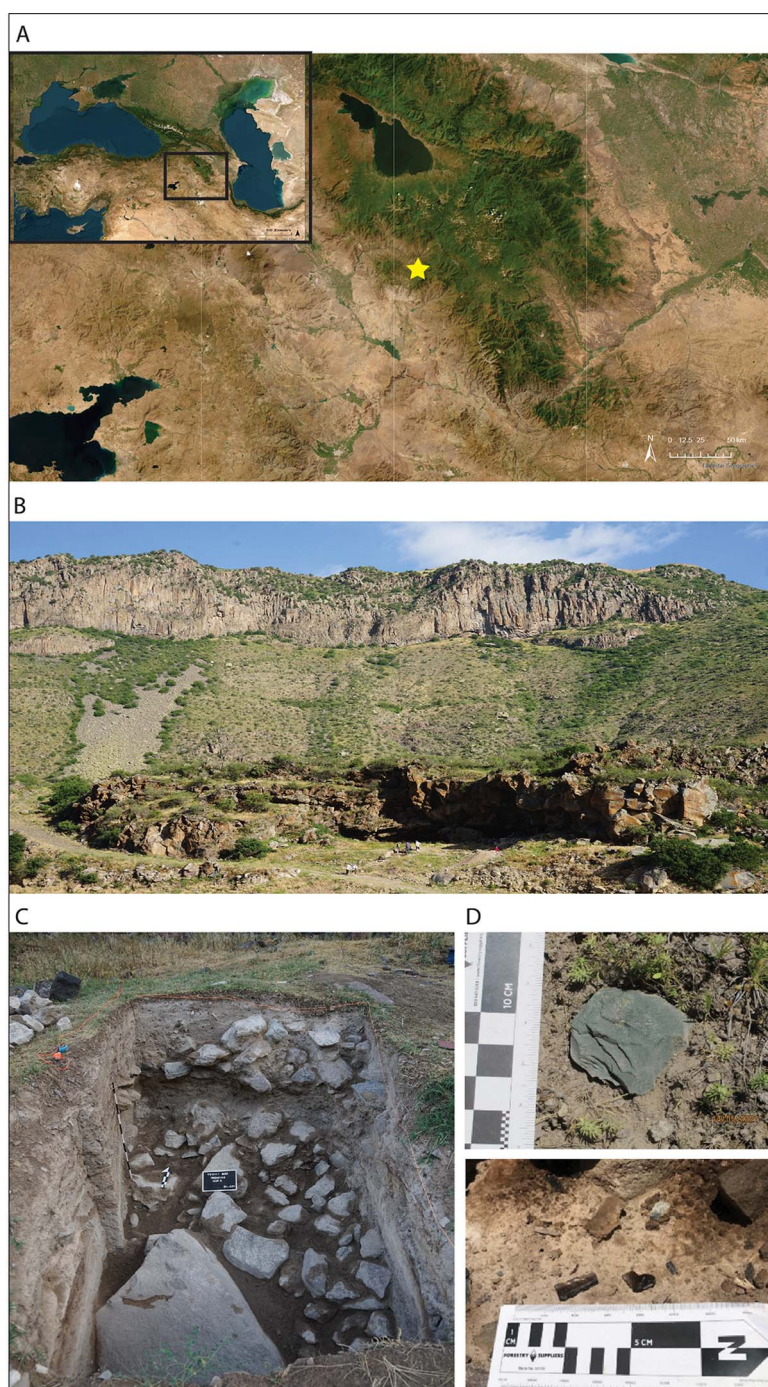


Figure 1. Yeghegis-1 rockshelter: A) geographic location; B) view of the rockshelter; C) excavated trench (2022); and D) surface finds (figure by authors).

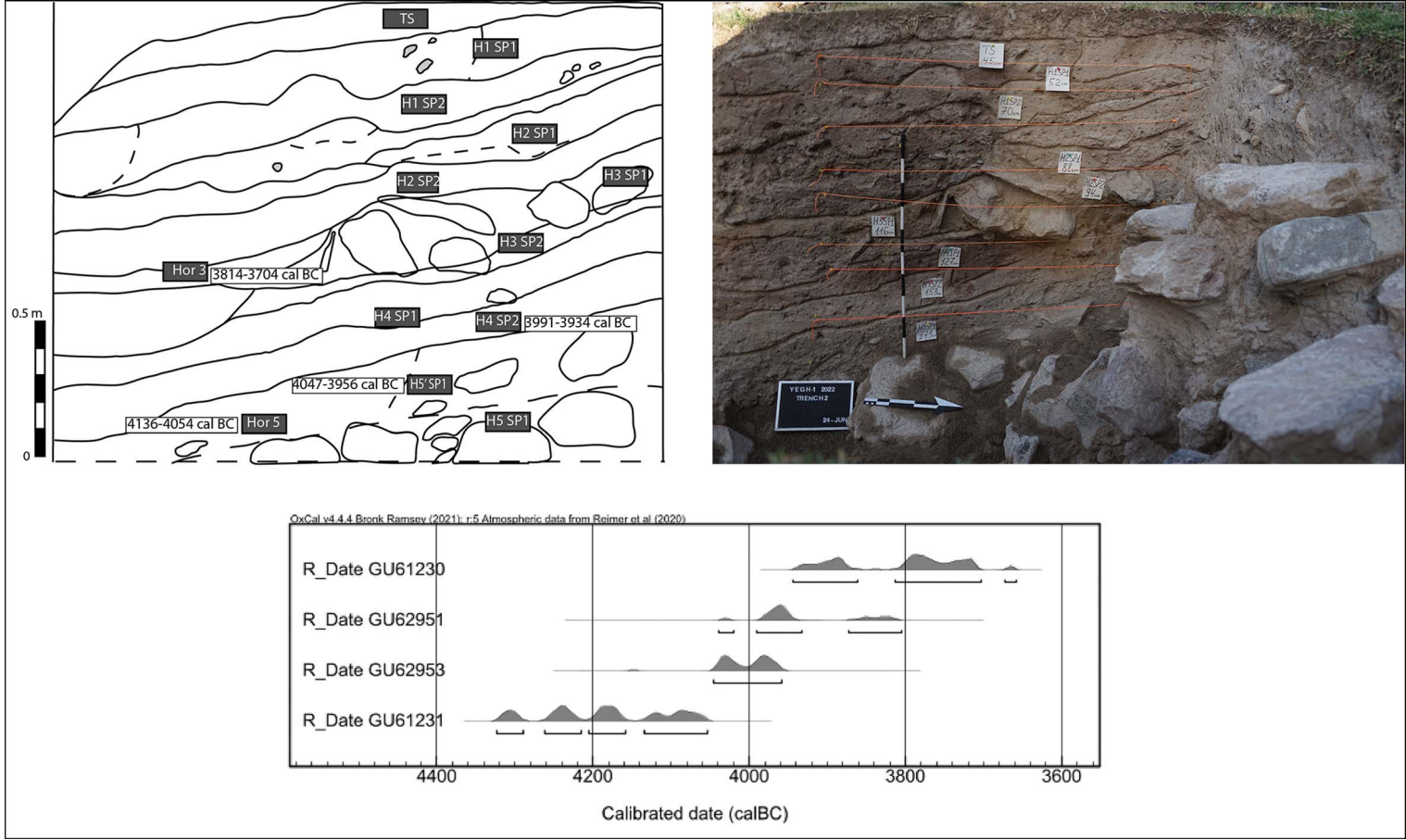


Figure 2. Chronostratigraphy of the site and radiocarbon dating of the four samples (figure by authors).

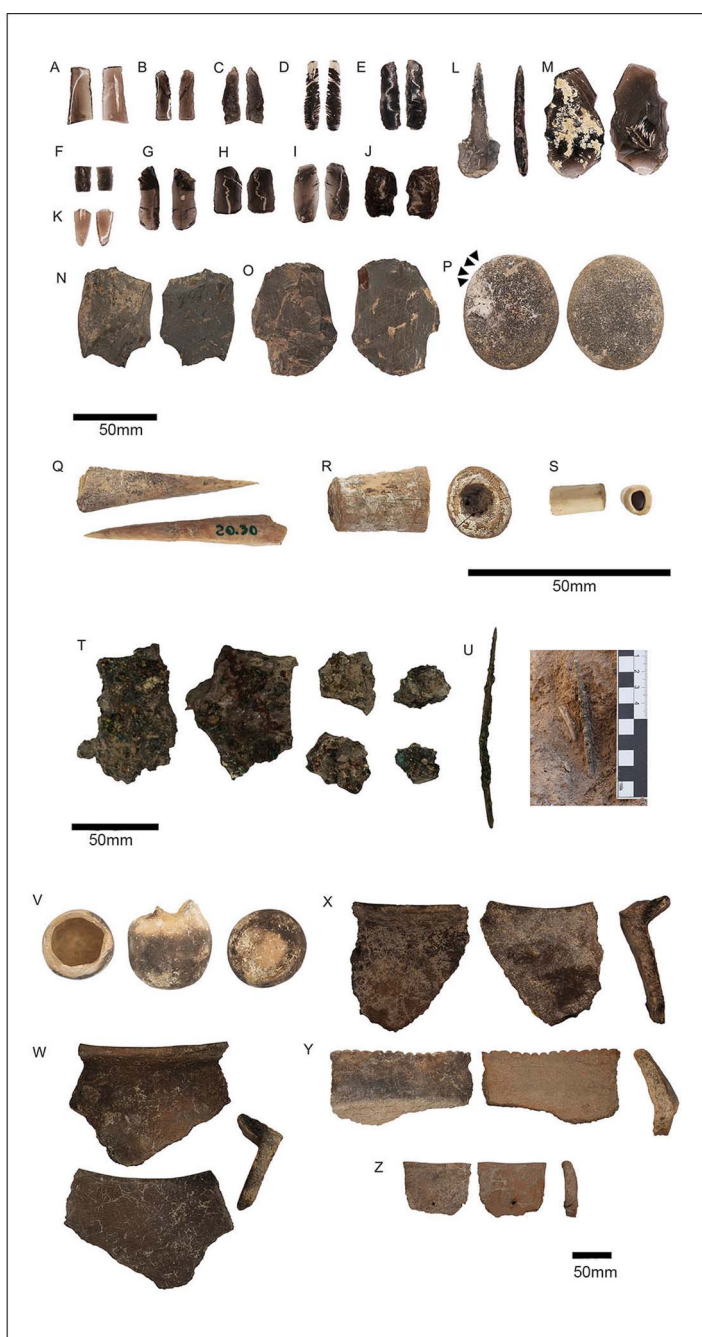


Figure 3. Selected artefacts: A–M) obsidian tools; N–O) flint tools; P) hammerstone; Q–S) bone artefacts; T) copper smelting slags; U) copper pin (inset: viewed in situ); V–Z) pottery (figure by authors).

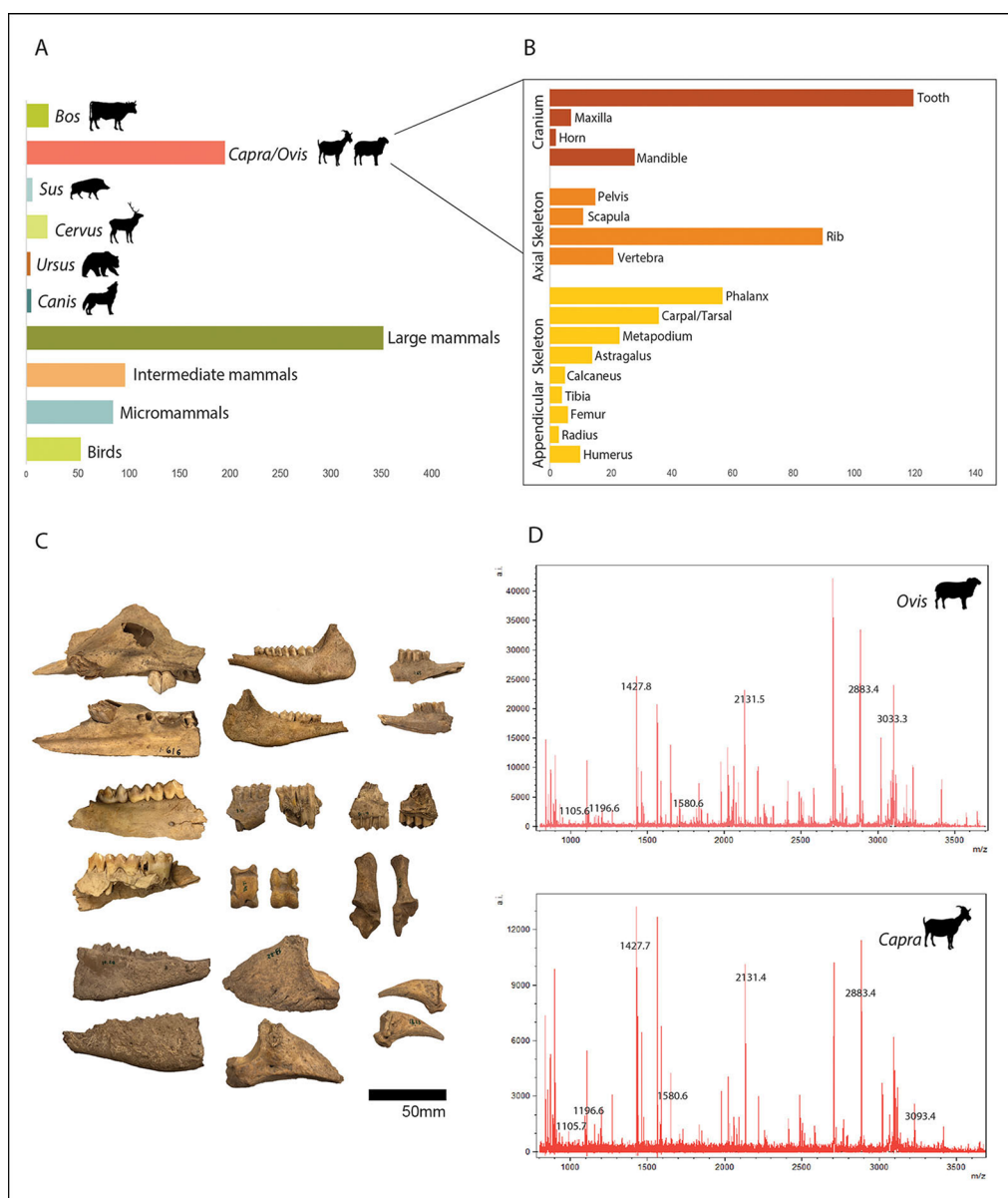


Figure 4. Faunal assemblage: A) taxonomic composition; B) anatomical representation of capraoids; C) examples of identifiable bones; D) example ZooMS spectra identified as sheep (Ovis) and goat (Capra) (figure by authors).

burnt/calced or bear cut marks, suggesting an anthropogenic accumulation. These results are comparable with contemporaneous faunal material recovered from nearby Areni-1 cave, where zooarchaeological investigation revealed a predominance of goats over sheep (Samei *et al.* 2019, 2020).

To complement the morphological identification, increase taxonomic resolution and effectively distinguish ovine from caprine remains to reveal the relative proportions of each, Zooarchaeology by Mass Spectrometry (ZooMS) analysis was conducted on selected bone fragments. Preliminary ZooMS analysis of ungulate bones ($n = 40$), performed following established protocols (Buckley *et al.* 2009; Brown *et al.* 2020), had an 85 per cent success rate, adroitly allowing the separation of sheep from goats, with sheep dominating the record (Figure 4) and highlighting the potential for large-scale ZooMS investigation.

Future perspectives

Preliminary results from the Yeghegis-1 rockshelter underscore the potential of this site to provide important insights into human lifeways during the Chalcolithic. Further excavation seasons are planned to fully explore the archaeology of the site, and studies of the lithic and ceramic artefacts will elucidate trade and exchange networks, craft specialisation and manufacturing techniques. Ongoing analyses of the rich faunal remains are expected to contribute to knowledge of human subsistence economies, with ZooMS contributing high-resolution data on taxonomic composition. The application of bulk and sequential stable carbon and oxygen isotope analyses to faunal tooth enamel will additionally allow insights into local environmental conditions and herd management strategies, particularly regarding mobility and seasonality. Future work on archaeobotany is also expected to provide information on ancient flora utilised by the inhabitants of the site. Our ongoing and planned multidisciplinary research will thus investigate how shifts in modes of occupation and economic strategies, expansion of external networks and advancement of metallurgy affected human-environment interactions during the late Chalcolithic.

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