

The port of Aynuna in the pre-Islamic period: nautical and topographical considerations on the location of Leuke Kome

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Abstract: The trade facility in Wadi Aynuna, as well as the adjacent settlement and tentative location of an ancient port are believed to be the ancient Leuke Kome, a Nabatean port which connected Petra with the Red Sea trade network. In this brief paper the author reviews some data that bring light to bear on the issue of the nautical challenges posed by sailing conditions in the Red Sea, their potential influence on the maritime trade, and the importance of Aynuna as a port in northern Arabia which, taken together, support with greater strength the identification of this location with the Leuke Kome from the ancient written sources.

Keywords: Leuke Kome, Red Sea, Nabateans, maritime trade, caravans, Aynuna

In 2014, the Saudi Commission for Tourism and Antiquities and the Polish Centre of Mediterranean Archaeology launched a new archaeological project in the northwestern region of Saudi Arabia, spearheaded by Prof. Michał Gawlikowski (PCMA) and Dr. Abdullah al-Zahrani (SCTA). By the spring of 2016 the team had carried out three seasons of archaeological survey and excavation work at Wadi Aynuna, supported by Dr. Ali Al-Ghabban from the SCTA.

The excavation follows from a research grant focused on the subject of the “Indian Trade” between the Mediterranean in general terms and India and its infrastructure during the Roman period.¹ The trade facilities in Wadi Aynuna as well as the adjacent settlement and the tentative location of an ancient port are believed to be the Nabatean Leuke Kome, connecting Petra with the Red Sea trade network [*Fig. 1*].

Leuke Kome is mentioned in two ancient sources, the *Periplus Maris*

¹ At the time of press the project, funded from a Polish National Science Center grant UMO-2014/14/M/HS3/00795 and run by the Polish Centre of Mediterranean Archaeology University of Warsaw, is still underway with more seasons planned for 2018 and 2019.

Erythraei (Casson 1989: 61–63) and Strabo's *Geography* (Strab. 16.4.22–24) and identifying it with the modern Aynuna continues to excite a vivid academic discussion (Kirwan 1984; Gatier and Salles 1988: 186–187; Nappo 2010; Durand 2012: 88; Pedersen 2015: 126). El Wajh, a small port approximately 200 km south of Aynuna along the coast of

Arabia, is usually considered as the other likely location, based on an interpretation of the two written sources. Practical issues concerning sailing in the Red Sea are not taken into account in the scientific discourse on the location of this Nabatean port, and this is a serious failing considering the tremendous impact of the natural environment of this narrow

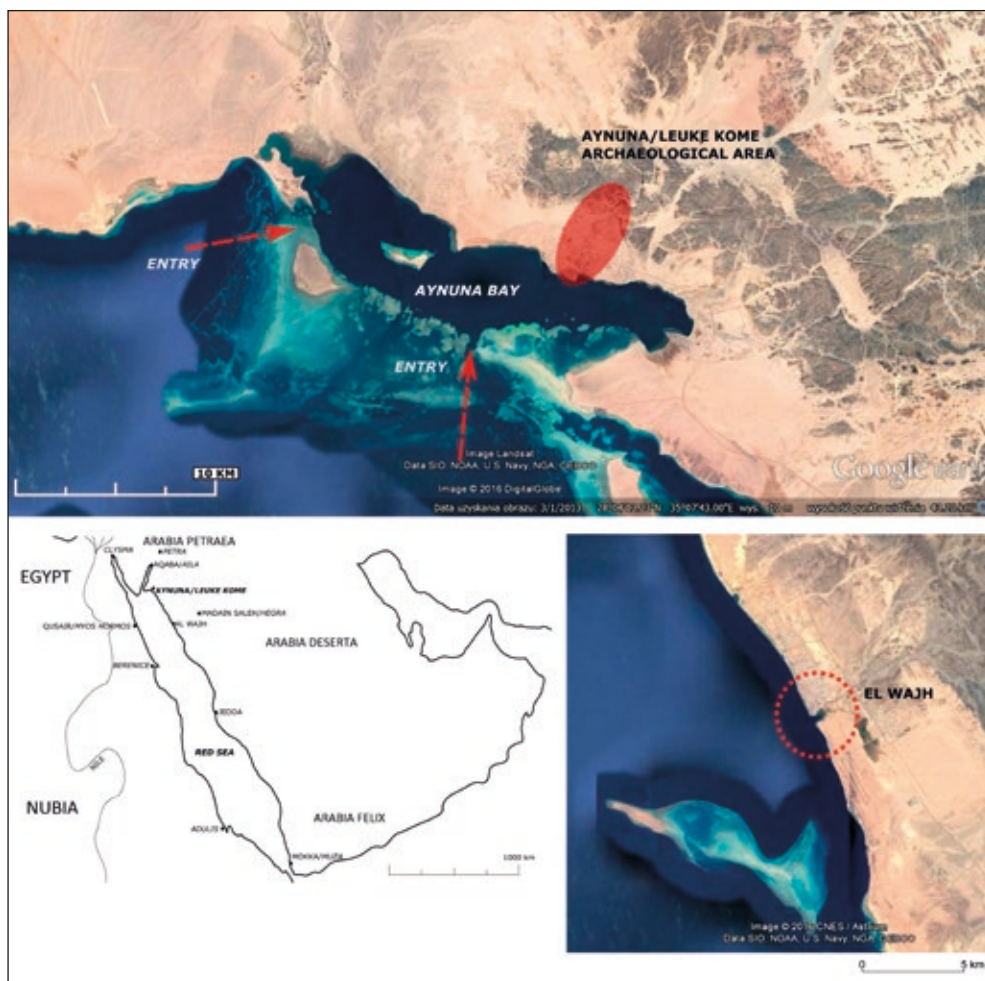


Fig. 1. Aynuna Bay (top) and El Wajh cove (above right); inset, map of the Red Sea and Arabia (PCMA Aynuna Project/© Google Earth, processing K. Juchniewicz)

branch-off of the Indian Ocean on the interpretation of the historical topography and archaeological sites located on the coast.

In the absence of any actual reports on the nautical conditions and sailing vessels of the period, the present discussion focuses on a careful consideration of the available sources that can tell us something about sailing in the Red Sea and its technical circumstances during the period in question. Archaeology has little to give in this respect still, although there is promise of change in new discoveries (see Whitewright 2008). The need for navigating along such difficult shores leads to a fair assumption that merchant ships were of a type known later

as “dungiyeh”, equipped with an Arab-type sail or so-called lateen/settee rig. This issue, however, will not be addressed in greater detail in this paper, bringing to the fore rather the testimonies of people who actually sailed the Red Sea and left accounts of their journeys. Captain Robert Moresby was an unquestionable authority on this topic having spent four seasons sailing back and forth along the Red Sea for the East India Company. A vivid report of this was left by one of his officers, Lieutenant J.R. Wellsted (1838). Of some importance is also a brochure printed in 1872 by the United States Hydrographic Office containing sailing directions for steamers and sailing vessels on the Red Sea (Kropp 1872).

SAILING CONDITIONS IN THE RED SEA AND THE GULF OF SUEZ

The Red Sea, 1932 km long and approximately 350 km wide at the longitude of Massawa and the Farasan Islands, narrows gradually to 180 km at the point where it branches into the Gulf of Suez and the Gulf of Aqaba. In the south, it narrows abruptly to 29 km at Bab al-Mandab. Its shores are more or less parallel and fairly straight. The coastal zone is rather shallow and full of reefs, whereas considerable depths are reached within a few kilometers offshore (Braithwaite 1987: 25).

There are two main seasons in the Red Sea basin, roughly corresponding with the Northern hemisphere's “winter” and “summer”. Cooler weather occurs usually in mid-October (in the northern part even earlier) and lasts until mid-April. Maximum daily temperatures in January

oscillate around 20°C in the north and 29°C in the south. In July, the temperatures are approximately 10–15°C higher, respectively. In winter, conditions seem to be relatively mild, while the summer is most uncomfortable, high temperatures being combined with extensive humidity to make all activity most difficult during the day and failing to provide any relief at night (Edwards 1987: 47–48).

In the main body of the Red Sea, between the latitudes of 16°N and 26°N, the mean annual wind speed is less than 10 knots and gales are rare. Especially in summer and autumn, up to 85% of winds are of Beaufort force 4 and less (which equals 0–16 knots). To the north of 26°N it is windier than in the central zone. The mean annual wind speed is above 10 knots, strong winds of Beaufort force 5–6 usually

accounting for some 25% of instances (rising to 35% in September). Occasional gales of Beaufort force occur throughout the year (Edwards 1987: 49–51).

Kropp (1872: 21) stated that the dangers connected with navigating the main body of the Red Sea used to be overrated. Data presented above seem to corroborate his comment when consi-

dering sailing between the latitudes 16°N and 26°N, long passages and weather conditions accounting for the chief hardships to ancient sailors. Nonetheless, safe navigation in this area demanded the utmost attention of vessel crews. Kropp's observation was generally corroborated in later research by Elaine Morgan and Stephen Davies (1995: 26).

SAILING CONDITIONS IN THE GULF OF AQABA

In the Gulf of Aqaba weather conditions are somewhat rougher than in the main body of the Red Sea. Northern winds make for approximately 50% and northeastern for 20% of all winds blowing there. In winter, a minor northwestern component is present, while southern winds are rare. Average wind speed is about 10–15 knots, possibly rising to 40–45 knots (northern directions) and 28–33 knots (southern directions). Gales are more frequent during the winter months. They can reach 45 knots and blow over several days. Changes of wind directions can occur within less than one hour (Reiss and Hottinger 1984: 36).

Strong winds, on top of significant seasonal currents and steep waves of an average height of 1.50 m, can make the sailing conditions very rough (Manasrah, Lass, and Fennel 2006: 221). Additionally, safe havens are very rare and the shores are bristling with reefs for most of their length.

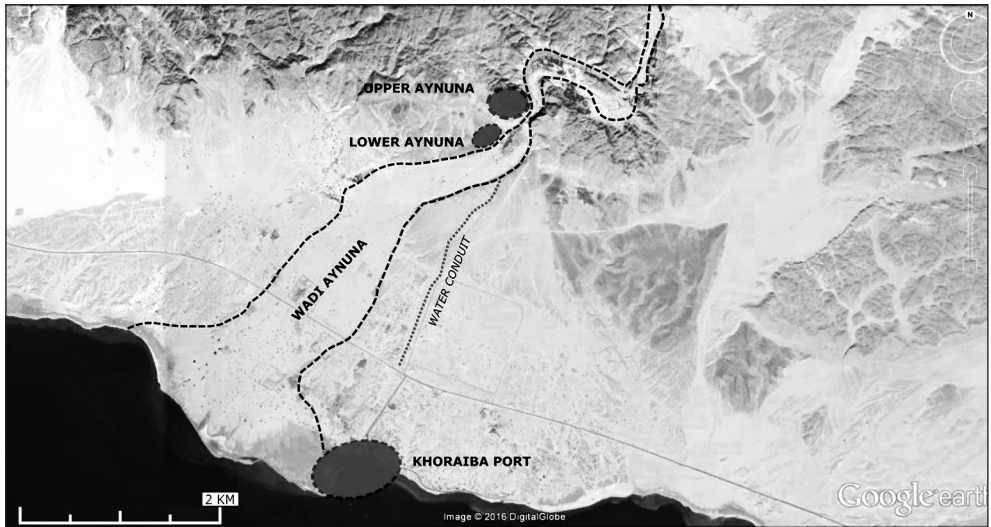
The entry to the Gulf of Aqaba, reported by Wellsted (1838: 126–129), gives insight into the challenges of sailing through the Strait of Tiran. In this context the bay of Aynuna appears as the last truly safe point on the Arabian shore for vessels going north and the first haven for those coming from the north.

AYNUNA

The bay of Aynuna is in itself very spacious. It is approximately 20 km wide and 5 km long [Fig. 2], sheltered from the northern winds by the mainland. A range of small islands and coral reefs protect it from the open sea, preventing waves from entering the bay. There are two passages for entrance, the one in the north still serving as the main passage. According to 19th century accounts, this 2 km wide passage could accommodate even large ships like a frigate, if accompanied by a pilot. The other passage to the south is narrower, only

0.5 km wide and, according to the local fishermen, is used in emergency or in good weather only, although it is also quite safe.

The Aynuna bay offers very good anchorages along its shore. The most convenient place, however, is the modern port of Khoreiba [Fig. 3]. A small promontory built up from the material washed out from Wadi Aynuna protects it additionally from the northern winds and small waves sweeping through the bay. The land there slopes gently towards the sea, the shore is sandy and the sea itself is about 5 m



*Fig. 2. The Aynuna Archaeological Area
(PCMA Aynuna Project/© Google Earth, processing K. Juchniewicz)*



*Fig. 3. Port of Khoraiiba
(PCMA Aynuna Project/aerial photo J. Kaniszewski)*

deep for about 100 m. The site is perfect both for stranding boats on the beach and for anchoring them offshore.

Wadi Aynuna was first investigated in 1981 by the Saudi Arabian Comprehensive Survey Programme, which reported a pottery assemblage of clearly Nabatean/Roman date as well as later (Ingraham et al. 1981: 76–79). Later, it was also visited and described by Ali Al-Ghabban from the Saudi Commission of Tourism and Antiquities (Al-Ghabban 2011: 182–183). The wadi runs about 4 km inland and sites are clustered on both sides. No traces of ancient structures except

for some ruins of a water conduit of unknown date can be observed in the port of Khoraiba [see *Fig. 2*]. The 19th-century seafarers' accounts paint a picture of humble buildings of mud brick and reed (Wellsted 1838: 162–163; Burton 1878: 133–137). Just where the wadi comes down from the inland plateau, on the right (western) bank, there is a group of buildings typical of structures used for the storage of goods. This complex, currently investigated by a Polish–Saudi team, may have been an emporium located close to the port [*Fig. 4*].



*Fig. 4. The emporium of Leuke Kome
(PCMA Aynuna Project/aerial photo J. Kaniszewski)*

WADI 'IFAL: TRADE ROUTE BETWEEN AYNUNA AND PETRA

Its location in the northernmost regions of the Red Sea make Aynuna an excellent stop on the land route connecting Nabatea with the rest of Northern Arabia while avoiding at the same time the hardships of the Gulf of Aqaba. A relatively good road, approximately 300 km long, ran from the Red Sea through Wadi 'Ifal to Aqaba and farther on along the Wadi Arabah to the Nabatean capital of Petra [Fig. 5]. The route through Wadi 'Ifal was used also in the Islamic period, as part of the “Egyptian

Pilgrim Route” to the Holy Cities. It crossed the mountains, but was relatively easy and safe for caravans. Stopovers, with fresh water available, were at Haql, Al Sharaf, Al Bad and in Wadi Aynuna. The stretch of the route between Aqaba and Petra was well known as *Via Nova Traiana* and was used by the Roman army. Assuming that a fully loaded camel can make 30–40 km per day (Seland 2015: 46), a caravan moving from the Red Sea must have taken 8–9 days to reach Petra.

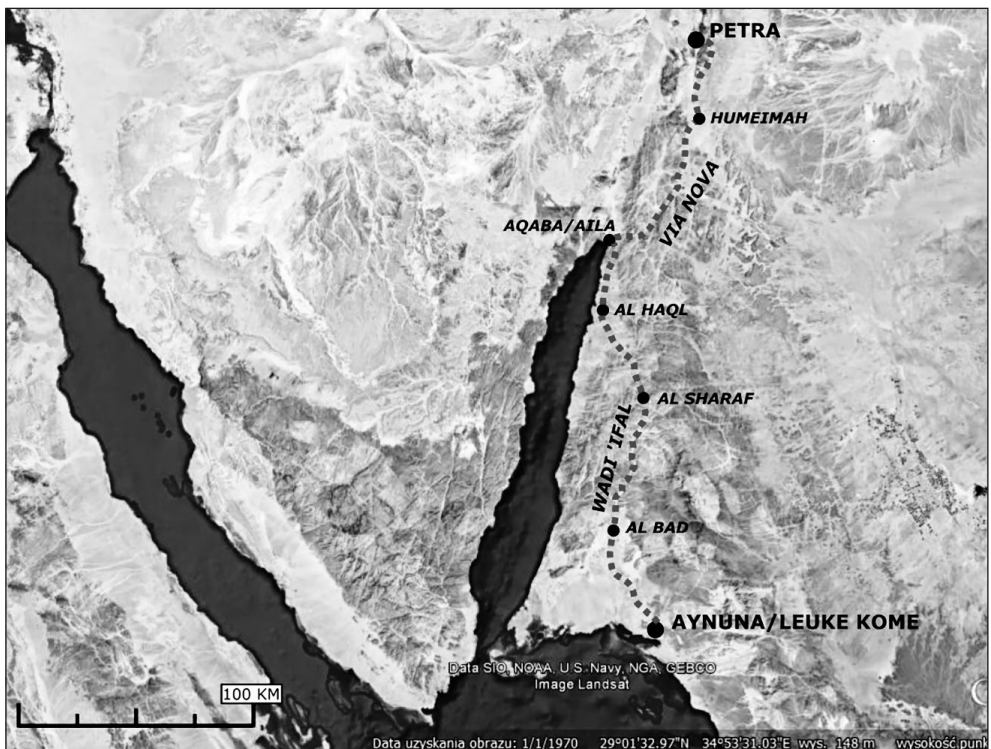


Fig. 5. *The Aynuna–Petra trade route*
(PCMA Aynuna Project/© Google Earth, processing K. Juchniewicz)

EL WAJH

Of the various places identified with ancient Leuke Kome the small port of El Wajh appears to be a most likely contender. Its location almost directly opposite Myos Hormos at the site of modern Qusair al-Qadim perfectly suits the description in the *Periplus*.² Burton saw some considerable ruins at El Wajh (Burton 1879: 219–233), but an extensive archaeological survey carried out by Ingraham in 1981 did not reveal any Nabatean/Roman remains (Ingraham et al. 1981: 78). According to Wellsted (1838: 184), Sharm el-Wajh is a small cove good only for small vessels. Drinking water was available from wells located a few miles away from the shore. Later detailed observations of the port by Kropp (1872: 23–24) pictured it as not spacious enough for even moderate-sized

vessels to maneuver in; when northwestern winds were blowing the sea was high and tall waves set into the harbor basin. Burton is said to have excavated a temple there in the 19th century (Durand 2012: 88), a temple which he referred to as *Gasr Gurayyim Sa'id*, that is, Palace of Sa'id the Brave (Burton 1879: 218, 222–233). However, the mouth of Wadi Hamd and the site of the temple lie about 50 km to the south of El Wajh cove.

A brief visit to El Wajh in the winter of 2016 corroborated these descriptions. The port is small and it is hard to imagine it could have accommodated 130 transport vessels with 80 warships, a fleet commanded by the Roman prefect of Egypt Gaius Aelius Gallus to transport his army to Leuke Kome (Mayerson 1995: 17).

CONCLUSIONS

It has been argued that sailing upwind beyond Jiddah, which is the northern limit of fairly steady southern winds in the Red Sea, was difficult for ancient merchants aiming for the northernmost regions of the Red Sea, hence their decision to reload onto camels at Jiddah at the farthest and continue the journey overland (Facey 2004: 9–11). Whitewright is more convincing when he argues that maritime experience in the Roman period was such that it allowed ships to navigate to all parts of the Red Sea (Whitewright 2007: 87). Even if large ocean vessels are assumed to have stopped at Jiddah because of the prevailing wind conditions, it is presumptuous to think that only overland caravan transport was

eschewed from this point. Cargoes could very well be reloaded onto smaller vessels and shipped to their ports of destination and Leuke Kome could have been one such harbor.

A very preliminary analysis of the pre-Islamic ruins in Wadi Aynuna leads to the conclusion that the cluster of buildings in Lower Aynuna functioned as a storage facility for goods brought to the port at Khoraiba by ship. Once on shore, they were transported by camel caravans to Aila/Aqaba and then to Petra. Still, there are issues to be considered. Why should a storage facility be located 3 km away from the port and why in the first place goods would have been stored there instead of

² For the identification of Myos Hormos, see Peacock 1993 and Whitcomb 1996.

being shipped on smaller vessels further north to the port of Aqaba?

Accessibility of water and pastures for camels is the simplest answer to the first question. Both were easily available in the valley of Aynuna and the caravan station would have been located halfway between the port and the camel pastures. Moreover, the site was protected by the nearby settlement in Upper Aynuna.

Regarding the second issue, two factors come into play: time and risk. Sailing conditions in the Gulf of Aqaba, with the sudden gales that could last for days, coupled with treacherous reef-lined shores made the journey fraught with danger. In 1833, it took the British ship ss. *Palinurus* under Captain Robert Moresby six days to sail from the mouth of the Gulf to Aqaba and that only on the second try. Moresby spent four years charting the northern part of the Red Sea for the East India Company and he had no doubt that the Gulf of Aqaba was dangerous to sail. Lateen/settee rigged vessels, known probably as early as the 2nd century AD (Whitewright 2009: 102) were capable of sailing even in such a narrow stretch of sea, although it might have been regarded as risky and time consuming. The inland trade route through Wadi 'Ifal cut by half the time to reach Petra and was perfectly safe. Decisions in this regard would have been business-driven and safety-oriented for sure.

Sailing all the way to Aqaba is another issue to be considered. The *Periplus*, whether by mere chance or not, speaks of Leuke Kome and not Aqaba/Aila, which is clearly the port of Petra. Aqaba/Aila is not even mentioned there. It seems to have been of minor importance for international trade, possibly because of the risky location

in terms of navigation. Aynuna/Khoreiba however was the last safe point on the way from the south, still ensuring fairly comfortable sailing conditions. The real challenge started in the Tiran Strait. The port of Aynuna with its excellent anchorage and its safe and easy connection via an inland route to the rest of the Nabatean kingdom, allowed this dangerous stage of the voyage to be avoided. Modern accounts of sailing conditions in the Gulf of Aqaba indicate that caravans could reach Petra in half the time and without any additional risk.

Identifying Leuke Kome has been the topic of numerous scientific discourses and it is beyond the scope of this paper to study the pros and cons of all the diverse views and arguments. What should be pointed out in this context is the topographical question. Generally speaking, two locations of Leuke Kome are considered: Aynuna and El Wajh. The most important source for Red Sea topography is definitely the *Periplus Maris Erythraei* where Leuke Kome is clearly described as the "port of Petra". There would be no reason for merchants to stop in El Wajh and take a roundabout route through the Hegra, which incidentally is not mentioned at all, to reach Petra, when Aynuna offers a good and safe anchorage, and an excellent connection with the capital of the Nabateans.

The only advantage of El Wajh, and a contested one at that, is its situation opposite Qusair/Myos Hormos, corresponding thus to the description in the *Periplus*, which says that Leuke Kome is to the east of this port. However, while the *Periplus* seems to be quite accurate in its descriptions, it shows a surprising generality in the case of Leuke Kome: an approximate distance ("two or three days

sailing”) and not very exact directions (“to the left of Berenike”). Moreover, there is no mention of the goods that were traded in this port, a component usually present in descriptions of other ports. It has been recently argued that the author of the *Periplus* had never been in Leuke Kome personally, making his description of the harbor unreliable at best (Bukharin 2012: 110–124). No material indicating Nabatean presence in El Wajh has been recorded so far, while the temple at Wadi Hamd, found by Burton, is too far away (“one long or two short marches”, Burton 1879: 220) to be linked with the port and was rather part of the main route connecting this part of the coast with

Al Hijr (ancient Hegra, modern Mada’in Saleh), an important Nabatean city in the interior. The author of the *Periplus* expectedly did not mention Hegra as it would have been a major land stop on the way to Petra. The subordinate route from El Wajh went 50 km south before turning east–northeast toward the desert city.

The location of Aynuna on the contrary suits most of the topographical directions regarding Leuke Kome in the *Periplus* and given by Strabo (Gawlikowski forthcoming). The safe anchorage and the convenient land connection with Petra make Aynuna a strong contender for identification with ancient Leuke Kome.

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