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Boston University
10 Lenox Street
Boston, MA 02146

PREHISTORIC AND HISTORIC ANTECEDENTS OF A CONTEMPORARY NGAMILAND COMMUNITY*

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Introduction

An archaeological survey was incorporated as part of a long-term project which I began in 1973. Fieldwork has been carried out during two periods: July, 1973 - January, 1974 and February, 1975 - May, 1976. The work is centered at /ai/ai (Nxai Nxai) in northwestern Ngamiland. Malan (1950) and Yellen (1975) made small collections at this waterhole. My investigations are designed to increase our understanding of the social ecology of the ǂzu/õasi and Ovaherero peoples who live in this region. Periodic animal and plant censuses are recorded so that reasonably precise estimates of productivity of both wild and domesticated food resources may be calculated. Inventories of animals killed are kept on a daily basis and vegetable foods acquired are recorded on a randomly established schedule. A logbook is maintained in which are kept data pertaining to the social behavior of all residents at and visitors to /ai/ai. A number of indicators of nutritional status of both ǂzu/õasi and Ovaherero individuals are monitored periodically. Short reports on the project have

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appeared (Wilmsen 1976a, 1976b, van der Walt et al., 1977). This report is confined to the current status of the archaeological program and its implications.

Recent History

During the time of my study, the number of people making their homes at /ai/ai varied between 183 and 197. Of these, 149 to 161 are ǂǔ/õasi and 31 to 34 are Ovaherero; in addition, there are 1 Motswana, 1 Mambukushu, and 1 Omuqwena. Fluctuations occurred because some individuals and families changed their places of primary residence. The average numbers are ǂǔ/õasi, 158; Ovaherero, 32; others, 1 each. These people were divided among 16 residential units; 9 of ǂǔ/õasi, 6 of Ovaherero (in one of which lived the Omuqwena) and one in which the Motswana and the Mambukushu lived.

Census estimates made during the past 25 years provide valuable information about the current structure of the community. I collected the following data in October, 1973: total number of /ai/ai residents, 194; ǂǔ/õasi, 162; Ovaherero, 29; the same Motswana, Mambukushu, and Omuqwena individuals. In November, 1964, Lee (1965) recorded 107 ǂǔ/õasi and 67 others (almost all Ovaherero) living at /ai-/ai. Lorna Marshall (1976: 158) estimated in 1953 -- but did not actually count -- 125 ǂǔ/õasi at this place. There

is no necessary discrepancy between Lee's and Marshall's figures; the latter, being estimates, are probably 10% or more in error. The inference that ǯu/õasi living at /ai/ai remained fairly stable in number during the 1950s and early 1960s seems justified.

It is clear, however, that ǯu/õasi at /ai/ai have increased by about 50% since 1964. At the same time, the total number of these people has remained constant or decreased slightly in the !angwa Valley (i.e., in these communities, listed from west to east: dobe, !ubi, !xabe, Mohopa, !angwa, !angwamatsee, baate, g!oše). Ovaherero, on the other hand, decreased by about 50% at /ai/ai between 1964 and 1973. Comparable census estimates for !angwa Valley are incomplete, but it is my impression that numbers there too have been reduced, although perhaps not so drastically. There is complete agreement among Ngamiland informants about the reason for the decline in Ovaherero numbers. In the middle 1960s, the quantity of water available for cattle began to diminish; stock records indicate that, before 1963, 10,000 head were kept in the entire region. Today there are slightly more than 4,000 head. The majority of the people and cattle that have left /ai/ai and !angwa Valley have gone northward to places centered around n!au'n!au or eastward to the vicinity of !on!a Makxoikxoi, and Sehitwa.

There is complete agreement on the part of all informants that the current pattern of settlement at /ai/ai -- a mix of Ovaherero with their cattle and ǯu/õasi in various degrees of interdependence -- was begun in the late 1930s. Several kinds of evidence support this date; one refers to recruitment for "Hitler's war" at Tsau (one man now living at /ai/ai served in the Herero Regiment which fought in North Africa). These pastoralists, members of a large extended family, came from Makakong near Tsau where their parents had settled after escaping the German War in 1904-1905; this older generation had been settled at Otjivarumeda between Windhoek and Gobabis. The Omuqwena man (who was ± 84 in 1975) was born in this place.

Before this, beginning in the final decades of the 19th century, some Batswana grazed their cattle in western Ngamiland (Tlou, 1972), including the /ai/ai area, and employed individual ǯu/õasi as cattle tenders. Some /ai/ai ǯu, now in their 50s and 60s, tell of their father's having been employed in this way before they (the informants) were born.

All of these movements have, of course, brought changes. The flow of events has altered the social and demographic structure of the region, and indeed, of a much larger portion of western Ngamiland and adjacent Namibia. Kinship and genealogical data support the claims of one ǯu/õasi camp unit for

historical priority at /ai/ai; this group, with its extensions, accounts for about a third of current residents at this place. These people can name ancestors in four ascending generations whose homes were at /ai/ai; they thus have something like 150 years of continuity there. Another 40% are descended from ancestors who first settled at /ai/ai about 75 years ago. The remaining people have arrived within the past 25 years. (More extensive treatment of this subject plus the data upon which it is based is given in my report to the Ministry of Local Government and Lands dated December, 1976).

Prehistory

An understanding of the development of the region through time is central to this study. It has become standard practice -- by the simple mechanism of extending analogously into the past the undeniable upheavals of the present -- to attribute many aspects of ǯu/õasi culture (indeed, that of all Basarwa) to alterations from a previous undisturbed hunter-gatherer condition. But unless we can adduce certain basic things about the former condition of a region -- estimates of relative numbers of people, assessments of dietary regimes, knowledge of extractive technologies -- we run the risk of confounding continuity with change and, thus, of obscuring

that which we wish to make clear. The ethnohistorical data outlined above is critical to an ecological assessment of the current situation at /ai/ai. Archaeological data are indispensible to extend this understanding into the prehistoric past.

Field Procedures

The entire archaeological collection was obtained at /ai/ai. Two complimentary survey procedures were employed; one to sample materials at or near the present ground surface, the other to sample more deeply for the presence of cultural material. The wells which provide water for people and livestock were selected as a convenient reference point for a grid system laid out to control excavation locations (Fig. 1). Grid lines were oriented in relation to the general course of the molapo. One set, therefore, lies along compass bearings 70° E of N - 110° W of N (these are called E-W lines); the other set of lines is at right angles to the first (20° W of N - 160° E of N) (these are called N-S lines). The lines are spaced 10 m. apart. The N-S lines are numbered 1-150; the E-W lines are numbered according to their position with respect to the molapo. A 2 m. long iron pipe has been set at intersection N10.100 so that the grid may be reconstructed by future investigators. Each intersection was marked temporarily by a wooden stake.

Initially, every fourth stake in both directions was selected for excavation, so that a 40x40 m. grid was first investigated. A circle 1 m. in radius was scribed with the aid of standard lengths of rope made for the purpose with a loop at one end and a stick secured to the other. At the beginning of work on each unit, the loop was dropped over the intersection stake and, with the rope kept taut, the other end was made to scribe a circle around the stake. All material within this circle to a depth of 8 cm. was put through screens of 5 mm. mesh size. Excavation was done by four teams, each composed of four ǂu/ǒasi and Ovaherero men. Lisa Wilmsen and I supervised the work and collected all recovered specimens.

These initial excavations revealed general locations of high artifact density and those where little or nothing was found. This information was used to structure the next phase of excavation. In areas of relatively high density, every second stake was now selected for excavation (20x20 m. grid); in low density areas, every eighth stake was selected. The procedure was repeated, guided by the newly acquired data. Ultimately, those units marked on Fig. 1 were excavated. On this figure, every excavated unit -- whether it produced specimens or not -- but only excavated units are marked.

After the surface survey had been completed, a randomly selected sample of 10% of the units excavated on the surface

was taken down in 10 cm. increments to a depth of 1 m. below surface excavated depth (thus total depth for these units is 108 cm.). Locations of these units are given on Fig. 2; only units on the north side of the molapo were included in this second sample. Time and funding limitations prevented its extension to the south side. Rock lies at or just under the molapo surface; consequently, no deep units can be put down in that area.

Analysis

All of the recovered specimens were analyzed in the National Museum and Art Gallery, Gaberone, in June-July, 1977, with the invaluable aid of Robert Hitchcock and Helga Vierisch. (The collections made in 1973 were lost in transit to the United States and, therefore, only limited locational information is available for these.)

Figs. 1-3 reveal unambiguously a strong clustering tendency in the distribution of stone. We may infer that the clusters represent camp locations, and if this is so, that living areas were distributed, in the past, quite differently than they are today. Contemporary camps are often located more than a kilometer from the molapo, but earlier camps -- in which chipped stone was extensively used -- were never farther, on present evidence, than 0.3 km. Fig. 4 documents the fact that this pattern of distribution is characteristic

of the more remote past as well; note that those units farther from the molapo yielded very little material at every level.

Fig. 4 displays the numbers of chipped stone specimens found in 10 cm. vertical increments in each unit that was excavated to a depth of 1 m. No stratigraphic separations were discernable in the homogeneous sands that formed the matrix of all excavated deposits. The fact, however, that specimen densities vary at different depths in the manner shown suggests that materials were deposited at some levels at particular locations and not at others at those locations. In other words, we may infer a series of camps on then exposed ground surfaces at varying parts of the /ai/ai molapo area. Vertical disturbances by commonly occurring factors -- unevenness of ground surface, wind, rain, plant growth, insect burrowing, mammal activity -- can account for the fact that materials are no longer found in a horizontal plane. The fact that the slopes of the frequency curves are all nearly the same, is strong evidence that processes of vertical transport in the sand have been regular during the represented period of time. Yellen (pers. comm.) finds in his excavations of ǂu/ǂasi camps occupied during the last 20 years around dobe that most materials occur in a zone ± 12 cm. deep.

Table 1 documents regularity in both the quantity of chipped stone material and in the proportion of modified to unmodified specimens at each level.

All peripheral units were sterile, with the exception of five units on the north side and 11 on the south; six of these, south side, are within areas of very recent occupation but none of the total number yielded more than three specimens. The density distribution of specimens found in each surface unit on the north side is shown on Fig. 2; areas of high surface density in south side units are given on Fig. 1. All molapo units except M10.21, which yielded a single chert flake, were completely sterile.

All recovered materials were sorted into the following classes:

1. unmodified chipped stone,
2. modified chipped stone -- pieces showing either retouch or use wear scars,
3. other stone -- limestone pebbles, granite, etc.,

4.,5. ostrich eggshell fragments (4) and beads (5),

6. pigments (most of this material is probably soft cortex of 1 and 2),
7. glass or porcelain beads,
8. ceramic shards,
9. metal,

10.,11. bone, burned (10) and unburned (11),

12. plant remains.

Specimens in each class were counted for each unit, and a 10% sample of modified chipped stone specimens was randomly selected and measured.

Distribution of Chipped Stone

The total number of chipped stone specimens in each surface unit were plotted on rectangular graph paper. Locations of high density were readily apparent on this plot, but as expected, these graded into low density areas without sharp demarcating breaks. In order to determine if density distribution is actually continuous, the frequency of units yielding specified numbers of specimens (chipped stone only) is plotted against frequency of specimens expressed in increments of 10 (Fig. 3). Three points of discontinuity are readily apparent in this figure; these dictated the display pattern used to indicate unit specimen densities in Fig. 2.

In summary, the distribution of chipped stone in the area of investigation permits the conclusion that the inner parts of this area (adjacent to the molapo) was regularly, and apparently continuously occupied but that more distant portions were not used as residential areas until very recent times. The evidence suggests a great deal of uniformity of

occupation history throughout the time encompassed by the investigations. The surface excavations reveal rather small clusters of materials, only one of which exceeds 10 m. in longest dimension; we may infer that resident groups were composed of relatively few people. The evidence fits that presented by Yellen (1977) for camps occupied by a small number of families. There is no way to determine how many of these clusters may have been deposited simultaneously.

Stone Artifact Analysis

Summary statistics for measured chipped stone specimens are given in Table 2; values are displayed for each level separately and for all specimens taken as a group. This table also presents the results of tests for differences among the data subsets. The only thing to be said about these data is that they display complete homogeneity. Small sample size can account for the obtained significant difference between extreme mean values of each linear dimension (length, width, thickness); if the most extreme value in each case is ignored, the obtained significance disappears. Width is somewhat more heterogeneous than either length or thickness, but not markedly, or significantly ($p < .01$) so. Chi-square analysis confirms that there is no difference in the distribution of edge-angle values among specimens in each level.

Figure 5 shows a representative group of modified specimens from each level. These artifacts are indistinguishable from Late Stone Age materials commonly found throughout southern Africa. Fig. 6 records two unusual specimens: a is of hard stone, used as a whetstone; b is a bifacially flaked specimen for which I have been unable to find a counterpart in the literature. [Note: we were unable to reproduce these illustrations, and have omitted Fig. 5 & 6.]

Specimens Other Than Stone

Table 3 lists all ostrich eggshell, glass and porcelain beads, ceramic shards, and metal recovered by the survey (except for that lost in shipment). All of the listed materials were found on the north side of the molapo in the area designated by the prefix N (that is, the same units from which analyzed stone specimens were recovered).

Ostrich eggshell apparently deteriorates rapidly in this environment and, therefore, little can be said about its distribution other than that its use has a fairly long history in this area. Of this material, 18% of all fragments and 37% of all beads were found in 9 contiguous units excavated in an area known to have been occupied within the past 40 years. Glass and porcelain beads occurred only in the surface units; 15 of these are white porcelain and three are pink porcelain of the sort that are used today in large numbers by the peoples of the Okavango system and traded in small quantities to ǂzu/õasi.

Ceramics occur at many points at the surface and throughout the depth tested. There are 357 plain body shards included in the assemblage along with 16 incised and/or punctuated shards; all of these are grey in color, thick, coarse in texture, and appear to contain limestone or bone temper which is white and chalky. In these characteristics, in design elements (punctates, incised lines), and in patterns of design (bands composed of the above elements alone or in combinations, triangles filled with these elements, chevrons, etc.), the shards are identical to modern Hambukushu pottery and also conform to the descriptions of Late Iron Age/Historic Lungwebongu ware which is said to have been widespread in western Zambia and westward (Phillipson, 1974: 11-12). The frequency of occurrence of pottery in the excavations (average number of shards per unit) is essentially invariant from the surface through level 4 -- that is, to a depth of 48 cm. The single shard from level 10 has an incised design, but it is too small to permit a pattern to be discerned. The remaining 11 shards (all from surface units) have hard, dense surfaces which are buff in color; two of these have red painted designs. These specimens match modern pottery used by Ovaherero.

Most of the metal recovered has rusted badly or is deformed so that little can be said about original shapes. Among these specimens, however, are two iron beads which are

indistinguishable from beads worn until very recently by Ovaherero women; these were found in levels 3 and 7. Another specimen, found in level 8, is spatulate and is virtually identical in shape and size to a specimen from the Brandberg industry illustrated by Sampson (1974; Fig. 396,1).

Identified faunal material is listed in Table 4; in addition, 4,345 fragments of burned and unburned bone which could not be identified were recovered. The presence of cow (Bos taurus) at 63 cm. in level 6 places this domestic species in the area much earlier than previously supposed, but this should come as no surprise considering the evidence from surrounding areas. Cattle are reported from Tautswemogala (Welbourne, 1975).

Discussion

This survey of the recent prehistory and history of /ai/ai reveals that a basic continuity of Late Stone Age cultural material has existed in this area for several centuries. To this, elements of Late Iron Age derivation were added, and these were followed much later (in the time represented by the top 8 cm. of sand) by European introductions. At present, no time scale can be assigned to these events. Twenty-five charcoal samples were collected for age analysis, however, and when these have been assayed, a reasonably clear chronology should emerge.

Some comparative material is available as an aid. Maggs (1977) summarizes recent radiocarbon dating for southern Africa. He places the Brandberg industry -- with pottery and microliths -- between the 16th and 19th centuries A.D. and the Late Iron Age site of Otjinungua on the Kunene River as A.D. 1650 (1977: 171). Phillipson (1975), on the basis of the intersextile range of all reported radiocarbon ages for western Zambia and Rhodesia, dates the beginning of Late Iron Age developments in that region to about A.D. 1100. It is not possible to state how much time was involved in the accumulation of 1 m. of sand at /ai/ai or if accumulation proceeded at a uniform rate. But the dates just mentioned seem reasonable estimates, intuitively, especially in view of the similar dates now known for the northern Transvaal and Orange Free State (Sampson, 1974; Maggs, 1977). Tautswemogala, north of Palapye (Lepionka, 1971) falls within this period as well (Maggs, 1977). It would stretch the imagination to suppose that northwestern Botswana would not have participated in the LIA events surrounding it; therefore, an age range of 400-800 years may be tentatively assumed for the materials in level 10.

Similarly, it seems unlikely that the /ai/ai region could have been isolated from later events connected with European incursions into central and southern Africa. For the northwest, Birmingham (1970) and Miller (1970) outline extensively

the effects of Portuguese trade into the interior of Angola. The Portuguese themselves appear not to have penetrated beyond central Angola until the middle of the 19th century, being prevented from doing so by the Matamba and Ksanje who wished to maintain their middleman status in dealings with people to the south and east (Birmingham, 1970:172). Portuguese traders eventually overcame this resistance. László Magyar was at Libebe (Dario, Dirido) at the confluence of the Cubango (Okavango) and Cuito (Kwito) Rivers and at Sekeletu's town, Linyanti, in 1852. Livingstone (1912: 130) met three Portuguese (among them Silva Porto) at Linyanti in 1853 and received detailed geographic information about the route to Luanda from them. Magyar gives what may be the first European reference to !kũ (!kung) speakers: "... der Kuito (an-Sambuella), welcher von Nord nach Süd durch die Gebiete der bösen wilden Völker Bángoákánuka und Lulu fliesst..." (...the Cuito (an-Sambuella) which flows from north to south through the territory of the malicious wild people Bángoákánuka and Lulu...) (Petermann, 1860: 228). Mambari traders, who accompanied Magyar, were active in the area by that time and Chokwe shortly thereafter (Miller, 1970: 197).

Five families at /ai/ai (and several others in !angwa Valley) trace their ancestors to čo/anna and samangaigai in northeastern Namibia; these places are 125 km. and 140 km.

respectively from the Okavango River, within two days' walk for ǂu/ǒasi. We may feel comfortable with the supposition that these ancestors participated in a trading network that encompassed Portuguese Angola to the north and /ai/ai to the south.

In the east, Rozvi Mambo traders (western Rhodesia) were actively passing on European goods to peoples living in what is now Botswana during the 18th century (Mudenge, 1974) and by the early 19th century had established a "complicated trading network, which undoubtedly percolated throughout all of southern Africa.... (in which) beads became something of a circulating currency" (Smith, 1970: 285, 266). Vansina (1962: 384) maintains that trading networks whose nodes were on the east and west coasts of the continent had been linked by 1850. As an indication of the magnitude of some movements that were taking place during the first half of the 19th century: Alexander (1838) records his encounter with Jonker Amaraal on the Orange River in 1812; 39 years later, in 1851, Galton obtained guides from this same man -- then living near Windhoek -- for his dash to 'Tournobis (Rietfontaine) and Lake Ngami (Galton, 1853). In this context, recall that several /ai/ai residents trace their ancestry to the Windhoek area.

Finally, Tlou (1972: 150) dates Bayei and Hambukushu migrations into northern Botswana to about 1750, the same time at which the Ovaherero are said to have established

themselves in northern Namibia after having come from east of the Omuramba Omatako (near the Namibia-Botswana border) (Vedder, 1938: 134-155). My informants at /ai/ai speak of trade networks stretching from beyond Ghanzi on the south to Shakawe and Runtu on the Okavango that were well established in their grandfathers' youths, which would mean the routes were probably in existence a hundred years ago or more. Pottery, metal knives, and beads are specifically mentioned as having been obtained; duiker skins were the main items given. The fact that beads are confined to the surface level but that pottery occurs with equal frequencies in all of the upper levels suggests that indigenous ceramics became important long before European items were obtained in quantities great enough to be detectable by a sampling procedure such as the one employed in this survey.

The main conclusion to be drawn from these investigations is that people living at /ai/ai -- and certainly all of Ngamiland can be included in this statement -- participated in whatever events were taking place around them. It seems reasonable to suppose that domestic animals may have been present for at least some parts of the time indicated by the investigations just reported although there is no evidence at present to suggest that pastoralism was the principal subsistent mode at any time until the present. Rather the evidence may be

interpreted to indicate a flux of peoples and conditions over the past several hundred years. Hunting and gathering throughout this period, as now, was almost certainly the major subsistence base, but the people who were living on this base were also part of a much wider interactive network.

Archaeological surface material and genealogical evidence together indicate that the number of people living at /ai/ai in the latter half of the 19th and the earlier part of the 20th centuries was probably about 50% that of the present. Current numbers and distributions have been affected strongly by political events in distant locations. These events have had accumulating repercussions throughout southern Africa and have contributed to present social and demographic conditions at /ai/ai much more directly than has been reported previously. Subsurface investigations must be extended before more detailed statements about earlier times can be made.

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Table 1. Frequency of Stone Specimens Per Level

Level	N	unmodified		modified		u+m		m/u
		f	$\bar{x}$	f	$\bar{x}$	f	$\bar{x}$	
S	773	22048/	28.52	961/	1.24	23009/	29.77	.044
1	21	1672/	79.62	62/	2.95	1734/	82.57	.037
2	21	1616/	76.95	50/	2.38	1666/	79.33	.031
3	20	1379/	68.95	35/	1.75	1414/	70.70	.025
4	21	1980/	94.29	54/	2.57	2034/	96.86	.027
5	20	1924/	96.20	65/	3.25	1989/	99.45	.034
6	21	2451/	116.70	59/	2.81	2510/	119.52	.024
7	21	2279/	108.52	73/	3.48	2352/	112.00	.032
8	21	1788/	85.14	59/	2.81	1847/	87.95	.033
9	21	1117/	53.19	56/	2.67	1173/	55.86	.050
10	21	1431/	68.14	46/	2.19	1523/	72.52	.032
Totals		39,685		1520		41,205		

Notes:
N is number of units in level
f is frequency of specimens in level
$\bar{x}$ is mean number of specimens in level (f/N)
m/u is ratio of modified to unmodified specimens

Table 2. Summary Statistics for Measured Specimens in Each Level (mean and standard deviation, measurements in millimeters)

Level	N	Length	Width	Thickness	a	b	c	d
S	162	15.96±4.69	9.23±2.73	3.58±2.14	15	30	67	50
1	16	15.78±3.26	8.21±2.08	3.98±1.91	0	2	11	3
2	19	18.58±4.04	9.72±3.77	3.64±1.82	0	3	15	1
3	17	16.08±2.93	8.38±3.50	3.17±1.56	0	3	7	7
4	17	15.21±3.01	6.37±1.15	3.13±1.73	0	4	10	3
5	21	16.60±3.71	8.39±1.70	3.47±1.39	1	3	12	5
6	26	15.74±4.11	7.96±2.27	3.26±0.98	1	5	16	4
7	22	15.81±2.03	7.88±1.99	3.38±1.82	1	3	14	4
8	20	15.89±2.76	7.44±1.91	3.12±1.06	0	3	11	7
9	30	16.92±2.81	8.08±2.33	3.08±1.11	2	6	13	9
10	17	16.22±2.98	7.88±3.50	2.64±0.87	0	3	9	5

Notes:
- a is frequency of edge angles less than 45°
- b is frequency of edge angles 45° - 50°
- c is frequency of edge angles 50° - 65°
- d is frequency of edge angles greater than 65°

Tests for significance of difference between means

Length: $t = 2.79$ (extremes), $t = 1.42$ (levels 4,5) $p < .05$

Width: $t = 3.44$ (extremes), $t = 2.37$ (levels S, 4) $p < .01$

Thickness: $t = 2.98$ (extremes), $t = 1.87$ (levels 1,9) $p < .05$

Chi-square test for difference in edge angle frequencies in levels

$X^2 = 19.40$ $df = 30$ $p < .05$

Table 3. Frequency of Specimens Other Than Stone Per Level

Level	Of	Ob	Gb	Ct	Cu	M
S	1619	494	32	348	.45	43
1	13	0	0	9	.43	0
2	5	0	0	8	.38	1
3	3	0	0	8	.40	2
4	4	4	0	7	.33	2
5	0	0	0	0	.00	0
6	1	0	0	1	.05	1
7	2	0	0	0	.00	1
8	2	0	0	2	.10	1
9	2	0	0	0	.00	0
10	0	0	0	1	.05	1

Notes: Of is ostrich eggshell fragment

Ob is ostrich eggshell bead

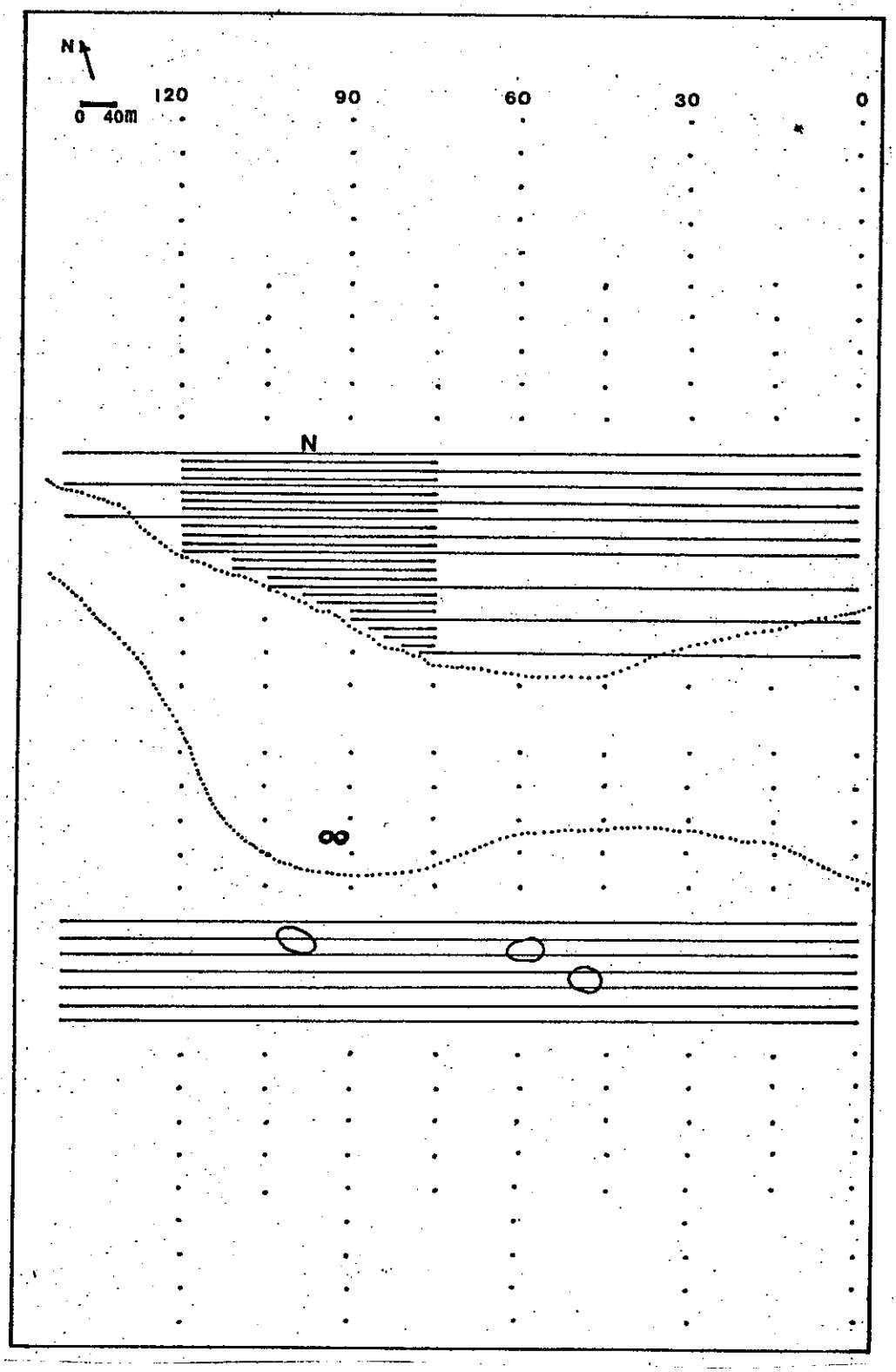
Gb is glass or porcelain bead

Ct is number of shards in level

Cu is number of shards per unit (average)

M is metal (iron); there were in addition, 2 brass fragments in S

Figure 1. Layout of Excavation Grid



For clarity, East-West lines only are shown, North-South lines are spaced at the same distances in each respective area. Large dots indicate peripheral and molapo test unit locations; ovals indicate artifact concentrations on south side; dotted lines are molapo margins; circles indicate location of wells. Area marked N shown at larger scale in Figure 2.

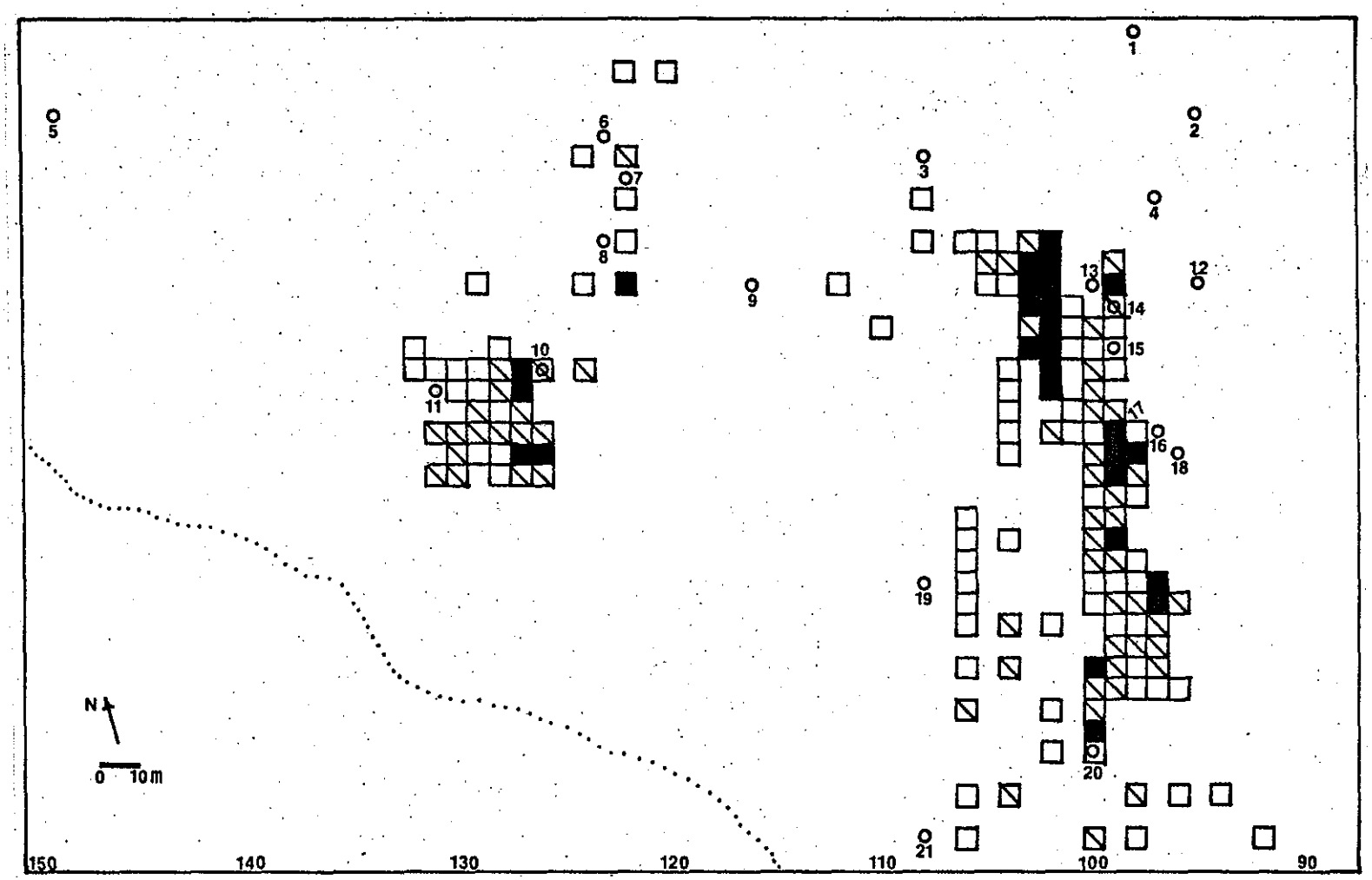


Figure 2. Density of Stone Specimens in Area N

areas with 100-220 specimens per unit
areas with 60-99 specimens per unit
areas with 30-59 specimens per unit

o units excavated to 1 m. depth

indicates molapo margin

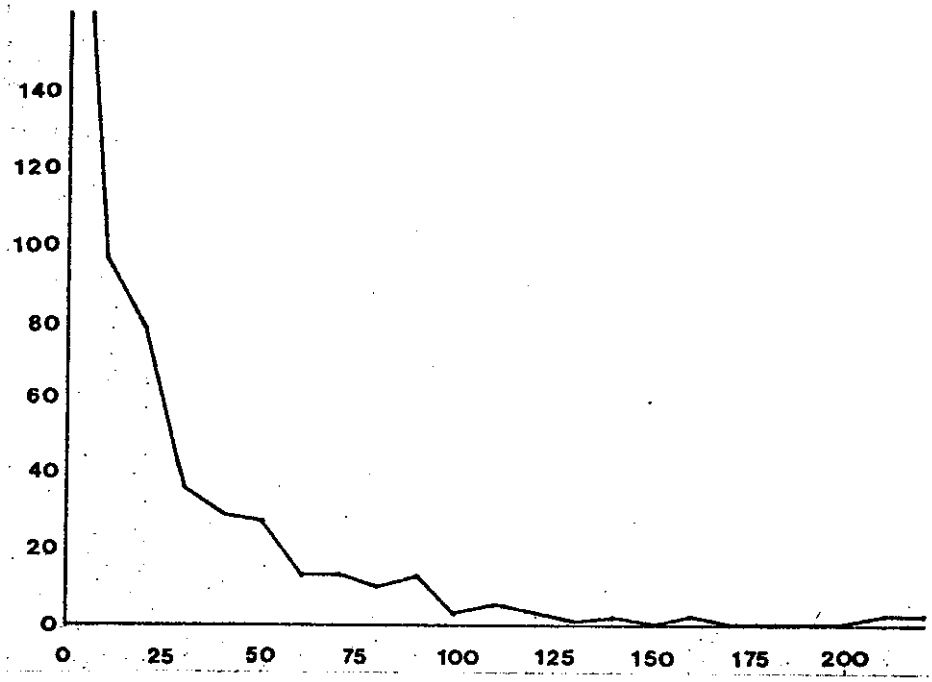


Figure 3. Frequency of Units Yielding Specified Numbers of Stone Specimens

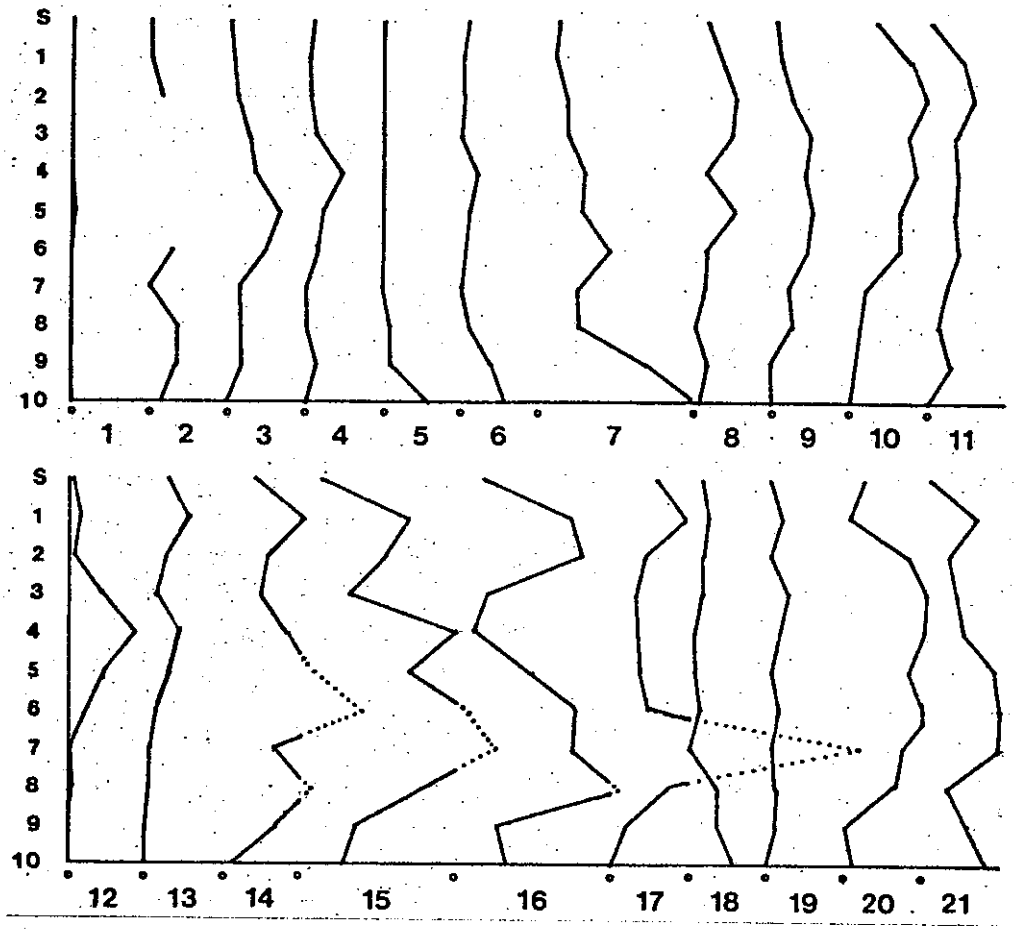


Figure 4.

Frequencies of specimens in 10 cm. levels in each unit (numbered as in Fig. 2) excavated to 1 m. depth. Levels 3-5 missing for unit 2 because collection bags were eaten by a cow. Horizontal scale: 1 mm. = 20 specimens.