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Settlement behavior in the Kanto Plain during the Japanese Paleolithic based on lithic raw material procurement and consumption

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ABSTRACT

This study examines settlement system changes before and during the Last Glacial Maximum in central Japan. Human mobility is estimated from raw material procurement to infer how Upper Paleolithic hunter–gatherers acquired necessary materials. Seventy-four sites are investigated with the methodological assumption that the lithic raw materials were obtained through an embedded strategy.

Changes in settlement patterns through time are reconstructed in the following ways. First, around 30,000 ¹⁴Cyrs BP, hunter–gatherer territories formed between high-quality lithic raw material sources approximately 200 km apart, constrained by the distribution of lithic raw material sources and the area's terrain and suggesting that their subsistence activities were also conducted in those prime areas. Second, during the Last Glacial Maximum, hunter–gatherers still acquired lithic raw materials from distant sources around 200 km apart, while the area of hunting activities using spear points decreased to an 80 km radius. As territories shrank, large manufacturing sites for making spear points appeared in the vicinity of high-quality raw material sources in this period.

In sum, the embedded lithic procurement system in Japan during this period was largely changed by ecological deterioration. Patterns transitioned from general resource exploitation in the early period to seasonal movement between isolated resource-rich areas during the Last Glacial Maximum, resulting in significant change from the mobile hunter–gather society at the end of the Late Pleistocene to the sedentary society of the Holocene.

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1. Introduction

The study of prehistoric territories is a major topic in research on the Japanese Paleolithic. Many studies follow the assumption that Paleolithic groups settled and moved within alluvial vial uplands, traveled to lithic quarries, and brought the procured lithic raw materials back to their home range. This is especially the case in studies of the Musashino Plateau. This theory is very similar to the working of the Jomon settlement system, in which the territorial size was very small.

This paper presents settlement systems based on territorial analysis. The primary aim of the study was to detect how Upper Paleolithic hunter–gatherers in the Kanto Plain procured and consumed lithic raw materials. The study focuses in particular on the temporal transitions of these mobile territories and settlement patterns (Kunitake, 1999, 2004a). Furthermore, lithic technology is

interpreted based on the correlation between the mobile territories and the lithic raw materials within the territories (Kunitake, 2005).

2. Study area

2.1. Paleolithic sites in the Kanto Plain

The prominent characteristics of Japanese Paleolithic sites are as follows:

1. The density of excavated Paleolithic sites is very high. There are more than 3600 sites in central Japan.
2. There are many multicultural sites.
3. Organic materials are very scarce because of high soil acidity.

As such, we have a large quantity of high-quality stone tools. These data allow for fine-grained analysis of the procurement and consumption of lithic raw materials. The Kanto Plain consists of three fluvial plains divided by major rivers. Most

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Paleolithic sites are located on the terraces along these major rivers. One reason why the Paleolithic sites are concentrated on the river terraces is that large, gregarious animals would have lived along the rivers, which invited Paleolithic people to hunt there. The Kanto Plain is mainly divided into eastern and western regions by the Old Kinu River, which flow into the central Kanto Plain. This plain is covered with volcanic ash erupted from Mt. Hakone and Mt. Fuji, located in the west of the Kanto Plain. Paleolithic sites are buried in loam sediments, which are weathered volcanic ash. Loam was consistently deposited from the early to the terminal Upper Paleolithic. In particular, stratified loam layers deposited in the Musashino Plateau, located in the southwest of the Kanto Plain, have been used as a common reference in cultural chronologies of the lithic industries of the Kanto Plain.

2.2. Distribution of lithic raw materials in the Kanto Plain and surrounding regions

The distribution of lithic raw materials recovered from Paleolithic sites in the Kanto Plain is shown in Fig. 1 (Tamura et al., 2003). As explained below, six resources in particular were very important for Paleolithic hunter-gatherers in the Kanto plain. These lithic

resources are thought to have been used repeatedly by many generations of Paleolithic hunter-gatherers who foraged across the Kanto Plain during the Upper Paleolithic.

In the Banetsu Highlands (N1), “chocolate siliceous shale” is available in the Tertiary sediments. The Mt. Takahara area (N2) has important lithic resources. Obsidian is available on top of the mountain, and there is a lithic quarry site present (Tamura and Kunitake, 2006). Siliceous shale is available from the Tertiary sediments at the basal level of the mountain. The siliceous shale from this area was used for blade production, mainly in the eastern part of the Kanto Plain.

Black siliceous andesite and rhyolite are available in the Utsunomiya Upland (N3). In the Mineoka Mountains (S1), siliceous shale is found in the Tertiary sediments. Obsidian is found in the volcanic sediments in the Central Highland (W1). In the Mikuni Pass (W2), black siliceous shale is available in the Tertiary sediments.

3. Materials and methods

The data for tool stones were obtained from lithic raw materials in the Kanto Region, which are substantial in both quantity and quality (Fig. 1). Raw materials were used during the entire Upper Paleolithic. This study analyzed 74 sites, presented in Table 1 and Fig. 2. The

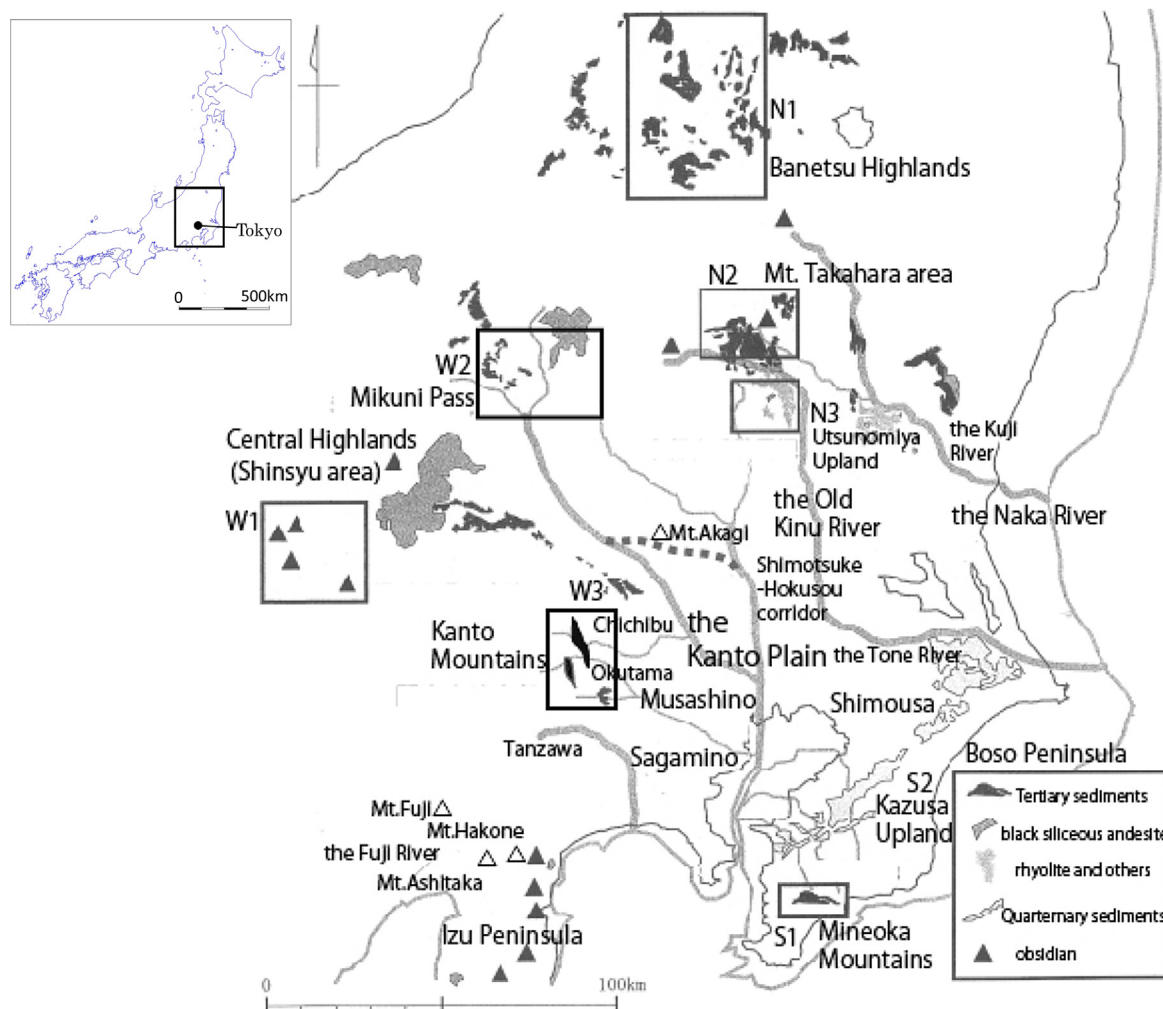


Fig. 1. The distribution of lithic resources in the Central Japan including Banetsu Highlands (N1), Mt. Takahara area (N2), Utsunomiya Upland (N3), Mineoka Mountains (S1), Central Highlands (W1), and Mikuni Pass (W2), Shimotsuke-Hokosou corridor.

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