

# A PRELIMINARY REPORT ON THE EXCAVATION OF STRUCTURE 5 AT RA'S AL-JUNAYZ 1 (SULTANATE OF OMAN)

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## *Excavation and finds (P.B.)*

The prehistoric site of Ra's al-Junayz 1 (RJ-1) lies on the Tertiary mesa some 35 m high which rises from the beach just south of the easternmost cape of the Arabian peninsula (fig. 1). Here forty-one stone structures were identified by L. Mariani,<sup>1</sup> mainly grouped along the western edge of the terrace. One of these structures, number 5, was selected for excavation during the campaigns carried out by the Italian Archaeological Expedition in the winters of 1986-87 and 1987-88.

Structure 5<sup>2</sup> was composed of two rectangular rooms and one semicircular « courtyard ». The rectangular rooms, some 7 sq m in size, 3-3.5 m long and 2 wide, were called 5/2 and 5/3 respectively. The first was N-S oriented, while the second, adjacent to the first, had been built in E-W direction. The entrance to room 5/2 was in its SE corner where the natural bedrock floor had been artificially lowered.

Five fireplaces were found inside and outside the walls (fig. 2). Some were characterized by rounded burnt cobbles and small amounts of charcoal, while others had been excavated into the bedrock, sometimes surrounded and covered with round pebbles. These latter were richer in charcoal fragments. A hearth was discovered in a natural concavity of the bedrock in the northern edge of room 5/2. It was rich in charcoal, partly covered with pebbles, with its western part almost exclusively composed of ash. A concentration of rubbish, possibly a kitchen-midden, was brought to light in squares G7 and G8, against a natural step of the bedrock. Here burnt pebbles, broken chert instruments, burnt fish bones, shells and charcoal had been heaped together (plate I A). Room 5/2 produced evidence of a *Conus* shell workshop (plate I B) for the production of polished rings. The *Conus* pieces were mainly concentrated in the southern part of the room, close to its entrance (fig. 3 A). Structure 5 also yielded a number of potsherds (fig. 3 B). The more interest-

ing ones come from room 5/2 where two sherds with typical Harappan signs were recovered (fig. 4/1) as well as pieces of pottery with red painted bands and geometric patterns (fig. 4/2-5).

## *The chipped stone assemblage (P.B.)*

This preliminary report only considers the chipped stone artefacts from structure 5/2. The whole collection is composed of 231 tools, including 21 instruments, 229 of which were obtained from locally available chert of white-brownish colour, and 2 from liver-coloured jasper. Forty-five complete unretouched artefacts were measured to produce the diagram of fig. 5. Normolithic tools are more abundant (57.8%) than macroliths (37.7%), while microliths are rare (4.5%). The hard-hammering technique had been employed to detach flakes (73.4%), blades (20.0%) and intermediate artefacts (6.6%) where the percussion angle is normally greater than 90°.

The instruments, chipped with a simple or *sommaire* retouch, include 1 truncation with side retouch (fig. 6/1), 3 side scrapers (fig. 6/2-4), 1 notched flake (fig. 6/5), 6 denticulated scrapers (fig. 6/6,7), 1 marginal point (fig. 6/8) and many heavily utilized « points » with rounded, polished or beaten edges, which are the more typical instruments of this structure (fig. 6/9-14). The distribution map of these tools is shown in fig. 7.

A few polished stone artefacts were recovered as well. They are represented by 2 flat sandstone « plaquettes » polished along the edges, 1 net-sinker obtained from a flat pebble of conglomerate with two bifacial notches along the edges and 1 broken « quern » with concave/convex section and clear traces of percussion, obtained from a sandstone.

## *C14 chronology (P.B.)*

Two radiocarbon dates are currently available for structure 5. The first, obtained from charcoal from a small hearth in square C11, south of room 5/2, gave the result of 3450 ± 70 BP (Bln-3689).

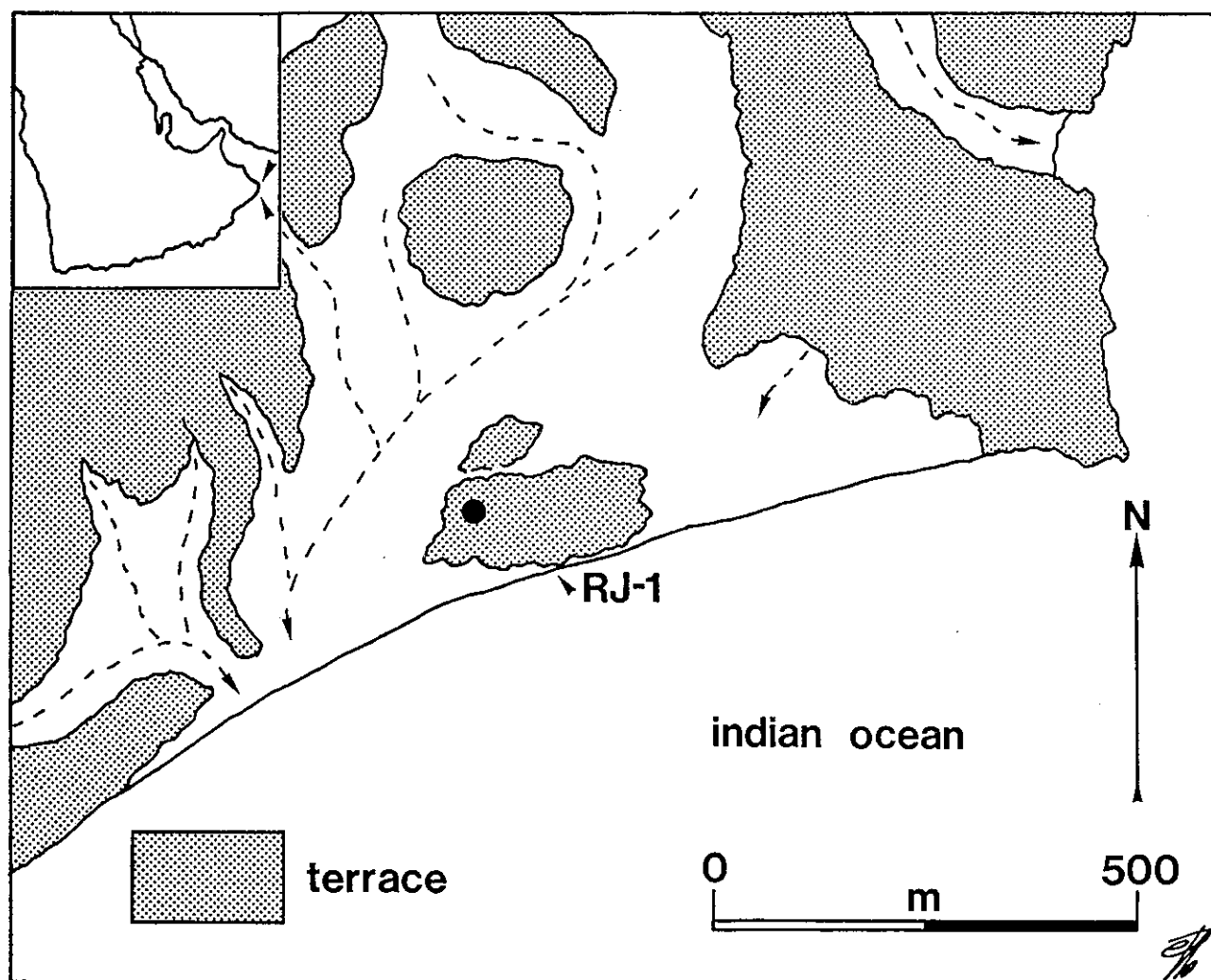


FIG. 1. - Ra's al-Junayz with the indication of site RJ-1 and Structure 5 (dot) (Drawing by P. Biagi).

The second, from a *Mytilus* shellfish sample from squares C5-8, along the southern edge of the courtyard, was dated to  $3290 \pm 60$  BP (Bln-3652/I) and  $3450 \pm 60$  BP (Bln-3652/II). According to the calibration computer programme developed by Stuiver and Reimer,<sup>3</sup> Bln-3689 is to be corrected into 1895-1692 (1 sigma) calendar BC years. This demonstrates that room 5/2 was inhabited during the first centuries of the 2nd millennium BC.

#### Charcoal analysis (R.N.)

As already discussed in a previous report,<sup>4</sup> the charcoal analyses from structure 5 show rather different patterns of land-use uphill and along the flat coastal area. Because of an incomplete sampling of the present vegetation, only a provisional list

of carbonized plant remains from RJ-1 can be given in this note, which confirms the first impression that firewood was collected locally and, apart from a few *taxa* (*Tamarix* and *Acacia*), the favoured plants were those still growing along the cliffs and the slopes around the site (table 1). A total of 193 fragments was analyzed and 9 *taxa* described (25 fragments remained undetermined).

Many of the fragments collected in the sediment are too small for a detailed anatomical description. When possible, the istological pattern was recognized as « type ».

The largest pieces belong to trees, namely *Acacia*, *Ziziphus* and *Tamarix*, but there was no definite evidence of any timbers that may have been used in the construction of the house.

TABLE 1. - *Distribution of charcoals at RJ-1.*

area	sample square		fragments number	area	sample square		fragments number
5	C5	Ziziphus	4	5/2	H9/B	Acacia sp.	15
5	C6	Commiphora sp.	2			Tamarix sp.	7
		Undetermined	4			Ziziphus	4
5	C7	Undetermined (the wood is ring porous, with large vessels in two/three series; rays pluriseriate (5-8))	3	5/2	H9/C	Acacia sp.	3
						Rhus sp.	1
						Tamarix sp.	1
5	C8	Acacia sp.	6	5/2	H9/D	Tamarix sp.	4
		Branches/small bush	4			Undetermined	3
5	C9/B	Acacia	1	5/2	H10/A	Acacia sp.	1
		Commiphora	1	5/2	H10/B	Acacia sp.	1
		Tamarix	1			Undetermined	3
		Undetermined	2	5/2	H10/C	Acacia sp.	7
5	D5	Acacia sp.	1			Undetermined	2
		Tamarix sp.	3	5/3	I8/A	Acacia sp.	3
		Chenopodiaceae type	5	5/3	L5/D	Commiphora type	3
5	D8	Acacia sp.	7	5/3	M7	Commiphora type	2
		Heliotropium type	4			Tamarix sp.	2
		Rhus sp.	3			Ziziphus	3
		Tamarix sp.	4			Undetermined	3
		Chenopodiaceae type	4	5/3	M9/B	Acacia	3
		Small branches, undetermined	2	5/3	N9/A	Lycium type	1
5	D9	cf Lycium sp.	3			Rhus type	2
		Tamarix sp.	7				
		Undetermined	2				
5	D9 door	Acacia	4				
		Tamarix	11				
5	E8 wall	Acacia sp.	2				
		Chenopodiaceae type	3				
5	E9 wall	Tamarix	1				
		Ziziphus	4				
5	G6	Commiphora type	5				
		Ziziphus	2				
5/2	F9/B	Lycium type	2				
		Rhus type	1				
5/2	F10/B	Tamarix	8				
5/2	G9/A	Heliotropium type	3				

The charcoals were found in several independent areas, used for different purposes. Five hearths were recognized during the excavation: four outside the house (M12, I 3-4, D3, C11), one inside, in room 5/2.

We have no botanical data for the outdoor structures, at present. In 5/2, however, the samples from H9/B, H9/C, H9/D and H10/C, belong to a large fireplace containing a quern. The charcoals were contained into a shallow depression oval in shape, some one metre wide. Fifty-two fragments of charcoal from this hearth were analysed showing the use of only large branches of *Ziziphus*, *Tamarix* and particularly *Acacia*.

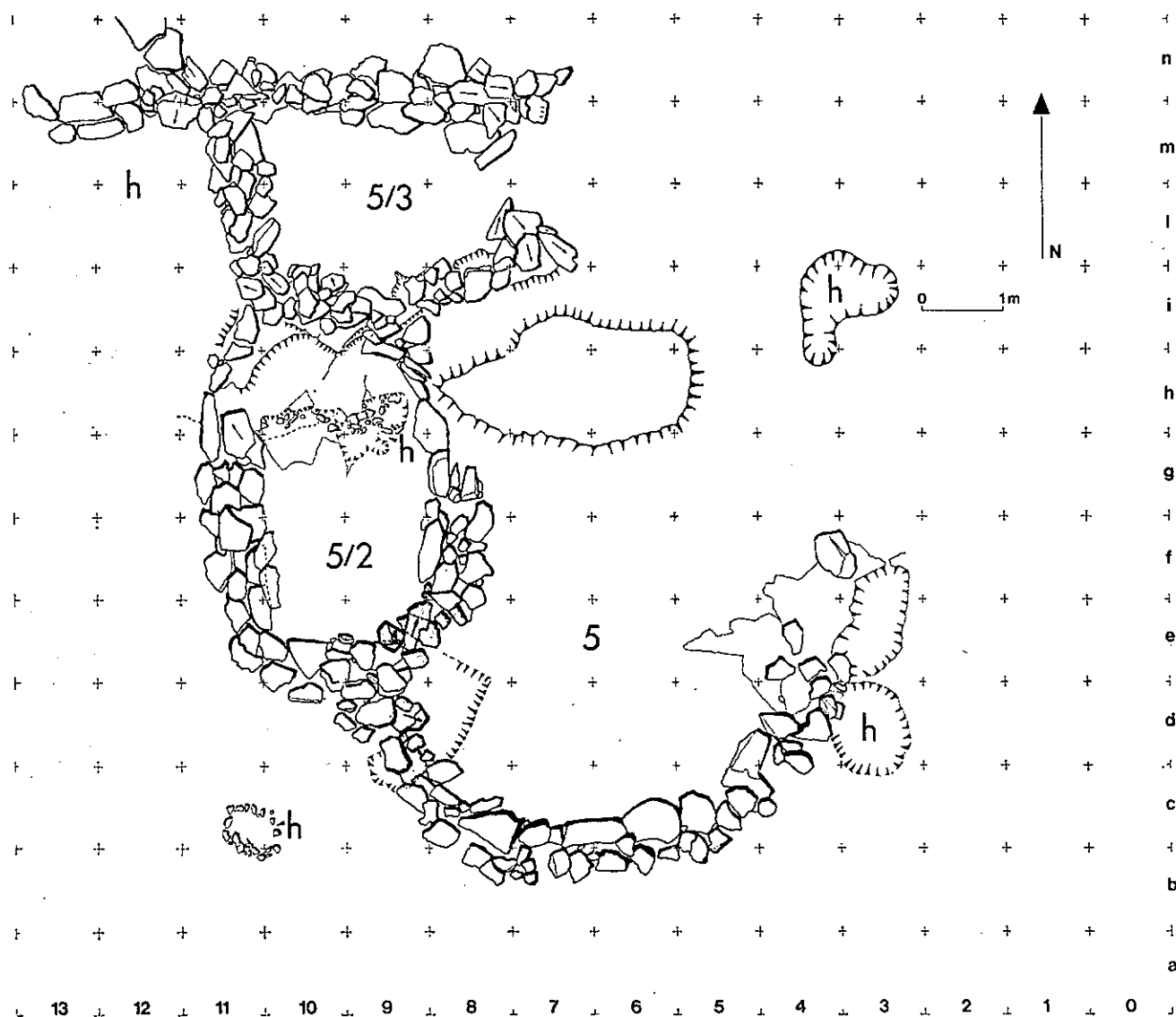


FIG. 2. - RJ-1, plan of Structure 5. 'h' indicates hearths (Drawing by G. Almerigogna, E. Isetti, E. Starnini and G. Marchesi).

Perhaps in this case the branches were ignited by using tinder from bushes growing on or near the shore (*Heliotropium* type).

A second concentration of charcoal is seen close to doors and to the passages between rooms and courtyard (CE8-9, M6-8). In at least one instance (D8-9, southern passage between courtyard and outside) there is a large dominance of a single plant, the tamarisk. Although we have no definite indication of the use of this plant as timber, perhaps as a part to support a roof or a door, this possibility must be taken into account, given the

concentration of the wood particularly in this area.

A third assemblage of charcoal is evident along the southern wall of the courtyard. Again we found not only *Acacia*, *Tamarix* and *Ziziphus*, but also spiny bushes from the slopes (*Commiphora*) and *Chenopodiaceae*. In comparison to these major concentrations of charcoal the absence of charred materials in room 5/3 is noticeable. It is not clear, from the archaeological evidence what was the use of this area. Again, we find charcoals only near the entrance (M6-8). In spite of the small size of

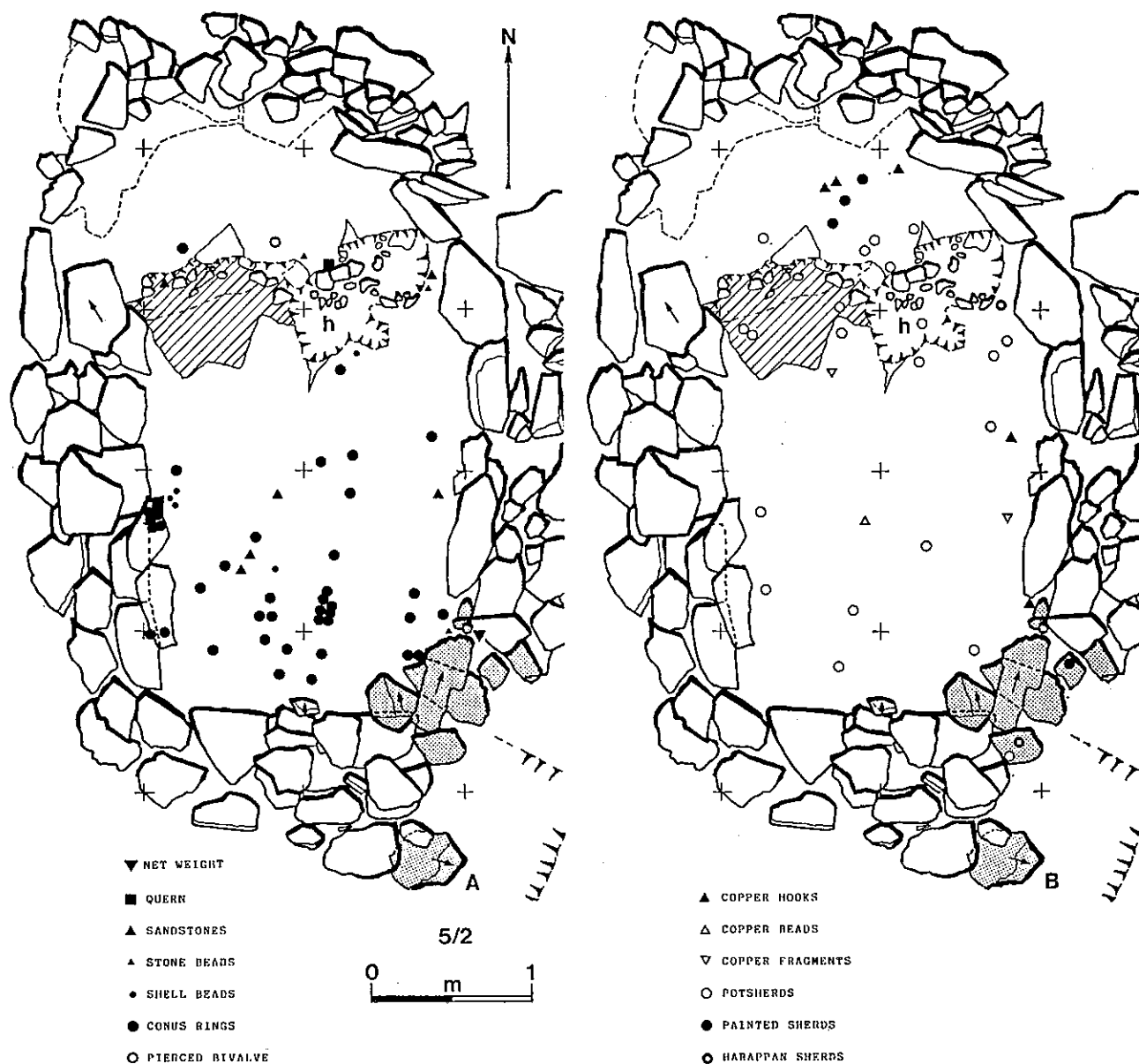


FIG. 3. - RJ-1, Room 5/2. Distribution map of various classes of artefacts (Drawing by P. Biagi).

the samples, some ideas on the vegetation in the area and about the techniques of collecting wood can be discussed briefly.

It seems obvious that gathering was made essentially by people walking around the site on the top of the mesa and/or on the slopes. These are the zones where many of the bushes grow today. Only a part of the samples shows gathering on the alluvial plain (*Acacia*, *Ziziphus*, *Tamarix*) or close to the seashore (*Heliotropium*). However, some of the wood (trees) could be collected on the

flat surroundings the hillock or, perhaps, in the *wadi* beds as deadwood (*Rhus*, possibly of allocthonous origin).

Some shrubs are also present in the sample. We were able to identify the charcoals to species level, and only of these still growing in the locality. *Lycium* is a thorny shrub 1 to 3 metres high, frequently growing in shallow depressions or around small stony edges. *Commiphora* is a shrub commonly seen today along the rocky slopes in the whole Ra's al-Junayz area.

The presence of a high frequency (13% of the total) of undetermined *taxa* should be referred to bushy species, no longer growing in the area and without any comparable examples in our reference collection.

### Shellfish (D.A.J.)

To date only some sample squares have been examined from areas 5 and 5/3 of site RJ-1. The

aim has been to identify and count the types of shellfish present. Only a few very basic preliminary interpretations will be made at this stage, but more detailed investigations will follow when further specimens have been identified.

The shellfish from each sample square (fig. 2) were counted and Minimum Number of Individuals (M.N.I.) established. Table 2 shows the species counts. This represents the total shells

TABLE 2. - *Shellfish counts from areas 5 and 5/3.*

AREA	SAMPLE SQUARE	F. MYTILIDAE	F. CONIDAE s.c.	F. CONIDAE ap.	OSTREA CUCULLATA	PURPURA PERSICA s.c.	PURPURA PERSICA ap.	BALANUS	OTHERS
									KEY
									F. = Family
									s.c. = siphonal canal
									ap. = apex
									w. = whole specimen
5	B3	0	0	1	0	0	0	0	
5	B5	20	1	0	0	4	1	0	F. arcacea 1.
5	B6	19	0	0	0	4	3	0	
5	B7	2	0	0	0	4	2	0	
5	B8	2	0	1	0	1	3	1	
5	C4	1	0	0	0	0	0	0	
5	C5	56	0	1	0	6	4	2	Melanella cumingii 1 - F. conidae 1 w. - Tellina rastellum 1 - F. cardiidae 2.
5	C6	58	10	4	1	9	8	4	F. olividae 1 - Purpura persica 1 w. - F. veneridae 1.
5	C7	10	2	4	1	0	0	0	
5	C8	64	2	0	1	1	0	1	Alectryonella plicatula 1 - Oliva bulbosa 1.
5	C11	1	0	0	0	0	0	0	
5	C-D9	4	0	0	0	0	0	0	
5	D1	20	0	0	0	0	0	1	
5	D3	1	0	0	0	5	0	0	
5	D5	154	8	0	0	13	7	8	F. pectinidae 1 - Tivela damaoides 1 - Engina mendicaria 1 - Limpet 1 - F. fissurellidae 1.
5	D6	38	5	2	2	11	3	4	Oliva bulbosa - F. veneridae 1 - Limpets 2.
5	D7	22	2	2	3	10	2	0	F. ostreidae 2.
5	D8	171	2	2	6	6	2	15	Engina mendicaria 1 w. - F. veneridae 1 - Tivela mulawana 1 - F. columbellidae 1.
5	D9	48	0	1	0	1	0	2	Tivela damaoides 1.
5	D10	5	1	0	0	0	0	3	F. ostreidae 1.
5	E3	14	0	1	0	5	1	1	F. conidae 1 w.
5	E6	30	4	1	4	18	14	1	Alectryonella plicatula 1 - F. pectinidae 1.
5	E7	0	1	0	0	11	4	2	F. veneridae 2.
5	E8	52	2	0	1	5	4	6	F. cardiidae 1 - F. arcidae 1 - Limpet 1 - Purpura persica 1 w. - F. architectonicidae 1 - F. veneridae 2 - F. olividae 1 w.

continued TABLE 2.

5	E9	22	0	0	0	1	4	2	Purpura persica 1 w.
5	F3	3	0	0	0	2	1	0	
5	F5	10	1	0	0	11	4	0	F. architectonicidae 1 - F. veneridae 2 - F. ostreidae 1.
5	F6	42	3	0	0	18	12	2	Purpura persica 2 w. - Limpet 2.
5	F6/D	0	0	0	0	2	0	0	
5	F8/F9	5	0	0	0	0	0	0	
5	G5	7	0	0	0	1	0	0	
5	G6	41	1	1	0	15	2	1	F. arcidae 1 - Engina mendicaria 1.
5	G7	109	2	0	0	4	1	6	
5	G6/A	4	0	0	0	2	1	0	
5	G6/D	63	1	0	0	2	1	0	F. fissurellidae 1.
5	G7/A	179	1	0	0	0	1	0	Glycymeris lividus 1 - F. conidae 1 w.
5	G7/D	11	0	0	0	3	1	1	
5	G8/A	55	0	0	0	0	0	0	Limpet 1 - F. cardiidae 1.
5	H6	11	2	0	1	7	2	3	
5	H5/C	0	1	0	0	7	4	0	F. conidae 1 w. - F. ostreidae 1.
5	H6/B	0	0	0	0	0	0	0	
5	H6/C	10	0	0	0	2	1	1	Tivela damaoides 1.
5	H6/D	38	0	0	0	3	1	0	F. ostreidae 1.
5	H7/A	24	0	0	0	1	0	0	
5	H7/B	9	0	0	0	5	0	1	F. conidae 1 w.
5	K5/D	0	0	0	0	5	1	0	
5	L5	0	0	0	0	2	0	0	F. fissurellidae 1.
5/3	C3/BD	4	0	0	0	0	0	0	
5/3	C5/C	7	0	0	0	0	0	1	
5/3	H4	0	0	0	0	2	0	0	
5/3	H3/D	6	0	0	0	0	0	0	
5/3	H7/A	33	0	0	0	1	0	2	Alectryonella plicatula 2 - Engina mendicaria 1 - F. ostreidae 2.
5/3	H8/D	25	0	0	0	0	0	0	F. cardiidae 1.
5/3	I4/B	19	0	0	0	2	0	0	F. ostreidae 1.
5/3	I4/D	0	1	0	0	1	0	0	
5/3	I5/A	0	0	0	0	0	0	0	
5/3	I5/C	0	0	0	0	4	0	0	
5/3	I5/D	0	0	0	0	7	1	1	
5/3	I6/B	0	0	0	0	3	1	1	
5/3	I6/C	60	0	0	0	1	2	0	
5/3	I6/D	71	0	0	0	10	4	1	Oliva bulbosa 1 w.
5/3	I7/A	110	1	0	0	3	1	3	
5/3	I7/B	63	1	0	0	2	1	1	
5/3	I7/D	47	0	0	0	1	2	2	
5/3	I8/A	39	1	1	0	2	3	1	Alectryonella plicatula 1 w.
5/3	I8/B	4	0	0	0	0	0	2	
5/3	I8/C	29	0	0	0	2	3	2	Purpura persica 1 w.
5/3	I8/D	7	0	0	0	0	1	0	
5/3	L4/C	5	1	0	0	0	0	0	Alectryonella plicatula 1.
5/3	L5/A	33	0	0	0	1	1	0	F. cardiidae 1.
5/3	L5/D	127	2	0	0	3	3	9	

continued TABLE 2.

5/3	L6/B	26	1	1	1	1	1	2	
5/3	L6/C	71	2	0	0	11	5	1	F. ostreidae 1.
5/3	M11	8	0	0	0	1	0	0	
5/3	M4/B	3	0	0	0	2	0	0	
5/3	M4/C	8	0	0	0	0	0	0	
5/3	M4/D	3	1	0	0	2	1	0	
5/3	M5/A	16	0	0	1	3	0	0	Limpet 1.
5/3	M5/B	76	1	1	0	2	1	0	
5/3	M5/C	157	0	0	0	3	2	2	
5/3	M5/D	84	0	0	1	2	0	6	
5/3	M7/A	28	0	0	0	2	0	0	
5/3	N11/D	3	0	0	0	0	0	0	
5/3	N6/C	91	2	1	0	1	1	2	Purpura persica 1 w. - F. ostreidae 1.
5/3	N6/D	53	1	0	2	3	4	2	Purpura persica 1 w.
5/3	N7/B	323	3	0	0	1	1	3	

from each species, so for M.N.I. it is necessary to divide the bivalves by two (table 3).

TABLE 3. - Minimum number of individuals and relative percentages of different species from areas 5 and 5/3.

	Area	F. mytilidae	Purpura persica	F. conidae	Ostrea cucullata
Total					
M.N.I.	5	763	222	68	10
%	5	72.5	21.1	5.5	0.9
Total					
M.N.I.	5/3	820	84	18	3
%	5/3	88.6	9.1	1.9	0.3
Combined % from 5 and 5/3		80	15.5	3.8	0.7

The principal shellfish are shown along the top of table 2. F. *Mytilidae* and *Ostrea cucullata* are bivalves and the other species gastropods. Other species which occurred less frequently are listed separately. Bivalves of the family *Veneridae* were found in some samples. Occasionally enough of

the shell remained to identify these as *Tivela damaoides*. The bivalve *Barbatia obliquata* also occurs in a number of samples, as do the gastropods of the family *Olividae*, especially *Oliva bulbosa* and members of the family *Cypraeidae*. *Cardiidae* also occur occasionally. The limpets are generally of the family *Fissurellidae* (keyhole limpets) though some broken specimens could also be *Patellidae*, so they have been classed simply as limpets.

Certain shellfish have only been identified to the family level ('F' table 2) because the species is not determinable from the archaeological samples. Detection at species level often requires reference to colour (this is especially the case for the *Conidae*) or fine features of the shells, and it is also often necessary to have the whole shell, or certainly a large part of it. Many of these samples are broken into quite small fragments, *Mytilidae* for example may be *Mytilus viridis*, *Mytilus pictus* or *Modiolus philippinarum*, yet only with a few individuals is it possible to distinguish the species, as the specimens are broken and the shells smoothed. *Ostrea cucullata* is clearly identifiable, but other members of the family *Ostreidae* are often indistinguishable from small pieces of shell.

Counts were done with reference to hinges for the bivalves and both siphonal canals and spire apices for gastropods. It can be seen from table 2 that in the majority of cases siphonal canals have proved to be the strongest and best preserved parts of the gastropods shells. *Conidae* apices outnumber



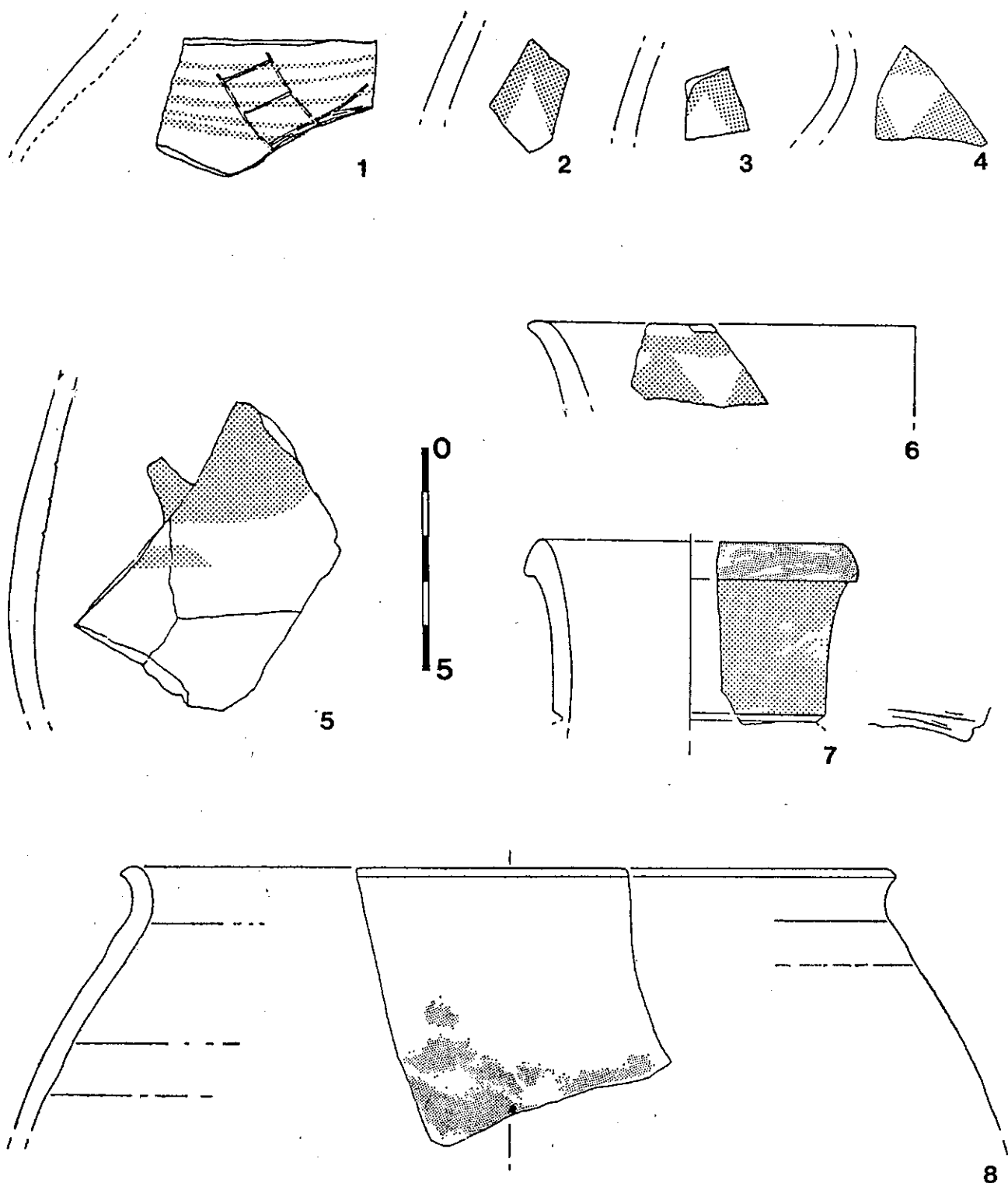


FIG. 4. - RJ-1, Structure 5. Potsherds with Harappan signs (1), with geometrical red painted (2-6), with red and black (7) and black (8) motifs (Drawings by G. Almerigogna and P. Biagi).

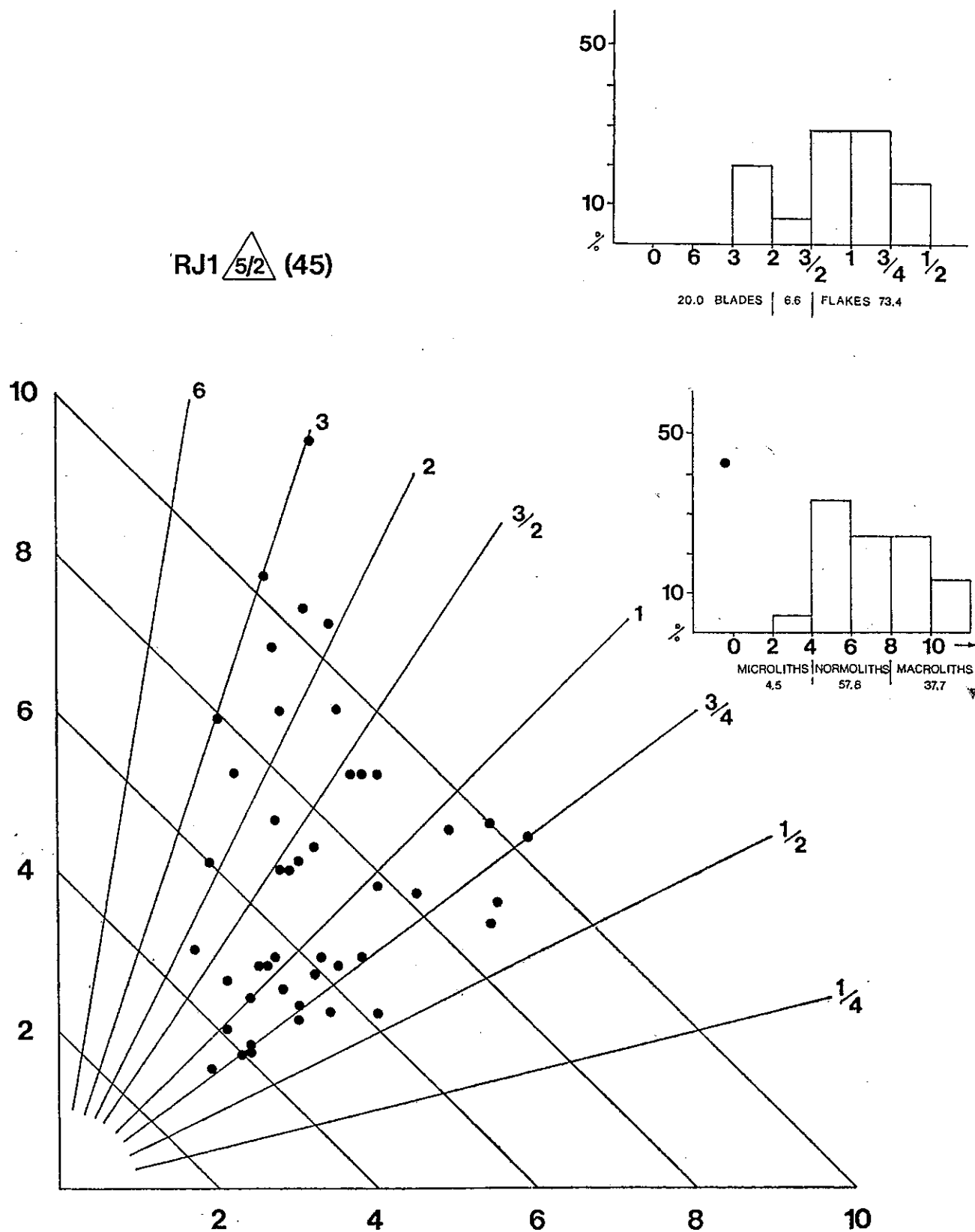


FIG. 5. - RJ-1, Room 5/2. Dispersion diagram of the unretouched chert artefacts (Drawing by P. Biagi).

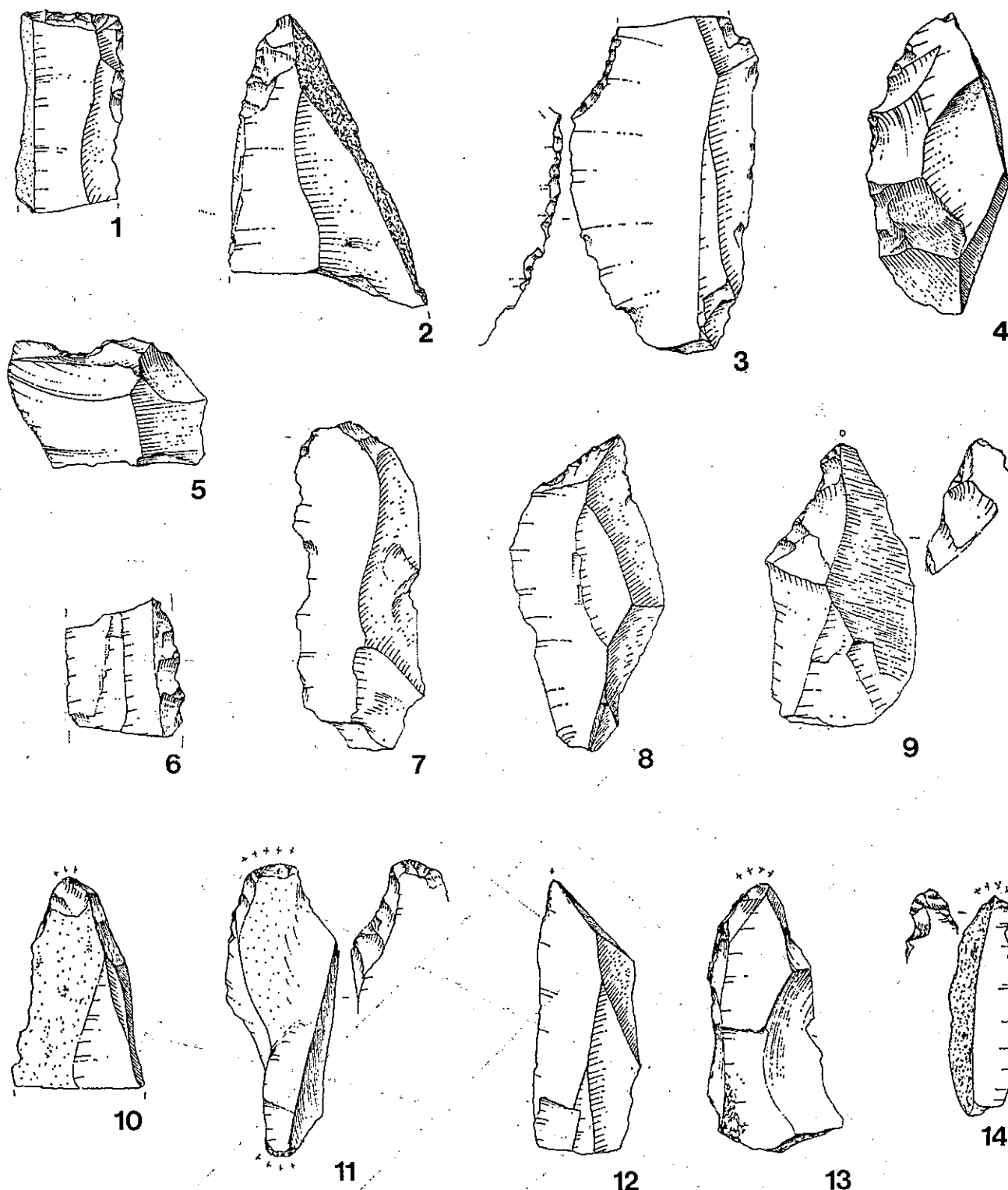


FIG. 6. - RJ-1, Structure 5. Chert instruments from Room 5/2 (2:3) (Drawings by G. Almerigogna).

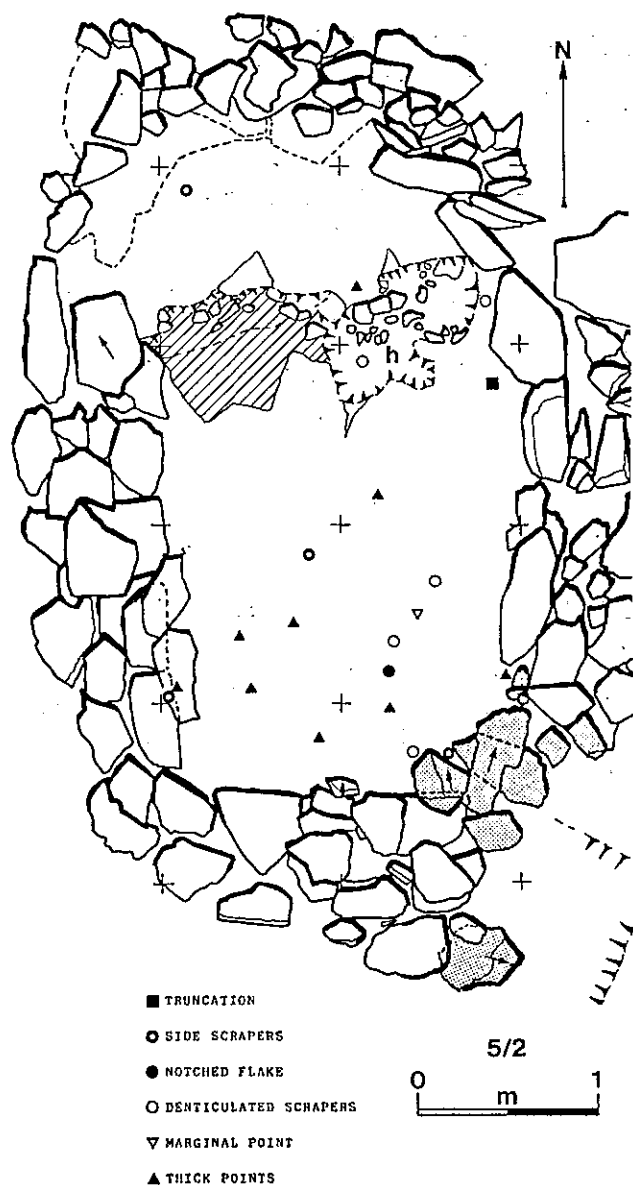


FIG. 7. - RJ-1, Room 5/2. Distribution map of chert instruments (Drawing by P. Biagi).

siphonal canals in only six sample squares, and *Purpura persica* in nine (out of a total of eighty-six). When calculating the M.N.I. (table 3) for these gastropods the part of the shell giving the highest count for each sample square was chosen. While counting the representative parts of the shellfish (hinges, siphonal canals and apices) notes were taken of the fragments of broken shells. It was seen that these were representative of the countable portions, for instance where there were more *Mytilidae* hinges there were also more frag-

ments of this shellfish. Only very occasionally were fragments found of the species not represented by the countable portion. Many of the samples contained crab fragments, generally parts of the claws or shell. It is however possible to quantify these.

Table 3 shows that over the site as a whole, *Mytilidae* are the predominant shellfish representing 80% of the total shellfish. *Purpura persica* represent 15.5% of the total shellfish, though they are relatively less important in area 5/3, at the N of the site, than in area 5 (fig. 2), the former having relatively more *Mytilidae*. Indeed area 5/3 has very few other species apart from *Mytilidae*, whereas area 5 has proportionately more *Conidae* and *Ostrea cucullata*.

It is evident that *Mytilidae* were deliberately collected, almost certainly for either food or fish bait. They are easy to gather as they live in concentrated groups. The fact that there are many small specimens, some of only a few months old, implies whole groups were gathered. It would have been a very time consuming task to select the larger specimens from a group.

*Purpura persica* could also have been collected as food, though probably not as fish bait. Their habitat along the lower intertidal zone on and around rocks makes them fairly easy to collect, though they are not as cost effective with regards to collection time as *Mytilidae*, as they have to be gathered individually and take longer to extract from their shells.<sup>5</sup> For this reason they were probably not used as fish bait, but were prized either as a food source or for their shells. The latter is unlikely, as to date there seems no evidence of these being worked. As a food source however whelks in general have a strong taste and could well have been used to 'spice-up' a meal.

The *Conidae* seem to have been collected for their shells, as these are often found worked. The relatively small number of these shells could represent their natural distribution on the shore, or simply 'supply and demand'. They would have needed less for making ornaments than if they were to provide a meal.

*Ostrea* is, and probably was at time RJ-1 was occupied, a much valued food. It would however have been hard to collect, inhabiting shallow water often at a quite scattered low density. The *Balanus* would have been brought into the site attached to

other marine creatures and not as a food in their own right.

It must be emphasized that this is only an initial examination of the data. More sample squares need to be analysed and their cluster analysis should be done on the shellfish distribution over the site.

#### *Aknowledgements.*

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