NEO-LITHICS 1/16

The Newsletter of Southwest Asian Neolithic Research

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Editorial

On several occasions we co-editors of Neo-Lithics have discussed a peer-reviewed and open access format of the newsletter, encouraged by repeated appeals from our colleagues to provide a publication opportunity that also serves the need to promote careers, *e.g.* by collecting impact points. We hesitated: We didn't want to be just another peer-review network, with problems in transparency, with manipulation opportunities by selecting reviewers, for helping mainstream research topics and strategies, and the like. Knowing our capacities, we also wanted to avoid the immense administrative and moral work related to the organization of peer reviews. Rather we wanted to continue being a 1) direct gate to quickly publish information on important new findings from the Neolithic fields and labs with just a lighter editor-based reviewing, 2) an alternative for Neolithic topics not easily placed in other journals, 3) a place for field reports often considered not reviewable, and 4) especially a chance for young researchers – especially from the Middle East - outside existing research networks to launch their first publications under less severe conditions, to promote regional expertise. How to maintain these goals when introducing peer review?

The discussion is still ongoing and we seek your comments, advice, and collaboration. We can imagine to be an open access newsletter by applying testable standards of transparency, organizing a non-anonymous peer reviewing for our sections *Field Reports* and *Contributions* while keeping the "documentary" sections of reports on conferences, news on books and thesis, *etc*. unreviewed. Our sorrow is, however, that this might lead to the exclusion of worthy information presented by younger colleagues who do not meet advanced standards of research presentation and analysis. But this might become the chance for another type of reviewing, understanding it as coaching authors and raising the discursive levels of contributions by adding - in one way or another - the reviewers' points of view? By reaching high quality contributions through strong acceptance hurdles, resulting from an intense transparent negotiation of results between the author and sponsoring or even nursing non-anonymous reviewers, we can make peer reviewing in Neo-Lithics an interactive motor for high quality Neolithic research, and an investment into the academic offspring as well. It would mean that we would need a much larger community of peer reviewers (or peer coaches), ready to be committed to this future format of Neo-Lithics. It even can result in a paradigm of another type and culture of peer review. Is this idea beyond academic reality, too much idealistic or even naïve?

Upon the publication of this editorial, we will launch this discussion also into the mailing list Forum Neo-Lithics, to open a broader discussion on a potential change of the Neo-Lithics format.

The co-editors Hans Georg K. Gebel, Marion Benz, Dörte Rokitta-Krumnow, joined by Gary Rollefson.

The Aegean Before and After 7000 BC Dispersal: Defining Patterning and Variability

Çiler Çilingiroğlu

Introduction

Recent studies provide a coherent picture of a coastal Neolithic dispersal from southwest Asia to the Aegean in the first half of the 7th millennium cal BC using maritime navigation (Perlès 2001; Özdoğan 2011; Çilingiroğlu and Çakırlar 2013; Arbuckle *et al.* 2014; Horejs *et al.* 2015). Key sites along the route show that while new permanent sites were founded on inland or coastal plains, at others, where Mesolithic occupations were present forager-farmer interactions resulted in exchange of goods and technologies in the first instance and then replacement or displacement of local foragers (Munro and Stiner 2015). In this contribution, I will focus on a major dispersal event enacted by multiple small groups moving with domestic plants and herd animals transmitting southwest Asian cultural affinities to few selected localities in the Aegean, around 7000-6600 cal BC, thereby drastically altering the somewhat isolated living of well-established and highly mobile Aegean foragers. This short-term but significant dispersal process can be identified at several sites from western Anatolia, Crete and Argolis only, marking the archaeologically most visible earliest neolithization process of the eastern and western Aegean (Fig. 1).

The process manifests itself archaeologically at few known key sites with common features as well as variabilities (Table 1). As emphasised by Kotsakis (2008), the non-homogeneous and complex nature of this dispersal process resulted not only from temporal

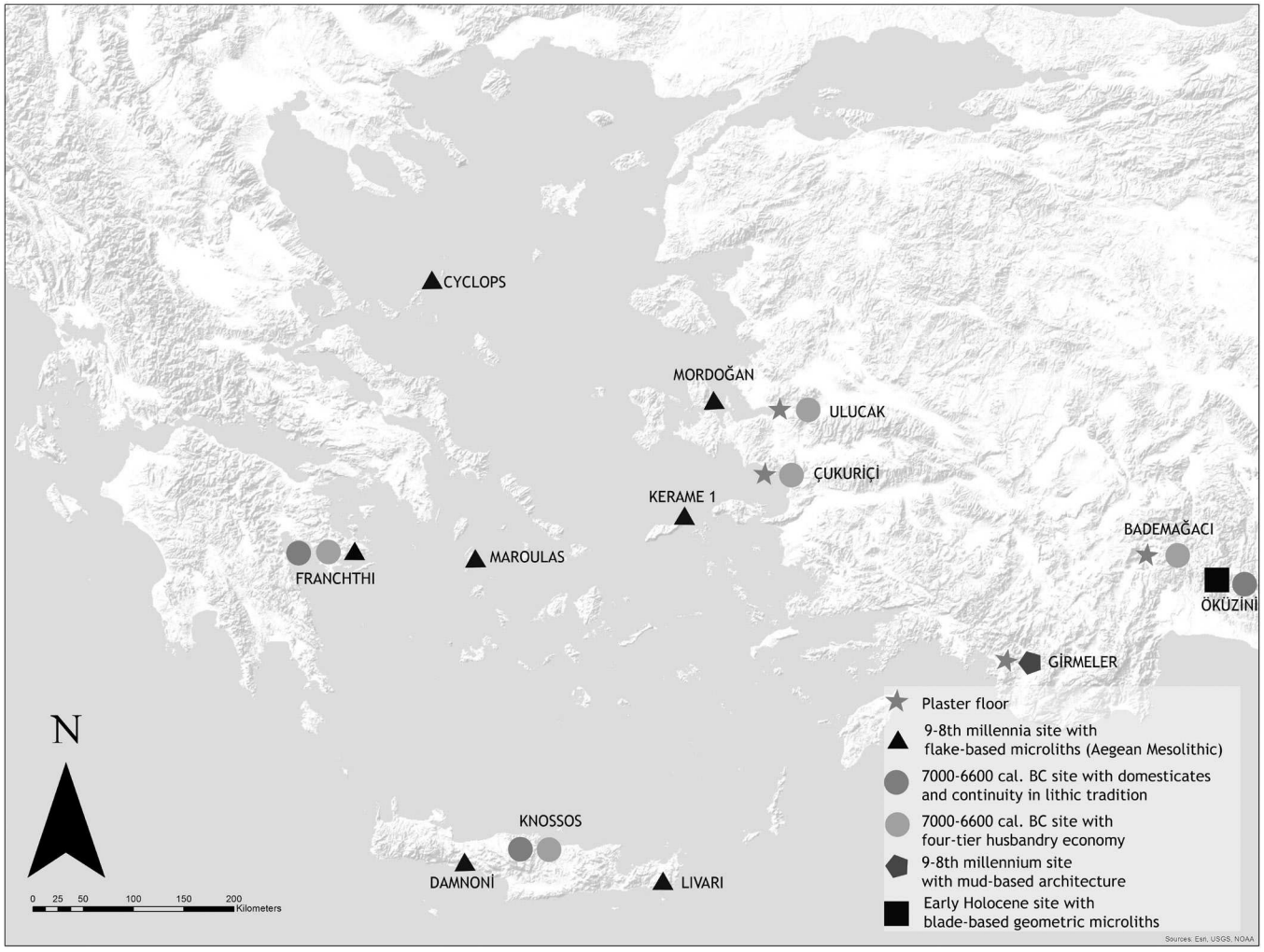

Fig. 1 The location of key sites discussed in the text. The legend aims to highlight the changing nature of archaeological manifestations from pre- and post-7000 BC Aegean. (map: C. Çilingiroğlu)

7000-6600 cal. BC Key Sites	ÖKÜZİNİ	BADEMAĞACI	ULUCAK	ÇUKURİÇİ	FRANCHTHI	KNOSSOS
FOUR-TIER HUSBANDRY	?	X	X	X	X	X
DOMESTIC CEREALS AND PULSES	X	X	X	X	X	X
MUD-BASED ARCHITECTURE	-	X	X	X	-	X
PLASTER FLOORS	-	X	X	X	-	-
PRESSURE FLAKING	-	?	?	X	X	-
FLAKE-BASED LITHICS	-	-	X	-	X	X
BLADE-BASED LITHICS	X	X	-	X	-	-

Table 1 Major archaeological proxies marking the 7000-6600 cal. BC dispersal showing common as well as diverse sets of items.

and environmental factors, but also, and perhaps more importantly, from social and cultural variables. Farmer-herder groups new to a given region may have had diverse cultural practices related to ideology and identity resulting in different sets of material culture and architectural features. These groups may have had on-going and intense interaction with local foragers over centuries influencing and altering certain forms of technologies and practices. Adaptation to new environmental settings and resources may also have affected the nature of utilitarian items used by farmer-herders despite heavy reliance on food production. Additionally, as suggested by Munro and Stiner (2015) diverse groups in different times may have used a variety of maritime routes with different sets of challenges to allow or restrict transport of certain items, especially herd animals.

This seemingly widespread trend to move and establish permanent sites must have followed yet earlier explorations of these areas made by real pioneers in the late 9th and 8th millennia cal BC as suggested by recent evidence from Girmeler Cave (Takaoğlu *et al.* 2014). These findings may indicate that the relatively major movement of 7000-6600 cal BC was a consequence of earlier non-massive mobility that explored "new" landscapes and resources fostering contacts with foragers in western Anatolia and the Aegean. In the later and more visible dispersal trend that is the subject matter of this contribution, it seems like farmer-herders either settled at areas that were not optimal for foragers or displaced them. Although the archaeological record is still poor for this kind of discussions and new research may refine the present picture, aDNA evidence suggests that social interaction or exchange of spouses remained at a minimum between farmers and foragers in the 7th-6th millennia cal BC (Hofmanová *et al*. 2016; Kılınç *et al*. 2016).

The Aegean and Coastal West Turkey Before 7000 cal BC

The last decade has experienced significant progress in Aegean archaeology in terms of Mesolithic research (Galanidou 2011). Mesolithic sites are excavated in southern Crete (Strasser *et al.* 2014; Carter 2016), Aegean islands show remarkable remains of forager sites with architecture and burials (Sampson *et al.* 2012), surveys reveal new find spots on the Cycladic islands (Carter *et al.* 2014) and on the western coast of Turkey (Çilingiroğlu *et al*. 2016). As Sampson *et al.* (2012) suggest Mesolithic architectural features from sites like Maroulas and Kerame 1 may belong to multi-seasonal or even year-round sites of Aegean foragers. While we see permanent sites with food-producing populations in Southwest Asia, in the Aegean we encounter 9th-8th millennia cal BC foragers occupying caves, rock shelters and open-air sites, exploiting certain environmental niches, especially island resources such as migratory and coastal marine fish, hunting wild goat and other mammals, collecting various wild botanical taxa (Trantalidou 2011). Based on the very characteristic, flake-based chipped stone industries, Kozlowski and Kaczanowska (2009; also Sampson *et al.* 2012) define an "Early Holocene Aegean Islands Tradition" that is distinct both from all the contemporary industries from the eastern Mediterranean as well as from the blade-based industries using pressure-flaking of the western and eastern Aegean during the 7th-6th millennia cal BC. As such, the Aegean Mesolithic, *c*. 9000-7000 cal BC, displays an idiosyncratic character, with foragers exploiting marine and terrestrial resources both on the mainland and islands, occupying seasonal, multi-seasonal or perhaps even year-round sites.

Despite its name, it is known that this specific lithic production is not confined to the islands. A corresponding trend has already been recognized on the Greek mainland, namely in the Franchthi sequence. Perlès (1999: 315) emphasises the toolkit at Franchthi Lithic Phase VII is formed by what she calls "transformation tools" such as notches, denticulates, endscrapers and laterally retouched pieces. A similar lithic industry was also identified at Sidari on Corfu (Perlès 2001: 34). Therefore, Argolis and western Greece can be included in the Aegean Mesolithic tradition in terms of lithic assemblages. Moreover, a flake-based, non-geometric microlithic industry has been identified at an open-air site during our 2015 survey from Karaburun Peninsula in Izmir. The site POI.15.31 near Mordoğan overlooking the Balıklıova Bay at an altitude of 140 masl produced

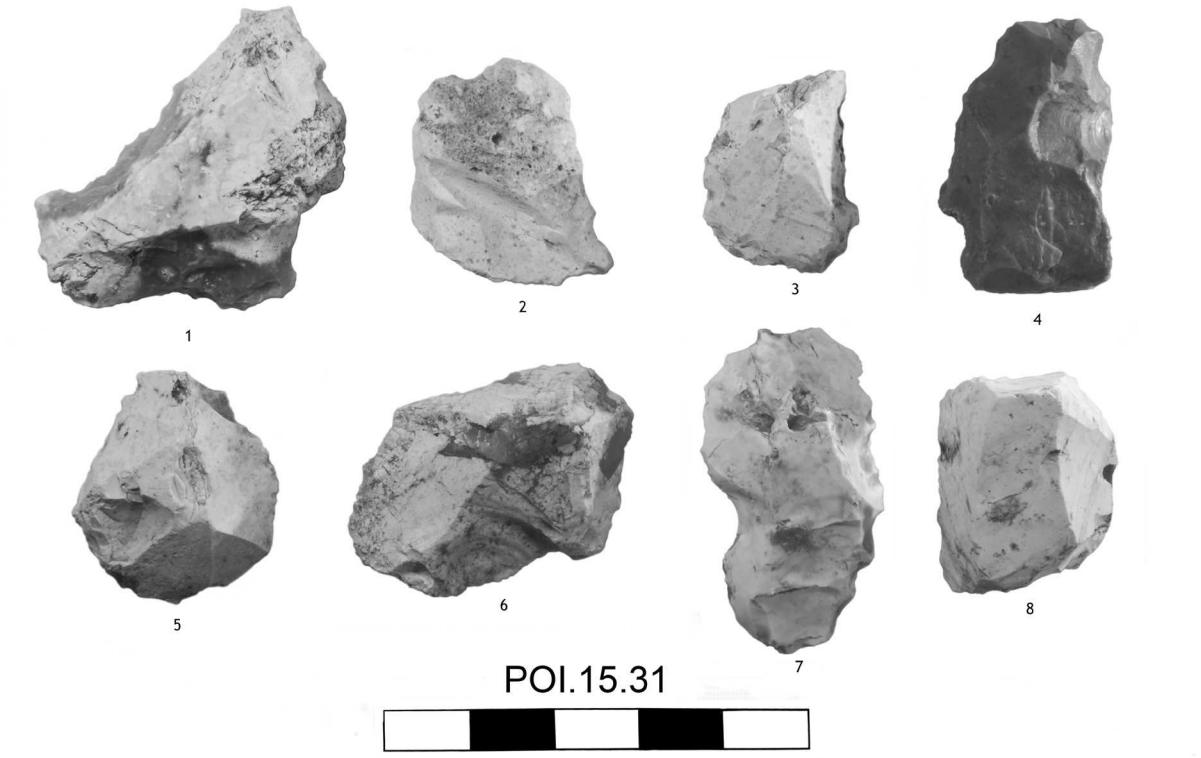

Fig. 2 A selection of chipped stones discovered at the site of POI.15.31 near Mordoğan, Izmir. Flakes (1,3-4), retouched flakes (2,6), blade fragment (5), notch (7) and endscraper (8). (photos: Berkay Dinçer)

116 lithics, most of them produced from white patinated flint, with few brown flint and no obsidian present (Fig. 2). With an average length of 27 mm (ranging from 14-70 mm), the assemblage is heavily dominated by unretouched flakes (n=63). Five cores (four flake and one blade) are also identified. Only *c.* 10% of the assemblage can be identified as specific tool types. Three endscrapers, three notches and six retouched flakes constitute the only pieces that can be identified as tools (Fig. 3). The assemblage contains only three blades (Çilingiroğlu *et al.* 2016: 5). The preferred raw material from site 31 is identical to the raw material from Kerame 1 on Ikaria (Sampson *et al*. 2012; personal observation). The industry from Mordoğan bears therefore close similarities to known Aegean Mesolithic sites in terms of raw material and techno-typology. These findings from the eastern Aegean coast demonstrate that flake-based Mesolithic industries are prevalent on western Anatolian coast. Also, it shows the coastal western Anatolia was culturally part of the greater Aegean with possible mobility between the Anatolian mainland and eastern Aegean islands. It additionally accentuates the idea that blade based industries arrived to the eastern Aegean in the early 7th millennium cal BC as evidence from Çukuriçi suggests (Horejs *et al.* 2015).

So, where lay the spatial limits of the "Aegean Mesolithic Tradition"? To define the eastern margins of this peculiar and original Aegean Mesolithic technology, it is worth highlighting the contrasting picture from the Antalya area. It is reported that post-10,000 cal BC deposits at Öküzini, for instance, contained large amounts of geometric microliths and that use of geometrics continued well into the final stages of the cave occupation (Otte *et al.* 1995; Kartal 2009). This shows that Öküzini is strongly connected to the Epipaleolithic/Early PPN traditions of eastern Mediterranean even in the Early Holocene which makes sense especially when one considers the Natufian-type lithics and material culture from the earlier phase III (Otte *et al*. 1995). The contrast with the Early Holocene Aegean is so clear that one can suggest that the southern Turkish coast lies outside of the Aegean interaction zone. So instead of a connected Aegean, we can actually suggest vibrant forager communities interacting within a rather closed Aegean network as suggested by its locally developed and maintained chipped stone industry. This idiosyncratic character of the Aegean Mesolithic is an indication of its local development and its isolated nature compared to sites outside the Aegean (Kozlowski and Kaczanowska 2009: 362).

The only evidence that complicates the picture from the Aegean comes from a newly investigated site from southwest Turkey, namely Girmeler Cave near Fethiye. Late 9th millennium deposits (8200-7900 cal BC) at the site revealed a plastered floor, post-holes with remains of a wattle-and-daub superstructure (Takaoğlu *et al.* 2014). Besides circular hearths, pits as well as a large collection of grinding instruments like querns at Girmeler Cave present a good candidate for evidence of sedentary living. Takaoğlu *et al.* (2014) suggest that these may be remnants of a permanent residence of foragers who reportedly hunted wild boar, red deer, fallow deer and hare. It is known that the earliest sedentary villages appeared in SW Asia already in the 11th-10th millennia cal BC (if not earlier; see Maher *et al.* 2012), on Cyprus around 9500 cal BC, in Central Anatolia around 8500 cal BC (Baird *et al.* 2012). Multiple seasonal sites appeared in Antalya

LIST OF ABSOLUTE DATES FROM KEY 7000-6600 CAL. BC SITES						
Site Name	**Stratum**	**Lab-Nr**	**Conventional RC Age**	**1 sigma calibration**	**Material**	**Reference**
BADEMAĞACI	EN8	Hd-22340	7949±31	7025-6767	Charcoal	Duru 2012
ÖKÜZİNİ CAVE	Öküzini IV (GH III)	Poz-1858	7970±50	7060-6690	Lens	Martinoli 2004
	Öküzini III (GH VII)	Poz-1859	8030±50	7090-6700	Triticum monococcum	
ULUCAK	VI	Beta-269727	7950±50	7026-6710	charcoal	Çilingiroğlu *et al.* 2012; Brami 2014
		Beta-317542	7870±50	6767-6644	Emmer wheat	
		Beta-269729	7850±50	6768-6609	Charcoal	
		Beta-317544	7850±40	6751-6635	Emmer wheat	
		Beta-317543	7830±40	6689-6604	Emmer wheat	
		Beta-269731	7820±50	6733-6591	Bone (sheep)	
		Beta-317538	7810±40	6678-6596	Emmer wheat	
		Beta-250266	7770±50	6646-6513	Charcoal	
		Beta-317539	7730±40	6598-6502	Emmer wheat	
		Beta-269730	7710±50	6591-6493	Bone (goat)	
		Beta-269728	7680±50	6586-6465	Charcoal	
ÇUKURİÇİ	XIII	MAMS-24429	7748±28	6633-6515	Wheat	Horejs *et al.* 2015
		MAMS-24430	7886±28	6767-6657	Cereal	
		MAMS-24431	7851±29	6695-6642	Wheat	
FRANCHTHI CAVE	IN (Stratum X2, Interphase 0/1 or Initial Neolithic)	P-2094	7930±100	7027-6686	Charcoal	Brami 2014; Stiner and Munro 2015
		P-1527	7900±90	7021-6647	Charcoal	
		P-1392	7790±140	6821-6465	Wood charcoal	
		GifA 11016/SacA 23624	7805±40	6637 ± 34	Wheat	Perlès *et al.* 2013 (Calibrations run by quickcal2007 v.1.5)
		GifA 11455/SacA 26197	7740±50	6568 ± 54	Wheat	
		GifA 11017/SacA 23625	7780±40	6601 ± 44	Wheat	
		GifA 11456/SacA 26198	7645±50	6509 ± 49	Wheat	
		GifA 80044/SacA 10908	7555±40	6427 ± 23	Charcoal	
		GifA 80043/SacA 10907	7910±40	6825 ± 115	Charcoal	
KNOSSOS	X	BM-124	8050±180	7246-6690	Wood charcoal	Brami 2014
		BM-278	7910±140	7029-6647	Wood charcoal	
		BM-436	7740±140	6765-6434	Wood charcoal	
	Level 39 (Aceramic)	OxA-9215	7965±60	7030-6780	Wood charcoal	Facorellis and Maniatis 2013

Table 2 A list of radiocarbon dates from key sites mentioned in the study.

region as early as 12,000 cal BC (Atıcı and Stutz 2002; Martinoli 2004). Therefore, it is possible that late 9th millennium cal BC site at Girmeler may be a year-round forager site. Takaoğlu *et al.* (2014) report that late 8th millennium cal BC deposits at the site revealed multiple plaster floors with 12 cm thickness; much in the tradition of Cappadocian site of Aşıklı with plaster floors that are as thick as 6-8 cm (Hauptmann and Yalçın 2000: 62).

The lithics from the 9th millennium site Girmeler is said to be of flake based with rare retouched specimens produced on local raw materials. Although the issue of sedentism needs to be addressed with proper seasonality research, this constitutes the earliest mud-based architecture in southwest Turkey that may reflect architectural know-how attested from early PPN sites of the Konya Plain and Cappadocia (Takaoğlu *et al.* 2014). The building materials and employed techniques at Girmeler Cave can be juxtaposed with the stone-based features (stone lined and stone paved remains) excavated at Maroulas and Kerame 1 in the Aegean islands. A detailed analysis of chipped stones from the site may shed light whether the industry is more related to Aegean Mesolithic, eastern Mediterranean traditions or a mixture of the two.

A Dispersal Event: 7000-6600 cal BC

The subsistence economy and material culture of early 7th millennium cal BC Aegean farmer-herders is easily distinguished from Early Holocene Aegean tradition. Current archaeological data suggests that basal deposits at Bademağacı, Ulucak and Çukuriçi are sites that were first established following a major dispersal event around 7000-6600 cal BC as these sites show strong parallels in terms of their faunal-floral remains as well as material culture and architectural features (Çilingiroğlu *et al.* 2012; Duru 2012; Horejs *et al.* 2015). As it will be argued below, a corresponding trend that shares many similarities with the west Anatolian sites in terms of faunal-floral remains, architectural tradition and material culture can be recognized at the Initial Neolithic sites in Greece: namely, the Franchthi Cave and basal Knossos (Efstratiou *et al*. 2013; Perlès *et al.* 2013). In my opinion, these commonalities arise from culture specific choices and practices that share a common historical and societal background as suggested by Perlès (2001), Özdoğan (2008) and more recently by Broodbank (2013). Many of the elements and technologies identified at these sites find their closest parallels not in the local Mesolithic 'cultures' but in the southwest Asian Neolithic. Radiocarbon evidence is not crystal clear but a time period of several centuries seems probable for this specific dispersal process (Table 2). This time period must have allowed for mobility in all directions and variability of interactions among farmer-farmers and forager-farmers. One thing is certain though. The Aegean Mesolithic that flourished in the 9th and 8th millennia cal BC in a rather closed Aegean network came to an end with 7000 cal BC marking the beginning of a new prehistorical era with new incomers. As suggested by radiocarbon data, one of the striking aspects of this process is its rapidity when compared to Neolithic dispersals in inland Anatolia (Schoop 2005; Brami 2015). The rather rapid process of dispersal in the early 7th millennium BC was enabled

by a coastal mobility using long established sea routes, possibly improved forms of navigational know-how and maritime technology (Broodbank 2013: 188). The seafaring knowledge of communities who were familiar with eastern Mediterranean waters at least since the Epipaleolithic period – as typically known from Cypriot evidence – facilitated the rather speedy movement of people along with their heavy and alive cargo such as domestic cattle, pigs, sheep and goats; not to mention loads of domestic cereals and pulses. This movement penetrated inland areas using well-known mountain passes and valleys targeting mainly rich alluvial plains with access to freshwater (mainly lacustrine but also perennial) and woodland environments (Çilingiroğlu and Çakırlar 2013; Arbuckle *et al.* 2014; Horejs *et al.* 2015). Although the archaeological evidence is still patchy, a general dispersal pattern using multiple routes and diverse engagements with local foragers can be inferred. Further evidence for population dispersal comes from aDNA evidence. Farmer-herder sites of the early 7th millennium cal BC were arguably occupied by groups with close genetic affinities as indicated by recent aDNA studies which demonstrate that early farmer-herders of Central Anatolia, western Anatolia, Greece and even Central Europe and western Mediterranean cluster together forming a homogeneous group who shared common ancestors somewhere in eastern Mediterranean but did not or minimally mixed with local foragers (Hofmanová *et al.* 2016; Kılınç *et al.* 2016).

Below I will try to outline the general characteristics of this dispersal event as incorporated by archaeological evidence.

First of all, the presence of all four domestic herd animals (sheep, goat, pig and cattle) is a strong link between these sites indicating common herd compositions and husbandry strategies (Isaakidou 2008; De Cupere *et al.* 2008; Çakırlar 2012; Horejs *et al.* 2015; Munro and Stiner 2015). Four-tier economy identified at these sites is not a feature of Central and Northwest Anatolian Initial Neolithic sites. It is well-known that domestic cattle and pigs are absent in Central Anatolia and domestic pigs are absent in the earliest northwest Anatolian sites (Arbuckle 2013). Therefore, four-tier husbandry practice which requires encyclopaedic knowledge (Munro and Stiner 2015) can be described as a culturally and historically determined choice that is peculiar to both southwest Asian and Aegean Early Neolithic groups to the exclusion of Central and Northwest Anatolian groups. The recognition of this pattern led zooarchaeologists (Arbuckle *et al.* 2014) to infer a human-mediated mobility of herd animals by way of coastal navigation which is the most probable scenario especially when one considers the well-established colonization cases of Cyprus and Crete (Broodbank and Strasser 1999; Vigne *et al.* 2012).

There are other commonalities among these sites. One of the most interesting attributes of these sites is the lack of diversity and abundance in the material culture (Evans 1971: 115; Çilingiroğlu *et al.* 2012; Duru 2012; Horejs *et al.* 2015). The typical items of the Southwest Asian and Anatolian Neolithic such as the clay stamps, figurines, spindle whorls or biconical slings are scarcely found in this early horizon. The material culture is composed of few utilitarian items, mainly bone tools, grinding instruments and chipped stones. Rarities like well-made stone bracelets (such as the ones from Çukuriçi; Horejs *et al.* 2015: 303; and Knossos IX; Ünlüsoy 2002) and pierced circular beads (such as the ones from Çukuriçi and Ulucak; Horejs *et al*. 2015: 303-304; Çilingiroğlu *et al.* 2012) constitute the only portable symbolic items. Total lack of or minute amounts of clay containers at these sites are but one indication of their common technological level and attitude towards food preparation and storage practices. All the early 7th millennium cal BC sites suffer from the Aceramic/Ceramic Neolithic discussion which actually indicates that clay containers and the associated technology was perhaps known but was not integrated into the daily lives which left sporadic finds of pottery (Perlès 2001: Chapter 5). All these items appear variously at these sites, however overall this set of objects composes a material culture that is vaguely related to Aegean forager material cultures which is, apart from the flake-based chipped stones, dominated by bone pointed instruments, bipoints, hooks, few polished objects and ad-hoc bone tools (Perlès 1999: 34; Galanidou 2011; Moundrea-Agrafioti 2011).

The architecture of 7000-6600 cal BC sites can be contrasted with the known Aegean Mesolithic architectural features. Mainly, Initial Neolithic sites show construction of rectilinear dwellings, use of mud, mudbrick, timber for superstructure and occasionally stones as foundations. At west Anatolian sites beside the use of rectilinear mud-based architecture, one observes the widespread construction of lime plastered floors. Basal Bademağacı, the so-called "Aceramic Hacılar", Ulucak VI and Çukuriçi XIII all contain well-preserved remains of red plaster floors which are in most cases renewed several times (Mellaart 1970; Çilingiroğlu *et al.* 2012; Duru 2012; Horejs *et al.* 2015: 297). Painted plaster floors at these early 7th millennium cal BC sites may be important in terms of origins of farming groups as this practice which incorporates use of large amounts of lime, pyrotechnology and red paint are a well-defined characteristic of PPNB-C sites in southwest Asia and PPN sites in Central Anatolia (Garfinkel 1987; Özbaşaran 2012). The symbolic substance of these can be inferred from the labour intensive production stages on the one hand and the persistent use of colour symbolism on the other; however it would be premature to suggest that buildings with red plastered floors entailed solely ritual purposes (Çilingiroğlu 2011). Their widespread occurrence in southwest Asia, including Central, southwest and western Anatolia is in my opinion yet another culture specific practice that is unrelated to forager practices in those areas. In the context of west Anatolia their appearance can be linked to the 7000-6600 cal BC dispersal event as this practice is absent at post-6500 cal BC sites.

Interestingly, red plaster floors are not known from Greek Initial Neolithic (IN) sites. Remains of such features are known neither from Mesolithic nor Initial/Early Neolithic deposits at Franchthi Cave or basal Knossos

(Kotsakis 2015). In this respect it is worth highlighting architectural features from basal Knossos (X-IX) to gain a perspective of the architectural techniques at Greek IN sites. Evans (1971: 102-103) reports that at Knossos, the earliest level X lack evidence for mud-based architecture, but has instead produced stake holes and pits. In the following level IX, burnt mudbrick pieces and more substantial remains of rectilinear architecture were recovered. Recent rescue excavations at Knossos exposed additional archaeological remains of basal layers in a very limited area (1.5 x 1.5 m). These showed presence of "dissolved unbaked mudbrick" pieces in the earliest stratum (Levels 38-39). The overlying deposit likewise contained mudbrick pieces with straw imprints (Efstratiou *et al.* 2013: 19). Old and recent evidence from Knossos indicate that use of mudbrick as a building material and construction of rectilinear spaces started in the basal layers along with use of pits and postholes. Use of mudbrick can be considered as a practice brought to the island by farmer-herders in the early 7th millennium cal BC as part of the dispersal process as earlier sites on the island did not reveal any evidence of architectural remains (Galanidou 2011; Strasser *et al.* 2014; Carter 2016). Absence of red plaster floors at Greek IN sites is intriguing and may entail a demographic or cultural variability differentiated from the west Anatolian populations despite many commonalities in their general composition.

Use of pressure flaking and blade-based chipped stone industries is another significant index of 7000-6600 cal BC farming groups which contrasts with the known Aegean Mesolithic industries. Because chipped stones constitute a major material cultural item common to both periods, their techno-typological comparisons would yield the most reliable information on the nature of forager-farmer encounters. Here emerges the possibility of peaceful interactions (such as gift giving, exchange of spouses, exchange of goods/foods *etc*.) that may have resulted in an influence of forager toolkit on incoming farmer-herders or adaptation of Neolithic features by local foragers. This idea seems to be supported by the chipped stones both at Knossos X and Franchthi Cave IN deposits because they are characterized by flake-based chipped stones of Mesolithic character together with blades (Perlès 2001: 47; Kozlowski and Kaczanowska 2009: 375). However, new evidence from Franchthi Cave also opens up a path for new interpretations. Earlier understanding of Franchthi Cave (Perlès 1999: 317; 2001: 48) data presented a case for interaction and exchange of goods upon early contacts with the farmer-herders. Perlès (1999: 317) indicates that first encounters during the Initial Neolithic caused foragers to adapt some domesticated species like wheat, lentils and ovicaprids with local chipped stone industry maintaining its Mesolithic (*i.e.* flake-based) character. In the second instance, *i.e*. during the Early Neolithic, however, no forager component can be identified in the archaeological strata. These disappeared completely, possibly following a brief abandonment of the site when a fully developed Neolithic subsistence and material culture is recognised at the site, both in the cave and in Paralia (Perlès 1999: 317). However, new dates from Franchthi Cave establishes a hiatus of 200 years between the Final Mesolithic and IN periods (Perlès *et al.* 2013: 1011) which speaks against uninterrupted encounters of farmers and foragers or a smooth adaptation of farmer-herder practices by local foragers. More importantly, new zooarchaeological investigation from the site establishes that there is no piecemeal transition from forager to farmer-herder subsistence at the site. Instead, the broad spectrum diet of Final Mesolithic groups heavily dominated by red deer (*Cervus elaphus*) was suddenly replaced by a fully-developed package of domesticates including all four herd animals with a clear focus on domestic sheep which is a non-native animal (Munro and Stiner 2015: 597-601). Munro and Stiner (2015: 601) suggest that the low numbers of cattle and pigs at IN Franchthi Cave may be linked to difficulties of their maritime transport. A similar contrasting pattern can be observed in the plant taxa from the cave's Final Mesolithic and Initial Neolithic levels, with two-row barley and emmer wheat suddenly appearing along with the locally collected wild plants (Munro and Stiner 2015: 600). New evidence suggests an abrupt introduction of farmer-herder components in the Argolid but how to accommodate the continuing Mesolithic character of the chipped stones remains an issue to be further addressed.

Forager-farmer interactions may have been in place at Öküzini, a cave site in Antalya with forager occupations since 18,000 BP. Two AMS dates on domestic seeds opens a previously unnoticed possibility of farmer-herder presence at the cave or in the area around 7000-6600 cal BC. It is striking to see that two domesticated seeds of *Lens* and *Triticum monoccocum* provided AMS results of 7060-6690 cal BC and 7090-6700 cal BC (Martinoli 2004: Table 3). These dates correspond to the emergence of fully-sedentary and food producing villages in Southwest and West Turkey and may signify a similar event at Öküzini. The fact that geometric microliths (lunates, triangles, backed bladelets, trapezes) continue to be produced after 10,000 cal BC at Öküzini may indicate that Antalya foragers adapted some of the components of the farmer-herder living upon early encounters. If strong continuity of Epipaleolithic industries at Öküzini's Phase 4 can be taken at face value, then a piecemeal adaptation or at least mutual exchanges with arriving farmer-herders seem probable. Presence of polished axes in the same phase further lends probability to the notion of farmer-forager interaction (Broodbank 2013: 175). Alternatively, a scenario similar to Franchthi Cave may have been in play. Unfortunately, the final phase at Öküzini contains mixed deposits (Kartal 2009: 150) which impedes further investigation of the nature of forager-farmer contacts in this area. Nevertheless, the fact that sites like Bademağacı, which can be reached via a mountain pass from Mediterranean littoral, was established by farmer-herders around 7000-6600 cal BC indicate that the area received newcomers around this time (Duru 2012) and that domestic seeds from Öküzini can be historically contextualized within the 7000-6660 cal BC dispersal event. Öküzini-Bademağacı connection shows

also that maritime dispersal was at times accompanied by inland penetrations.

As already mentioned for west Anatolian sites, it is early to discuss forager-farmer interactions based on firm archaeological evidence. From western Anatolian sites, there is yet no compelling lithic evidence to suggest a similar interaction phase. A recent report stated that basal Ulucak incorporates flake based chipped stones co-occurring with blades and bladelets (Çevik and Abay 2016: 190). Also, one lunate from basal Çukuriçi (Horejs *et al.* 2015: Fig. 7a) can be tentatively highlighted as a possible local forager component in the otherwise typically blade-based industry. Horejs *et al.* (2015) relate this item to Neolithic technologies of southwest Asia where it finds good parallels, but local forager option may likewise be considered here based on the evidence from Ulucak VI and IN sites from Greece.

Discussion

Since Central Anatolian Neolithic sites are distinguished from the Aegean sites in terms of herd composition (specifically by the absence of domestic pig and cattle), researchers working in Turkey and elsewhere developed a model of maritime dispersal that operated more or less independently from the inland dispersal and interaction zones in the eastern Mediterranean, reaching western Turkey, Argolis and Crete as shown by radiocarbon data pointing towards the first half of the 7th millennium cal BC (Çilingiroğlu and Çakırlar 2013; Arbuckle *et al.* 2014; Horejs *et al.* 2015). Brami's work (2015: Fig. 5) on radiocarbon data from Neolithic sites reveals that Greek and western Anatolian sites mirror similar trends – same peaks and troughs – in terms of chronological distributions with a marked increasing trend beginning in the early 7th millennium cal BC, implying that farmer-herders founded permanent sites in western Anatolia, Crete and Argolis around the same time.

This contribution aimed to evaluate and discuss the archaeological evidence from Bademağacı, Ulucak, Çukuriçi, Knossos and Franchthi Cave as key sites with deposits from this temporal horizon. My aim was to demonstrate that establishment of these sites can be understood as manifestations of a demographic movement process from southwest Asia to different areas of the Aegean. Zooarchaeological, archaeobotanical, archaeological, architectural and finally aDNA evidence is in favour of such a dispersal process and presents us a non-homogenous, complex course of events with multiple variables causing the diverse appearances of archaeological evidence (Fig. 1; Table 1).

I also tried to support this interpretation by contrasting the material culture from the Aegean Mesolithic with the evidence from early 7th millennium cal BC sites. There is little correspondence between Aegean Mesolithic and IN assemblages. The continuity of Mesolithic or Epipaleolithic lithic traditions at cave sites and at Knossos may indicate well-functioning forager-farmer interactions and exchanges of goods upon early encounters. But as discussed above, the evidence from Franchthi Cave and Öküzini Cave do allow for multiple interpretations. This is virtually the most challenging aspect of the neolithization research in this area which still needs to be clarified.

At key sites of the early 7th millennium cal BC, sheep, goat, cattle and pig are morphologically domestic with clear genetic links to Southwest Asian species (Scheu *et al*. 2012; except for pig; see Ottoni *et al.* 2013). Fourtier economy requires vast knowledge on each of these species behaviour, management techniques and their reproduction cycles *etc*. We know that all these species were first domesticated in southwest Asia around 8000 cal BC (Zeder 2008). All of them together appear in West Anatolia (both Lake District and coastal West Anatolia) and at Greek IN sites (Knossos and Franchthi Cave) around 6800-6700 cal BC. All four domesticates are also present at Yumuktepe, a coastal site in eastern Turkey, around 6700 cal BC; further underscoring the option of maritime dispersal (Arbuckle *et al.* 2014). Archaeobotanical work is still under progress and is not as clear as the faunal evidence. The sites dating between 7000-6600 cal BC incorporate evidence of cultivation of einkorn wheat, emmer wheat, durum wheat, barley, free-threshing wheat and lentil; some of these species being non-native to the Aegean (Çilingiroğlu *et al.* 2012; Horejs 2012; Perlès *et al.* 2013). Archaeological evidence substantiates this view with presence of southwest Asian traits at these sites such as pressure flaking technique that is absent in Central Anatolia until 6500 BC, also traits like rectangular mud-based architecture, red plastered floors, elaborately made stone bracelets and shaft straighteners (Çilingiroğlu and Çakırlar 2013; Horejs *et al.* 2015; Munro and Stiner 2015). The absence of red plaster floors at Greek Initial and Early Neolithic may hold a differentiated cultural significance and does highlight the level of social variability during and after this dispersal process.

Using a long-existing, pre-Neolithic maritime route, farmer-herder groups moved over long distances, implementing 'slow-motion seafaring' to use a term from Braudel, that intensely and constantly operated along the coastal lines within short distances and sporadically used for long-distance engagements in all directions (Çilingiroğlu 2016). An unorganized, spontaneous and constant movement of people along with plants, animals, finished goods and raw materials co-existed with infrequent yet planned long-distance mobility that aimed at exploring new lands and resources upon which new villages are established at some optimal localities. This movement was not limited to coastal areas but at times penetrated inland areas using natural mountain passes as with the case of Bademağacı and Ulucak. Before this movement, a 'colonization' phase requiring careful planning and organization (as described by Broodbank and Strasser 1991), an exploration phase epitomized by manifold forager-farmer interactions must have been present which pre-dates 7000 cal BC.

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References

Arbuckle B.S.
2013 The late adoption of cattle and pig husbandry in Neolithic Central Turkey. *Journal of Archaeological Science* 40: 1805-1815.

Arbuckle B.S., Kansa S.W., Kansa E., Orton D., Çakırlar C., Gourichon L., Atıcı L., Galik A., Marciniak A., Mulville J., Buitenhuis H., Carruthers D., De Cupere B., Demirergi A., Frame S., Helmer D., Martin L., Peters J., Pöllath N., Pawłowska K., Russell N., Twiss K. and Würtenberger D.
2014 Data sharing reveals complexity in the westward spread of domestic animals across Neolithic Turkey. *PLoS ONE* 9(6), e99845.

Atıcı L. and Stutz A.
2002 Mortality Profile Analysis of the Ungulate Fauna from Öküzini: A Preliminary Reconstruction of Site Use, Seasonality, and Mobility Patterns. In: I. Yalçınkaya, M. Otte, J. Kozlowski, and O. Bar-Yosef (eds.), Öküzini*: Final Palaeolithic Evolution in Southwest Anatolia*. ERAUL 96: 101-108. Liège: Université de Liège.

Baird D., Fairbairn A., Martin L., and Middleton C.
2012 The Boncuklu Project: The Origins of Sedentism, Cultivation and Herding in Central Anatolia. In: M. Özdoğan, N. Başgelen, and P. Kuniholm (eds.), *Central Turkey – The Neolithic in Turkey* 3: 219-244. Istanbul: Arkeoloji ve Sanat Yayınları.1

Brami M.
2015 A graphical simulation of the 2,000-year lag in Neolithic occupation between Central Anatolia and the Aegean Basin. *Archaeological and Anthropological Sciences* 7(3): 319-327. doi:10.1007/s12520-014-0193-4

Broodbank C.
2013 *The Making of the Middle Sea: A History of the Mediterranean from the beginning to the emergence of the Classical world*. London: Thames and Hudson.

Broodbank C. and Strasser T.F.
1991 Migrant farmers and the Neolithic colonization of Crete. *Antiquity* 65: 233-245.

Çakırlar C.
2012 Evolution of animal husbandry in Neolithic Central-West Anatolia, the archaeozoological record from Ulucak Höyük (ca. 7040-5660 cal. BC, İzmir, Turkey). *Anatolian Studies* 62(1): 1-33.

Carter T.
2016 Obsidian consumption in the Late Pleistocene - Early Holocene Aegean: Contextualising new data from Mesolithic Crete. *Annual of the British School at Athens* 111: 1-22.

Carter T., D. Contreras, Mihailović D., Moutsiou T., Skarpelis N., and Doyle S.
2014 The Stélida Naxos Archaeological Project: new data on the Middle Palaeolithic and Mesolithic Cyclades. *Antiquity Project Gallery* 88(341). http://antiquity.ac.uk/projgall/carter341 <accessed 13 June 2016>.

Çevik Ö. and Abay E.
2016 Neolithisation in Aegean Turkey. Towards a More Realistic Reading. In: Ü. Yalçın (ed.), *Anatolian Metal VII. Anatolien und seine Nachbarn vor 10.000 Jahren.* Der Anschnitt Beiheft 31: 199-210. Bochum: Deutsches Bergbaumuseum.

Çilingiroğlu Ç.
2011 The Current State of Neolithic research at Ulucak. In: R. Krauss (ed.), *Beginnings – New Research in the Appearance of the Neolithic between Northwest Anatolia and Carparthian Basin*. 67-76. Rahden: Marie Leidorf.
2016 Impressed pottery as a proxy for connectivity in the Neolithic Aegean and Eastern Mediterranean. In: B. Molloy (ed.), *Of Odysseys and Oddities: Scales and modes of interaction between prehistoric Aegean societies and their neighbours*. Sheffield Studies in Aegean Prehistory: 75-96. Oxford: Oxbow Books.

Çilingiroğlu Ç. and Çakırlar C.
2013 Towards configuring the neolithization of Aegean Turkey. *Documenta Praehistorica* 40: 21-29.

Çilingiroğlu A., Çevik Ö., and Çilingiroğlu Ç.
2012 Ulucak Höyük. Towards understanding the early farming communities of Middle West Anatolia: the contribution of Ulucak. In: M. Özdoğan, N. Başgelen, and P. Kuniholm (eds.), *Western Turkey – The Neolithic in Turkey* 4. 139-175. Istanbul: Archaeology and Arts Publications.

Çilingiroğlu Ç., Dinçer B., Uhri A., Gürbıyık C., Baykara I., and Çakırlar C.
2016 New Paleolithic and Mesolithic Sites in the Eastern Aegean: Karaburun Archaeologial Survey Project. *Antiquity Project Gallery*. doi:10.15184/aqy.2016.168.

De Cupere B., Duru R., and Umurtak G.
2008 Animal husbandry at the Early Neolithic to Early Bronze Age site of Bademağacı (Antalya province, SW Turkey): evidence from the faunal remains. In: E. Vila, L. Gourichon, A. Choyke, and H. Buitenhuis (eds.), *Zooarchaeology of the Near East 8: Proceedings of the Eighth International Symposium on the Zooarchaeology of Southwestern Asia and Adjacent Areas*. Travaux de la Maison de l'Orient et de la Méditerranée 49: 367-405. Lyon: MOM.

Duru R.
2012 The Neolithic of the Lakes Region. Hacılar-Kuruçay Höyük-Höyücek- Bademağacı Höyük. In: M. Özdoğan, N.Başgelen, and P. Kuniholm (eds.), *Western Turkey - The Neolithic in Turkey. New Excavations and New Research 4:* 1-65. Istanbul: Arkeoloji ve Sanat Yayınları.

Efstratiou N., Karetsou A., and Banou E.
2013 The Excavation. In: N. Efstratiou, A. Karetsou and M. Ntinou (eds.), *The Neolithic Settlement of Knossos in Crete. New Evidence for the Early Occupation of Crete and the Aegean Islands*. 1-25. Philadelphia: INSTAP Academic Press.

Evans J.D.
1971 Neolithic Knossos: the growth of a settlement. *Proceedings of the Prehistoric Society* 37: 81-117.

Facorellis Y. and Maniatis Y.
2013 Radiocarbon Dates from the Neolithic settlement of Knossos: An Overview. In: N. Efstratiou, A. Karetsou and M. Ntinou (eds.), *The Neolithic Settlement of Knossos in Crete. New Evidence for the Early Occupation of Crete and the Aegean Islands*. 193-200. Philadelphia: INSTAP Academic Press.

Galanidou N.
2011 Mesolithic Cave Use in Greece and the Mosaic of Human Communities. *Journal of Mediterranean Archaeology* 24(2): 219-242.

Garfinkel Y.
1987 Burnt lime products and social implications in the PPNB villages of the Near East. *Paléorient* 13(1): 69-76.

Hauptmann A. and Yalçın Ü.
2000 Lime plaster, cement and the first puzzolanic reaction. *Paléorient* 26(2): 61-68.

Hofmanová Z., Kreutzer S., Hellenthal G., Sell C., Diekmann Y., Díez-del-Molino D., Van Dorp L., López S., Kousathanas A., Link V., Kirsanow K., Cassidy L.M., Martiniano R., Strobel M., Scheu A., Kotsakis K., Halstead P., Triantaphyllou S., Kyparissi-Apostolika N., Urem-Kotsou D., Ziota C., Adaktylou F., Gopalan S., Bobo D.M., Winkelbach L., Blöcher J., Unterländer M., Leuenberger C., Çilingiroğlu Ç., Horejs B., Gerritsen F., Shennan S.J., Bradley D.G., Currat M., Veeramah K.R., Wegmann D., Thomas M.G., Papageorgopoulou C., and Burger J.
2016 Early Farmers from across Europe directly descended from Neolithic Aegeans. *Proceedings of the National Academy of Sciences* 113: 6886-6891.

Horejs B.
2012 Çukuriçi Höyük. A Neolithic and Bronze Age Settlement in the Region of Ephesos. In: M. Özdoğan, N. Başgelen and P. Kuniholm (eds.), *Western Turkey - The Neolithic in Turkey. New Excavations and New Research 4:* 117-131. İstanbul: Arkeoloji ve Sanat Yayınları.

Horejs B., Milić B., Ostmann F., Thanheiser U., Weninger B., and Galik A.
2015 The Aegean in the Early 7th Millennium BC: Maritime Networks and Colonization. *Journal of World Prehistory* 28(4): 289-330.

Isaakidou V.
2008 The fauna and economy of Neolithic Knossos revisited. In: V. Isaakidou and P. Tomkins (eds.), *Escaping the Labyrinth: The Cretan Neolithic in Context*. 95-112. Sheffield: Oxbow Books.

Kartal M.
2009 *Türkiye'de Son Avcı-Toplayıcılar*. Istanbul: Arkeoloji ve Sanat.

Kılınç G.M., Omrak A., Özer F., Günther T., Büyükkarakaya A.M., Bıçakçı E., Baird D., Dönertaş H.M, Ghalichi A., Yaka R., Koptekin D., Açan S.C., Parvisi P., Krzewińska M., Daskalaki E.A., Yüncü E., Dağtaş N.D., Fairbairn A., Pearson J., Mustafaoğlu G., Erdal Y.S., Çakan Y.G., Togan, I., Somel M., Storå J., Jakobsson M., and Götherström A.
2016 The Demographic Development of the First Farmers in Anatolia. *Current Biology* http://dx.doi.org/10.1016/j.cub.2016.07.057.

Kotsakis K.
2008 A Sea of Agency: Crete in the Context of the Earliest Neolithic in Greece. In: V. Isaakidou and P. Tomkins (eds.), *Escaping the Labyrinth: The Cretan Neolithic in Context*. Sheffield Studies in Aegean Archaeology: 49-72. Oxford: Oxbow Books.
2015 Domesticating the periphery. New Research into the Neolithic of Greece. *Pharos* 20(1): 41-73.

Kozłowski J. and Kaczanowska M.
2009 The Mesolithic of the Aegean Basin: How to interpret the pre-Neolithic settlement of the Aegean islands and its role in the neolithization of Southeastern Europe. In: J.J. Shea and D.E. Lieberman (eds.), *Transitions in Prehistory. Essays in Honor of Ofer Bar-Yosef*. 357-383. Oxford: Oxbow Books.

Maher L.A., Richter T., MacDonalds D., Jones M.D., Martin L., and Stock J.T.
2012 Twenty Thousand-Year-Old Huts at a Hunter-Gatherer Settlement in Eastern Jordan. *PLoS ONE* 7(2): 1-10.

Martinoli D.
2004 Food plants use, temporal changes and site seasonality at Epipalaeolithic Öküzini and Karain B caves, southwest Anatolia,Turkey. *Paléorient* 30(2): 61-80.

Mellaart J.
1970 *Excavations at Hacılar*. Edinburgh: Edinburgh University Press.

Moundrea-Agrafioti A.
2011 The Mesolithic and Neolithic Bone Implements. In: A. Sampson (ed.), The *Cave of the Cyclops. The*

Mesolithic and Neolithic networks in the Northern Aegean, Greece II. 3-52. Philadelphia: INSTAP Academic Press.

Munro N.D. and Stiner M.C.
2015 Zooarchaeological Evidence for Early Neolithic Colonization at Franchthi Cave (Peloponessos, Greece). *Current Anthropology* 56(4): 596-603.

Otte M., Yalçınkaya I., Leotard J.-M., Kartal M., Bar-Yosef O., Kozlowski J., Lopez-Bayon I., and Marshack A.
1995 The Epi-Paleolithic of Öküzini Cave (SW Anatolia) and its mobiliary art. *Antiquity* 69: 931-944.

Ottoni C., Girdland Flink L., Evin A., Geörg C., De Cupere B., Van Neer W., Bartosiewicz L., Linderholm A., Barnett R., Peters J., Decorte R., Waelkens M., Vanderheyden N., Ricaut F.-X., Çakırlar C., Çevik Ö., Hoelzel R., Mashkour M., Mohaseb Karimlu A., Sheikhi Seno S., Daujat J., Brock F., Pinhasi R., Hongo H., Perez-Enciso M., Rasmussen M., Frants L., Megens H.-J., Crooijmans R., Groenen M., Arbuckle B., Benecke N., Starnd Vidarsdóttir U., Burger J., Cucchi T., Dobney K., and Larson G.
2013 Pig domestication and human-mediated dispersal in Western Eurasia revealed through ancient DNA and geometric morphometrics. *Journal of Molecular Biology and Evolution* 30(4): 823-832.

Özbaşaran M.
2012 Aşıklı. In: M. Özdoğan, N. Başgelen, and P. Kuniholm (eds.), *Central Anatolia - The Neolithic in Turkey. New Excavacation and New Research 3:* 135-158. Istanbul: Arkeoloji ve Sanat Yayınları.

Özdoğan M.
2008 An Alternative Approach in Tracing Changes in Demographic Composition: The westward expansion of the Neolithic way of life. In: J.-P. Bocquet-Appel and O. Bar-Yosef (eds.), *The Neolithic Demographic Transition and its Consequences.* 139-178. Dordrecht: Springer.
2011 Archaeological Evidence on the Westward Expansion of Farming Communities from Eastern Anatolia to the Aegean and the Balkans. *Current Anthropology* 52(4): 415-430.

Perlès C.
1999 Long-term perspectives on the occupation of the Franchthi Cave: continuity and discontinuity. In: G.N. Bailey, E. Adam, E. Panagopoulou, C. Perlès, and K. Zachos (eds.), *The Palaeolithic Archaeology of Greece and Adjacent Areas: Proceedings of the ICOPAG Conference*, Ioannina, (September 1994). British School at Athens Studies 3: 311-318. London: British School at Athen.
2001 *The Early Neolithic in Greece*. Cambridge: Cambridge University Press.

Perlès C., Quiles A., and Valladas H.
2013 Early seventh-millennium AMS dates from domestic seeds in the Initial Neolithic at Franchthi Cave (Argolid, Greece). *Antiquity* 87: 1001-1015.

Sampson A., Kaczanowska M., and Kozlowski J.K.
2012 Mesolithic occupations and environments on the Island of Ikaria. *Folia Quaternaria* 80: 5-40.

Scheu A., Geörg C., Schulz A., Burger J., and Benecke N.
2012 The arrival of domesticated animals in South-Eastern Europe seen from Ancient DNA. In: E. Kaiser, W. Schier, and J.Burger (eds.), *Population dynamics in Pre- and Early History. New Approaches by Stable Isotopes and Genetics*. 45-54. Berlin, Boston: Walter de Gruyter.

Schoop U.-D.
2005 The late escape of the Neolithic from the Central Anatolian Plain. In: C. Lichter (ed.), *How did Farming Reach Europe?* 41-58. Istanbul: Ege Yayınları.

Strasser T., Panagopoulou E., Karkanas P., Clinton M., Kapranos E., Thompson N., and Murray S.
2014 *The Excavation at Mesolithic Damnoni – The Discovery of a New Culture on Crete*. Poster Presentation at AIA 2014. Online access: http://plakiasstoneageproject.com/

Takaoğlu T., Korkut T., Erdoğu B., and Işın G.
2014 Archaeological Evidence for 9th and 8th millennia BC at Girmeler Cave near Tlos in SW Turkey. *Documenta Praehistorica* 41: 111-118.

Trantalidou K.
2011 From Mesolithic Fisherman and Bird Hunters to Neolithic Goat Herders: The Transformation of an Island Economy in the Aegean. In: A. Sampson (ed.), *The Cave of the Cyclops. The Mesolithic and Neolithic networks in the Northern Aegean, Greece,* II. 53-101. Philadelphia: INSTAP Academic Press.

Ünlüsoy S.
2002 Neolithische und chalcolithische Steinarmringe: Untersuchungen zur Chronologie und Verbreitung im Nahen Osten und in der Ägäis. In: R. Rüstem, S. Blum, G. Kastl, F. Schweizer and D. Thumm (eds.), *Mauerschau: Festschrift für M. Korfmann*. 541-566. Remshalden-Grunbach: Greiner.

Vigne J.-D., Briois F., Zazzo A., Willcox G., Cucchia T., Thiébault S., Carrère I., Franel Y., Touquet R., Martin L., Moreau C., Comby C., and Guilaine J.
2012 First wave of cultivators spread to Cyprus at least 10,600 yrs ago. *Proceedings of National Academy of Sciences* 109(22): 8445-8449.

Zeder M.A.
2008 Domestication and early agriculture in the Mediterranean Basin: Origins, diffusion, and impact. *Proceedings of the National Academy of Sciences* 105(33): 11597-11604.