ARCHAEOLOGICAL STUDY HISTORY OF THE UPPER SANGZOR BASIN

Kulboev N.
National Center of Archaeology, Academy of Sciences of the Republic of Uzbekistan,
81 Mirzo Ulugbek Street, Tashkent, 100007, Uzbekistan
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Abstract
This article analyzes the history of archaeological research in the Upper Sangzor Basin. The main objective is to review the process of archaeological investigations conducted in this region from the Soviet period to the present day, with special attention to previously unexplored and marginal areas. The study involved the examination of archival sources, scientific literature, and cartographic materials, as well as the use of GIS technologies and archaeological surveys. As a result, more than twenty new archaeological sites were identified in the Upper Sangzor Basin, and their spatial distribution and chronological characteristics were systematized.

Keywords: Upper Sangzor Basin, Nushkent, Rustoq, Molguzar Range, Sangzor River, GIS analysis, pastoralism, Soviet archaeology.

Introduction

The Sangzor Valley has been a permanent area of human settlement since ancient times. The scholar of Ustrushona studies, **M. Pardaev,** based on the scope and periodicity of sedentarization and land utilization processes, as well as ancient historical and administrative divisions, classifies the densely distributed archaeological sites in the Sangzor River basin into small cultural oases. He studies these as the **Upper Sangzor, Middle Sangzor,** and **Lower Sangzor** cultural zones. This classification is considered logically justified, and the present study also follows this framework [1, p. 34].

The upper parts of the valley are mountainous in nature, where **pastoralism** predominated; descending towards the plains**, irrigated agriculture** became dominant and spread as far as the Lower Sangzor. Since ancient times, such provinces and cities as **Nushkent, Kharkana**, and **Fagh'non (Dizak)** have existed in this region [2, p. 29]. Archaeological research demonstrates that the settlements along the Sangzor were closely associated with an advanced culture of irrigated agriculture.

Most of the previous archaeological studies in the Sangzor Valley were conducted primarily along the riverbanks and near transport routes, which led to a lack of systematic investigation in the foothill areas. However, since the main economic activity of ancient populations was closely tied to animal husbandry, people often lived precisely in the foothill zones. Therefore, conducting archaeological field surveys in these regions emerged as a scientific necessity.

In addition, certain chronological gaps are observed within the archaeological landscape of the Sangzor Valley. To fill these gaps — that is, to establish the intermediate chronological phases and reconstruct the sequence of cultural processes — targeted survey and analytical work was carried out.

During the research, **modern technologies**, particularly **GIS tools**, were extensively applied. This method, which was rarely employed in earlier studies, enabled a systematic evaluation of the territory. GIS-based analyses allowed the identification of areas with high potential for ancient habitation based on topography, water sources, soil fertility, and the spatial distribution of known archaeological sites. This approach made it possible to discover new archaeological settlements and to gain a deeper understanding of the lifestyle of ancient populations in the Sangzor Valley.

The **main objective** of this study is to examine the historical stages of archaeological research in the Sangzor oasis, to analyze the ancient culture and way of life of its inhabitants on a scientific basis, and to determine the role of this region in the development of **Central Asian archaeology.**

To achieve this objective, the following tasks were defined:

- To describe the natural and geographical conditions of the Sangzor oasis and their significance in the formation of human settlements;
- To analyze the earliest archaeological observations and research conducted in the late 19th and early 20th centuries;
- To summarize the results of Soviet-era archaeological expeditions (1950s–1980s);
- To reveal new scientific methods applied during the independence period and in contemporary research (GIS technologies, aerial imagery, and archival analysis);
- To collect and systematize data on ancient settlements, cemeteries, architectural structures, and economic remains identified in the oasis.

Archaeological research in the Sangzor Valley began in the **late 19th and early 20th centuries,** carried out by Russian travelers and scholars. Their observations were mainly limited to collecting information about the region's natural and geographical features, the external appearance of ancient monuments, and the lifestyle of local populations.

During the **Soviet period** (particularly between the 1950s and 1980s), systematic archaeological expeditions were conducted in the Sangzor Valley. These studies led to the discovery of ancient settlements, cemeteries, and irrigation systems. The material culture artifacts unearthed during excavations provided valuable data on the socio-economic life of the oasis across different historical periods.

In the **years of independence**, archaeological studies entered a new phase. Uzbek researchers began

employing modern methodologies such as **GIS technologies**, **aerial photography**, and **remote sensing data**. As a result, a clearer understanding emerged regarding the ancient irrigation networks, urban planning systems, and settlement dynamics of the region.

Overall, earlier scholarly research played a crucial role in uncovering the rich historical and cultural heritage of the Sangzor Valley and serves as a fundamental source for present-day investigations.

Natural conditions of the upper Sangzor region.Within the hydrographic system of the Molguzar Range, the Sangzor River serves as the principal water artery. It originates on the northern slopes of the Chumqortog‘ Range, at approximately 3,300 meters above sea level, where the G‘uralash and Jontaka streams converge [3, p. 36]. Along its course, numerous tributaries 28–59 km in length—such as Ko‘kjar, Novqa, and Sutlibuloq—join the river from the northern slopes of Chumqortog‘.

From the southern slopes of the Molguzar Range, the Qorashaqshaq and Shaybeksoy streams also merge into the Sangzor, contributing to the river’s overall water balance. The river flows into the Jizzakh Reservoir, serving as the main source of water for the province.

The Sangzor River is primarily fed by glacial and snowmelt waters. Consequently, water levels rise during summer and decrease in winter. The average discharge rate is about 6.1 m^3/s, with a total drainage basin covering approximately 2,580 km^2 and an overall length exceeding 120 km [4, p. 15].

Historically, the Sangzor River and its tributaries have played a crucial role in maintaining the ecological balance of the region, fostering the development of agriculture and pastoralism, and influencing the establishment of human settlements. This hydrological system remains one of the key natural and economic lifelines of the Jizzakh oasis.

Main Part

History of Archaeological Research. Early Archaeological Observations (Information from the Early 20th Century). The earliest archaeological observations in Central Asia date back to the late 19th and early 20th centuries, coinciding with the expansion of the Russian Empire into the region and its growing scientific and strategic interests. During this period, the primary focus of researchers was to collect and catalog ancient artifacts, while systematic investigation of the historical and cultural context of the territories remained secondary. Consequently, early studies were mostly limited to surface surveys and the registration of large visible finds.

Among the scholars active during this period, P. I. Lerch deserves special mention. In the 1860s, he studied and translated a white marble inscription discovered in the Ilono‘tti gorge, located between the Molguzar and Nuratau ranges [5, pp. 38–39]. The inscription records, on one side, Ulughbek’s victory over the Mongols, and on the other, Abdullakhon II of Bukhara’s triumph over the rulers of the Dasht-i Qipchoq. This artifact remains one of the key pieces of evidence of scholarly activity from that era.

In general, archaeological research of the late 19th and early 20th centuries concentrated mainly on describing the external features of monuments—architectural remains, fortification structures, and irrigation systems—without conducting in-depth excavations or stratigraphic analyses. Rather than adopting a scientific methodology, researchers focused on collecting descriptive information, oral traditions, and local historical narratives.

Overall, the archaeological investigations of the early 20th century laid the groundwork for subsequent research in the Sangzor Valley and the wider Ustrushona region, though this stage can be considered preliminary, superficial, and not yet systematically organized. From the 1920s–1930s onward, Soviet expeditions introduced more structured and comprehensive archaeological studies across the region.

Research during the Soviet Period. The systematic exploration of Sangzor Valley’s archaeology entered a new phase in the second half of the 20th century, particularly during the Soviet era. Expeditions conducted in this period aimed not only to document archaeological sites but also to determine their chronology, economic functions, and cultural development patterns.

The first comprehensive excavations were carried out in 1948 by archaeologist Ya. G‘. G‘ulomov, who conducted excavations in the village of Nushket in the Bakhmal district. This research is recognized as one of the first systematic archaeological investigations in the Sangzor Valley and laid a solid foundation for subsequent studies [6, pp. 57–59].

In the following years, U. A. Alimov and L. M. Sverchkov conducted archaeological surveys near the villages of Qashqasuv, Qizilmozor, and Boyqo‘ng‘ir. They identified stone-built graves, burial mounds, and jar burials containing human remains [7, p. 15]. These discoveries indicate that the region’s inhabitants possessed complex funerary customs and developed religious concepts during that period.

In 1982, archaeologist R. A. Badakhov recorded twelve stone-covered burial mounds southwest of the Bakhmal district, along the road from Qoraqishloq to Oyqorsoy. Additionally, about 500 meters northwest of this area, a chain of nineteen burial mounds was documented. In the Oyqor area, about 500 meters west and north of the village of Sartyuzi, isolated large burial mounds were identified, around which fragments of early medieval pottery were found [8, pp. 6–7]. Furthermore, in the northern parts of Zartepa village, additional stone-encircled burial mounds were recorded [9, p. 11].

These studies revealed that during the Soviet period, the Sangzor Valley contained numerous large necropolises and burial complexes, providing valuable insights into ancient funerary rituals, belief systems, and social structures. Moreover, the findings highlight the interrelation between pastoralism, agriculture, and mortuary practices in the cultural life of the ancient population.

Overall, the Soviet-era expeditions contributed significantly to forming a scientifically grounded ar-

chaeological framework of the Sangzor Valley. The results of these studies later served as the empirical and methodological foundation for research conducted during the independence period.

New Approaches and Research after Independence. After Uzbekistan gained independence, archaeological research in the Sangzor Valley and the mountainous regions of Ustrushona entered a new stage of development. The studies conducted during this period are notable for enriching previous findings, filling chronological gaps between different archaeological complexes, and introducing modern research methodologies.

Between 2003 and 2016, archaeologist F. Toshboyev carried out large-scale excavations in the districts of Zomin, Jizzakh, Bakhmal, and others. During these investigations, the Shirinsoy, Sa‘gonok, and Uchtepa burial mounds were excavated and analyzed in comparison with other sites. The resulting materials provided a deeper understanding of local populations’ funerary traditions, religious beliefs, and economic activities [10, pp. 19–20].

In recent years, landscape-archaeological surveys and GIS analyses in the mountainous areas of Ustrushona, particularly within the Molguzar Range, have revealed traces of ancient nomadic pastoralist communities. According to researcher F. A. Maksudov, due to favorable natural conditions, campsites of Bronze-Age herding groups were established in these territories. Their remains were recorded at elevations of 1,100–1,800 m in the valleys of G‘alchasoy, Qoratosh, Besharchasoy, Moyliqoton, and Uyqto‘sh, as well as at 2,000–2,500 m on the Bedana Plateau, particularly in the Toshbuloq pastures [11, p. 17].

Studies based on archaeological predictive modeling have shown that the Molguzar Range contained ecological “niches” suitable for early pastoral habitation. According to AMS/^{14}C radiocarbon analyses, together with the stratigraphy, spatial layout, and material culture of these campsites, nomadic pastoralists began occupying this region as early as the second millennium BCE, maintaining continuous seasonal use for nearly four thousand years.

Thus, the research conducted during the independence period not only enriched existing archaeological knowledge but, through the application of modern methods—GIS technologies, radiocarbon analysis, and landscape-archaeological approaches—provided a more comprehensive reconstruction of the ancient economic and cultural landscapes of the Sangzor Valley and the highlands of Ustrushona.

In recent years, the contribution of foreign scholars to the study of Ustrushona and the Sangzor Valley has significantly increased. For instance, in 2022, M. Frachetti, F. Maksudov, E. Henry, A. Merkle, and their international collaborators conducted extensive surveys using UAV-LiDAR technology at the sites of Tashbulak and Tugunbulak in the Zaamin region. As a result, highly precise digital elevation models (DEMs) were produced, revealing for the first time large-scale urban systems located above 2,000 m. The research documented fortification walls, road networks, residential quarters, cemeteries, and industrial areas within the Tashbulak (12 ha) and Tugunbulak (120 ha) sites, identifying them as among the largest high-mountain urban centers of medieval Central Asia [12, pp. 1118–1124]. These findings have prompted a reevaluation of the socio-economic significance of highland regions previously regarded as “peripheral.”

Moreover, foreign researchers such as R. Spengler, P. Doumani, L. Rouse, and B. Cerasetti have investigated Bronze- and Iron-Age nomadic pastoralism and early agricultural processes in Central Asia, providing new evidence on the formation of ecological and subsistence systems. Their studies demonstrate how pastoralism, agriculture, and trade routes were closely intertwined in the Sangzor region and its neighboring territories [13, pp. 3–26].

The archaeological observations by E. Luneau and colleagues in the Nuratau Mountains have also shed light on the complexity of the region’s socio-economic dynamics. Using remote sensing, drone-based aerial photography, and field surveys, they identified numerous previously unknown ancient settlements. These methods have proven highly effective and are applicable to the study of the mountainous zones of both Sangzor and Ustrushona [13, pp. 3–26].

Overall, the integration of modern technologies—including UAV-LiDAR, GIS, archaeobotanical analysis, and isotopic studies—by international research teams has elevated the study of the archaeological heritage of the Sangzor Valley and Ustrushona to a new scientific level. These advancements not only provide a deeper understanding of the region’s historical development but also strengthen Central Asia’s position within the global archaeological discourse.

Economic Activities of the Upper Sangzor Population.

One of the main branches of economic activity in the Upper Sangzor oasis was animal husbandry. The region’s natural and geographical conditions—particularly the abundance of wide pastures—provided favorable opportunities for breeding and raising livestock. Consequently, pastoralism became a leading element in the local population’s lifestyle. It was not merely an economic occupation but also a key factor in shaping various forms of craft production.

Products derived from livestock were widely used for weaving wool fabrics, making clothing, and producing leather goods and household items. At the same time, agriculture played an important role in the oasis economy, existing in close interrelation with pastoralism. In some areas, crops grown in the fields were used as fodder for livestock, while also meeting the population’s basic food needs.

The blacksmithing craft also reached a high level of development and played a vital role in supporting both pastoral and agricultural practices. Iron tools and weapons were produced for herders, while ploughs, sickles, and other implements essential for farming were made for agricultural communities. Thus, metalworking became not just a branch of production but an integral component of the economic system.

Recent archaeological discoveries confirm these processes. Artifacts associated with animal husbandry, craft production, agriculture, and ironworking indicate

that economic life in the Upper Sangzor oasis developed in a multifunctional and interdependent manner.

Connections with the Ustrushona Culture.

The pastoral communities of the Upper Sangzor oasis mostly led nomadic or semi-nomadic lifestyles. They moved their herds seasonally to different pastures, either permanently or temporarily relocating according to climatic conditions. This way of life not only provided optimal conditions for livestock but also facilitated the development of economic and cultural interactions between local populations and neighboring regions.

Pastoralists traded their own products—wool, milk, hides, and other goods—in exchange for grain, fruit, household utensils, and craft products. This exchange indicates that the inhabitants of the Upper Sangzor maintained continuous economic contact with other parts of Ustrushona.

Archaeological evidence supports these interactions. For example, seeds discovered at the Toshbuloq site belong to plant species that do not occur naturally in mountainous areas, suggesting that agricultural products were imported from other regions. Furthermore, architectural styles and burial structures demonstrate close links with other cultural centers of Ustrushona, proving that the population of the Upper Sangzor oasis was integrated not only economically but also culturally and spiritually within the broader regional system.

Archaeological Surveys in the Upper Sangzor Region.

Based on the analysis of recent literature and earlier research, the northern part of the Upper Sangzor basin and the southern slopes of the Molguzar Range, which had not yet been thoroughly explored archaeologically, were selected for new field investigations. The region's complex topography, dense hydrographic network, and historically important communication routes made it a promising area for archaeological research.

In the initial stage, cartographic and remote-sensing materials from open sources were analyzed. In particular, Corona satellite mission imagery (1960–1972) with 1–2 m spatial resolution and Soviet military topographic maps (at scales 1:100,000 and 1:50,000) were examined. In the next stage, higher-resolution Hexagon (KH-9) panoramic images (1971–1986) were acquired and processed using orthophotogrammetric techniques.

Based on these materials, ArcGIS Pro software was used to integrate hydrological, elevation, and geomorphological layers, identifying zones with a high probability of ancient habitation. As a result, several locations with favorable ecological and strategic conditions for human activity were delineated and examined through archaeological surface surveys. This approach led to the discovery of new sites, significantly expanding the known scope of ancient occupation in the Upper Sangzor region.

Conclusion

Research conducted in the Upper Sangzor oasis demonstrates that this region has been an important center of human activity since antiquity. Surface observations identified a total of 28 archaeological sites, of which 10 were cemeteries. From each site, 1–2 ceramic samples were collected, providing evidence of continuous habitation in the valley from the Iron Age to the Medieval period.

Among the traces of ancient economic activity, the remains of cultivated fields (0.5–1 ha), irrigation channels (100 m to 3 km long), and spring-fed water installations on mountain slopes were recorded. These findings indicate that the inhabitants of the Upper Sangzor developed mountain-adapted irrigation methods. Meanwhile, the extensive pastures confirm that pastoralism formed the backbone of the local economy.

The cemeteries located on mountain slopes, along with the diversity of burial types (stone cists, simple earth graves, etc.), suggest a variety of religious beliefs and funerary customs. Although their precise chronology will require future excavation and radiocarbon dating, existing data already reveal strong cultural links between the oasis and other regions of Ustrushona.

The scientific significance of this research lies in the fact that the archaeology of the Upper Sangzor provides crucial insights into the development of mountain regions in Central Asian history, the interaction between pastoralism and agriculture, and the economic and cultural relationships between local populations and neighboring territories.

Future research prospects include conducting systematic excavations, establishing precise chronologies through radiocarbon (^{14}C) analysis, studying anthropological and archaeobotanical materials, and reconstructing the spatial organization of sites using GIS technologies. These steps will not only enhance the understanding of the Upper Sangzor but will also contribute to forming new scientific perspectives on the archaeology of Ustrushona and Central Asia as a whole.

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