



# Industrial Vernacular Heritage and Tourism – Tide Mills in Faro, Portugal

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<https://doi.org/10.29227/IM-2025-02-02-070>

Submission date: 2025-04-07 | Review date: 2025-05-02

## Abstract

*Faro being a seaside city, the tide mills are part of its rich heritage. Located on the shores of the Ria Formosa, between mainland and sea, these mills have a potential tourist and cultural interest that is still unexploited. Taking part in the predominantly Mediterranean climate of Faro, along with tourism being one of the major engines of the region's economy, proposals to create pedestrian routes are generally welcome. Thus, the objective of this article is to draw attention to a type of heritage that is at high risk of disappearing, developing a pedestrian path in the city of Faro, so that by integrating this heritage into a tourism and sustainable activity, it can be protected and disclosed. This research was based on bibliographic, webgraphic and field surveys. Throughout the development of the research for this work, the locations of several tide mills were identified, most of them in ruins, some disappeared completely only knowing their approximate location, or their function was changed, making use, in this case, of the existing infrastructures. In the Algarve, the region of which Faro is the capital, and in the city itself, the vernacular heritage is systematically ignored, either by ignorance or, for being a "minor" heritage, it is simply insignificant to the eyes of experts and to the general population, who do little to protect it. However, tide mills are part of the collective memory of the region and the city of Faro in particular, so it is important to draw attention to these heritage elements and, in this case, tourism can be a driving force.*

**Keywords:** Vernacular heritage; cultural tourism; sustainable tourism; heritage preservation; collective memory; Algarve.

## 1. Introduction

With the ICOMOS Charter on Vernacular Heritage in 1999 [1], this type of heritage was recognized as such. And after about 25 years it is still considered an emerging heritage, mainly due to ignorance in general, and also due to the fact that it is always present in our day-to-day life and being a heritage created by the people, by the humblest layers of population, and not by the elites, which is usually a rich and luxurious heritage that attracts everyone's attention.

Fortunately, the concept of heritage has evolved in recent years [2-4], abandoning an isolated elitist historical monument concept, limiting its meaning to the historical heritage, and it has been moving towards a more integral and broader approach, composed of cultural and natural assets. The objects that initially were not part of the concept adopted, were also covered by the concept of heritage (*ib.*), thus becoming covered by the vernacular heritage, as is the case of tide mills. Nowadays, heritage has become an economic asset for development, being considered as a resource of identity and a place of memory.

Being the vernacular heritage mainly utilitarian, when it loses its usefulness, it tends to be abandoned and forgotten, in some cases has new functions and is adapted and, in few cases, is rehabilitated. The tidal mills have also ceased to be useful for grinding cereals, so they are in serious danger of disappearing. The city of Faro is just another example of this situation.

Faro is the administrative capital of the Algarve, located in the south of Portugal and in this highly touristic region, it is the tourism sector that contributes most to the revenues of the region, noting that tourism has been increasing in recent years, which is another reason to create more routes that include heritage in danger of disappearing and be valued through sustainable tourism.

Although this research is still being started, it can contribute to the preservation of local heritage and the development of tourism, making heritage a differentiating factor of the city and a cultural icon, promoting a pedestrian walk, that it is a sustainable form of mobility and has plenty of potential.

It was then elaborated a pedestrian path based on the location of the old tide mills in the western part of Faro, giving knowledge of the buildings that constituted them and also of the landscape where they are included and which is stunning: the Ria Formosa. In this way, users can become familiar with the milling culture that existed in the city of Faro, as well as the landscape where they are located, taking even more advantage of existing infrastructure.

The design of this route was based on an unpublished study, presented by Filipe Cunha, on the theme Architectural and Cultural Heritage, Specialization in Sustainable Cities at the University of the Algarve, as well as an article proposing a similar pedestrian circuit, but for the eastern part of Faro [5]. In order to get there, research was done based on bibliography, webgraphy and field surveys. It was decided to propose a pedestrian circuit that is a sustainable way of doing tourism and getting to know the places better.

Throughout the development of the research for this work, the locations of several tide mills were identified, most of them in ruins, some disappeared completely only knowing their approximate location, or their function was changed, making use, in this case, of the existing infrastructures.

Thus, the objective of this article is to draw attention to a type of heritage that is at high risk of disappearing, developing a pedestrian path in the city of Faro, so that by integrating this heritage into a tourism and sustainable activity, it can be protected and disclosed.

The novelty of this work are the objects of study: the tide mills located in the west zone of the city of Faro, and that differs from the work of Filipe Cunha, which covers all the mills which existed in this city.

In the region and also in Faro, the vernacular heritage goes unnoticed and, being able to draw attention to these elements through tourism, it is expected that the competent authorities also commit themselves to its valorisation and preservation. During the development of research was identified the possible locations of several tide mills, although some have disappeared completely, or are in ruins, or were reused for

other purposes. In any case, these places are part of the collective memory of the Faro citizens and should be publicised published and valued, showing their potential to be included in the various offers of existing tourist routes.

## 2. Contextualization

### 2.1 Faro

Faro, capital of the southernmost territory of mainland Portugal, due to the tourist industry, has gone from one of the poorest regions in Europe to the second richest in Portugal.

Faro is a city with a lot of history, being the first reference to this city from the fourth century BC, around the time of the Phoenician colonization of the Western Mediterranean [6]. After the foundation of Portugal in 1143, Faro was conquered from the Arabs in 1249, under the reign of King Afonso III (*ib.*). Taking advantage of its favorable geographical situation, it developed as an important trade center that suffered a boost during the Portuguese expansion (1400-1520). The city was elevated to town in 1540, in the reign of D. João III (*ib.*).

In the sixteenth century, more specifically in 1596 the city was attacked and plundered by the British troops of the Earl of Essex and during the War of the Restoration (1640-1668) a new ring of defensive walls was built (*ib.*). With the earthquake of 1 November 1755, the "Lisbon earthquake", Faro was almost completely destroyed. However, until the nineteenth century, the city remained within the limits of what remained of its defensive walls from the sixteenth century, and its design is still perceived in the division of properties and urban morphology that make part of the city [6, 7].

### 2.2 Ria Formosa

The Ria Formosa constitutes the Natural Park of the Ria Formosa and is located between the sea and the land, being the most important wetland in the south of Portugal. It is separated from the sea by a chain of barrier islands, being fed with fresh water by small watercourses with seasonal regime [8]. In this Park there are several habitats, from dunes, marshes, pine areas, agricultural areas, among others and is an important area in terms of birds, for example (*ib.*), having a high ecological (Figure 1), scientific, economic and social value. It is therefore not surprising that it was declared a Natural Reserve in 1979, renamed as a Natural Park in 1987, is covered by the provisions of the Ramsar and Bern Conventions, and has been considered by the Wetlands Directory of the IUCN (International Union for the Conservation of Nature) as "a wetland of world interest, belonging to the Park itself to the list of Corine Biotopes. The Parc is also part of the Natura 2000 Network, being considered in the European context as an Important Bird Area (IBA) [9].



Fig. 1. Board to warn of the existence of chameleons and to warn to be careful, not to capture them or cause them damage (author)

### 2.3 Tide mills

The tide mills were installed where today is the Natural Park of Ria Formosa, on the edge of the city of Faro, where there are also agricultural land and salines. This type of grinding technique (hydraulic mills) has existed for a long time, there are reports that they existed since the beginning of the Christian era, attributing to the Greeks and Romans its spread through Europe and the Mediterranean [10].

As [5, 11] explain: "A tide mill is a mill that takes advantage of the driving force that is obtained between the hydraulic potential that the high tide and the low tide originate. For such unevenness to exist, these mills had a component that was fundamental, the boiler (*caldeira*), which are large walled spaces, like a pool, with ponds, which were filled in the high tide, taking advantage of the principle of communicating vessels, closed when full. When the tide was low, the water passed under the mill to drive the millstones because the difference in level between the two tides made the *caldeira* water had enough energy to make the millstones work. Then one had to wait again for the high tide to refill the *caldeira* and empty it again in the low tide. In the area of Faro, the difference between tides is about three meters" (Fig. 2).

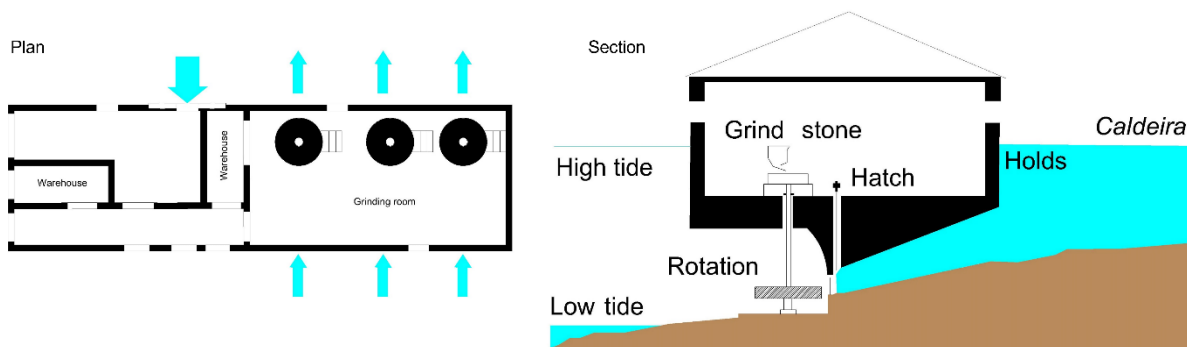


Fig. 2. Plan (author) and section (author based on [12]) of a tide mill, showing how it operates

Since the 12<sup>th</sup> century there are records of tide mills in the Algarve, but those of Faro only appear in records from the 14<sup>th</sup> century, being this property of the King and his descendants [10], as well as the production of salt, which demonstrates the economic importance that these structures had [13]. Subsequently, these goods would pass to the nobility and to the clergy and, later, they would become property of the bourgeoisie but, with the emergence of other more efficient technologies, these traditional systems were devalued and eventually acquired by the millers themselves and their families, some of them continuing to work until the mid-twentieth century (*ib.*).

Many of the *caldeiras* of the mills were gradually used as salines, because the extraction of this product was becoming economically more attractive (*ib.*). Fish farming was also another activity that used the old inactivated *caldeiras*.

Since the production of cereals was located in nearby lands, and there was a need to grind the cereals, tide mills seemed to be the most practical solution, given the proximity to the sea. Thus, these mills became very important for the local economy, there were 14 mills in Faro in the 19<sup>th</sup> century, resulting in the largest concentration of mills in Portugal [10].

### 3. Industrial vernacular heritage and tourism, a pedestrian path

The proposed route is developed in the western part of Faro (Figure 3). There is currently a small concentration of old tide mills, having been found only four sites where they existed, as can be seen in Figure 4. These mills were: 1) Torrinha's mill; 2) Sobradinho's mill; 3) Greilha's and Gordinho's mills; 4) Penteados's mill. All the maps were elaborated by the author and based on Google Maps or Google Earth.



Fig. 3. City of Faro and the location of the proposed pedestrian path (author)

This path has a total of 1,2 km in length, taking about 17 minutes to be traveled, if uninterrupted. Almost all of this route is flat and most of the sites are inserted in the area defined as Parque Ribeirinho de Faro (Riverside Park of Faro), a large leisure area with infrastructure such as cafes, restaurants, parking lots, walkways, among others, where it is possible to walk safely and enjoy the stunning views of the Ria Formosa.

The climate of the Algarve is also favorable, as it is a climate with Mediterranean influence, averaging temperatures of +12°C in winter and +24°C in summer, lots of light, little rainfall, and generally clear skies [14].

Two of the mills found were in ruins, but preserved, because they are inserted in the Riverside Park of Faro, one of them was transformed into private housing and the other only its old *caldeira* can be seen its, because it is thought that the buildings of the mill gave place to other more recent buildings that were built over the foundations of the same. However, using Google Earth, we can identify approximately each of the *caldeiras* (Figure 5).



Fig. 4 Proposed pedestrian path under the theme of vernacular heritage and tourism, to the city of Faro (author)



Fig. 5. Possible *caldeiras* location and outline. The yellow shows the possible location of the mills. a) Torrinhã's mill; b) Sobradinho's mill; c) Grelha's and Gordinho's mills; d) Penteados's mill (author)

### 3.1 Torrinhã's mill

Being the first location of the path, it is located between the railway station of Faro and the Ria Formosa. Currently it is a private house, to which you do not have access, but we can admire its remains walking a little on the banks of the Ria. Almost nothing remains of the mill typology, except the rectangular and longiligneous plant, characteristic of these mills (Figure 6).

The owners named this property "Moinho da Torrinhã" (Torrinhã's mill) as a way to mark the past of these buildings and the place where the mill was located.



Fig. 6. Torrinhã's mill. a) location (in yellow); b) view of the old mill; c) identification of private property with the name "Torrinhã's Mill" (author)

### 3.2 Sobradinho's mill

This mill is identified as point 2 of the pedestrian circuit. In fact, the point considered on the circuit is the one from where you can currently see the old *caldeira*. It is believed that some pavilions were built in the place where the old mill would have been. In the property there is an information board that provides us with a date and which has written: Nave Pegos Lda boatyards | Maritime Port Infrastructures | "Progress Farm" | Sobradinho's mill 1827 (Figure 7).



Fig. 7. Sobradinho's mill. a) location (in yellow); b) information board on the site; c) panoramic of the old *caldeira* mill and the current pavilions where it is believed that would have been the old mill (author)

### 3.3 Grelha's and Gordinho's mills

In the place where today there are the ruins of the mill of the Grelha, point 3 of our circuit, there were also the ruins of another mill, adjacent to this one, which was the mill of the Gordinho. Currently, the existing ruins were integrated into the leisure area of the Faro Riverside Park and have been maintained and preserved for this reason.

You can still see the base of the walls of the mill and some millstones that were placed there as a way to give identity to the place. There are also the lower openings through which the water passed from the *caldeira* to the Ria, making the grindstones work (Figure 8).



Fig. 8. Grelha's and Gordinho's mills. a) location (in yellow); b) old grindstones; c) panoramic of the ruins of the old mill of Grelha, inserted in the leisure area of the Faro Riverside Park (author)

### 3.4 Penteados's mill

Also inserted in the Riverside Park of Faro, these ruins are in better condition and have more details than the previous ones, constituting the final point of this route (Figure 9).

Access to these ruins is restricted, it is only possible to see them from the walkway there. There are still several details of the tide mills, such as the lower passages. The fact that there were two sets of lower passages is due, in our opinion, to the fact that the mill was so large

that it had several grinding rooms, which does not seem very plausible given the dimensions of the existing mills in Faro, or the fact that one set is actually from the mill (in arch) and the other set is only to give way to the numerous streams that exist on site, and therefore being just a way of crossing a water line. This last hypothesis seems to us the most acceptable.



Fig. 9. Penteado's mill. a) location (in yellow); b) general view of the ruins; c) detail of the lower passages; d) detail (author)

#### 4. Conclusion

The proposed path perfectly combines industrial vernacular heritage with natural heritage, given the place where it is inserted, which can increase tourism in this place if more attention and emphasis is given to these mills, even these being in ruins or having disappeared and remaining only the possible place where they existed. The fact that more tourism is developing in this area of the city, will make infrastructure better maintained and others built in less favored areas.

Another advantage that this path offers is the chance to enjoy the wonderful landscapes of the Ria Formosa, as you can see in Figure 10. In fact, starting from this landscape, it would be possible to give emphasis to the tide mills, which are part of the collective memory of the city of Faro and its way of life. In this way it would be possible to keep and preserve them. As a way to inform the public what it was about, information boards or QR Codes might be used, for example. Adding this route to the others existing in Faro, it would be an asset and a bridge between the city and the Ria.

Currently the tides are being used again as a driving force in the Europe, which shows that these mills are an old technique, but current at the same time.

The tide mills do not only exist in Faro; along the entire coast of the Algarve, they exist or existed and should be the subject of an in-depth study on the subject, and can be offered as drivers of tourism and, in a final goal, to create the opportunity for reconstruction and preservation of these vernacular heritage elements.



Fig. 10. Lagoon landscape of the Ria Formosa (author)

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