

Material Report: Human skeletal remains newly added in the 2013 academic year to the Human Osteological Collection at the Department of Anthropology, National Museum of Nature and Science, Tokyo

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Abstract This report focuses on morphological descriptions according to consistent criteria of the human skeletal remains newly and officially added in the 2013 academic year to the Human Osteological Collection at the Department of Anthropology, National Museum of Nature and Science, Tokyo. The purpose of the report is to record and provide basic information to researchers on these skeletal remains on the basis of a standard for descriptions of their preservation, sex, and age at death.

A minimum of 57 individuals was unearthed from five archaeological sites. Of these, four are likely from the middle Jomon period, eight from the late Jomon period, 43 from the Kofun period, and two may be from the Edo period.

Key words : Human skeletal remains, the Jomon period, the Kofun period, collection.

Introduction

Since 1972, we, the Department of Anthropology, National Museum of Nature and Science, Tokyo, have made efforts to collect human skeletal remains excavated at archeological sites, and the outline of the specimens collected until now are shown at our web site: <http://anthrodb.kahaku.go.jp/site-e/index.jsp>. This brief report focuses on the human skeletal remains newly and officially added in the 2013 academic year to the Human Osteological Collection of the Department of Anthropology, National Museum of Nature and Science, Tokyo (NMNST).

The purpose of this report is to record and provide new basic information to researchers on these skeletal remains according to consistent criteria used to describe preservation, period, sex, and age at death.

Methods

This report intends to summarize information about the location, period, and the minimum number of individuals for each site. The criteria of description for each specimen are as follows.

“Preservation of the skull”

Complete: The skull is almost completely preserved.

Partially broken: A partially broken skull with three or more measurable variables.

Immeasurable: A broken or fragmented skull with less than three measurable variables.

None: No skull fragments.

“Preservation of long bones”

This item refers to the preservation of any postcranial long bones.

Complete: Almost complete, and the maximum length of any long bone is measurable.

Partially broken: Maximum length is immeasur-

able, but the diameter of the diaphysis can be measured for any long bone.

Immeasurable: Fragmented long bone for which all variables are immeasurable.

None: No identifiable long bone fragments.

“Sex”

The sex of an individual can be diagnosed on the basis of morphological characteristics of the greater sciatic notch and ventral arc of the pelvis, supraorbital ridge, and mastoid process of the skull (Buikstra and Ubelaker, 1994; Sakaue and Adachi, 2009). The following five classifications pertain to this criterion.

Male: All characteristics indicate that the individual is male.

Male?: Any of the above-mentioned characteristics indicates that the individual is male. In case of discrepancy, sex is diagnosed in descending order of importance of the characteristics mentioned above.

Female: All characteristics indicate that the individual is female.

Female?: Any of the above-mentioned characteristics indicates that the individual is female.

Unknown: There is no indication of an individual's sex.

“Age at death”

The estimation of age at death is based on teeth, pubic symphysis of the pelvis, and epiphyseal union. An individual's age at death is classified according to nine “age categories.”

Fetus: This category refers to pre- or circum-natal individuals. Indications for the classification to this category are lengths of long bone (for example, the femoral diaphyseal length is less than 100mm) and the under-formation of any deciduous teeth (Ubelaker, 1989).

Infant: This category refers to individuals aged 0–5 years. Indications for this age group range from “eruption of deciduous teeth” to “no eruption of permanent teeth.”

Child: This category refers to individuals aged 5–11 years. Indications for this age group range from “eruption of the first permanent molar” to

“no eruption of the second permanent molar.”

Adolescent: This category refers to individuals aged 11–20 years. Indications for this age group range from “eruption of the second permanent molar” to “persistence of epiphyseal lines in any bone but the clavicle.”

Young adult: This category refers to individuals aged 20–30 years. Indications for this age group range from the “macroscopic disappearance of epiphyseal lines in all bones but the clavicle” to “persistence of epiphyseal lines of the clavicle.” In addition, the pubic symphysis of an individual shows the morphological characteristics of Phases 1–2 in the Suchey-Brooks system (Brooks and Suchey, 1990).

Middle adult: This category refers to individuals aged 30–50 years. Indications for this age group range from the “macroscopic disappearance of the epiphyseal lines of the clavicle” to “no appearance of degenerative change in the vertebral body.” In addition, the pubic symphysis shows the morphological characteristics of Phases 3–5.

Old adult: This category refers to individuals aged more than 50 years. Indications for this age group are degenerative changes such as “antemortem tooth loss,” “lipping of the vertebral body,” and “lipping on the articular facet.” In addition, the pubic symphysis shows the morphological characteristics of Phase 6.

Child?: This category is used for individuals without available indications that can be used for aging. In this case, however, the size of bones or bone surface characteristics such as area of muscle attachments as well as tooth formation must indicate that the individual is possibly a child.

Adult?: This category is used for individuals without available indications that can be used for aging. However, morphological characteristics such as size, muscle attachments, and tooth formation must indicate that the individual is possibly an adult.

“Femoral length”

The maximum length of the femur is measured according to Martin's definition (Baba, 1991).

Only an intact femur is measured. Here, the left femur was used.

Description

In the 2013 academic year, the human skeletal remains unearthed from five sites were accepted. The detailed information on each individual is provided in Table 1: site name, period, sample identification No., skull preservation, preservation of long bones, diagnosed sex, estimated age at death, maximum length of the femur (left side), and notes. The five sites are as follows.

“The Miyano shell mound site”

The Miyano shell mound site is located at Ayazato Miyano, Sanriku Town, Oofunato City, Iwate Prefecture. Human skeletal remains were unearthed in 1979 and 1980 (Miyano shell mound Chosa-dan, 1981). Skeletal remains found in 1980 were from the latest Jomon period, and were already stored at the Department of Anthropology of NMNST.

Human skeletal remains found in a 1979 survey were studied and stored by Dr. Y. Dodo, a member of the excavation team at this site. Dr. Dodo transferred the remains to the NMNST in December, 2013.

A minimum of two individuals was found in the 1979 survey. One individual is a relatively well-preserved whole skeleton diagnosed as male young adult. The other individual is a fetus. Figure 1 shows the preserved anatomical regions of these individuals.

These skeletal remains were associated with some fragments of Jomon pottery classified as “Daigishi 9 style pottery,” which are thought to have been produced in the middle Jomon period. Thus, these individuals possibly belong to the middle Jomon period. However, it is also possible that they are from the latest Jomon period, because the burial styles of these individuals were similar to those of individuals unearthed in the 1980 excavation. The date of these remains must be confirmed by the radiocarbon dating method or the like.

Distinctive characteristics of the “No. 1” individual include a relatively narrow and high face for a Jomon man, relatively tall stature (167 cm according to Fujii’s Formula) estimated from the length of the femur (450 mm), and a healed wound in the right innominate bone with a stone arrowhead lodged inside (Figures 10 and 11).

“The Ichigaya-kagamachi 2-Chome site”

The Ichigaya-kagamachi 2-Chome site is located at 7-1 Kagamachi 2-Chome, Sinjyuku-ku, Tokyo. Many human skeletal remains were unearthed from a relatively thin layer beneath the Edo period layer in 2012 and 2013 (Sakaue and Kajigayama, 2014).

The style of associated Jomon pottery and radiocarbon dating of the human skeletal remains confirm that these individuals were from the middle and late Jomon periods.

Although the sample number is as many as 16 individuals, the number of right and left femurs confirms the minimum number of individuals as 10 (Table 1). The preservation of these remains is so poor that only the face of one skull (No. 12) can be reconstructed (Figure 10). Figures 1–5 show the preservation of these individuals. A depressed skull fracture on the right parietal bone can be seen for No. 12 (Figure 12)

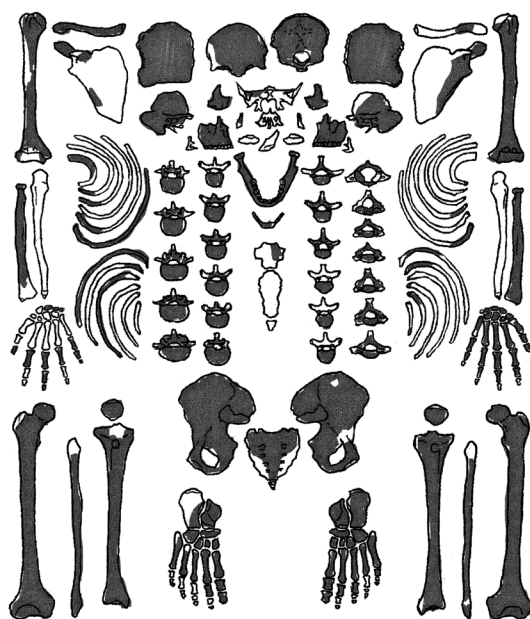
“The Hanezawadai decorated horizontal tomb caves”

The Hanezawadai decorated horizontal tomb caves site is located at 883-9-885-26 Oosawa 4-Chome, Mitaka city, Tokyo (Kajigayama, 2014). These caves were horizontal tomb caves constructed along the Kokubunji Terrace during the Kofun period. This site was discovered in the excavations for the development of residential land in 2013. Human skeletal remains were found in seven caves (burial chambers Nos. 4, 5, 6, 9, 10, 11, and 12).

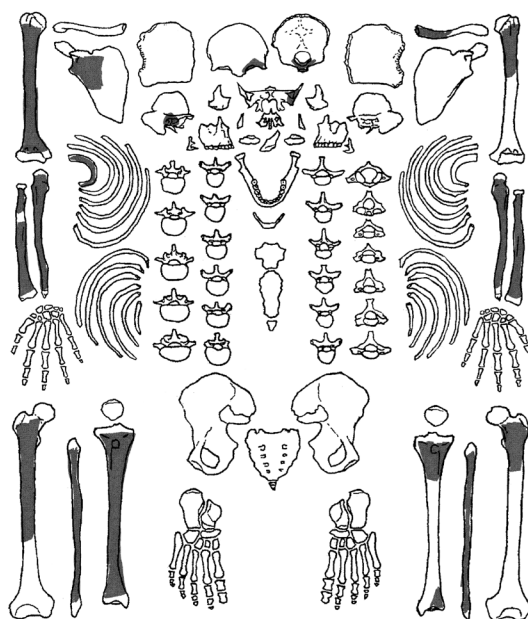
Generally, the decorated horizontal tomb caves were constructed under a mound or on the hillside in the late Kofun period (around the 6th to late 7th centuries). The entrance to the caves opened horizontally, and the caves comprised a

Table 1. Inventory of the human skeletal remains which were newly added to the Department of Anthropology, NMNST in the 2013 academic year

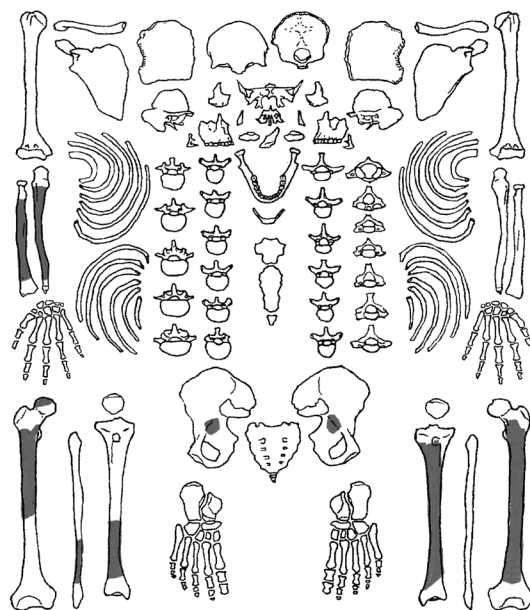
Site	Period	Sample ID.	Skull preservation	Long bones preservation	Sex	Age-at-death	Femur length (mm)	Note
Miyano Shell mound site	Middle Jomon	No. 101	complete	complete	male	young adult	455	stone arrowhead stuck on right hip bone
Ichigaya Kagamachi 2 chome site	Middle Jomon	No. 101-2	inmeasurable	partially broken	unknown	fetus		
	Late Jomon	No. 1	none	partially broken	female?	adult?		
	Late Jomon	No. 2	none	complete	unknown	adult?		
	Late Jomon	No. 3	inmeasurable	inmeasurable	female	adult?		
	Late Jomon	No. 4	none	partially broken	female?	adult?		
	Late Jomon	No. 5	none	partially broken	male?	adult?		
	Late Jomon	No. 6	inmeasurable	inmeasurable	male	adult?		
	Late Jomon	No. 7	inmeasurable	inmeasurable	male	adult?		
	Middle Jomon	No. 8	inmeasurable	complete	male	young adult		probably same individual of No. 10
	Late Jomon	No. 9	inmeasurable	none	unknown	adult?		
	Middle Jomon	No. 10	none	inmeasurable	male?	young adult		probably same individual of No. 8
	Late Jomon	No. 11	partially broken	complete	male	adult?		
	Middle Jomon	No. 12	partially broken	partially broken	male	middle adult		healed fracture on parietal bone
	Late Jomon	No. 14	none	partially broken	unknown	adult?		
	Late Jomon	No. 15	none	inmeasurable	unknown	adult?		
	Late Jomon	No. 16	none	complete	unknown	adult?		
Hanezawadai caves site	Kofun	No. 4 A-1	inmeasurable	partially broken	male	adult?		some individuals commingled
	Kofun	No. 4 A-2	inmeasurable	complete	unknown	adolescent	410	
	Kofun	No. 4 A-3	none	partially broken	unknown	child?		
	Kofun	No. 4 B-1	inmeasurable	partially broken	female?	middle adult		
	Kofun	No. 4 B-2	none	inmeasurable	unknown	child?		
	Kofun	No. 4 C	partially broken	complete	female	old adult	405	extended burial
	Kofun	No. 5 A	partially broken	complete	male	middle adult	450	extended burial
	Kofun	No. 5 B-1	inmeasurable	inmeasurable	unknown	child?		some individuals commingled. only teeth were remained in No. 5 C, No. 5 D-1, No. 5 D-2, and No. 5 D-3.
	Kofun	No. 5 B-2	inmeasurable	inmeasurable	unknown	child?		
	Kofun	No. 5 C	none	none	unknown	child		
	Kofun	No. 5 D-1	none	none	unknown	infant		
	Kofun	No. 5 D-2	none	none	unknown	child?		
	Kofun	No. 5 D-3	none	none	unknown	child?		
	Kofun	No. 6 A-1	none	none	unknown	child?		teeth only
	Kofun	No. 6 B-1	inmeasurable	complete	male	adult?		
	Kofun	No. 6 B-2	inmeasurable	complete	male	adult?		
	Kofun	No. 6 C	none	inmeasurable	unknown	child?		teeth only
	Kofun	No. 9 A-1	partially broken	complete	male	young adult	425	
	Kofun	No. 9 A-2	none	partially broken	unknown	adult?		
	Kofun	No. 9 B-1	partially broken	complete	male	adult?	450	
	Kofun	No. 9 B-2	inmeasurable	inmeasurable	unknown	adult?		
	Kofun	No. 9 C	partially broken	complete	male	middle adult	425	extended burial
	Kofun	No. 9 D	inmeasurable	partially broken	unknown	child?		
	Kofun	No. 10 A-1	inmeasurable	partially broken	female?	adult?		probably same individual of No. 10 C
	Kofun	No. 10 A-2	inmeasurable	partially broken	male?	adult?		
	Kofun	No. 10 B-1	inmeasurable	partially broken	unknown	young adult		
	Kofun	No. 10 B-2	inmeasurable	partially broken	male	adult?		
	Kofun	No. 10 C	none	partially broken	female	old adult		probably same individual of No. 10 A
	Kofun	No. 11-1	partially broken	partially broken	unknown	young adult		these bones were scattered on the floor
	Kofun	No. 11-2	partially broken	partially broken	female	middle adult		
	Kofun	No. 12 A	partially broken	complete	male	middle adult	465	extended burial, healed fracture in radius
	Kofun	No. 12 B	partially broken	complete	male	middle adult	430	
Kofun	No. 12 C	partially broken	complete	female	middle adult	420		
Kofun	No. 12 D	inmeasurable	complete	female	middle adult	400		
The Yamane caves site	Kofun	No. 1-1	partially broken	complete	male	young adult		
	Kofun	No. 1-2	partially broken	complete	female	young adult		
	Kofun	No. 1-3	inmeasurable	partially broken	male	middle adult		
	Kofun	No. 1-4	none	inmeasurable	unknown	child-adolescent		
	Kofun	No. 1-5	none	none	unknown	child?		teeth only
	Kofun	No. 1-6	none	inmeasurable	unknown	adult?		
	Kofun	No. 2-1	complete	complete	male	middle adult	444	
	Kofun	No. 2-2-I	partially broken	complete	male	middle adult	450	
	Kofun	No. 2-2-II	none	inmeasurable	male?	adult?		
	Kofun	No. 2-3	none	partially broken	male?	adult?		
The Siroganecho nishi site	edo?	No. 30	partially broken	complete	male	adult?		two individuals commingled
	edo?	No. 35	partially broken	partially broken	male	adult?		two individuals commingled. pathological changes of long bones



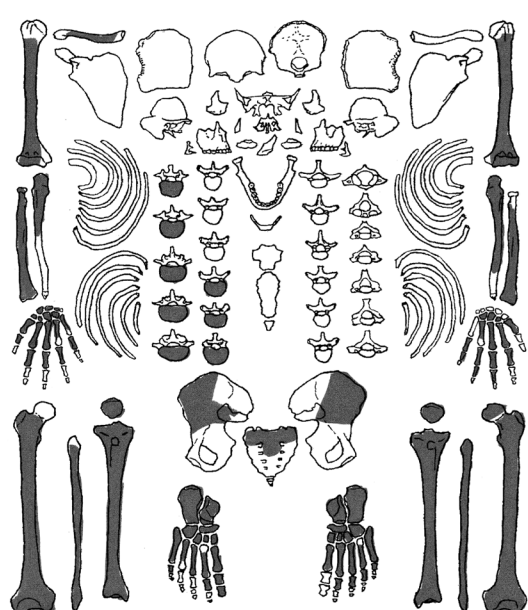
Miyano No.101



Miyano No.101-2



Ichigaya No.1

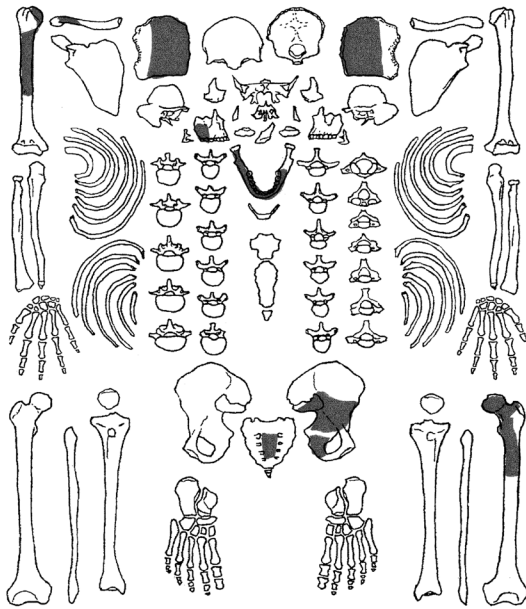


Ichigaya No.2

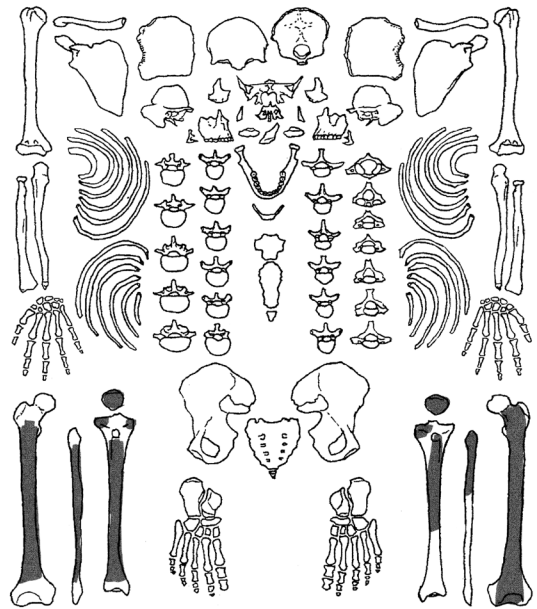
Fig. 1. Preservation of human skeletal remains unearthed at the Miyano shell mound site at the Ichigaya-kagama-chi 2-Chome site.

passageway and chamber. The chamber was used for burials several times, and many human skeletal remains were scattered or piled on the floor.

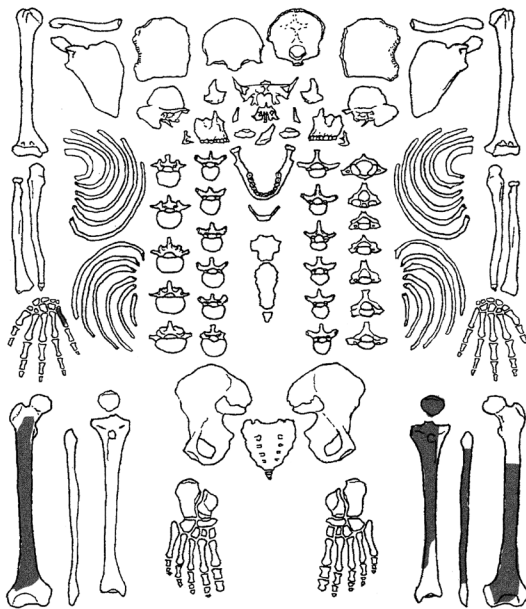
However, the last buried individual retained the anatomical position of an individual. All of the Hanezawadai decorated horizontal tomb caves



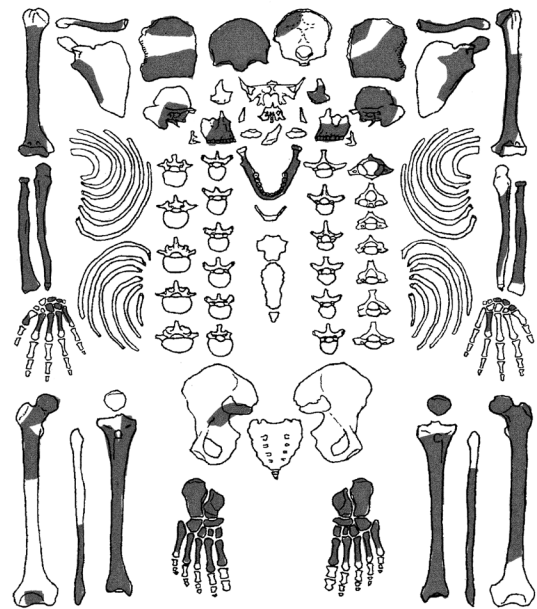
Ichigaya No.3



Ichigaya No.4



Ichigaya No.5

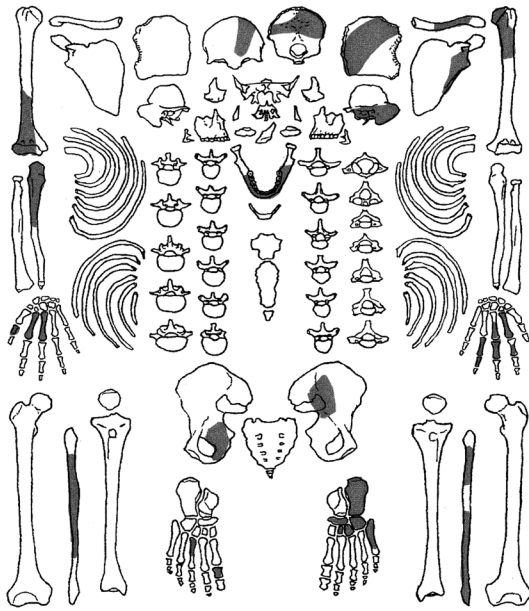


Ichigaya No.6

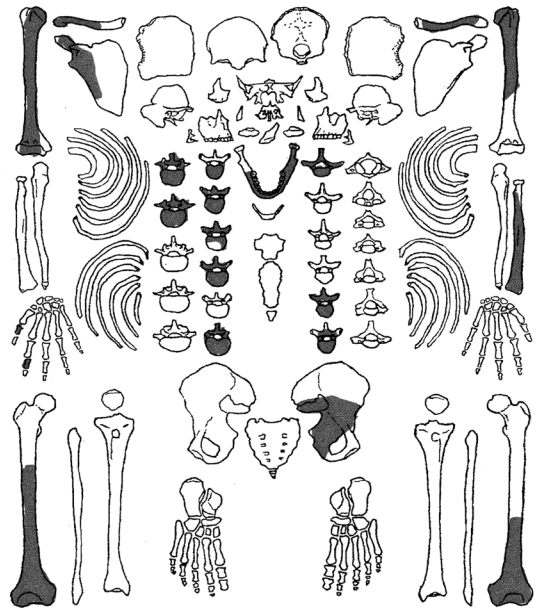
Fig. 2. Preservation of human skeletal remains unearthed at the Ichigaya-kagamachi 2-Chome site.

show the same type of burial style (Figure 13). The alphabet letter in "Sample ID" in Table 1 refers to the skeletal mass group in the excava-

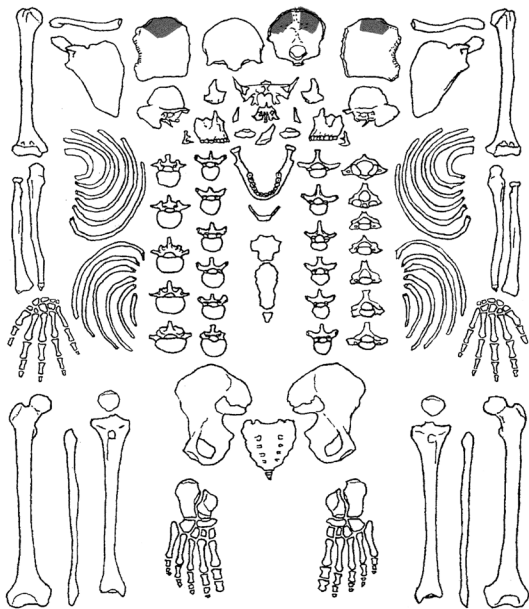
tion, and the number following this alphabet letter refers to an identified individual within the skeletal mass group.



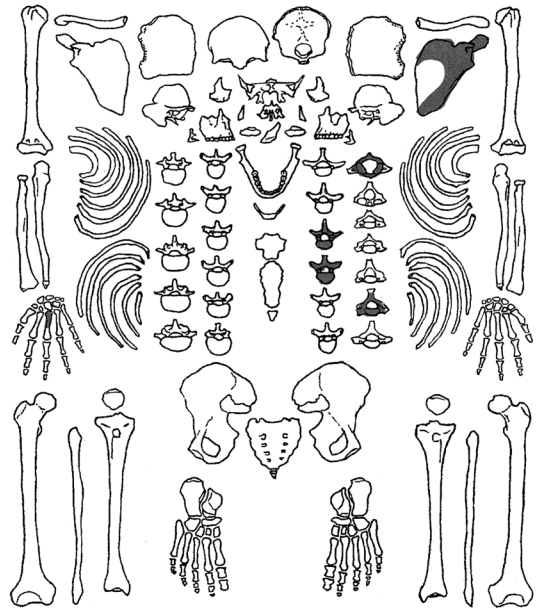
Ichigaya No. 7



Ichigaya No. 8



Ichigaya No. 9

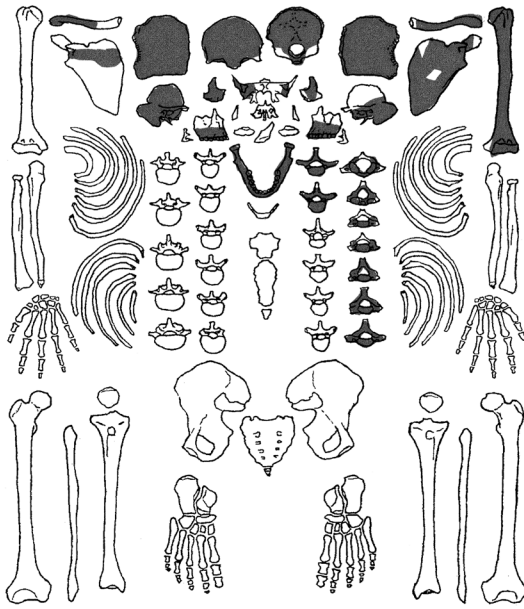


Ichigaya No. 10

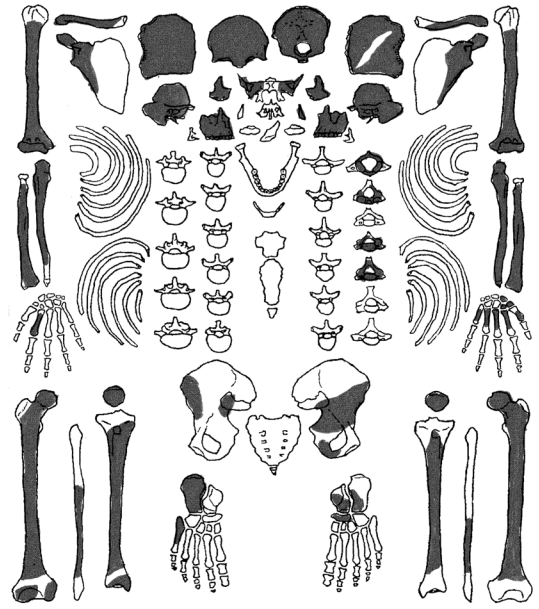
Fig. 3. Preservation of human skeletal remains unearthed at the Ichigaya-kagamachi 2-Chome site.

The minimum number of individuals is 33 (Table 1). The preservation of skeletal remains is so poor that only some teeth could be recognized

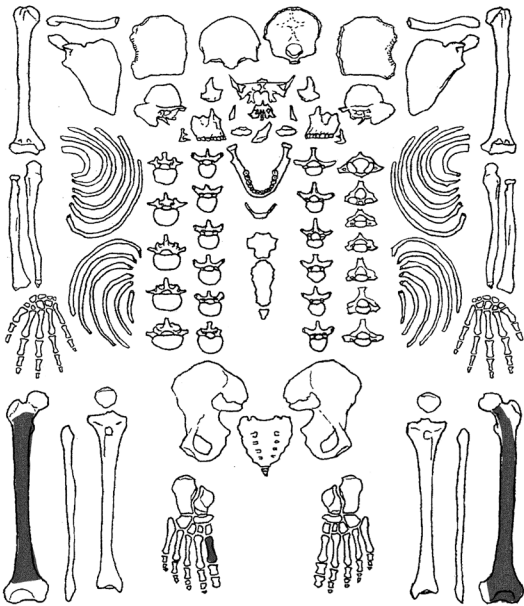
for some individuals (Figures 5–7). However, No. 9C shows good preservation of the skull, which reveals the typical flat, broad face of a



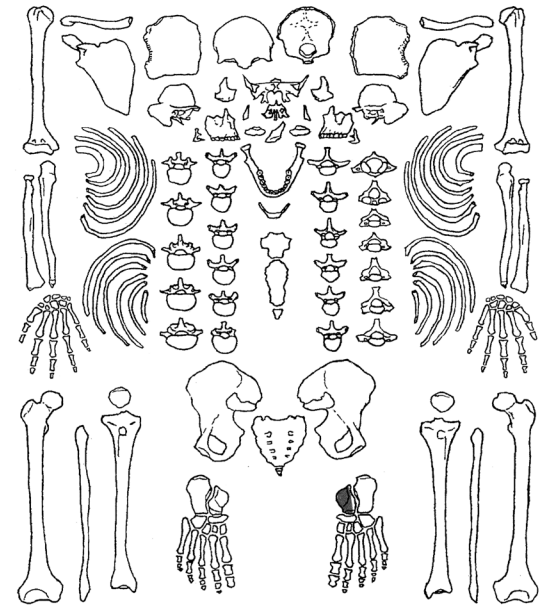
Ichigaya No.11



Ichigaya No.12



Ichigaya No.14

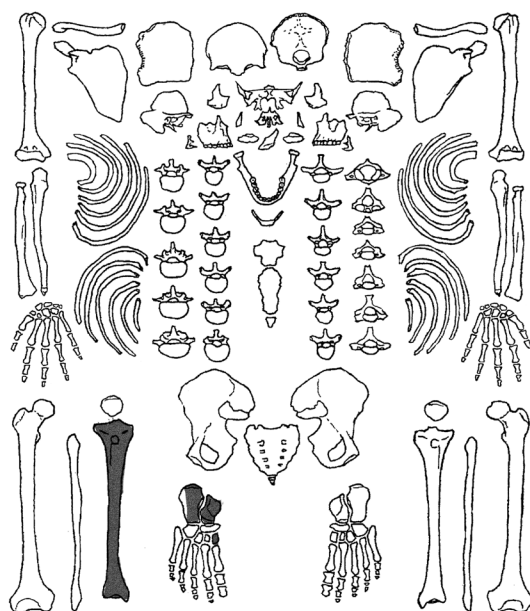


Ichigaya No.15

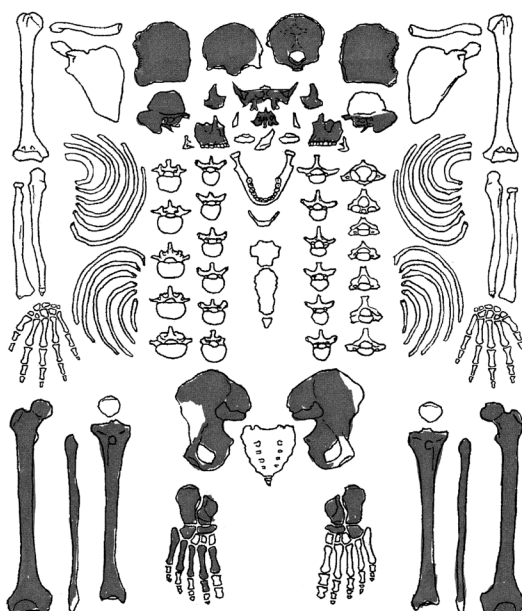
Fig. 4. Preservation of human skeletal remains unearthed at the Ichigaya-kagamachi 2-Chome site.

Kofun period man and a broad mandible (Figure 14). Three individuals have relatively long femurs, which measure over 450mm. Further-

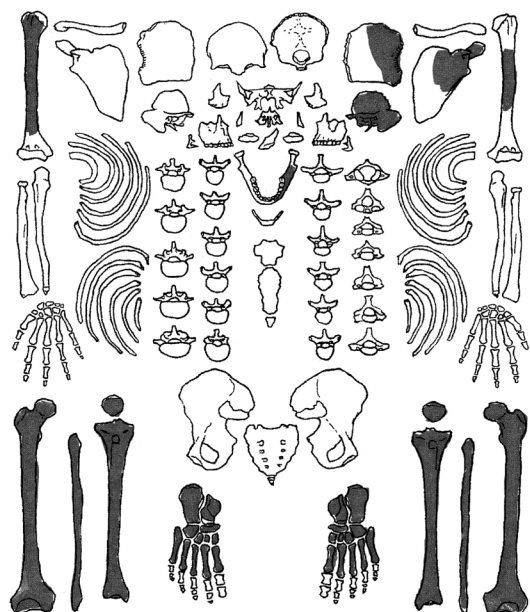
more, No. 12A exhibits a healed fracture in the distal radial shaft (Colles fracture).



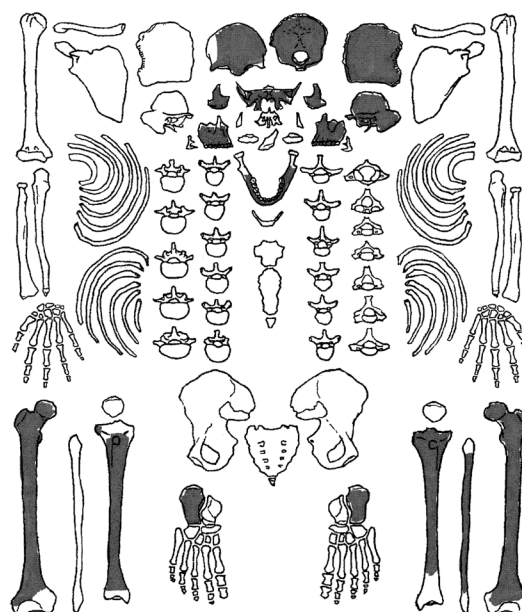
Ichigaya No.16



Hanezawadai No.4 C



Hanezawadai No.5 A



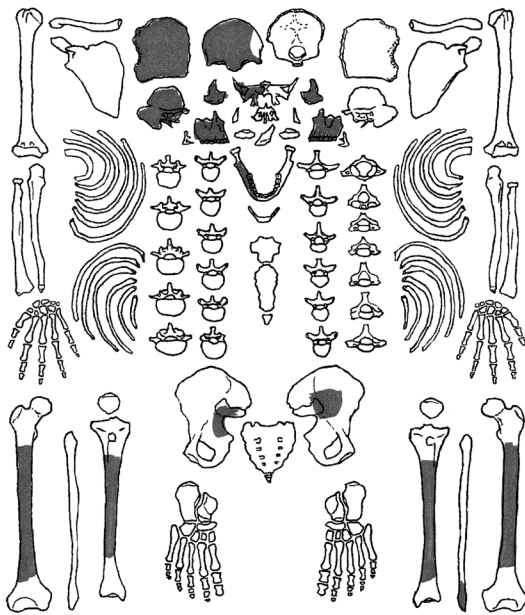
Hanezawadai No.9 A-1

Fig. 5. Preservation of human skeletal remains unearthed at the Ichigaya-kagamachi 2-Chome site and Hanezawadai decorated horizontal tomb caves.

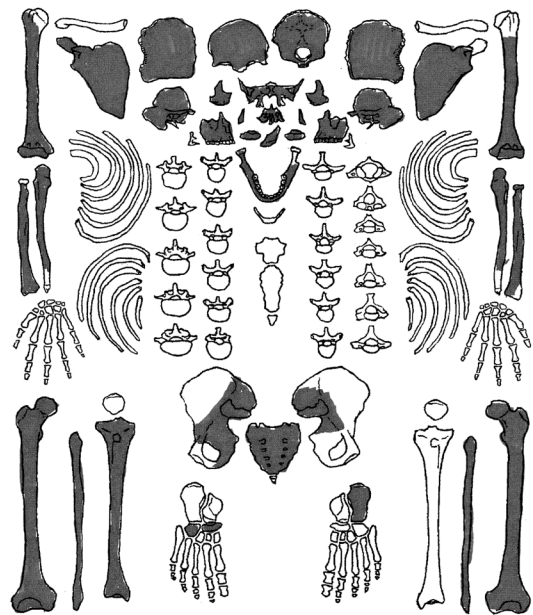
“The Yamane cave site in the Oowada decorated horizontal tomb caves”

The Oowada decorated horizontal tomb caves

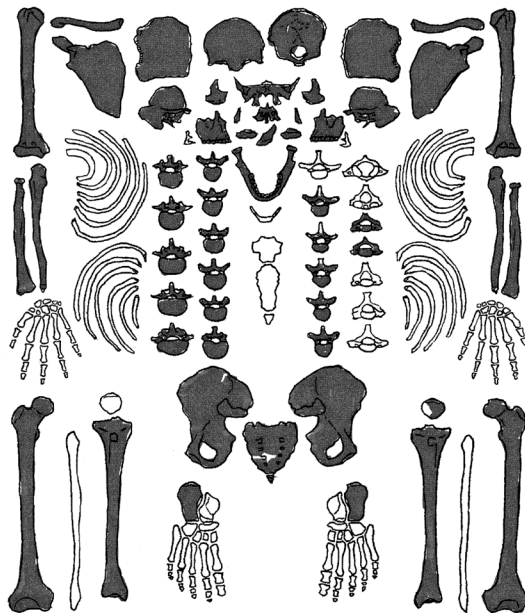
site is located at 2-7-Chome, Oowada-cho, Hachioji City, Tokyo (Hachioji City Board of Education, 1990). These tomb caves were con-



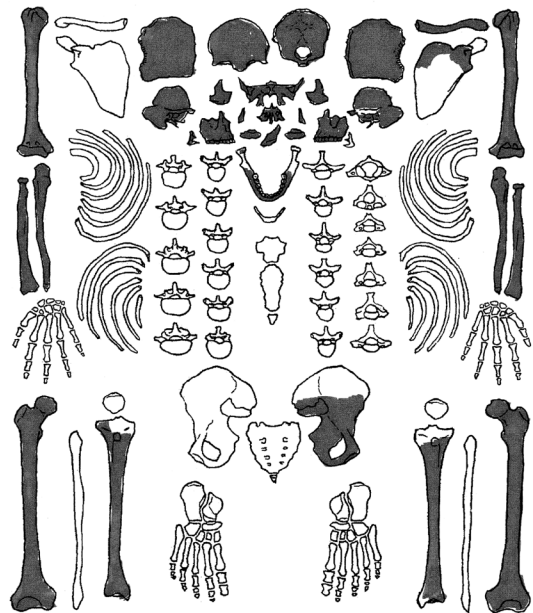
Hanezawadai No.9 B-1



Hanezawadai No.9 C



Hanezawadai No.12 A

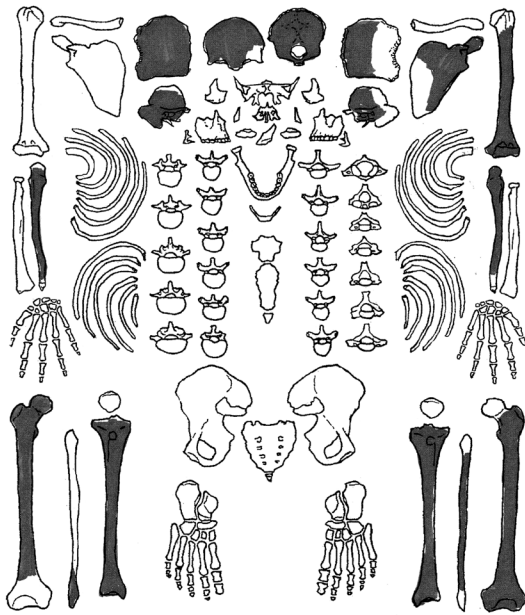


Hanezawadai No.12 B

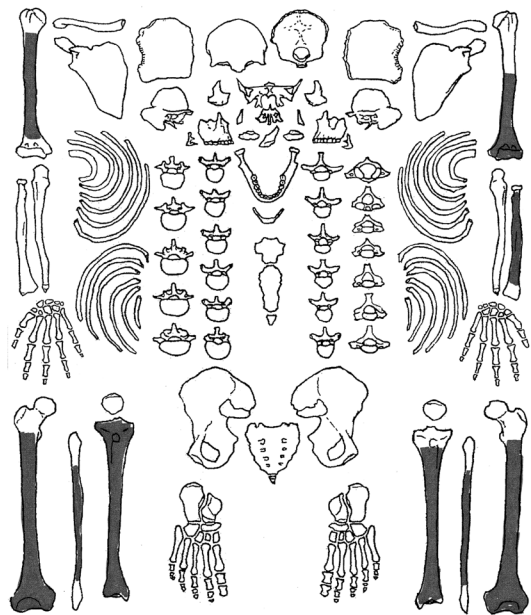
Fig. 6. Preservation of human skeletal remains unearthed at the Hanezawadai decorated horizontal tomb caves.

structed along the left bank of a tributary of the Tamagawa river. One of these caves is the Yamane cave site, which was discovered during

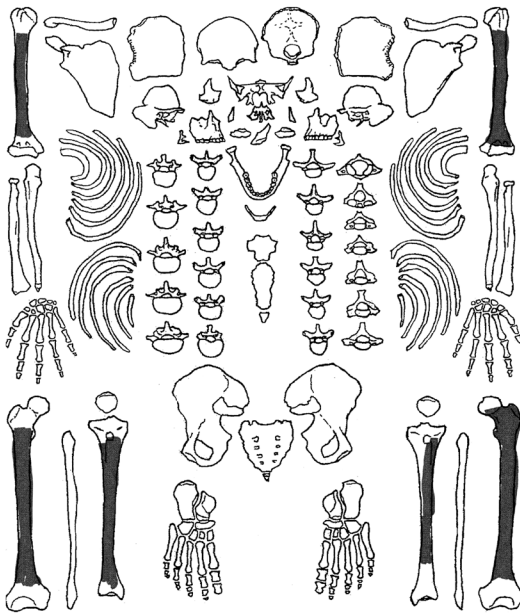
excavations accompanying the construction of an apartment building in 1989. Two burial caves were found and are identified as "No. 1" and "No.



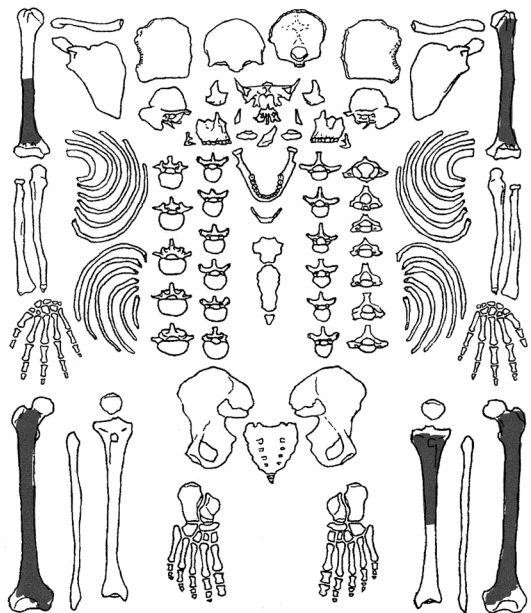
Hanezawadai No.12 C



Hanezawadai No.12 D



Yamane No.1-1

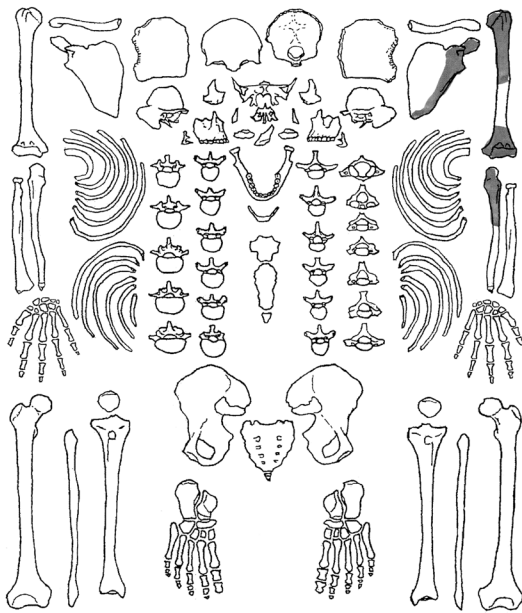


Yamane No.1-2

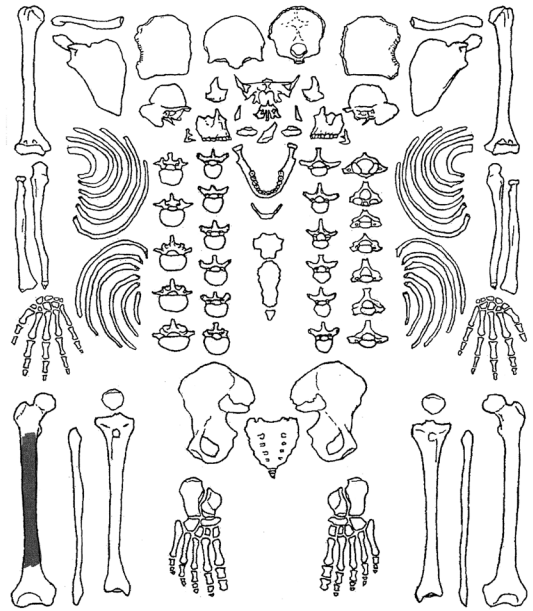
Fig. 7. Preservation of the skeletal remains unearthed at the Hanezawadai decorated horizontal tomb caves and Yamane cave site in the Oowada decorated horizontal tomb caves.

2.” The former had already been damaged during building construction. As such, the human skeletal remains found in “No. 1” were unearthed in a

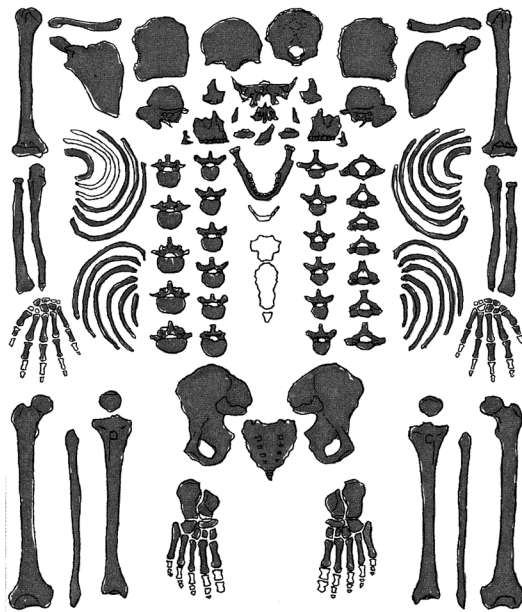
lump. The Hachiouji City Board of Education researched Cave No. 2. Burial style and accessories (sword and earrings) confirm the skeletal



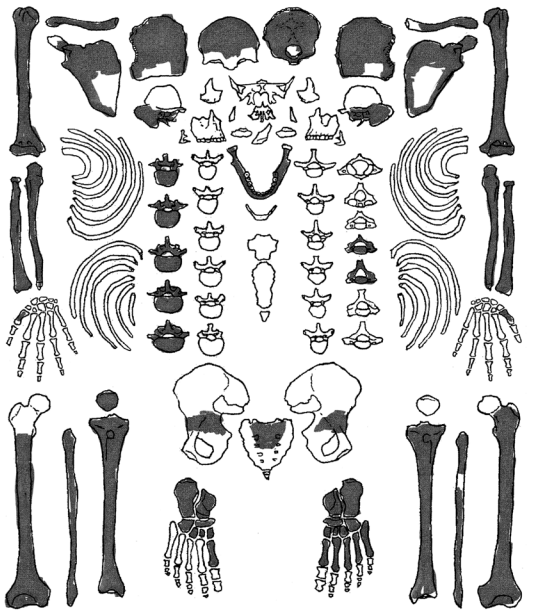
Yamane No.1-3



Yamane No.1-4



Yamane No.2-1



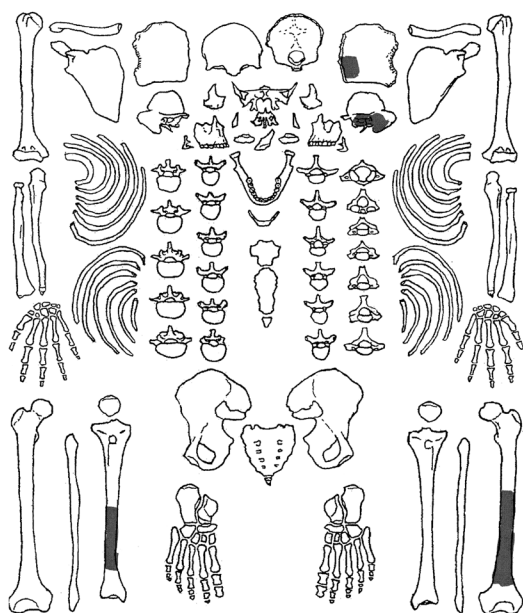
Yamane No.2-2-I

Fig. 8. Preservation of the human skeletal remains unearthed at the Yamane cave site.

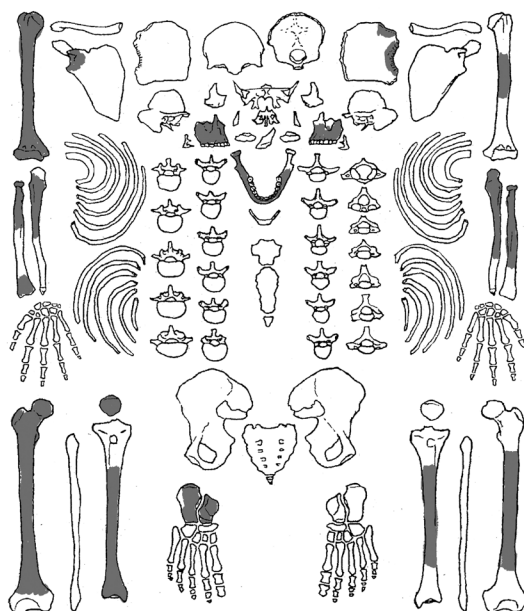
remains to be from the late Kofun period (the end of the 6th century).

The minimum number of individuals was six

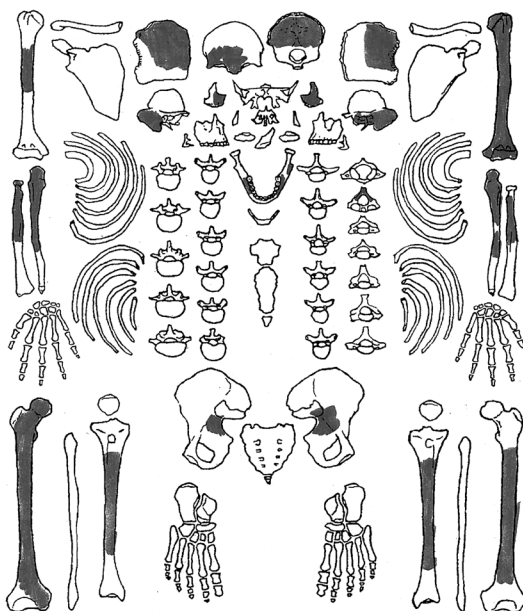
in Cave No. 1 and 4 in Cave No. 2. Although most remains were not well preserved, Individual No. 2-1, found in Cave No. 2, exhibits almost



Yamane No.2-3



Shiroganecho 30



Shiroganecho 35

Fig. 9. Preservation of human skeletal remains unearthed at the Yamane cave site and Sirogane-cho nishi site.

complete preservation of all bones, to such an extent that all variables can be measured (Figures 7–9 and Figure 14). This good preservation of all

bones is extremely rare for human skeletal remains unearthed in the Kanto district of the Kofun period.

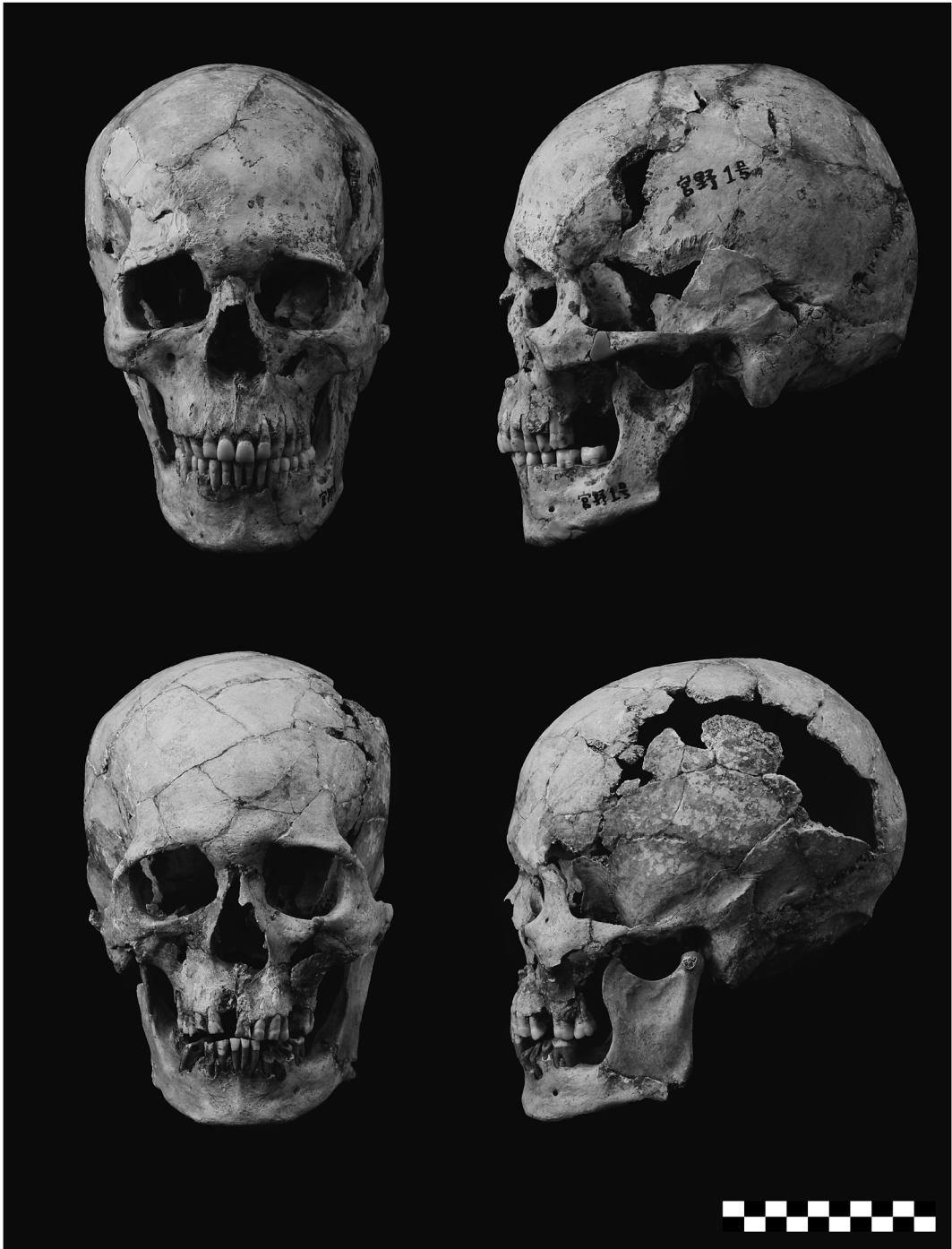


Fig. 10. Photographs of the skulls of individual No. 1 unearthed at the Miyano shell mound site in 1979 (upper row) and individual No. 12 unearthed at the Ichigaya-kagamachi 2-Chome site (lower row).



Fig. 11. Healed wound in the right innominate bone of individual No. 1 with a stone arrowhead lodged inside: from the Miyano shell mound site in 1979.



Fig. 12. Depressed skull fracture on the right parietal bone of individual No. 12 from the Ichigaya-kagamachi 2-Chome site

“The Sirogane-cho Nishi site”

The Sirogane-cho Nishi site (site No. 138 of Shinjuku-ku) is located at 5–7, Sirogane-cho, Shinjuku-ku, Tokyo. This area had been highly developed from the Muromachi period, and

included the residence of the Sakai family, a “hatamoto (direct shogunate retainer),” and the principal residence in Edo of the Nakayama family, a minister of the Mito Domain in the Edo period. Human skeletal remains were unearthed in the adjacent pits No. 30 and 35, which may have belonged to the relics of the Sakai family’s residence in 2013. These skeletal remains did not retain their anatomical position, and some bones were commingled. The skeletal remains were possibly from the Edo period.

The minimum number of individuals is two, and these were poorly preserved (Figure 9). A set of long limb bones shows pathological changes as irregular swelling of the shaft with bone sclerosis (Figure 15). These changes may have been caused by syphilis.

As described above, the minimum number of 57 individuals was newly added in the 2013 academic year to the Human Osteological Collection of the Department of Anthropology, NMNST, Tokyo. Of these, four are probably from the middle Jomon period, eight may be from the late Jomon period, 43 may be from the Kofun period, and two may be from the Edo period. Some individuals show interesting pathological changes such as a healed fracture with a lodged stone arrowhead, a depressed skull fracture, and irregular swelling of long bone shaft. Furthermore, some individuals have femurs longer than 450mm, meaning that estimated stature according to Fujii’s Formula is more than 165 cm.

We hope that the information provided here is helpful to the researchers who want to use the specimens in the future.

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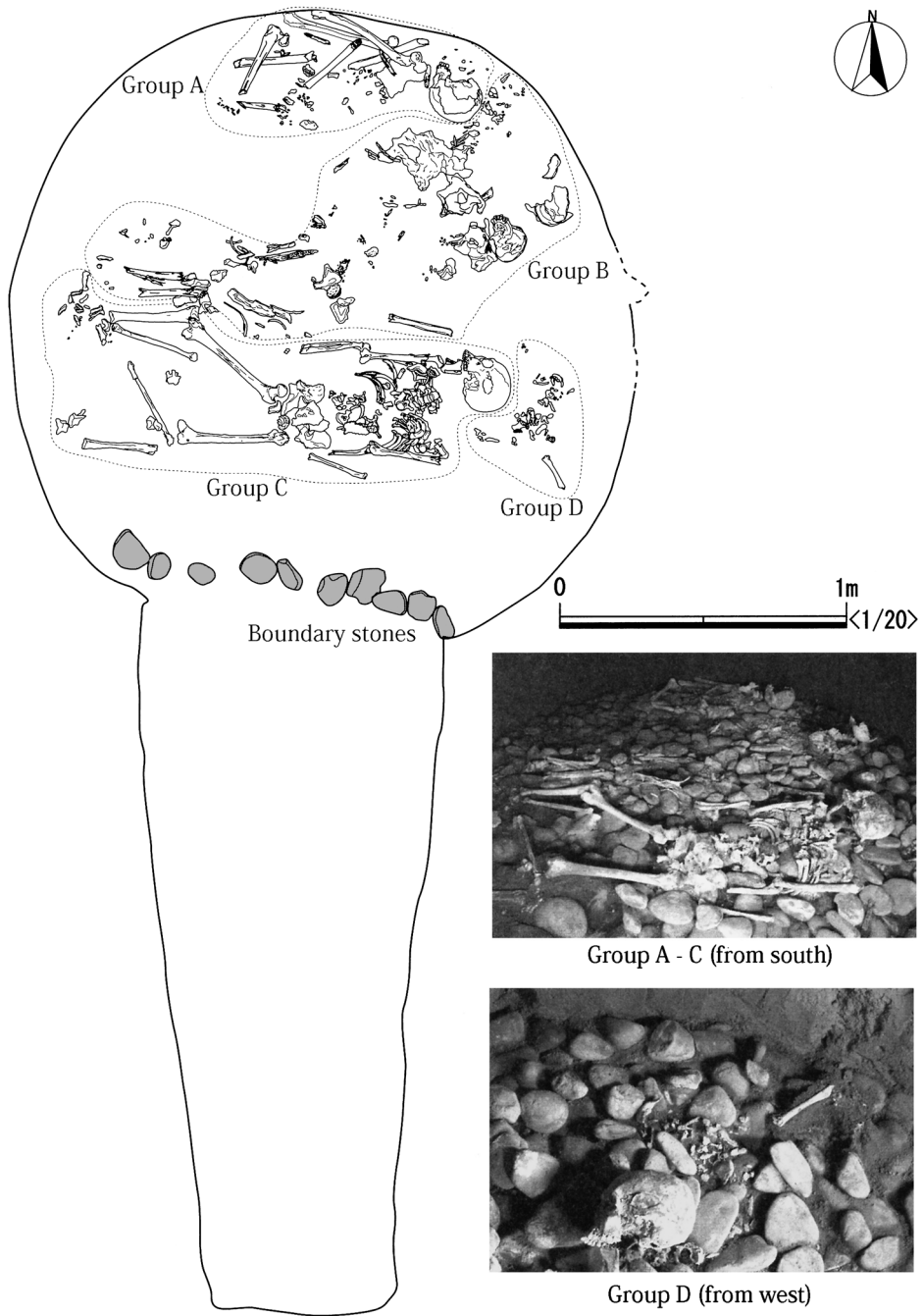


Fig. 13. Scatter diagram of the human skeletal remains of individual No. 9 in a burial chamber in the Hanezawadai decorated horizontal tomb caves.

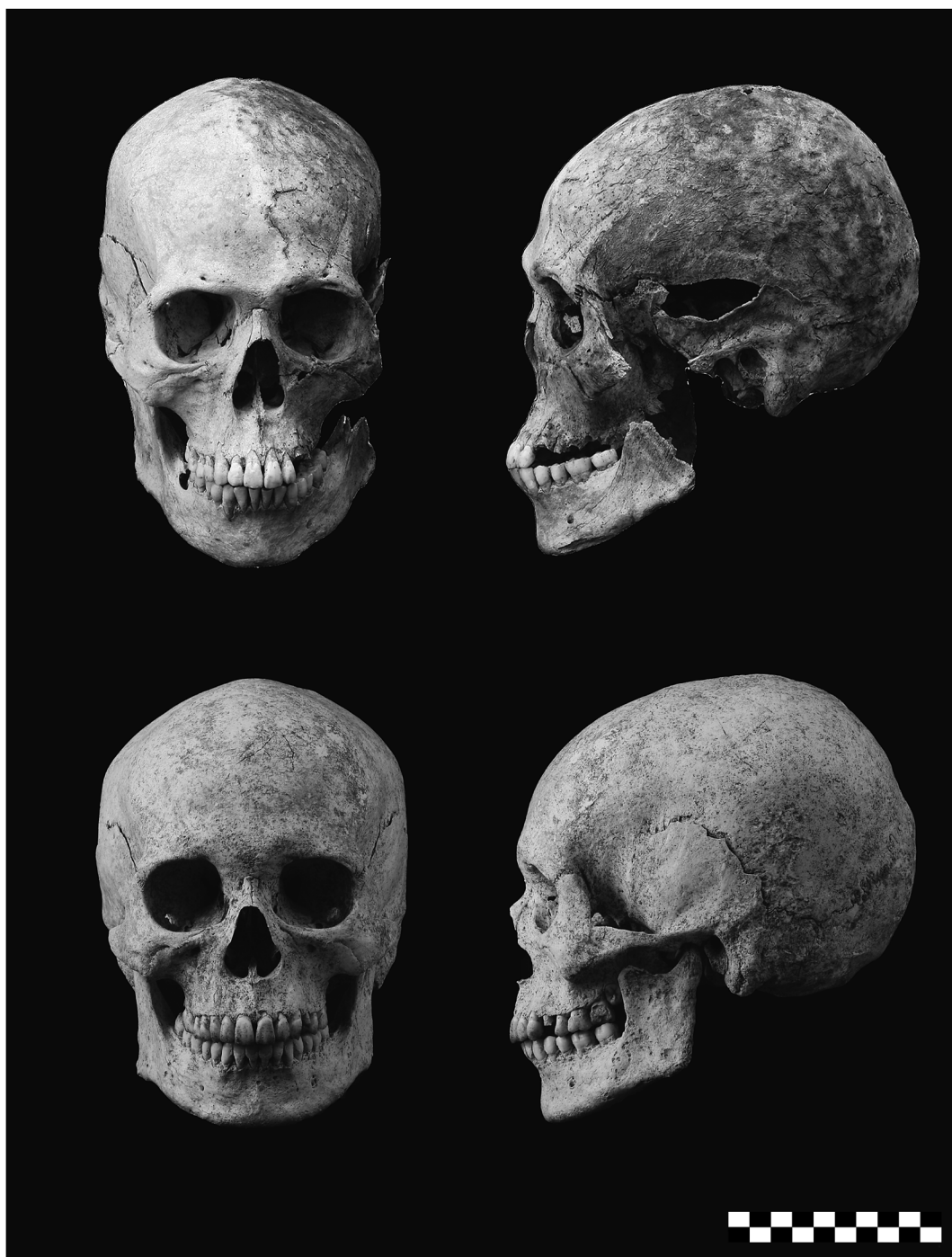


Fig. 14. Photographs of the skulls of No. 9C from the Hanezawadai decorated horizontal tomb caves and of No. 2-1 from the Yamane cave site.



Fig. 15. Irregular swelling of the long bones of individual No. 35 from the Sirogane-cho nishi site.

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