

SHORT REPORT

Paleolithic Open-air Sites, North of Susiana Plain in South West Iran, Khuzestan Province, East of Dez River

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Khuzestan province bears most of cultural periods since ten thousand years ago (the Holocene). This period relates to Khuzestan plain but up to now, little work has been done on the Pre-Holocene periods and there is no information of the Paleolithic hunter-gatherers groups all around this plain. Due to permanent and abundant rivers such as Dez and Karkheh, the rich flora and fauna around them and also abundant raw materials for making tools, made the north and northeastern heights of Khuzestan very favorable environments for the presence of Pleistocene hominin groups.

Introduction

Pre-Holocene time period in Khuzestan Plain has not been given its due attention and there is no information about the Stone Age human groups around this Plain. North and North East Highlands of Khuzestan province has been very favorable environment for Stone Age hunter groups because of the high rainfall and perennial rivers such as the Karkheh and Dez, rich flora and fauna, as well as plenty of raw materials for making stone tools.

Geography

Khuzestan province is located in southwestern Iran and northwest of the Persian Gulf, and Dezful one of its major cities, and the region of interest is located in the northern part of Khuzestan province and southwest of the Zagros Mountains with Dez River flowing from north to south direction in this city.

The first interesting phenomenon on the eastern edge of the plain of Khuzestan is a geological structure called "*Bakhtyari conglomerate* formation". In fact, Bakhtyari conglomerate formations are the last folds of sediments in the Zagros region which defines the location of the study area. Bakhtyari formation is actually the youngest formation in the region of Neogene age. The scope of the study includes protrusions of the Bakhtyari conglomerate formation and alluvial deposits at the current age.

The formation was named after the Bakhtyari tribe and generally includes conglomerates which are occasionally together with calcareous sandstone and placed on the older formation as harmonic or non-harmonic structures.

The age of this formation is that of Pleistocene. The Formation of Aghajary, which located in the study area at the upstream of formation, includes Miocene-Pliocene deposits with periodic deposits of brown to gray calcareous sand, red gypsum-bearing marl and siltstone. However, the Bakhtyari conglomerate in Dezful region includes well-rounded fragments in the size of megalith and rubble and is the result of Zagros rocks' erosion through different ages, in which Chert particles can be found in abundance but the combination is mainly formed by limestone parts and particles.

Cherts are among the chemical sedimentary rocks that silica plays an important role in their composition. Fragments of chert rocks are so rigid and sharp and that's why they are used as an appropriate choice for making hand tools. More than 95 percent of the collected artifacts are made of this genus.

Location and Archaeological history

The open air site under study is located in the South West of Iran (Khuzestan province). It is 10 kilometers from northeast of the Dezful city, on the sidelines of Dez river, 10 km south of Dez dam. (**Figure 1**: Location of survey).

During the last 150 years, numerous archaeological activities have been undertaken in Khuzestan province, however, only few cases related to the field of Paleolithic.

In 1949, Pebdeh cave, located in Lali County was excavated by Roman Ghirshman. Unfortunately, the report of his work is not available. He only has mentioned few limited points, and pointed out the Hunter-gatherer settlement in the area and their familiarity with the stone hammer and hand axe (Ghirshman, 1976). Another study by the Henry Wright before the Iran's Islamic revolution in Izeh region led to the identification of Epi-Paleolithic sites (Wright & Kossary, 1979). In 2004, in the context of a rescue project in the Karun-3 dam area, a delegation headed by Jafar Mehrkiyan studied the area. In this study, total number of 31 caves and rock-shelter and open air

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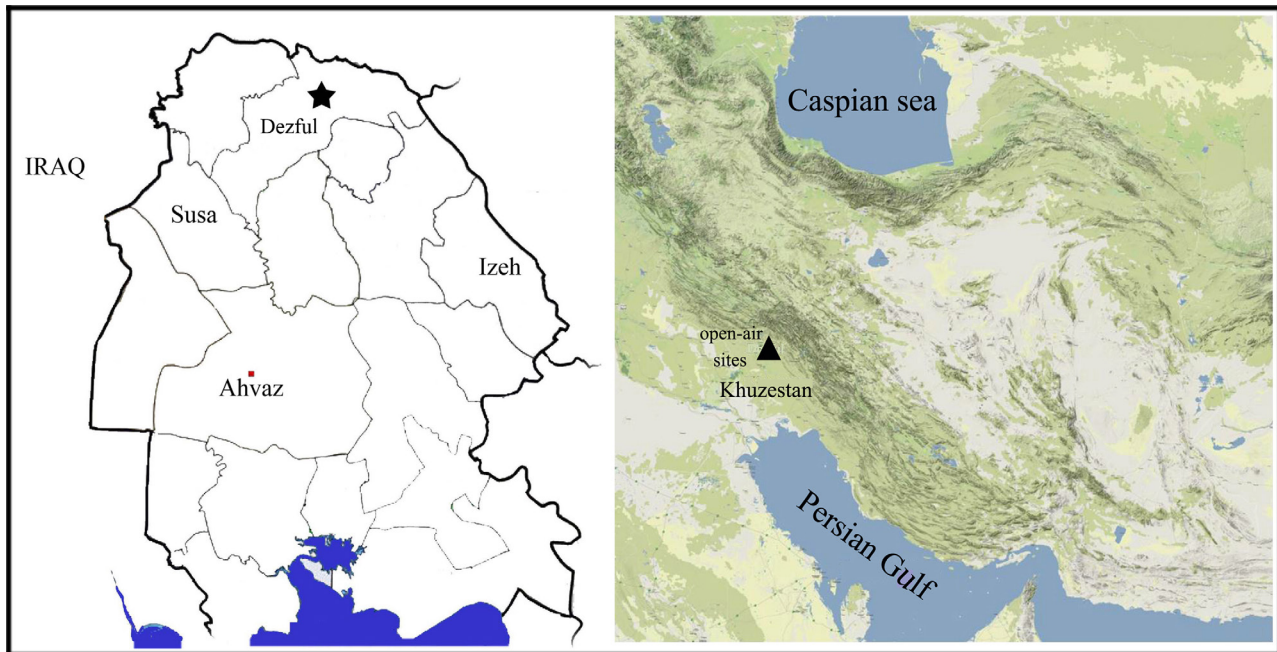


Fig. 1: Location of survey area.



Fig. 2: View of site.

sites were identified, with stone artifacts mostly related to Epi-Paleolithic. In the spring of 2007, another study conducted in the same area by Jafar Mehrkiyan, led to the identification of 54 sites belonging to the Stone Age. Some of these sites were studied by Wright (Niknami & Jayez, 2011).

However, there is no available published information regarding periods prior to the Epi-Paleolithic in Khuzestan. Only through the investigation of the (Amar-Merdeg) area in the northwestern part of the Khuzestan province and Mehran plain (a part of Ilam Province), Middle Paleolithic sites and probably lower Paleolithic sites were discovered (Biglari and Shidrang, 2006 & Biglari et.al, 2000). (**Figure 2**).

Methodology and Findings

In this survey, the method of intensive survey (Alizadeh, 2001: 189) was used, which is the most efficient and powerful method of investigation. Thus, the region of interest was gridded on the map with dimensions of 1×1 km. In this work, we managed to navigate the seven squares with dimensions of 1×1 km (7 square kilometers).

At this stage, intensive survey process began in each block, and we tried to carefully identify and collect all the phenomena in each block. During this survey/scaling, participants were at a distance of 10 m from each other and moved forward in a linear fashion. By dividing the area of interest (7 square kilometers) into 1×1 km blocks and evaluating them in an intensive survey, areas in each block were separately identified and then sampled.

In the end, four sites were identified. These sites are located at a height between 170 and 250 meters above sea level and all of them are placed on the natural ridges. Almost all stone artifacts have been produced by a direct percussion technique. The majority of samples in each of the four areas are formed by Cores and blade/chips. The Cores mostly include uni-directional Cores and Core-chopper types, and regarding some of them the "Levallois technique" was used in order to fulfill the sampling process. In addition, the largest discovered category of tools are scrapers and notches, and only two pointed samples can be seen in all categories.

Most of the stone artifacts were made of high quality chert as well as few poor-quality chert, mostly produced by raw materials with small dimensions and small sizes. Their color ranges from hepatic, yellow, orange, brown, and also there were few gray ones.

Conclusion

Existence of core- choppers in the site, comparable with those from the areas such as Hulailan and Amar Merdeg, indicates the period from the late Paleolithic to the early Middle Paleolithic age. The core-choppers discovered from this area (**Fig. 3**) show many similarities in terms of technology and typology to the Core-choppers from Hulailan (Mortersen, 1993: 174) and Amar Merdeg (Biglari et.al, 2000: 750) sites, and their period corresponds to the lower Paleolithic age. There are also signs of Levallois technique in some stone artifacts (**Fig. 4 & 5**) The percentage of cores and chips retrieved from these



Fig. 3: 1.Core-Chopper 2.core- scrappers 3,4.Core 5.bifacial chopper 6.core.

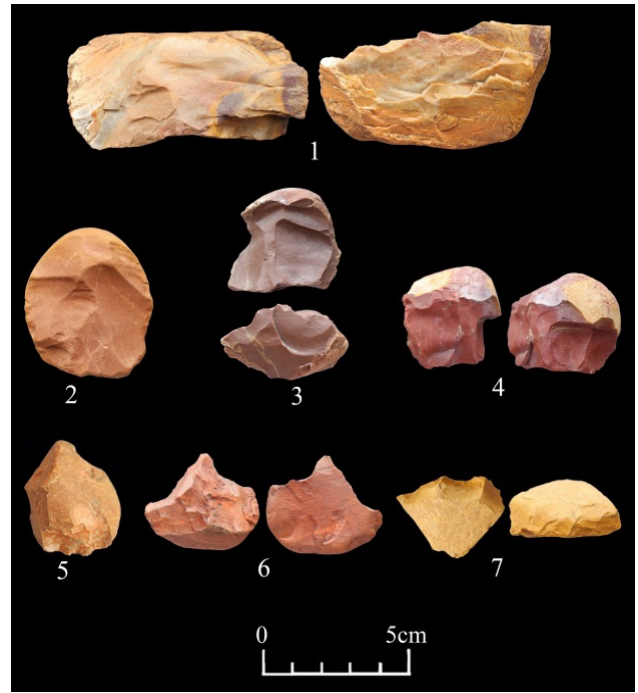


Fig. 5: 1.Core-Chopper 2.Levallois core 3,4,5. Unidirectional core 6.Borer 7.Scraper.

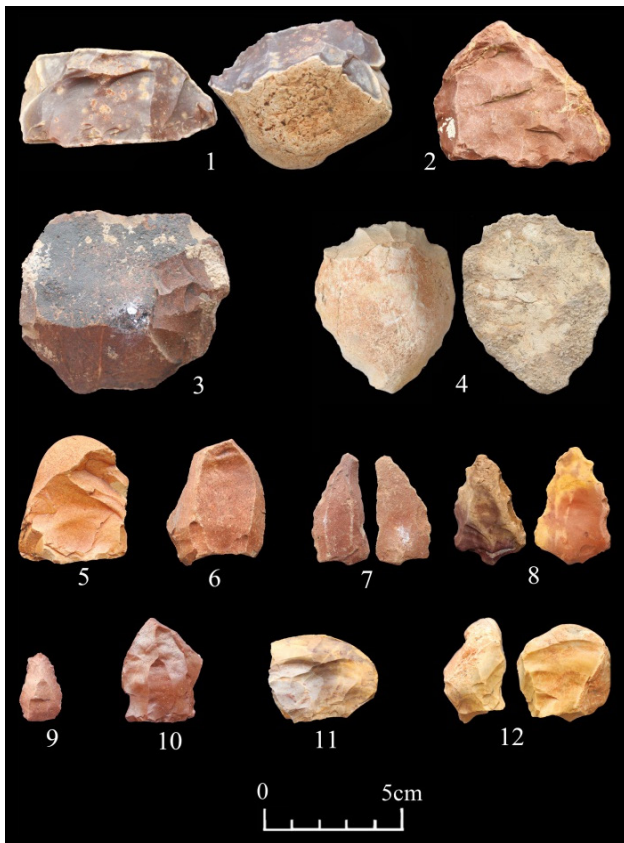


Fig. 4: 1.Core-Chopper 2,3,4,10 Levallois.core 5,6,11,12. Unidirectional core 7.Levallois point 8.Denticulate flake 9.Levallois flake.

four sites comprises 29% of the whole assemblage. This fact might indicate that these sites were possibly workshop of stone artifacts. However more research in the region is required to identify and examine the distribution pattern of the area.

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