

GIS analysis and the abandoned settlements in Pausanias' Periegesis: a methodological proposal

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Abstract: The *Periegesis* of Pausanias, an invaluable account detailing the state of Greece in the 2nd century AD, represents an ideal example of a classical text suitable for a complex geospatial representation, due to the sheer amount and precision of the author's descriptions. More importantly, Pausanias' accounts of specific features, mostly identified by archaeological research, often adhere to precise literary and cultural criteria. This approach by the author may lead to several layers of analysis of the text's content. The distribution of abandoned settlements, in particular, may be indicative not only of the actual state of Roman-era Greece and the demographic evolution of the accounted regions, but also of the cultural goals of the author. This article focuses on the possibility of adopting a *GIS*-based methodology in the analysis and evaluation of the content of a classical text, starting with its digitization and subsequently isolating specific elements related to a particular phenomenon. Such features, in turn, underwent a process of textual analysis and data systematization, thus enabling the evaluation of conclusions potentially useful for the literary research.

Introduction

The rise of digital humanities has seen a strengthening of the ties between several fields of research and different types of information systems. More than mere tools, they have been rightly labeled as “humanities of the digital realm”, focused on the study and representation of the human experience.¹ An invaluable asset in the use of digital tools for literary research is doubtlessly represented by their ability to rapidly perform complex searches through a vast amount of data. Specialized lexica and thesauri, many of which freely available online, represent an obvious example in this sense.² The creation of similar databases is in turn an ideal first step in the implementation of tools able to process the gathered data, highlight relations between single components from a repository, and elaborate scientifically valid conclusions. A promising field in textual data retrieval and analysis is represented by the adjustment of literary databases to a proper geographical context;³ an approach that proved particularly versatile in the geographic representation of classical antiquity. A visual reconstruction of the spatial features of a text does indeed allow to adopt and explore a different approach in the study of a particular literary material, and to appreciate features such as specific traits of an ancient author, the chronological context, etc. *GIS* mapping tools represent the most effective choice for the creation of this particu-

1 Scheuermann / Kroeze (2017).

2 A common flaw in the creation of these digital libraries is represented, however, by the lack of a critical apparatus, particularly necessary, for example, for the proper use of Greek and Latin texts; Damon (2016).

3 Franco Moretti's seminal work in analyzing the applications of a literary atlas adequately illustrates the potential of investigating the social and cultural implications behind both a single writer's literary geography and a comparison between the approaches pursued by different authors; Moretti (1997). See Taylor / Gregory (2022) for a case study regarding the analysis of a literary digital atlas; for an assessment of the digitization of literary maps, Cooper et al. (2017).

lar type of database due to their ability of both storing a large amount of complex data and combining them in different ways in order to evaluate particular features from a case study.⁴ Indeed, the demand for digital maps has recently soared due to the versatility of spatial representations, which are capable of intuitively illustrating the outcomes of a research and generating further insights from basic inquiries.⁵

The potential of geographic databases in classical research has been enthusiastically exploited. This is hardly surprising, as this field ideally combines historical, archaeological, and literary research with a cross-disciplinary approach. The foundation for much of these analyses is provided by Richard Talbert's two-volume *Barrington Atlas of the Greek and Roman World*⁶, a seminal text in the study of classical antiquity. Most notably, it provides the identifications for the *Pleiades* digital atlas, a database focused on the classical world and quite possibly the most well-known case of a digital atlas with precise ancient literary references.⁷ This was used in turn for the creation of further similar projects, such as the *DARE (Digital Atlas of the Roman Empire)*, edited by the Lund University.⁸ *Pleiades* was also a fundamental asset in the identification of ancient sites for projects such as *PELAGIOS (Pelagios Enable Linked Ancient Geodata In Open Systems)*⁹ or *ToposText*¹⁰. The latter, edited by the Aikaterini Laskaridis Foundation, provides several tools for the research on classical texts, including a detailed digital atlas, and does offer a visual representation and a description of 'ancillary' elements related to the sites, such as, for example, the temples of an ancient settlement. However, not all these features are always taken into consideration. Moreover, the atlas, like the other aforementioned projects, usually provides no more than one identification, when several alternatives are often necessary when analyzing features such as those from an ancient landscape, whose location may very well be uncertain. All these sites do represent invaluable tools for the analysis of ancient topography; nevertheless, they all share a few limitations, as they do not generally provide multiple identifications for uncertain locations and are essentially committed to the analysis of specific areas in the 'broader' sense. They do indeed pin ancient locations on their geographic context, but fail to account in a satisfactory way for all the unidentified elements and for those that occasionally lied *inside* the described sites, essentially neglecting a more complete analysis of the features related to the single points of interest. These features may include, for example, a single temple that lied within a settlement or, even more specifically, the sculptures that were part of a temple; elements generally not systematically considered or analyzed by the aforementioned projects.

Pausanias' *Periegesis* offers a detailed description of the landscape and sites of Greece under Roman rule and is one of the most important sources in the definition of the ancient layout of the region. The aforementioned websites often refer to locations described by this author, albeit with the already described limitations. However, these platforms are not exclusively focused on Pausanias, nor on specific features such as the state – whether inhabited or deserted – of Greek settlements during the Roman era, as described by the author. The digital Pausanias project¹¹, on the other hand, is indeed focused on referring Pausanias' text to its proper landscape by converting the information from the *Periegesis* into

4 Refer to Martí Henneberg (2023) and Lünen / Travis (2013) for an analysis of historical *GIS* in particular. Bodenhamer et al. (2010), for an assessment on the current and foreseeable impact of the *GIS* on humanities in general.

5 Knowles / Hillier (2008); Travis et al. (2020).

6 Talbert / Bagnall (2000).

7 <https://pleiades.stoa.org/> (last access 11.11.2024).

8 <https://www.lunduniversity.lu.se/lup/publication/dcaf05b8-a13b-4024-a47b-325dbb68a035> (last access 11.11.2024).

9 <http://pelagios-project.blogspot.com.es/> (last access 11.11.2024).

10 <https://topostext.org/> (last access 11.11.2024).

11 <https://gis.periegesis.org/> (last access 11.11.2024).

geodata through the *Recogito* open-source platform.¹² The resulting map has been implemented by using the *ArcGIS* software, and the results have been uploaded to the *ArcGIS* online cloud. However, the representation of Pausanias' sites, for which further possible developments are nevertheless contemplated, is by now still incomplete, with its points of interest associated with very simple data (such as the toponym, type, and a few tags) while the description of the sites is mostly provided by links to pages on the *Brill's New Pauly*, an encyclopedia ancient history and classical studies, published by *Brill.com*.¹³ Furthermore, the project presents the same issues of the aforementioned databases, as both structured descriptions for 'accessory' sites and possible alternatives in identifying still uncertain areas are missing. As for the yet *unidentified* features they are, again, not subjected to a thorough analysis which may highlight their characteristics and possible identification. While this is, of course, comprehensible, an approximate clarification of such occurrences may be useful, if based on elements provided by the author, in defining the broader context of an area under exam. Finally, it is crucial to grant the possibility of constantly improving and updating the collected data according to the progress of the research. Considering the aforementioned projects and their issues, the following prerequisites emerge in defining a functional map based on ancient Greek and Roman texts:

- The map must not only identify the described sites, but also provide a description of *related* elements.
- As for sites of uncertain identification, it is necessary to provide all possible localizations, along with the respective bibliographic references.
- Outright unidentified sites should also be taken into consideration and positioned according to the details provided by the classical author, albeit with the necessary caution due to the hypothetical nature of such identifications, in order to help to better contextualize the reconstructed landscape.
- The considerations of an author regarding the conditions of a specific area should be reported. This information is particularly important, for example, regarding the possible state of ruin of a location at the time of its description.
- All data related to the sites should be categorized according to a defined taxonomy. This can be particularly useful in conducting a targeted survey based on features such as era, identification status, type, etc.

As part of my PhD thesis, I have created a multimedia *GIS* atlas of Greece in the Roman era, based on the data retrieved from the analysis of the ten books of Pausanias' *Periegesis*. This atlas,¹⁴ freely available online,¹⁵ provides a representation of the sites described by the author, each one placed on the base of a critical analysis of the text. This work, carried out through the use of the *ArcGIS* software,

12 <https://recogito.pelagios.org/> (last access 11.11.2024).

13 <https://referenceworks.brillonline.com/browse/brill-s-new-pauly> (last access 11.11.2024).

14 This atlas was presented at the International PhD Colloquium *Sistema Binario III Colloquio Internazionale dei Dottorandi. Sulle molteplici prospettive del viaggio: dimensione reale e virtuale*, organized by the University of Macerata from March 30th to April 1st 2021. The publication of the proceedings of the event is still ongoing; see <https://studiumanistici.unimc.it/it/site-news/eventi/2021/sistema-binario-iii-colloquio-internazionale-dei-dottorandi> (last access 11.11.2024).

15 <http://purl.org/framelab/pausanias/atlas> (last access 11.11.2024).

does not aim to the recreation of a strictly *historical* or *archaeological* context,¹⁶ as much as to the digitization of Pausanias' assessments from a *literary* point of view. The map takes into account the perspective of the classical text, which (while amply vindicated by the archaeological research,¹⁷ in stark contrast with earlier late 19th century – early 20th century reservations and criticism¹⁸) nevertheless is not free from curious inconsistencies and omissions identified by the to archaeological research.¹⁹

Any discrepancies of the areas in exam with the literary atlas are noted in the data insertion, but the perspective adopted in creating the atlas is strictly that of the author. The aim of the project was in fact to assemble a reliable digitization of an ancient text, and to provide the tools to rapidly perform several forms of complex evaluations on the collected accounts as reported by their author. The *Periegesis* may represent an excellent case study in this sense. Not only the text is embedded with a vast number of descriptions organically tied to a geographic context, but the nature of the data itself, or rather their features and position within the framework of the text, are pliable to multiple literary interpretations regarding the author and the described setting. Little is known regarding Pausanias himself; his words from the *Periegesis* practically represent the only source of information regarding his background and the specific time period we can rely on.²⁰ More importantly, the text is indicative of the *cultural* background and motives of the author, an aspect that was taken into consideration and that emerged frequently in the creation of the atlas.

As Pausanias carries on his narration of the cities, sanctuaries, works of art and natural features disseminated throughout the area he explores (roughly corresponding to modern southern continental Greece²¹), his preferences and cultural purposes become increasingly evident, and they have been reflected in the setting up of the digital map. The author is notorious for his thoroughly meticulous descriptions of the main points of interests (such as large cities and famous sanctuaries) of Greece. Nevertheless, he is equally famous for his tendency to seek out for the lesser-known curiosities, myths, and historical anecdotes,²² in a quest that inevitably draws him far from the main routes of his time,²³ in search of isolated or little-known sites. A particular feature of the narration that emerged during the

16 Of course, the archaeological state of the art was a necessary and invaluable source of information I constantly used for the correct identification of the sites from the *Periegesis*. But while their identification was indeed possible thanks to the consultation of the archaeological data, the choice of the sites itself, their taxonomy and the relative data were solely based on the accounts from the *Periegesis*; see *infra* pp. 55–59.

17 Pausanias arguably represents one of the ancient sources on which archaeologists and scholars rely the most. More than that, the author can be considered *de facto* a decisive influence on classical archaeological methodology; see Stewart (2013) and Hutton (2005), 3.

18 See Habicht (1985), 167–169; 221.

19 Monuments such as the Stoa of Attalus (Hutton [2008], 292) in Athens or the Nymphaeum of Herodes Atticus in Olympia (Alcock et al. [2003], 186) are in fact conspicuously absent from the *Periegesis*' account.

20 The accounts and chronologically certain events mentioned within the *Periegesis* point to a period that roughly spans from 120 to 180 AD. This would place Pausanias' activity during the rule of the Antonine emperors, with his birth taking place roughly around 115 AD; see Pretzler (2013), 23.

21 The reasons behind the choice of this specific zone are not entirely clear. One possible explanation is that the territory included in the *Periegesis* roughly coincides with the area of the Delphic Amphictyony. Delphi is indeed one of the main focal points in Pausanias' narrative, but in that case, regions like Opuntian Locris, Doris, Euboea and Thessaly should also be present, while they are conspicuously absent in the text; see Bearzot (1988). Pausanias' Greece might also coincide with the Greece of the city-states. This could explain, for example, the absence of regions such as Aetolia, characterized more by the presence of ἔθνη than cities; another possible explanation is represented by the distribution of the panhellenic sanctuaries, so crucial in Pausanias' descriptions; see Bultrighini (1990), 295; 300. Finally, the area described by Pausanias roughly coincides with the boundaries of the Roman province of Achaëa; see Hutton (2005), 61.

22 See Bruit Zaidman (2003) and Goldhill (2001), 156.

23 See Pritchett's work on ancient Greek topography, for a focus on Pausanias and the ancient routes through Greece: Pritchett (1965).

creation of the atlas is the fact that Pausanias visited and described several abandoned settlements through Greece. Some of these were indeed of some historical and cultural importance, while others were definitely more obscure. This represents a measurable aspect of the *Periegesis*, consisting in a precise phenomenon with a discernible spatial distribution. It also proved to be a promising example of isolating and evaluating a set of features from a classical text, from which a series of considerations could be drawn regarding their location.

The state of factual abandonment²⁴ of several settlements becomes all the more remarkable when one takes into consideration the fact that relevant sites such as Mycenae (2,15,4–2,16,7), Tiryns (2,25,8), or Nauplia (2,38,2–2,38,3) were deserted by the age in which Pausanias wrote. The state of the ancient Greek towns in Pausanias' time may be tied to several different explanations. In many instances, it could be tempting to simply connect this phenomenon to the consequences of the Roman occupation. In describing the city of Megalopolis for example, Pausanias does explicitly refer to population movements in Greece together with the 'disaster' (συμφορά) of Roman rule. The author proceeds thus to draw a parallel between the case of the Arcadian city, founded in the aftermath of the Battle of Leuctra in 371 BC, and the population shifts that characterized the Roman dominion.²⁵ While Pausanias' attitude towards the Roman intervention in Greece is often critical,²⁶ however, it cannot be considered *wholly* negative.²⁷ Nor can it be taken into account for every case of settlement depopulation, as the trend of a general depopulation of Greece, while certainly ongoing during the Roman domination, had been underway at least since the Hellenistic period.²⁸

Pausanias' account of Megalopolis (8,27,1–8) is indeed relevant in this respect, as an example of depopulation independent of Roman rule, and helps to illustrate the circumstances of a population decline. The foundation of the city, established in opposition to the hegemony of Sparta, required in fact the settlement of a first wave of inhabitants, which was carried out by transferring the population of

24 It is worth of note, nevertheless, that there are many instances in which the depopulation of a specific settlement does not imply a state of complete abandonment. The remains of a deserted town could still be used by the neighboring communities, especially for very specific cultural purposes; see more *infra* pp. 66–68.

25 [...] ἡ δὲ Μεγάλη πόλις νεωτάτη πόλεων ἐστὶν οὐ τῶν Ἀρκαδικῶν μόνον ἀλλὰ καὶ τῶν ἐν Ἑλληνισί, πλὴν ὅσων κατὰ συμφορὰν ἀρχῆς τῆς Ῥωμαίων μεταβεβήκασιν οἰκήτορες (8,27,1); the Greek texts from the *Periegesis* and the respective translations in this article are drawn from the editions of the *Perseus Digital library*, edited by W. H. S. Jones and H. A. Ormerod; see Jones et al. (1918).

26 Emblematic in this sense is the case of Corinth, destroyed by Lucius Mummius during the Achaean War in 146 BC. Pausanias notes that, during his time, there were no longer any native inhabitants of Corinth, but only descendants of the colonists relocated to the area by the Romans following the city's 'refoundation' by Caesar (2,1,2).

27 The matter of Pausanias' attitude towards the Roman rule is complex, and still a subject of debate; see Hutton (2008) and Moggi (2002). In several cases, Pausanias shows open criticism towards the interference of *other* non-greek entities, as in the case of the Macedonian occupation of the Piraeus (1,26,3); see Bultrighini (1984) and Beschi / Musti (2013). See Bearzot (1992) for Pausanias' negative judgment of the role played by Macedonia in Greek history.

28 Mainland Greece represented in fact a noticeable exception in a broader context of population growth that involved the whole Mediterranean area during the Hellenistic period. The phenomenon, observable at least from the 3rd century BC, manifested itself with a decline in rural population; this trend is partly attributable to a shift of population towards larger settlements, as well as to the emergence of large land estates in the rural areas; see Alcock (1994), 178–179. The late second and third centuries AD, on the other hand, were characterized by a demographic drop in the Greco-Roman world, caused by pandemics such as the Antonine Plague (165–180 AD); see Scheidel (2004), 747. It is furthermore necessary to take into account the changing social conditions which had occurred in Greece by the time the *Periegesis* was written. By the 2nd century AD, many inhabitants of the Greek countryside (in particular, landowners), had begun to move to larger towns, to the detriment of small settlements. See for example Tomlinson (2014), 28 for a survey of the case of Argolis, and Rizakis (2014) for a survey on the changes in the economic relations between the ancient Greek city and the countryside during the early Roman empire.

the nearby towns, which were consequently deserted.²⁹ Pausanias' antiquarian attitudes, nevertheless, led the author to describe and locate the remains of these settlements in their respective geographical context.

This digital atlas may be used to evaluate such occurrences, and was conceived with the aim of overcoming the limitations and issues inherent in similar previous projects. Furthermore, it means to provide a replicable model in the geographic approach to the interpretation of classical texts, based on a taxonomy that may ensure not only the consultation of a complete database but also an easy and rapid collection of data. The scope of this paper is thus to outline a model of interpretive methodology based on the use of a *GIS* software, by illustrating how the creation of a georeferenced database based on the analysis of a classical text may allow to draw several conclusions about the author's goals and interests in relation to the area under examination.

First, I will elaborate on the methods applied in the creation and implementation of the digital atlas. I will thus take into account the methodological choices behind the definition of the taxonomy of the map, particularly in regard to the issues related to the creation of an updated list of toponyms for the identification of the sites. I will also list the specific features of these locations and how they have been annotated and categorized. The dissemination of abandoned settlements through second century AD Roman Greece will be successively examined, with a complete list of all these cases.³⁰ Following this, I will elaborate on a few considerations drawn from this list through the georeferencing of the collected data. I will therefore list all the causes of abandonment of the sites under examination, together with the regional distribution of the different cases. More importantly from the literary point of view, it is worth noticing that the area of an abandoned settlement may be indicated by the author by using different, but significant terms. Therefore, I will also scrutinize all the distinct expressions used by Pausanias to connote a specific site, while evaluating their distribution in the described Greek regions. Both the terms used to indicate the type of settlement and those used to describe the specific state of ruin of these areas have been taken into account.

Since Pausanias was mainly guided by his educated interests, with a very strong emphasis on the antiquity and cultural relevance of the sites he visited, I shall also examine all the occurrences of elements of interest that could have led the author to a deserted settlement. I will thus proceed to provide several lists, detailing all the cases in which a particular area still hosted religious activities or was otherwise relevant in the eyes of Pausanias from a cultural or even mythological point of view.

Methods

Text analysis and taxonomy

At the very beginning in the creation of this atlas, by then the subject of my PhD thesis, I chose to use a critical edition of Pausanias' *Periegesis* in order to grant the utmost precision in the identification and location of the sites described in the text. To this end, the choice fell on the updated critical edition

29 See Drakopoulos (1997) for the case of Asea. The village was one of the settlements which suffered depopulation in the founding of Megalopolis. Other significant cases of depopulation and population movement in Pausanias are presented in the instance of the foundation of Nicopolis (7,18,8); see instead Purcell (1987) and Isager (2009) regarding the migrations of the Aetolians (8,24,11; 10,38,4). On the topic in general, also refer to Mackil (2004).

30 See also Alcock (1996), 145–49. This work certainly does not aim to be the first example of a study on the subject itself, but rather to present a case study on the use of digital mapping for an efficient representation, cataloging, and further stages of analysis of the material provided by Pausanias' *Periegesis*.

of the volumes published by the Fondazione Valla.³¹ As for the *Perseus Digital Library*, possibly the most well-known online thesaurus,³² it presented a series of issues that would have made more difficult the creation of the map. Several of the comments from the online library are in fact drawn from sources in many respects outdated, such as the W. H. S. Jones and H. A. Ormerod edition of the *Periegesis* (1918) or William Smith's *Dictionary of Greek and Roman Geography* (1854); James Frazer's comments from his 1898 edition of the *Periegesis* are also referenced.³³

An indiscriminate use of these comments, even an indirect one, would have meant to adopt many identifications which are by now outdated, and which would have proved particularly problematic as they do not take into account, for example, the many changes in Greek toponymy through the 20th century.³⁴ The texts edited by the Fondazione Valla, on the other hand, offered a corpus of data vastly updated in regard to both the archaeological research and the changes in toponymy, together with a detailed critical apparatus and a rich bibliography which proved an excellent asset in the implementation of the *GIS* atlas. Nevertheless, a closer scrutiny proved the presence of a few outdated toponyms and identifications even in these texts. Indeed, several identifications in the Fondazione Valla volumes too were drawn, ultimately, from outdated sources such as Frazer's work.³⁵ In order to overcome this issue and try to correctly place the accounted locations on their proper position, I decided to also refer to the identifications provided by the *PANDEKTIS* website.³⁶ This platform, developed by the Institute of Neohellenic Research, the Institute of Byzantine Research and the Institute of Greek and Roman Antiquity, records the various changes in the toponymy of modern Greece and has enormously facilitated the identification of the current position of the sites mentioned in the *Periegesis*. A careful consultation of the classical text, following the aforementioned measures, eventually led to the recognition and methodical insertion³⁷ of the sites into the digital map.

Shapefiles definition

Most of the data adopted for my digital map are currently in Italian. An English translation is underway, to ensure the accessibility of the collected records to as many users as possible, both scholars and non-experts. The collection of the sites from the *Periegesis* soon led to a vast amount of information, which required a proper categorization in order to organically explore the locations described by Pausanias as a complex of distinct elements. By doing so, both the numbers and distribution of the spatial data could be evaluated to draw useful conclusions for the research. In light of the interpretation of Pausanias' text, a precise taxonomy was defined, and seven distinct categories were chosen for the purpose of cataloging all the elements described by the author in the ten books of the *Periegesis*. Each

31 The texts cover all the books of the *Periegesis*: Attica (2013), Corinth and Argolis (2008), Laconia (2008), Messenia (2010), Elis and Olympia (in two volumes, 2007 and 2013 respectively), Achaea (2008), Arcadia (2007), Boeotia (2012), and Phocis and Delphi (2017).

32 <http://www.perseus.tufts.edu/hopper/> (last access 11.11.2024).

33 See Jones et al. (1918), Smith (1854) and Frazer (1898).

34 Indeed, the process continued through all of the 20th century, with repercussions as late as into the 21st century. On the matter of the Hellenization of modern Greek toponyms, see Kyramargiou et al. (2020); Dimitropoulos et al. (2020). For the name changes as part of more recent administrative changes in Greece, see Akrivopoulou et al. (2012).

35 The example of the hydrography names of the Achaea region as reported in the critical editions may help to better illustrate the issues related to this specific topic. In the cases of the rivers Phoenix, Miganita, and Buraicus, the ancient names were indeed recovered and are currently in use. However, within the critical comments from the Fondazione Valla volumes, they are still referred to as Salmeniko, Gaidaropniktes and Ladopotamou respectively; see Moggi / Osanna (2008), 317; 333.

36 <https://pandektis.ekt.gr/> (last access 11.11.2024).

37 In the case of my project, the insertion of the shapefiles corresponding to the sites from the *Periegesis* was carried on manually.

typology was represented on the digital map through the insertion of specific layers³⁸, associated to distinct shapefiles³⁹ in order to recreate the layout of the ancient landscape. The defined layers are:

- Cities: a category comprehensive of all the settlements still inhabited during Pausanias' age.
- Forests: this layer specifically includes sacred groves (ἄλση), often associated in turn with monuments or sanctuaries.
- Locations: a layer designed in order to include more generic spatial features within Pausanias' *Periegesis*. Therefore, the layer includes sites of historical battles, unspecified locations, etc. The abandoned settlements identified during the creation of the digital map were initially ascribed to this specific typology.
- Monuments: all the isolated monuments, either commemorative or cult-related, encountered by Pausanias, which stood *outside* of the broader context of ancient settlements or sanctuaries.
- Mountains: the mountains described within the text, which often hosted additional elements.
- Rivers: the modern course of Greek hydrography, rather than a reconstruction of the ancient river routes, was recreated for the digital map, as Pausanias often describes several smaller watercourses for which it was not possible to find evidence of their state in antiquity.
- Sanctuaries: a complete list of all the accounted isolated sanctuaries, not including those part of a broader context, such as shrines located on the top of mountains or in the frame of ancient settlements.

Additionally, it was necessary to define what features would have been examined for the single sites associated to these layers. A *GIS* software provides several ways to view such data; in particular, by listing them inside an attribute table. A further step required thus the definition of the layout of such a table, consisting in:

- Name: the toponym of a specific site.
- Source: the proper reference to Pausanias' text.
- Data: a brief description of the selected shapefile. In accordance with the literary approach of this digital map to the *Periegesis*, the description is represented by a paraphrase of Pausanias' testimony rather than an objective comment, which is instead delegated to other fields (see below).
- Era: a chronological contextualization has been provided to better define the distribution of sites of interest through the centuries.
- Typology: the type of layer to which each shapefile is related is indicated within this field.
- Location: the identification of a specific site within the context of modern Greece. In those cases where it was not possible to determine the area of a particular element, this very fea-

38 In the context of a digital atlas, a layer represents a database of geometric elements disseminated through the map. It may be considered a macro-category of associated elements from the map itself. As the name implies, it visually appears as a layer of contents; several layers may be swapped, activated or deactivated for a better comprehension of a digital atlas.

39 A shapefile is a vector format for geographic data, ideally corresponding to the elements inserted in the map itself.

ture was labeled as ‘unidentified’, but nevertheless inserted inside the map according to the indications provided by Pausanias. In all the cases where there are instead multiple possible identifications, the most acceptable one is applied and recorded first in a list of proposals (a choice reflected by the placement of the shapefile on the map). This approach aims to provide a comprehensive overview of the state of the identifications of the *Periegesis* sites, thus overcoming the limitations of other digital atlases, which in similar cases usually present a *single* identification. Every proposed identification is supported by a bibliographic reference.

All of these features may be viewed by selecting the attribute table option. A more effective and immediate method, however, would be to directly select the shapefiles on the map. This action will open a pop-up, with all the site features accurately listed. Every dataset created for the representation of these elements is a *point* layer. The only exception is represented, of course, by the rivers, for which it was necessary to adopt a *polyline* type layer in order to recreate their course. While the procedure was originally carried out by using the open source *QGIS*⁴⁰ mapping system, it was eventually decided to use a different software. The project required, in fact, an application that would allow a faster completion of the *Periegesis* map, not to mention the association of complex data with the localized sites. It was also necessary to use a program capable of uploading the digital atlas online in order to grant a further implementation by providing more advanced tools for the search of contents, while eventually ensuring its dissemination. To this end, it was decided to transfer the layers of the already created map within *ArcGIS Pro*⁴¹. This proprietary software, provided by Esri⁴², has indeed been a reliable standard for the creation, statistical analysis, and sharing of complex maps for a long time.

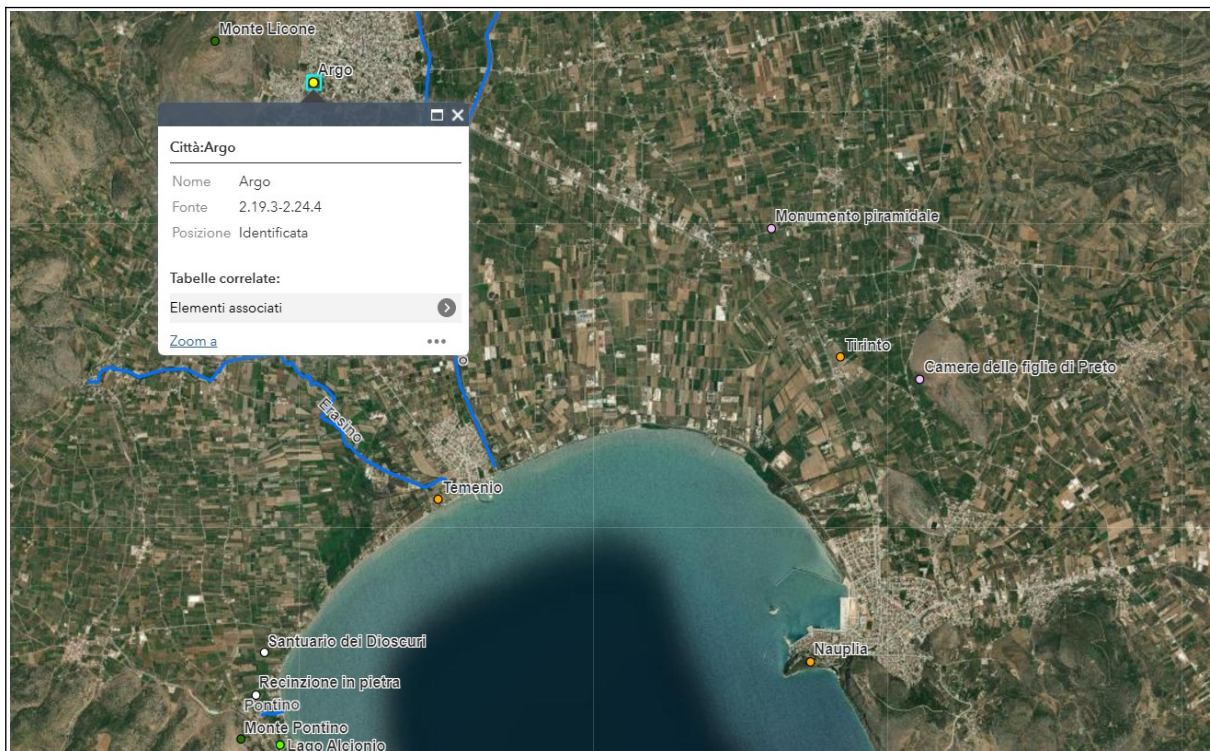


Fig. 1: A screenshot from the digital atlas. It is possible to view several shapefiles arranged to recreate a precise context from Pausanias' *Periegesis*. By clicking on a specific shapefile (in this case corresponding to the city of Argos), it is possible to view a list of related data. The features visible in relation to the 'city' layer are, from top to bottom, layer name, shapefile name, source, and state of identification, respectively. From the bottom of the pop-up it is possible to select a list of related elements; see *infra* pp. 59–60.

40 <https://www.qgis.org/it/site/> (last access 11.11.2024); see Graser et al. (2017) for a survey on the *QGIS* software; Geddes / Gregory (2014) for a focus on the applications of *GIS* software to the historical research.

41 <https://www.arcgis.com/index.html> (last access 11.11.2024).

42 <https://www.esri.com/en-us/home> (last access 11.11.2024).

While the sites described by the *Periegesis* had been successfully digitized inside the map, it was necessary, as aforementioned, to represent also all the elements contained *within* them, or otherwise related to them. This is the case, for example, for all the single buildings, monuments or generic features of a described settlement. Another case are the works of art that were once displayed within specific contexts such as ancient sanctuaries (whose detailed description represents a well-known trait of Pausanias' exposition⁴³), or the single shrines located inside forests or on the top of mountains. To this end, a series of Excel tables were compiled with all the data related to these elements. Again, just like in the case of the layers from the *GIS* map, the data were associated with a series of specific features.

- Shapefile name: the shapefile of the site to which a certain related element is associated.
- Name: the name of the analyzed element itself.
- Source: the reference from Pausanias' text.
- Location: the precise position of a feature inside the broader context of an ancient site.
- Status: the feature identification, either certain, uncertain or not possible.
- Era: in this case, too, a chronological contextualization was provided for a specific element.
- Proposed identification(s): again, each identification is tied to a bibliographic reference.
- Description: a succinct description, following Pausanias' account.
- Typology: the exact type of analyzed element, specified in order to facilitate the search through the gathered data.

These tables were eventually loaded into the *ArcGIS Pro* map as *CSV* files, and exported to the project's geodatabase. A subsequent phase consisted thus in the association of the records embedded inside these tables to the respective geographic locations, already represented through the shapefiles. To this end, a *Create Relationship Class* spatial operation was launched between the tables and the single layers. In order to relate these records, a common field, or *key*, was selected; in this case, the key consisted in the name of a site. This information is in fact present in both the map layers and the *CSV* table. The specific relationship selected to link these records was the 'one to many' cardinality.

43 See Arafat (1992), 387. Typical in Pausanias are accurate and critical descriptions of monuments and works of art, which often lead him to dwell on the style, author, or even materials of the described elements; see Pretzler (2013), 109.

Digital Classics Online

Argo	Statue di Zeus e Artemide	2.19.7	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Xoana lignei su colonna di Zeus e Artemide.	Statua
Argo	Tombe di Lino figlio di Apollo...	2.19.8	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Duplici tombe legate con il tempio di Apollo Lykios.	Testimonianza mitologica
Argo	Simulacro di Apollo Agyieus	2.19.8	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Simulacro aniconico di Apollo, che segnalava forse l...	Statua
Argo	Altare di Zeus Hyetios	2.20.1	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Altare presso il quale gli alleati di Polinice avrebbero...	Altare
Argo	Statua di Creuga	2.20.1	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Statua del pugile Creuga di Epidamno, presso il te...	Statua
Argo	Trofeo della vittoria sui Corinzi	2.20.1	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Monumento possibilmente dedicato in occasione d...	Monumento commemorativo
Argo	Statua di Zeus Melichios	2.20.1	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Statua seduta in marmo bianco, opera di uno dei d...	Statua
Argo	Rilievo di Cleobi e Bitone	2.20.2	Complesso di Apollo Lykios	Non identificato	Non specificata	<Null>	Sculture a rilievo di Cleobi e Bitone nell'atto di trasc...	Statua
Argo	Santuario di Zeus Nemeo	2.20.3	Agorà	Incerto	Classica	Fondazione sul...	Tempio con una statua di bronzo, opera di Lisippo.	Edificio sacro
Argo	Tomba di Foroneo	2.20.3	Agorà	Non identificato	Non specificata	<Null>	Monumento nei pressi del tempio di Zeus Nemeo.	Testimonianza mitologica
Argo	Tempio di Tyche	2.20.3	Agorà	Non identificato	Non specificata	<Null>	Tempio in cui Palamede avrebbe dedicato i dadi ch...	Edificio sacro
Argo	Tomba della Menade Corea	2.20.4	Agorà	Non identificato	Non specificata	<Null>	Tomba eroica in ricordo della spedizione di Dioniso...	Testimonianza mitologica
Argo	Santuario delle Ore	2.20.5	Presso l'Agorà	Non identificato	Non specificata	<Null>	Santuario dedicato alle Ore nel ruolo di nutrici di Er...	Edificio sacro
Argo	Cenotafio degli Argivi	2.20.6	Agorà	Non identificato	Non specificata	<Null>	Monumento dedicato agli Argivi che si riteneva fos...	Testimonianza mitologica
Argo	Tomba di Danao	2.20.6	Agorà	Non identificato	Non specificata	<Null>	Tomba eroica che, secondo Strabone (VIII 371), ave...	Testimonianza mitologica
Argo	Santuario di Zeus Soter	2.20.6	Agorà	Non identificato	Non specificata	<Null>	Santuario verosimilmente sull'agorà (Musti e Torell...	Edificio sacro
Argo	Santuario per le celebrazioni d...	2.20.6	Presso l'Agorà	Non identificato	Non specificata	<Null>	Una delle rarissime installazioni note di Adone, giu...	Edificio sacro
Argo	Santuario del Cefiso	2.20.6	Presso l'Agorà	Incerto	Non specificata	Terrazza ad est d...	Santuario dedicato al fiume Cefiso, di una tipologia...	Edificio sacro
Argo	Testa di Medusa in pietra	2.20.7	Presso l'Agorà	Non identificato	Non specificata	<Null>	Monumento in pietra attribuito ai Ciclopi.	Testimonianza mitologica

Fig. 2: Screenshot of a table with related features from the digital atlas. From left to right it is possible to view the specific characteristics associated with each element; in this case, the name of the shapefile, name of the element, source, exact position, identification status, period, proposed identification, description and type of the element respectively.

Once completed, the operation successfully tied the elements from the table to their proper position. By clicking on a specific shapefile on the map, it is thus possible not only to evaluate all the characteristics of the site itself listed inside a pop-up, but also to open a second pop-up where all the related elements are listed, each one in turn associated to its features categorized inside a proper table.

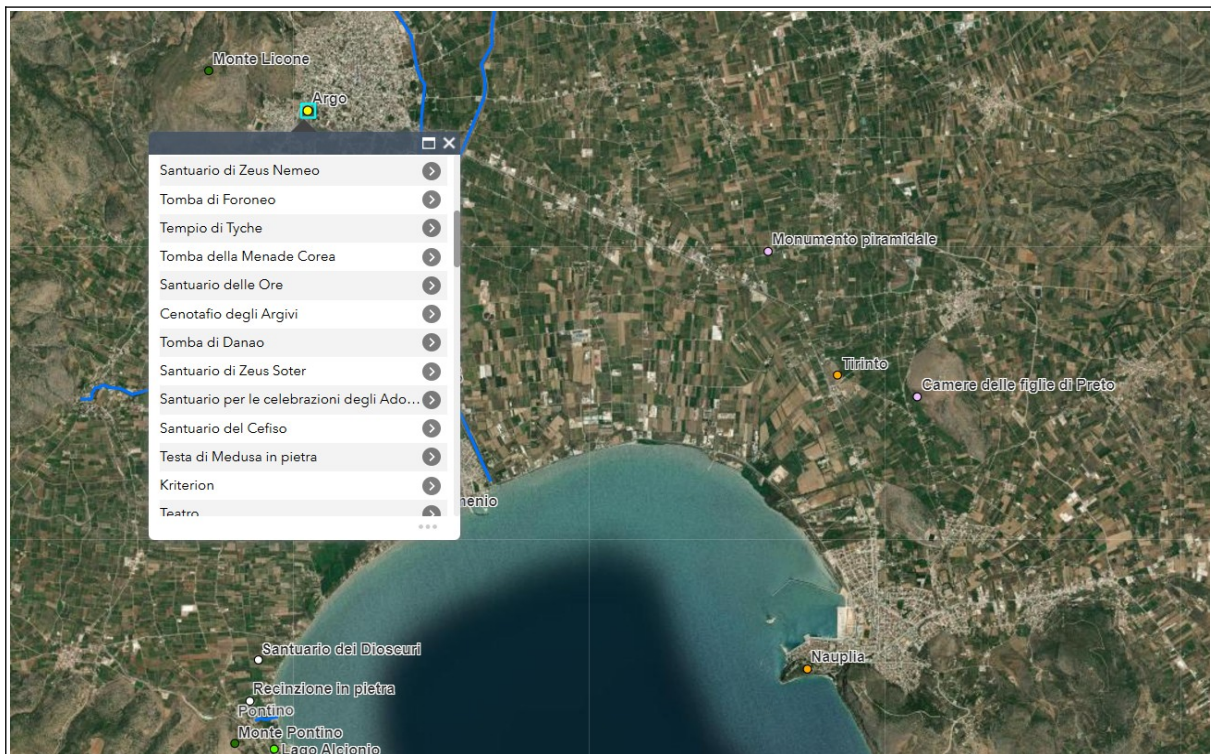


Fig. 3: A screenshot from the digital atlas, focused on a specific area. By expanding the related elements list it is possible to view all the elements associated with a single site. In this case, the picture shows a series of elements associated to the city of Argos, listed inside a pop-up.

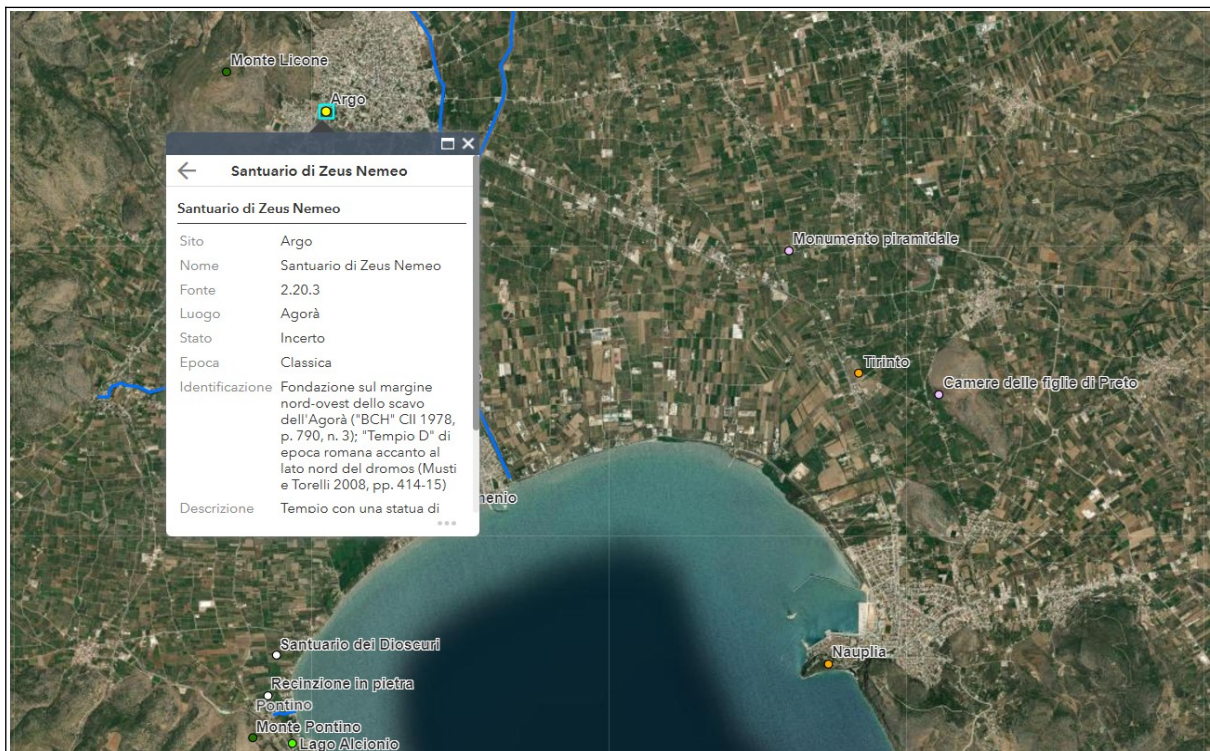


Fig. 4: A screenshot of the expanded table with related elements; by clicking on a specific feature from the list, it is possible to view all the data associated to an ‘accessory’ element: namely, the temple of Nemean Zeus in Argos (2,20,3). In this case, from top to bottom, the shapefile of which the element is part of, the name of the element, the source, the position, the state of identification, the time period, a few hypotheses, and a brief description.

This feature of the atlas aims to provide a further level of precision to the representation of an ancient landscape often lacking in other thesauri and digital maps.⁴⁴ Once the map was completed, the collected data amounted to 2791 elements from the *Periegesis* (868 shapefiles and 1923 related elements). The next step involved its uploading to an online platform. To this end, the use of the *ArcGIS* software allows to upload a digital map to *ArcGIS Online*, a cloud platform provided by ESRI for content sharing. Additionally, *ArcGIS Online* allows to embed a created map inside web apps which facilitate the dissemination and consultation of complex geodatabases. In this case, the *ArcGIS Web App Builder* function was chosen to create a web app that would convey the digital map containing the data from the *Periegesis*. The *ArcGIS Web App Builder* also allows to include within a web app several distinct *widgets*; commands that enable different kinds of intervention on the digital map and its contents. In this case, the ‘search’ widget was inserted, which allows possible users to type specific keywords, thus performing a targeted and in-depth search among the digitized contents of the *Periegesis* within the map. The analysis and digital representation of the case study, composed of all the elements accounted for in the text, eventually allowed the creation of a further, preliminary map focused on the abandoned settlements encountered by Pausanias. This in turn was eventually used as the basis for the creation of five new maps detailing specific features related to this aspect of the *Periegesis*, which provided the means to investigate further case studies.

In defining the elements within abandoned towns, it was decided to consider only those features that Pausanias recognizes as inherent to the context of the settlements. The author is usually keen in separating certain monuments, sanctuaries, etc., from the settlements, inhabited or not, that stood nearby. Therefore, those elements that Pausanias places outside the boundaries of settlements or in their imme-

44 As discussed above, p. 52.

diate vicinity were not taken into consideration as part of these areas, and have been recreated on the map through separate shapefiles.⁴⁵

A similar clarification needs to be made in regard to the method used to catalog the accessory features associated with the elements described by Pausanias. In the case of cult statues located within deserted settlements, for example, it was decided to consider them as standalone entities unless the author specified otherwise. The statues, altars, works of art, etc., that Pausanias explicitly associates with the sanctuaries inside these settlements, on the other hand, have been linked to these contexts, and are listed in their respective attribute table. Finally, in some cases, multiple designations have been used by the author in describing the same element. In the case of Nonacris, for example, the village is indicated as both *πόλισμα* (8,17,6) and *πόλις* (8,27,3–4). It was decided, therefore, to reflect the literary approach of the *GIS* atlas and to indicate sites with multiple denominations by using a distinct category.

Results

Preliminary lists

The creation of the Pausanias' *Periegesis* georeferenced database and the implementation of further maps represented an opportunity to isolate and evaluate all those instances where the author mentions an abandoned settlement. As already stated, the element of novelty of this case study consists not only in the fact that the data may be immediately visualized and queried, but also in the fact that several more complex analyses of the text accounts and their own correlations may be easily and rapidly carried out. This in turn allowed to elaborate a few considerations based on the number, type and distribution of some of the most prominent features concerning the deserted settlements described by Pausanias.

45 The constructions identified by Pausanias as the 'Chambers of the daughters of Proetus', for example, lie immediately near Tiryns (2,25,9). However, Pausanias differentiate them from the ruins of the ancient city itself. Thus, a separate shapefile was used to describe the 'Chambers of the daughters of Proetus' as a distinct element not included in the description of Tiryns itself, nor in the analysis of its related features.



Fig. 5: View of the 83 deserted settlements in Pausanias' *Periegesis*. This map consists in a single layer, obtained from the preliminary *Periegesis* map. These data, in turn, were used to create further layers and maps detailing the features inherent to this particular case study from Pausanias' text. Note the absence in the chart of any element located in the area of Attica; see *infra* p. 63.

Pausanias' fascination for ruins and deserted (but often culturally relevant) sites is of course tied to the author's personal interests and background, which naturally led him to seek out elements characterized by an intrinsic archaism and with a link with the local tradition (or both⁴⁶). His narrative itineraries from one main settlement to the next one often lack a logical spatial linearity, providing instead an occasion for detours in search of local curiosities. These explorations either relied on the accounts of guides, local hypotheses, or more educated sources drawn from the literary tradition, with a strong preference for Homer.⁴⁷ It is also possible that Pausanias could at times deliberately choose areas on which he was not well informed, while using the main settlements as a starting point for his explorations.⁴⁸ A quick survey of the map of the deserted sites allows to appreciate a series of features regarding the location of these areas. It is immediately evident that the highest concentration of these elements lies in the area of Arcadia, with a cluster of shapefiles related to the phenomenon lying immediately around the city of Megalopolis. The presence of so many (30) abandoned sites disseminated

46 See Bruit Zaidman ed. (2003) and Goldhill (2001), 156 for Pausanias' search for archaicism. This tendency by the author does not represent an isolated case in the broader picture of 2nd century AD literature; on the contrary, it is fully compatible with the style and canons of the Second Sophistic movement; see Anderson (2005), and Alcock et al. (2003), 63–67, for a comparison between Pausanias and Longinus.

47 For the use of Homer in Pausanias, see Bacher (1919).

48 See in this regard Hutton (2005), 83–174, who theorizes the existence of a basic structure for Pausanias' travels. The author postulates an organization of the explorations in the *Periegesis* according to a 'radial plan', with a central point from which various itineraries branched out towards destinations that Pausanias considered worthy of attention; see also Pretzler (2004), 203.

through Arcadia is compatible both with the history of the region, which had suffered a marked depopulation, and with the aims of Pausanias. The area was in fact related to a rich corpus of archaic traditions, which naturally piqued the interest of the author.⁴⁹

As for Megalopolis in particular, with the presence of 16 abandoned settlements within a radius of roughly 14 kilometers from the city, this situation is confirmed by the local history, too.⁵⁰ The second region by number of deserted settlements is instead Laconia, with 13 abandoned towns, mostly disseminated along the southern coast, in an area partially corresponding to the territory of the Eleuthero-lakones.⁵¹ Boeotia instead presents 10 elements, concentrated in particular in the area between the Lake Copais and the Asopus river. Next are the areas of Argolis and Corinthia, characterized by a rich historical and cultural past which certainly interested Pausanias,⁵² Achaëa and Elis (8 elements in each case), Messenia and Phocis (both with 3 elements). Curiously, there is no evidence of abandoned settlements in Attica.⁵³ This is explainable in part by the Roman policies, which had privileged the area, especially during the Antonine rule.⁵⁴ Furthermore, Attica represented in many aspects an area not ‘archaic’ enough for the tastes of Pausanias.⁵⁵

Case studies

The use of a *GIS* software also made it possible to highlight and distinguish the various causes for a settlement abandonment (or destruction). In most cases (48 elements), the reasons for the decline of a specific settlement are not reported. Naturally, this does not mean that the reasons are utterly unknown to the research, but simply that Pausanias was not able (or did not deem necessary) to elaborate on the specific circumstances for each case. The abandonment of a total of 17 elements, on the other hand, was attributed by Pausanias to a predetermined depopulation for the purpose of populating a new city. The phenomenon, once again, is particularly evident in Arcadia, with a marked concentration around the area of Megalopolis. This is not surprising since, as mentioned earlier, the establishment of Megalopolis itself was an event that required the depopulation of nearby villages.

49 See Berchet (1986).

50 See Drakopoulos (1997).

51 See Chrimes (1949), 435–6.

52 In the case of Argolis in particular, I must point out that the city of Mases was not considered part of these lists, as it was not, strictly speaking, an ‘abandoned’ settlement as much as a town repurposed as Hermione’s seaport (2,36,2); the same goes for the city of Samicum (5,5,3), which was a fortress by the Roman age (see Strab. 8,3,19).

53 Tab. 1: List of the abandoned settlements from the *Periegesis*; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

54 The area was notoriously interested by the philhellenic policies of Hadrian, which had by then recently created the league of the *Panhellenion*; see Anderson (2005), 3.

55 On the other hand, the Roman policies in Attica can be considered as an additional element of ‘modernity’ and foreign interference, which might have made the region less appealing to the eyes of Pausanias; see Beschi / Musti (2013), XLVIII–LI.

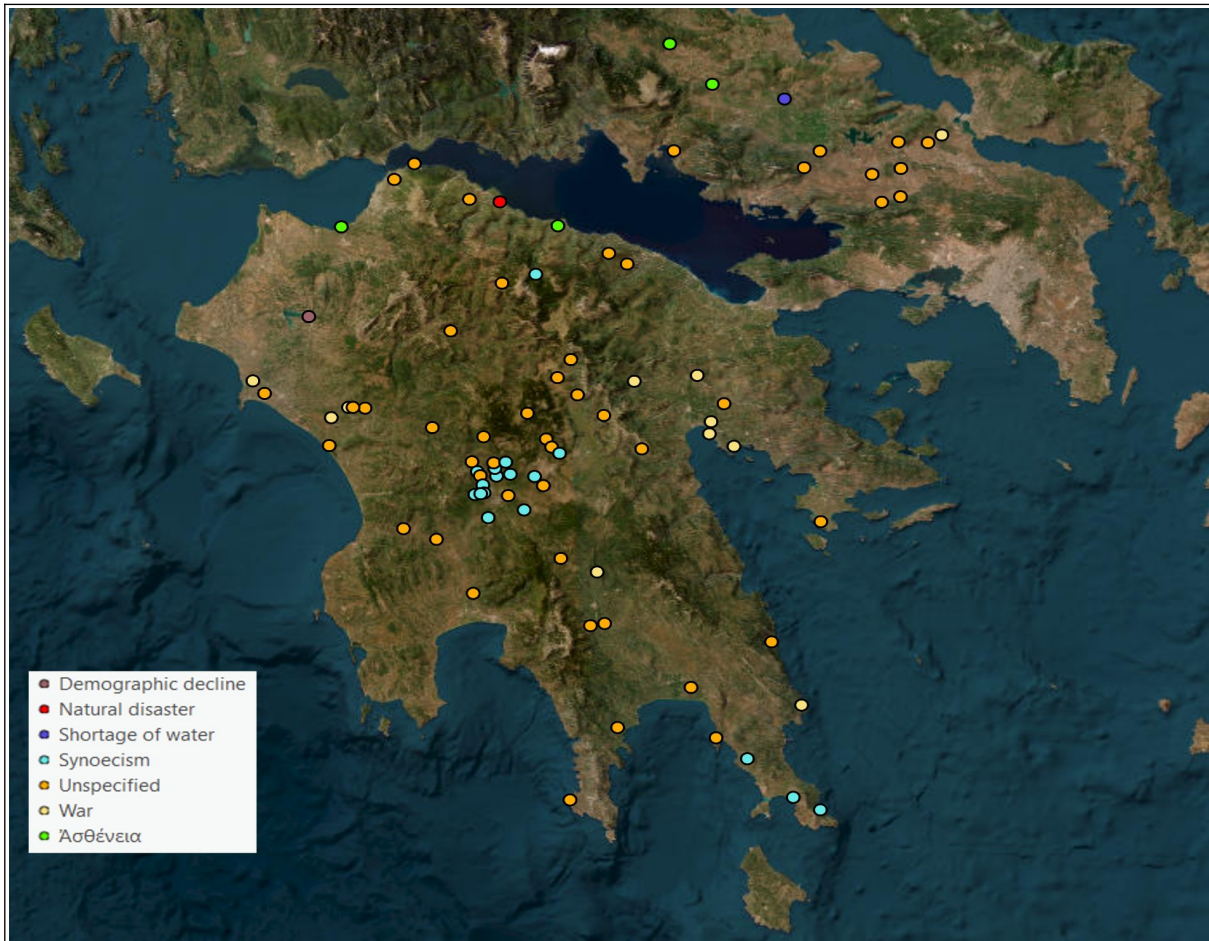


Fig. 6: Map of the deserted settlements from the *Periegesis*, differentiated by color based on the causes of their abandonment. It is possible to view, in particular, an evident cluster of settlements (in cyan), in the area of Megalopolis in Arcadia, that were abandoned following a synoecism.

Of the 12 settlements destroyed and never inhabited again, the destruction is never attributed by Pausanias to the interference of the Roman presence (in the famous case of Corinth, the depopulated city was eventually reoccupied). The responsibility is instead attributed to the Argives (5 elements)⁵⁶, the Eleans (3 elements)⁵⁷, the Thebans, the Achaeans and the Spartans (1 element in each case)⁵⁸, and even to natural phenomena (1 element)⁵⁹. The abandonment of 4 settlements is also curiously attributed to ‘ἀσθένεια’, which may be translated as ‘weakness’.⁶⁰ Finally, one settlement was apparently abandoned due to lack of water, and another due to a marked demographic decline.⁶¹

56 The Argives were responsible for the depopulation of Mycenae (2,16,5), Nauplia (4,24,4), Orneae (2,25,6), Tiryns (2,25,8), and Asine (2,36,4–5). In cases where the inhabitants of a city were forcibly relocated to another settlement as a result of a conflict (such as in the case of Tiryns, 2,25,8) and not as part of a ‘voluntary’ synoecism (as in the case of Megalopolis), the event has been considered a case of depopulation due to war.

57 The Eleans, on the other hand, depopulated Scillus (5,6,4), Pisa (6,22,4), and Dyspontium (6,22,4).

58 Mycalessus was depopulated by the Thebans (1,23,3), Sellasia by the Achaeans (3,10,7), and Zarax by the Spartans (3,24,1).

59 The city of Helice, in Achaea, was indeed destroyed by an earthquake in 373 BC, and no remains were visible in Pausanias’ time (7,24,6).

60 See Alcock (1996), 148.

61 Tab. 2: List of the causes of abandonment of the *Periegesis*’ deserted settlements; see in the data repository: <https://doi.org/10.11588/data/FOIQAT> (last access 16.10.2024).

In 61 cases, Pausanias refers to the abandoned settlements as πόλεις. The slightly more generic term πόλισμα, on the other hand, is used in 13 cases. There are, moreover, only 3 occurrences for κώμη, and 1 occurrence for the terms δήμος and περίοικος respectively.⁶²

As already stated, the list is inclusive of the cases in which multiple terms (such as πόλις and πόλισμα) have been used on different occasions in referring to a single settlement. In 12 cases Pausanias simply does not refer with a specific term to the settlements he visited.

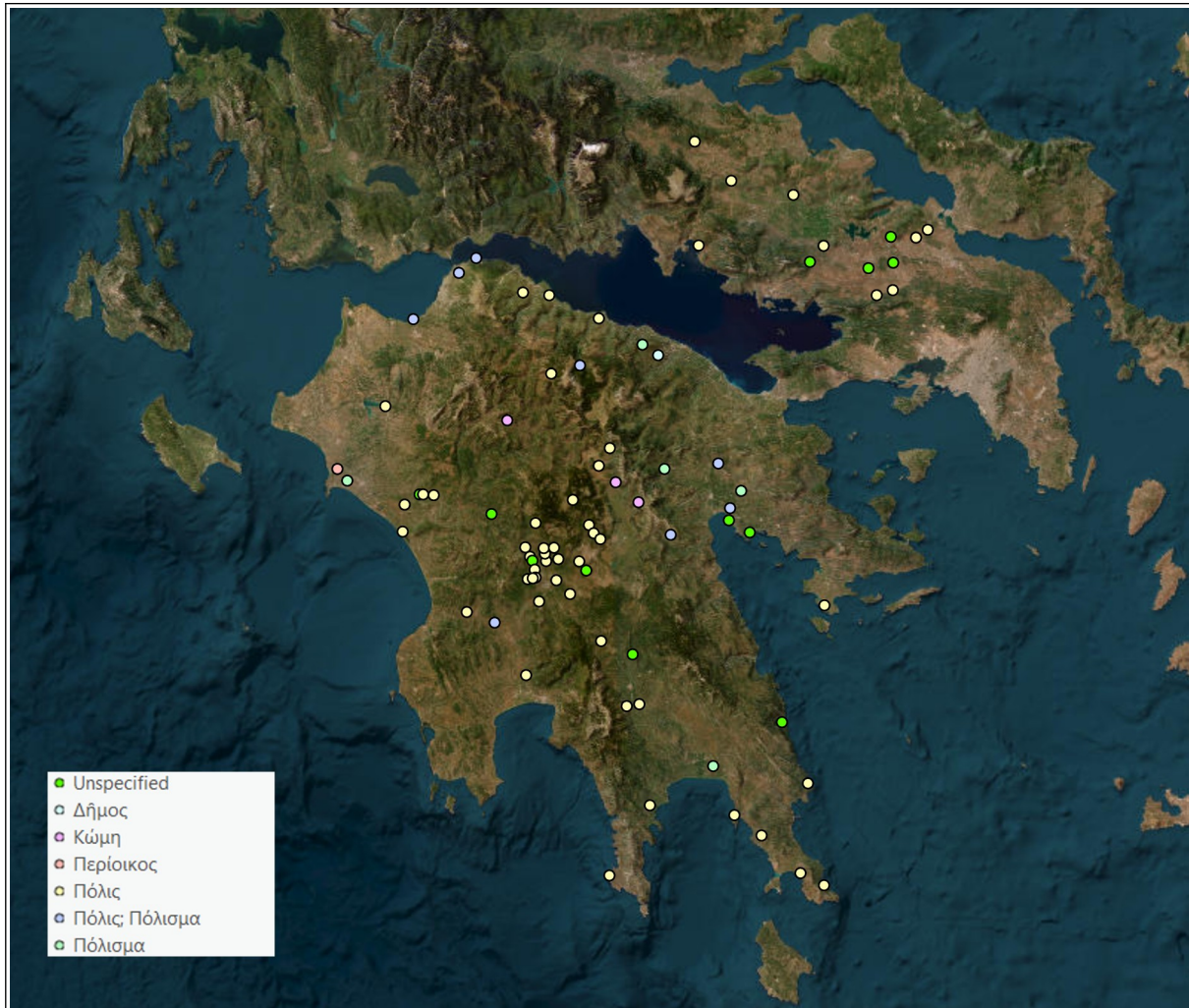


Fig. 7: Map of the deserted towns from the *Periegesis*, differentiated by color based on the term used by Pausanias in referring to the type of settlement. While the use of the term πόλις is evidently prominent and essentially equally distributed throughout all Greece, it is possible to appreciate the use of alternative terms for the area of Argolis.

62 Tab. 3: List of the denominations of the abandoned settlements from the *Periegesis*; see in the data repository: <https://doi.org/10.11588/data/FOIQAT> (last access 16.10.2024).

Another map was created to evaluate the distribution of the terms used by Pausanias in referring to the state of ruin of the abandoned settlements.

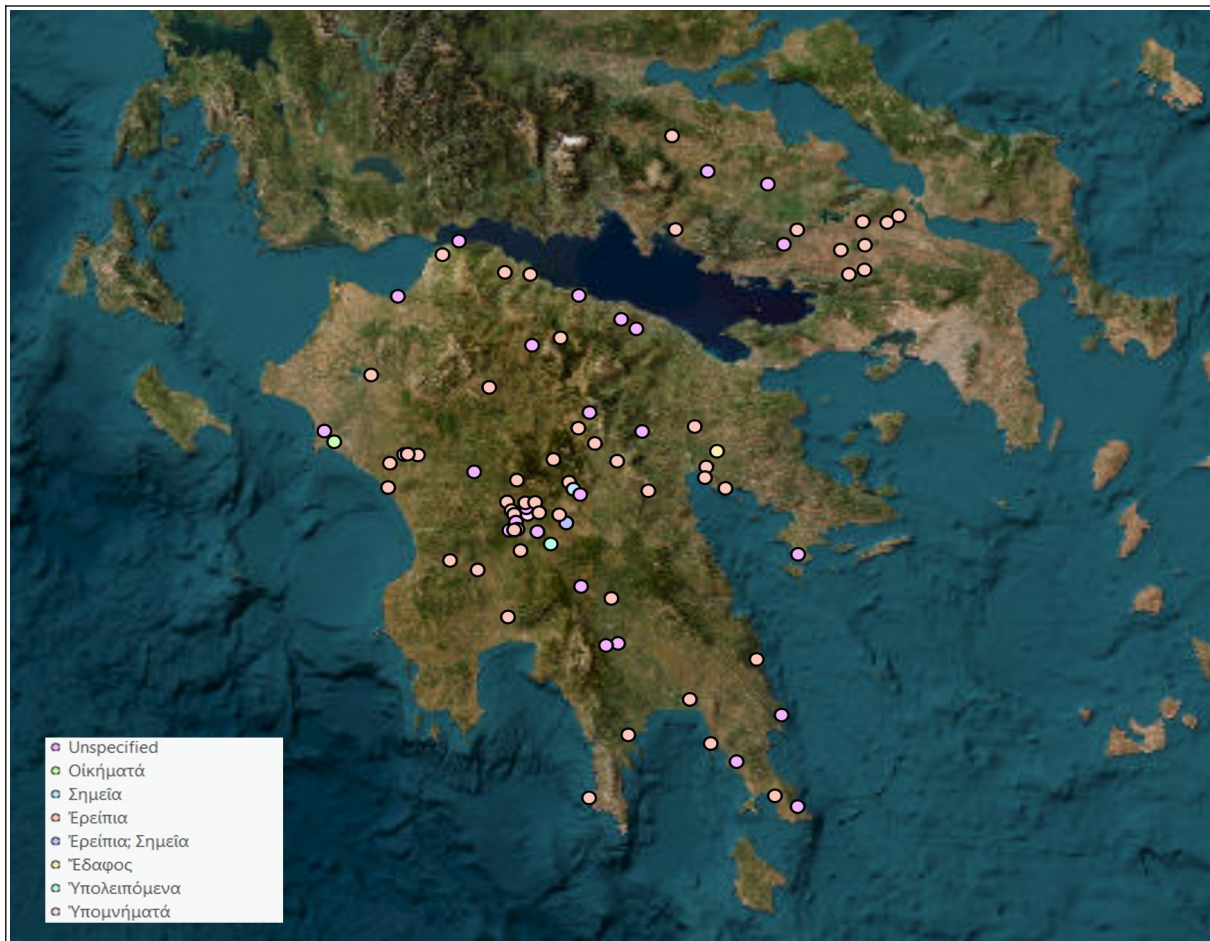


Fig. 8: Map of the abandoned towns from the *Periēgesis*, differentiated by the specific term used in referring to their respective state of ruin. The name ἔρειπια is used most frequently, with noticeable clusters visible in Arcadia and southeastern Boeotia.

In referring to 26 settlements, the author does not use any specific denomination when describing deserted cities, while he reports 52 times the term ἔρειπια, which is undoubtedly the term most frequently adopted. The term σημεῖα (2 cases) follows up, with ἔδαφος, οἰκήματα, ὑπολειπόμενα and ὑπομνήματα ensuing (1 occurrence in each case)⁶³.

A peculiar aspect of the abandoned settlements scattered throughout Greece in the 2nd century AD is the continuity of worship observed in several cases.⁶⁴ While describing the city of Potniae, for example, Pausanias clearly specifies that the settlement was in ruins. At the same time, however, he describes in detail the presence of a sacred grove in this site, dedicated to Demeter and Kore (9,8,1). The grove in turn must have certainly been tied to rituals associated with the cult of Demeter held in the area.⁶⁵ In several other cases, an entire temple still stands within an otherwise deserted settlement. This is the case with the ruins of Asine, where a sanctuary of Apollo Pythaeus was still visible in the Roman

63 Tab. 4: List of the terms used in referring to the ruined settlements from the *Periēgesis*; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

64 Only in the cases of the abandoned settlements of Bryseae (3,20,3) and Potniae (9,8,1) Pausanias provides a few details in regard to the continuity of worship.

65 διαβεβηκότι δὲ ἦδη τὸν Ἄσωπὸν καὶ τῆς πόλεως δέκα μάλιστα ἀφεστηκότι σταδίους Ποτνιαῶν ἔστιν ἔρειπια καὶ ἐν αὐτοῖς ἄλσος Δήμητρος καὶ Κόρης. τὰ δὲ ἀγάλματα ἐν τῷ ποταμῷ τῷ παρὰ τὰς Ποτνιαῖς ** τὰς θεὰς ὀνομάζουσιν. ἐν χρόνῳ δὲ εἰρημένῳ δρῶσι καὶ ἄλλα ὅποσα καθέστηκε σφισι καὶ ἐς τὰ μέγαρα καλούμενα ἀφιᾶσιν ὅς τῶν νεογενῶν· τοὺς δὲ ὅς τούτους ἐς τὴν ἐπιούσαν τοῦ ἔτους ὥραν ἐν Δωδώνῃ φασι ἐπι ** λόγῳ τῷδε ἄλλος πού τις πεισθήσεται. (9,8,1).

era, spared by the Argives after leveling the rest of the city (2,36,4–5) in 740 BC. It is clear, therefore, that the religious element ensured a continuity of use for various sites, a fact duly noted by Pausanias in his *Periegesis*. The *Periegesis* atlas allows the analysis of all the cases in which Pausanias has indeed noted the presence of temples within otherwise uninhabited areas. In total, the author mentions the presence of 21 temples within as many abandoned settlements.



Fig. 9: Map of the distribution of sanctuaries and worship areas in general in abandoned settlements according to the accounts of the *Periegesis*. Once again, the area of Arcadia presents the highest concentration of elements; Phocis, on the other hand (in the northwest), is evidently not represented by any shapefile on the map.

Once again, the highest number of occurrences is found in the region of Arcadia with 7 elements. Following Arcadia are Laconia (5 elements), Elis, Argolis (3 elements for each region), Boeotia (2 elements) and Messenia (1 element). It is possible to supplement this data with sites that, although not occupied by proper sanctuaries, are nevertheless indicated by Pausanias as sacred. Accordingly, the Poseidium area in Achaea, abandoned over the centuries but still clearly identified by Pausanias as sacred to Poseidon, may be included (7,27,8). Similar cases are represented by the aforementioned area of Potniae and by Bryseae (3,20,3), where sacred groves existed, and where Pausanias observed the survival of religious practices despite the abandonment of the ancient settlements. It is also possible to add the spot where a statue of Hermes still stood in Acacesium (8,36,10), and the sacred cave of Asclepium in Cyphanta (3,24,2). Following these considerations, the total number of abandoned areas with

significant cultic activities recorded by Pausanias rises to a total of 26 elements (8 in Arcadia, 7 in Laconia, 3 in Argolis, Boeotia and Elis respectively, and 1 in both Achaea and Messenia).⁶⁶

It is also interesting to note that most of these sanctuaries are located inland. In my opinion, this can be interpreted as a further confirmation of Pausanias' search for archaism. The phenomenon could be in fact explained by the author's cultural interests, which likely led him to prioritize the exploration of relatively less accessible, inland areas. These locations in fact could have been the ones that, in the author's view, were most likely to preserve ancient monuments and traditions, or at least the less known ones. On the other hand, the data may confirm the fact that Pausanias seemingly didn't rely much on sea routes, preferring instead to travel by land.⁶⁷ As for the deities to whom these temples were dedicated, the use of *GIS* software has allowed for the creation of a specific list.⁶⁸ A further table may be thus drawn from this list, detailing the number of attestations for each single deity worshiped in the abandoned settlements.⁶⁹

Determining the actual state of preservation of the sites visited by Pausanias is quite more difficult. The author does on occasion specify the cases in which a temple was in ruins or even unfinished. With the exception of the temple of Apollo near Hysiae in Boeotia,⁷⁰ the ruins of the temple of Artemis in Oresthasium,⁷¹ and the temple of Athena at Phrixa,⁷² however, there is no explicit mention of the possible state of ruin of these structures, thus allowing to presume that they were still standing in the Roman era. The description of cult statues and ongoing religious activities may indeed support this presumption.

As mentioned, there are also several mythological traditions that Pausanias refers to in connection with some of the abandoned settlements. The presence of mythological backgrounds drawn from ancient tradition served indeed as both an incentive for the author to personally visit certain sites and a guide in his itineraries through 2nd century Greece. This was especially true in the case of Homer, who served as a privileged source of information for the author of the *Periegesis*.⁷³ In this case as well, the *GIS* software was used in order to highlight all the sites in Roman-era Greece that had some connection to a mythological tradition reported by Pausanias, with a total of 63 abandoned settlements. Again it is not surprising to see the prominence of Arcadia, with 25 elements. The region must have represented a privileged target for Pausanias' investigations, as the archaic area of the Peloponnese *par excellence*.⁷⁴

66 Tab. 5: List of the abandoned settlements with cultic activities from the *Periegesis*; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

67 See Pretzler (2004), 203.

68 Tab. 6: List of the religious elements associated with the abandoned settlements; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

69 Tab. 7: List of the specific deities attested in reference the abandoned settlements in the *Periegesis*; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

70 γῆς δὲ τῆς Πλαταιίδος ἐν τῷ Κιθαιρῶνι ὀλίγον τῆς εὐθείας ἐκτραπέουσιν ἐς δεξιὰ Ὑσιῶν καὶ Ἐρυθρῶν ἐρείπια ἐστὶ πόλεις δὲ ποτε τῶν Βοιωτῶν ἦσαν, καὶ νῦν ἔτι ἐν τοῖς ἐρείπιοις τῶν Ὑσιῶν ναὸς ἐστὶν Ἀπόλλωνος ἡμίεργος καὶ φρέαρ ἱερόν· πάλαι δὲ ἐκ τοῦ φρέατος κατὰ τὸν Βοιωτῶν λόγον ἐμαντεύοντο πίνοντες (9,2,1).

71 μετὰ δὲ Αἰμονιάς ἐν δεξιᾷ τῆς ὁδοῦ πόλεως ἐστὶν Ὀρεσθασίου καὶ ἄλλα ὑπολειπόμενα ἐς μνήμην καὶ Ἀρτέμιδος ἱεροῦ κίονες ἔτι: ἐπίκλησις δὲ Ἰέρεια τῆ Ἀρτέμιδι (8,44,2).

72 ἐν ταύτῃ τῇ χώρᾳ λόφος ἐστὶν ἀνήκων ἐς ὄξύ, ἐπὶ δὲ αὐτῷ πόλεως Φρίξας ἐρείπια καὶ Ἀθηνᾶς ἐστὶν ἐπίκλησιν Κυδωνιάς ναὸς. οὗτος μὲν οὐ τὰ πάντα ἐστὶ σῶς, βωμὸς δὲ καὶ ἐς ἐμὲ ἔτι [...] (6,21,6).

73 19 of the uninhabited towns described by Pausanias are indeed mentioned by Homer: Erythrae, Harma (Il. 2,495), Mycalessus (Il. 2,495), Scolus (Il. 2,495), Glisas, Medeon (Il. 2,500), Onchestus (Il. 2,505), Aspledon, Orchomenus (Il. 2,510), Tiryns (Il. 2,555), Asine (Il. 2,560), Mycenae (Il. 2,565), Donussa (Il. 2,570), Helice (Il. 2,575), Bryseae, Pharis (Il. 2,580), Helos (Il. 2,580), Arene, Dorium, (Il. 2,590) and Thuria/Antheia (Il. 9,150).

74 See Hejnc (1961).



Fig. 10: Chart of the distribution of all the abandoned settlements tied to the mythical tradition visited and described by Pausanias in his *Periegesis*.

Specifically, a well-defined cluster of mythological attestations can be identified in the very heart of this region, in the area of the Maenalus, Ostracina and Thaumasius mountains. Next are the regions of Elis and Laconia (each with 8 elements). Elis in particular presents a second defined cluster, easily detectable in the area of Olympia / Pisa.⁷⁵ Next are Achaëa (7 elements), Boeotia (6 elements), Argolis (5 elements) Messenia (3 elements), and Phocis (1 element).⁷⁶

From this list, it is possible to further define data that may allow to evaluate those abandoned settlements which not only were linked to a specific myth, but also retained tangible elements recognized by local tradition as connected to mythic events. These may correspond to anthropic elements that were considered to have been created by the protagonists of local myths, or even to features of the landscape, nevertheless ascribed to a similar nature. Following these considerations, the picture offered by the processed data changes significantly, with 3 elements found in Argolis, 2 in Boeotia and 1 in Laconia, Elis, Achaëa and Arcadia respectively. In 14 cases, furthermore, there is a coincidence of mythic attestations and areas of worship.

⁷⁵ For a survey on the area of Olympia / Pisa and its historical and mythical background, see Maddoli / Saladino (2013), 364–365; Ekroth (1999).

⁷⁶ Tab. 8: List of the mythic attestations for the abandoned settlements from the *Periegesis*; see in the data repository: <https://doi.org/10.11588/data/FO1QAT> (last access 16.10.2024).

Conclusions

In light of the collected data, the use of *GIS* software has proven to be an extremely versatile tool in the representation and analysis of a literary text from classical antiquity, with results beyond the simple spatial recreation. The ability of these applications to store a vast amount of data on one hand, and to associate them to their proper location on the other have been crucial not only in gathering the material provided by Pausanias, but also in contextualizing it, aiming thus to facilitate the assessment of this case study. The possibility of visually representing and georeferencing these data allows for the evaluation not only of the distribution of certain elements but also of their own specific features, with the purpose of scientifically elaborating valid results. As the research progresses and new elements relative to the landscape of the *Periegesis* emerge, this *GIS*-based methodology can be constantly employed to update the collected data.

The overall collection of material gathered during the preliminary digitization of the *Periegesis* has thus allowed the reprocessing of the data into new cartography. A careful cataloging and representation of the terminology used by Pausanias and the causes of abandonment of the ancient settlements reported by the author have also effectively facilitated the assessment of features related to the history of the sites under examination. The degree of precision in the analysis of the text is reinforced by the choice to establish a relation between the mapped areas and the associated elements. This allows for a more detailed evaluation of data that usually escape similar mapping projects of the classical world. The resulting atlas has furthermore enabled the representation of various features associated not only with the phenomenon of the abandonment of settlements but also with the persistence of cultural memories and activities tied to these sites.

As the *Periegesis* atlas itself may allow the production of new cartography, the six additional maps, detailing various features related to the presence of abandoned settlements, can be used simultaneously to better investigate the contents of the digitized corpus. The use of *GIS* maps allows in fact to assemble several layers at the same time, thus appreciating several distinct features of the same area. Moreover, the capability of this tool to upload and share a project online not only makes the work available for research, either on this specific text or on this area in general, but also allows the data to be scrutinized by experts and collaborators. This in turn can lead to the creation of a community capable of managing and further enhancing the collected database.

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