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# Economy and Production in the Late Republican Settlement of Poggio del Molino, Populonia

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## Abstract

*The settlement of Poggio del Molino, located in the northern sector of the territory controlled by the city of Populonia, has been inhabited since prehistoric times.*

*At the beginning of the 1st century BCE, the hill is occupied by a fortified building, whose purpose is to control and defend the access to the channel leading from the sea to the coastal lagoon of Rimigliano. The pirates, who in around 74 BCE were able to attack the coasts of Etruria, were then the main threat for the Roman state.*

*After the victorious war led by Pompei in 67 BCE, the inner portion of the defensive structure was occupied by workshops for the smelting of iron ore and for the making of fish sauces. The cetaria, made of at least six vats coated with cocchiopesto plaster, was likely active between the second half of the 1st century BCE and the first imperial age.*

*Our research are actually focusing on what kind of fish-based products were made at Poggio del Molino, what was their distribution area and, finally, the amphora or the amphora-pot used for the trading.*

## Keywords

Populonia, Fort, Pirates, Iron, Tuna fishing, Fish-based productions, *Cetariae*, Pot-amphoras.

## The fort and the iron (1st century BCE)

The Roman settlement of Poggio del Molino is located on the northern side of a headland that acts as a watershed, between the beach of Rimigliano to the north and the Gulf of Baratti to the south, to the northern border of the territory administered by the city of Piombino. The structure spreads over a high plateau of about 22 m a.s.l. that dominates, to the west, the stretch of sea between San Vincenzo and the Elba island and, to the east, the Metalliferous hills and plains of the Campiglia lagoon (**Figures 1a and 1b**).

Without doubt 'a rural position such as this provides an advantage, which is not of secondary importance to a seaside villa, but the choice of location may have been based on other motives more closely linked to the morphology of this stretch of coast and the activities that took place here in ancient times' (translation K. Bloxham; Saladino *et al.* 1984, 319; Saladino 1995, 33).

The hill of Poggio del Molino has been frequented and inhabited since prehistoric times, as indicated by the stone tools of the Middle and Upper Paleolithic eras found at the 'Villa del Barone', on the eastern and southern side of the headland (Fedeli 1983, 396, n. 291 e

402-403, n. 296; Galiberti, Perrini 1997; Saladino *et al.* 1984, 319-320).

During the Bronze Age, on the same side, flourished a village dated to the Late Bronze Age (11th–10th century BCE), to which a necropolis was linked, between the 'Villa del Barone' and Poggio San Leonardo, where about fifty globular or biconical urns, dated to the proto-Villanovan *facies*, were found (Fedeli 1983, 403-405, nn. 297-299; Fedeli *et al.* 1993, 60-76).

At the beginning of the Iron Age the population tends to concentrate around the Gulf of Baratti and the Poggio del Molino seems to be uninhabited until at least the Republican Age. From this moment, coinciding with the gradual abandonment of the urban centre of Populonia, the number of archaeological records in the territories north of Baratti increased: from the eastern slope of the hill, in fact, come a few fragments of black glazed pottery and a Rhodian stamped amphora (named ΦΑΝΕΥΣ). These finds witnessed the revival of the site which was in an area immediately east of the area where, shortly afterwards, the coastal settlement will be built (Fedeli 1983, 405, n. 300; Saladino *et al.* 1984, 321; Saladino 1995, 34).

The first systematic surveys of the area were conducted in the early seventies by volunteers of the Archaeological Association of Piombino and, between 1984 and 1988, a team of archaeologists of the University of Florence, led by Professor Vincenzo Saladino, undertook the first stratigraphic excavation of the settlement.

After twenty years of interruption, beginning in 2008 a new season of archaeological excavations started: the research project is directed by the Superintendence for Archaeological Heritage of Tuscany in collaboration with the University of Florence, and coordinated on the field by a team of archaeologists from the Archeodig project ([www.archeodig.com](http://www.archeodig.com); De Tommaso, Ghizzani Marcia, Megale 2010a, 167-168). The primary objective of the research is to bring to light the monument in its entirety, to reconstruct its architecture in the various stages of life, from Roman times to the late antiquity, and to understand their relationship with the surrounding territory (the sea, the lake - now drained - of Rimigliano, the mines of Elba and Campiglia, the road system, etc.).

The settlement of Poggio del Molino, in fact, had a very long life, at least five centuries, from the first half of the 1st century BCE to the late 5th century CE (De Tommaso 1998), characterized by complex architectural and functional changes, sometimes difficult to read.

At the beginning of the 1st century BCE, the northern area of the hill is occupied by a stately fortified building (**Figure 2**) whose purpose is to control and defend the access to the channel that led from the sea to the lake of Rimigliano.

The building, rectangular in plan, is defined by a thick perimeter wall (1.30-1.50 m) that consists of an inner core of limestone rags tied with tough mortar and two vestments made with blocks of stone of medium and large size summarily blanks, which are also attached with mortar. The corners are made with blocks of perfectly squared white rhyolite, positioned alternating the header bonds and stretcher bonds (**Figure 3**). The southern arm of the perimeter wall (the only fully preserved section as the northern portion collapsed into the sea) is approximately 55.60 m, equal to 188 Roman feet.

Two blocks of limestone, found in secondary arrangement in 2008, reveal the inscriptions *P(edes)* CLXXXVIII on one and *P(edes)* CXCI on the other, equal to 56.54 m (De Tommaso, Ghizzani Marcia, Megale 2010b, 355, fig. 16). It is probable that the numbers inscribed on the blocks (today without comparison) report the linear measurements of the north-south and east-west arms of the perimeter wall: 188 x 191 Roman feet, equal to 55.65 m (for which there is the archaeological evidence) x 56.54 m. If the interpretation is consistent, the area of the fort would correspond to about 3,145 square meters.

Along the south wall, at about half of its length, opens a square room of about 5.60 x 5 m, with thick walls (80 cm), without any opening access. This is probably a tower equipped with external stairs (maybe made of wood) and entrance through the upper level.

Inside the settlement, in the south-west sector, six square bases of about 90 cm per side were found; these are made of limestone blocks of small and medium size attached with mortar. At this phase, difficult to grasp because disrupted by subsequent construction activities, is referred to a tight sequence of strata characterized by the presence of a high percentage of iron slags, hematite, coal and burnt clay related to the activity of iron smelting during its first phase - the reduction of minerals. It has not yet been possible to define the extent of this process because the structures built in the successive phases, such as walls and mosaics, are set upon, cover or cut the layers and structures of this first phase (**Figure 4**).

The fortress of Poggio del Molino was located to defend the territory that opens onto to the north of the city of Populonia. The building controlled the access to the lagoon of Rimigliano, where it is most likely that tanks to fish farming and related activities were set up along with the production of salt, for which the environmental and climatic conditions were ideal. Furthermore, the stretch of sea in front of the fort crossed by coastal trade routes that connected Rome with Spain and Gaul and the Peninsula with Corsica, Sardinia and Elba.

The main enemy - against whom made the construction of the fort necessary- were pirates who in the first half of the 1st century BCE infested the Eastern and Western Mediterranean Sea.

Plutarch (Life of Pompey, 24) recounts that during the Mithridatic wars, pirates had become masters of the seas, armed with Mithridates himself to attack the Roman ships and to stop the supplies directed to Rome. They struck not only sailors but also islands and the towns by the sea; they landed on the ground and raiding the coastal towns, destroying roads, houses, and even sanctuaries.

Appian (*De bello Mithridatico*, 93) and Plutarch (Life of Pompey, 25) recount that around 74 BCE, the pirates attacked the coasts of Etruria. While Livy (*Periochae*, 98.3), Florus (I, 41.6) and Cassius Dio (XXXVI,22) report that in 70 BCE the magistrate *Caecilius Metellus* defeated the pirates who infested Sicily, Campania, and who had pillaged and burned the ships in the port of Ostia and in other Italian cities.

The sea and the coast had become so unsafe that in 67 BCE, based on an initiative of the tribune of *Aulus Gabinius (lex Gabinia)*, the command of the war against the pirates of the Mediterranean (*bellum piraticum*) was assigned to Pompey. The Senate gave him 270 ships, 120.000 soldiers (approximately 30 legions) and 4.000 knights under the command of 14 ambassadors (according to Florus; 25 according to Appian).

Pompey divided the Mediterranean into 15 districts, to each of which he assigned a fleet and a commander; he began the war from the western sector and in 40 days, between spring and summer of 67 BCE, freed the West from the pirates. Then he went in the Eastern Mediterranean, to Cilicia, where the pirates withdrew. In three months he overcame them, forcing them to surrender: almost 400 ships were delivered, he killed 10.000 pirates and over 20.000 were captured.

(C. M.)

#### **Fish-based productions at Poggio del Molino (second half of the 1st century BCE-1st century CE)**

As previously mentioned, the settlement of Poggio del Molino developed during the first half of the 1st century BCE, during a period characterized by substantial political instability. Once the civil wars between Sulla and the Marian parties ended and the threat of piracy was eliminated, the inner portion of the defensive structure which was part of the first phase of the settlement was occupied - perhaps at different times - by two distinct separate workshops: one for the smelting of iron ore and the other for the making of fish sauces. The fish sauces workshop was housed in the North-Eastern area (**Figure 5**), where the 2010 and 2011 excavations revealed part of a structure that can be identified as a *cetaria*.

So far, five tanks have been identified (**Figure 6**): four of which have a square floor plan (2,18 x 2,18 m; depth. 1,2 m) and lay parallel to each other while the fifth tank which has a rectangular shape is positioned in the center of the other four tanks. The rectangular tank has bigger dimensions and depth. The sixth one, whose extension is not yet defined was added at a later date next to the easternmost basins.

The structure is characterized by the use of just one building technique (**Figure 7**); the tanks are bounded by 30 cm thick walls made of blocks of local sandstone (commonly referred to as 'bench stone') and mortar. The interior, coated with a layer of waterproof plaster ('cocciopesto') about 2,5 cm thick, has a quarter-circle *pulvini* located in the horizontal and vertical angles. Also there is a circular depression of 40 cm in the center of the floor.

The southern and western sides of the complex are enclosed by an 80 cm thick wall, made of large blocks of

a stone called 'macigno', and blocks of bench-stone form the only currently known corner.

The system of tanks excavated in the Poggio del Molino settlement can be identified with a workshop for the making of fish-based products (a so-called *cetaria*) on the basis of a number of comparisons with the Italic and provincial framework. No relevant matches have been found with the structures for the production of wine and oil. Very significant are, in particular, the morphology and the number of tanks and the presence of a big perimeter wall, the latter being a constant presence in the plans of the western provinces *cetariae* (Etienne and Mayet 2002, 8-11).

Relevant is the comparison with the tanks for fish processing of workshop II (mid 1st - late 2nd/early 3rd century CE) of the Lusitanian fish factory of Tróia, located next the estuary of the Sado River (Western Portugal); the vats, no less than a meter deep, have both the characteristic quarter-circle *pulvini* and the depression in the center (Magalhães, Pinto, Brum 2010, 534, figs. 2, 6). The same building features are typical of the basins of the workshops of the baetican town of *Baelo Claudia*, whose use can be dated as well between the late Julio-Claudian age and the mid-3rd century CE (Etienne, Mayet 2002, 87, 89, 93-94, fig. 20, A).

As for the Italian peninsula, we can remember the small *cetaria* of Torre del Campese, on the island of Giglio (2nd-3rd century CE), consisting in two square vats linked to a third rectangular one; all of which are equipped with *pulvini* (Rendini 2003, 176-179, fig. 2-5).

The settlement of Poggio del Molino is located on the promontory at 22 m above current sea level. This position is unusual for a *cetaria* since typically for this kind of workshop, a location closer to the coastline and at lower altitude is chosen in order to favour fish hunting and/or breeding and the fish processing. A few cases in which *salsamenta* and/or fish sauce production centers occupied places at higher altitudes are, however, known. That's the case of the 2nd century CE *cetariae* of Ploumarc'h en Douarnenez, located at the top of a promontory of the coast of Britain (Eveillard and Bardel 2005, 151-156) and of Tavira's workshops in the territory of Lusitanian town of *Balsa* (De Figueiredo 1906, 118-119, fig. 4).

All of the tanks we have identified were intentionally filled with many layers containing building materials (stones, lumps of mortar and earthenware, fragments of *pulvini*, bricks and *opus spicatum* floor bricks), pottery and a considerable quantity of iron slags. The complete excavation of tank nos. 1 and 2 reached the bottom layers making it possible to define a *terminus ante quem* for the abandonment of the entire building. Among the latest materials coming from tank n. 1 are some fragments of late-Italic sigillata relevant to the *Conspectus* 45.2.1 cup, dating from the Flavian period until the mid II century CE (Rizzo 2003, 95, tab. 12).

It is worth noting the strong residuality of the materials found inside the two vats. There are many fragments of black-glazed pottery dating between the 3rd and the 1st century BCE (cup Morel 2655a, 2654a 1 and 2784d 1, dish Morel 2255f 1), lamps (Esquiline biconical type), amphoras of greek-Italic and Dressel 1 types and common and cooking pottery dating to Mid and Late

Republican Age - the latter being very well known from the excavations of the Acropolis of Populonia.

It is actually difficult, however, to date the construction of the workshop since the excavation has not yet reached the foundations of the structures. However, the accuracy of the building technique of the vats and the internal organization of the building seem to be typical of a mature stage of the architecture of this type of building, likely to be dated between the half of the 1st century BCE and the first imperial age.

The identification of the vats' system of Poggio del Molino with a *cetaria* inevitably involves the relevant archaeological and historical topic of the fish hunting and the fish processing activities in Populonia. The existence of this activity is known to us thanks to the famous passage in Strabo's geographical work (*Geogr.*, V, 2, 6), which describes the presence of a point for sighting the schools of tuna fish from the promontory on which the city stands. Rutilius Namatianus' poem (*De reditu suo*, I, 370-376) attests fish breeding in the Southern part of Populonia's *ager* during the first decades of the 5th century CE. The practice of tuna fishing is well attested from the fifteenth century until the middle of twentieth century while the large lagoons in the area, including Rimigliano Lake, provided the salt needed for the fish processing (Shepherd and Dallai 2003, 201). Such indirect sources and the Strabonian text's witness were not, however, supported so far by archaeological evidence given the exception of the supposed remains of a tuna fish trap in the sea area in front of the Baratti gulf, consisted of lead anchors hypothetically placed on the seabed in order to block the networks (Shepherd and Dallai 2003, 196-197, fig. 5a-b).

The fish hunting, breeding and processing in Populonia, handed down by the passages of Strabo and Rutilius Namatianus, are now confirmed by the discoveries and studies of recent years. New archaeological data, concerning the presence of a fish salting vat along the beach of Baratti (Cambi *et al.* 2007, 306, 311-312, fig. 3b), and the studies relating to the territory's lagoon areas, indispensable sources of salt for the production of fish sauces and/or *salsamenta* (Carusi 2008, 303-312) – are added to the tuna fish trap of Baratti (Shepherd 2003, 271-280; Shepherd and Dallai 2003, 189-207).

Regarding the issue of raising salt for the *cetaria* of Poggio del Molino, it is conceivable that the main source of supply was the Rimigliano Lake (Carusi 2008, 305), a vast lagoon area which had its main access point immediately North of the relief on which the settlement lies. The Northern stretch of the Populonia coast must have been, in Etruscan, Roman and Medieval Age, a district favorable to fish breeding and processing, like other sectors of the Southern part of the city's territory.

Understanding the role played by this activity in the economic framework of the territory of Populonia is still very difficult; the discovery of Dressel 1 amphoras containing fish bones on the Acropolis of Populonia assure us of the existence of an import trade of *salsamenta* from the nearby *ager Cosanus* (De Grossi Mazzorin 2006, 263-272; Costantini 2007, 151-156; for the activity of the *cetariae* of this area. See also Cavallo *et al.* 1992, 103-114). The Poggio del Molino workshop's

excavations pose otherwise a big question mark on the consistency of Populonia's local productions and the possible range of their trade.

The total capacity of the five known tanks is currently estimated to be at least 33.8 m<sup>3</sup>, a value which places the *cetaria* of Poggio del Molino at a level similar or slightly lower than that of the single workshop of *Baelo Claudia* - average capacity of 40-50 m<sup>3</sup> (Etienne and Mayet, 1995, 201-218; Etienne and Mayet 2002, 95-96) - but significantly higher than that of small establishments known in *Sabratha*, whose capacity varies between 4 and 9.55 m<sup>3</sup> (Wilson 2007, 173-181). This figure is only slightly significant, since in both the cities of *Baelo Claudia* and *Sabratha* the presence of several fish processing factories is attested and the total production capacity was at the base of a large exportation all over the Western Mediterranean basin.

There is a close link between this topic and the study of vectors eventually used in the trade of the fish-based products of Poggio del Molino. Recent studies show that in the Italic peninsula, different solutions were adopted for this purpose (*urcei*, amphoras of big and smaller size); these kinds of pottery are already well known from the archaeological excavations conducted in the *ager Populoniensis*, but they have never been the subject of a comprehensive study.

A production center of Dressel 1 amphoras (it is nowadays well-known that the C type was actually used for the trade of fish sauce or *salsamenta*) is located in the South-eastern area of the *ager Populoniensis*, very close to the ancient settlement of Vignale (Giorgi *et al.* 2009, 209-220).

Another important contribution for future research is the discovery of a small pot-amphora at the settlement of Poggio del Molino (De Tommaso 1998, 265, fig. 33, 7) (**Figure 9, n. 5**), whose morphology is similar to that of a type used in the Campanian region for the local trading of fish-based production of the city of *Pompeii* (**Figure 9, nn. 3, 4**) and known as well at *Cosa* (**Figure 9, n. 2**), the main fish-sauces production centre of the mid-Tirrenian coast (Gasperetti 1996, 27-28, 31, fig. 2, 15-16). The fragment's fabric, generally dating between the Early Imperial Age and the beginning of the 3rd century CE, does not match those of Lazio and Campania pottery productions, which suggests that the amphora could be hypothetically attributed to a local and still unknown production.

The future excavations of Poggio del Molino settlement will ultimately offer a significant contribution to the study of the making of fish-based products in the territory of the Etruscan town of Populonia. This activity was certainly, together with the iron smelting process, one of the major economic sources of the *ager Populoniensis* throughout a long part of its ancient history.

(S. G.)

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Figure 3: Perimeter wall of the settlement (photograph Archeodig).



Figure 4: Traces of activity of iron reduction (photograph by P. Nannini).

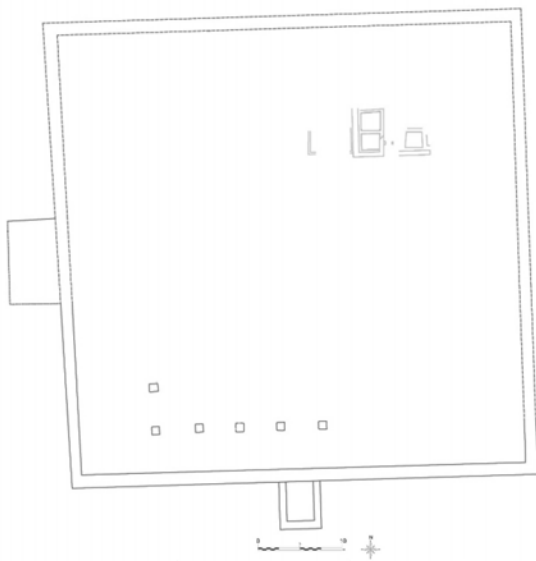


Figure 5: Plan of the settlement of Poggio del Molino and the fish factory's area (graphics processing by I. Cerato and C. Baione).

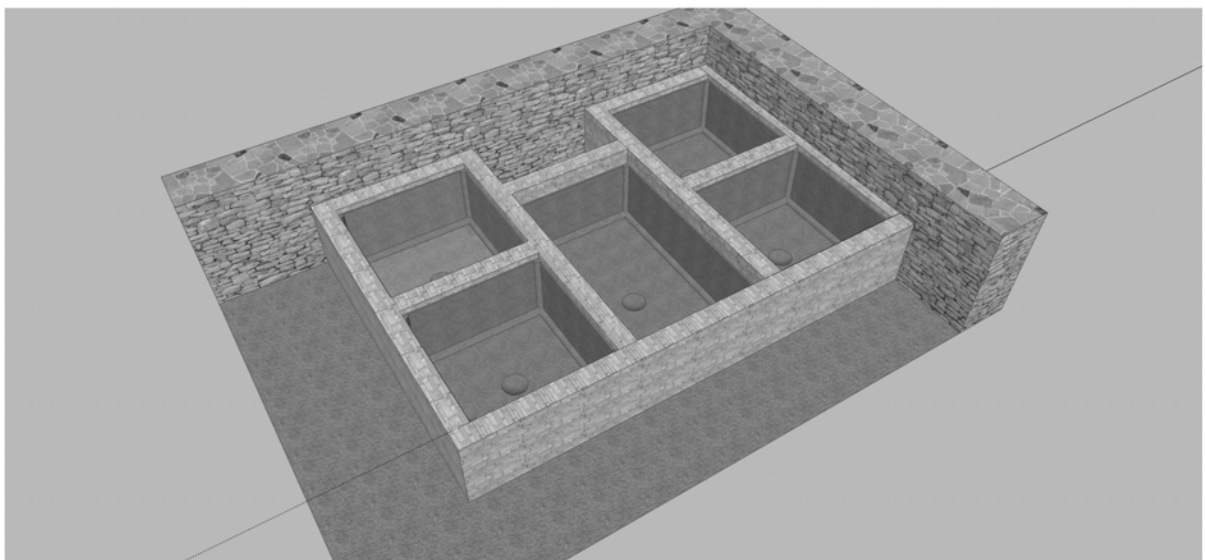


Figure 6: 3D reconstruction of the fish-sauces workshop of Poggio del Molino (graphics processing by S. Genovesi).



Figure 7: Vats nn. 1 and 2 seen from South. In the foreground the thick perimeter wall can be seen (photograph by D. Ansaldi).

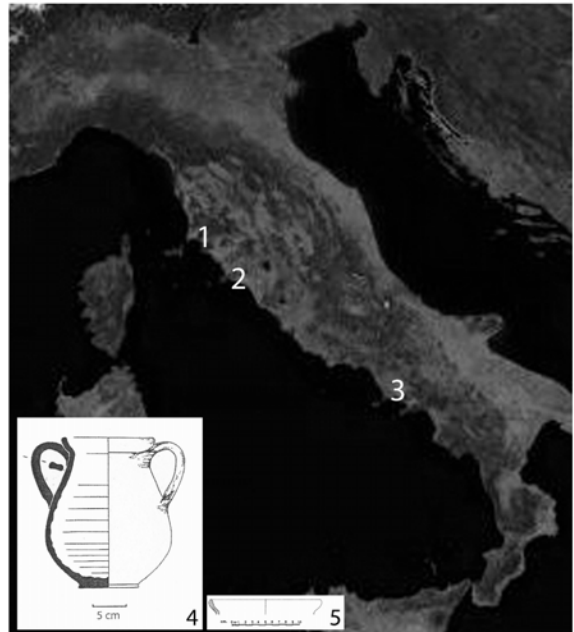


Figure 9: Location of the most important fish-sauce workshops along the Tirrenian coasts. 1) Pompei; 2) ager Cosanus; 3) ager Populoniensis. Small pot-amphoras. 4) Port La Nautique, ; 5) Poggio del Molino (De Tommaso 1998, 265, fig. 33, 7).



Figure 8: Cross-section of the stratigraphic sequence in vat n. 2 (photograph Archeodig).