

## THE BIBI NORTH SHELL MIDDEN SITE AT CHITOSE CITY, HOKKAIDO, JAPAN

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### ABSTRACT

Three episodes of excavation at the Bibi North shell midden since 1993 exposed the whole area of settlement dating to the first half of Early Jomon Period (6,000 BP). Features include 200 pit dwellings, more than 280 grave pits, three shell mounds, two large soil mounds, one ditch, and two suspected "agricultural fields." The two soil mounds and the two "agricultural fields," as well as two cemeteries, are located symmetrically along a center line running north to south through the site, with two paths running between the features. The "agricultural fields" were identified by the presence of large quantities of plant opals from *Ecinochloa* sp. The data so far accumulated and the implications of the distinctive distribution of features imply that the existence of the oldest "Jomon agricultural fields" at this site may not be unique.

The area of the Bibi North shell midden is estimated to be 26,300 square meters, and about 10,000 square meters of this site required excavation for the construction of a garbage disposal center. These excavations were done over a three year period, starting in 1993. The final season of excavation was completed in 1997 and has encompassed over 6,700 square meters.

The Bibi North shell midden is located on the Tomakomai Lowlands, in the center of Hokkaido. These lowlands vary from 5 to 7 meters above sea level and are surrounded by spreading marshes. The Bibi River flows from the north to the south and into the Pacific Ocean. The name "Bibi" means marsh or wetland in the Ainu language. Along both sides of the Bibi River are hills rising 20 meters above sea level. The Bibi North site is located on the western side of one of these hills and is 200 meters in length and between 70 and 100 meters in width.

We can present three important conclusions as a result of these excavations. The first conclusion is that the whole site is well preserved and dates to the first half of the Early Jomon Period at about 6,000 years B.P. The settlement of this period is overlain by later Jomon Periods. This period has more than 200 pit-dwellings, of which 77 have been completely excavated. There was also a cemetery with 280 burials, a large ditch, 3 shell mounds, two large artificial embankments

and possible agricultural fields. The 3 shell mounds encircle the site on the west, east and north sides. The west and east mounds are smaller in size and consist of between 5 and 40 strata thought to represent disposal episodes. Brackish water molluscs and fish remains were identified in these shell mounds. The molluscs primarily include clams and oysters. The fish species include Japanese dace, mullet and sea bass that would require the use of watercraft.

The second set of conclusions addresses the settlement pattern of the site. The 200 pit-dwellings are located at the south end of the site on the elevated hill. There are also two trash middens, two cemeteries and possibly two agricultural fields. These areas represent a duality and are distributed symmetrically along a central corridor running north to south. This central area is devoid of features and there are two paths identifiable at the north end of the site. The settlement of the Bibi North shell midden is linear in structure. This is in contrast with the typical Concentric Circle structure of the Middle Jomon Period. Concentric Circle settlement structures usually have a cemetery area in the central area with pit-dwellings, ground dwellings and storage pits distributed around the periphery.

The dualistic nature of the Bibi North site suggests that the settlement was planned in advance. From a number of recent excavations of

the Early Jomon Period, it now appears that prior to the Middle Jomon Period, the Linear Village structure was the primary settlement pattern. However, the significance of the change to the symmetrical Concentric Circle structure of social organization is still unclear.

The third topic I wish to discuss is the discovery of two suspected agricultural fields. The east one is 40 meters in length and the west one is more than 45 meters long. Their width varies from 4 to 7 meters. These fields indicate that soil was removed to construct the east and west soil mounds. The soil of the fields was very soft and rich, with an irregular underlying strata. In the lower strata there were many traces of stone axe marks. It is known that stone axes were used to mix soils and this appears to be the case in this site.

It would be important to confirm the agricultural use of these fields at this early date, as well as the identification of the plants being exploited. In conjunction with these interests we conducted flotation analysis for pollen but only identified a few grass seeds, and little other pollen has been confirmed. However, a large quantity of plant opal of barnyard millet has been identified. The volume is ten times the amount found in the Heian Period sites of the tenth century. Thus, it appears likely that barnyard millet was being cultivated in the Bibi North site by 6,000 B.P.

These findings have great significance. First, they support recent findings that the existence of plant cultivation occurred earlier than the Late and Final Jomon Periods. On the islands of Hokkaido and Honshu the cultivation of barnyard millet, foxtail millet, and buckwheat are known from the Late and Final Jomon. Previously, almost 3,000 seeds of barnyard millet have been found in the Tominosawa 2 site dating to the Middle Jomon, but the question of whether this was a domesticated variety is one of the biggest

problems in Japanese archaeology today. The discovery of suspected agricultural fields in the Bibi North site should advance the discussion on the early domestication of millet in the Early Jomon Period.

Further, there appears to have been a clear plan to locate the agricultural fields in the center area of the settlement through the construction of 2 artificial mounds. The height of these mounds is thought to have been approximately 2 meters. We feel that these mounds may have served to channel water to these fields and to protect them from the fierce north wind and prevent frost. Also, the large ditch located to the north may have served to drain excess water from the fields. The location and construction of these fields indicate that they were very important to the people.

Faunal remains in the shell mounds included molluscs, fish, birds, and terrestrial mammals such as Shika deer. Therefore, it is probable that these people practiced a diversified hunting, fishing and gathering basis of subsistence which was supplemented by agriculture. Recently, the Nakano B site, dating to 8000 years B.P., has been discovered on Hokkaido and yielded seeds of barnyard millet. Based upon new evidence, it appears that the primitive cultivation of millet may have started in the early stage of the Jomon, and the agricultural fields of the Bibi North shell midden reveal a fairly well developed state of cultivation.

In conclusion, I would like to suggest that the Bibi North site represents one of the oldest known agricultural fields of the Jomon Culture in Japan. This suggests that even in the early stage of the Jomon, subsistence might have been more complex than previously thought and that millet cultivation supplemented the traditional way of life, which included the gathering of plants, fishing and hunting.