

## DATING A CHALCOLITHIC BURIAL CAVE IN PEQI'IN, UPPER GALILEE, ISRAEL

DROR SEGAL,<sup>1</sup> ISRAEL CARMI,<sup>2</sup> ZVI GAL,<sup>1</sup> HOWARD SMITHLINE<sup>1</sup> and DINA SHALEM<sup>1</sup>

**ABSTRACT.** In May 1995 an impressive karstic cave possessing dozens of burials dating to the main phase of the Chalcolithic Period (ca. 4500–3500 BCE) was discovered in Peqi'in in the high hills of Galilee in northern Israel. It was subsequently excavated over the course of the following months. The large amount of unique ceramic ossuaries and the variety of burial offerings shed light, for the first time, on this critical societal development period in a region where its remains have rarely been found. Although the major significance of the cave is as a mortuary center, it was also utilized in a domestic capacity some centuries previously, during the generally less familiar Early Chalcolithic Period. We present here the dating of 22 <sup>14</sup>C samples collected from these separate phases of cave use. Their interpretation should aid in understanding of the absolute dating of the Chalcolithic Period and its relation to the period preceding its inception.

### INTRODUCTION

#### Description of the Site

A unique Chalcolithic burial cave was excavated during the summer of 1995 at Peqi'in in the Upper Galilee hills (Fig. 1) (Gal, Smithline and Shalem 1995, 1996). The burials were in an ecologically impressive natural karstic cave highlighted by numerous stalagmites and stalactites. The cave is 17 m long and 5–7 m wide. It consists of three separate units, situated on three built terraces sloping down from east to west. An additional loft-like area was found almost hidden in the wall above the lowest terrace.

The cave shows three stages of use. During the early Chalcolithic period it most probably served as a seasonal dwelling place. Later, in the Ghassulian phase of the Chalcolithic period, the cave was transformed into a mass burial place from which most of the finds originated. Probably hundreds of deceased were interred in the cave. Shortly after the final burial, but still within the Chalcolithic period, the cave underwent intensive and destructive robbing activity. The karstic activity continued and produced many hundreds of speleothems (Fig. 2).

#### The Finds

The most common objects found in the cave are the numerous ceramic ossuaries used for secondary burials of bones belonging to previously interred individuals. The majority are rectangular boxes with unique and hitherto unknown gable-shaped lids. The flat triangular facade of the lid is usually decorated with symbolic or naturalistic painted faces or with applied human facial features. Most unusual is the occasional addition of a sculpted ceramic anthropomorphic head with individual facial features (Fig. 3). All of these are outstanding innovations found only in this cave. Another type of ossuary consists of closed boxes with a frontal opening, reminiscent of the type common to the coastal plain of Israel. The area around Hadera was believed to have been its northernmost limit (Sukenik 1937), but our excavation shows its dispersion even to the relatively distant Upper Galilee. Other objects found include V-shaped bowls, bowls on fenestrated bases with window-like openings cut into the base, goblets, and burial jars—some decorated with stylized female breasts, whereas others are similar to jars originating in the Golan Heights (Epstein 1978); copper objects similar to those known from Nahal Mishmar (Bar-Adon 1980); flint tools and approximately two dozen perforated flint disks similar to objects from the Golan Heights (Epstein and Noy 1988); several maceheads and fragments of basalt bowls on fenestrated bases; a head of a small ivory figurine in the Be'er Sheba tradition (Perrot 1959) and ten violin-shaped figurines of various sizes.

<sup>1</sup>Israel Antiquities Authority, POB 586, 91004 Jerusalem, Israel

<sup>2</sup>Department of Environmental Sciences and Energy Research, Weizmann Institute of Science, 76100 Rehovot, Israel

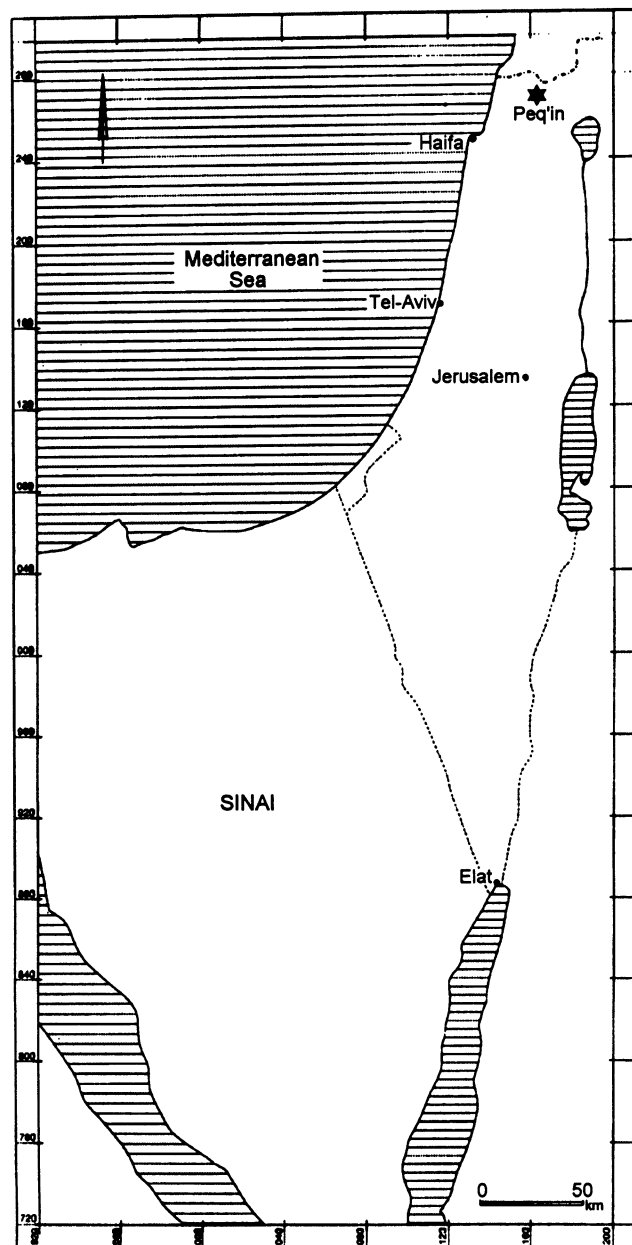


Fig. 1. Map of Israel showing the Peqi'in cave site

#### **<sup>14</sup>C Dating of the Peqi'in Site**

Dating of the Peqi'in cave by <sup>14</sup>C was required in order to evaluate the archaeological assumptions on the age of the cave in its various stages of use. We dated 22 charcoal samples at the Rehovot Radiocarbon Laboratory (RT) (Table 1). The samples were of two types: 1) Charred wood, all samples of which were identified to be of local variety; and 2) Accumulation soil, ash and charcoal.

The samples were treated with acid-alkali-acid, converted to benzene and counted in liquid scintillation counters (LSC). The dating results are given in Table 2.

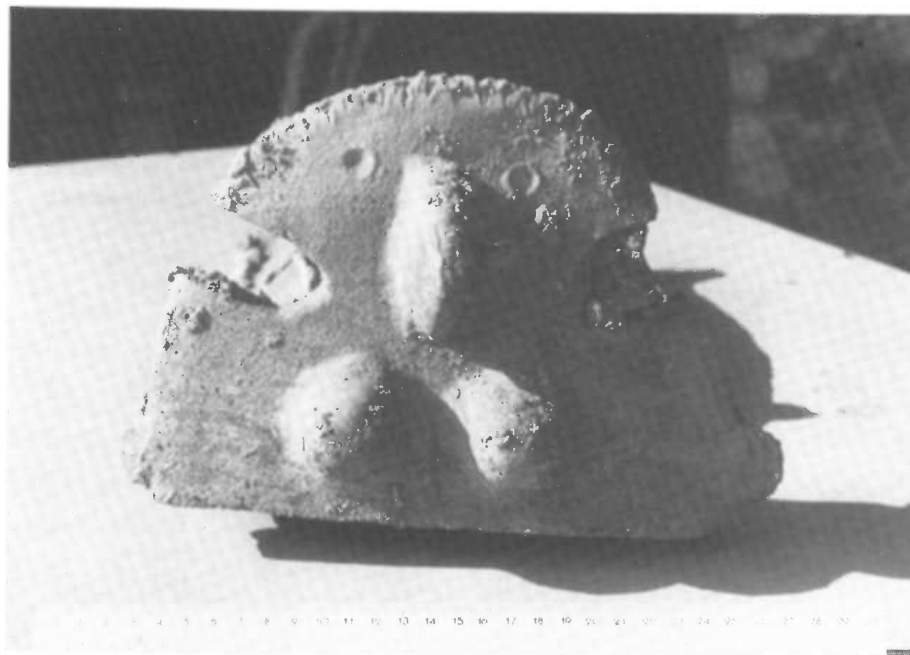


Fig. 2. Ossuary and speleothems in Peqi'in cave

TABLE 1. Peqi'in Cave Samples Dated by  $^{14}\text{C}$ 

Sample (RT-no)	Species*	Terrace	Square	Locus	Basket
2373	<i>Pistacia palaestina</i>	I	N	111	1527/8
2374		I	O	111	1509/18
2376	<i>Quercus boissieri</i>	II		205	2146/80/91
2377		II	T	205	2140/78
2378		II		207	2360/90
2379	<i>Quercus calliprinos</i>	II		207	2380/95
2380	<i>Quercus calliprinos</i>	II	T,S	208	2267
2381	<i>Olea europaea</i>	II	B	209b	2263/73/87
2382	<i>Olea europaea</i>	II	A,B	210	2291
2383	<i>Olea europaea</i>	II	A,B	210	2296/303/313
2384		II	A,B	210	2318
2385		II		212	2353/64
2386	<i>Olea europaea</i>	II	T	216	2411
2387		III		301	3119/45
2388		III	A	307	3546
2391		III	I	307	3644/5
2392		III		310	3482
2393		III	O	314	3689/91
2394		III	H,N	315	3713
2395		III	O,I	315	3706/7
2396		III	O,I	315	3720
2397		III	O,I	315	3760/1

\*Botanical identification by Nili Lipshitz of Tel-Aviv University



**Fig. 3.** (Top) Ossuary with a sculpted human face; (bottom) sculpted human figure from an ossuary.

TABLE 2.  $^{14}\text{C}$  Dates from Peqi'in Cave

Sample (RT-no.)	$\Delta^{14}\text{C}$ (‰)	$\delta^{13}\text{C}$ (‰)	$^{14}\text{C}$ age (yr BP)	Calibrated age (cal BC)*	P† (%)	Stage
2373	$-513.6 \pm 2.8$	-22.3	$5790 \pm 45$	4584–4315		Transition
2374	$-504.6 \pm 3.0$	-22.9	$5645 \pm 60$	4533–4369		Transition
2376	$-496.4 \pm 3.0$	-23.4	$5510 \pm 45$	4450–4330	97	Burial
2377	$-495.0 \pm 3.4$	-23.1	$5490 \pm 55$	4441–4426 4366–4256	9 91	Burial
2378	$-503.0 \pm 2.9$	-22.8	$5615 \pm 45$	4492–4366		
2379	$-508.8 \pm 2.9$	-22.3	$5710 \pm 45$	4597–4468		Transition
2380	$-540.4 \pm 3.1$	-24.5	$6245 \pm 55$	5255–5083		Transition
2381	$-516.5 \pm 3.1$	-22.6	$5840 \pm 50$	4781–4618		Pre-Burial
2382	$-515.8 \pm 3.1$	-22.6	$5825 \pm 50$	4774–4612		Pre-Burial
2383	$-509.5 \pm 3.0$	-22.9	$5725 \pm 50$	4671–4499		Pre-Burial
2384	$-523.8 \pm 5.0$	-22.6	$5960 \pm 85$	4940–4735		Pre-Burial
2385	$-533.2 \pm 3.2$	-20.1	$6120 \pm 55$	5196–4943		Pre-Burial
2386	$-507.3 \pm 4.9$	-23.3	$5685 \pm 80$	4673–4454	98	Pre-Burial?
2387	$-490.0 \pm 3.3$	-23.5	$5410 \pm 50$	4333–4228		Burial
2388	$-506.7 \pm 3.7$	-22.6	$5675 \pm 60$	4591–4405		Transition
2391	$-515.2 \pm 5.4$	-23.2	$5815 \pm 90$	4778–4568		Transition
2392	$-533.2 \pm 3.1$	-24.0	$6120 \pm 55$	5192–4939		Pre-Burial
2393	$-557.2 \pm 2.8$	-21.9	$6545 \pm 50$	5561–5388		Pre-Burial
2394	$-522.1 \pm 3.0$	-23.1	$5930 \pm 50$	4902–4771		Pre-Burial
2395	$-531.2 \pm 2.9$	-23.2	$6085 \pm 50$	5054–4935		Pre-Burial
2396	$-529.3 \pm 4.8$	-23.6	$6055 \pm 85$	5059–4843		Pre-Burial
2397	$-532.1 \pm 3.1$	-22.8	$6100 \pm 55$	5065–4936		Pre-Burial

\*Calibrated with CALIB 3.0 program (Stuiver and Reimer 1993); 1- $\sigma$  range is given.

†P is the relative probability, when less than 100%.

## DISCUSSION

All of the large quantity of finds strewn upon the surface of each terrace and the loft belong to a single period of use when the entire cave served as a burial center. It appears that, in order to organize the cave to accommodate the numerous burials, the original surface of the cave was filled and leveled with soil and stones, and three terraces were constructed, supported by stone walls. The  $^{14}\text{C}$  dates confirm usage during the Chalcolithic period over the course of several centuries. In sections excavated down to bedrock, older material was recovered, whose date suggests a human presence in the cave during the Early Chalcolithic period. Five groups of dates from individual loci in Table 2 are quite consistent and amenable to further statistical treatment. Table 3 shows the results of a minimum variance analysis of these groups. A better estimate of the  $^{14}\text{C}$  ages of all of these loci improves significantly while the calibrated-age-region is narrower for 2 loci only (207 and 210). The  $^{14}\text{C}$  and the archaeological analysis of the different stages in the cave agree well. Loci 210, 212, 310, 314 and 315 date from the earliest layers in the cave (pre-burial), the other loci are from the burial layer and transition layers adjacent to and directly below the burials in the cave.

As shown in Table 2,  $^{14}\text{C}$  samples dating to the fourth millennium BC are totally absent. Additional research and clearer defining of archaeological terms and periods will be necessary to understand the chronological implications of this dating. Findings from this cave should help us to better understand the geographical distribution in relation to the absolute chronological range of the Chalcolithic Period. At numerous other sites, such as those in the Golan Heights, the  $^{14}\text{C}$  dates present a longer

range, extending into the fourth millennium BC (Carmi, Epstein and Segal 1995). Most of the dates and findings in the Peqi'in cave are, nevertheless, comparable to the dates and findings for site sites of the Golan Chalcolithic, Nahal Issaron (Carmi *et al.* 1994), Beer Sheba (Segal and Carmi 1996), Nahal Kana (*loc cit*), the Carmel Coast (*loc cit*), and many others. These data and findings help strengthen and clarify the chronological relation between the different Chalcolithic cultures in the southern Levant.

Aside from the unique sculpted heads and ossuaries with separate lids, almost all the finds are similar to those from other Chalcolithic sites. This is, however, the first time that finds relating to all of the regional Chalcolithic subcultures, from the Negev and Judean Desert through the Jordan rift valley to the Golan Heights and as far as Byblos on the Lebanese Coast, are found in a single, defined context. Therefore, it is possible to posit the existence of a heretofore unknown Galilean contribution to Chalcolithic regionalism. The coexistence of the various regional cultures in the Peqi'in cave provides a unique opportunity to re-examine the relation among these regions during this period.

#### CONCLUSION

The Peqi'in cave is a key site for the Chalcolithic Period in the Upper Galilee, with implications for a wide geographical expanse, from Byblos in the north to Be'er Sheba in the south. The  $^{14}\text{C}$  dates provide independent chronological evidence, in addition to the archaeological data, and enable deeper understanding of a complicated geological and archaeological site.

#### ACKNOWLEDGMENTS

We thank N. Liphschitz for the botanical identifications and G. Mintz for preparation of the samples.

#### REFERENCES

- Bar-Adon, P. 1980 *The Cave of the Treasure: The Finds from the Cave in Nahal Mishmar*. Judean Desert Studies. Jerusalem, Israel Exploration Society: 243 p.
- Carmi, I., Epstein, C. and Segal, D. 1995 Radiocarbon dates from Chalcolithic sites in the Golan. *Atiqot* 26: 207–209.
- Carmi, I., Segal, D., Goring-Morris, A. N. and Gopher, A. 1994 Dating the Prehistoric site Nahal Issaron, Israel. *Radiocarbon* 36(3): 391–398.
- Epstein, C. 1978 A New Aspect of Chalcolithic Culture. *Bulletin of the American School of Oriental Research* 229: 27–45.
- Epstein, C. and Noy, T. 1988 Observations concerning Perforated Flint Tools from Chalcolithic Palestine. *Paleorient* 14: 133–141.
- Gal, Z., Smithline, H. and Shalem, D. 1995 Peqi'in. *Ha-dashot Archeologiot* 104: 20–22 (in Hebrew).
- \_\_\_\_\_. 1996 A Chalcolithic Burial Cave at Peqi'in. *Qadmoniot* 111: 19–24.
- Perrot, J. 1959 Statuettes en ivoire et autres objets en ivoire et en os provenant des gisements préhistoriques de la région de Beersheba. *Syria* 36: 8–19.
- Segal, D. and Carmi, I. 1996 Rehovot radiocarbon date list V. *Atiqot* 29: 79–106.
- Stuiver, M. and Reimer, P. J. 1993 Extended  $^{14}\text{C}$  data base and revised CALIB 3.0  $^{14}\text{C}$  age calibration program. In Stuiver, M., Long, A. and Kra, R. S., eds., Calibration 1993. *Radiocarbon* 35(1): 215–230.
- Sukenik, E. L. 1937 A Chalcolithic necropolis at Hadera. *Journal of the Palestine Oriental Society* 17: 15–30.

TABLE 3. Minimum Variance Analysis of  $^{14}\text{C}$  Dates from 5 Loci in Peqi'in Cave

Locus	n	$^{14}\text{C}$ age (yr BP)	Calibrated age* (cal BC)
111	2	5735 ± 35	4671–4527
207	2	5660 ± 30	4517–4462
210	3	5856 ± 27	4774–4717
307	2	5718 ± 48	4664–4493†
315	4	6046 ± 46	5033–4852

\*Calibrated with CALIB 3.0 program (Stuiver and Reimer 1993); 1- $\sigma$  range is given.

†Relative probability 98%