

# **Boca do Rio (Algarve, Portugal). A Centre of Export Oriented ‘garum’ Production on the Shore of Roman Lusitania**

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Since spring 2017, the project “Vulnerability of complex production-networks at the Atlantic Coast of Roman Lusitania” funded by the German Research Foundation (DFG TE 590/8-1) has been investigating Roman fish sauce production in Hispania and its dependency on the changing development of its direct environment. At the site of Boca do Rio the interdisciplinary cooperation between the Universities of Marburg, Cologne and Aachen (RWTH) is working locally within the PIPA-project “Boca do Rio, um sítio pesqueiro entre dois mares”, led by João Pedro Bernardes (University of Algarve).<sup>1</sup>

Boca do Rio is located in the extreme southwest of the Iberian Peninsula. Together with the Straits of Gibraltar, this area has the highest density of fish-sauce-production sites in the whole Roman Empire.<sup>2</sup> Like many other Roman coastal settlements and small fishing sites of the region it is situated in a small bay right by the Atlantic Ocean. Two considerations led us to choose the site as one of three investigation sites<sup>3</sup> in order to observe the dependencies mentioned above:

- The recorded vulnerability of the site of being hit by natural disasters (or extreme wave events, EWE) in recent times. In 1755 a large earthquake and tsunami hit large parts of the coast of Portugal, which led to the eventual destruction of Lisbon and also impacted Boca do Rio bay.<sup>4</sup> As such events are thought of having certain repetition rates, similar events could be assumed to have taken place in prehistoric or early historic times as well.
- Long-term developments in coastal dynamics can be observed in the local deposits. This comprises the slow sedimentation of what is nowadays the (mostly) dry alluvial plain of three small rivers (port. ribeira). The conversion from an open marine body of water to the current state was a long process which started in Antiquity and could have had a drastic impact on the Roman settlement situated at the shore of the estuary.<sup>5</sup>

To enable the detection of environmentally forced changes within the settlement, it was crucial to identify certain ‘key features’ at the crossroads of the settlement and its environment.

Therefore, several field campaigns of geophysical prospection and excavation were conducted and the whole accessible area was investigated with geophysical and remote sensing techniques.<sup>6</sup> This produced not only a new understanding of the complexity and overall composition of the fish-processing site of Boca do Rio, but also identified certain decisive indicators. The results of these studies can be summed up as follows:

The settlement lies on the eastern slope of a dune leaning against the local limestone cliffs.<sup>7</sup> It was built on top of the Roman era dune and was itself covered by the growing

dune. In its southernmost region, next to the sea, was a living area, as already described by S. P. M. Estácio da Veiga in the 19<sup>th</sup> century.<sup>8</sup> Due to their exposed position the majority of those structures have already been destroyed by the sea.

To the north, the continuation of the settlement consists mainly of conglomerates of various small-scale workshops. Those follow the design known from various other fish-sauce production sites, with vats arranged around central courtyards.

Parallel to the estuary, a single large structure of more than 40 m long and 10 m wide limited the settlement. Geophysical measurements and diagnostic excavations proved that this installation is a combination of a large coherent workshop with astonishingly large vats for the site and region.<sup>9</sup> There were also adjoining structures that can be interpreted as harbour installations (fig. 1).<sup>10</sup> Here, the successive steps of the 'halieutic cycle', namely of production (workshops, fish sauce) and distribution (harbour, estuary and open sea) can be studied within a single structure. Thus, this construction plays a key role in understanding the site's functionality and dependency on the stability of the environmental conditions. In accordance with the image created by Helmut Brückner's



Fig. 1: Aerial view of the recently excavated section of the harbor wall and quay at Boca do Rio. The ramp visible on the right leads directly to the large workshop, making the harbour an essential part of the production.

keynote, it is the life cycle of a port which determines the duration of a settlement. Future research on the site will focus on these port structures and their evolution.

### Notes

<sup>1</sup> For an overview on the ongoing excavation work, see Bernardes et al. in press.

<sup>2</sup> Wilson 2006; Teichner 2016.

<sup>3</sup> The other sites are Tróia (Setúbal) in the delta of the Sado river and *Baelo Claudia* (Bologna) near the Straits of Gibraltar; Hermann et al. 2021.

<sup>4</sup> For historical sources, see Bernardes – Medeiros 2016, 266; Geological evidence: Hindson et al. 1996; Font et al. 2013. First results give Feist et al. 2019 and Hermann et al. in press.

<sup>5</sup> Allen 2003; Teichner et al. 2014. First results give Hermann et al. in press.

<sup>6</sup> For details see Hermann et al. 2021.

<sup>7</sup> These house a necropolis, which may be connected to the settlement in the bay; Bernardes – Medeiros 2016.

<sup>8</sup> Estácio da Veiga 1910; on the mosaics, see Teichner – Mañas Romero 2018.

<sup>9</sup> In comparison with other sites of the region and other vats at the site, the sheer size of these stands out: Among the other vats of the site sizes of 1.4 m × 1.5 m × 1.6 m (length × width × height) are average, while in the “big workshop”, ‘whole’ vats of 3.3 m × 4.0 m × 2.0 m or ‘half’ vats of 1.6 m × 4.2 m × 2.0 m are normal. More detail in Bernardes et al. in press; Hermann et al. in press; Hermann et al. 2021.

<sup>10</sup> For comparison see the harbour facilities of Cerro da Vila (Vilamoura): Teichner 2008; Teichner 2017a; 2017b.

### Image Credits

Fig. 1: Florian Hermann; photo by Kevin Paul.

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