Quaternary International 404 (2016) 16–24

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Food processing and consumption in the Jōmon

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ARTICLE INFO

Article history:
Available online 11 September 2015

Keywords:
Jōmon
Hunter-gatherers
Acorn
Horse chestnuts
Food processing

ABSTRACT

The Jōmon is recognized as a hunter-gatherer society, and it is thought that food exploitation in the Jōmon period (14,500 BC-950/400 BC) had a minor influence on social change, compared to the introduction of rice cultivation in the beginning of the Yayoi period (950/400 BC-AD250). However, during the Jōmon there were some changes in the exploitation of wild resources, which could be related to social changes. From the Middle to the Late Jōmon, the exploitation of wild plants changed dramatically. In the Middle Jōmon, chestnuts were the main staple. Utilization of horse chestnuts showed a remarkable increase in the Late Jōmon. Horse chestnuts were found in waterlogged sites, mostly associated with wooden structures which could have been used for food processing. Japanese folklore examples of the processing of horse chestnuts show that they could have been used to obtain large amounts of nuts. Compared to folklore examples, Jōmon wooden structures are larger, which could be due to their use in a communal context. This paper examines Jōmon wooden structures and remains found within them, and then explores the potential social impact of the change in food exploitation.

1. Introduction

The subsistence of the Jōmon (ca. 16,500–950/400 BC) has been thought to rely on hunting, gathering, and fishing. Especially, gathering must have played an important role in their diet since recent excavations at the water-logged sites, such as Shimoyakebe site (Chiba et al., 2006), revealed the accumulation of acorn, chestnuts, horse chestnuts and nuts. Due to the geographical condition of Japan, plant foods which could be used differed in areas. In brief, currently deciduous broad-leaved forests cover eastern Japan, while Coniferous forest zone is dominant in the northern most area. On the other hand, broad-leaved forest zone is developed in western Japan. In addition to this natural environment and the temporal climatic change, use of major plant foods such as acorn, chestnuts, horse chestnuts also changes temporally. Although chestnuts were dominantly discovered from the Middle Jōmon sites, horse chestnuts increased after the Late Jōmon (Kawashima, 2015). Most archaeologists regard that cooling event resulted in this change in Jōmon diet. However, I have argued that this change could have been related to cultural preference rather than climate change because chestnut trees continued to be the main building material for houses and piles. Increasing use of horse chestnuts could have been associated with the food processing facilities which could be observed in traditional Japan until several decades ago. Intensive use of horse chestnuts in the Jōmon was archaeologically seen only in eastern Japan where most of the population lived (Koyama and Sugitō, 1984). At the same time in western Japan storage pits for acorns were constructed, which also show increased food consumption. This trend of increasing food consumption is inconsistent with the fact that Jōmon population decreased from the Middle to the Late period. In most of the previous studies, the use of wild food in the Jōmon has been discussed based on the archaeological remains from northern and eastern Japan. In this paper, by comparing the environment of east and west Japan, I will focus on the intensive use of acorns and horse chestnuts after the Late Jōmon.

2. Methodology

In the following section, the food processing and storage facilities which developed after the Late Jōmon are mentioned. Most of these facilities were associated with the remains of horse chestnuts and acorns. From Japanese folklore it is known that mountain villages which could hardly produce rice and other cereals used wild food such as horse chestnuts and acorns (Watanabe, 1975; Hosoya, 2011). Folklore examples seem to be useful to evaluate the existence of wild food remains at archaeological sites, and to reconstruct the method of processing horse chestnuts and acorns. Firstly, water reservoirs are examined in terms of the structure, size, and location. Secondly, structures used for processing horse chest nuts in folklore examples

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http://dx.doi.org/10.1016/j.quaint.2015.08.040
1040-6182/

are mentioned, which could be compared with Jōmon wooden structures. Thirdly storage pits of western Jōmon culture dug in wetland are described, which could develop after the Late Jōmon.

3. Discussion

3.1. Water reservoirs after the Late Jōmon

The staples of the Jōmon were plant food, especially acorn and nuts. For processing these foods, grinding stones and pestles were used, combined with boiling in pottery. Although these artifacts were discovered dating from the early stage of the Jōmon, in the Late Jōmon a new type of facility developed. Wooden water reservoirs seem to be most related to processing abundant food, such as nuts and acorns (Fig. 1). Nuts and acorns were discovered in the reservoirs in most cases. Although acorns and nuts were the main foods through the Jōmon period, there are some temporally different usages of nuts. In the Middle Jōmon, chestnuts were characteristic and dominant among excavated botanical remains. On the other hand, in the Late Jōmon period, the number of discovered horse chestnuts rapidly increased. This trend is also supported by pollen analysis at Shimoyakebe site, Tokyo (Yoshikawa and Kudō, 2014). They were uncovered especially from the water reservoirs. Processing horse chestnuts is quite difficult, because they contain saponin and aloin, toxic ingredients, which are difficult to remove. From the folklore research in Japan, it takes a maximum of almost two weeks for leaching horse chestnuts, which included boiling with ash in most cases.

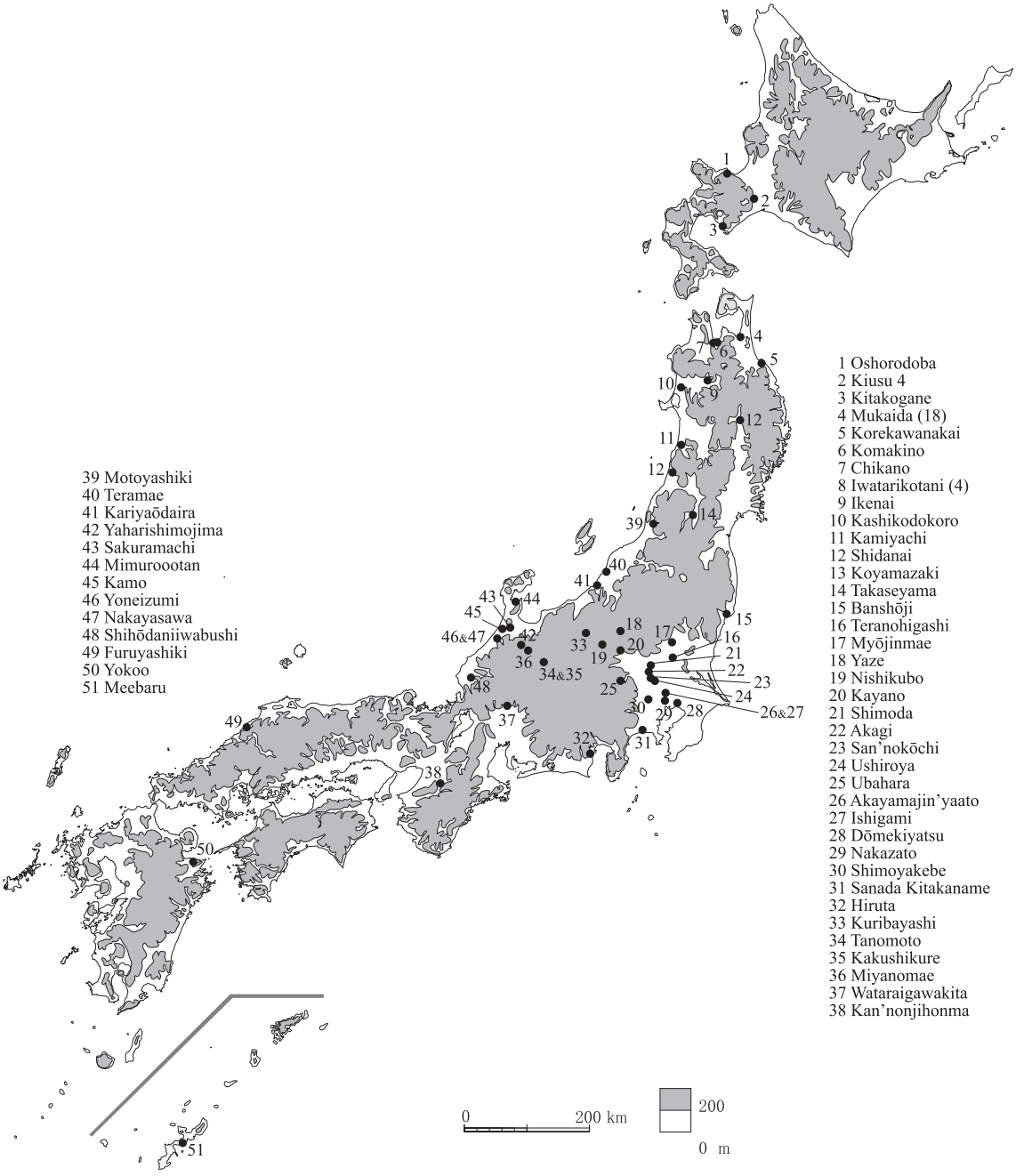

Fig. 1. Distribution of water-reservoirs (after Sasaki 1997:Fig. 2).