

Ancient Lighthouses - Part 7: A Catalogue

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Abstract: *This paper presents a catalogue of ancient lighthouse sites. The probabilities that sites existed at these locations have been assessed and presented as a colour-coded scheme.*

Results of the Survey

Following an exhaustive survey such as this, perhaps the most surprising result is that there are so few sites listed. I have chosen to include 144 sites that I have judged to be of interest. These have each been assigned a confidence probability from 1 to 100%, but I must stress that the assignment of probabilities to each site is my own and we cannot expect them to carry any more than the most superficial meaning. I decided to adopt the approach simply to assist readability. Serious researchers must make their own assessments. Of the 144 sites, there are 82 that I judged to have a greater than 50% chance of being sites of ancient lighthouses. For comparison, of the two most recent studies, Giardina (2010) listed around 95 possible structures at 76 sites; Zemke (1992) listed 53 sites.

In view of the large errors that must apply to my assignments, I shall make only a few further comments about the probability data. The sites with the greatest probabilities deserve the most detailed inspections, for in these cases we can have a high degree of confidence that lighthouses existed. As far as the numbers are concerned, there are only 43 that have a confidence level >75%. Readers might rightly conclude that I have not been able to advance the number of ancient lighthouse sites beyond what was already known. The factor that adds the greatest amount of uncertainty to such a study is the issue of Roman structure identity. The subject has already been discussed fully, but with relevance here it concerns the question, "What proportion of towers functioned as lighthouses rather than signal stations?" Roman lighthouse towers were almost certainly dual-role, used as watchtower and signalling. This makes the regular spacing of towers along coasts very likely. There is a very fine distinguishing line between lighthouses and signal towers. It was likely that long stretches of coast were devoid of tower networks because of

the logistics requirements. Unfriendly forces made it hard to keep them up constantly. But a chain of signal towers down the east coast of England is likely.

There was potentially a lighthouse at every port to assist shipping but this is by no means proven. For example, Romans came and went at La Rochelle and had a salt business there but no real archaeological knowledge about this. We know remarkably little about the many locations where there should have been Roman lighthouses. When we consider the Roman methodology, that included a lighthouse in all but the smallest ports, there are many ports that were known to have seen much activity, yet for which there is no evidence at all of a lighthouse. These structures have been greatly neglected through history. Strabo records a great lighthouse at Caepiona, yet there is virtually nothing reported, let alone found. There are many others like this, all along the coastline at regular intervals. These extensive networks are very incomplete and there is much still to discover.

Names of sites are complicated because of the long time periods involved, and, although I have tried to give alternatives, they are almost certainly incomplete. Locations, as given by Lat/Lon specifications have been checked using Google Earth and in some cases improve upon other published data.

The sequence of sites is approximately in series, starting from northern Europe, and passing through the regions of Atlantic, northwest Mediterranean, Italy, Greece, Black Sea, Turkey, Middle East and north Africa. There is one entry outside of this are and that is the final entry in Yemen.

The probability that these sites bore lighthouses is assessed according to the colour code, the key to which is given at the top of each even page. There is so little information about when a lighthouse might have been built that the site record has a field entitled Earliest Settlement Established. This, perhaps gives some idea as to the year when a lighthouse might have been built.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



The Catalogue

Flevum.

Earliest Settlement Established: 50 CE

Roman Port Site: yes

Modern Location: Velsen, Netherlands.

Lat: 52.46667; Lon: 4.616667.

Comments: The Roman site of Flevum is believed to be sited at modern Velsen. Sited at another exit of the Rhine, north of Katwijk, the latest archaeology suggests a substantial Roman river port with four piers, and several ship sheds. The present knowledge of Roman strategy suggests that a small lighthouse would have been built on the end of at least one mole, even if only a minor light to assist traffic in this river port.

References: Morel (1987).

Calla, Katwijk, Lugdunum Batavorum, Brittenburg.

Modern Location: Katwijk aan Zee, Netherlands.

Lat: 52.217; Lon: 4.397.

Comments: The location is at one of the ancient outlets of the River Rhine. This formed the seaward end of a chain of defences created by the Romans to form the Empire's northern border. Originally Lugdunum Batavorum, it became Brittenberg in the 15th century. Remains of a large fortification have been reported beneath the sand just offshore from Katwijk. It is thought that there was a lighthouse here to guide ships from the North Sea into the Rhine where there was a Roman naval base to receive them.

References: Wikipedia: Brittenberg, 20180110; Zemke (1992), p21, 22, 23.

Boulogne, Tour d'Ordre, Turris Ardens, Turris Ordens, Port Bononiensis, Bononia, Gesoriacum, Itium.

Earliest Settlement Established: 39 BCE

Roman Port Site: yes

Modern Location: Boulogne, France.

Lat: 50.7334; Lon: 1.5965.

Comments: The location of this famous Roman lighthouse was based upon a different coastal and port geography in Roman times when much of the land that is above water today was then submerged. This Roman lighthouse is represented by an octagonal structure of twelve reducing stages. The lighthouse was destroyed in 1644.

References: De Montfaucon (1719); Bromwich (2013); Zemke (1992), p21, 22, 23; Hague (1974), pp2, 7, 11; Stevenson (1959), p2, 11, 12; Giardina (2010), p117-119.

Shadwell, Londinium, Portus Londinii, London.

Earliest Settlement Established: 100 CE

Roman Port Site: yes

Location: On the River Thames near the city

Modern Location: London, England.

Lat: 51.5071; Lon: -0.0466.

Comments: A multi-function tower that served as a watch tower, a toll tower, a message tower and perhaps also a lighted aid to navigation.

References: Lakin (2002); Giardina (2010), p119.

Regulbium, Reculver.

Earliest Settlement Established: 43 CE

Roman Port Site: yes

Location: At the north end of the Wantsum Channel where it entered the Thames. West of Margate.

Modern Location: Kent, England.

Lat: 51.38; Lon: 1.20.

Comments: The Wantsum Channel was a busy waterway giving a short cut from the English Channel to the River Thames until the late 17th c. when it dried out because of silting. It became an important passage for Roman ships arriving from home. The Roman fort at Regulbium is reported to have had a lighthouse for ships entering the Thames and the Medway. Much of the original site has been lost to the sea.

References: Mothersole (1924); Wheeler (1929).

Rutupiae, Ritupium, Richborough.

Earliest Settlement Established: 43 CE

Roman Port Site: yes

Location: Richborough; at the south end of the now dry Wantsum Channel near Sandwich.

Modern Location: Kent, England.

Lat: 59.29306; Lon: 1.332414.

Comments: Founded in 43 CE, Richborough was a busy Roman port on the Wantsum Channel at the end of the important Roman road called Watling Street. Later,

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



around 300 CE, a great fort was built here to protect against the increasing invasions by Saxons. The unique cross-shaped structure at the centre of Richborough fort is thought to be the foundation of a great lighthouse built around 100 CE when most traffic entering and leaving the country passed through Richborough.

References: Antonine Itinerary; Mothersole (1924); Wheeler (1929).

Portus Dubris.

Earliest Settlement Established: 30 BCE to 44 CE

Roman Port Site: yes

Modern Location: Dover Castle, Dover, England.

Lat: 51.12838; Lon: 1.323347.

Comments: The Straits of Dover is the narrowest point of crossing the English Channel (French: La Manche) between England and France. It was the obvious point for the Roman army to cross, although some say that Portchester was also used. One of the best preserved Roman lighthouses, it was originally built as one of a pair occupying east and west sites on either side of the river Dubris, now non-existent. Communication with Boulogne across the Channel is very likely.

References: Philp (1981); Zemke (1992), p21, 22, 23; Hague (1974), p2; Stevenson (1959), p2, 11; Giardina (2010), p119-120.

Portus Dubris, Drop Redoubt, Dover West.

Earliest Settlement Established: 30 BCE to 44 CE

Roman Port Site: yes

Modern Location: Dover West, England.

Lat: 51.123; Lon: 1.30863.

Comments: A second tower on high ground to the west of Portus Dubris, is very likely. Almost no archaeological remains can be seen but there is firm evidence for its existence, nonetheless, within the Drop Redoubt fortifications.

References: Philp (1981); Hague (1974), pp2, 7; Giardina (2010), p119-120.

Campa Torres, Noega, Torre Augusto.

Earliest Settlement Established: 330 BCE

Roman Port Site: yes

Modern Location: Gijon, Spain.

Lat: 43.57035; Lon: -5.701969.

Comments: The site of the Roman Campa Torres is in the focus of a large industrial complex at Gijon in Asturias. There are few remains, but the site remains generally accessible by approaching the modern lighthouse. Ancient sources describe a structure Turrem Augusti linked to Campa Torres. Some kind of Roman harbour light is possible here, but modern industry may have obscured the full site. Fernandez Ochoa's proposal for a significant lighthouse here is convincing.

References: Strabo: Geographica 3, 5 & 3, 20; Pliny the Elder: The Natural History 4, 3; Pomponius Mela: Geogr 3, 12-13 & 7; Fernandez Ochoa (2010); Giardina (2010), p117.

Julio Briga, Tower (Torre) of Hercules, Corunna, Brigantium, Flavium Brigantium, Farum Brigantium.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: La Coruña, Spain.

Lat: 43.3861; Lon: -8.40656.

Comments: The modern city of La Coruña is situated on the far northwest corner of Galicia in Spain. It occupies a strategic location for ships on long voyages between the Mediterranean and northern Europe. A Phoenician temple seems likely to have preceded the Roman tower about which a good amount is known, although the modern lighthouse was built over and around the old one. The Roman tower dates from end of 1st c. CE or the start of the 2nd c. CE.

References: Zemke (1992), p18, 19, 20, 22, 23; Hague (1974), p2; Stevenson (1959), p2, 10; Giardina (2010), p114-117.

Balsa.

Earliest Settlement Established: 700 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Tavira, Portugal.

Lat: 37.0829; Lon: -7.6972.

Comments: Balsa was a Roman coastal town in the province of Lusitania, Conventus Pacensis. A Phoenician colony thought to have been called Baal Saphon, which became Balsa. Later another settlement called Tavira grew up nearby. The possibility of a lighthouse here is slight.



References: Pliny the Elder: *The Natural History* 4, 35; Marcianus of Heraclea: *Periplus Maris Exteri* 8.

Turris Caepionis, Turris Chipionis, Pirgo Caepino, Caepion.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Chipiona, Salmedina islet, in front of Chipiona, on the south bank of the outlet of the River Guadalquivir; Punta del Perro

Modern Location: Chipiona, Spain.

Lat: 36.73806; Lon: -6.442447.

Comments: Located on a rocky spur or an island, a Phoenician temple site is the earliest chance of a lighthouse function here. There is ample evidence of a great tower here called Turris Caepionis built in 140 CE by Quintus Servilius Caepio. Strabo records it as a great building. There is virtually no hard evidence for it, however.

References: Strabo: *Geographica* 3, 1; Pomponius Mela: *Geogr* 3, 1; Keay (1988); Zemke (1992), p16, 22, 23; Hague (1974), p2; Stevenson (1959), p2, 10; Giardina (2010), p114.

Gades, Gadir, Gadira, Eritheia, Eriteia.

Earliest Settlement Established: 1100 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Cadiz. Gadir was originally an island.

Modern Location: Cadiz, Spain.

Lat: 36.52955; Lon: -6.300888.

Comments: There is a good chance that the earliest Phoenician temple built in Gades acted as a lit aid to navigation and provided a model for ancient lighthouses for the next 700 years. There is plenty of evidence for lighthouses in later centuries too.

References: Strabo: *Geographica* 3, 5; Caesar: *Guerre d'Espagne* 37; Diodorus Siculus: *Bibliotheca Historica* 25; Avienus: *Ora Maritima*; Pseudo-Scylax: *Periplus*; Peman (1954); Ordonez Agulla (1993); Zemke (1992), p16, 22, 23; Hague (1974), pp2, 11; Giardina (2010), p113-114.

Carteia, Calpe, Karpessos, Guadarranque, San Roque.

Earliest Settlement Established: 904 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Bay of Gibraltar / Algeciras

Modern Location: Algeciras, Spain.

Lat: 36.18552; Lon: -5.4083.

Comments: Carteia was an original Phoenician colony at the head of the Bay of Gibraltar and on the east bank of the River Guadarranque. It became a Roman colony in 190 BCE. This was almost certainly the site of lighthouses at some time. There may have been other sites too, to the east and west of this location. Probability is high, but evidence is low.

References: Strabo: *Geographica* 3, 1; Titus Livius (Livy): *The History of Rome* 28, 30; Avienus: *Ora Maritima*; Thouvenot (1940); Giardina (2010), p112-113.

Terraco, Tarracco, Tarracon, Tarchon.

Earliest Settlement Established: 550 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Tarragona, Spain.

Lat: 41.11196; Lon: 1.24534.

Comments: Thought to be an ancient port called Tarchon

Established by the Phoenicians. Zemke suggests a lighthouse here, but his proposal may be based upon an ancient tradition of an elevated light from a Phoenician temple.

References: Strabo: *Geographica* 3, 4; Zemke (1992), p16, 22.

Empuries, Emporium, Emporia, Neapolis, Emporion.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes

Location: Ampurias

Modern Location: Ampurias, Spain.

Lat: 42.13594; Lon: 3.122465.

Comments: An ancient Greek settlement was

Established on an island in the mouth of the Fluvia. Later, around 550 BCE, the inhabitants moved to the mainland where the Greek port of Empuries developed.



The supposed legacy of a lighthouse at this position may be on the basis of Greek navigators using the light from the temple as a waypoint for navigation.

References: Zemke (1992), p16, 22.

Narbo Martius, Narbo, La Tour de Vauban, Colonia Julia Narbo Martius.

Earliest Settlement Established: 118 BCE

Roman Port Site: yes

Modern Location: Narbonne, France.

Lat: 43.17952; Lon: 3.015881.

Comments: This site is complex having been rebuilt in several places over centuries. After its founding in 118 BCE, Julius Caesar remodelled it in 46 BCE. It seems clear that at least one lighthouse existed here. Archaeological remains exist in several locations and call for new analyses. In view of the confidence with which a lighthouse at this site is asserted, it is remarkable how few studies exist.

References: Strabo: Geographica 4, 1; Ausonius: Ordo Urbium Nobilium 13; Apollinaris: Poem 23; Brogan (1953); Bedon (1988a); Zemke (1992), p16, 22; Giardina (2010), p111-112.

Bouches du Rhone, Arelas, Arelate, Theline, Fossa Marianae.

Earliest Settlement Established: 500 BCE

Ancient Greek Site: yes; Phoenician Port Site: yes

Location: Arles; Bouches du Rhone

Modern Location: Arles, France.

Lat: 43.67768; Lon: 4.619494.

Comments: There is much evidence of lighthouses used for the many waterways and harbours at the Bouches du Rhone. Both archaeological and documentary records tell a complex story because of geographical changes. The site is located only as an approximation.

References: Antonine Itinerary; Caesar: Guerre Civile 2, 5; Ausonius: Ordo Urbium Nobilium 8; Giardina (2010), p110-111.

Massalia, Massilia, Massalia Graecorum, Lacydon.

Earliest Settlement Established: 600 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Modern Location: Marseilles, France.

Lat: 43.29763; Lon: 5.374913.

Comments: Massalia was originally named by Greek settlers from Phocaea around 600 BCE. There are suggestions that lighthouses were built here because of the name Faro that occurs locally, but no evidence has yet been found.

References: Zemke (1992), p16, 22; Hague (1974), p11; Allard (1895), p25.

Lion de Mer.

Earliest Settlement Established: 49 CE

Roman Port Site: yes

Location: Fréjus, Var; The Roman Naval Base of Fréjus or Forum Julii; on an islet in front of St. Raphael

Modern Location: Fréjus, France.

Lat: 43.43132; Lon: 6.740503.

Comments: The rock known as the Lion de Mer was located about 3.5 km southeast of the entrance to Fréjus. A rock lighthouse has been proposed, guarding the entrance to the Roman port. The lighthouse is said to have been about 9.5 m in diameter.

References: Gèbara (2010)

Lanterne d'Auguste, Forum Julii, Fréjus.

Earliest Settlement Established: 49 CE

Roman Port Site: yes

Location: Forum Julii; Roman naval base

Modern Location: France.

Lat: 43.42957; Lon: 6.74398.

Comments: The lanterne d' Auguste is the best preserved of all of the parts of the ancient Roman port, although it has been partly restored in the early 20th century. Many claim it is an old lighthouse, but its shape is not consistent with the patterns seen at other locations and it would have been insignificant compared to the two grand towers at the port entrance. The tower is solid and must have been a daymark only.

References: Gèbara (2010).

Fréjus (South), Forum Julii, Forum Julium.

Earliest Settlement Established: 49 CE

Roman Port Site: yes

Location: Forum Julii; Roman naval base

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Modern Location: Butte St. Antoine, France.

Lat: 43.43132; Lon: 6.740503.

Comments: A second lighthouse is confidently assigned to the end of the mole on the southern entrance to the port. A square base tower, with two or three diminishing sections is the likely design.

References: Gébara (2010).

Fréjus (North), Forum Julii, Forum Julium; the Triton tower.

Earliest Settlement Established: 49 CE

Roman Port Site: yes

Location: Forum Julii; Roman naval base

Modern Location: Fréjus, France.

Lat: 43.4068; Lon: 6.774.

Comments: The town of Forum Julii was founded by Julius Caesar around 49 BCE. The site was strategically important at a focus of road communication routes in the region, and it also had a good bay for access to and from the sea. There is little doubt about the existence of this grand, decorated tower on the northern side of the port entrance, possibly modelled on the other Roman structures at Ostia, Leptis Magna and Caesarea Palestina.

References: Strabo: Geographica 4, 1, 9; GÉbara (2010); Zemke (1992), p16, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p108-109.

Vergoanum, La Tour Sainte Anne; Lero Insula; Fort Royal.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Isle of St. Marguerite in the Isles of Lerins off Cannes; on the NW point of the island.

Modern Location: France.

Lat: 43.52285; Lon: 7.03733.

Comments: Phoenicians founded a small port facility at Vergoanum on the island of Sainte Marguerite in the Isles of Lerins. Significant Roman fortifications were built on the island after Pliny reported the island as having no early remains. The de Graauw catalogue suggests this as the site of an ancient lighthouse, but there appears to be no other support for this in the literature.

References: Antonine Itinerary; Pliny the Elder: The Natural History 3, 79; Cooper-Marsdin (1661)

Olbia.

Earliest Settlement Established: 330 BCE

Modern Location: Olbia, Sardinia, Italy.

Lat: 40.92364; Lon: 9.507322.

Comments: Archaeological remains have been interpreted as being a lighthouse, originally on a small island joined to the land as at Alexandria. The structure is thought to have been modelled on the Pharos, but there is little hard evidence.

References: Ptolemy: Geography 3, 3; Giardina (2010), p95.

Nora, Capo di Pula, Cala di Nora.

Earliest Settlement Established: 750 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Sardinia: On a high point of the Coltellazzo promontory, Nora

Modern Location: Nora, Italy.

Lat: 38.98426; Lon: 9.020256.

Comments: Good historical knowledge of this port remains scarce, but archaeological investigations could prove fruitful, especially underwater where an ancient lighthouse might be found. Otherwise, its remains might lie beneath the present tower, Capo Di Pula.

References: Ptolemy: Geography 3, 3; Bartolini (1979); Giardina (2010), p94-95.

Industria.

Earliest Settlement Established: 30 CE

Roman Port Site: yes

Location:

Modern Location: Italy.

Lat: 45.163; Lon: 8.008.

Comments: This is a very tentative assignment for a light shown at an inland river site. The research is based upon a report by Pliny.

References: Pliny the Elder: The Natural History 3, 49 & 3, 122; Giardina (2010), p108.

Albingaunum, Albingauno, Albenganum.

Earliest Settlement Established: 550 BCE

Modern Location: Albenga, Liguria, Italy.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Lat: 44.0358; Lon: 8.225654.

Comments: Since pre-Roman times this settlement based its existence on maritime trade. In the time of the Punic Wars it was allied with the Carthaginians and therefore conquered by the Romans. The headland would have been a natural site to exhibit a light.

References: Zemke (1992), p16, 22; Hague (1974), p2.

Vado Ligure, Vadis Savadis, Vadum Sabatium, Isola di Bergeggi.

Earliest Settlement Established: 30 BCE

Modern Location: Isola Di Bergeggi, Italy.

Lat: 44.23871; Lon: 8.443866.

Comments: Remains of the Roman tower assigned as a lighthouse still exist on the island of Bergeggi.

References: Antonine Itinerary; Pliny the Elder: The Natural History 3, 7; Lamboglia (1939); Lamboglia (1970); Ricci (1998); Giardina (2010), p108.

Portus Pisanus, Porto Pisano, Liburnus Portus, Portus Herculis Liberni, Leghorn.

Earliest Settlement Established: 400 BCE

Roman Port Site: yes

Modern Location: Pisa, Italy.

Lat: 43.5704; Lon: 10.3321.

Comments: In ancient times the site where Pisa is located today was much closer to the coast. The land was marshy and there were many lagoons. Recent archaeology has found evidence of Etruscan occupation of the site from the 5th c BCE. The site for the port of Pisa is now inside the city boundary. It is now all land, several km from the sea. The old port may have had a small harbour light at its entrance, but there is no archeological evidence for it.

References: Hague (1974), p11, 12.

Igilium, Aegilium, Campese.

Earliest Settlement Established: 330 BCE

Roman Port Site: yes

Modern Location: Isola del Giglio, Italy.

Lat: 42.36863; Lon: 10.87652.

Comments: The Roman port structures have been built upon for modern harbour works, but the remains of an old lighthouse on a high point can be seen. The precise

location is unclear but is probably under the foundations of the fort.

References: Rutilius: De Reditu Suo 1, 325; Antonine Itinerary; Bronson (1970); Giardina (2010), p106-107.

Artemisium, Dianium, Artemisia.

Earliest Settlement Established: 30 BCE

Modern Location: Isola di Giannutri, Italy.

Lat: 42.25396; Lon: 11.30383.

Comments: There is only speculation about lighthouses on this small island that was a most useful point of safety for mariners in ancient times. Remains of a tomb in a high position that might have been lit at night could have acted as a lighthouse.

References: Bronson (1970); Giardina (2010), p106.

Portus Cosanus, Cosa, Cossae, Portus Herculis Cosanus.

Earliest Settlement Established: 274 BCE

Modern Location: Ansedonia, Italy.

Lat: 42.40697; Lon: 11.29453.

Comments: The port was mostly developed around 100 BCE. Underwater remains have only recently been investigated. Confidence is high that there was a lighthouse at this small Roman port, but its exact location is still unclear. McCann favours a location known to archaeologists as underwater pier 5. Oleson gives a clear location. (See Fig. 6-21.)

References: Strabo: Geographica 5, 2; Titus Livius (Livy): The History of Rome 22, 11; Antonine Itinerary; Virgil: Aeneid 10, 163; McCann (1987); Oleson (2014), p65; Giardina (2010), p107.

Centumcellae, Civitavecchia.

Earliest Settlement Established: 106 CE

Roman Port Site: yes

Modern Location: Civitavecchia, Italy.

Lat: 42.09316; Lon: 11.78577.

Comments: The port was modelled on Portus Romanus and almost certainly used a similar format for lighthouses. It may have had four lighthouses on the mole ends. However, there remains doubt about the precise site or sites that were used in Roman times.

References: Antonine Itinerary; Pliny the Younger: Let-

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



ters 6, 31, Rutilius: De Reditu Suo 1, 238; Zemke (1992), p14, 22, 23; Hague (1974), p2; Giardina (2010), p105-106.

Portus Claudius, Portus Augusti Ostiensis.

Earliest Settlement Established: 42-54 CE

Roman Port Site: yes

Modern Location: Ostia, Italy.

Lat: 41.7797; Lon: 12.24816.

Comments: Ostia, or Portus Romanus was the main port of Rome for many centuries. There were a number of lighthouses built in this general area, necessary because of closure of waterways because of silting.

References: Hague (1974), p2; Stevenson (1959), p2.

Portus Trajanus, Trajanic Harbour.

Earliest Settlement Established: 103 CE

Roman Port Site: yes

Modern Location: Ostia, Italy.

Lat: 41.77994; Lon: 12.2626.

Comments: Portus Trajanus was one of three major developments of the Roman port of Ostia. The building of a lighthouse specifically as part of the Trajan port is possible, but uncertain.

References: Keay (2012).

Tor Boacciana, Ostia-Antica.

Earliest Settlement Established: 280 BCE

Roman Port Site: yes

Modern Location: Ostia, Italy.

Lat: 41.75343; Lon: 12.27985.

Comments: This tower, which exists in modified form today, was situated at the mouth of the Tiber, close to the port of Ostia. There is a strong possibility that it functioned as a lighthouse, as well as having other functions. Its early construction suggests that it was the first Roman lighthouse, built between 280 and 42 BCE.

References: Strabo: Geographica 5, 3; Dionysius of Halicarnassus: Roman Antiquities Volume 3, 14; Suetonius: Nero, 16; Ptolemy: Geography 3, 1; Procopius: The Gothic War 1, 26; Rutilius: De Reditu Suo 1, 179; Titus Livius (Livy): The History of Rome 22, 11; Keay (2012); Zemke (1992), p6, 22; Giardina (2010), p102-104.

Astura, Storas.

Earliest Settlement Established: 330 BCE

Roman Port Site: yes

Location: Astura

Modern Location: Italy.

Lat: 41.408; Lon: 12.76486.

Comments: Torre Astura was an island called Astura. It is now a peninsula on the coast of Latium, Italy, at the southeast extremity of the Bay of Antium. It seems likely that there was a small port at Astura in the time of Trajan, when there were many villas here. There has been extensive damage to archaeological remains at underwater sites in the submerged harbour. There may have been two or three lighthouses here.

References: Strabo: Geographica 5, 3; Giardina (2010), p102.

Circeii, Cape Circaeum, Aia, Aea, Mount Circeo.

Earliest Settlement Established: 390 BCE

Neolithic Site: yes; Ancient Greek Site: yes; Roman Port Site: yes

Location: Capo Circeo

Modern Location: San Felice Circeo, Italy.

Lat: 41.22438; Lon: 13.06854.

Comments: Aea was a mythological island home of the sorceress Circe. It was later identified by classical Roman writers with Mount Circeo on the western coast of Italy. Numerous colonies existed temporarily before the Romans made it permanent in -390 BCE. The lofty site on Mount Circeo was probably used as an ancient Greek temple-lighthouse long before Roman activities in the port below. The modern lighthouse is supposed to have been built on the same site as an old one, but is an uncharacteristic site.

References: Strabo: Geographica 5, 3; Pseudo-Scylax: Periplus; Apollonius: Argonautica 4, 666; Giardina (2010), p101-102.

Terracina, Tarracina, Anxur, Anxuras.

Earliest Settlement Established: 550 BCE

Roman Port Site: yes

Modern Location: Terracina, Italy.

Lat: 41.2825; Lon: 13.2605.

Comments: Volsci was a region immediately south of



and adjoining Rome's Latium district. The Volsci people were rivals to Rome and were taken over by them by 300 BCE. Likewise the Volsci port of Anxur became Terracina in 329 BCE under the Romans. A 6th c. light may have been shown from high up in the Temple of Jupiter, but records are clear about the presence of a harbour lighthouse in Roman times. Some attribute the building to Trajan and it may have been modelled on the Ostia tower.

References: Antonine Itinerary; Plutarch: Caesar 58; Titus Livius (Livy): The History of Rome 40, 51; De La Blanchere (1884); Zemke (1992), p15, 22, 23; Hague (1974), p2; Giardina (2010), p101.

Pandataria, Pandoteria, Pandatoria, Pentotene, Ventotene.

Earliest Settlement Established: 30 CE

Roman Port Site: yes

Location: Porto Vecchio, Roman villa Giulia, at Punta Eolo, on the isle of Ventotene

Modern Location: Ventotene, Italy.

Lat: 40.7969; Lon: 13.43455.

Comments: Ventotene, in Roman times known as Pandataria, is one of the Pontine Islands in the Tyrrhenian Sea, 46 km off the coast of Gaeta on the border between Lazio and Campania. It was used by emperors for exiling disgraced members of their family. De Rossi has recently identified a structure recently found on a high point of the island at Montagnazzo as the remains of a Roman lighthouse. Alternatively, the small bay of Porto Romanus may have hosted a lighthouse on the site of the present one.

References: Antonine Itinerary; De Rossi (1993); Giardina (2010), p100-101.

Cumae, Cumes, Kyme.

Earliest Settlement Established: 750 BCE

Neolithic Site: yes; Ancient Greek Site: yes

Location: Cuma

Modern Location: Lido Fusaro, Italy.

Lat: 40.849; Lon: 14.05134.

Comments: Cumae was originally a settlement for Greeks who had displaced its original iron age inhabitants. It occupied higher ground some 0.5 km away from the sea. A link was established from the sea to Lake Fusaro, and the lake was used for sheltered anchorage. The proposal for a light at Cumae is based

upon the principle of a light being shown from the important Greek temple site. Romans seem not to have used lights here for navigation.

References: Dionysius of Halicarnassus: Roman Antiquities Volume 7, 2; Antonine Itinerary; Vitruvius: Morgan (1914).

Misenum, Faro, Misenum, Miseno, Portus Misenum.

Earliest Settlement Established: 27 BCE

Roman Port Site: yes

Location: Bay of Naples

Modern Location: Capo Miseno, Italy.

Lat: 40.79825; Lon: 14.0841.

Comments: Misenum was developed as a naval port by Marcus Agrippa in 37 BCE. Extra capacity, in addition to that available at Portus Iulius, was needed for ships to combat other forces disloyal to the Emperor. The harbour took advantage of lakes behind the port by construction of connecting canals. Though secret at first, lighthouses may have been later built on the ends of moles at the entrance to the port. A large lighthouse was built ashore in the port.

References: Strabo: Geographica 5, 4; Vegetius: De Re Militari 5, 1-15; Dionysius of Halicarnassus: Roman Antiquities Volume 1, 53; Flaccus: Argonauticas (1) 375-386; Tacitus: Annals 4, 5, 1; Suetonius: Augustus, 49, 1; Vegetius: De Re Militari 4, 31-32; Zemke (1992), p15, 22; Giardina (2010), p97-99.

Punta Terrone, Misenum, Miseno, Portus Misenum.

Earliest Settlement Established: 27 BCE

Roman Port Site: yes

Location: Bay of Naples

Modern Location: Miseno, Italy.

Lat: 40.78811; Lon: 14.08934.

Comments: On the southern side of the entrance to the port of Miseno, a mole was built to provide extra protection and to form a formal entrance to the port. On the end of the mole it has been suggested that a lighthouse called Punta Terrone was built. There is a site in the water here today that could have marked its location.

References: Oleson (2014); Giardina (2010), p97-99.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Punta Pennata, Misenum, Miseno, Portus Misenum.

Earliest Settlement Established: 27 BCE

Roman Port Site: yes

Location: Bay of Naples

Modern Location: Miseno, Italy.

Lat: 40.79; Lon: 14.091.

Comments: The island of Pennata was at the time joined to the land and used to form a northern protective arm to the harbour. Some archaeological evidence supports this. The embrace of Pennata was further extended to form a mole. A lighthouse is thought to have been built on the end of the mole at the entrance to Porto Miseno.

References: Oleson (2014); Giardina (2010), p97-99.

Baiae, Baia, Portus Baianus.

Earliest Settlement Established: 330 BCE

Roman Port Site: yes

Location: Bay of Naples

Modern Location: Baiae, Italy.

Lat: 40.8185; Lon: 14.0767.

Comments: Baiae was a Roman town on the northwest shore of the Gulf of Naples, perhaps developed as a port for Cumae. It was a fashionable resort for centuries by the super-rich who built luxurious villas here from 100 BCE to 500 CE. Much of it is now under water. A harbour for Baiae existed for several centuries and was called Portus Baianus. Entry was between a pair of moles and lights may have been exhibited on the ends of the moles. The area is only now under intense archaeological investigation.

References: Pliny the Elder: The Natural History 3, 9; Stratus: The Silvae (Silves) 4, 3; Oleson (2014); Zemke (1992), p15, 22, 23; Hague (1974), p2.

Portus Julius, Portus Iulius.

Earliest Settlement Established: 37 BCE

Roman Port Site: yes

Location: Bay of Naples

Modern Location: Puteoli, Italy.

Lat: 40.82648; Lon: 14.09471.

Comments: A short-lived harbour created by Agrippa 37-36 BCE using Lakes Lucrino and Averno. Because of

secrecy, there are no reports of lighthouses at this location. However, they may have been constructed later as small structures only.

References: Strabo: Geographica 5, 4; Dio Cassius: Roman History 48, 50; Suetonius: Augustus, 16; Virgil: Georgics 2, 160; Oleson (2014).

Puteoli, Potuoli, Pozzuoli, Pouzzoles, Dicaearchia.

Earliest Settlement Established: 750 BCE

Roman Port Site: yes

Location: Pozzuoli, Bay of Naples

Modern Location: Pozzuoli, Italy.

Lat: 40.8216; Lon: 14.1154.

Comments: A structure is thought to have been built as a lighthouse in this Roman port. Despite good evidence in artifacts, precise interpretation remains elusive. However, the remains of what is thought to have been an end-of-mole lighthouse are in deeper water.

References: Stratus: The Silvae (Silves) 3, 2; Seneca: Lucilius, 77; Antonine Itinerary; Josephus Flavius: The Life 3; Dubois (1907); Zemke (1992), p15, 22; Giardina (2010), p99-100.

Capreae - Villa Jovis High, Capri, Capraria.

Earliest Settlement Established: 26 CE

Roman Port Site: yes

Location: Capri Island, West of the Villa Tiberius (Villa Jovis)

Modern Location: Capri, Italy.

Lat: 40.55769; Lon: 14.22623.

Comments: The island of Capri is situated at the southern end of the Bay of Naples. On the summit of the eastern promontory, near to the villa of Tiberius (Villa Jovis), is a site proposed as the foundations of a great pharos that replaced a smaller one. The lighthouse was in clear view of another at Porto Miseno.

References: Tacitus: Annals 4, 67; Antonine Itinerary; Krause (2003); Zemke (1992), p15, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p96-97.

Capreae - Villa Jovis Low, Capri, Capraria.

Earliest Settlement Established: 26 CE

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Roman Port Site: yes

Location: Capri Island, Southeast of the Villa Tiberius (Villa Jovis)

Modern Location: Capri, Italy.

Lat: 40.55769; Lon: 14.22623.

Comments: The island of Capri is situated at the southern end of the Bay of Naples. On the summit of the eastern promontory, near to the villa of Tiberius (Villa Jovis), are the remains of a pharos of Capri, supposedly destroyed in an earthquake a few days before the death of Tiberius. It may have been replaced by a bigger lighthouse.

References: Tacitus: Annals 4, 67; Antonine Itinerary; Krause (2003); Zemke (1992), p15, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p96-97.

■ **Capo Atenheum, Cape Athens.**

Ancient Greek Site: yes

Location: Termini

Modern Location: Italy.

Lat: 40.58238; Lon: 14.33538.

Comments: The site is likely to have served as a temple lighthouse since earliest Greek times. It was also a point of contact with the villa of Tiberius on Capri. Archaeological evidence has been found to support its existence but the location remains imprecise.

References: Strabo: Geographica 1, 22 & 5, 8, 247; Mingazzini (1946); Maiuri (1983), pp177-194; Giardina (2010), p96.

■ **Punta Licosa.**

Earliest Settlement Established: 30 CE

Ancient Greek Site: yes

Location: San Marco di Castellabate

Modern Location: Italy.

Lat: 40.25125; Lon: 14.90028.

Comments: Circumstantial evidence suggests strongly that there was a lighthouse in the form of a Greek temple in this area. It may have been superseded by a Roman pharos at some point, but whether it was at San Marco, Santa Maria, or on the point is unclear.

References: Giardina (2010), p95.

■ **Rhegium, Rhege, Reggio di Calabria.**

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Reggio di Calabria

Modern Location: Reggio di Calabria, Italy.

Lat: 38.10207; Lon: 15.63336.

Comments: The city was founded by Ionian Greeks from Chalcis in the late 8th c. As a busy Greek colony in a strategic position, it would almost certainly have shown lights from temene. Later it became a Roman port, but there is no evidence of a Roman lighthouse.

References: Antonine Itinerary; Diodorus Siculus: Bibliotheca Historica 13, 2 & 14, 25; Dio Cassius: Roman History 48, 18; Thucydides: The History of the Peloponnesian War 6, 50; Plutarch: Timoleon 10; Zemke (1992), p15, 22, 23; Hague (1974), p2.

■ **Messana, Zancle, Messene, Messina, Punta San Ranieri.**

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Messina

Modern Location: Sicily, Italy.

Lat: 38.1947; Lon: 15.557.

Comments: Founded by Greek colonists in the 8th c, BCE it was called Zancle, changed to Messene in the 5th c. BCE. Roman control came in the 3rd c. BCE. A natural harbour is formed by the curved San Ranieri Spit. There is no clear idea about the form of any lighthouse built here. Confusion of this site with the one at Faro (Capo Peloro) is common.

References: Homer: Odyssey 12, 304; Caesar: Guerre Civile 2, 3; Appian: The Civil Wars 5, 6 & 13; Diodorus Siculus: Bibliotheca Historica 4, 36 & 14, 15 & 14, 25; Pausanias: Guide to Greece 4, 23; Moscati (1988a), p186; Zemke (1992), p15, 22, 23; Hague (1974), pp2, 73; Stevenson (1959), p2; Giardina (2010), p93-94.

■ **Capo Peloro, Faro, Punta del Faro, Torre Faro, Cape Pelorus, Capo del Faro.**

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Torre Faro; In the Forte degli Inglese

Modern Location: Faro, Italy.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Lat: 38.26867; Lon: 15.65191.

Comments: Cape Peloro is on the northeast tip of the island of Sicily at the northern entrance to the Straits of Messina. This town has been known as Faro for centuries, indicating the importance of a lighthouse here. An ancient lighthouse has been on this site since at least Roman times. It may have originated as an elevated fire. The agreed site is within the grounds of an old fortification known as the Forte degli Inglese where archaeological remains exist.

References: Homer: *Odyssey* 12, 304; Caesar: *Guerre Civile* 2, 3; Appian: *The Civil Wars* 5, 6 & 13; Diodorus Siculus: *Bibliotheca Historica* 4, 36 & 14, 15 & 14, 25; Pausanias: *Guide to Greece* 4, 23; Buceti (2012); Giardina (2010), p93-94.

Akragas, Acragas, Agrigento, Agrigentum.

Earliest Settlement Established: 580 BCE

Ancient Greek Site: yes

Location: Agrigento

Modern Location: Sicily, Italy.

Lat: 37.2875; Lon: 13.52747.

Comments: Agrigento was founded on a plateau overlooking the sea. Its establishment took place around 582-580 BCE and is attributed to Greek colonists from Gela, who named it Akragas. As a Greek colony its sanctuary must have exhibited lights, at least temporarily.

References: Moscati (1988a), p186.

Panormus, Panormos, Panorme.

Earliest Settlement Established: 750 BCE

Neolithic Site: yes; Ancient Greek Site: yes; Phoenician Port Site: yes

Location: Palermo

Modern Location: Sicily, Italy.

Lat: 38.1331; Lon: 13.37304.

Comments: The site of the port remains unclear, and evidence for a lighthouse here is slight, based upon coins only. However, the port was extensively used by Phoenicians, Greeks and Romans and probably had a lighthouse.

References: Titus Livius (Livy): *The History of Rome* 24, 36; Diodorus Siculus: *Bibliotheca Historica* 22, 23, 24; Procopius: *The Gothic War* 1, 5; Polybius: *Histories* 1, 39; Moscati (1988a), p186; Giardina (2010), p94.

Halaesa, Alesa, Alaesa.

Ancient Greek Site: yes

Modern Location: Sicily, Italy.

Lat: 37.99799; Lon: 14.2629.

Comments: The city was of Sicilian origin, and its foundation is related by Diodorus. An early citadel on high ground close to the shore suggests lights being shown at night.

References: Diodorus Siculus: *Bibliotheca Historica* 14, 16; Moscati (1988a), p186.

Otranto, Hydros, Hydruntum, Otrante.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes

Modern Location: Otranto, Italy.

Lat: 40.14734; Lon: 18.4982.

Comments: An 8th c. BCE Greek colony, it probably showed lights from temeni, but the site was certainly the location of a medieval lighthouse.

References: Pseudo-Scylax: *Periplus*; Titus Livius (Livy): *The History of Rome* 36, 21; Procopius: *The Gothic War* 3, 10; Antonine Itinerary; Hague (1974), p11.

Brindisium, Brindisi, Brindes, Brentesium, Brundisium, Bronduse.

Modern Location: Brindisi, Italy.

Lat: 40.64144; Lon: 17.94895.

Comments: Hard evidence is scarce, but there were possibly two ancient lighthouses - one on Barra Island and one at the entrance to the inner port. Significant accounts exist in ancient texts to give confidence to the presence of a Pharos-type lighthouse here.

References: Tacitus: *Annals* 3, 1; Caesar: *Guerre Civile* 3, 24; Plutarch: *Pompey* 62; Dio Cassius: *Roman History* 41, 48; Pliny the Elder: *The Natural History* 3, 16; Titus Livius (Livy): *The History of Rome* 44, 1; Antonine Itinerary; Polyaeus: *Stratagems* 8, 24; Zemke (1992), p15, 22, 23; Hague (1974), pp2, 11; Stevenson (1959), p2; Giardina (2010), p92-93.

Bari, Barium.

Earliest Settlement Established: 300 BCE

Roman Port Site: yes

Modern Location: Bari, Italy.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Lat: 41.13136; Lon: 16.86416.

Comments: Bari was probably founded by the Peucetii, a Iapygian tribe which first inhabited Apulia. It had strategic importance under Roman rule in the 3rd c BCE. Its important harbour dates from 181 BCE. There is no evidence for an ancient lighthouse at Bari, but the site's little-known Roman history suggests it as a possibility. Hague's designation as a 'principal' Roman lighthouse is unsubstantiated..

References: Hague (1974), p11.

Merinum, Merinium.

Earliest Settlement Established: 30 BCE

Roman Port Site: yes

Location: Santa Maria di Merino, Vieste

Modern Location: Santa Maria di Merino, Italy.

Lat: 41.915; Lon: 16.1114.

Comments: The geographical location on a headland in the Adriatic Sea makes this an obvious waypoint for mariners. A light to aid navigation may have been shown from this site where there is a tradition of an ancient sanctuary.

References: Zemke (1992), p16, 22, 23; Hague (1974), p2.

Ancona, Ancone.

Earliest Settlement Established: 300 BCE

Modern Location: Ancona, Italy.

Lat: 43.62444; Lon: 13.51032.

Comments: With only poor evidence for a formal lighthouse here, there could have been a light from the Greek Temple of Aphrodite in very early times. Evidence for a Roman structure used as a lighthouse remains circumstantial, but is good.

References: Titus Livius (Livy): The History of Rome 41, 1; Antonine Itinerary; Zemke (1992), p16, 22, 23; Hague (1974), pp2, 11; Giardina (2010), p90-91.

Ariminum, Rimini.

Earliest Settlement Established: 268 BCE

Roman Port Site: yes

Modern Location: Rimini, Italy.

Lat: 44.06345; Lon: 12.57047.

Comments: The area was part of the Etruscan civilization until the arrival of the Celts, who held it from the 6th century BCE until their defeat by the Umbri in 283 BC. In 268 BCE the Roman Republic founded the colonia of Ariminum. Despite a lack of archaeological remains due to modern developments, there is high confidence of an ancient and a medieval lighthouse at this location, probably built over in later centuries.

References: Strabo: Geographica 5, 1; Giorgetti (1980); Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p89-90.

Classe, Classis, Ravenna.

Earliest Settlement Established: 227 BCE

Roman Port Site: yes

Location: Classis, home port of Ravenna

Modern Location: Ravenna, Italy.

Lat: 44.39537; Lon: 12.21917.

Comments: Originally selected as a port by the Etruscans, Classe became the military port of the Roman fleet in the Adriatic around 35 BCE, and was an important site for five hundred years. It is now a comparatively small, landlocked archaeological site. Pliny describes a lighthouse here as similar to the Pharos. Hutton states that part of the bell tower of the Church of Santa Maria in Porto Fiori was the original Pharos. It was totally destroyed in WWII.

References: Strabo: Geographica 5, 1; Vegetius: De Re Militari 5, 1-15; Pliny the Elder: The Natural History 36, 18; Hutton (1913); Zemke (1992), p15, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p86-88.

Baro Zavelea, Comacchio, Argine, Agosta, Emilia Romagna, Sacis ad Padum.

Earliest Settlement Established: -30

Location: Valle Mezzano, Baro Zavelea, Bingottella, Comacchio

Modern Location: Italy.

Lat: 44.68428; Lon: 12.15012.

Comments: Situated on an ancient inland waterway, this site revealed some archaeological remains that were interpreted as a lighthouse. Sadly, the remains have now been destroyed.

References: Ugeri (1973), pp821-822; Giardina (2010), p85-86.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Adria, Atria, Hatria.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes

Location: Adria

Modern Location: Italy.

Lat: 45.04853; Lon: 12.06712.

Comments: The sea was much closer in antiquity than it is today. An ancient Hellenic port, Adria was important to Romans too. Submerged archaeological remains suggest a lighthouse here.

References: Strabo: Geographica 5, 1; Pliny the Elder: The Natural History 3, 20; Giardina (2010), p85.

Canale San Felice, Lio Piccolo.

Location: Roman Tower of Canal de San Felice, near Lio Piccolo.

Modern Location: Venice, Italy.

Lat: 45.47473; Lon: 12.45977.

Comments: Venice was certainly the location for a number of medieval lighthouses, but a Roman lighthouse built specifically for this canal is considered a possibility.

References: Hague (1974), p11; Giardina (2010), p84-85.

Torre di Caligo, Jessolo, Turris di Piave, Equilum, Turris Caligo, Turris Caliginis.

Earliest Settlement Established: 30 BCE

Location: Jessolo

Modern Location: Italy.

Lat: 45.544; Lon: 12.599.

Comments: Remains of an old Roman tower exist near Jessolo, inland on a section of river-canal. Giardina believes there was a network of these towers along these inland waterways.

References: Pliny the Elder: The Natural History 3, 22; Dorigo (1994); Giardina (2010), p84.

Aquileia, Aquilee.

Earliest Settlement Established: 180 BCE

Roman Port Site: yes

Modern Location: Aquileia, Italy.

Lat: 45.77445; Lon: 13.36962.

Comments: Aquileia was a large, ancient Roman city

in Italy, at the head of the Adriatic at the edge of the lagoons, about 10 km from the sea, on the river Natiso (Natisone) the course of which has changed since Roman times. There is no evidence of a lighthouse here, but the size and importance of the Roman site suggests that there must have been a typical Roman structure, probably as a small tower alongside a main waterway.

References: Strabo: Geographica 5, 1; Titus Livius (Livy): The History of Rome 41, 1; Ausonius: Ordo Urbium Nobilium 7; Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p83-84.

Fons Timavi, Timavus.

Earliest Settlement Established: 30 BCE

Modern Location: Duino, Italy.

Lat: 45.7881; Lon: 13.5928.

Comments: Strong circumstantial evidence of at least one lighthouse is not backed up with archaeological proof. The location is thought to have been on the River Timavo, with an outlet at San Giovanni di Duino at Monfalcone.

References: Strabo: Geographica 5, 1; Giardina (2010), p82.

Tergeste, Tergesteo.

Earliest Settlement Established: 330 BCE

Location: Trieste, near the Roman theatre.

Modern Location: Trieste, Italy.

Lat: 45.6495; Lon: 13.77167.

Comments: A strong candidate for the site of a lighthouse, but the archaeological proof is missing because of later building over the location. Nevertheless, it is considered that a Roman lighthouse stood on the site of the present Lanterna.

References: Paglia (1997), p116; Giardina (2010), p82-83.

Pyrrhanum, Piran, Pirano, Pyrranheum.

Earliest Settlement Established: 330 BCE

Modern Location: Piran, Slovenia.

Lat: 45.528; Lon: 13.5638.

Comments: A tentative suggestion as the site of an ancient lighthouse has been made based upon the association of the Greek word pur (fire) with Pyrrhanum, but there is no archaeological evidence.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



References: Giardina (2010), p81.

Parentium, Julia Parentium, St Nicholas Tower.

Earliest Settlement Established: 330 BCE

Modern Location: Porec, Croatia.

Lat: 45.22367; Lon: 13.59114.

Comments: The site on the Istrian peninsula was first settled by Illyrians in the late bronze age, and became increasingly important to the Romans from the 2nd c. BCE onwards. The port was developed in the 1st c. CE. There is a strong tradition for there being several lighthouses at Porec, including one on the Island of St Nicholas that dates from the 15th century and may have been built over the Roman tower.

References: Giardina (2010), p80-81.

Zadar, Diadora, Zara, Iadera.

Earliest Settlement Established: 850 BCE

Neolithic Site: yes; Roman Port Site: yes

Modern Location: Zadar, Croatia.

Lat: 44.11889; Lon: 15.22894.

Comments: An ancient settlement from 3000 BCE, it was inhabited first by people called Liburnians. Zadar was laid out around 850 BCE and the people became known as Illyrians, a great seafaring people. There is a tradition of a lighthouse here, but evidence is very scarce. With so many islands to negotiate into the port, it seems likely that some navigational assistance would have been vital.

References: Zemke (1992), p16, 22, 23; Hague (1974), p2; Stevenson (1959), p2.

Salonae, Salonai, Salona.

Earliest Settlement Established: 330 BCE

Modern Location: Solin, Croatia.

Lat: 43.5395; Lon: 16.4833.

Comments: An important Roman port, Giardina considers that it must have had a lighthouse but the precise site is unknown.

References: Strabo: Geographica 7, 5; Caesar: Guerre Civile 3, 8; Antonine Itinerary; Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p79-80.

Jelsa Tor, Pharos, Hvar, Jelsa.

Earliest Settlement Established: 384 BCE

Neolithic Site: yes; Ancient Greek Site: yes

Modern Location: Stari Grad, Croatia.

Lat: 43.15139; Lon: 16.69134.

Comments: The area around Stari Grad was settled by the neolithic tribes of the Hvar culture between 3500 and 2500 BCE. In 384 BCE, the town was formally founded by ancient Greeks from the island of Paros in the Aegean Sea who called their settlement Pharos. The precise location of a lighthouse is uncertain but Giardina points to the site at Jelsa Tor where there are remains of a tower.

References: Polybius: Histories 2, 19; Giardina (2010), p79.

Narona, Vid.

Earliest Settlement Established: 30 BCE

Ancient Greek Site: yes

Location: Vid, 4 km NW of Metkovic on the River Neretva

Modern Location: Vid, Croatia.

Lat: 43.08035; Lon: 17.628.

Comments: Originally a Greek port, it was used by the Romans as an important inland waterway. Excavations have indicated the existence of towers that may have been lighthouses.

References: Pseudo-Scylax: Periplus; Giardina (2010), p78-79.

Dyrrachium, Dyrrachio, Epidamnos, Durazzo.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Modern Location: Durrës, Albania.

Lat: 41.31023; Lon: 19.45394.

Comments: An early Greek port of Epidamnos was taken by the Romans and changed to Dyrrachium. Some excavations show a structure thought to be a lighthouse approximately contemporary with the Pharos.

References: Antonine Itinerary; Pliny the Elder: The Natural History 3, 16; Caesar: Guerre Civile 3, 26; Polybius: Histories 2, 9; Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p77-78.



Piraeus, Piraus, Le Piree, Kantharos, Gantharos, Kranaoi.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes

Modern Location: Piraeus, Greece.

Lat: 37.94165; Lon: 23.61728.

Comments: The most likely site for a lightstructure in Piraeus was at the Tomb of Themistocles. The precise location is still disputed, but is most likely in the grounds of the old fertilizer factory.

References: Pliny the Elder: The Natural History 2, 87; Zemke (1992), p9, 22, 23.

Munichia, Mounichia, Munychie, Munychia.

Earliest Settlement Established: 550 BCE

Modern Location: Mounikhias, Greece.

Lat: 37.93718; Lon: 23.66039.

Comments: Perhaps one lighthouse on each breakwater is possible, but there is no hard evidence.

Sestos, Tower of Hero, Sestus.

Earliest Settlement Established: 750 BCE

Location: Bigale Kalesi, Yalikabat

Modern Location: Turkey.

Lat: 40.20914; Lon: 26.3856.

Comments: Paired with the ancient light reputedly built at Abydos. Site of the story of Hero and Leander. Without archaeological support, there is a great confidence that lighthouses existed on both sides of this narrow part of the Bosphorus.

References: Strabo: Geographica 13, 1, 22; Zemke (1992), p9, 22, 23; Hague (1974), p2.

Asopos, Plytra.

Earliest Settlement Established: 550 BCE

Roman Port Site: yes

Location: Plytra

Modern Location: Greece.

Lat: 36.68504; Lon: 22.83325.

Comments: Asopos is a village in Laconia, Peloponnese, Greece. In antiquity it was a town of the Eleuthero-Lacones in Laconia, on the eastern side of the Laconian

gulf, and 60 stadia south of Acraiae. Roman remains are now underwater so if a lightstructure ever existed here, new sub-sea archaeological work is needed.

References: Strabo: Geographica 8, 364; Pausanius: Guide to Greece 3, 21, 7 & 3, 22, 9.

Lechaion, Lecheum.

Earliest Settlement Established: 750 BCE

Modern Location: Lechaio, Greece.

Lat: 37.93213; Lon: 22.88619.

Comments: With two functional ports at Lechaion (west) and Cenchreae (east) it is likely there was a lighthouse at both sites, each referred to as Corinth.

References: Pliny the Elder: The Natural History 4, 6; Pausanias: Guide to Greece 2, 2; Diodorus Siculus: Bibliotheca Historica 14, 21 & 15, 68; Polybius: Histories 5, 5; Titus Livius (Livy): The History of Rome 32, 23; Ptolemy: Geography 3, 16; Engels (1990); Giardina (2010), p76-77.

Cenchreae, Corinth, Corinthe.

Earliest Settlement Established: 750 BCE

Location: Cenchreae

Modern Location: Corinth, Greece.

Lat: 37.943; Lon: 22.9253.

Comments: Mention of a lighthouse at Corinth may refer to either or both sites of Lechaion and Cenchraea.

References: Thucydides; Thomas Hobbes (trans): The History of the Peloponnesian War 1, 13- 14; Engels (1990); Giardina (2010), p76-77.

Heraion, Heraea, Hera, Limenia, Peraion, Peraia.

Earliest Settlement Established: 750 BCE

Location: Heraion

Modern Location: Corinth, Greece.

Lat: 38.02787; Lon: 22.85268.

Comments: Mention of a lighthouse at Corinth may also refer to this site at Heraion on the northern entrance to Corinth at the far eastern end of the Gulf of Corinth. Two other lighthouses have also been suggested as possible in different sites at Lechaion and Cenchraea.

References: Stevenson (1959), p2.



Nydri, Agia Kiriaki, Lefkada.

Earliest Settlement Established: 300 CE

Location: Nydri

Modern Location: Lefkada, Greece.

Lat: 38.7049; Lon: 20.71408.

Comments: A lighthouse here is of uncertain origins. Such a legacy might have originated from its references in the Odyssey.

Thasos (Naval), Thase, Chryse, Thasos.

Earliest Settlement Established: 680 BCE

Ancient Greek Site: yes

Location: Thasos naval base, north coast

Modern Location: Thasos, Greece.

Lat: 40.78101; Lon: 24.71097.

Comments: The situation on Thasos is confused. Whilst it seems clear there were both a commercial and a naval port, it is not clear where each was situated. A lighthouse in each port is suggested to have been present.

References: Homer: Iliad 1, 430; Bouras (2014); Giardina (2010), p76.

Thasos (Commercial), Thase, Chryse, Thasos.

Earliest Settlement Established: 680 BCE

Ancient Greek Site: yes

Location: Thasos commercial port, south

Modern Location: Thasos, Greece.

Lat: 40.7793; Lon: 24.7096.

Comments: The situation on Thasos is confused. Whilst it seems clear there were both a commercial and a naval port, it is not clear where each was situated. A lighthouse in each port is suggested to have been present.

References: Homer: Iliad 1, 430; Bouras (2014); Giardina (2010), p76.

Cape Phanari, Thase, Chryse, Thasos.

Earliest Settlement Established: 680 BCE

Ancient Greek Site: yes

Modern Location: Cape Phanari, Thasos, Greece.

Lat: 40.78499; Lon: 24.7158.

Comments: Cape Phanari would be an obvious site for a lighthouse to assist vessels approaching the port and, as a Greek religious site, is most likely to have preceded all others. No traces are presently known.

References: Homer: Iliad 1, 430; Giardina (2010), p76.

Cape Pyrgos, Thase, Chryse, Thasos.

Earliest Settlement Established: 680 BCE

Ancient Greek Site: yes

Modern Location: Cape Pyrgos, Thasos, Greece.

Lat: 40.77691; Lon: 24.73055.

Comments: The situation on Thasos remains confused. The existence of this tower may constitute the oldest existing lighthouse in the world, dating from the late to mid 7th c. BCE.

References: Homer: Iliad 1, 430; Empereur (1998), p15; Giardina (2010), p76.

Ainyra, Helleniko, Potamia.

Earliest Settlement Established: 550 BCE

Ancient Greek Site: yes

Modern Location: Cape Pyrgos, Thasos, Greece.

Lat: 40.7106; Lon: 24.761.

Comments: Ainyra is a little known location at Cape Pyrgos on Thasos. Remains of a cylindrical tower thought to be a lighthouse built before the Pharos have been found here.

References: Duggan (2014).

Rhodes, Colossus.

Earliest Settlement Established: 300 BCE

Ancient Greek Site: yes

Modern Location: Rhodes, Greece.

Lat: 36.44497; Lon: 28.23009.

Comments: Although it is extremely unlikely that the Colossus showed a light in the way that is commonly described, there is a high confidence level of at least one light shown either at the harbour entrance or in the port.

References: Zemke (1992), p13, 14, 22, 23; Hague (1974), p2; Stevenson (1959), p2, 7, 8.



■ **Nea Paphos, Paphon.**

Earliest Settlement Established: 550 BCE

Ancient Greek Site: yes

Modern Location: Paphos, Cyprus.

Lat: 34.75411; Lon: 32.4106.

Comments: An important trading port in the time of Ptolemy, the confidence that it had a lighthouse like the Pharos is high. There are several possible ruined structures that might have been the lighthouse. A Greek acropolis here may also have acted as a lighthouse.

References: Strabo: Geographica 14, 6; Diodorus Siculus: Bibliotheca Historica 20, 49; Luke: Acts 13, 13; Antonine Itinerary; Stadiasmus: Maris Magni 272; Giardina (2010), p70-71.

■ **Byzantium, Boukoleon.**

Location: On the south shore of the Golden Horn in the ancient Roman port of Boukoleon; Istanbul

Modern Location: Istanbul, Turkey.

Lat: 40.98873; Lon: 28.95894.

Comments: There are several possible sites for lighthouses in Byzantium. A main candidate is in the Roman harbour of Boukoleon. However, the history is so rich and complex there is unlikely to be agreement over the numerous sites in Byzantium.

References: Hague (1974), p11; Giardina (2010), p73-74.

■ **Byzantium, Byzance, Bosphore.**

Earliest Settlement Established: 667 BCE

Modern Location: Istanbul, Turkey.

Lat: 40.98873; Lon: 28.95894.

Comments: A lighthouse at Byzantium is thought to have been located at the SE corner of the Great Palace, and modelled on the Pharos at Alexandria with three diminishing stages of different geometry. Some representations are dubious, but this may not have been too far-fetched.

References: Zemke (1992), p10, 22, 23; Hague (1974), pp2, 7, 8.

■ **Phane, Phanar, Fene, Fener.**

Modern Location: Istanbul, Turkey.

Comments: The names would indicate a lighthouse here at some point, perhaps in yet another unidentified location, but it may have been built later, in medieval times only.

■ **Hieron, Fanum, Yoros Kalesi.**

Ancient Greek Site: yes

Location: On the high point of the promontory at the narrowest point of the Bosphorus on the Asian side, close to Anadolukavagi.

Modern Location: Yoros Castle, Turkey.

Lat: 41.17863; Lon: 29.09492.

Comments: Called Hieron by Greeks and Fanum by Latins, this ancient temple site was considered to be at the mouth of the Bosphorus, even though it might seem to be not at the mouth on today's maps.

References: Moreno (2008), pp665-709.

■ **Rumelifeneri, Timoea, Turkelifeneri, Rumili Fanar, Panium.**

Location: Promontorium Panium, on the European side of the Black Sea entrance to the Istanbul Bogazi.

Modern Location: Istanbul, Turkey.

Lat: 41.23498; Lon: 29.11443.

Comments: The name Rumeli refers to this location belonging to Greece, so today it is renamed Turkeli. The equivalent site on the Asian side of the waterway is Anadolu Feneri (E4958).

References: Zemke (1992), p10, 22, 23; Hague (1974), pp2, 8.

■ **Antea, Antheia, Apollonia Pontica, Apollonia Magna, Sozopolis.**

Earliest Settlement Established: 610 BCE

Neolithic Site: yes; Roman Port Site: yes

Location: Sozopol; on the Isle of St. Yvan (Sveti Ivan)

Modern Location: Sozopol, Bulgaria.

Lat: 42.42436; Lon: 27.69238.

Comments: Many anchors from the second and first millennium BCE have been discovered in the town's bay, a proof of active shipping since ancient times. Archaeologists report evidence for a Roman lighthouse on the island.

References: Rowlett (online).

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Neoptolemi Turris, Neoptolomeia, Hermonactosome, Zatoka.

Earliest Settlement Established: 600 BCE

Roman Port Site: yes

Modern Location: Zatoka, Ukraine.

Lat: 46.06002; Lon: 30.46709.

Comments: Zatoka is located on a sand spit of the Dniester Estuary where the river flows into the Black Sea. It is 60 km from Odessa. A light may have been shown at Zatoka to guide ships to the fortress at Tyras where another light showed the harbour.

References: Strabo: Geographica 7, 3; Zemke (1992), p10, 22, 23; Hague (1974), p2; Stevenson (1959), p2.

Tyras, Ophiussa, Asprokastron, Albajulia, Levkopolihnon.

Earliest Settlement Established: 600 BCE

Ancient Greek Site: yes; Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Bilhorod-Dnistrovskiy, Ukraine.

Lat: 46.2006; Lon: 30.3486.

Comments: Bilhorod-Dnistrovskiy, formerly known to Ottomans as Akkerman, is a fortress city on the bank of the Dniester estuary. The Greeks called the site Tyras after their own name for the river. It was later a Roman naval base. Phoenicians called the site Ophiussa. A light may have been shown nearby at Zatoka to guide ships to the fort here where another light indicated the harbour.

References: Strabo: Geographica 7, 3; Zemke (1992), p10, 22, 23; Hague (1974), p2; Stevenson (1959), p2.

Heraclea Pontica, Herakleia Pontica, Eregli.

Earliest Settlement Established: 550 BCE

Modern Location: Karadeniz Eregli, Bithynia, Turkey.

Lat: 41.2821; Lon: 31.413.

Comments: The Black Sea city of Heraclea waxed and waned in importance from the 6th c. BCE and minted its own coins. Often shown on the coins was a lighthouse-type of structure similar to the Pharos.

References: Strabo: Geographica 13, 3; Arrian: Periplus 18; Marcianus of Heraclea: Periplus Maris Exteri 8; Zemke (1992), p10, 22, 23; Hague (1974), p2; Giardina (2010), p75.

Chrysopolis, Damalis, Bous, Scutari.

Earliest Settlement Established: 650 BCE

Modern Location: Üsküdar, Istanbul, Turkey.

Lat: 41.03004; Lon: 29.01736.

Comments: Giardina is a source of confusion about locations of possible ancient lighthouses in Byzantium, on the west bank, and Chrysopolis and Chalcedon on the east. Possible sites vary widely in probability.

References: Zemke (1992), p10, 22; Stevenson (1959), p2; Giardina (2010) p73-4.

Kiz Kulezi, Maiden's Tower, Leander's Tower, Chrysopolis, Scutari.

Earliest Settlement Established: 550 BCE

Location: On an island, Üsküdar, Istanbul

Modern Location: Istanbul, Turkey.

Lat: 41.0211; Lon: 29.0042.

Comments: The names of Maiden and Leander are misleading for the story of Hero and Leander did not take place here. This is a small island in the Bosphorus just off the eastern shore of Istanbul. There is general agreement that this is the site of an old lighthouse, but the date of lighting is unclear. There is confusion about the identification of structures and sites.

References: Appian: The Mithridatic Wars 10; Diodorus Siculus: Bibliotheca Historica 18, 20; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010) p73-4.

Chalcedon, Kadikoy.

Earliest Settlement Established: 659 BCE

Modern Location: Istanbul, Turkey.

Lat: 40.99306; Lon: 29.01942.

Comments: The earliest settlement site in the Bosphorus. The exact site of a possible lighthouse is unclear.

References: Appian: The Mithridatic Wars 10; Diodorus Siculus: Bibliotheca Historica 18, 20; Giardina (2010) p73-4.

Caesarea Germanica.

Modern Location: Tirilye, Turkey.

Lat: 40.37904; Lon: 28.7245.

Comments: A dubious assignment by Giardina. Evidence from one coin only.

References: Giardina (2010), p75.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Abydos, Abydus, Cap Nagara or Nara.

Earliest Settlement Established: 550 BCE

Location: Dardanelles, north of Canakkale

Modern Location: Canakkale, Turkey.

Lat: 40.19603; Lon: 26.40516.

Comments: Paired with the ancient light reputedly built at Sestos. Site of the story of Hero and Leander. Despite no archaeological evidence thus far, the strength of the story provides the confidence in the existence of a light at Abydos, if not at Sestos.

References: Strabo: Geographica 13, 1, 22; Zemke (1992), p9, 22, 23; Hague (1974), p2.

Sigeum, Sigeium, Sigeion, Cape Sigea.

Earliest Settlement Established: 1200 BCE

Ancient Greek Site: yes

Location: Promontory NW of Kumkale

Modern Location: Turkey.

Lat: 39.90128; Lon: 26.15024.

Comments: A candidate for the first lighthouse. Strabo says that Sigeum was razed to the ground by the Ilions for disobedience, and that Achilleium was the site of Achilles tomb.

References: Strabo: Geographica 13, 1, 31-32; Hague (1974), p2; Stevenson (1959), p6, 7.

Cape Baba, Baba Burnu, Cape Lectum, Cape Lecture.

Location: The westernmost point of Turkey.

Modern Location: Babakale, Turkey.

Lat: 39.47945; Lon: 26.06416.

Comments: As the westernmost point of Turkey, Cape Baba has always been a danger to seamen. There is a long tradition of showing a warning signal to mariners from his site. This may have been an early lighthouse. Palamedes of Nauplia is said to have invented lighthouses here. If so, the aids were probably in the form of temene.

References: Strabo: Geographica 13, 1; Duggan (2014) p380.

Kyme, Cyme, Syme, Aeolis.

Earliest Settlement Established: 750 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Nemrut Limani, South of Aliaga

Modern Location: Nemrut Limani, Turkey.

Lat: 38.7594; Lon: 26.9362.

Comments: The Aeolians regarded Cyme (Aeolis) as the largest and most important of their twelve cities, which were located on the coastline of Turkey. It came under Roman control in the 1st c. CE. A well-established port from the end of the Trojan Wars, this Greek site was important. Presence of a harbour lighthouse on the end of a mole is tentative, based upon underwater remains in the now-submerged port area.

References: Strabo: Geographica 13, 3, 6; Pseudo-Scylax: Periplus; Esposito (2002), pp1-37.

Smyrna, Eurydikeia.

Earliest Settlement Established: 330 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Modern Location: Izmir, Turkey.

Lat: 38.419; Lon: 27.1376.

Comments: The city of Smyrna has played a large role in history since at least 11th c. BCE when it was an Aeolian Greek settlement at Tepekule. But constant battles for its control have left few remains. Kadifekale is the centre of late Greek / Roman remains. Much change has occurred here regarding the location and form of the ancient ports so it is unsurprising that there is no archaeological evidence for this lighthouse. However, 4th c. records attribute a lighthouse to Proconsul Ambrsius of Mylasa.

References: Strabo: Geographica 14, 1, 4;; Feissel (1998), pp125-44; Bedon (1988b), pp54-66; Zemke (1992), p10, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p72.

Knidos (Commercial), Cnide.

Earliest Settlement Established: 330 BCE

Modern Location: Knidos, Turkey.

Lat: 36.6838; Lon: 27.37822.

Comments: Knidos is situated at the western end of a long Turkish peninsula, southeast of the Greek island of Kos. Two natural harbours exist on this peninsula: this one for commercial shipping. Both may have had lighthouses, although evidence for any is slight.

References: Krischen (1938).



Knidos (Navy), Cnide.

Earliest Settlement Established: 330 BCE

Ancient Greek Site: yes

Modern Location: Knidos, Turkey.

Lat: 36.68695; Lon: 27.37082.

Comments: Knidos is situated at the western end of a long Turkish peninsula, southeast of the Greek island of Kos. Along with Halicarnassus and Kos, and the Rhodian cities of Lindos, Kamiros and Ialysos, Knidos made up an alliance known as the Dorian Hexapolis. Two natural harbours exist on this peninsula: this one for naval shipping. Both may have had lighthouses, although evidence for any is slight. It would certainly have had a Greek sanctuary showing lights.

References: Krischen (1938).

Patara, Arsinoe, Patara Plaji.

Earliest Settlement Established: 200 BCE

Ancient Greek Site: yes

Roman Port Site: yes

Location: Near to Gelemis, 5 km southeast of the mouth of the River Xanthos.

Modern Location: Gelemis, Turkey.

Lat: 36.2633; Lon: 29.30813.

Comments: Patara was an important city in Lycia, itself part of Anatolia. A city with ancient origins, its history was complicated as it came under different rulers. After being Hellenized in the time of Alexander it later came under Roman control. The remains of a great lighthouse can be seen today and is confirmed by inscriptions and other artefacts. It is very likely to have been built post-Pharos, either in the time of Ptolemy or during the reign of Nero. It is not typical of a Roman lighthouse.

References: Strabo: Geographica 14, 3; Pseudo-Scylax: Periplus; Stadiasmus: Maris Magni: 246, 272; Herodotus: The Histories 1, 182; Iskan-Isik (2008), pp91-121; Zemke (1992), p10, 22; Hague (1974), p2; Giardina (2010), p71.

Attaleia, Adalia.

Earliest Settlement Established: 150 BCE

Roman Port Site: yes

Location: Antalya

Modern Location: Antalya, Turkey.

Lat: 36.88296; Lon: 30.70002.

Comments: Antalya is Turkey's biggest international sea resort, located on Anatolia's southwest coast and bordered by the Taurus Mountains. The city was first settled around 200 BCE by the Attalid dynasty of Pergamon, but was soon subdued by the Romans. Arguments about the existing tower known as Hidirlik Kulezi concern whether it was once a Roman lighthouse or a mausoleum. However, consensus supports its use as a lighthouse for at least part of its existence.

References: Stadiasmus: Maris Magni 223; Zemke (1992), p10, 22, 23; Hague (1974), p2; Giardina (2010), p70.

Perga, Perge, Magydos.

Earliest Settlement Established: 30 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Murtana

Modern Location: Turkey.

Lat: 36.85002; Lon: 30.78101.

Comments: Evidence for a lighthouse is from one coin and therefore unreliable. The port flourished during the second century of Roman occupation, but it was used in the Hellenistic period too, so there is a chance that a lighthouse was to be found here at some time.

References: Giardina (2010), p69.

Side, Sida.

Earliest Settlement Established: 900 BCE

Ancient Greek Site: yes

Modern Location: Selimiye, Turkey.

Lat: 36.7644; Lon: 31.397.

Comments: Settlement began here in the 7th c. BCE and the port was used until the 4th c. CE. Evidence for a lighthouse is only from a coin and therefore uncertain, but the commonality of this port with numerous others make it a good candidate for a lighthouse.

References: Pseudo-Scylax: Periplus; Stadiasmus: Maris Magni 214; Pomponius Mela: Geogr 1, 15; Mansel (1963); Duggan (2014); Giardina (2010), p69-70.

Aegeae, Aigai, Aigaiai, Aiscala, Ege, Aiyas, Venetian: Laiazzo.

Earliest Settlement Established: 330 BCE



Location: Yumurtalik, Roman province of Cilicia, Gulf of Iskerendum

Modern Location: Yumurtalik, Turkey.

Lat: 36.76859; Lon: 35.7932.

Comments: This site has a long history, dating from ca. 2000 BCE. Located on the Gulf of Issus (Iskerendum) Evidence for a lighthouse is solely based on images on coins. There are clear remains of a harbour but insufficient archaeological work has been undertaken. An old lighthouse may have been built on the site of the present castle in the harbour.

References: Strabo: Geographica 14, 5; Stadiasmus: Maris Magni 158; Zemke (1992), p10, 22, 23; Hague (1974), p2; Stevenson (1959), p2; Giardina (2010), p69.

Seleucia di Pieria.

Earliest Settlement Established: 550 BCE

Modern Location: Cevlik, Turkey.

Lat: 36.11923; Lon: 35.92215.

Comments: The location is incorrect in Giardina. De Grauw is correct, placing it near the mouth of the River Orontes flowing from Antakya (Antioch). This man-made port had shipyards and an inner harbour. The port became the home of the Roman fleet, Classis Syriaca. Underwater remains of a mole and of a tower seem to confirm a lighthouse at this port.

References: Stadiasmus: Maris Magni 148, 272; Polybius: Histories 5, 13; Giardina (2010), p68-69.

Laodicea, Latakia.

Modern Location: Latakia, Syria.

Lat: 35.51317; Lon: 35.76989.

Comments: A Syrian port south of Antioch, Laodicea flourished in Roman times. Evidence of a harbour lighthouse appears on numerous coins. The lighthouse seems to have been a replica of the Pharos.

References: Strabo: Geographica 16, 2; Stadiasmus: Maris Magni 137; Zemke (1992), p10, 22, 23; Hague (1974), p2; Giardina (2010), p67-68.

Apamea, Qalaat al-Madiq, Hama.

Location: Precise location of a port at Apamea is difficult.

Modern Location: Syria.

Lat: 34.4095; Lon: 36.39.

Comments: The site of Apamea lies 55 km northwest of Hama, Syria on the bank of the Orontes River. It was an ancient Greek and Roman city and capital of Apamene under the Macedonians. Identified only on the basis of its appearance on a coin, and some other preserved images, Roman construction of a light-tower is possible on an inland waterway, but its value as an aid to navigation when so far inland is limited.

References: Giardina (2010), p67.

Magdala, Migdal, Tarichea.

Modern Location: Galilee, Israel.

Lat: 32.836; Lon: 35.5194.

Comments: The presence of a lighthouse here is dependent upon interpretation of underwater remains and other clues of language.

References: Giardina (2010), p66-67.

Ake, Akko, Acre, Ptolemais (Greek), Antiochia Ptolemais, Tower of Flies.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Acre, Israel.

Lat: 32.91863; Lon: 35.084.

Comments: The Tower of Flies was a medieval guard tower or fort at Acre. It overlooked the harbour from a small island and protected maritime trade. Part remains today. It reputedly served as a lighthouse, reported by Naish to be an early leading line. Its origins are ancient and it may have components built in Phoenician times.

References: Naish (1985).

Drusion, Druseion, Drusus tower, Caesarea Maritima, Caesarea Palestina.

Earliest Settlement Established: 22 BCE to 10 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Modern Location: Caesarea, Israel.

Lat: 32.50343; Lon: 34.88813.

Comments: Originally founded by the Phoenicians, Caesarea became the most important port in Judea. Several towers were built, the tallest being a replica of the Pharos. There are good indications of two lighthouses on moles marking the entrance to the port.



References: Strabo: Geographica 16, 4; Josephus Flavius: The Jewish War 1, 21; Stadiasmus: Maris Magni 272;; Vann (1991); Oleson (2014); Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p63-65.

 Stratonos Pyrgos, Straton's Tower, Caesarea Maritima, Caesarea Palestina.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes

Modern Location: Caesarea, Israel.

Lat: 32.50151; Lon: 34.89132.

Comments: Built on the site of the ancient pagan city of Pyrgos Stratonos (Straton's Firetower). A major port

Established by Herod the Great with at least one lighthouse modelled on the Pharos of Alexandria. In 134 AD the town was renamed Caesarea Palestina.

References: Strabo: Geographica 16, 4; Luke: Acts 18, 22; Stadiasmus: Maris Magni 272; Raban (1996); Zemke (1992), p16, 22, 23; Hague (1974), p2; Giardina (2010), p63-66.

 Berenice, Berenike Troglodytika, Baranis.

Earliest Settlement Established: 275 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Bernike

Modern Location: Egypt.

Lat: 23.90889; Lon: 35.47285.

Comments: Berenice was founded in 275 BCE by Ptolemy II Philadelphus who named it after his mother, Berenice I of Egypt. Troglodytika refers to the aboriginal people of the region, the Troglodytai (cave dwellers). From the 1st century BCE until the 2nd century CE, it was one of the trans-shipping points of trade between India, Arabia, and Upper Egypt. The possibility of the port having a Roman or other lighthouse - maybe in the form of a temple - is unexplored.

References: Pliny the Elder: The Natural History 6, 23; 6, 26; 6, 29; 6, 33; Schoff (1912).

 River Nile.

Location: Nile mouth

Modern Location: Egypt.

Lat: 31.69829; Lon: 31.07843.

Comments: There are suggestions that lighthouses

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



were built here but no evidence has yet been found.

References: Pliny the Elder: The Natural History 5, 10 & 6, 26; Naish (1985), p17

 Alexandria, Pharos, Portus Magnus.

Earliest Settlement Established: 280 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Modern Location: Alexandria, Egypt.

Lat: 31.21418; Lon: 29.88568.

Comments: Alexandria was founded by Alexander the Great as a focus for traffic into and out of Egypt via the River Nile. The first lighthouse of its kind, this was a monumental building and famous engineering achievement.

References: Empereur (1998); Clayton (1988b); Zemke (1992), p11, 12, 13, 17, 22; Hague (1974), pp2, 9, 11, 63-4; Stevenson (1959), p2, 5, 8, 9, 11.

 Philoxenite, Port on Lake Mareotis (Mariut), Mareia, Marea.

Earliest Settlement Established: 100 CE

Ancient Greek Site: yes

Location: Qaryat Shakush near Huwariya

Modern Location: Egypt.

Lat: 30.99724; Lon: 29.65897.

Comments: Ruins of an ancient port can be found at a site called Philoxenite on Lake Mareotis. Some have identified it as the ancient Marea, but this is not confirmed. The port was en-route to a site of pilgrimage. It was connected by canal to the Canopic Nile. De Graauw is confident of the presence of a lighthouse here. Four long quays have been identified and it would be natural to assume a lighthouse was present also, as Lianos suggests.

References: Lianos (2016).

 Taposiris, Taposiris Magna, Taposiris Megale.

Earliest Settlement Established: 30 BCE

Ancient Greek Site: yes

Modern Location: Taposiris, Egypt.

Lat: 30.94788; Lon: 29.52361.

Comments: A pharos-type structure exists here today, but arguments continue over its precise role. A light was shown here at some time, but possibly as a funer-

ary pharos, rather than a navigational aid. However, the weight of evidence is in favour of a lighthouse.

References: Stadiasmus: Maris Magni 4; El-Fakharani (1974), pp257-272.

Apollonia, Cyrene, Kyrene, Cyrenaica.

Earliest Settlement Established: 632 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Susah, Susa, Soussa, Sozousa, Shahhat

Modern Location: Shahhat (Cyrene), Libya.

Lat: 32.90587; Lon: 21.97231.

Comments: Founded by Greeks from Thera, Apollonia was the ancient port serving Cyrene, now a UNESCO World Heritage site at Shahat in Libya. One of the five pentapolis cities of Cyrenaica. Confidence is high for a lighthouse here but it may have been post-Pharos that significant structures were built. Much of the ancient site is now underwater. The ancient lighthouse is thought to have been located on a small island remaining just offshore.

References: Strabo: Geographica 17, 3; Stadiasmus: Maris Magni 52; Laronde (1996); Muckelroy (1981); Giardina (2010), p55.

Phykous, Phykus, Phycunte.

Roman Port Site: yes

Modern Location: Al Hamamah, Libya.

Lat: 32.92586; Lon: 21.63223.

Comments: One of several ports in Cyrenaica, Phykous is a large archaeological site where attempts have been made to identify the port layout. Submerged remains include a structure identified as a lighthouse, but a site on the rocky promontory to the west of the harbour seems most likely.

References: Stadiasmus: Maris Magni 53; Marimpietri (2008), pp12-13; Giardina (2010), p55.

Ptolemais, Barce, Barca, Barraca, Tolmeta, Tolmeita, Tulmaythah, Tolemaide.

Earliest Settlement Established: 252 BCE

Ancient Greek Site: yes; Roman Port Site: yes

Location: Ptolemais

Modern Location: Tolmeita, Libya.

Lat: 32.71524; Lon: 20.94503.

Comments: A typical sheltered ancient harbour has been found to the east of a headland in this town.

Originally known as the harbour at Barca. Ptolemais became a city under the Ptolemaic dynasty of Egypt, famous for medicinal herbs. The latest research suggests that the modern lighthouse was built on top of the ancient tower on the headland in this port.

References: Yorke (2017).

Leptis Magna, Lepcis Magna.

Earliest Settlement Established: 193 CE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Lebdah, Labdha, 130 km east of Tripoli

Modern Location: Lebdah, Libya.

Lat: 32.63786; Lon: 14.30007.

Comments: There is a long tradition of a port at this site from Phoenician times and through the Roman period. There may have been several lighthouses here but there is no doubt of at least one in Roman times, remains of which can still be seen.

References: Pliny the Elder: The Natural History 5, 4; Vann (1991); Zemke (1992), p16, 22, 23; Hague (1974), pp2, 66; Stevenson (1959), p2; Giardina (2010), p53-55.

Sabratha, Sabrata, Abrotonon.

Earliest Settlement Established: 750 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: 65 km west of Tripoli.

Modern Location: Tripoli, Libya.

Lat: 32.80816; Lon: 12.48225.

Comments: An ancient city

Established by the Phoenicians, there is a substantial amount of archaeological remains of the old port underwater, between the beach and an offshore reef. Archaeological investigations of partly-submerged remains have been interpreted as a lighthouse. The port was much used in Roman times and almost certainly had a light-tower.

References: Pliny the Elder: The Natural History 5, 4; Pseudo-Scylax: Periplus; Di Vita (1999); Giardina (2010), p218; Dallas (1968); Giardina (2010), p52-53.

Kerkenna, Cercenna, Cercina, Cercinitis islands.

Roman Port Site: yes

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



Location: Borj-el-Hasar, Kerkennah islands

Modern Location: Tunisia.

Lat: 34.7111; Lon: 11.1525.

Comments: Originally settled by natives, the Romans used the small port as a lookout centre for monitoring activities in the seas around Carthage. A small lighthouse or signalling tower may have been built here, but there is no known archaeological evidence in support.

References: Strabo: Geographica 17, 3.

Thapsus, Thapsos, Tapsos, Portus Pristinus.

Earliest Settlement Established: 660 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Ras Dimass, near Bekalta

Modern Location: Tunisia.

Lat: 35.6243; Lon: 11.05131.

Comments: A Phoenician port at first, Thapsus became a Roman property after Julius Caesar defeated his enemies in 46 BCE at the Battle of Thapsus. The remains of an ancient Roman mole run for 130 m underwater from the shore. There is evidence of extensive building for several hundred metres in a great arc beyond that. Large stonework debris on the seabed suggests the remains of a lighthouse or fort.

References: Pseudo-Scylax: Periplus, 110; Daux (1869).

Hadrumentum, Adrymetum, Honoriopolis, Justinianopolis.

Earliest Settlement Established: 330 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Sousse, Tunisia.

Lat: 35.82832; Lon: 10.64029.

Comments: An original Phoenician colony from the 9th c. BCE, Adrumeto pre-dated Carthage. It stands on present-day Sousse. The city allied itself with Rome during the Punic wars and escaped major damage. Strong but circumstantial evidence suggests the use of lighthouses here over a long period. Foucher found archaeological remains that he proposes to be a lighthouse.

References: Foucher (1964); Giardina (2010), p52.

Cape Carthage, Sisi Bou Said, Carthage.

Phoenician Port Site: yes

Modern Location: Tunis, Tunisia.

Lat: 36.87254; Lon: 10.34881.

Comments: There are many suggestions that lighthouses were built here and in the port itself by the Carthaginians, but there is no evidence in their culture for specific lighthouse structures.

References: Sladen (1906).

Carthago, Karthago, Latomiae, Hermaia, Carthage.

Location: El-Haouaria

Modern Location: Tunis, Tunisia.

Lat: 36.84198; Lon: 10.328.

References: Zemke (1992), p16, 22, 23; Hague (1974), p2.

Caesarea Mauretania, Iol, Caesarea, Psamathos.

Earliest Settlement Established: 400 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Location: Ancient Iol (Jol); on an island (later called Joinville) off Cherchel but later linked to the mainland; the region was called Mauretania Caesariensis.

Modern Location: Cherchel, Algeria.

Lat: 36.61183; Lon: 2.187984.

Comments: The city of Iol was founded by the Phoenicians ca. 5th c. BCE; the harbour area has been rebuilt on numerous occasions. However, there is high confidence of a lighthouse said to be similar to the Pharos on the north side of the island of Joinville.

References: Lehmann-Hartleben (1963), pp178-180; Giardina (2010), p51-52.

Quiza Cenitana.

Earliest Settlement Established: 30 BCE

Phoenician Port Site: yes; Roman Port Site: yes

Modern Location: Oued Chelif, Algeria.

Lat: 36.02698; Lon: 0.1271.

Comments: Originally a Phoenician port, Quiza developed during the Roman period around 30 BCE. There are suggestions that lighthouses were built here but no evidence has yet been found.

1-10% 11-25% 26-50% 51-75% 76-90% 91-100%



 **Qani.**

Location: Southwest of Bir Ali; Located in a high fort called Husn-al-Ghurab.

Modern Location: Yemen.

Lat: 14.00635; Lon: 48.32692.

Comments: Likelihood of a lighthouse is dependent on interpretation of archaeological investigations.

References: Giardina (2010), p63.



Bibliography

Conventions used

1. References are given in the usual format: Smith (2002), p123. Multiple citations having the same author and year are given the suffix a, b, c etc.
2. A reference given as Smith (online) has no date if it is continuously updated. Specific information downloaded from the Internet is given a date of download.
3. Entries in the Bibliography are considered relevant to the content of this book, but are not necessarily to be found in the references.
4. Entries are in alphabetical order of the first author's last name. Unnamed authors are assigned the usual 'Anon'.

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