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University of Tsukuba: Studies for West Asian Archaeology

Excavation Reports of Tell el-Kerkh, Northwestern Syria 1

Edited by Akira Tsuneki and Jamal Hydar

The Neolithic Lithic Industry at Tell Ain El-Kerkh

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The situation in Syria remains unpredictable, and I don't know when I will be able to visit again. For a person who experienced Syrian life in the 1990s and early 2000s, this situation is truly a nightmare. I sincerely hope that peace will come to Syria as soon as possible.

Makoto Arimura
22 February 2020, Hiratsuka-shi, Japan

Introduction

1. The research subject

Western Asia is one of the regions where the transition from a subsistence mode based on hunting and gathering to one based on agriculture and herding occurred without any outside influence. This transition, called 'Neolithisation,' is well documented, especially in the Levant, the western part of Western Asia. The Neolithisation of the Levant accelerated during the PPNB (Pre-Pottery Neolithic B) and the Pottery Neolithic phases (around 8500 to 6200 cal. BC). Various changes can be observed during these periods in the archaeological material related to Neolithisation: the domestication of plants and animals probably brought about many changes in the socio-economic and spiritual activities of the Neolithic populations. Lithic industries also changed in the course of Neolithisation because the knapped stone found on the sites is the result of several actions: acquisition of raw materials, shaping, and use and abandonment of the tools. The objective of this research is to study the evolution of lithic industries in the northern Levant during Neolithisation, based on data from Tell Ain el-Kerkh (Syria), where a long Neolithic occupation has been revealed. To achieve this goal, three stages will be followed:

1. A detailed analysis of the lithic industries of Tell Ain el-Kerkh in order to understand the lithic production activities carried out on this site. Analysis of the evolution of the lithic industries of Tell Ain el-Kerkh in the Neolithic period will thereby enable the establishment of a reference base for comparison with various other sites in the Levant.

2. A comparison of lithic material from Tell Ain el-Kerkh with that of contemporary sites in the northern Levant, to provide an understanding of the general evolution of lithic industries during the Neolithic.
3. Finally, a general consideration of the characteristics of lithic industries associated with Neolithisation will be presented.

2. Organisation of the research

This research is divided into six chapters. Chapter I presents the geographical and archaeological framework of Neolithisation in the Levant with a look at work carried out in the Rouj basin (north-western Syria). Chapter II deals with the methodology adopted for the analysis of the lithic industries in this book. In Chapter III, the lithic industries of Tell Ain el-Kerkh, the main site examined in this research, are analysed in detail through the long Neolithic sequence. Chapters IV and V present comparative studies with other sites in the northern Levant: Chapter IV deals with the sites whose materials I have myself studied, Chapter V the sites studied based on bibliographical sources. Finally, Chapter VI presents the general conclusions of this research.

3. Illustrations

The illustrations are of three kinds: figures, tables, and plates. The figures are graphs, maps, and diagrams. The tables are tables of values or lists. Figures and tables are presented in the text. The plates consist of drawings of the lithic material. They are presented at the end of the book.

Chapter I

The research framework

1. Neolithisation of the northern Levant

1.1. Geographical situation

The Levant is a zone in Western Asia situated north-west of the Arabian Peninsula. It is an elongated region running north to south, bordered by the following geographical features: the Taurus mountains in the north, desert to the east, the Mediterranean to the west, and the Sinai peninsula to the south. The term 'northern Levant' used in this research corresponds more or less to the geo-cultural region proposed by Aurenche and Kozłowski¹ (Figure 1.1). Moreover, certain sites in neighbouring regions, such as south-eastern Anatolia (the upper valleys of the Tigris and Euphrates) and the Balikh (Jazira), are included with those of the northern Levant because of the cultural links between their lithic industries and those of the northern Levant sites. The northern Levant is composed of several geographical areas (Figure 1.2) and the landscape varies across its width (200–250 km from the Mediterranean coast to the Middle Euphrates in Syria). The Mediterranean coast is composed of a narrow plain, approximately 15 km wide at the most. This plain is surrounded by chains of mountains to the north and east: the Baer Bassit and Amanus ranges are situated to the north, and the Jabal an-Nassuriyeh lying north-south is situated to the east.²

The two rivers, the Orontes and the Nahr el Kebir, flow into the Mediterranean at Samandağ and Lattakia, respectively, where thick alluvia have accumulated. To the east of Jabal an-Nassuriyeh and south of the Amanus, the plains extend in a continuation of the Rift, which runs north from the Gulf of Aqaba: they consist of the Ghab basin, the Rouj basin, the plain of Amuq, and the Afrin valley. These regions are rich in water, with springs, lakes (Amuq and Beloua in the Rouj basin), and rivers (the Orontes and the Afrin). The borders of these depressions are formed by limestone ranges such as the Jabal Zawihe in the Ghab valley. As the Rift Valley rises towards the east, the central plateau stretches to the Euphrates valley. Mountainous regions border this plateau to the north, which largely correspond to the present-day border between Syria and Turkey. The other plain (Jazira) stretches to the east of the Euphrates, and includes two tributaries (the Balikh and

the Khabur). The altitude changes rapidly between the coast and the plateau; this produces a variety of natural environments within relatively narrow zones.

The climate of Western Asia is characterised by strongly contrasting seasons, with hot, dry summers and cold, wet winters. Most rainfall occurs in the winter. Annual precipitation differs according to the region (Figure 1.3). In most of the northern Levant, precipitation is relatively abundant compared to other regions of Western Asia, with an average of 400–600 mm; on the coast, it can reach 1000 mm. Depending on differences in precipitation, present-day vegetation is similarly varied according to region (Figure 1.4). In the northern Levant, the vegetation zones are divided into three groups: forests in the mountain ranges (in north-western Syria and eastern Anatolia), Mediterranean vegetation in north-western Syria, and steppic vegetation in northern Syria.

Reconstruction of the palaeoclimate and ancient vegetation is based on pollen diagrams of cores extracted from lake basins and on analyses of flora in archaeological sites. Pollen diagrams from the Ghab basin have enabled the study of the palaeoenvironment of the northern Levant. According to results from the Ghab, forests (cf. *Quercus*: oak) developed rapidly in north-western Syria between 12,000 and 11,000 BP (ca. 12,000–11,000 cal. BC; Figure 1.5: local pollen zone 2).³ The authors have observed that forest vegetation reached a maximum between 10,000 and 8000 BP (ca. 9800–7000 cal. BC, local pollen zone 3, which corresponds roughly to the PPNA and PPNB). A decrease in tree pollen can be observed after 8000 BP (ca. 7000 cal. BC), and the proportion of tree pollen never again reached the levels of the period between 10,000 and 8000 BP (ca. 9800–7000 cal. BC).

This tendency observed in the Ghab contrasts with observations resulting from the pollen diagrams of the Hula basin in northern Israel. Unlike the Ghab, expansion of forest vegetation is observed to have occurred since 13,000 BP (ca. 12,600 cal. BC), a process that reached a peak around 11,500 BP⁴ (ca. 11,500 cal. BC; Figure 1.6). The diagram of the Hula indicates a rapid decline in tree pollen between 11,500 and 10,500 BP (11,500–9800 cal. BC) – a point in time that the Ghab diagram indicates should have been favourable for forest growth.

¹ Aurenche and Kozłowski 1999.

² The highest point in the Baer Bassit range is the Jabal Aqraa (1700 m), and the height of the Jabal an-Nassuriyeh averages 1300–1600 m (Hardenberg 2003).

³ Bottema and van Zeist 1981: 118; van Zeist and Bottema 1991: 101.

⁴ Hillman 1996: 166–168.

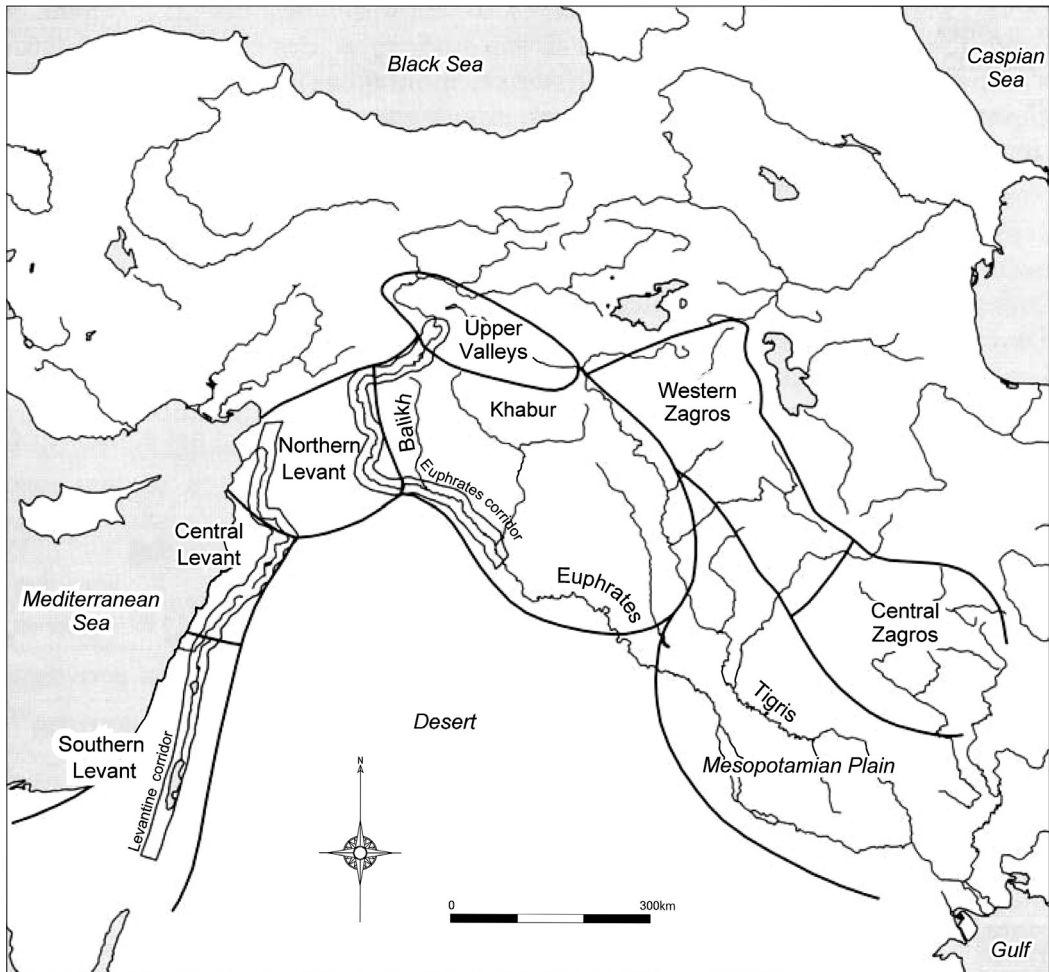


Figure 1.1 The northern Levant with its different geo-cultural regions (after Aurenche and Kozłowski 1999; Fig. 3).



Figure 1.2 Geographical map of the northern Levant.

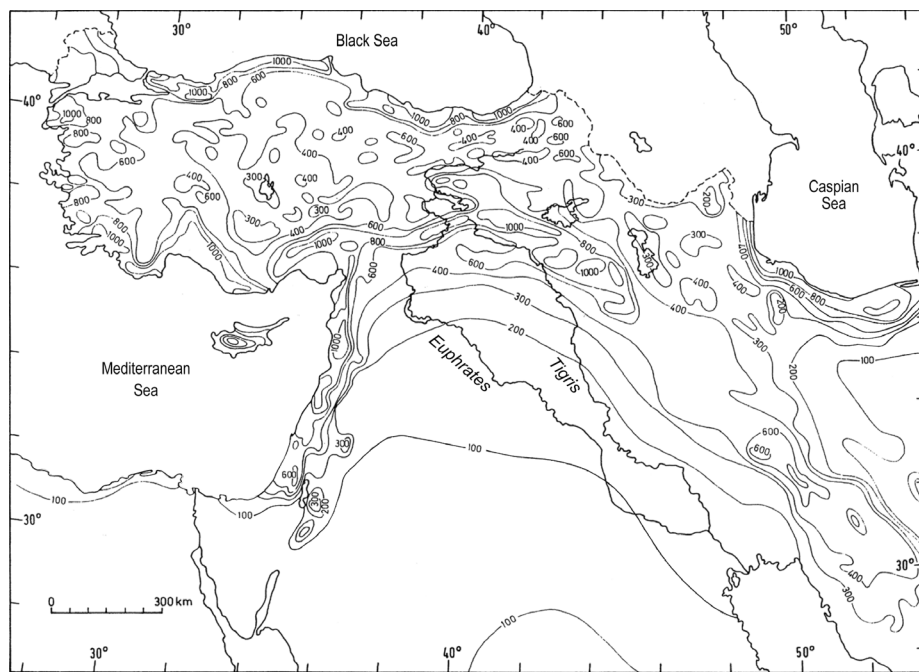


Figure 1.3 Annual precipitation in western Asia (after Van Zeist and Bottema 1991: Fig. 3).

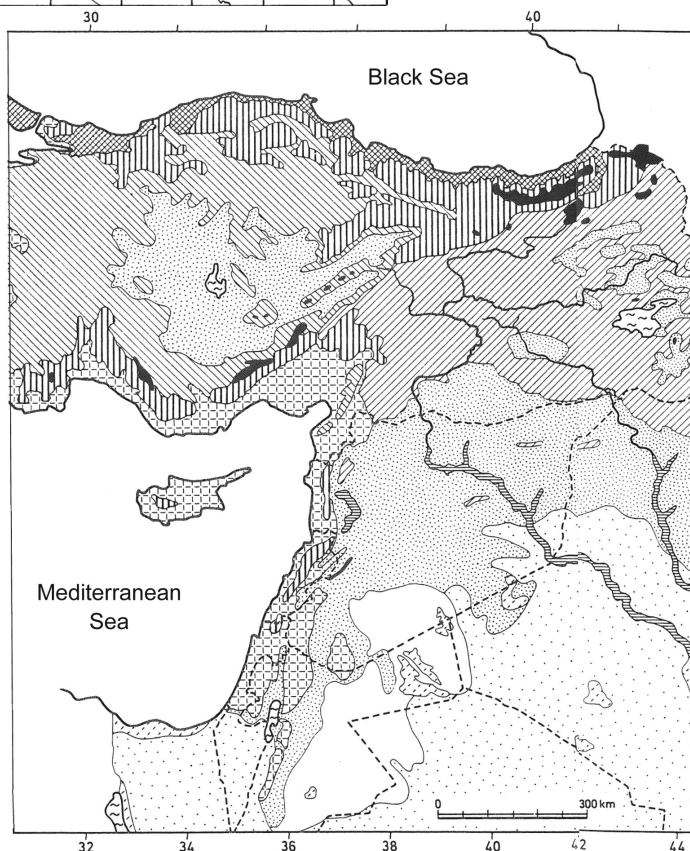

















Figure 1.4 Present-day vegetation in Western Asia (after Van Zeist and Bottema 1991: Fig. 4).

- | | |
|---|--|
|  Eu-Mediterranean vegetations |  Dwarf-shrublands (steppe) |
|  Montane forests |  Very open xeromorphic dwarf-shrublands (desert-steppe) |
|  Mixed broad-leaved and needle-leaved woodland |  Deserts |
|  Cold-deciduous broad-leaved montane woodland |  Subalpine and alpine vegetation |
|  Cold-deciduous forests |  River-valley vegetation |
|  Open tree and shrub vegetation |  Salt marshes |
|  Juniper woodland and forest-steppe |  Lakes |
|  Nubo-Sindian forest-steppe (pseudosavanna) | |

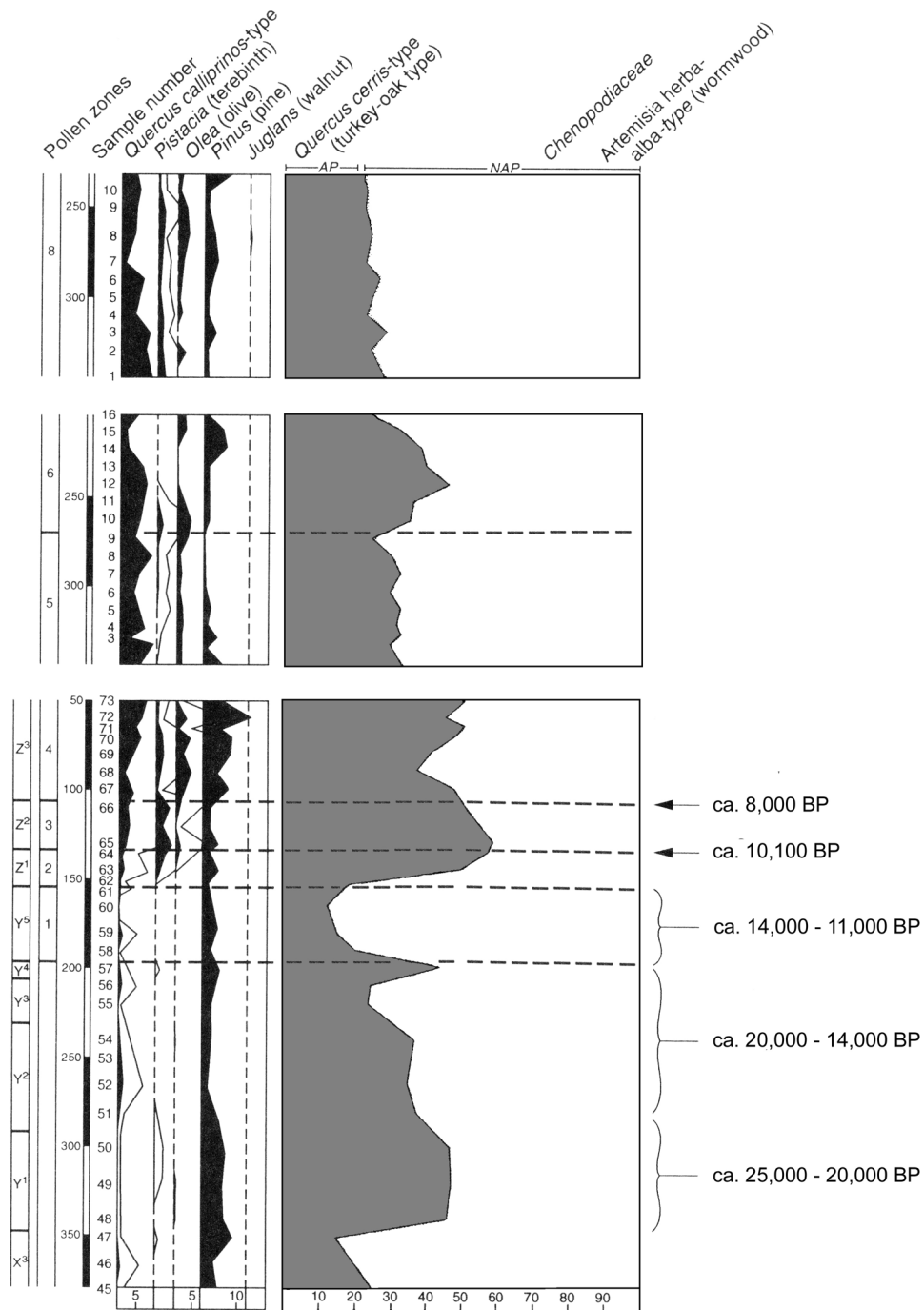


Figure 1.5 Pollen diagrams for the Ghab basin (after Hillman 1996: Fig. 10.7).

Several explanations have been offered for this discrepancy between the Ghab and the Hula, including a dating error in the Ghab diagrams and regional differences in the effects of climate.⁵ New results from the Ghab pollen diagrams, however, appear to confirm the previous ones (Figure 1.7). Here also, the diagram shows that the oak forest developed from 12,000 to 9000 BP (ca. 12,500–8200 cal. BC, local pollen zone 2). At the same time, this new Ghab diagram shows that oak pollen

(*Quercus*) diminished rapidly between 9000 and 8600 BP (ca. 8200–7600 cal. BC). We are unable to judge whether this change was caused by over-exploitation of the wood by PPNB populations, as the authors have suggested.⁶ Moreover, a similar phenomenon was observed in the Late PPNB levels of Tell Halula (ca. 7600 cal. BC): *Quercus* and *Pistacia* decreased in comparison with Middle PPNB levels, while *Chenopodiaceae* increased.⁷ This

⁵ Hillman 1996.

⁶ Yasuda *et al.* 2000: 131.

⁷ Cauvin, J. *et al.* 1997: 64.

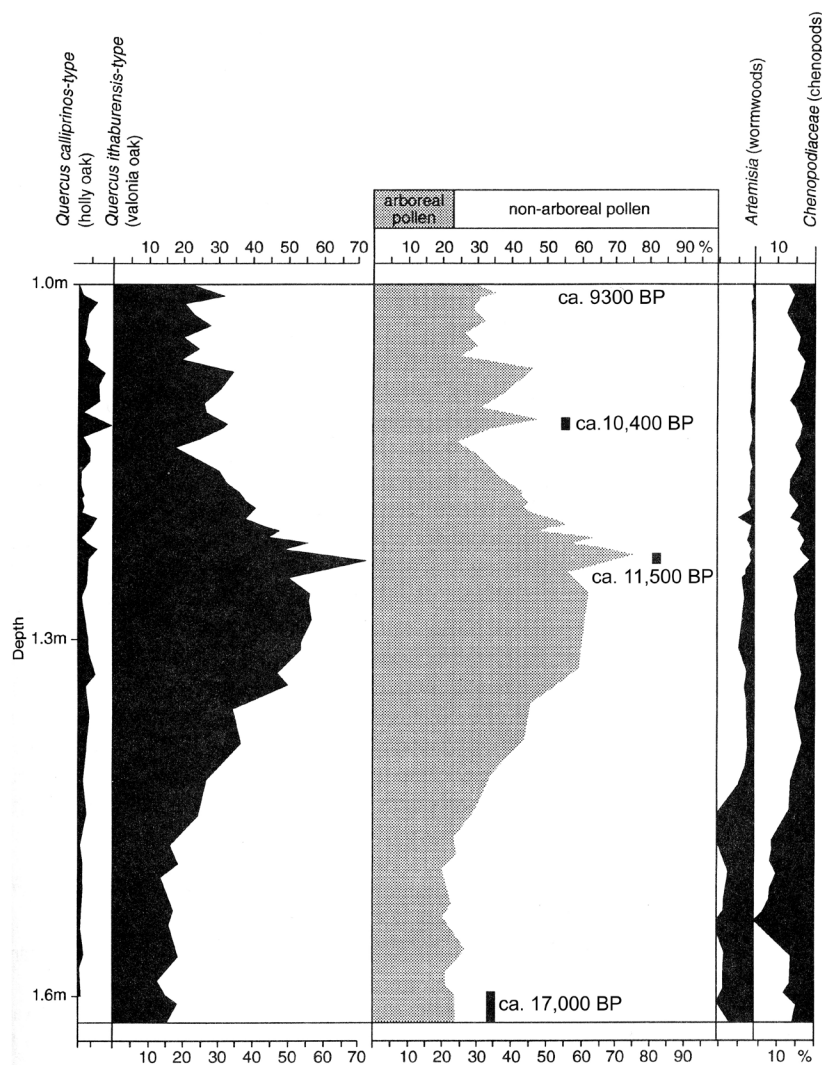


Figure 1.6 Pollen diagrams for the Hula basin (after Hillman 1996: Fig. 10.6).

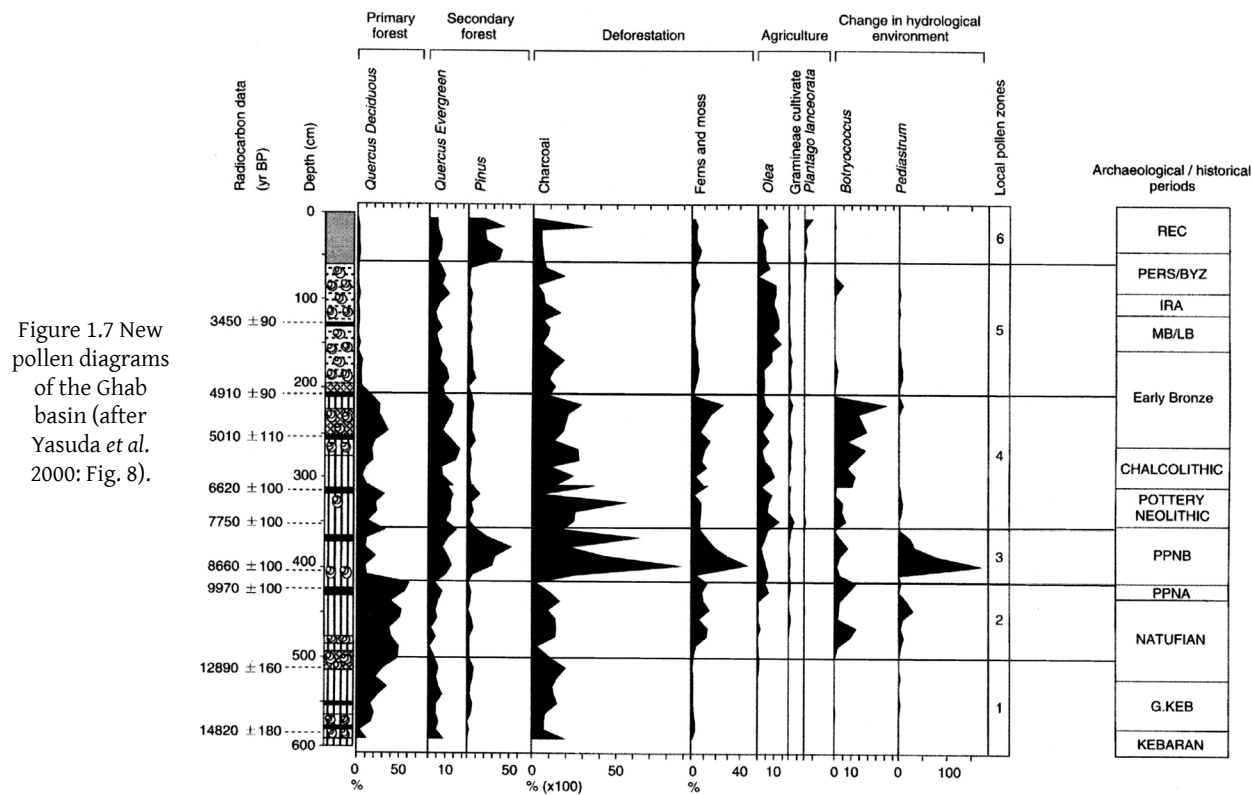


Figure 1.7 New pollen diagrams of the Ghab basin (after Yasuda et al. 2000: Fig. 8).

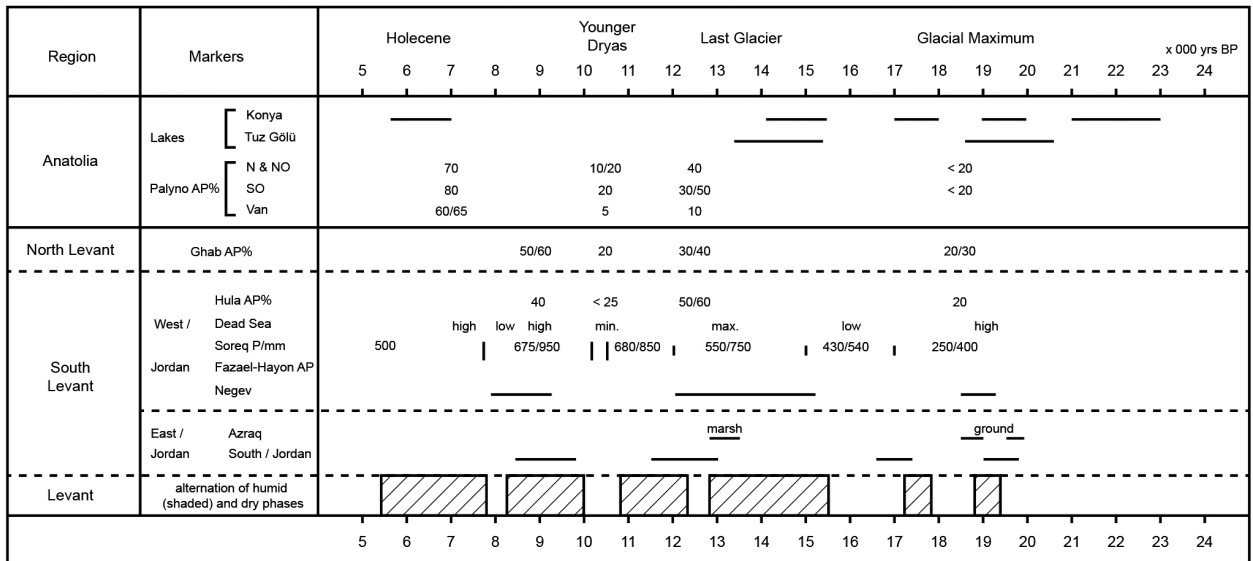


Figure 1.8 Climatic and palaeoenvironmental changes in Western Asia from 24,000 to 5000 BP. Horizontal lines: humid phases (after Sanlaville 1997: Fig. 1).

phenomenon can be attributed to either a drying of the climate or over-exploitation of wood.⁸

At this point in time, given the various pollen studies, including those mentioned above, it seems probable that the beginning of the Holocene was more humid than today's climate (Figure 1.8). High precipitation during the beginning of the Holocene is also suggested by the high water level of the Dead Sea at that time (Figure 1.9). This climatic situation probably accelerated the maximum expansion of the forest vegetation with two possible scenarios: only the western part of the northern Levant was covered by forest (Figure 1.10), or the greater part of the northern Levant was covered by forest (Figure 1.11), and it is possible that the border between the forest and the steppe vegetation was situated much farther to the east than it is today. The drying of the climate and the advent of the present climatic conditions apparently began after 8000 BP (ca. 7000 cal. BC). The decline in tree pollen may be observed in the limited data available for the PPNB (8800–7000 cal. BC) in the northern Levant, as has been noted, but it is difficult to determine the anthropic or climatic reasons for this phenomenon. The presumed drying of the climate in the southern Levant about 8000 BP (7000 cal. BC) has not yet been confirmed for the northern Levant.⁹ Given the regional difference in climate between the south and the north when the diagrams of the Ghab and the Hula are compared, even if drying began throughout the Levant about 8000 BP (7000 cal. BC), its effect will probably have been different in the north compared to the south.

⁸ *ibid.*

⁹ Sanlaville 1997: 252.

1.2. Chronological framework

The period dealt with in this study, from 8700 to 6500 cal. BC, is composed of pre-pottery and pottery phases. The pre-pottery phase corresponds with the PPNB, a conventional term, between about 8700 and 7000 cal. BC. The pottery phase corresponds to the term Pottery Neolithic or Pre-Halaf; this study mainly deals with the first half of the Pottery Neolithic (between 7000 and 6500 cal. BC).

For the periodisation of the Pre-Pottery Neolithic phase in the Levant, several chronological frameworks have been proposed (Figure 1.12). In this study, in order to follow the evolution of the lithic industries in detail, the traditional chronology of the PPNB of the northern Levant will be used with three sub-periods (Figure 1.13).¹⁰

The term 'PPNB' and its sub-periods, Early, Middle, and Late PPNB, signify only a pre-pottery period. As opposed to the terms applied to the PPNA, such as 'Mureybetian' in the Middle Euphrates and 'Sultanian' in the southern Levant, the terms used for regional entities or local cultures are not yet well defined for the PPNB. Some studies have pointed out or have tried to define regional entities in the PPNB as 'Nevalıçorian' and 'Aswadian'.¹¹ However, it would appear that these names are premature for the Neolithic of the northern Levant, for which relatively few studies of the archaeological sites with detailed information are available. For the time being, it is safer to use geo-cultural terms for the regional differences in the

¹⁰ Cauvin and Cauvin 1993.

¹¹ Schmidt 1996: 366; Kozłowski and Aurenche 2005.

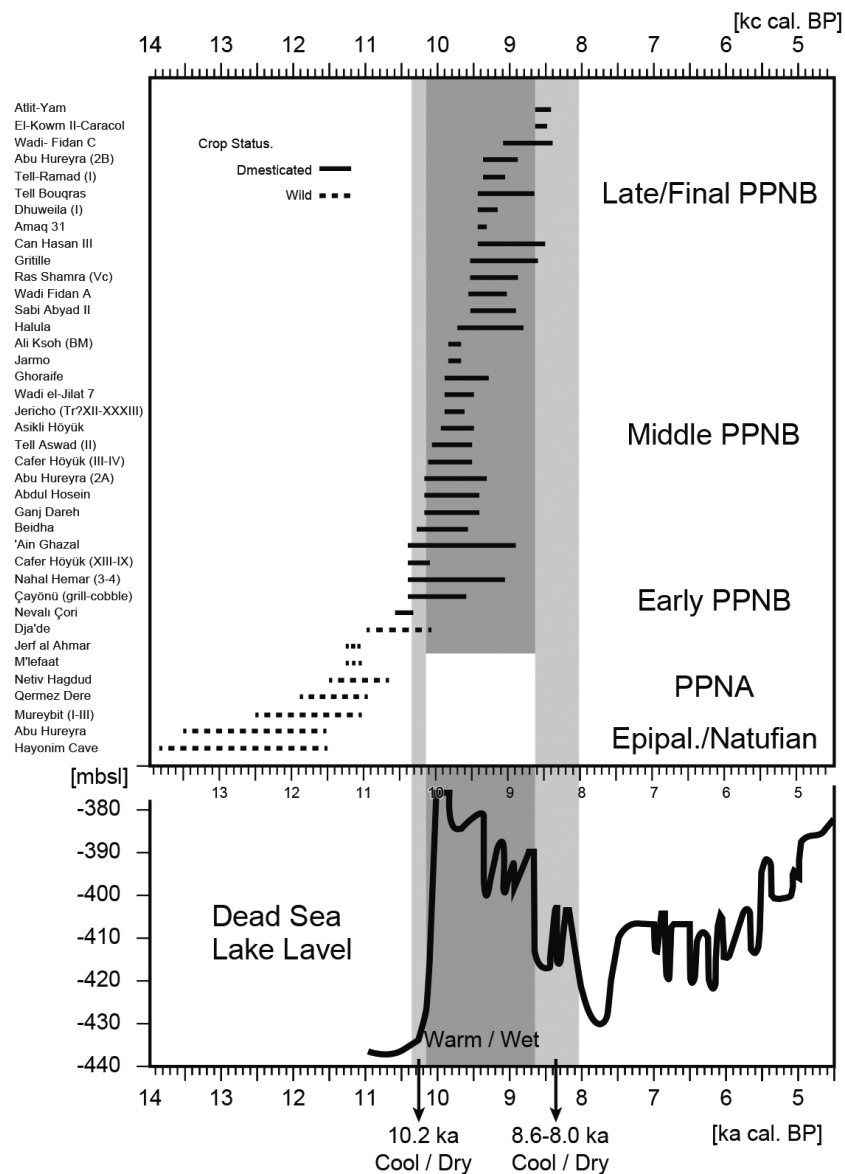


Figure 1.9 Archaeobotanical records for cereals compared with Dead Sea Lake levels (after Weninger *et al.* 2009: Fig. 8).

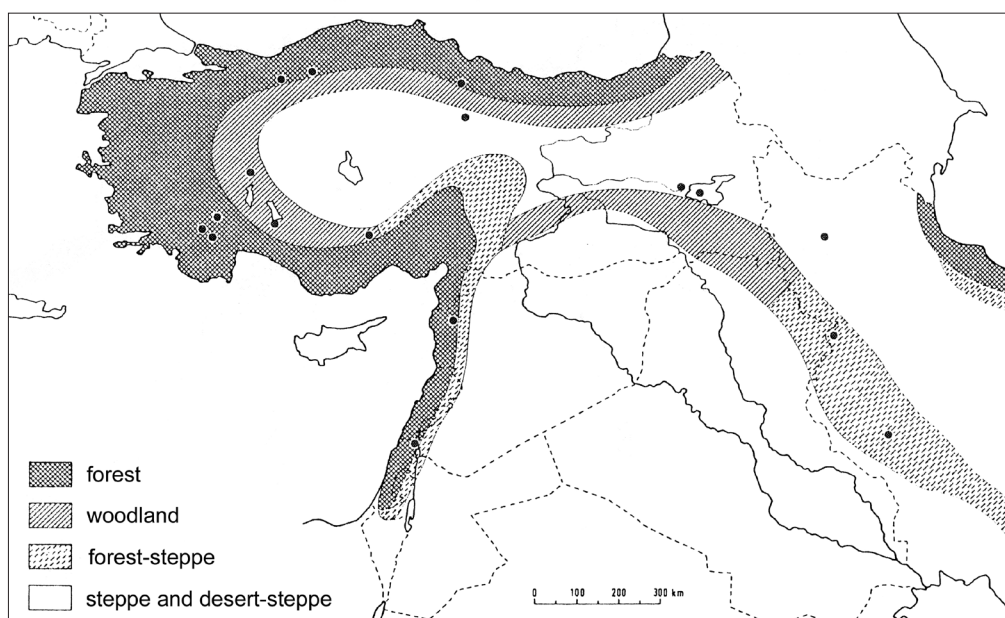


Figure 1.10 Reconstructed vegetation at the beginning of the Holocene, about 8000 BP (ca. 7000 cal. BC, after van Zeist and Bottema 1991: Fig. 44).

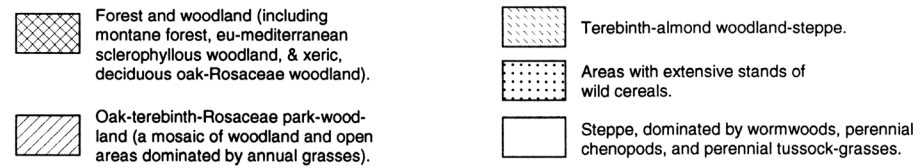
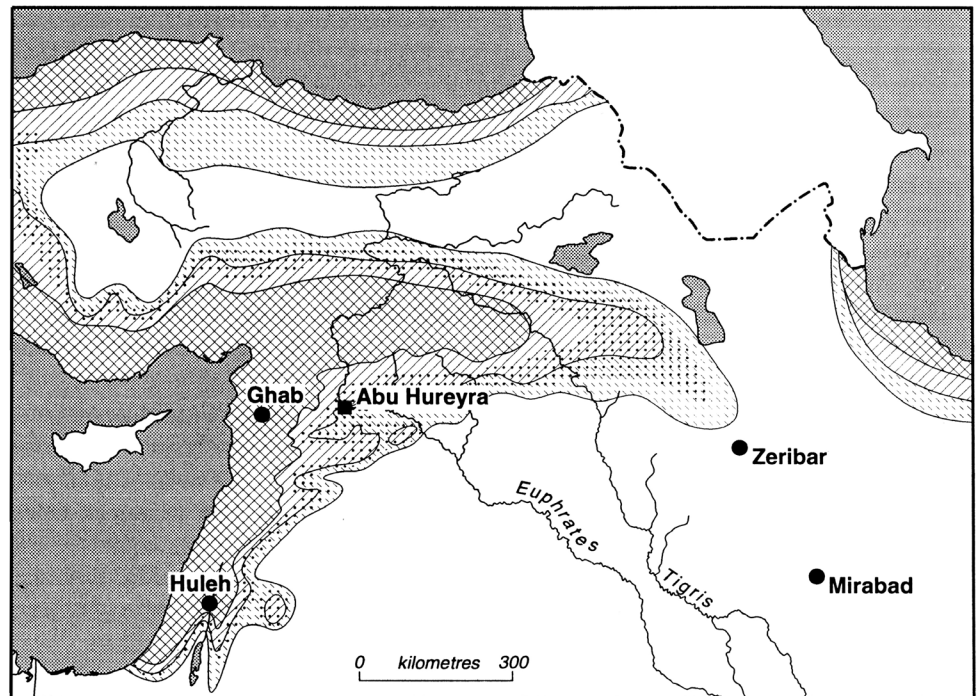


Figure 1.11
Reconstructed vegetation
at the beginning of the
Holocene, about 11,000
BP (ca. 11,000 cal. BC,
after Hillman 1996:
Fig. 10.10-b).



7000 cal. BC

7600 cal. BC

8000 cal. BC

8700 cal. BC

Neolithic 2	late PPNB	période 4	PPNB récent
	early PPNB	période 3	PPNB ancien

Moore 1978

Mellaart 1975

Hours *et al.* 1975

Cauvin & Cauvin 1993

Figure 1.12 Different
chronological frameworks
depending on different
authors or groups.

PPNB: for example, the PPNB of the Taurus and the PPNB of the southern Levant.¹²

1.2.1. Early PPNB

The Early PPNB is generally dated between ca. 8700 and ca. 8200 cal. BC. Because of cultural continuity with the preceding phase (the PPNA) and the presence of certain elements of the PPNB at the end of the PPNA, such as lithic technology and the tradition of house building, the Syrian Middle Euphrates has been considered the region that gave birth to this culture. In the northern Levant, the number of recognised sites

is very low and most are concentrated in the Syrian Middle Euphrates (Dja'de, Mureybet, Sheikh Hassan) and eastern Anatolia (Çayönü, Nevalı Çori, Göbekli Tepe, Cafer Höyük). In the other regions, the excavated or surveyed sites that have been attributed to this period are rare: the only ones found have been Tell Ain el-Kerkh in north-western Syria and a site surveyed in the Balikh (site BS 397).¹³

Several rectangular houses built of pisé or mud brick have been found on the Middle Euphrates sites. It is difficult to determine the size of the villages on these sites because the area excavated is limited, but it would

¹² Edwards *et al.* 2004: 54.

¹³ Copeland 2000.

THE NEOLITHIC LITHIC INDUSTRY AT TELL AIN EL-KERKH

	Anatolia	Cilicia Queiq	Upper Euphrates Western upper Tigris	Karababa	Balikh	Syrian Euphrates	Syrian desert	Khabur	Eastern upper Tigris Sinjar
LPN	Köşk	Amuq B	Çayönü ?		Sabi Abyad-pre-Half			Chagar Bazar	
Atlantic	Can Hassan I	Mersin	Tülintepe					Raheke	
	Çatal-West	Tarsus						Cheikne	
	Hacilar	Ras Shamra VA						Khaneke	
MPN	Köşk	Amuq A	Çayönü PN		Sabi Abyad I			Kashkashok II	Umm Dabaghiya
Atlantic	Erbaba	Mersin	Til Huzur		DFBW			Seker al	Sotto
	Çatal-East	Tarsus	Tülintepe-DFBW					Aheimar	Yarimtepe I
		Ras Shamra VB							
LPN	Çatal-East	Juaidah	Çayönü Large Room	Kumartepe	Gürcütepe I		el Kowm 2 P. II	Bouqras	Ginnig
Atlantic	Suberde	Ras Shamra VC		"AS-Site 6"	Assouad				Building Level
	Köşk		ÇAYÖNÜ-CULTUR	Sürtük Mevkii,	Damishliya			Tell es-Sinn	
				Girik Tepe	Gritille				
LPPNB	Can Hassan III		Çayönü Cell	Gritille	Gürcütepe II	Abu Hureyra IIB		bouqraz	Ginnig Sondage
Boreal	Aşıklı		Gölbent, Papazgözü	Hayaz	Sabi Abyad II	Halula	el Kowm 2 P.1	Feyda	Maghzalia
			Cafer late	Girik Tepe			Umm el Tlel-2	Fakhariyah	
			Boytepe, Cinay-III				Djer		
PPNB				NC IV/V		MB IVB		Bouqras	Nemrik 4-5
MPPNB	Aşıklı		Çayönü Cobble	NEVALIÇORIAN		Halula			
Boreal	Kaletepe		Çayönü Chamel			Abu Hureyra IIA			NEMRIKIAN
			Cafer middle						
	Öküyini Technocomplex 4			NC II/III	Göbekli Tepe	MB IVB			Nemrik 3
EPPNB			Çayönü Grill			Djadé			
Preboreal			Cafer early						
"PPNA"		Tell Qaramel	Çayönü Round	NC I	Göbekli Tepe	MB III (Mureybetian)			Hallan Cemi
Preboreal		Tell Berne				Sheikh Hassan			Nemrik 1-2
		Tleilat				Jerf el-Ahmar			Qermez Dere 4-5
									Qermez Dere 6-7
	Khiamian - Dryas III			?	Göbekli Tepe ?	MB IB, II			
	Natufian			Anep Sirt ?		MB IA	el Kowm I	Khazné II	
	Dryas II/Allerød	Gerade				Abu Hureyra I	Aarida	Ain Mrer	
						Dibsi Faraj	Umm el Tlel-2		
	Kebarian	Öküyini Technocomplex 2-3		Biris Mezarlığı		Nahr el-Homr	el Kowm I Sondage		
	Dryas I/Bolling								

PERIODS	STAGE OF THE NEOLITHISATION
5 8500-7500 BP	Emergence of pottery (Pre-Halaf, D.F.B.W., etc.) in the 'fertile crescent' Culture without pottery (Final PPNB) in the desert zones Agro-pastoral Nomadism Diffusion toward the desert and Europe (Mediterranean, Central Europe)
4 7500-7000 cal. BC 8500-8000 BP	Late PPNB New species of domestic plants: wheat, naked barley, flax Demographic increase in general Diffusion of the Neolithic to the Mediterranean coast and Western Anatolia
3b 8200-7500 cal. BC 9200-8500 BP	Middle PPNB Standardised rectangular houses Domestic cereals and pulses in general Domestication of goat, sheep, cow and pig Diffusion of the PPNB to the South Levant
3a 8700-8200 cal. BC 9500-9200 BP	Early PPNB in the Euphrates Rectangular houses, new weapons Predomestic agriculture Continuity of the PPNA in the South Levant
2b 9500-8700 cal. BC 10000-9500 BP	PPNA: Sultanian, Aswadian, Mureybetian Large villages with round houses First rectangular structures in the Euphrates Predomestic agriculture in the Euphrates (Mureybetian) Diffusion of Mureybetian to the Southeast Anatolia
2a 10000-9500 cal. BC 10200-10000 BP	Khiamian First projectile points Diversified hunting-fishing-gathering
1 12000-10000 cal. BC 12200-10200 BP	Natufian in the Levant First sedentary villages with round pit dwellings Microlithic tools Diversified hunting-fishing-gathering

Figure 1.13 Periodisation of the Pre-Pottery Neolithic of the northern Levant. After Schmidt 1998a: Abb. 1 (above), Stordeur 2000: Table 1 (left).

appear that the number of houses was quite low. The sites in eastern Anatolia have produced collective and religious buildings: a cult building at Nevalı Çori and buildings constructed with T-shaped steles at

Göbekli Tepe.¹⁴ These types of buildings, which do not have comparable examples from the Neolithic sites

¹⁴ These buildings at Göbekli were first built in the PPNA (Schmidt 2000).

in other regions, represent a specific characteristic of the beginning of the Pre-Pottery Neolithic in eastern Anatolia.

The remains of plants and animals collected on these sites are generally wild species, which indicates that the subsistence strategy in the Early PPNB was still based on animal hunting and plant gathering. However, some studies of flora and fauna show that the first attempts at domestication of natural resources started in the PPNB (perhaps at the end of the PPNA).¹⁵ In particular, eastern Anatolia (Nevalı Çori) is presumed to have been the centre for the domestication of sheep and goats.¹⁶

1.2.2. Middle PPNB

The range of the Middle PPNB is generally considered as lying between ca. 8200 and ca. 7600 cal. BC. This period in the northern Levant is poorly understood. The excavated sites are also limited to the Middle Euphrates regions (Mureybet, Abu Hureyra, Halula) and eastern Anatolia (Cafer Höyük, Çayönü). It is probably during this period that there appeared for the first time in the northern Levant some large sites such as Abu Hureyra and Halula, which extend over several hectares. Rectangular houses are found on these sites but their shapes vary according to the site. There is clear evidence of the use of floor plaster at Halula and Abu Hureyra, and the large stone wall at Halula is evidence of the development of social organisation at this time.

Domesticated animals, at the very least sheep and goats, appear during the Middle PPNB.¹⁷ The sudden appearance of these two domesticated species in the Middle Euphrates has been interpreted as an introduction from another region, probably eastern Anatolia, where the domestication of sheep and goats had apparently already begun in the Early PPNB.¹⁸ As for domesticated plants, although most of the sites have produced wild cereals, there are domesticated cereals on some sites such as Halula. In any case, cereal cultivation and herding clearly began in the Middle PPNB and became more and more important in the subsistence economy.

1.2.3. Late PPNB

In general, the Late PPNB starts around 7600 cal. BC and ends around 7000 cal. BC with the introduction of pottery production. This is a period for which sites are found all over the northern Levant, including the regions which had rarely provided any sites for the earlier periods, such as western Syria or the Balikh.

According to the excavations, there are sites that were occupied without interruption beginning in the Middle PPNB (Cafer Höyük, Çayönü, Halula, Abu Hureyra), as well as numerous new sites that were first occupied during this period,¹⁹ such as those in north-western Syria (Kerkh 2, Qminas, Ain Dara III) and the sites of the Balikh (Assouad, Damishliyya, Sabi Abyad II, Gürcü Tepe II). Moreover, the surveys carried out in the Balikh and the Rouj basin²⁰ show a hierarchy of sites: most of them are small sites (less than 1 hectare), but certain sites are as large as 10 hectares (Ain el-Kerkh in the Rouj basin, Mounbatah in the Balikh).

The domestication of animals and plants became generalised in this period. Besides sheep and goats, oxen and pigs joined the list of domesticated animals.²¹ The hunting of wild animals such as the gazelle continued, but their proportion in the animal remains decreases. The acquisition of plants is unclear because of the small number of thorough studies, but domestic cereals (such as rye, naked wheat, and emmer) have been found on several sites.²² In short, it is probable that the village economy of the Late PPNB was largely based on food production.

1.2.4. Pottery Neolithic

Around 7000 cal. BC, the production of pottery in noticeable quantities began in the northern Levant. The Pottery Neolithic, or the Pre-Halaf, is a period that lasts from the beginning to the end of the 7th millennium cal. BC, when the influence of Halafian pottery spread throughout most of the northern Levant. The chronology of the Pottery Neolithic has been established by study of the pottery²³ but not yet in detail, especially for the early phase of the Pottery Neolithic. The first half of the Pottery Neolithic will be the main subject of this study, which extends from the very beginning of the Pottery Neolithic to the generalisation of pottery production (ca. 7000–6500 cal. BC).²⁴ The term 'final PPNB' is used for the pre-pottery sites of inner Syria (El-Kowm 2, Qdeir), which are contemporary with the first pottery sites in northern Syria. Unlike the southern Levant, according to our present knowledge, the final PPNB phase was not generalised throughout the northern Levant. Therefore, in this study the final PPNB is used to designate a phase present on a few sites only. However, it is possible that future studies may show that the final PPNB is a regional characteristic in certain regions such as inner Syria, rather than an aspect specific to some sites.

¹⁹ cf. Akkermans, P.M.M.G. 1999.

²⁰ Akkermans, P.M.M.G. 1999; Iwasaki *et al.* 1995; Iwasaki and Tsuneki 2003.

²¹ Helmer *et al.* 1998; Peters *et al.* 1999.

²² Nesbitt 2002.

²³ Le Mièrre and Picon 1998; Cruells and Nieuwenhuysse 2004.

²⁴ This phase corresponds more or less to stages 2 and 3 of Le Mièrre and Picon (1998; 2003).

¹⁵ Peters *et al.* 1999; Willcox 2004.

¹⁶ cf. Peters *et al.* 1999.

¹⁷ Peters *et al.* 1999.

¹⁸ Helmer *et al.* 1998: 26.

Site	Natufian	PPNA	Early PPNB	Middle PPNB	Late PPNB	Pottery Neolithic
Gerade						
Dederiyeh						
Qminas						
Ras Shamra V						
Ain Dara III						
Sites in Rouj Basin*				?		
Sites in Amuq Plain**						
Tell Sukas						
Hama						
Qalaat el-Moudiq						
Arjoune						
Nebi Mend						
Shir						

* Ain el-Kerkh, Kerkh 2, Arayl & 2, Abd el-Aziz
 ** Judidah, Kurudu, Dahab

Figure 1.14 Natufian and Neolithic sites in north-western Syria. Reference: Gerade: Poplin and Cauvin, M.-C 1986-1987; Dederiyeh: Nishiaki *et al.* 2017; Qminas: Masuda and Sha’ath 1983; Ras Shamra: Contenson 1992; Ain Dara III: Suleiman 1995; sites in the Rouj basin: Iwasaki and Tsuneki 2003, Tsuneki *et al.* 2006; sites in the Amuq plain: Braidwood and Braidwood 1960; Tell Sukas: Riis and Thrane 1974; Tabaat al-Hammam: Hole 1959; Hama: Thuessen 1988; Qala’at el-Moudiq: Dewez 1970; Arjoune: Parr 2003; Nebi Mend: Nishiaki 2000; Shir: Bartl *et al.* 2012.

For the northern Levant, it is difficult to accept a break in the occupations between the Late PPNB and the beginning of the Pottery Neolithic, for which there are some examples in the southern Levant. On the contrary, many sites established in the Late PPNB were occupied without interruption until the beginning of the Pottery Neolithic.²⁵ In the northern Levant, these sites are situated in particular on the Mediterranean coast, where many have been identified by excavation or survey. Concerning the architecture, rectangular houses with several rooms like those of previous periods have been found on some sites. Bouqras on the Middle Euphrates demonstrates developed village planning in this period.²⁶

The subsistence mode is agro-pastoral. Animal husbandry and the cultivation of cereals and legumes have been demonstrated by the studies of several sites.²⁷

2. Neolithisation of north-western Syria

2.1. State of research

North-western Syria as considered in this study is a region bordered by the Amanus in the north, by the central Syrian plateau on the east, and by the coast on the west. The southern edge is situated at the level of Hama.

Despite the relatively large number of excavated sites in this region, most of the Neolithic phases, particularly the pre-pottery phase, are not well known (Figure 1.14). Before the discovery of the Early PPNB layers at Tell Ain

el-Kerkh (see below), the first Neolithic occupations in this region were thought to date back only to the Late PPNB. Unlike the small number of early pre-pottery sites, the Late PPNB sites such as Ras Shamra VC are relatively well known in this region. On the basis of the similarity between the archaeological material of Ras Shamra and that of the Middle Euphrates sites, it has been suggested that the diffusion of the Neolithisation of the Euphrates towards the Mediterranean coast occurred in the Late PPNB,²⁸ and a ‘colonisation of the coast’ has been discussed. However, this scenario must be corrected in the light of recent studies in Cyprus and our own work in the Rouj basin; the discovery of early pre-pottery sites in Cyprus signifies that the first coastal sites date back to the Early PPNB or even earlier,²⁹ and this has recently been confirmed by the excavations at Tell Ain el-Kerkh (see below).

The material from the Late PPNB sites such as Ras Shamra and Tell el-Kerkh 2³⁰ is very rich. The lithic industries are characterised by blade tools. Local flint is used to make the predominant tools (points and sickle elements, for example), and tools such as blades and bladelets are made from Anatolian obsidian, coming mostly from central Anatolia.³¹ Heavy objects, querns and hand stones, often made of basalt, are common. Polished axes in various stones such as serpentine and diabase are also abundant. The bone industries consist of various tools, including spatulas, awls, and needles. The least common objects are beads of various materials and stone seals; the seals of Ras Shamra VC are among the earliest specimens in the Levant.

²⁵ Akkermans, P.M.M.G. *et al.* 2006: 153.

²⁶ Akkermans, P.A. *et al.* 1981.

²⁷ cf. Tell Sabi Abyad (Akkermans, P.M.M.G. *et al.* 2006).

²⁸ Cauvin, J. 1994; 2000.

²⁹ Manning *et al.* 2010.

³⁰ Contenson 1992; Iwasaki and Tsuneki 2003.

³¹ Maeda 2003.

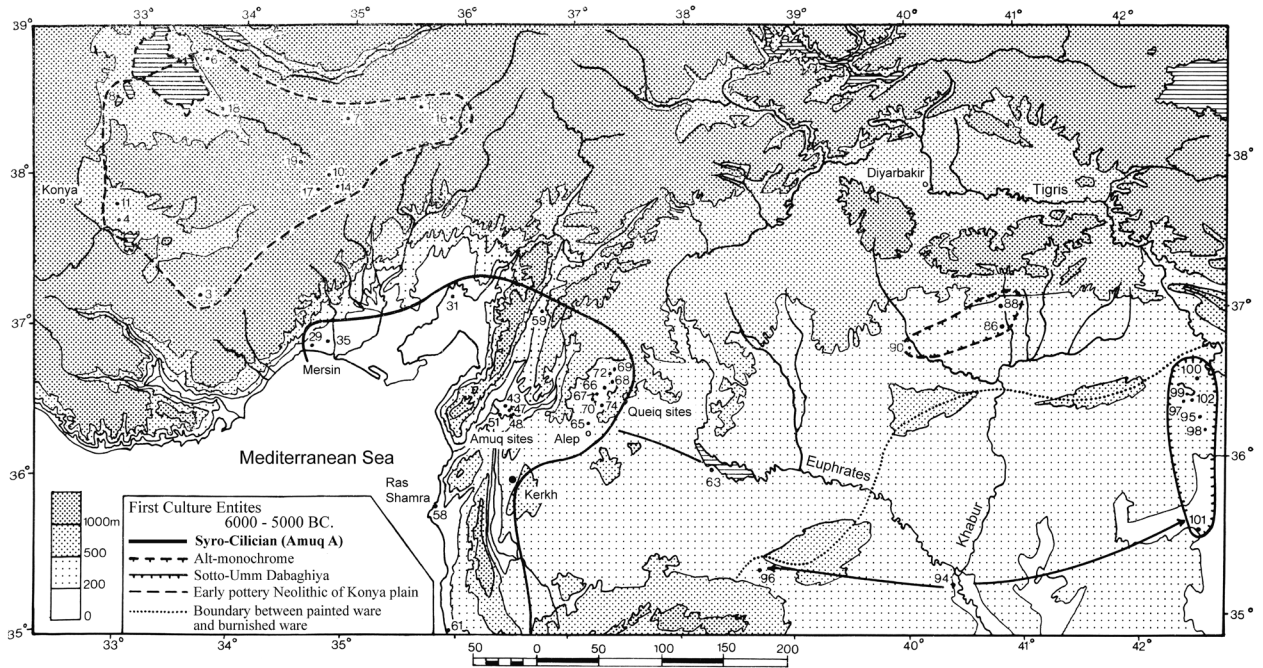


Figure 1.15 The 'Syro-Cilician' group (after Hours and Copeland 1983; map 2).

The flora is very poorly known because of a lack of studies, with the exception of that of Ras Shamra VC; there, domestic emmer wheat and barley, with some legumes, are present.³² Concerning the domestication of animals, the four domestic species (sheep, goats, pigs, cattle) are present at Ras Shamra VC and at Tell el-Kerkh.³³ The abundance of pigs and cattle in the fauna is noticeable, and this is probably a regional characteristic.³⁴ The presence of domestic plants and animals at Ras Shamra VC was an essential element for the hypothesis of a colonisation carried out by farmers from elsewhere. However, the domestication process for local, natural species must be studied with the new data from Tell Ain el-Kerkh, which provide information on phases earlier than the Late PPNB.

Compared to the pre-pottery sites, the known pottery sites are more numerous throughout this region. The characteristic pottery of this region is polished and dark in colour, 'Dark-Faced Burnished Ware' (DFBW).³⁵ Similar pottery has been found not only in north-western Syria but also on the Mediterranean coast in Anatolia, which suggests the existence of a 'Syro-Cilician' cultural entity in the Pottery Neolithic (Figure 1.15).³⁶ Apart from the beginning of pottery use, no other changes in the objects have been observed.

Animal husbandry is attested at Ras Shamra VA and at Tell Aray 2³⁷; the four domestic species are present; in particular, an abundance of cattle is noticeable at Tell Aray 2. On this site, the hunted animals, such as gazelles, deer, and wild boar, are less frequent than the domestic animals (20% of the fauna by weight).

2.2. Archaeological research in the Rouj basin

2.2.1. The Rouj basin: geomorphology

The Rouj basin is situated in north-western Syria, west of Idlib (Figure 1.16). The geomorphological characteristics of the basin were noted in previous studies.³⁸ The basin lies north of the large valley of the Levantine Rift. It is a small plain enclosed by two limestone ranges to the east and the west. It extends 2 to 7 km from east to west and approximately 37 km from north to south. The high mountains (*jabal*) that border the plain rise to about 400 to 600 m, and many small valleys (*wadis*) have developed there. The western mountains, the Jabal Wastani, composed of Eocene, Oligocene, and Miocene limestone, present a fairly steep slope. The foot of the Jabal Wastani is covered by basaltic lava from the Pliocene. The eastern mountains, the Jabal Zawiye, composed of Eocene and Miocene limestone, present a gentle slope except in the northern part. At the foot of the Jabal Zawiye, the alluvial cones are formed by the sediments brought by the wadi. The northern part of the basin can be separated into two parts. The western part is formed

³² Cauvin, J. *et al.* 1997.

³³ The studies on the fauna of Tell Ain el-Kerkh and Tell el Kerkh 2 are being carried out by Tomoko Anezaki.

³⁴ Peters *et al.* 1999: 32. This is also attested at Ain el-Kerkh and Kerkh 2 (Tomoko Anezaki, pers. comm.).

³⁵ Braidwood and Braidwood 1960.

³⁶ Hours and Copeland 1983; Balossi 2003.

³⁷ Helmer 1989; Hongo 1996.

³⁸ Besançon and Geyer 1995; Akahane 2003.

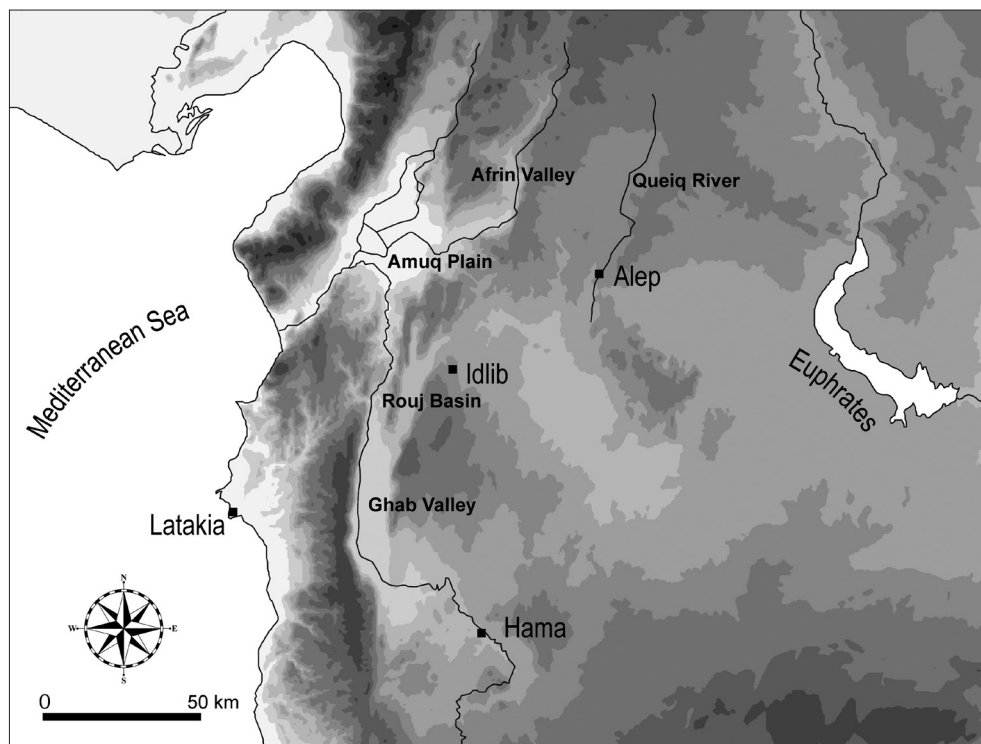


Figure 1.16 Location of the Rouj basin.

by a narrow corridor of about 2 km bordered by two limestone ranges that are very steep, and it forms a passage towards the plain of the Amuq in Turkey, situated only 30 km north of the basin. The other part is more extensive and is largely covered by alluvial cones. In the south, this basin is joined with the Ghab Valley. The modern east–west road (Ariha–Muhambel–Jisr Shughur) uses this route.

Most of the Rouj plain is covered by deposits from alluvial cones or from floods of the Quaternary.³⁹ In fact, many tells in the basin were established on these deposits. The fact that no Palaeolithic sites have yet been found in the basin can be explained by this thick accumulation of Quaternary deposits.

Water resources are an essential factor for places of settlement. In the basin, the permanent water resources (even in the dry season) are the ancient lake of Rouj (Lake Beloua) and several springs. The Rouj lake has completely disappeared today, but it lay in the middle of the basin up to the 1950s.⁴⁰ According to a geological study,⁴¹ the size of the lake varied according to the period. It was probably a salt lake before 7000 BP (5800 cal. BC); this is an important observation that suggests the exploitation of resources from this ancient lake by Neolithic populations.

³⁹ Akahane 2003: Table 2.

⁴⁰ The hydrographic situation has worsened. Besides the disappearance of the lake, many springs have recently dried up rapidly because the deep water tables have been tapped for cotton cultivation.

⁴¹ Akahane 2003: 20–21.

For the archaeological study of the Rouj basin, two main elements are to be noted, linked to the geography. First, from a human geography point of view, it was an important passage point for early circulation; the route from the interior regions towards the Mediterranean Sea (from Aleppo–Idlib to Lattakia via Jisr Shughur) and the route lying north–south in the great Rift valley cross each other in the southern part of the basin. Second, this is a closed geographical space, which enables us to reconstitute the local historical process more easily.

2.2.2. Archaeological research in the years 1990–1992

There are many tell sites in the northern part of the Levantine Rift valley, the Ghab valley, and the Rouj basin, thus making it an attractive region for archaeologists. The Rouj basin was surveyed for the first time by French researchers.⁴² In the eighties, the Japanese mission directed by the Ancient Orient Museum, Tokyo, carried out archaeological projects in the district of Idlib. This mission was particularly dedicated to the excavation of a Neolithic site at Qminas, and of a Bronze Age and Iron Age site at Tell Mastuma (Figure 1.17). The possibility of archaeological research in the Rouj basin, 20 km west of Idlib, from a regional point of view, was realised during this research in the 1980s and the results provided a key basis of knowledge for the chrono-cultural framework of the Idlib region. Finally, during the years 1990–1992, the Japanese mission from the University of Tsukuba (directed by Prof. Takuya Iwasaki) began a project in the basin.

⁴² Courtois 1973.

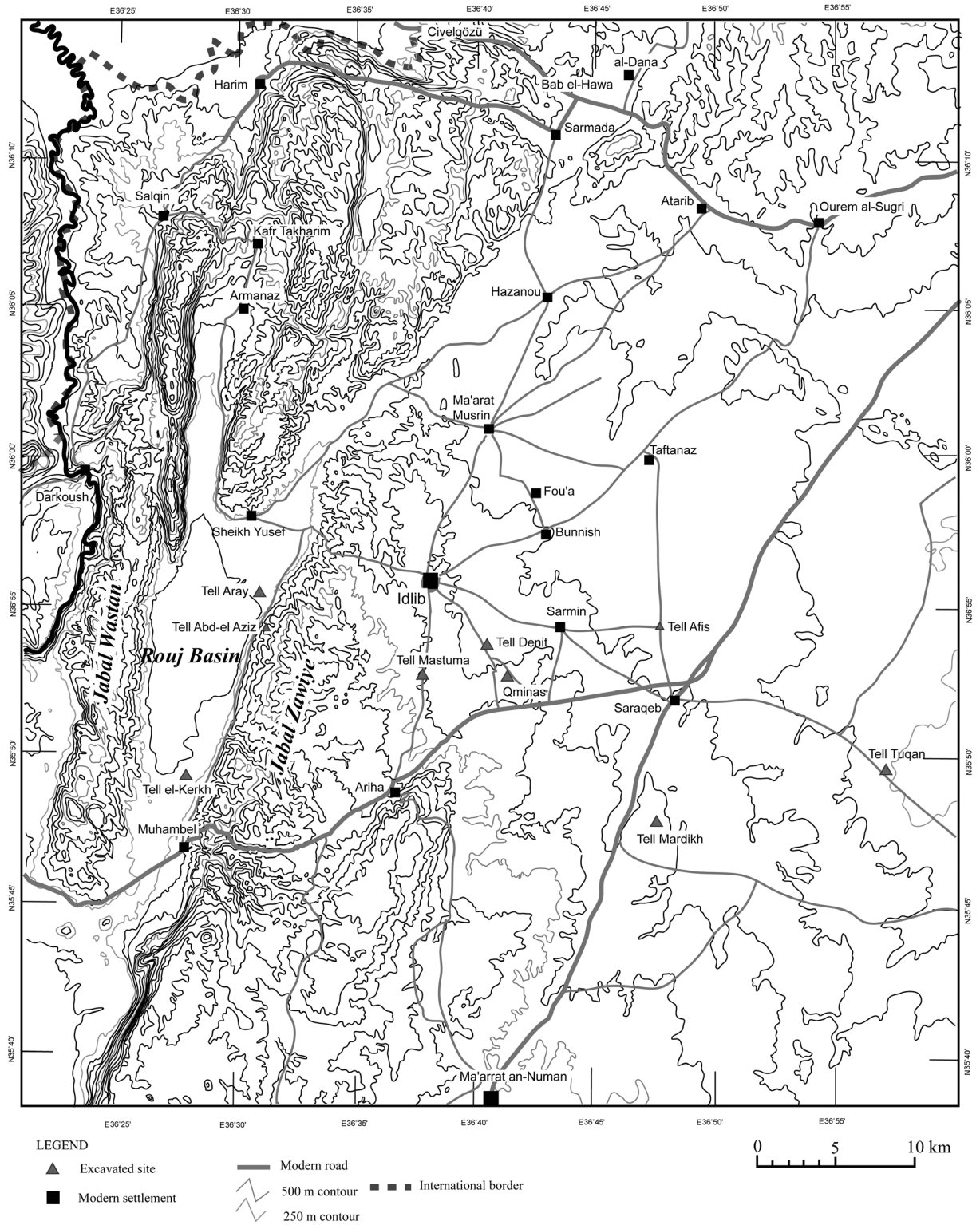


Figure 1.17 Archaeological sites in the Idlib region (drawing: Shin'ichi Nishiyama).

In order to understand the dynamics of the mode of settlement in the basin, three field surveys of the archaeological sites were carried out between 1990 and 1992.⁴³ More than 40 sites of different types (such as

tells, caves, and Byzantine tombs) have been found in the plain and the surrounding mountains (Figure 1.18). The tells are often located in the eastern part of the

⁴³ In addition to the surveys of 1990 and 1992 (Iwasaki *et al.* 1995; Iwasaki and Tsuneki 2003), we have recently found two sites: Tell Riz

and Qastun. Tell Riz lies in the extreme south of the Rouj basin. The site of Qastun is situated near Tell Qastun, in the north of the Ghab valley; it is an open-air site in a cotton field (see Chapter IV).

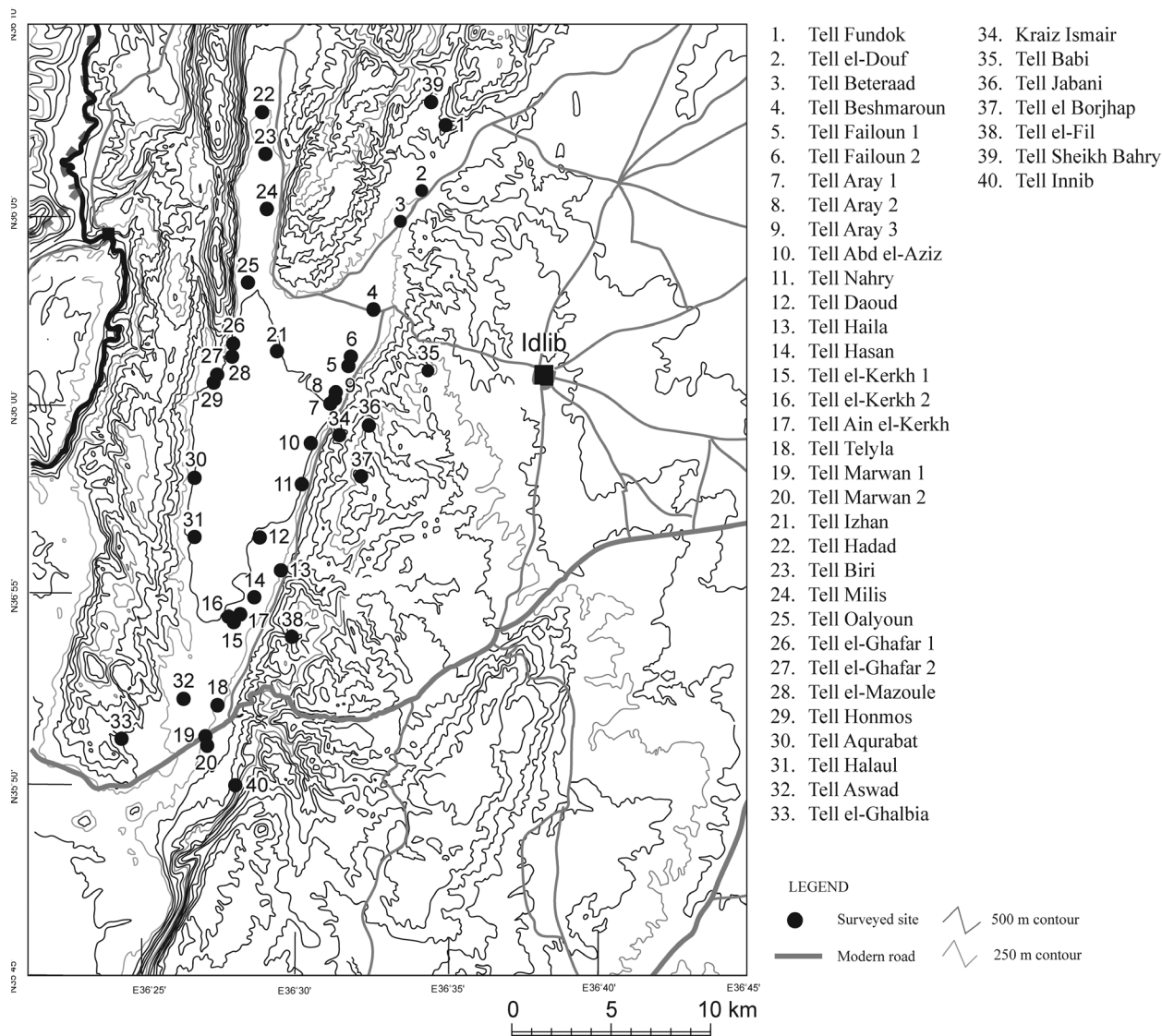


Figure 1.18 Sites surveyed and excavated in the Rouj basin (after Iwasaki and Tsuneki 2003: Fig. 2).

basin, at the foot of the Jabal Zawiye. Geomorphological studies show that this phenomenon is linked to water resources: springs are numerous in the east of the basin, along the Jabal Zawiye, because of its geological structure.

The diachronic change in the number of sites discovered by the surveys shows a variable density of sites according to the period (Figure 1.19). The Neolithic is one of the periods when settlements were quite numerous in the Rouj basin. Among the sites found in the years 1990–1992, 14 can be dated to the Neolithic (Figure 1.20). Study of the material shows that most of these sites belong to the Pottery Neolithic (Figure 1.19). However, the fact that this tendency probably reflects the ease of finding and recognising the Pottery Neolithic sites, thanks to the presence of pottery, must be taken into account. Moreover, it must be noted that the difference between the lithic industries of the Late PPNB and the

beginning of the Pottery Neolithic is not very great in this region; this makes it difficult to identify the Pre-Pottery Neolithic sites through surveys. Given the results from the deep levels at Tell Ain el-Kerkh, the Neolithic settlements in this region could date back to an earlier period (cf. infra).

The size of the Neolithic sites in the basin varies greatly. Tell Ain el-Kerkh and Tell Aray are the two largest Neolithic sites. The present-day dimensions of the tells are over 10 ha with several metres of archaeological deposits, indicating that they were major sites occupied successively and for long periods of time. On the other hand, there are sites of less than 1 ha with little accumulation of deposits, such as Tell Ghafar and Tell Telylat. In fact, it is difficult to estimate the site size by the current appearance of the site without excavations. The dimensions of the site were possibly different in the past compared with the present day because of

Site	Period	PPNB	PN	Chalcolithic			Bronze Age			Iron Age	Persian-Islamic
				Early	Middle	Late	Early	Middle	Late		
				1	2	3	4	5	6		
1. Tell Fundok											
2. Tell el-Douf											
3. Tell Beteraad											
4. Tell Beshmaroun											
5. Tell Failoun 1											
6. Tell Failoun 2											
7. Tell Aray 1											
8. Tell Aray 2											
9. Tell Aray 3											
10. Tell Abd el-Aziz											
11. Tell Nahry											
12. Tell Daoud											
13. Tell Haila											
14. Tell Hasan											
15. Tell el-Kerkh 1											
16. Tell el-Kerkh 2											
17. Tell Ain el-Kerkh											
18. Tell Telyla											
19. Tell Marwan 1											
20. Tell Marwan 2											
21. Tell Izhan											
22. Tell Hadad											
23. Tell Biri											
24. Tell Milis											
25. Tell Qalyoun											
26. Tell el-Ghafar 1											
27. Tell el-Ghafar 2											
28. Tell el-Mazoule											
29. Tell Honmos											
30. Tell Aqrabat											
31. Tell Halaul											
32. Tell Aswad											
33. Tell el-Ghalbia											

Figure 1.19 Rouj chronology and the sites surveyed and excavated (after Iwasaki *et al.* 1995: Fig. 26).

problems such as the depositions of multi-occupations and modification from natural causes. However, given the recent discussion on the phenomenon of the appearance of large sites during the PPNB in the Levant,⁴⁴ the excavations at Tell Ain el-Kerkh will be of interest in relation to the appearance of the large Neolithic sites in the Rouj basin.

Based on the analyses of the surface collections, four sites, Tell Aray 1 and 2, Tell Abd el-Aziz, and Tell el-Kerkh 2, offered hope of establishing a prehistoric sequence from the Pre-Pottery Neolithic to the Chalcolithic. Trenches were dug between 1990 and 1992. The results show that the four sites were inhabited according to the following diagram (Figure 1.21):

- Tell Aray 1: Occupation in the Pottery Neolithic, from the Halaf period to the Bronze Age;
- Tell Aray 2: Occupation in the Pottery Neolithic;
- Tell Abd el-Aziz: Occupation from the Pottery Neolithic to the Ubaid period;
- Tell el-Kerkh 2: Occupation from the Late PPNB to the Pottery Neolithic.

Finally, based on the data from the trenches dug on the four sites and on the surveys, a relative and local chronology has been established.⁴⁵ In the chronology of Rouj, the sequence from the Neolithic to the Islamic period is provisionally divided into 10 periods. The Neolithic period, which is our subject, represents the Rouj 1 and 2 periods, which correspond, respectively, to the Pre-Pottery and the Pottery Neolithic. In particular, thanks to the results from the trenches, the Rouj 2 period (Pottery Neolithic) has been subdivided into four periods. The state of knowledge of the Neolithic period in the Rouj basin before the excavation of Tell Ain el-Kerkh (1997–2002) is presented here.

Rouj 1 period

This concerns the Pre-Pottery Neolithic phase. This phase was found only in layers 7–12 at Tell el-Kerkh 2. Comparison of the material with that of the Syrian sites and a C14 date of layer 10 (8070±275 BP: N-6548) show that the level of the Pre-Pottery Neolithic at Tell el-Kerkh 2 corresponds to the Late PPNB in the Levant.

⁴⁴ cf. Bienert *et al.* 2004.

⁴⁵ Iwasaki *et al.* 1995.

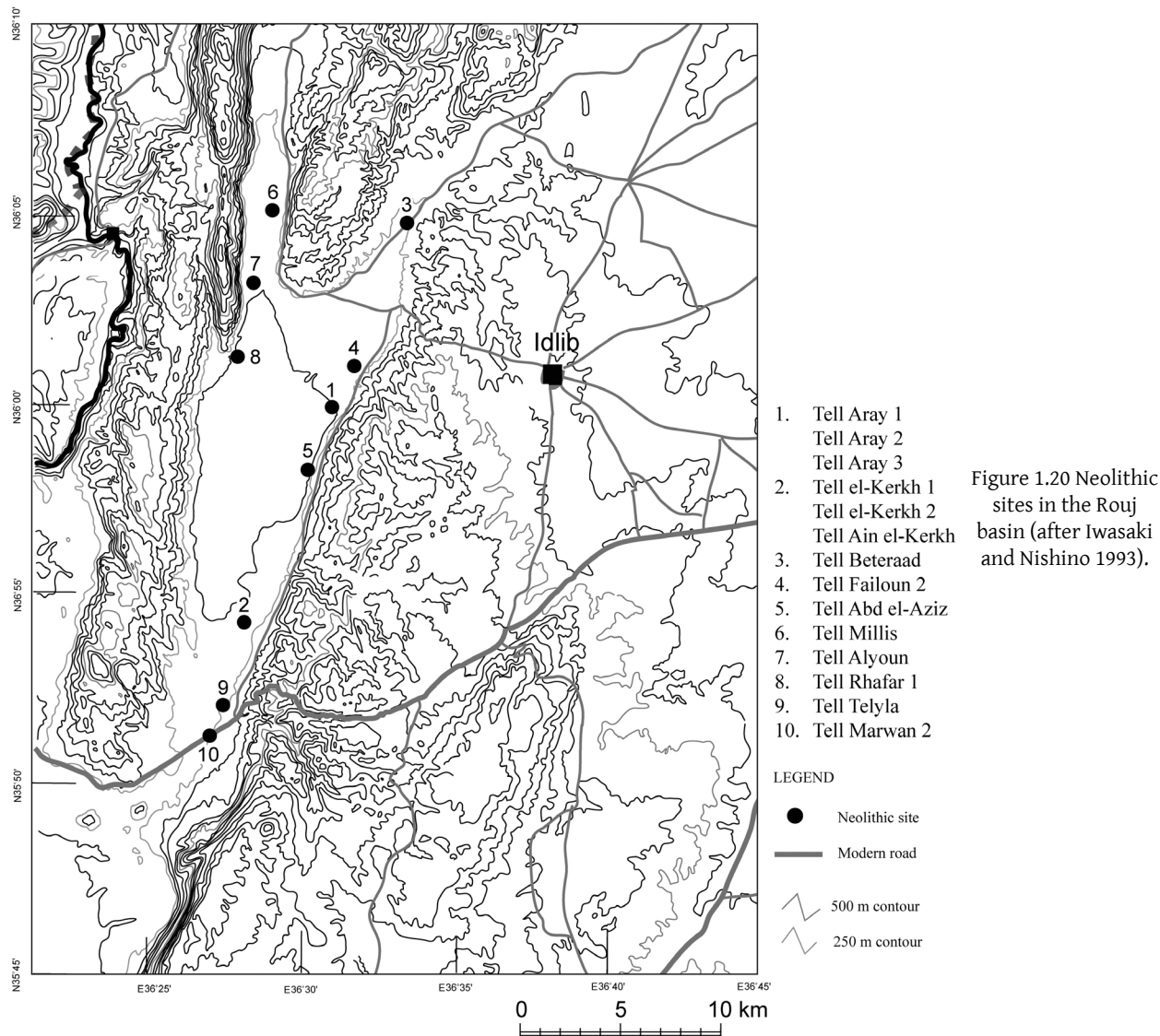


Figure 1.20 Neolithic sites in the Rouj basin (after Iwasaki and Nishino 1993).

Figure 1.21 Rouj chronology with the stratigraphies of the sites excavated during 1990–1992 (after Iwasaki and Nishino 1993).

Rouj Chronology	Kerkh 2	Aray 2	Aray 1	Abd el-Aziz	Levantine chronology
Rouj 6			5-8		Early Bronze Age
Rouj 5					Late Chalcolithic
Rouj 4				1-8	Ubaid
				9-14	
Rouj 3			9-17	15-18	Halaf
			18-21		Pottery Neolithic
Rouj 2		1-4	22-25		
	1-4	5-11			
	5-6				Late PPNB
Rouj 1	7-12				

Elements of rectangular architecture with small cells built with pisé have been discovered in layer 7. The tools include knapped flint and obsidian, polished tools in various rocks, and tools made of bone. The lithic industry in flint is characterised by blade fabrication, the shaping of points and sickle elements in particular.

Rouj 2 period

This concerns the Pottery Neolithic phase; the Rouj 2 period begins with the appearance of pottery at Tell el-Kerkh 2 and ends with the appearance of painted pottery of the Halaf type. According to the pottery sequence, this period is divided into four sub-periods.

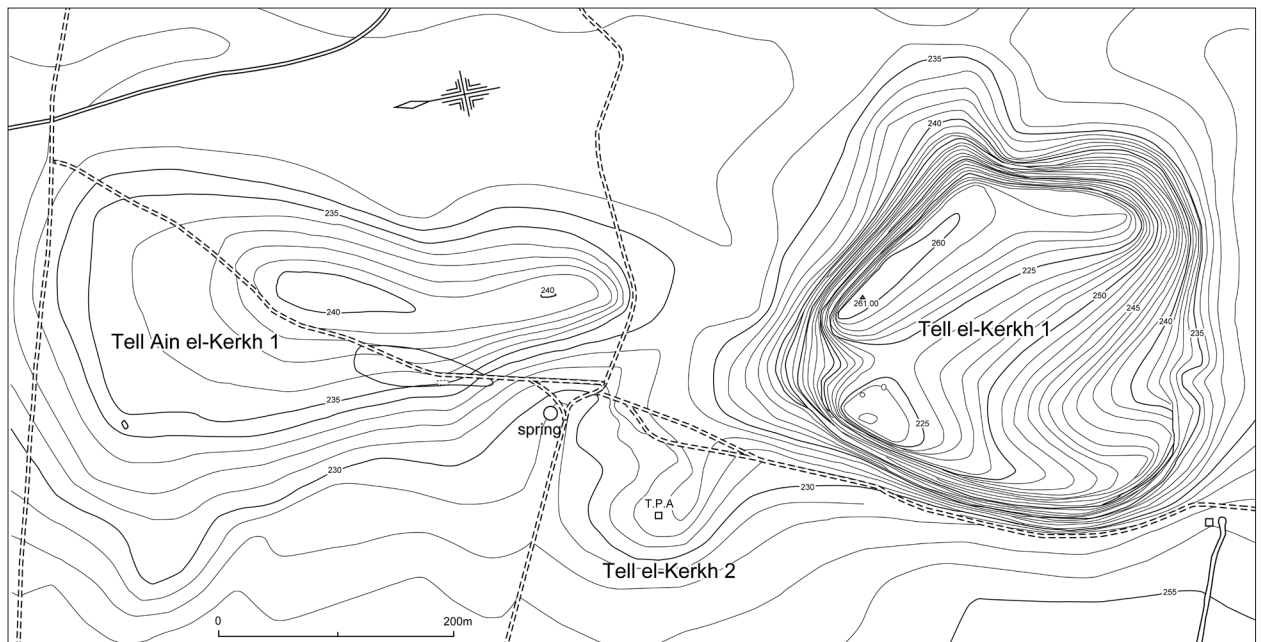


Figure 1.22 Map of Tell el-Kerkh: Ain el-Kerkh, Kerkh 1 and 2.

Rouj 2a (beginning of the 7th millennium cal. BC); this sub-period is characterised by the appearance of pottery ('Kerkh Ware' and DFBW).⁴⁶ Kerkh Ware constitutes a particular group that may have preceded the DFBW at Tell el-Kerkh 2. It is predominant in layers 5–6, and in the upper layers it disappears in favour of DFBW. According to the stratigraphic sequence and the techno-morphological similarity between these two groups of pottery, Kerkh Ware was considered to be the ancestor of DFBW.⁴⁷ It must be noted that Kerkh Ware is one of the oldest groups of pottery in the basin and in all of the northern Levant.

Rouj 2b (first half of the 7th millennium cal. BC): this sub-period is characterised by the predominance of DFBW in all the pottery. DFBW with impressed decoration is typical of this period. The other pottery group, crude pottery, is also present, but is much less common than DFBW. As for the structures of this period, a round construction, probably a kind of silo, was discovered in layer 3 of Tell el-Kerkh 2. Apart from the use of pottery, the tools of this period do not show any significant differences compared to those of the preceding period. At Tell Aray 2, as has been noted, the study of the fauna has demonstrated the presence of the four species (sheep, goats, cattle, pigs).

Rouj 2c (middle of the 7th millennium cal. BC); this sub-period is characterised by the increase in crude pottery

⁴⁶ This group is characterised by surfaces that are more or less polished, a dark colour, and a paste with mineral inclusions (Tsuneki and Miyake 1996).

⁴⁷ *ibid.*

such as the 'Husking trays' and the presence of a new pottery group, 'Cream Ware'. DFBW is still predominant and DFBW with varied decoration is noticeable in this period. The lithic industry shows some differences to the preceding one. Certain types of points, such as Ugarit and Byblos, which are numerous in the preceding periods, disappear almost completely.

Rouj 2d (end of the 7th millennium cal. BC): this concerns the final period of the Pottery Neolithic. A new decorative technique on the DFBW pottery, 'pattern burnishing', appears. The appearance of DFBW pottery with Halaf-type 'cream bowl' shapes is also characteristic of this period. The lithic industry resembles that of the preceding period but the production of flakes clearly increases in comparison with that of blades.

2.3. Excavations at Tell Ain el-Kerkh and the present state of research

2.3.1. New excavations at Tell Ain el-Kerkh (1997–2002)

Tell el-Kerkh is situated in the southern part of the basin, 2.5 km west of the foot of the Jabal Zawiye. This site is located at the edge of the alluvial cone originating from the Wadi Târoûf, one of the large valleys that developed in the Jabal Zawiye.

The site is composed of three tells, called respectively Tell Ain el-Kerkh, Tell el-Kerkh 1, and Tell el-Kerkh 2 (Figure 1.22). Tell el-Kerkh 1 is the highest of the three and also the largest tell in the Rouj basin; it resembles a fortified town of irregular square shape, about 40 m on each side. Material from several periods was collected,

Table 1.1 Stratigraphy of the Neolithic layers in sectors D and E (1997–2000 seasons).

Period	Sector D	Sector E		
Rouj 2	d	Layers 1-2	Pottery Neolithic	
	c	Layers 3-6		
	a / b	Layers 1-2		*
Rouj 1	c	Layers 3-5	Pre-Pottery Neolithic	
	b	Layer 6?		*
	a	Layers 7-10		*

* not excavated

from the Neolithic to the Islamic period; it is thus difficult to determine the precise period of this fortified town.

However, the main period of occupation of Tell el-Kerkh 2 and Tell Ain el-Kerkh is limited to the Neolithic.⁴⁸ Tell el-Kerkh 2, situated between Tell el-Kerkh 1 and Tell Ain el-Kerkh, is a small circular hill (about 180 m in diameter). As mentioned above, a trench (5 × 5 m) was dug in 1992; 4.5 m deep, it revealed successive layers of occupation from the Late PPNB to the beginning of the Pottery Neolithic (Rouj 1 to Rouj 2b).⁴⁹

Finally, Tell Ain el-Kerkh is a large hill of about 500 × 450 m. The present-day surface area of the tell is more than 10 ha. This does not correspond to the usual dimensions of a Neolithic village; from the results of the trenches dug in different parts of the tell, it is possible that the tell may have consisted of several tells (see below), and thus estimating the size of the site for each period requires prudence. Because of the abundance of surface material attributable to the Neolithic, and its large size, Tell Ain el-Kerkh was chosen for excavation. The appearance of extensive sites in the Middle and Late PPNB is a generalised phenomenon, noticed by several researchers.⁵⁰ Tell Ain el-Kerkh would thus appear to be an ideal site to understand the establishment of large Neolithic sites in north-western Syria. The excavations began in 1997 under the direction of a Syro-Japanese team (directors: Akira Tsuneki and Jamal Haydal), and up to 2002 six field surveys were carried out.⁵¹ During these surveys, 8 squares of 100 m² each were excavated, and several small trenches were also dug to determine the size of the site (Table 1.1 and Figure 1.23).

⁴⁸ In sector E, a late Chalcolithic pit (comparable to the late Amuq F phase) and graves of the Hellenistic period were found at the surface. In the south of the site, a Byzantine tomb constructed in stone was excavated in 1998. Byzantine pottery is present in abundance on the surface around this tomb. Moreover, in 2001 a Byzantine house with a mosaic floor, probably a church, was found at the foot of Tell el-Kerkh 1. In the Byzantine period, dwellings were usually located in the mountains, as at Serjila, and the Byzantine remains at Kerkh suggest the presence of a religious centre in this period.

⁴⁹ Iwasaki and Tsuneki 2003.

⁵⁰ Cf. Bar-Yosef and Meadow 1995.

⁵¹ Tsuneki *et al.* 1997; 1998; 1999; 2000.

Sector D (north-west excavation area)

North-west part of the tell. This area forms a protuberance, causing it to resemble an independent tell. In fact, the results obtained in several trenches in the north-west part of the tell appear to confirm this hypothesis (see further on).

In this sector, two squares (D6 and D26) were first opened in the 1998 survey (Table 1.2). It is the only sector where the excavations reached virgin soil (Figure 1.24) and it has produced the earliest occupations of Tell Ain el-Kerkh. The lower layers (layers 7–10) are of an earlier phase than the Late PPNB, which was the earliest phase in the basin when the chronology of El-Rouj was established. The characteristics of the lithic industry (see Chapter III for details) and the C14 dates of these layers (Figure 1.24 and Table 1.3) show that they can be dated to the Early PPNB of the northern Levant. This discovery has led to the division of the Rouj 1 period into three sub-periods, 1a, 1b and 1c (*infra*). The material collected in these lower levels, such as fauna or knapped flint, is relatively abundant for the area excavated (5 × 5 m). However, no architectural remains were found, and only some hearths or hollows filled with earth, ashes, and charcoal were discovered.

Given the C14 dates obtained, the upper pre-pottery layers (layers 3–6: the Rouj 1c period) are attributed to the Late PPNB. However, as discussed in Chapter III, lithic studies of these layers show that the lithic industry of layer 6 can be distinguished from that of the upper layers (layers 3–5). This suggests the possibility that layer 6 belongs to the Middle PPNB (Rouj 1b period). In layers 3–6, the constructions found are generally poorly preserved; there are several partial rectangular constructions in limestone, probably the bases of walls (Figure 1.25).

The Pottery Neolithic level (layers 1–2) corresponds to the Rouj 2a and 2b periods. There is very little Kerkh Ware, a main indication for the Rouj 2a period, which does not allow distinction of the layers between Rouj 2a and 2b.⁵² In this study, the Pottery

⁵² As already mentioned, in the Rouj chronology, the difference between Rouj 2a and 2b rests simply on the proportion of Kerkh

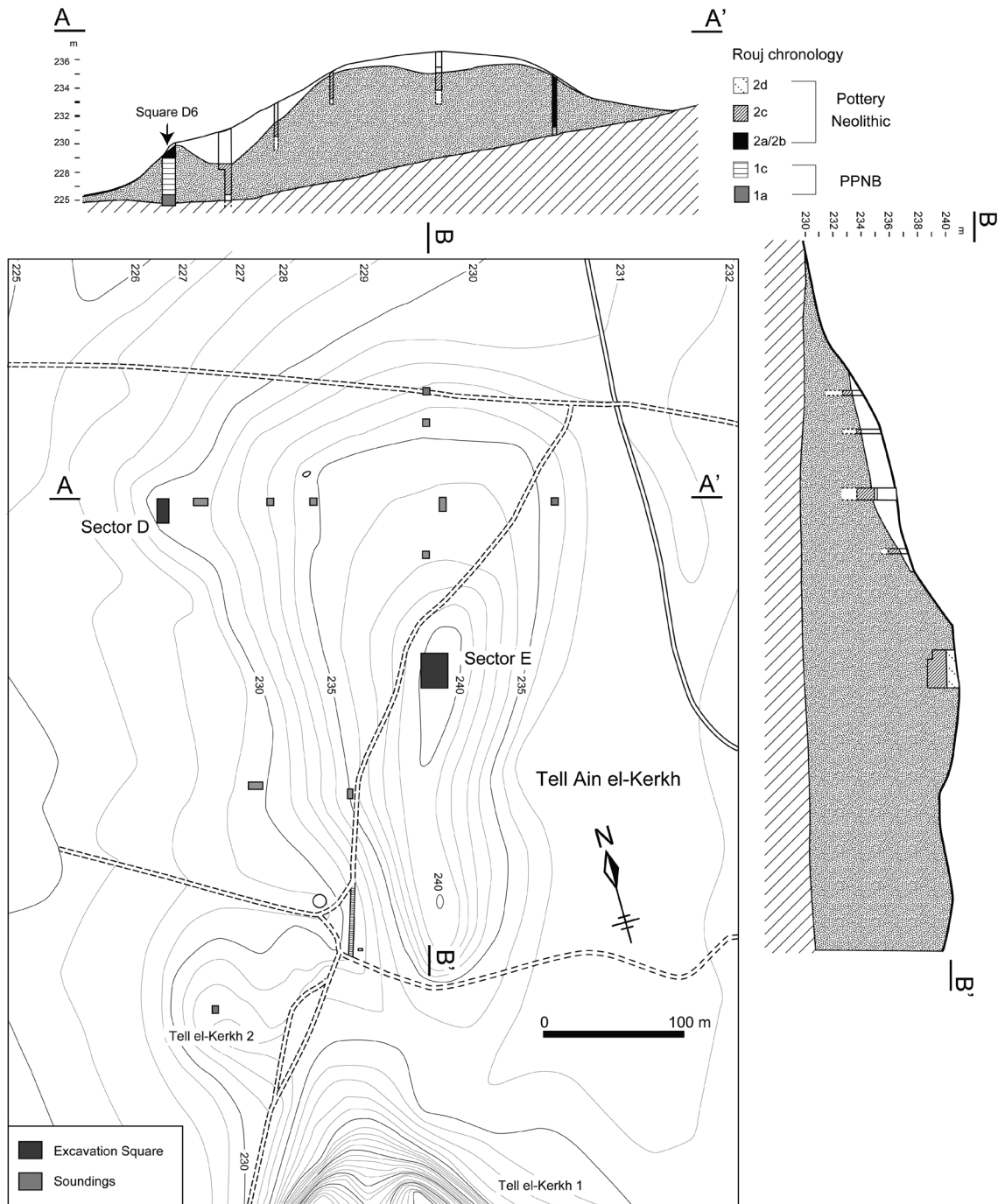


Figure 1.23 Tell Ain el-Kerkh. Situation of the excavation squares, trenches dug and presumed sections of the tell (1997–2000 seasons).

Neolithic level of sector D is considered equivalent to Rouj 2a/2b: that is, the beginning of the Pottery Neolithic. As for the stone constructions, there are two rows of stones forming an angle (Str. 113: Figure 1.26) and pavings of small limestone blocks (Figure 1.27); the first element was perhaps a terrace since clayey earth with very few artefacts was packed inside and above the rows of stones. As for structural

remains of the Pottery Neolithic level, only some pits and hearths were found.

Table 1.2 Stratigraphy of the Neolithic layers in sector D.

Period	Square D6	Square D26
Rouj 2a/2b	Layers 1-2	
Rouj 1c	Layers 3-5	*
Rouj 1b	Layer 6?	*
Rouj 1a	Layers 7-10	*

* not excavated

Ware, according to the results of a trench (5 × 5 m) at Tell el-Kerkh (1992). The existence of the Rouj 2a period in which Kerkh Ware is predominant needs to be verified in the future by more data.

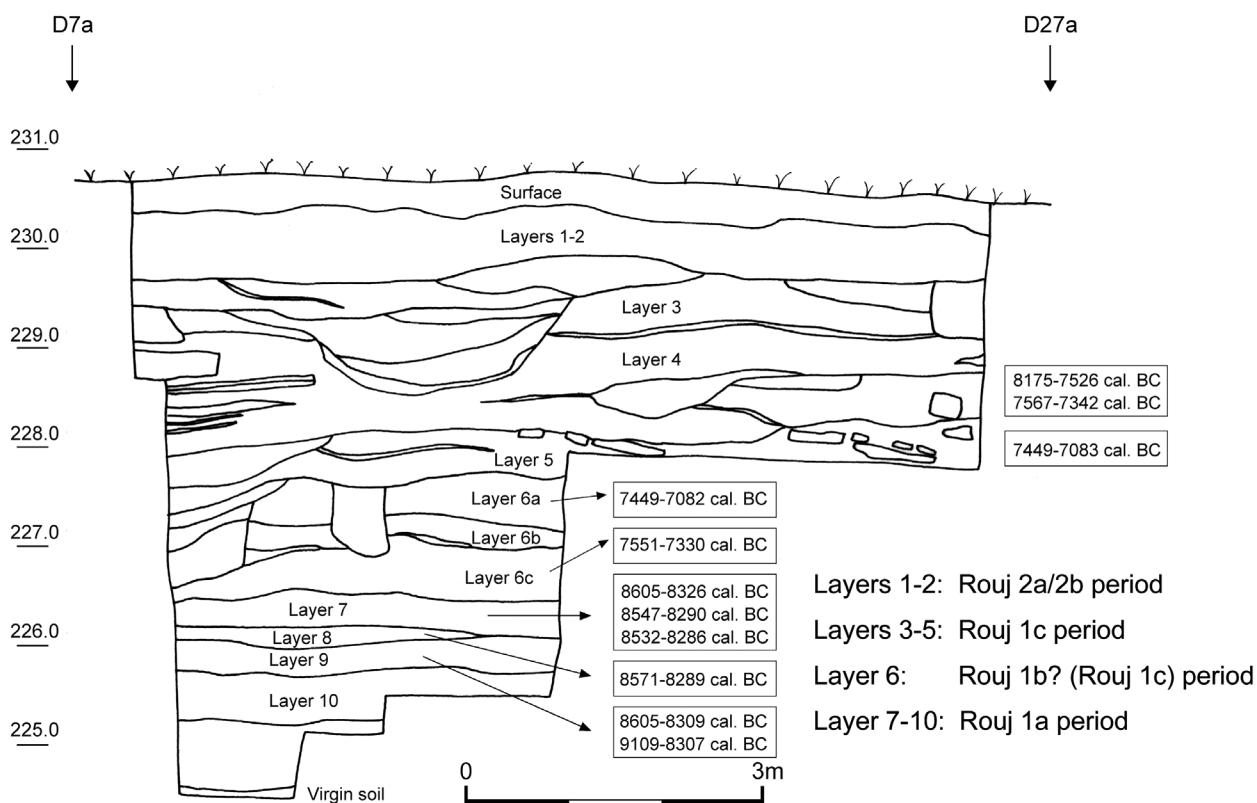


Figure 1.24 Tell Ain el-Kerkh. East section of square D6.

Table 1.3 Absolute dates of square D6.

Sector D Layer	Period	Sample No.	¹⁴ C age BP	cal. BC (2σ)*	Laboratory No.	N. Levant chronology
4	Rouj 1c		8660±100 8390±50	8175-7526 7567-7342	NUTA2-2106 NUTA2-2109	Late PPNB
5	Rouj 1c	AK01 D6b-3	8235±40	7449-7083	Lyon-2554 (OxA)	Late PPNB
6a	Rouj 1b?	AK01 D6b-24	8230±45	7449-7082	GrA-22266	Middle PPNB?
6b	Rouj 1b?	AK01 D6b-32	8380±50	7551-7330	GrA-22275	Middle PPNB?
7	Rouj 1a	AK02 D6b-18 AK02 D6b-22 AK02 D6b-29	9250±40 9185±55 9165±40	8605-8326 8547-8290 8532-8286	Lyon-2555 (OxA) Lyon-2860 (Poz) Lyon-2556 (OxA)	Early PPNB
8	Rouj 1a	AK02 D6b-31	9205±60	8571-8289	Ly-12086	Early PPNB
9	Rouj 1a	AK01 D6b-44 AK01 D6b-45	9240±50 9350±90	8605-8309 9109-8307	GrA-22276 GrA-22277	Early PPNB

* calibration program: OxCal version 4.3.2

Sector E (central excavation area)

Sector E is situated in the middle of the tell, which is the highest point. In order to understand the spatial organisation of the Neolithic village, a large area was exposed by the excavations. Six squares were excavated in all (squares E310, 311, 290, 291, 270, 271) and the excavation surveys from 1997 to 2002 have revealed Pottery Neolithic settlements. In this sector, the settlements can be grouped into two main phases according to the differences in the pottery

assemblages. The lower layers (3–6) are attributed to the Rouj 2c period. Given the C14 dates of the different layers (Table 1.4) and the quite thick deposits (more than 3 m), the Rouj 2c period occurred between 6600 and 6100 cal. BC, which represents a large part of the Pottery Neolithic phase; ongoing studies of the pottery show that this period can be divided into two or three sub-periods. In comparison with sector D, the architectural constructions were well preserved and several rectangular constructions in pisé or in brick, often composed of small rooms, were brought to light

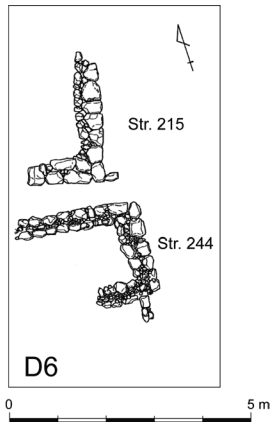


Figure 1.25 Tell Ain el-Kerkh. The constructions of layer 5 (Rouj 1c) in square D6.

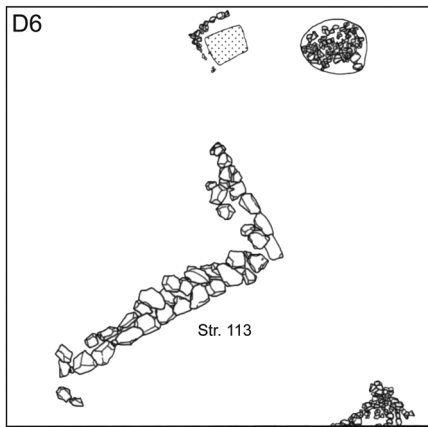


Figure 1.26 Tell Ain el-Kerkh. The constructions of layer 1 (Rouj 2a/2b) in squares D6 and D26.

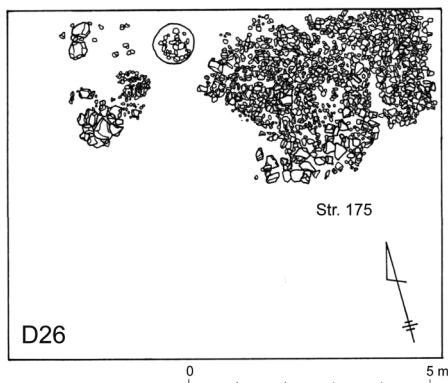


Figure 1.27 Tell Ain el-Kerkh. The constructions of layer 2 (Rouj 2a/2b) in square D26.

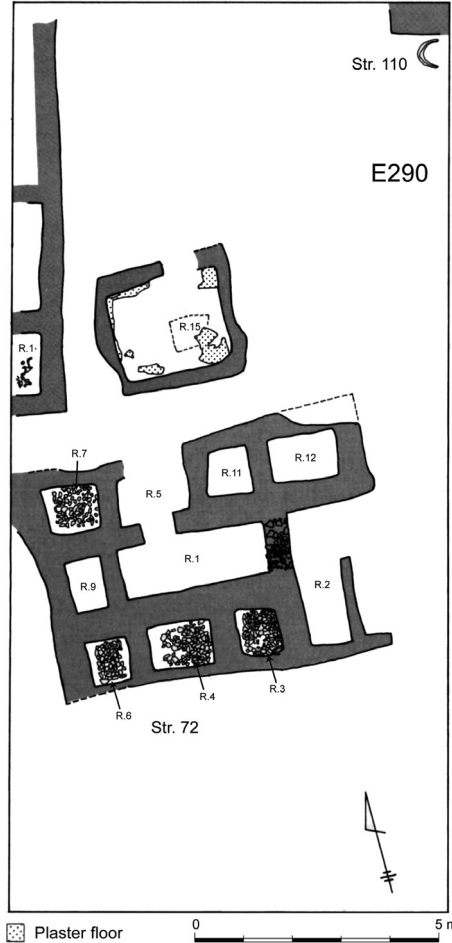
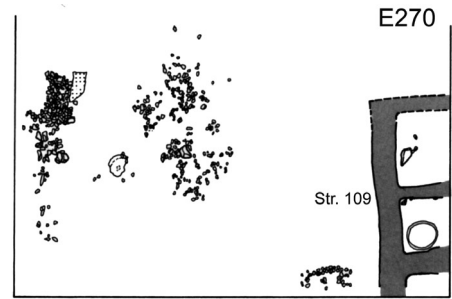


Figure 1.28 Tell Ain el-Kerkh. The constructions of layer 5 (Rouj 2c) in sector E.

(Figure 1.28). Moreover, a square pit (Str. 153), which may have had a ritual function, is remarkable for this period.⁵³ Most of the burials are found in these layers.⁵⁴ The abundance of non-utilitarian objects, such as beads, seals, and clay seal impressions, is characteristic of this period.

The upper layers (1–2) are attributed to the Rouj 2d period, the last phase of the Pottery Neolithic. In comparison with the previous period, the architectural constructions are poorly preserved and almost always incomplete, composed of several rows of stones (Figure

⁵³ Tsuneki 2002.

⁵⁴ Hudson *et al.* 2003.

Table 1.4 Absolute dates of sector E.

Sector E Layer	Period	Sample No.	¹⁴ C age BP	cal. BC (2σ)*	Laboratory No.	N. Levant chronology
1b	Rouj 2d	E271a-18 Str. 222	6950±50	5976-5731	Nuta2-2105	Pottery Neolithic or Early Halaf
3	Rouj 2c	E271 Str. 240	7230±40	6211-6021	Nuta2-2104	Pottery Neolithic or Early Halaf
4	Rouj 2c	E270-290	7420±45	6403-6220	Nuta2-2089	Pottery Neolithic or Pre-Halaf
6	Rouj 2c	E310 Str. 167	7670±45	6597-6442	Nuta2-2023	Pottery Neolithic or Pre-Halaf
6	Rouj 2c	E310 Str. 167	7730±80	6751-6430	Nuta2-2024	Pottery Neolithic or Pre-Halaf
6	Rouj 2c	E310 Str. 167	7830±50	6906-6506	Lyon-12087	Pottery Neolithic or Pre-Halaf

* calibration program: OxCal version 4.3.2

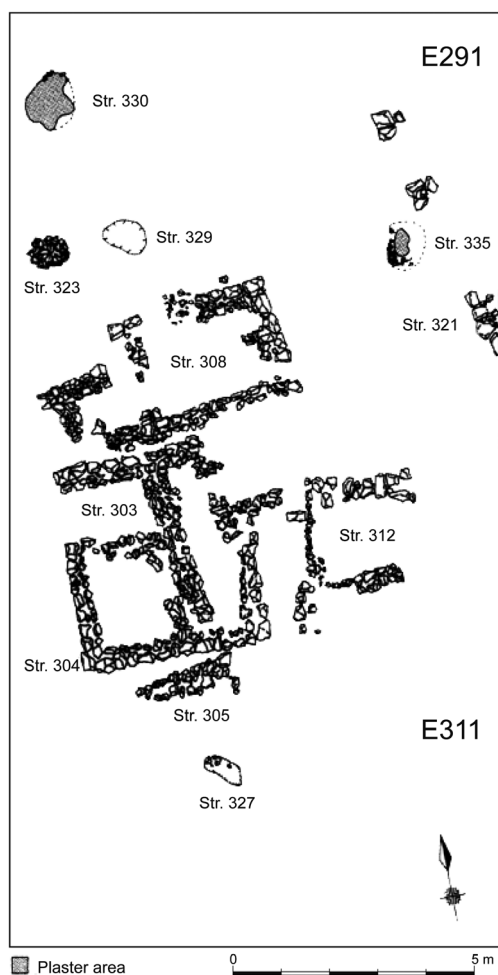


Figure 1.29 Tell Ain el-Kerkh. The constructions of layer 2 (Rouj 2d) in sector E.

1.29). In addition, three pits containing DFBW pottery that had been intentionally broken were found in square E310, which may be evidence of a ritual activity.⁵⁵

⁵⁵ Tsuneki et al. 1997.

Trenches

Trenches were dug in various parts of the tell to confirm the assessment of the deposits for each period (Figure 1.23). They showed that the ancient shape of the tell was different from that of today and that it varied according to the period. The main results are as follows:

- For the moment, none of these trenches has produced a level of the Early PPNB phase, Rouj 1a, like the one found in sector D. This indicates that the site of the Rouj 1a period was much smaller than the present tell and that it probably only extended around sector D of the excavation;
- During the Rouj 1c and 2a/2b periods (Late PPNB and the beginning of the Pottery Neolithic), the site was probably composed of several tells; at least two different tells can be distinguished (Figure 1.23);
- In the following period, Rouj 2c, the expansion of the site probably reached its maximum; deposits from this period have been uncovered on most of the present tell;
- At the end of the Pottery Neolithic, Rouj 2d, the size of the site had diminished; the occupations of this period are only identified at the summit of the tell.

2.3.2. Revision of the Rouj chronology

The new results from the excavations at Ain el-Kerkh have led to both greater accuracy in the periodisation of the Rouj chronology, and confirmation of the previous results of the years 1990–1992 (Table 1.5).

Rouj 1a period

This new sub-period was defined on the basis of the results from layers 7–10 of sector D. For the absolute

Table 1.5 Rouj Chronology (2006 version).

Rouj chronology	cal. BC	N. Levant chronology
Rouj 2d	ca. 6100 - 5700	Pottery Neolithic/ Early Halaf
Rouj 2c	ca. 6600 - 6100	Pottery Neolithic/ Pre-Halaf
Rouj 2a/2b	ca. 7000 - 6600	Pottery Neolithic/ Pre-Halaf
Rouj 1c	ca. 7600 - 7000	Late PPNB
Rouj 1b	ca. 8300 - 7600	Middle PPNB
Rouj 1a	ca. 8700 - 8300	Early PPNB

dates of this period, the six samples taken from different layers provide homogeneous dates, varying approximately from 8500 to 8300 cal. BC. These dates coincide well with the Early PPNB of the northern Levant (8700–8200 cal. BC). This also corresponds with the results obtained by the study of the lithic material.

Rouj 1c period

This period is well attested by layers 3–6 of sector D. All the C14 samples from these layers, except for one sample from layer 4 (8660±100 BP: NUTA 2-2106), provide comparable dates; these vary from 7400 to 7000 cal. BC (8400–8200 BP) and coincide well with the Late PPNB in the northern Levant (ca. 7600–7000 cal. BC). These dates indicate a break in occupation after the layers of the Rouj 1a period, about 1000 years; the Middle PPNB phase (ca. 8200–7500 cal. BC) appears to be missing at Tell Ain el-Kerkh. However, although the dates of layer 6 correspond to the Late PPNB like those of layers 3–5, the lithic industry of layer 6 shows that this layer could belong to the Middle PPNB (Rouj 1b period, see Chapter III). In any case, a Middle PPNB phase has not yet been clearly identified at Tell Ain el-Kerkh according to the present data, and only future work will disprove or confirm this hypothesis.

Rouj 2a/2b period

Layers 1–2 of sector D, which follow the pre-pottery layers, produced the first phase of the Pottery Neolithic. Although we do not yet have absolute dates for this period, given the chronological sequence and the dating of the preceding and following periods, this period is probably situated at the beginning of the 7th millennium cal. BC.

Rouj 2c period

The main layers of sector E showed that this is a long phase in comparison with the other pottery phases; this period corresponds to the greater part of the 7th

millennium cal. BC (ca. 6600–6100 cal. BC). Given the results obtained in sector E and also in the trenches, the maximum extension of the site dates to this period. Abundant evidence of diverse activities such as the fabrication of ornaments, and administrative objects such as the seals and clay seal impressions, points to a significant level of socio-economic development in this period.

Rouj 2d period

The last pottery phase is dated to the end of the 7th millennium cal. BC (ca. 6100–5700 cal. BC). This phase was mainly found at the summit of the tell; the size of the site appears to decrease in comparison with the preceding period. Moreover, the characteristics of the construction of houses is different, especially the frequency of house reconstruction in terms of orientation and the dispersion of the constructions.

2.3.3. Re-examination of the Neolithic sites in the Rouj basin

The sites surveyed in the Rouj basin have been re-examined in the light of the new data from Tell Ain el-Kerkh (Figure 1.30). An increase in the number of Pottery Neolithic sites can be ascertained, especially in the Rouj 2c and 2d periods. On the other hand, relatively few sites can be attributed to the pre-pottery phases; indeed, apart from Tell el-Kerkh, only one other site of the Rouj 1c period is known (Ghafar 1). Moreover, thanks to the data from Tell Ain el-Kerkh, two sites can be attributed to the Rouj 1a period (Early PPNB); these sites are dealt with in Chapter IV.

Thus, in the present state of research, an increase in the number of sites in the basin beginning in the Pottery Neolithic has been confirmed. However, it must be noted that, as the Early PPNB phase was revealed at the base of Kerkh, pre-pottery deposits have perhaps been covered by later deposits. It is probable that new research will enable the discovery of other sites of this period.

THE NEOLITHIC LITHIC INDUSTRY AT TELL AIN EL-KERKH

Site \ Period	Rouj 1a	Rouj 1c	Rouj 2a / 2b	Rouj 2c	Rouj 2d
cal. BC	8700 – 8300	7600 –	7000 –	6600 –	6100 –
Tell Abd-el Aziz					
Tell Alyoun					
Tell Alay 1					
Tell Alay 2					
Tell Alay 3					
Tell Beteraad				?	
Tell Failoun 2					
Tell el-Ghafar 1					
Tell el-Kerkh 1					
Tell el-Kerkh 2					
Tell Ain el-Kerkh					
Tell Marwan 2					
Tell Milis					
Tell Telyla					
Tell Riz					
Qastun					
N. Levantine Chronology	PPNB		Pottery Neolithic / Pre-Halaf		Early Halaf

Figure 1.30 Neolithic sites in the Rouj basin according to the present state of research (2006 version).