

Walter Gauß

Considerations on Aegean Bronze Age Fortifications

The current paper summarizes the development of Bronze Age Aegean fortifications with a special focus on the Aegean Early and Middle Bronze Age. In order to get a better understanding of Aegean fortifications for each period, their numbers are set into relation with the number of known sites and other features. The impressive multi-phased fortifications of sites such as Troy or Kolonna on the island of Aegina will be used as case studies to explain the development of Early to Middle Bronze Age sites in the central Aegean. The final part of the paper gives a preview on the development of Late Bronze Age (Mycenaean palatial and postpalatial) fortifications.

Introduction

This paper¹ stems from the author's interest in Aegean Bronze Age fortifications, their chronological and spatial distribution, as well as their significance. Some preliminary and general considerations will be presented here with a special focus on the later Early and Middle Bronze Age,² that is,

in absolute dating, c. 2600 BCE to 1650 BCE.³ Although throughout the Bronze Age in the Aegean (c. 3100 BCE to 1050 BCE)⁴ it has been attempted to search for fortifications, the amount of information about them varies. Comfortable compilations and gazetteers of prehistoric sites cover mainly the central and western part of the Aegean, today's modern Greece,⁵ whereas in the eastern most part of the Aegean, today's modern Turkey, the situation seems less easy.⁶ In spite of these limitations, a comprehensive (as far as possible) record of sites and settlements is necessary for an in-depth understanding of fortifications.⁷

¹ An earlier version of this paper was presented at the LOEWE conference in Alba Iulia in fall 2017, and I would like to thank the organizers of this conference, S. Hansen and R. Krause, for their kind invitation and hospitality, as well as their patience. Furthermore, I would like to thank P. Matsouka and Anavasi editions© (<http://www.anavasi.gr>) for compiling the distribution maps as well as for important support regarding the compilation of the relevant GIS-information. As to the compilation of GIS-information many thanks go also to B. Consoli and his Mycenaean Atlas Project, which aims to provide reliable GIS-information for Mycenaean sites in the Aegean (<http://www.helladic.info/>). H. Birk provided important support for compiling the plans of the fortifications at Kolonna on Aegina, and J. Heiden (DAI Athens) provided the photos of the Lion Gate at Mycenae and the entrance to the citadel at Tiryns and the permission to publish them here; I owe many thanks to both. Some general thoughts on Early and Middle Bronze Age Aegean fortifications have been published more recently by the author (Gauß 2017) and are in part repeated here.

² Sites and fortifications on Bronze Age Crete are not dealt within this paper. For an overview of fortifications at Crete see, e.g., Hayden 1988; Nowicki 1992; 1999; 2000; Alusik 2007; Betancourt 2013; Alusik 2016.

³ For an overview on the Early and Middle Bronze Age fortifications, see also Gauß 2017. In regard to the architectural development and fortifications from Early Bronze Age III to the Late Bronze Age I, see also Wiersma 2014.

⁴ On absolute Aegean chronology, see e.g., Manning 2010.

⁵ E.g. Hope Simpson 1965; Hope Simpson/Dickinson 1979; Hope Simpson 1981; Renfrew 1972, 507–525 (Gazetteer of Neolithic and Early Bronze Age Sites in the Cyclades); Syriopoulos 1995; Kouka 2002 (North-East Aegean islands); Alram-Stern 2004 (Early Bronze Age); Salavoura 2015 (Mycenaean Arcadia); Smith 2017 (Early Bronze Age Southern Greece).

⁶ For compilations with a chronological, thematic and/or regional focus, see e.g., Özdoğan 1986 (Dardanelles); French 1997 (Early Bronze Age); Kouka 2002 (North-East Aegean islands); Ivanova 2008; Schwall 2018, 29–40 (5th and 4th millennium). – For a collection of archaeological sites in Turkey, see <http://tayproject.org/>.

⁷ For the site distribution in the north-eastern Peloponnese, see e.g., Wright 2008, 232 Fig. 10.2.

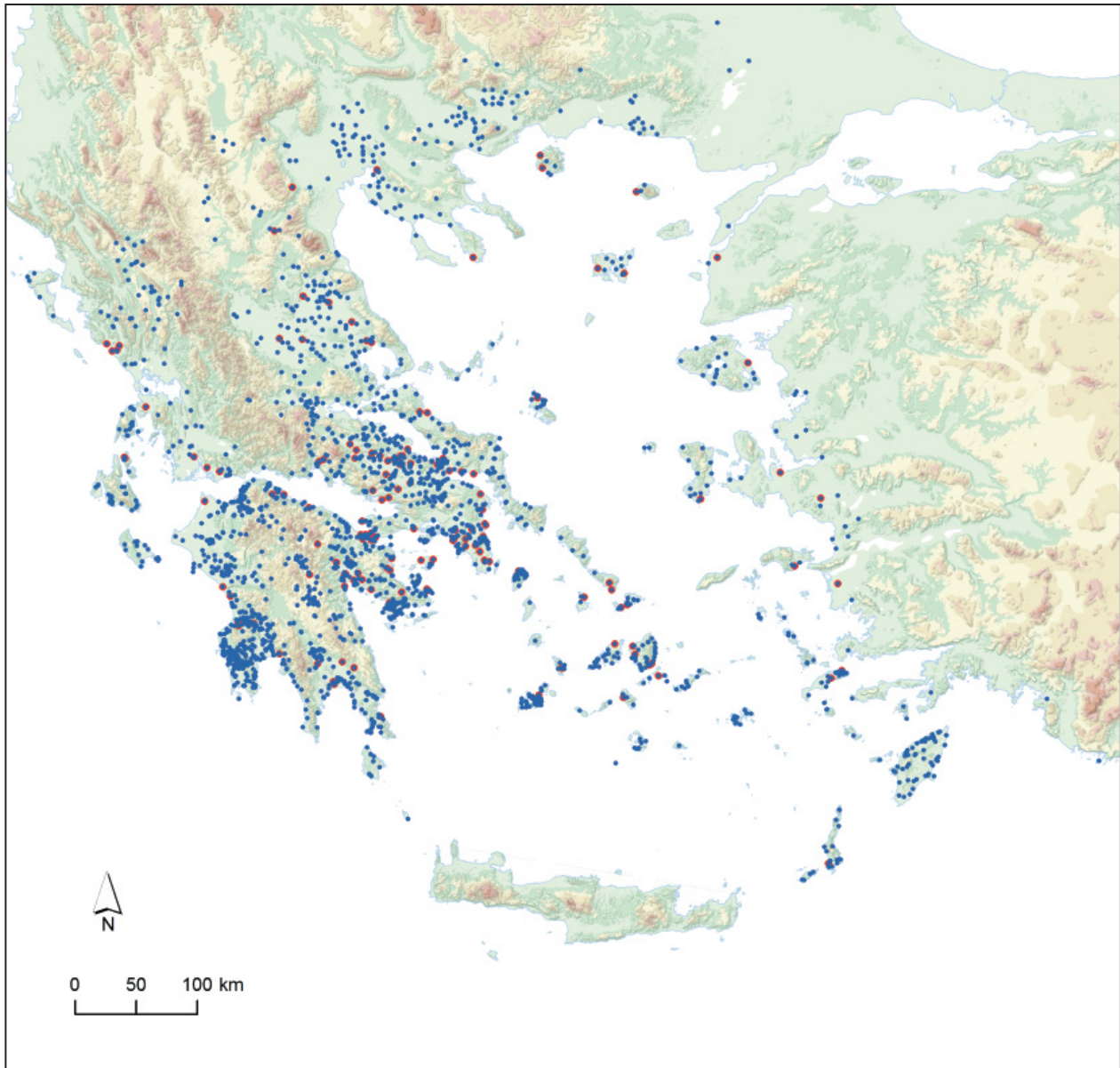


Fig. 1 Distribution of Bronze Age sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

The number of Bronze Age sites now known numbers about 2,900 in the central Aegean; very few of these sites (c. 140) are fortified (**Fig. 1**).⁸ If those sites with fortifications are considered according

to the main chronological periods (that is, whether each site dates to the Early, Middle, or Late Bronze Age), the distribution is uneven (**Fig. 2**).⁹ Furthermore, because fortifications are rare when compared to contemporary sites, it is difficult to discuss long-term developments and changes in defensive systems. Sites with a long, ideally continuous sequence of fortifications, as attested throughout the Early, Middle, and Late Bronze Age, are exceptional

⁸ For local or regional compilations, see e.g. Kouka 2002 (North-East Aegean islands) and Ivanova 2008. As a comparison to illustrate the exceptional situation: At least some 1,200 castles are known within the limits of today's Austria (83,878 km²), whereas modern Greece is 131,957 km² in area and covers only one part of the Aegean. Within the limits of Salzburg (7,156 km²), one of the nine states of Austria, at least some 200 fortified Middle Age sites are known (I owe this information to P. Höglinger, Bundesdenkmalamt Salzburg; on fortifications within Salzburg, see e.g., Zaisberger/Schlegel 1978; 1992).

⁹ The numbers given in the table refer to the number of sites attested so far per period, fortifications per period (including theoretical ones, after Hope Simpson/Dickinson 1979, 426; Hope Simpson 1981, 245; Hope Simpson/Hagel 2006, 33–122), as well as the approximate duration of the Early, Middle, and Late Bronze Age (for absolute chronology, see e.g., Manning 2010).

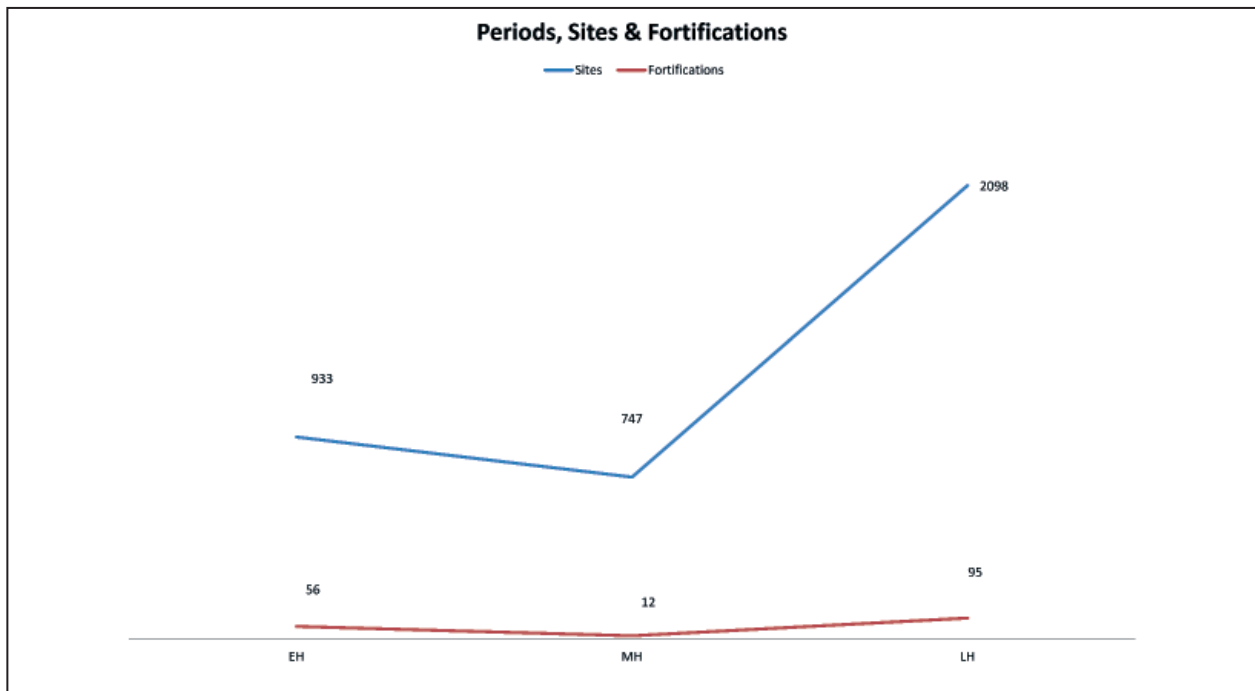


Fig. 2 Chronological distribution of Early, Middle and Late Bronze Age sites and possible/certain fortifications (chart by author)

and limited to very few sites: Troy, the Heraion at Samos, and Kolonna on Aegina (Fig. 3).

Despite these limitations, defensive structures are amongst the most impressive perceptible archaeological remains, and the monumentality of the Late Bronze Age Mycenaean fortifications at the palatial centers of Mycenae and Tiryns is breathtaking even today (Fig. 4a-b).¹⁰ Earlier, pre-Mycenaean fortifications, however, mostly lack this monumentality and are often far less well known or preserved. Even if the fortifications vary in spatial and chronological distribution, their defensive structures are similarly the products of communal work.¹¹ The construction of a defensive structure requires labor and certain degrees of organization, specialization and hierarchy.¹² Defensive systems are complex and must accommodate many factors: the natural landscape and its resources, the time, technical and technological skill of the builders, the social and historical context, the level of threat to the settlement, and current defensive and offensive weaponry.¹³ Very

often, the purpose of a fortification included more than fulfilling mere protective requirements.¹⁴ It was equally important to display power, to express the individual or group character of the principal builders, and to demonstrate the community's ability to undertake sometimes monumental building programs. Finally, the planning and execution of this communal project likely strengthened the group's common identity.¹⁵

Early Bronze Age

Recent research has contributed greatly to the understanding of Final Neolithic and Chalcolithic fortifications.¹⁶ It is very interesting to note that several Early Bronze Age centers include early phases (4th millennium) that lack fortifications.¹⁷ An impressive number of sites date to the Early Bronze Age

¹⁰ For the relief crowning the Lion Gate at Mycenae, see e.g., Blackwell 2014.

¹¹ E.g., Kouka 2002, 5. 295; Betancourt 2013, 117; Alram-Stern 2014, 310; Gauß 2017, 48. 52.

¹² For the energetics of Late Bronze Age fortifications, see e.g., Cook 2014.

¹³ Ivanova 2008; Lull *et al.* 2015, 161; Gauß 2017, 43.

¹⁴ E.g., Tsipopoulou 1999, 181; McEnroe 2010, 22; Betancourt 2013, 118–122; Müth 2016; Müth *et al.* 2016; Philippa-Touchais 2016, 657; Gauß 2017, 43.

¹⁵ E.g., Maran 2006a; 2006b; Wright 2006; Fitzsimons 2007; Brysbaert 2013; 2015; Gauß 2017, 43.

¹⁶ For overview of the Aegean in the 4th millennium BC, see e.g., Alram-Stern 1996, 111–112; Ivanova 2008; Alram-Stern 2014; Dietz *et al.* 2018.

¹⁷ E.g., Kouka 2014, 57; Gauß 2017, 44.



Fig. 3 General distribution of possible/certain Bronze Age fortifications (blue) and sites with continuous, multi-period fortifications attested in the Early, Middle and Late Bronze Age (red) (map by author and P. Matsouka, Anavasi)

Aegean (c. 3100 BCE to 2150/2100 BCE).¹⁸ Further subdivisions are (if possible) necessary to create a more detailed view of settlement patterns (**Fig. 5**).¹⁹

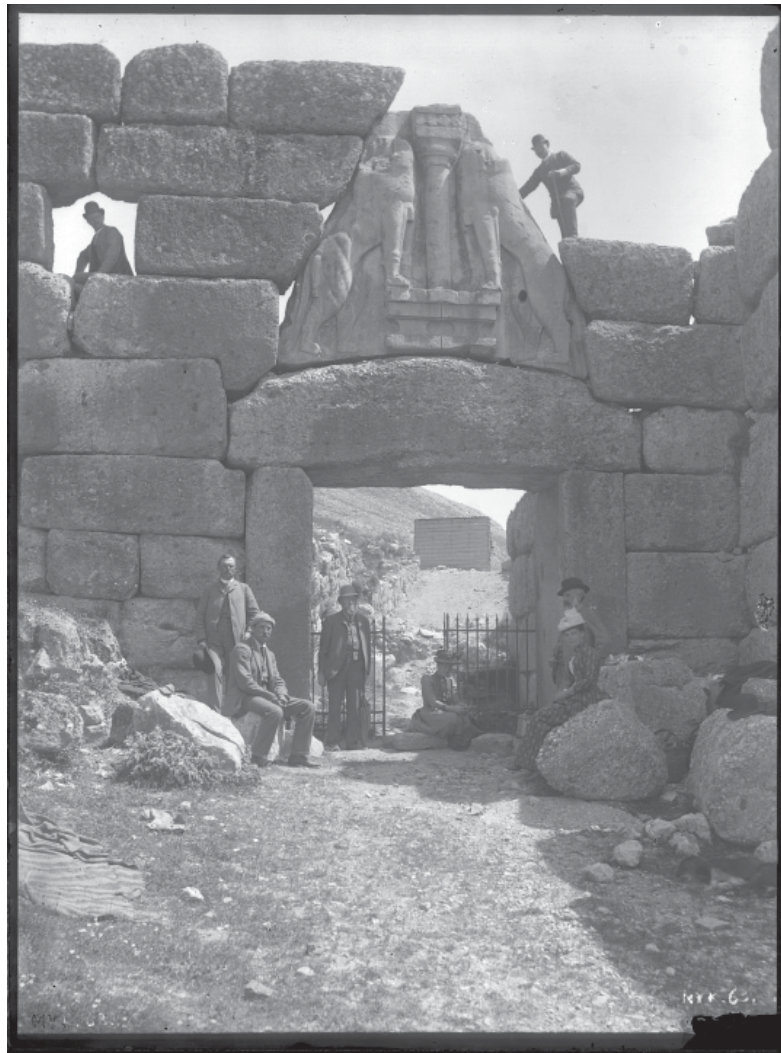
In the eastern Aegean, several settlements include massive fortifications; Troy is the best known

example.²⁰ The earliest fortification of Troy I (Troy I Early to Middle, EB I) were modified soon after their construction. The walls were reinforced and

¹⁸ For the absolute chronology of the Aegean Early Bronze Age, see e.g., Manning 2010 (with references); Smith 2017, 116.

¹⁹ In his monumental study, K. Syriopoulos (1995, 335–597) classified 927 Early Bronze Age sites without further subdivision. See also Wright 2004 for a detailed comparative study of settlement patterns in the north-eastern Peloponnese, and Wright 2008, 232 Fig. 10.2 for site distribution in the north-eastern Peloponnese, Laconia and south-western Messenia.

²⁰ Gauß 2017, 44 (with references). For Troy, see e.g., Korfmann 2006; Jablonka 2010; Ivanova 2008, 319–332; 2013, 23–24 Fig. 5. Regarding the fortifications and material culture remains from the site of Kanlıgeçit (today's Turkish Thrace) with remarkable resemblances to Troy, see e.g., Ivanova 2008, 286; Özdoğan/Parzinger 2012; Özdoğan 2016. Regarding the fortifications of Thermi on Lesbos, see e.g., Lamb 1936; Kouka 2002, 171–172. 182–183. 213. 226–229 Pls. 15. 18. 21. 27. 30. For the Early Bronze Age Heraion on Samos and its fortifications and stratigraphy, see e.g., Kouka 2002, 213. 226–229; Ivanova 2008, 284; Kouka 2014; 2015.



a



b

Fig. 4 a The Lion Gate at Mycenae; **b** The entrance to the citadel of Tiryns
(photos DAI Athens, D-DAI-ATH-Mykene-0063; D-DAI-ATH-Tiryns-0050)

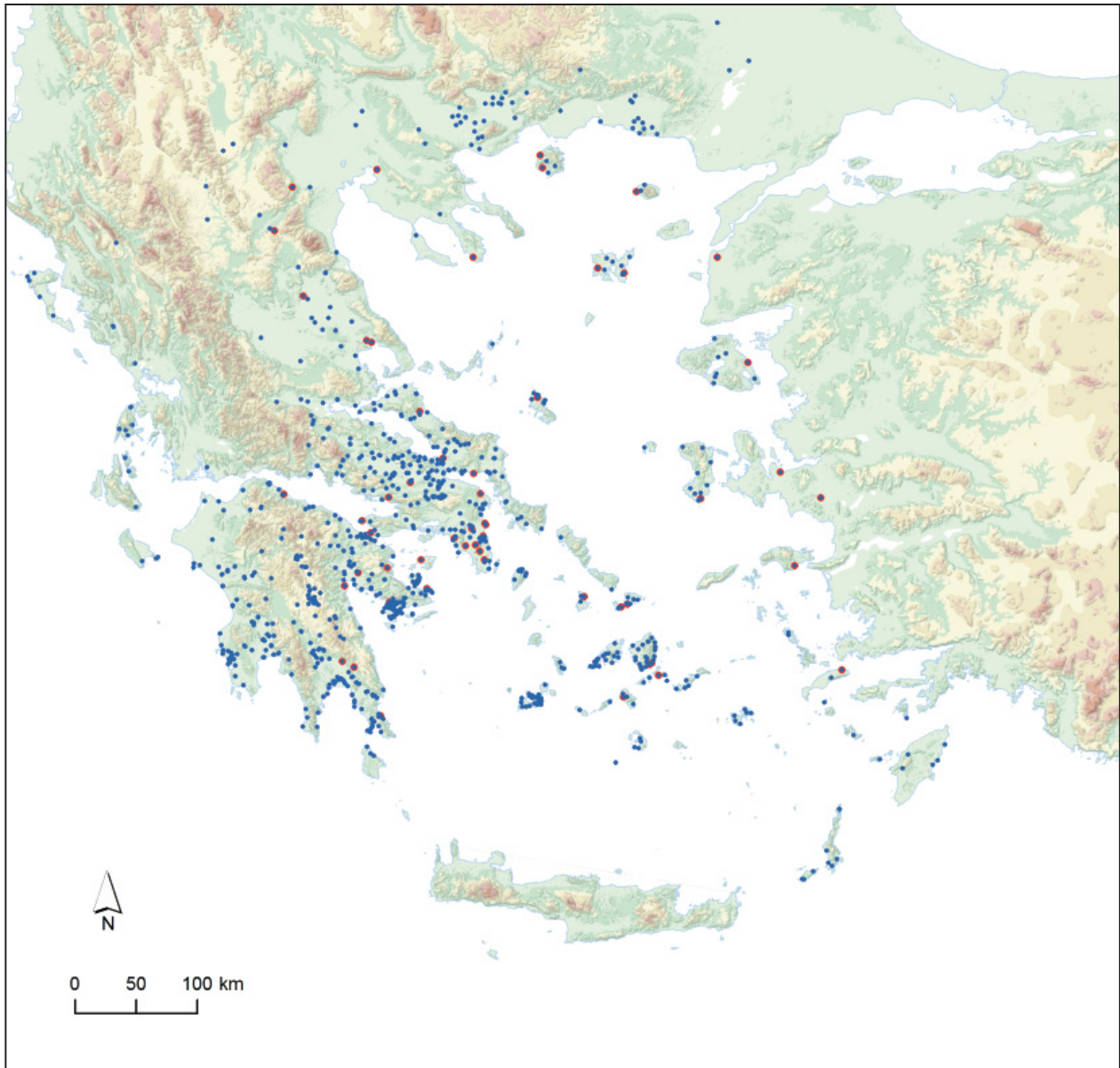


Fig. 5 Distribution of Early Bronze Age sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

exhibited all features typical in later phases. Rather than a freestanding wall, the fortifications included a sloping monumental stone revetment ('glacis'), a distinctive feature of north-eastern Aegean fortifications.²¹ Wide gates are protected by massive rectangular bastions of monumental dimensions. Later, a steep monumental stone-paved ramp about 21 m long and 7.5 m wide led to one of the gates. Several phases of destruction can be identified in Early Bronze Age Troy. However, the fortifications did not fundamentally change, but rather were gently modified.²² The large c. 90,000-m² large lower set-

tlement of Troy I/II with its protection by a separate rampart makes Troy I/II exceptional.²³ Two reconstructions of the rampart have been suggested: either a wooden palisade with wattle and daub between posts or a more substantial construction of wooden posts and mud bricks.²⁴

2006; Ivanova 2008, 325–330; Ünlüsoy 2010, 129–136; Gauß 2017, 46.

²³ Jablonka 2001, 394. A ditch cut into bedrock (approximately 40 m long, c. 0.4 m wide, and about 1 m deep) was uncovered some 200 m away from the acropolis. The ditch preserved a line of postholes (diam. c. 0.3 m) located every 2.5–2.7 m and a second line of postholes parallel to the first one some 2.5 m behind it.

²⁴ E.g., Jablonka 2001; 2006, 172–174; Hueber 2004; Ivanova 2008, 330; Ünlüsoy 2010, 128–129; Gauß 2017, 46.

²¹ E.g., Korfmann 1989, 309; Ivanova 2008, 221–222, 323; 2013, 24 with references; Gauß 2017, 44.

²² E.g., Dörpfeld 1902, 49–98; Korfmann 2001; Ünlüsoy

In the central and western regions, Early Bronze Age settlements (such as on the Cyclades and the Greek mainland) are mostly smaller than their eastern Aegean counterparts.²⁵ On the Cycladic island of Syros, the hilltop site of Kastri²⁶ was protected by two sectional fortification walls encompassing an area of 6,500 m². The fortified site of Palamari²⁷ on the island of Skyros was slightly larger, c. 10,000 m². At Kastri, only one narrow tangential gate permitted entrance through the freestanding outer wall. Six horseshoe-shaped towers/bastions strengthened the much wider main wall, situated immediately behind the outer one. Similar double wall fortifications with bastions have been identified at numerous Early Bronze Age sites in the eastern and particularly in the western Mediterranean²⁸ and have been recently labelled as ‘Los Milares/Kastri type’ fortifications.²⁹ Other fortified Cycladic sites, such as Mount Kythnos on Delos³⁰ and Panormos on Naxos,³¹ are smaller than Kastri. At these sites defensive works protected only a few houses.³² Any comparisons with the large eastern Aegean fortifications are almost impossible.

The Greek mainland includes a noteworthy, yet hardly surprising concentration of monumental architecture and special items at fortified Early Bronze II sites (**Fig. 6**). The first category consists of so-called corridor houses and related structures,³³ and large buildings covered with roof tiles.³⁴ The second category consists of special items, such as

stone weights,³⁵ bone tubes³⁶ and roller stamp impressions.³⁷ Only through future in-depth studies will we be able to test whether a concentration of the abovementioned special features or additional ones (e.g., the existence of nearby tumuli) justifies the assumption of fortifications at the site.

One of the major Early Bronze II centers on the Greek mainland is Lerna in the Argolid.³⁸ The site with its two successive corridor houses was protected with a massive fortification wall (Lerna III, latest phase B? and phase C).³⁹ The wall consisted of a stone socle with a superstructure of mudbrick and projecting bastions/towers.⁴⁰ During major modifications, the horseshoe-shaped tower/bastion was replaced by a massive rectangular one located near the new gate. At a late stage of Lerna III phase C, the fortifications seem to have been abandoned. In the following phase (phase D), the time of the well-known ‘House of Tiles’ corridor house “the status of the fortification is an open question”.⁴¹ Several other sites in the Argolid in addition to Lerna provide important new evidence for Early Bronze II fortifications, and further research will show how these sites interacted within their regional and interregional networks.⁴² Similarly, in Corinthia several Early Bronze II sites (e.g. Korakou, Corinth and Cheliotomylos) with the aforementioned special find categories as well as roof tiles⁴³ suggest that it is necessary to consider the connections among the sites and whether any might have had fortifications.

²⁵ In general, e.g., Angelopoulou 2017; Gauß 2017, 46–47.

²⁶ See e.g., Ivanova 2008, 290–291 (with references); Lull *et al.* 2015, 161; Angelopoulou 2017, 46.

²⁷ See e.g., Parlama *et al.* 2015 (with references); Romanou 2015; also Alram-Stern 2004, 728–732; Ivanova 2008, 305–307; Gauß 2017, 47. Regarding the absolute chronology of this site, see Maniatis/Aravaniti 2015.

²⁸ Lull *et al.* 2015, 160–162 Fig. 4.

²⁹ Lull *et al.* 2015, 160–161.

³⁰ Ivanova 2008, 294 (with references); Angelopoulou 2017, 139, 141.

³¹ Ivanova 2008, 306 (with references); Angelopoulou 2014; 2017, 141–142.

³² In general, e.g., Dumas 1990; Branigan 1999; Hubert 2011; Lull *et al.* 2015; Angelopoulou 2017.

³³ For the “Rundbau at Tiryns”, see e.g., Marzollf 2004; 2009; Maran 2016.

³⁴ E.g., Shaw 1987; 2007. Regarding the distribution of Early Bronze II roof tiles and corridor houses, see also Rutter 1993, 762 Fig. 3. See also Jazwa 2018 on Early Bronze II roof tiles. Also Smith 2017 in general and on newly-found large buildings. For the recently discovered monumental Early Bronze II building at Keryneia/Aigio, see Kolia/Spiroulias 2017. The building

is somewhat similar to the Rundbau at Tiryns and is situated in an extended settlement.

³⁵ For the distribution of stone weights, see Kilian-Dirlmeier 2005, 167–169; Rahmstorf 2006, 87 appendix 5.

³⁶ For the distribution of bone tubes, see Kilian-Dirlmeier 2005, 167; Rahmstorf 2006, 85 appendix 3.

³⁷ For the distribution of roller stamps and roller stamp impressions weights, see Rahmstorf 2006, 86 appendix 4. For new roller stamps from Asine and specialized itinerant craftsmen in the Early Bronze II, see Lindblom *et al.* 2018.

³⁸ E.g., Wiencke 2010 (with references).

³⁹ Wiencke 2000, 89–149, 649 (with references) plans 5–7, 18–24.

⁴⁰ Wiencke 2000, 93–94 Fig. I.12.

⁴¹ Wiencke 2000, 213.

⁴² E.g., D. M. Smith stressed the regionalism and the abundance of cross-scale networks in the Early Bronze Age in southern Greece (Smith 2017, 106). For additional fortified sites, see Smith 2017, 116.

⁴³ For roof tiles in Corinth, see Smith 2017, 118.



Fig. 6 Distribution of possible/certain Early Bronze II fortifications (red) and corridor houses/roof-tiles/incised bone-tubes and weights (blue) (map by author and P. Matsouka, Anavasi)

The final part of the Bronze Age (Early Bronze III, c. 2250 to 2150/2100 BCE)⁴⁴ included major changes,⁴⁵ and a number of sites were abandoned.⁴⁶ Fortified sites and in particular newly fortified sites are almost unknown,⁴⁷ especially in the central

Aegean and on the Greek mainland (**Fig. 7**). Kolonna on the island of Aegina,⁴⁸ where the c. 600-year history of successive fortification walls began in this final stage of the Early Bronze Age, seems exceptional.⁴⁹ The settlement (Kolonna V) was protected at its eastern side by a sectional wall that blocked the critical access point from the land to the peninsula (**Fig. 8**). At the steep scarp to the north no fortification walls have been detected, and it is likely that the backs of houses provided protection there, similar to Thermi on Lesbos. The Kolonna V for-

⁴⁴ For absolute chronology, see Manning 2010; Smith 2017, 116.

⁴⁵ In general on the “Wendzeit FH II/FH III”, see Maran 1998; also Weiberg/Lindblom 2014; Smith 2017, 116.

⁴⁶ E.g., Wright 2004, 119; 2008, 232 Fig. 10.2.

⁴⁷ At Troy and at Seraglio on the island of Kos fortifications were built in the late Early Bronze as well. For Troy, see e.g., Easton 2002, 310; Ivanova 2008, 331–332; Blum 2012, 352 (on the regional context). For Seraglio, see e.g., Marketou 1997; Alram-Stern 2004, 94; Marketou 2004, 25–27 Fig. 7b.

⁴⁸ E.g., Walter/Felten 1981; Ivanova 2008, 271–272; Gauß 2010; 2017, 48.

⁴⁹ For tentatively Early Bronze II fortifications, see Walter/Felten 1981, 22 plan 5.



Fig. 7 Distribution of Early Bronze III sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

tification is a freestanding, vertical and wide stone wall with mudbricks above; it may already have included a rampart.⁵⁰ Two gates, presumably curved bastions/towers, formed a double gate and a 'bailey' similar to Kastri on Syros. After a fire completely destroyed the site, the fortifications were newly built.⁵¹ A new massive stone wall with a battered front and a mudbrick superstructure was built on

top of the destroyed houses of the Kolonna V settlement. This wall is situated immediately behind the Kolonna V fortifications,⁵² which were repaired and served as an outer line of defense (Fig. 9).⁵³ Two massive rectangular bastions flanked the axial entrance; the door opening was rather narrow, permitting access to only one person at a time.⁵⁴

Considering the almost c. 950-year timespan of the Aegean Early Bronze Age, as well as the various geographical regions, differences in settlement patterns, and the rareness of fortifica-

⁵⁰ Walter/Felten 1981, 28–33. 35 Fig. 26 plan 7; Gauß 2017, 48.

⁵¹ E.g., Walter/Felten 1981, 28–42; Gauß 2010, 743–744. For the absolute chronology at Kolonna, see Wild *et al.* 2010. The fiery destruction and end of the Kolonna V settlement phase are dated with 95.4 % likelihood to 2196–2111 BCE (Wild *et al.* 2010, 1020 Table 3).

⁵² Walter/Felten 1981, 43–46; Gauß 2017, 48.

⁵³ Walter/Felten 1981, 48–49. 30 Figs. 24–25; the proposed Kolonna V rampart was abandoned.

⁵⁴ Walter/Felten 1981, 43–47 Fig. 38.



Fig. 8 Kolonna on Aegina, settlement with fortifications of Kolonna phase V (red); the late Archaic/Classical temple of Apollo is symbolized by the light gray area (figure based on Walter/Felten 1981, with additions by the author and H. Birk)

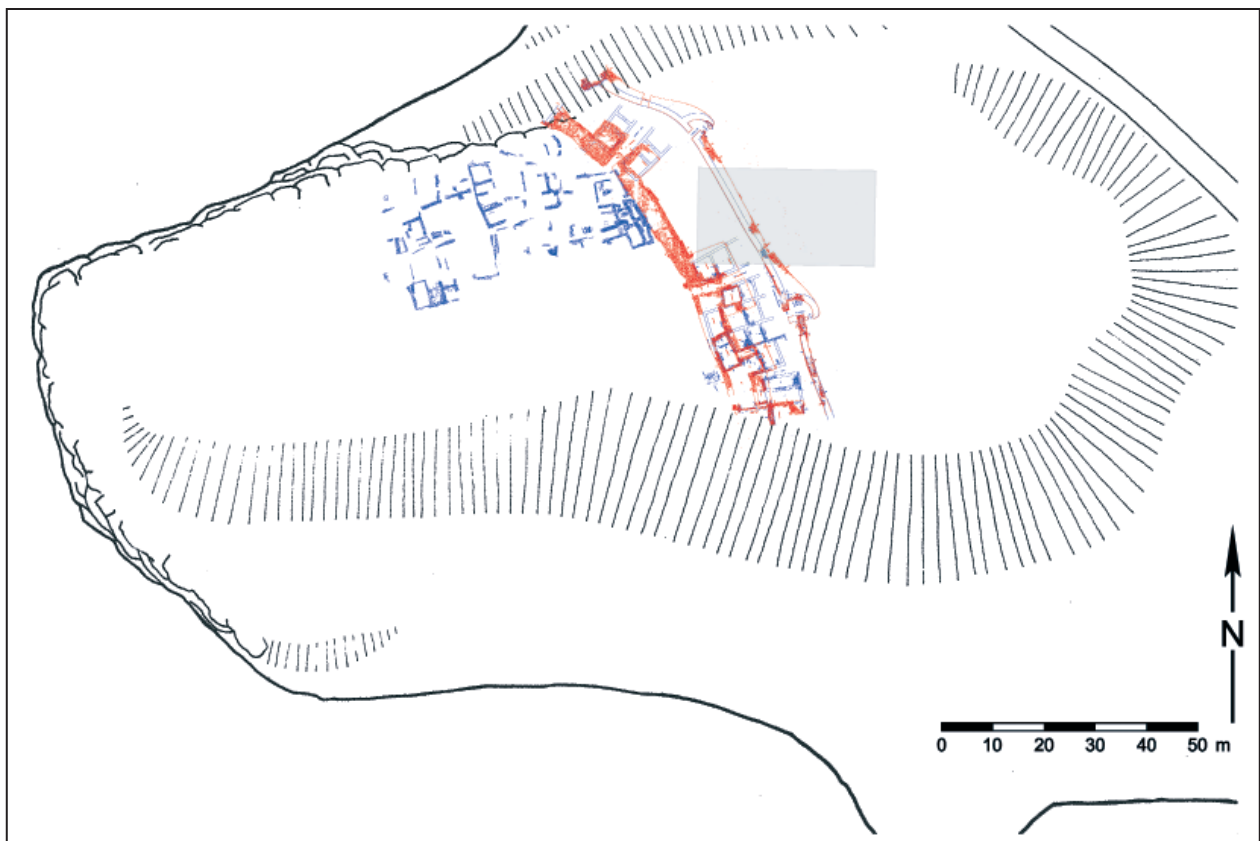


Fig. 9 Kolonna on Aegina, settlement with fortifications of Kolonna phase V (blue) and VI (red); the late Archaic/Classical temple of Apollo is symbolized by the light gray area (figure based on Walter/Felten 1981, with additions by the author and H. Birk)



Fig. 10 Distribution of Middle Bronze Age sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

tions, only general comparisons seem possible.⁵⁵ Very important factors for defensive strategies are clearly the location and natural conditions.⁵⁶ Most fortifications are located immediately at or in close proximity to coastlines,⁵⁷ even if situated on rather inaccessible hilltop locations. However, the assumption that only coastal sites may have been fortified or that the greatest threat came mainly from the sea is an oversimplification, and

the growing number of fortified or potentially fortified inland sites urges caution.

One primary difference between eastern and central/western Aegean fortifications may be the form and dimensions of fortifications. Troy, with its massive fortification of the acropolis and a defensive system for the lower settlement, is exceptional. In the central and western Aegean, the Cycladic islands and the Greek mainland, fortifications are commonly of much smaller scale, sometimes protecting only a few houses. The walls are either free-standing or have buildings abutting them; stone revetments ('glacis') of the settlement mound seem more common in the eastern Aegean.⁵⁸

⁵⁵ For a more detailed summary, see Gauß 2017, 48.

⁵⁶ E.g., Ivanova 2008, 193. Further GIS analysis may provide additional common features, e.g., the proximity to other contemporary settlements, or the inclination of the slopes.

⁵⁷ E.g., Renfrew 1972, 399; Tartaron *et al.* 2006, 157–158. Also D. Pullen (2008, 32), who stresses the correlation of fortifications and harbor sites.

⁵⁸ E.g., Ivanova 2008, 221–222.



Fig. 11 Distribution of later Middle Bronze Age and early Late Bronze Age sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

Middle Bronze Age

The number of sites in the Middle Bronze Age Aegean (c. 2150/2100 BCE to 1650 BCE)⁵⁹ is smaller than in the preceding Early Bronze Age. A clear, unambiguous subphasing of the Middle Bronze Ages is still tricky, but must be attempted for a better understanding of long-term developments of settlement patterns and fortifications (Fig. 10).⁶⁰

⁵⁹ For absolute chronology of the Aegean Middle Bronze Age, see e.g. Manning 2010 (with references).

⁶⁰ K. Syriopoulos (1995, 605–771) classified 773 Middle Bronze Age sites without further subdivision. See also Wright 2004 for a comparison of settlement patterns

In the central Aegean area relatively few fortified sites are known, especially in the first half of the Middle Bronze Age. Current evidence indicates an increase in fortifications in the second half or the late phase of the Middle Bronze Age, or at the beginning of the Late Bronze Age (Fig. 11).⁶¹ When comparing the distribution of Middle Bronze Age

in the northeastern Peloponnese with a clear rise in the numbers of Middle Bronze Age sites compared to relatively few Early Bronze III ones.

⁶¹ Davis 1986, 104–105 referring also to Howell 1973, 75 and Hope Simpson/Dickinson 1979, 426 with list of Bronze Age fortifications; see also Papadimitriou 2010, 257 Fig. 1; Philippa-Touchais 2016, 647.



Fig. 12 Distribution of Middle Bronze Age sites (blue), possible/certain fortifications (red) and tumuli/elite burials and mansions (green) (map by author and P. Matsouka, Anavasi)

tumuli and the earliest tholos tombs⁶² as well as other indications for emerging elites (e.g., special structures⁶³ or mansions like the ‘Large Building Complex’ at Kolonna⁶⁴), an interesting picture develops: Only at a few fortified sites can emerging elites be detected in exceptional burials or special structures (e.g. mansions). Likewise, only a few sites with the aforementioned features preserve evidence of fortifications (**Fig. 12**).

Middle Bronze Age fortifications are likewise not well attested in the eastern Aegean and on the western Anatolian coast.⁶⁵ At Troy, there is so far scanty evidence for fortifications at the Troy V settlement, which covers most of the Middle Bronze Age.⁶⁶ The prehistoric site at the Heraion on the island of Samos seems exceptional for the eastern Aegean. Three successive phases of Middle

⁶² For the distribution of tholoi, see e.g. Pelon 1976. On tumuli and their distribution, see e.g., Boyd 2002; Merkouri/Kouli 2011.

⁶³ Wright 2008, 249.

⁶⁴ Gauß *et al.* 2011.

⁶⁵ For Çeşme-Bağlararası in the Izmir region and its fortifications, see Şahoğlu 2007.

⁶⁶ Easton 2002, 309–310 Fig. 202; Blum 2012, 50. 77. 124 with references. In general on Troy V, see e.g., Blegen 1963, 105–110; Blum 2006; 2012. Regarding Troy VI, see now Pavúk 2014.

Bronze Age fortifications have been attested, but only small stretches have yet been uncovered.⁶⁷

Aghia Irini on the island of Kea is thus far the best known example of Middle Bronze Age fortifications in the Cyclades,⁶⁸ but other fortified sites may have existed as well.⁶⁹ Aghia Irini was fortified after its reoccupation in the Middle Bronze Age.⁷⁰ The location of the settlement on a peninsula and the preserved fortifications indicate a sectional rather than circumferential defensive wall, with housing limited to within the fortifications.⁷¹ After a complete destruction, the site seems to have been unfortified until the construction of a new massive wall, the ‘Great Fortification’,⁷² in the advanced to late Middle Bronze Age.⁷³ The new fortified area increased the size of the settlement by one-third,⁷⁴ and, as with the earlier phases, no signs of habitation were identified outside the fortifications.⁷⁵ Several modifications altered the ‘Great Fortifications’ over time, and at the end of the Middle Bronze Age it suffered severe damage, presumably due to an earthquake.⁷⁶ Following this event it is not clear if repairs at the wall were made before the beginning of the Late Bronze Age.⁷⁷

The fortifications at Kolonna on Aegina are one of the best known examples from the Greek mainland and its adjacent islands. In this geographical area, Kolonna is so far the only site with a continuous sequence of fortifications from the

late Early Bronze to the Late Bronze Age.⁷⁸ The fortifications of the Kolonna VII settlement at the beginning of the Middle Bronze Age fundamentally changed the form of the defensive wall, with new tangential and partly bent gateways protected by massive bastions (**Fig. 13**). The fortifications were reinforced during the Kolonna VIII settlement, when both gateways were extended and a massive bastion near the northern entrance was built (**Fig. 14**). In Kolonna VIII for the first time there is also clear evidence for housing outside the fortifications.⁷⁹ In the advanced Middle Bronze Age, the time of the Kolonna IX settlement, dramatic changes occurred in the design and form of the defensive system (**Fig. 15**). The eastern extension was fortified separately, and a new massive fortification wall was built to protect the center of the settlement. This new wall was unique in two aspects: it comprised three individual parts⁸⁰ and used a combination of stone and mudbrick in the lower zone and half-timber and mudbrick in the upper zone.⁸¹ The fortifications of Kolonna X at the end of the Middle Bronze and the beginning of the Late Bronze Age are less clear and seem to comprise reinforcements of Kolonna IX walls and major changes in the access to the inner settlement.⁸²

Current evidence indicates that the number of newly fortified sites on the Greek mainland increased during the Middle Bronze Age. Among the best known examples are the fortifications on the Aspis hill at Argos⁸³ in the Argolid and Kiapha Thiti in Attica,⁸⁴ but more sites are likely to have been fortified.⁸⁵ At the Aspis hill, multiple phases of fortifications have been traced. An inner enceinte seems to have been fortified during the middle part of the Middle Bronze Age,⁸⁶ and an outer one in the middle/advanced and late

⁶⁷ Kouka 2015, 228–229 Figs. 1–2, 4–5; on the continuous sequence, see also Kouka 2013.

⁶⁸ Davis 1977; 1986; Overbeck 1989; Rutter 1993, 776 and note 135.

⁶⁹ Sotirakopoulou 2010, 829 and notes 21 and 22. For Palamari on Skyros in the Sporades, see Parlama *et al.* 2015; Romanou 2015.

⁷⁰ Overbeck 1989, 6. 8. 119. 175–177 pls. 3–4; Davis 1992, 709; Kilian-Dirlmeier 1997, 86 Fig. 47 (tentative reconstruction of fortifications). For the reoccupation, see Overbeck 2007; Overbeck/Crego 2008; Schofield 2011, 191.

⁷¹ Overbeck 1989, 6.

⁷² Davis 1986.

⁷³ Construction of the new wall marks the beginning of period V, in Minoan chronological terms MM IIB/MM IIIA; Davis 1986, 1. 8–15; Overbeck 1989, 120; Davis 1992, 709; Schofield 2011, 53.

⁷⁴ E.g., Davis 1986, 8. 102.

⁷⁵ Davis 1986.

⁷⁶ Davis 1986, 1. 106 (in Minoan terms before the end of MM IIIB).

⁷⁷ Davis 1986, 1 (in period VI, when Cretan LM IA pottery reached the site).

⁷⁸ On Middle Bronze Age Kolonna with references, see e.g., Walter/Felten 1981; Rutter 1993, 775–780; Gauß 2010; Gauß/Smetana 2010; Gauß *et al.* 2011; Gauß 2017, 52–56.

⁷⁹ Walter/Felten 1981, 70.

⁸⁰ Walter/Felten 1981, 76 Fig. 60.

⁸¹ Walter/Felten 1981, 76. 81 Figs. 60–61. 65 Pl. 64.2; in general on this technique, see Naumann 1971, 91–117; Küpper 1996, 67–69.

⁸² Walter/Felten 1981, 83.

⁸³ Philippa-Touchais 2016 with references.

⁸⁴ E.g., Lauter 1989; 1995; Gauß 2017, 56

⁸⁵ E.g., for Attica, see Papadimitriou 2010; for new evidence at Plasi in eastern Attica, see Polychronakou-Sgouritsa *et al.* 2016.

⁸⁶ Philippa-Touchais 2016, 649–651.

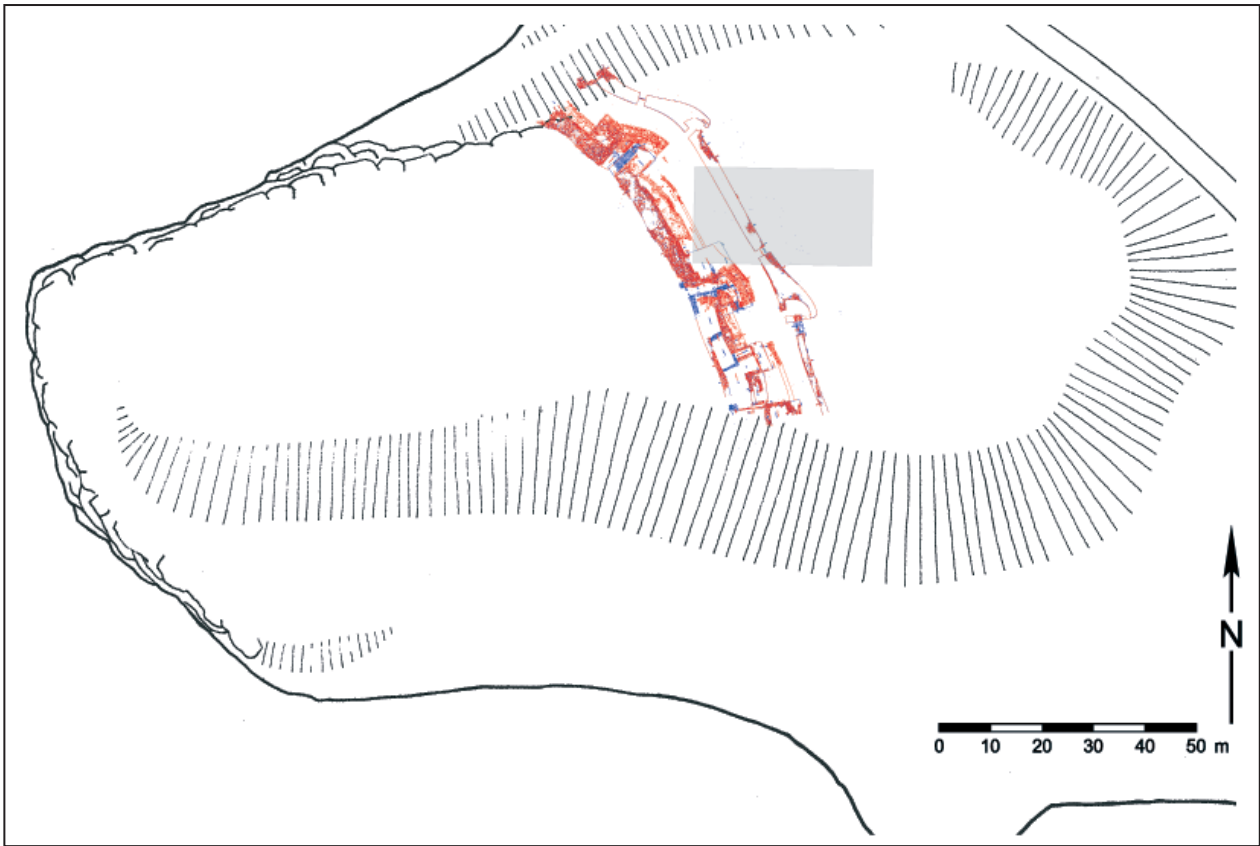


Fig. 13 Kolonna on Aegina, settlement with fortifications of Kolonna phase VI (blue) and VII (red); the late Archaic/Classical temple of Apollo is symbolized by the light gray area (figure based on Walter/Felten 1981, with additions by the author and H. Birk)

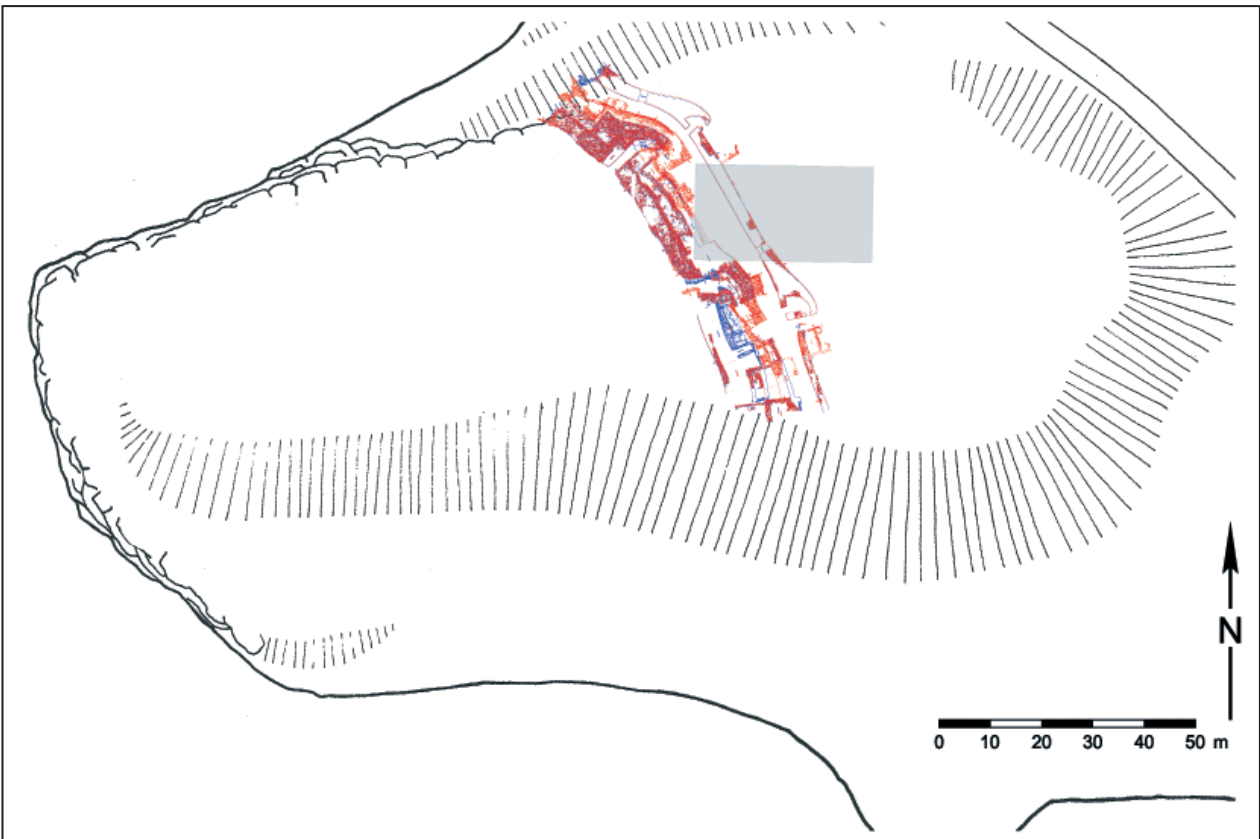


Fig. 14 Kolonna on Aegina, settlement with fortifications of Kolonna phase VII (blue) and VIII (red); the late Archaic/Classical temple of Apollo is symbolized by the light gray area (figure based on Walter/Felten 1981, with additions by the author and H. Birk)

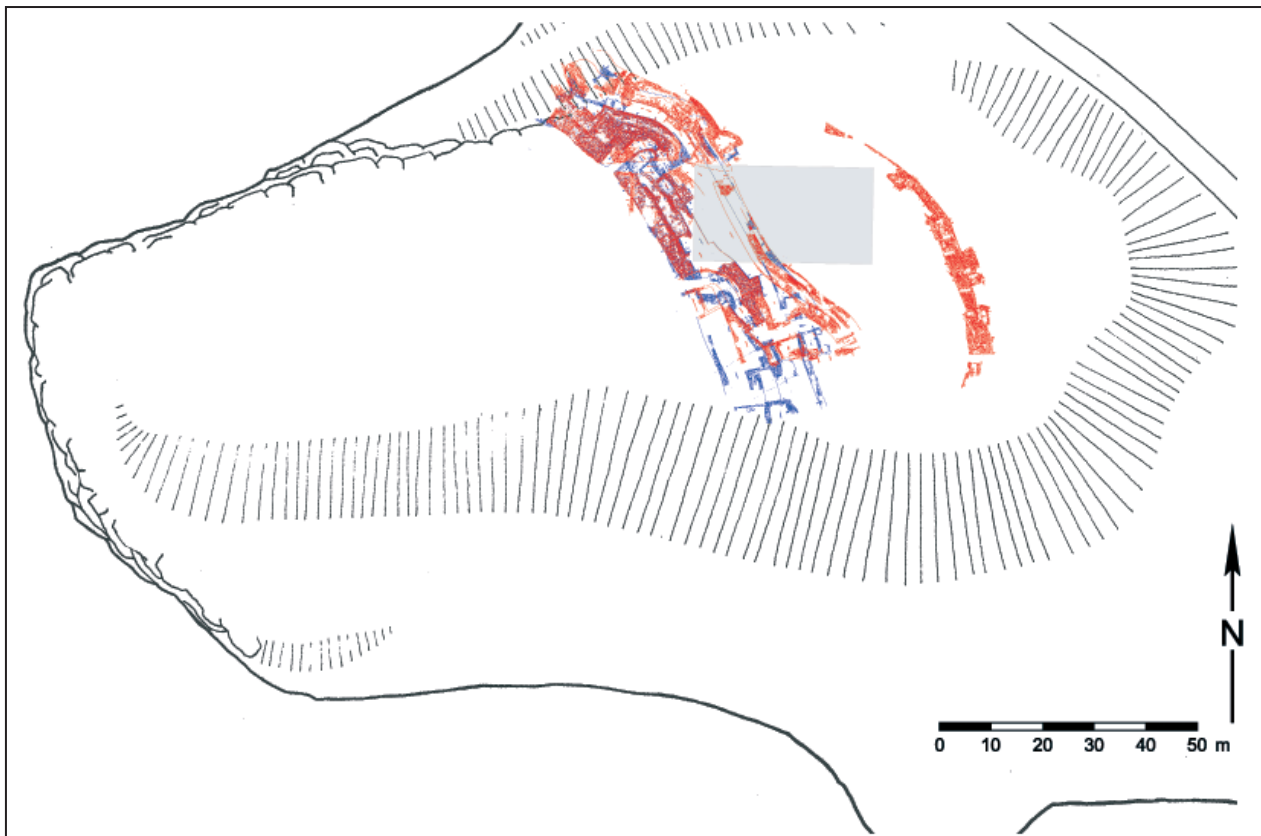


Fig. 15 Kolonna on Aegina, settlement with fortifications of Kolonna phase VIII (blue) IX (red); the late Archaic/Classical temple of Apollo is symbolized by the light gray area (figure based on Walter/Felten 1981, with additions by the author and H. Birk)

stages.⁸⁷ The newly built sectional fortifications at Kiapha Thiti⁸⁸ are remarkable, as they mark the re-emergence of fortified regional centers in the area of the Saronic Gulf, aside from Kolonna on Aegina.⁸⁹ The walls at Kiapha Thiti followed the natural topography and protected an area of c. 10,000 m². No substantial changes or extensions have been traced; the fortifications were destroyed presumably by a landslide in the early Late Bronze Age, and the site was subsequently abandoned.⁹⁰

Because of the limited evidence, it is difficult to generalize Middle Bronze Age fortifications. Thus far the continuous sequence of fortifications at

Kolonna seems unique, but other sites, such as the Heraion of Samos, may also have similarly unbroken sequences of fortifications. Other sites became fortified during the Middle Bronze Age, such as Argos, Kiapha Thiti, or Aghia Irini on Kea. Fortifications in that period seem to be located immediately at or in close proximity to coastlines (e.g., Kolonna, Samos, Plasi) or on hilltops (e.g., Argos, Kiapha Thiti). The number of known fortified sites increased in the later stages of the Middle and early Late Bronze Age.⁹¹ This trend is most likely related to the major changes in the Aegean that occurred in the Shaft Grave era and early Mycenaean period.⁹²

⁸⁷ Philippa-Touchais 2016, 651.

⁸⁸ E.g., Lauter 1995; Kalogeroudis 2008, 190–192; Lohmann 2010, 38–41; Vonhoff 2015, 488–489. On finds, see Maran 1992.

⁸⁹ On the role of Kolonna, see Pullen/Tartaron 2007, 155–157 Fig. 14,4–5. The tumuli at Vrana and new research at Plasi attest an important Middle Bronze Age center in the Marathon bay area in eastern Attica, see e.g., Pantelidou Gofa *et al.* 2016; Polychronakou-Sgouritsa *et al.* 2016.

⁹⁰ E.g., Lauter 1995, 21. 49.

⁹¹ E.g., Kiapha Thiti, Malthi – for early Late Bronze Age fortifications, see e.g., Rutter 1993, 788 note 176; Vonhoff 2015. For Malthi, see now Worsham *et al.* 2018.

⁹² E.g., Rutter 1993, 785–794; Voutsaki 2005; Wright 2008; Shelton 2010, 139–143; Voutsaki 2010.



Fig. 16 Distribution of Late Bronze Age (Early Mycenaean) sites (blue) and possible/certain fortifications (red) and tumuli/tholoi/elite burials and mansions (green) (map by author and P. Matsouka, Anavasi)

Late Bronze Age – A Preview

The sheer number of Late Bronze Age Aegean (c. 1650 BCE to 1050 BCE⁹³) sites is impressive,⁹⁴ and likewise the number of fortified or presumably fortified sites (Fig. 16).⁹⁵ In the first part of the Late Bronze Age, the early Mycenaean or so-called pre-palatial period⁹⁶ (c. 1650/1600 BCE to

1420/1410 BCE),⁹⁷ a picture similar to that of the Middle Bronze Age (Fig. 12) emerges. The number of sites where special structures (mansions, ‘*maisons de Chef*’)⁹⁸ are attested and/or with associated

⁹³ For absolute chronology, see, e.g., Weninger/Jung 2009; Manning 2010.

⁹⁴ Syriopoulos 1995, 777–1271, classified 1312 Late Bronze Age sites.

⁹⁵ E.g., Iakovidis 1983; 1999; Hope Simpson/Hagel 2006; Cook 2014; Papadopoulos 2017.

⁹⁶ Sites such as Aghios Vasileios/Xerocambi in Laconia

and Pylos in Messenia indicate that both sites could have been “palatial” already in the early Mycenaean period. On the situation in Early Mycenaean Greece, see, e.g., Wright 2008, 249–250. For Pylos see, e.g., Nelson 2001; Rutter 2005, 21–26; Davis 2010, 683. For Aghios Vasileios/Xerocambi, see, e.g., Vasilogambrou 2010; 2011; 2012; 2013; Vasilogambrou/Kardamaki in press.

⁹⁷ For absolute chronology, e.g., Manning 2010, 23 table 2.2.

⁹⁸ E.g., Kilian 1987; 1988; Barber 1992; Vonhoff 2015; Maran 2015, 278–280. See also J. Wright (2008, 249):

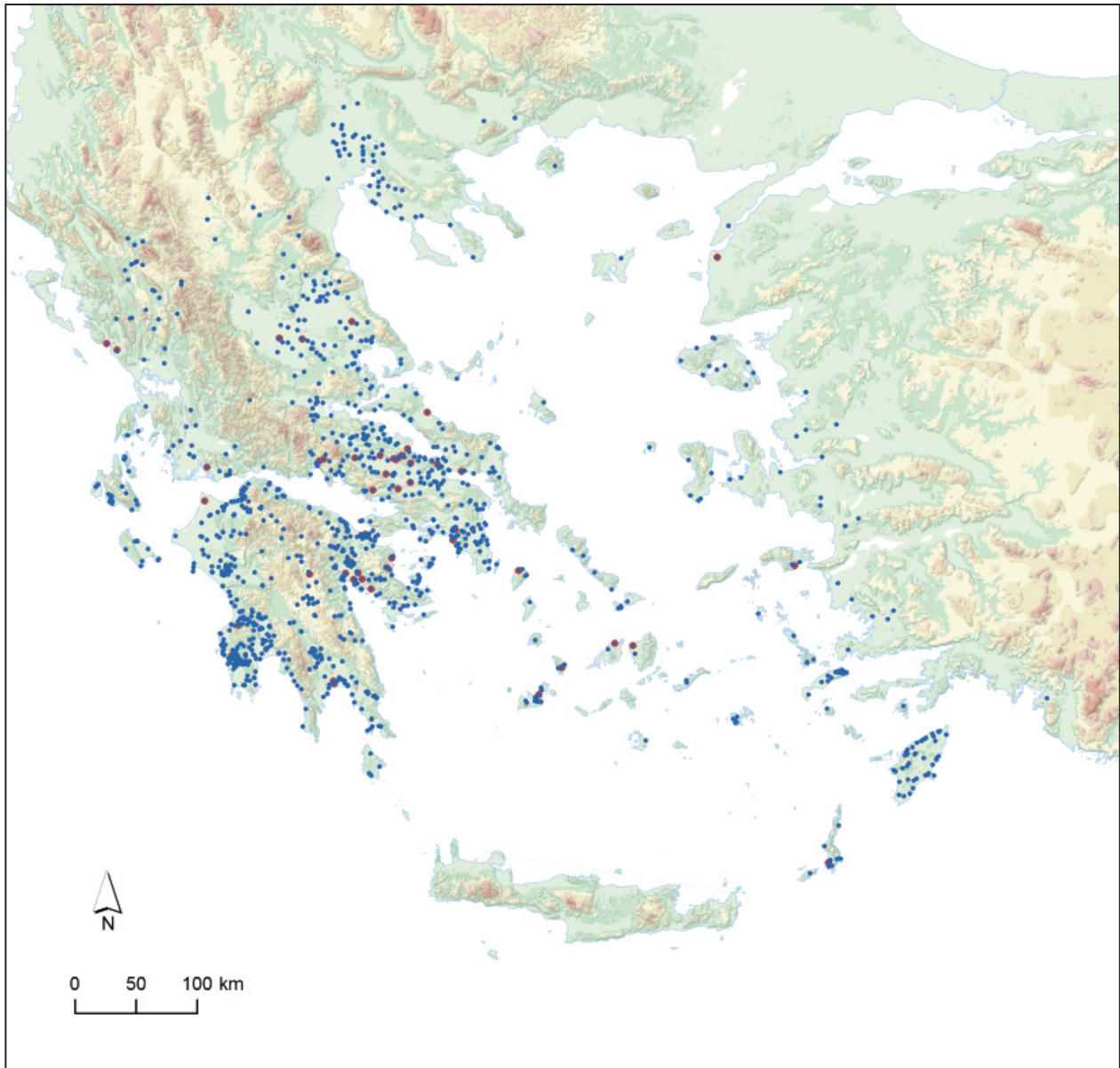


Fig. 17 Distribution of Late Bronze Age (Palatial) sites (blue) and possible/certain fortifications (red) (map by author and P. Matsouka, Anavasi)

tholos tombs far outnumbers fortified sites.⁹⁹ Likewise, only a few fortified places have clear evidence for mansions and/or exceptional burials.¹⁰⁰

The following Mycenaean palatial period (c. 1420/1410 BCE to 1210/1190 BCE)¹⁰¹ may be characterized by the decline of local/regional centers and the emergence of palaces, often massively fortified,

e.g., Mycenae, Tiryns, Midea, and Thebes.¹⁰² Fortified sites apart from the palaces are concentrated in the Argolid and Boeotia. Athens¹⁰³ seems to be the only fortified site in Attica, and no fortifications of the palatial period are known in Messenia.¹⁰⁴ The reason for this heterogeneous pattern has not been explained (Fig. 17). Most fortified sites seem relatively small, and even at Mycenae and Tiryns only the palatial center was fortified, while the lower

“At most of the palace sites, special structures were constructed, perhaps as early as LH II.”

⁹⁹ For the distribution of tholoi, see e.g., Pelon 1976. On tumuli and their distribution, see e.g. Boyd 2002; Merkouri/Kouli 2011; Zavadil 2013.

¹⁰⁰ See also Vonhoff 2015.

¹⁰¹ For absolute chronology, e.g., Manning 2010, 23 table 2.2.

¹⁰² On the fortifications of the palatial centers, see, e.g., Iakovidis 1983; 1999. For Midea, see also, e.g., Demakopoulou/Divari-Valakou 1999; Demakopoulou 2015. For Thebes, see Dakouri-Hild 2010, 699 with references.

¹⁰³ On the Mycenaean fortifications of Athens, see, e.g., Iakovidis 2006.

¹⁰⁴ See also Rutter 2012.

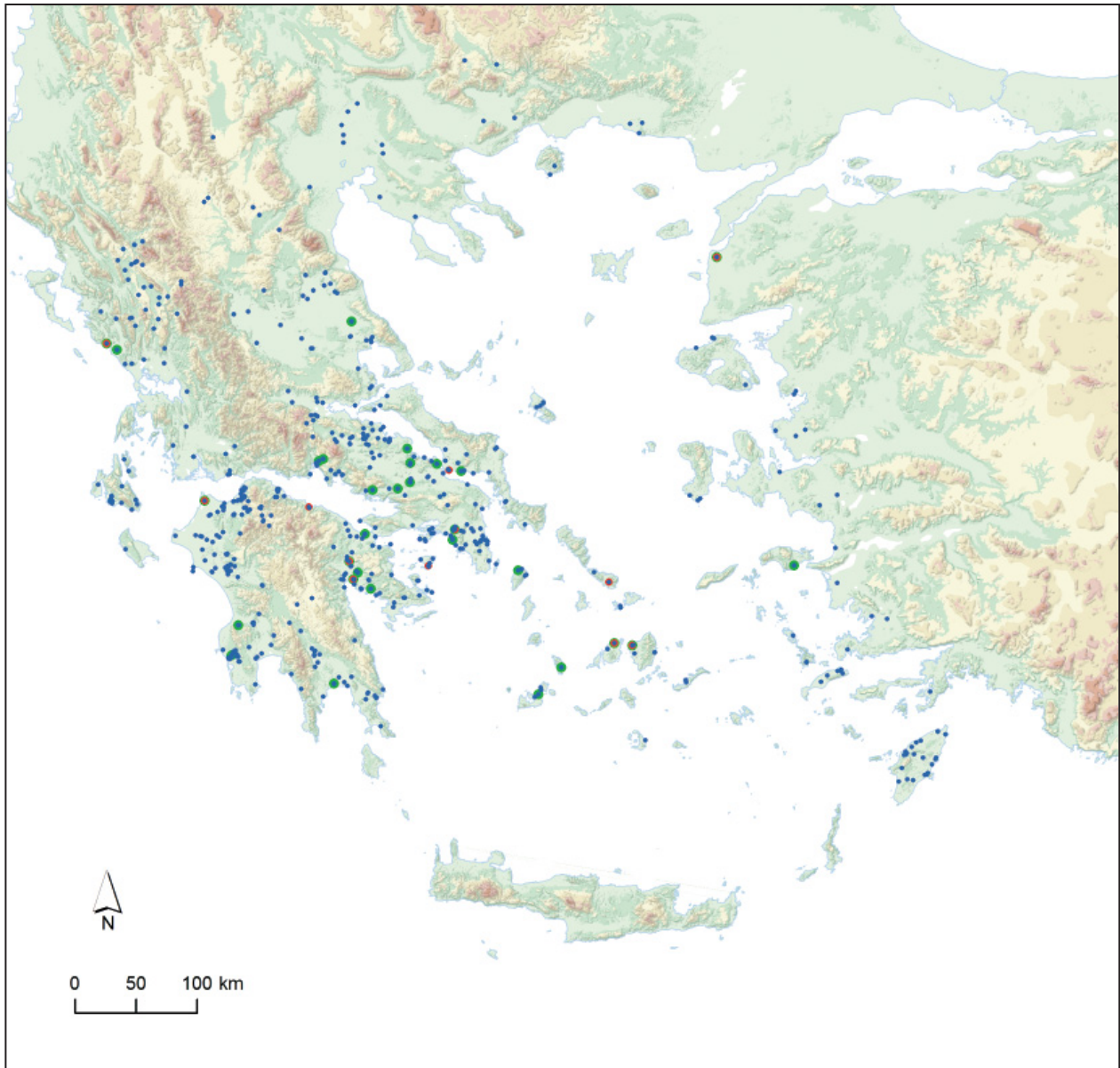


Fig. 18 Distribution of Late Bronze Age (Post-palatial) sites (blue) and possible/certain fortifications (red) and fortified palatial sites occupied in post-palatial times (green) (map by author and P. Matsouka, Anavasi)

towns seem to have been unprotected. However, Troy (Troy VI and VII), with its massively fortified acropolis and the separately protected lower settlement, is once more exceptional.¹⁰⁵

In the following post-palatial period (c. 1210/1190 BCE to 1050 BCE),¹⁰⁶ newly built fortifications are rare and limited to a few sites, e.g. Aigeira in Achaia¹⁰⁷ and possibly Lefkandi,¹⁰⁸ Grotta on Naxos,¹⁰⁹ Xoburgo on Tinos¹¹⁰ and Koukounaries on

Paros¹¹¹ and Megali Koryphi on Aegina¹¹² (**Fig. 18**). However, a number of sites with fortifications, including e.g. the former palatial centers of Mycenae and Tiryns or the Athenian acropolis, continued to be used in post-palatial times. It is therefore very likely that existing fortifications stayed in use through the latest stages of the Bronze Age and even beyond.¹¹³

¹⁰⁵ On the fortifications of Troy VI and VII, see, e.g. Klinkott/Becks 2001; Klinkott 2004.

¹⁰⁶ For absolute chronology, e.g., Manning 2010, 23 table 2.2.

¹⁰⁷ Gauß 2015.

¹⁰⁸ See <http://lefkandi.classics.ox.ac.uk/2008regionII.html> (visited on 18.11.2018)

¹⁰⁹ E.g., Lambrinouidakis/Philanotou-Hadjianastasiou 2001.

¹¹⁰ E.g., Kourou 2001; 2011.

¹¹¹ E.g., Schilardi 1981; 1984; 2016.

¹¹² See Vokotopoulos/Michalopoulou 2018.

¹¹³ For example, on the repair and modifications of the Late Bronze Age fortifications at Aghios Andreas on Siphnos in the Late Geometric period, see Hope Simpson/Hagel 2006, 113. On Early Iron Age fortified sites, see e.g. Kourou 2009, 112–116.

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