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Playas and Middle Paleolithic settlement of the Iranian Central Desert: The discovery of the Chah-e Jam Middle Paleolithic site

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ABSTRACT

Geomorphological studies indicate that the current Iranian Central Desert has previously consisted of several large lakes, the remains of which are still visible in the form of numerous playas across the desert. The Northern edge of the Iranian Central Desert has been subject to several seasons of systematic Paleolithic surveys from 2009. As a result of these surveys, several Paleolithic settlements have been recorded, the most significant of which include the Middle Paleolithic sites of Mirak, Soofi-Abad and Chah-e Jam. In order to test whether any Middle Paleolithic sites existed around the boundary of such playas, one of them (Chah-e Jam Desert), which is located at the southern outskirts of the modern city of Dāmghan (300 km east of Tehran), was selected for intensive walking survey in July–August 2014. During the course of the survey, a large exposure of lithic artefacts, 8.5 km in length, was discovered. Techno-typological analysis of the lithic assemblages indicates an abundance of Levallois technology and numerous retouched tool types (e.g., Levallois points, and all types of convergent scrapers), leading the site to be attributed to the Middle Paleolithic. The presence of some typological elements of later periods indicates the site has been inhabited during Upper/Epipaleolithic periods as well. This site, along with other Middle Paleolithic settlements in this landscape, indicate that climatic conditions during the Late Pleistocene were significantly different to present, and the presence of numerous lakes and associated vegetation permitted hominin populations to occupy currently arid areas.

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1. Introduction

The Iranian Plateau has been identified as one of the most important dispersal corridors in the Near East (Vahdati Nasab et al., 2013), presenting accessible routes for hominins dispersing out of Africa to the east. Between three major seas (Caspian Sea to the north and Persian Gulf and Oman Sea to the south), the coastal regions of the Iranian Plateau could have been used for such dispersals (e.g. Field and Lahr, 2006). This led numerous pioneers of the Iranian Paleolithic archaeology to concentrate their field work on excavation and survey of the northern and southern coast of the Iranian plateau (Coon, 1951; Hume, 1976). Aside from its strategic location, the Iranian Plateau is adjacent to sites yielding important hominin fossils, the most significant of which include Dmanisi (Abesalom et al., 2002) and Shanidar (Solecki, 1954). Although a handful of Paleolithic localities have been recorded on the Iranian Plateau (based on their cultural materials), few have been tested

archaeologically and even fewer provided hominin remains (e.g., Bistun rock shelter (Coon, 1951), Eshkaft-e Gavi (Rosenberg, 1985), Wazmeh (Trinkaus et al., 2007)).

The history of the Paleolithic archaeology of Iran can be divided into three major phases: a) prior to the Second World War, during which time only a few sporadic field missions were conducted; b) from 1950s to 1979, when the area witnessed several Paleolithic surveys and excavations; and c) from 2000 onwards, following a reawakening of the field of Paleolithic archaeology of Iran after a gap of two decades (Vahdati Nasab, 2011). Since 2000, a substantial number of Paleolithic field missions in Iran have been initiated (e.g., Berillon et al., 2007; Otte et al., 2007; Conard et al., 2009; Jaubert et al., 2009). Only a few Iranian experts are active in this field, and most of their research has concentrated on the Zagros Mountains. The significance of the northern part of the Iranian Central Desert (the ICD) as an additional major dispersal route has been noted since 2007. Since then, several Paleolithic surveys have been conducted in the region, although some major time gaps occur between them. The Paleolithic Survey of the Iranian Central Desert Project (PSICDP) was established in 2009 in order to evaluate the

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Paleolithic potential of the region. This project targets the ICD knowing that it experienced different climatic conditions during the Pleistocene, including phases in which environmental conditions were able to support Paleolithic groups, such as peak humidity during MIS 5e (Groucutt and Blinkhorn, 2013, Fig 2b).

2. Background

2.1. Landscape of the Iranian Central Plateau

The Iranian Central Plateau (The ICP) is flanked by the Zagros Mountains to the west, the Alborz Mountains to the north and northeast, and the Lut desert in south (Fig. 1), and occurs at an average elevation of 1200 meters above the sea level (Wilson, 2011: 3). The ICP is the physical remains of some large playas, which once covered much of the area (Kransley, 1970: 23). Although no unanimous agreements exists about the exact boundaries of the ICP, because of significant geographical overlap between the ICP and the Iranian Central Desert (The ICD) (Fig. 1): in this article we use ICP. The presence of two distinct geomorphological formations of desert and mountains in close proximity has created a unique geography in the region, with several corridors lying between them, which could have been used by Pleistocene populations (Vahdati Nasab et al., 2013). The width of these corridors has been subjected to constant changes through expansions and contractions of the ICD.

Here, we focus on the northern edge of the ICP, which is surrounded by the Alborz Mountains and Central Desert. From the Alborz Mountains southwards, the landscape changes from the rocky body of the mountains, through alluvial fans and pediments,

leading to floodplains and lowlands, ending in sandy and highly saline, barren lands, which are the remnants of ancient playas. In contrast to the Zagros Mountains, which is a karst landscape containing numerous parallel intermountain valleys, the Alborz possesses few such valleys (Oberlander, 1968: 200). The alluvial fans below the Alborz Mountains consist of relatively large pebbles and gravels with limited cultivable soil and largely unsuitable for agricultural activities. Instead, they act as underwater reservoirs (Arzani, 2010). Following the alluvial fans, there are pediments, of which the largest ones are Garmsar, Semnan, Dāmghan and Shahrud. The pediments contain appropriate soil for cultivation and most of the Holocene settlements are located on them at the region. Increasing alkalinity of soil as the pediment meets the desert has limited the possibilities for agriculture. The salt desert is located at the very center of the ICP, where few plants and animals are suitably adapted to survive. The salt desert is the final destination of all seasonal and permanent rivers and creeks in the region.

2.2. Modern and ancient environments

Currently, this geographical region can be classified as semi-arid. More specifically, the studied region in this article (Chah-e Jam Paleolake) possesses an average annual temperature of 21.8 °C, which varies between 48 °C in June–July and –5 °C in winter. Concerning the vegetation of the area the *Artemisia* group with 9 species is dominant, followed by *Salsola Dendroides* (Vahdati Nasab, 2014).

Due to research conducted by Kehl (2009) and Frechen et al. (2009) on loess deposits of the southern parts of the Caspian Sea,

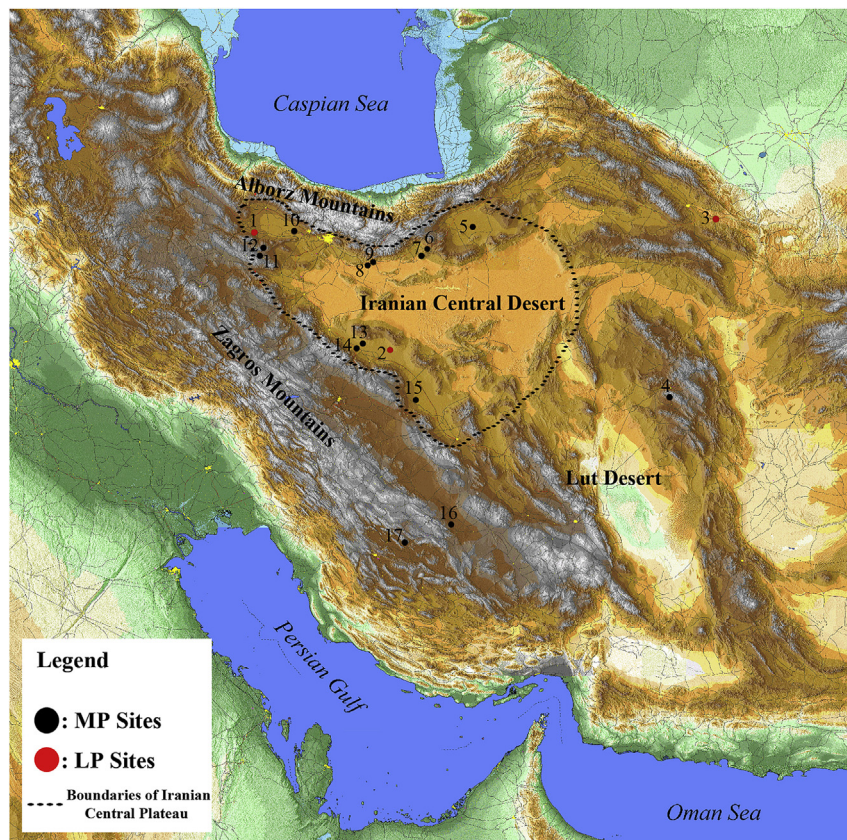


Fig. 1. Iranian Central Plateau and location of mentioned sites on it. 1. Tappeh Khaleseh, 2. Geleh, 3. Kashaf Roud, 4. Khunik, 5. Chah-e Jam, 6. Mirak, 7. Soufi Abad, 8. Moghanak, 9. Otchounak, 10. Sepid Dasht, 11. Nargeh, 12. Zavieh, 13. Qaleh Gousheh, 14. Holabad, 15. Qaleh Bozi, 16. Arsanjan, 17. Eshkaft-e Gavi.

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