

A Dataset of Roman Fish-Salting and Fulling Workshops: Summary of the Structure and Contents of the Dataset

Christopher F. Motz
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This document reproduces part of the second chapter of the author's Ph.D. dissertation, "The Knowledge Networks of Workshop Construction in the Roman World" (University of Cincinnati, 2021). It has been reproduced here in order to ensure that essential information about the structure and contents of the dataset remain associated with the dataset itself.

2.2 Structure of the Data Sets

In this part, I outline the structure of the digital database, and thus the data it contained, that underpinned the two case studies. This explanation is intended to serve four purposes. First, it is an opportunity to define terminology that is employed throughout this study. Second, it allows me to lay out the ways in which the physical and conceptual components of the research subjects were represented and recorded, which may be of interest to the reader when engaging with the text, the appendices, and the raw digital data (see below). Third, it records an important part of the process that produced the interconnected, dynamic data set that was analyzed for this study, which is now represented in a different, static form in the appendices. Fourth, it allows interested parties to reconstruct the relationships that were encoded in the original database on any platform, using the raw data tables (without images) that are available online.

The data model employed in the database was made up of three standard elements: *entities*, *attributes*, and *relationships*. A structural diagram of the entities and relationships can be seen below (Fig. 2.1). An *entity* is an abstract representation of a real-world or conceptual object within a database. Entities are considered to be whole and indivisible and can be uniquely identified. The eleven entities that were represented in the database can be grouped into three

categories, which I have dubbed “primary entities,” “secondary entities,” and “join entities.” Each entity was represented in the FileMaker database by a table (Table 2.1; for a diagram of the technical terms I will use to describe the FileMaker database, see Fig. 2.2). The properties or characteristics of an entity were represented by *attributes*, or FileMaker fields. Individual examples of an entity are called *instances*, or FileMaker records. For example, a specific fish-salting vat record is an instance of the general concept of a vat type (the entity). Entities were linked to each other through *relationships*, which were established when the value of the “foreign key” in one record matched the value of the “primary key” in another; for example, a site with a primary key value of “X” was linked to all workshops with a foreign key value of “X,” and in turn one of those workshops with a primary key value of “Y” was linked to all vats with a foreign key value of “Y.” Every instance of every entity was assigned a universally unique identifier, or UUID, to serve as the primary key in relationships. Some entities also included attributes for human-readable identifiers, such as site and workshop names, but the permanent UUID allowed relationships to persist even if a record’s human-readable identifier was changed or deleted, or if an entity did not require a human-readable identifier (e.g., equipment and join entities). I have omitted the UUID’s from the catalog, but I have included them in the digital data set to ensure that the digital records can always be differentiated from one another.

In the following sections, I offer a short explanation of what each entity represents and what information was gathered about it. I will discuss the definitions and parameters of certain data points in greater detail throughout the course of Chapters 4 and 5, where such issues can be treated more thoroughly in the contexts in which they arise.

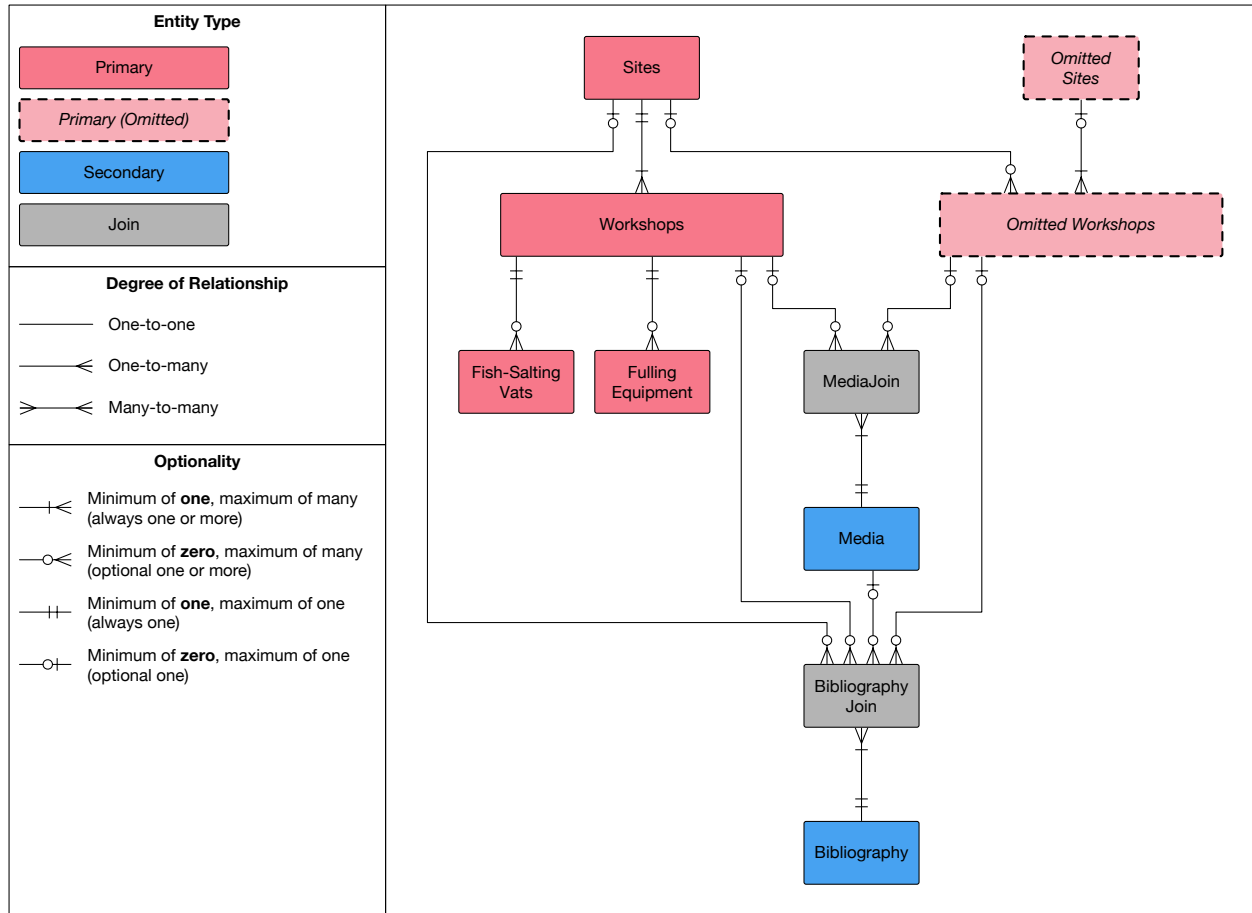


Fig. 2.1. Structural diagram of the project database

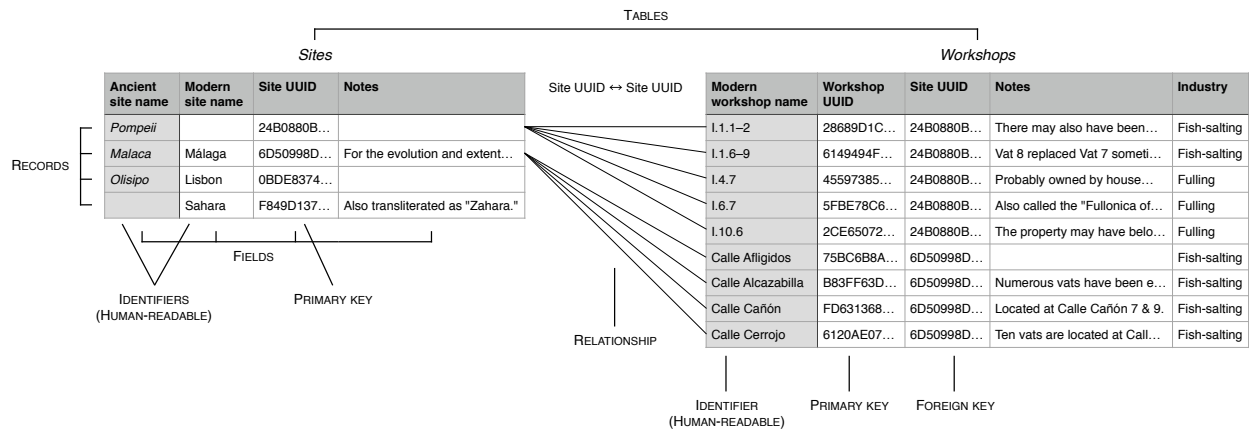


Fig. 2.2. Illustration of the main technical components of the project's FileMaker database

Table 2.1. The data tables in the project database

Table	Record Definition	Record Count
Primary Entities		
Sites	A city, town, settlement, or isolated structure	149
Omitted Sites	A site initially identified (by me or other scholars) as including workshops that possibly contained relevant archaeological remains, later determined to include only workshops that were not relevant or for which insufficient information was available	193
Workshops	A single property used for fish salting or fulling	405
Omitted Workshops	A workshop initially identified as possibly containing relevant archaeological remains, later determined to be not relevant or for which insufficient information was available	345
Fish-Salting Vats	A set of fish-salting vats with the same defining criteria	752
Fulling Equipment	A set of fulling equipment with the same defining criteria	193
Secondary Entities		
Bibliography	A bibliographic reference	934
Media	A photo or drawing	2,936
Join Entities		
BibliographyJoin	A single link between a <i>Bibliography</i> record and a <i>Site</i> , <i>Workshop</i> , or <i>Media</i> record	5,830
MediaJoin	A single link between a <i>Media</i> record and a <i>Workshop</i> record	4,503

2.2.1 Sites

A *Site* is a city, settlement, or isolated structure, such as the town of *Pompeii* or the villa at *Cotta*. Each of the 149 sites contains one or more *Workshops*. The primary function of sites in the database is to link multiple workshops in the same city or settlement and to record their collective location information. Several pieces of identifying information were recorded for each site (Table 2.2), including ancient and modern names and Pleiades ID (see <https://pleiades.stoa.org>). In order to simplify the analysis and comparison of geographical patterns, I assigned the sites to geographical areas that I manually defined based on a combination of the distribution and clustering of sites, the boundaries of ancient provinces, and the natural topography (Fig. 2.3).

Another 193 sites had all of their workshops omitted from the data set (see below); these sites were moved to the *Omitted Sites* table (Table 2.3), which was identical to the *Sites* table.

Table 2.2. Fields in the *Sites* database table

Field	Type	Values	Comments
Site UUID	Text		Primary key
Ancient site name	Text		Human-readable identifier
Modern site name	Text		Human-readable identifier
Notes	Text		
Location			
Ancient province	Text		
Modern country	Text		“Crimea” is used for the disputed territory
Modern state/region	Text		
Geographical area	Text		See Fig. 2.3
Pleiades ID	Number		Unique identifier used by the <i>Pleiades</i> project. The canonical URI of a site is “https://pleiades.stoa.org/places/” followed by the Pleiades ID.

Table 2.3. Fields in the *Omitted Sites* database table

Field	Type	Values	Comments
<i>Same as Sites</i>			

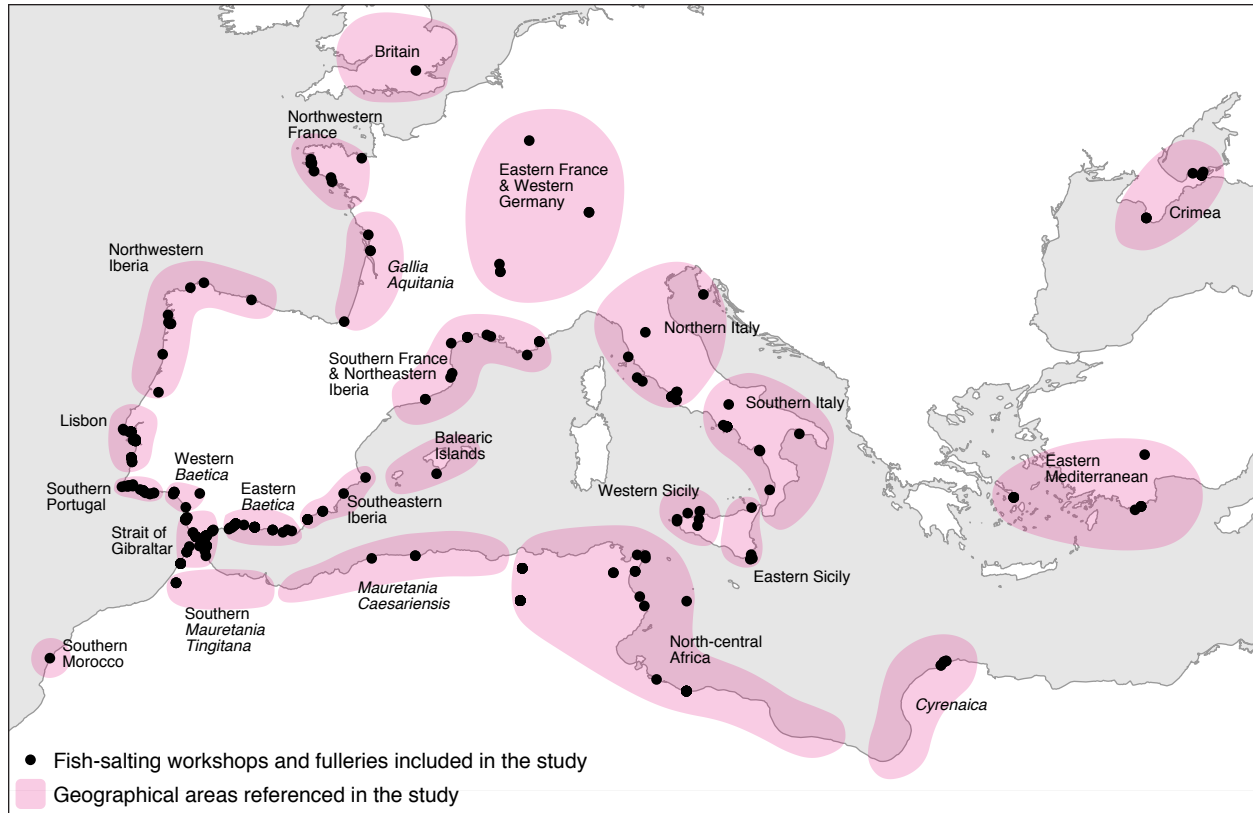


Fig. 2.3. Map of the geographical areas employed to aid analysis

2.2.2 Workshops

The *Workshop* entity represents properties used for fish salting or fulling (Table 2.4). Each of the 405 workshops (330 for fish-salting, 75 for fulling) is contained within a site, which may consist solely of that workshop, as with the villa at *Cotta*, or contain several workshops, as *Pompeii* does. By default, the modern workshop name is the one used by the primary publication of the site; if disambiguation was required, another name was selected that prevailed in the most recent scholarship. I have also recorded other names that researchers have given to each facility. If a workshop and site were one and the same or if there was only one workshop at the site, the workshop usually was not given a separate name. The workshop's latitude and longitude were

recorded along with its Pleiades ID, if different from the site's;¹ URLs were gathered for all fish-salting workshops with entries in the online atlas of the Atlantic-Mediterranean Network of Excellence on Ancient Fishing Heritage, or “RAMPPA” (after its Spanish title, “Red de Excelencia Atlántico-Mediterránea del Patrimonio Pesquero de la Antigüedad”; see <http://ramppa.uca.es>).² To assist anyone who may wish to see these sites in person, I described the current visibility of the workshop and the dates on which I visited it. To provide myself and other researchers with some insight into how the final data set was assembled, I noted the basis on which the workshop's industry has been identified by myself or by another scholar and I assessed and described subjectively the certainty of the identification; for this study, I did not employ these two metrics in my analysis of the workshops.

The beginning and end of the workshop's estimated date of construction was recorded, and it was determined whether each workshop had more than one phase of equipment construction. Each workshop with only one phase of construction was assigned to a single century to facilitate mapping and quantitative analysis. When the estimated construction date spanned multiple centuries, the workshop was assigned to the latest one; this choice was made due to the tendency of archaeologists to emphasize the earliest end of a possible date range as well as to account for the resurfacing of features after their original construction.

¹ Latitude and longitude are provided in decimal degrees to facilitate their use in online mapping platforms such as Google Maps, which I anticipate is how most readers will engage with them. The number of decimal places of the latitude and longitude roughly represents my certainty about the location. I employed a maximum of 5 decimal places, which corresponds approximately to room-level precision.

² The RAMPPA atlas and the catalog of fish-salting workshops produced for this study (see Appendices A and C) are complementary—both seek to bring together the many regional lists of workshops that have been published, but their parameters and precise aims differ slightly, leading to differences in the final lists of sites. Intriguingly, both of these comprehensive digital resources were developed independently at almost exactly the same time (the RAMPPA entries were published between 2016 and 2018).

In order to permit my analyses of workshop design, numerous aspects of each workshop’s spatial organization were described (for detailed examinations and explanations of each element, see Chapter 4, section 4.3.2, and Chapter 5, section 5.3.2), beginning with the total number of each type of equipment I identified through on-site inspection or through examining published images and descriptions.³ This number was subsequently divided into counts of standalone equipment that did not share walls with any other piece of equipment, such as fish-salting vat 1 in Workshop 1 at *Lixus*, shown in Fig. 2.4 (in the case of treading equipment without stall walls, this metric included tubs or vats that were not located immediately adjacent to another unit, such as S35 and S36 in fullery V.vii.3 at *Ostia*; Fig. 2.5), and contiguous equipment that did share walls, such as the remaining vats and treading stalls in these two examples (note that this metric recorded the total pieces of equipment that shared a wall with another, not the number of consecutive contiguous units); attested equipment was omitted from

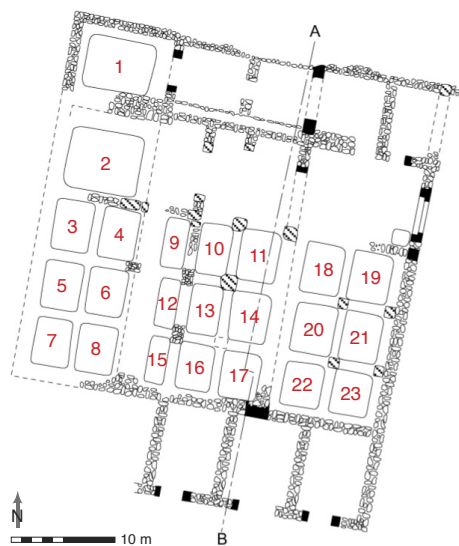


Fig. 2.4. Fish-salting workshop 1 at *Lixus*

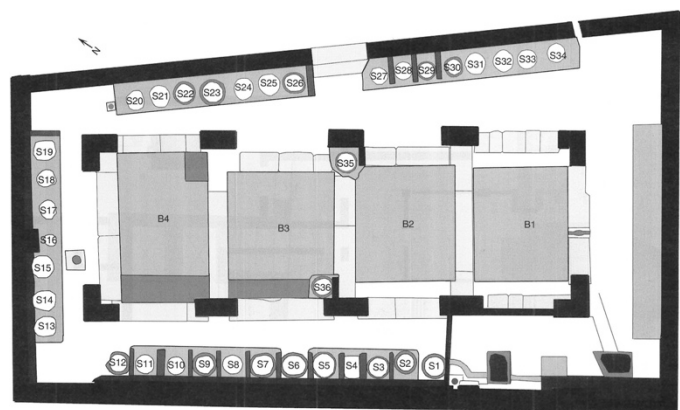


Fig. 2.5. Fullery V.vii.3 at *Ostia*

³ The definitions of the attributes and their values will be discussed further in Chapter 4, part 4.3, and in Chapter 5, part 5.3.

these counts if its status could not be determined. I marked the presence or absence of some items only for certain types of workshop: stairs or stair-like features in fish-salting vats; containers embedded near fullery treading equipment; and a working floor in front of treading equipment. Because the upper portions of vats, basins, and other subterranean features rarely survive and the bottoms of many remain buried, it is often impossible to calculate their original volumes. For this reason, no equipment measurements were entered into the database. Instead, the relative sizes (in plan) of each type of equipment were recorded to determine whether a workshop contained any installations that were the same size as each other (true for both Workshop 1 at *Lixus* and fullery V.vii.3 at *Ostia*) and whether there was more than one size of equipment (as in Workshop 1 at *Lixus*; for example, compare vats 1, 3, and 9). I classified all the ways in which the equipment was arranged (in plan), the primary arrangement that contained the most pieces of equipment, and whether the equipment was located inside or outside of a building. Finally, I recorded the presence or absence of courtyards in the workshop; the relationship of the workshop to any other structures; and whether it was in an urban area (inside city walls), a suburban area (immediately outside city walls),⁴ a semi-urban settlement (small agglomeration of structures), or the countryside.

Three hundred forty-four workshops (280 for fish-salting, 64 for fulling) were identified at some point by me or other scholars as possibly belonging to the fish-salting or fulling industries and were recorded preliminarily, but ultimately were omitted from the data set. They were moved to the *Omitted Workshops* table and the reasons for their omission were recorded (Table 2.5; see Appendices C and D). One hundred and four of these workshops were determined not to be part of either industry. One hundred ninety-one were omitted because

⁴ This definition of “suburb” is an approximation of the ancient concept of *continentia aedificia*; for a fuller study of these terms, see Emmerson 2020, pp. 1–18.

insufficient information was available to employ them in this study. For some, no determination about their identities could be made. Others were plausibly associated with one of the industries and would have been included in the data set if sufficient information about their equipment had been available: for a fish-salting workshop to be included in the data set I needed to be able to determine (through in-person inspection or from published data) the shape of at least one vat; for a fullery to be included, I needed to be able to determine the shape of at least one rinsing basin or the shape of at least one part of at least one treading installation (tub, stall, or vat). Twenty-three workshops were omitted because I encountered them too late to include them in my analysis; another twenty-six initially were omitted because insufficient information was available to employ them, but additional sources came to my attention too late for the facility to be reviewed and possibly included. These 49 facilities (all of which were associated with the fish-salting industry) may be reviewed for future iterations of the data set.

Table 2.4. Fields in the *Workshops* database table

Field	Type	Values	Comments
Workshop UUID	Text		Primary key
Site UUID	Text		Foreign key
Modern workshop name	Text		Human-readable identifier
Notes	Text		
Industry	Text (radio button) ⁵	Fish-salting, Fulling	
Remains visible	Text (radio button)	Yes, No, Uncertain	
Comments on visibility	Text		
Dates visited	Text		
Location			
Pleiades ID	Number		Unique identifier used by the <i>Pleiades</i> project. The canonical URI of a workshop

⁵ Radio buttons allow only one value.

			is “ https://pleiades.stoa.org/places/ ” followed by the Pleiades ID.
RAMPPA	Text		URL for the entry in “RAMPPA: The Atlantic-Mediterranean Network of Excellence on Ancient Fishing Heritage” (http://ramppa.uca.es)
DGPC ID	Number		Unique identifier used in the online portal of Portugal’s <i>Direção-Geral do Património Cultural</i> (https://arqueologia.patrimoniocultural.pt)
Latitude	Number		Maximum precision is 5 decimal places; the number of decimal places roughly represents the certainty of the location.
Longitude	Number		Maximum precision is 5 decimal places; the number of decimal places roughly represents the certainty of the location.
Identification			
Type identification certainty	Number (radio button)	1, 2, 3, 4	4 = Highly likely, 86–100% 3 = Probable, some uncertainty, 71–85% 2 = Possible, pretty uncertain, 51–70% 1 = Unlikely, 0–50% ⁶
Basis for industry identification	Text (checkbox) ⁷	Equipment morphology, Equipment construction, Spatial organization, Location (resource proximity), Artifacts, Ecofacts, Chemical residue, Literary/epigraphic, Other	
Comments on identification	Text		
Dates			
Construction date (start)	Number		
Construction date (end)	Number		
Construction date (century)	Number		
More than one construction date?	Text (checkbox)	Yes [True/False]	
Spatial Organization – Equipment Count			
<i>Number of vats (fish-salting workshop) / treading equipment (fullery)</i>			
Number of vats / treading equipment	Number		Unless noted otherwise, all equipment was able to be parsed

⁶ These percentages do not indicate statistical probability or any other quantitative assessment. They are intended to be read in concert with the textual descriptions that precede them; both the descriptions and percentages merely give an approximate indication of the subjective certainty represented by each level. All workshops that were assigned to level 1 were omitted from the data set.

⁷ Checkboxes allow multiple values.

Number of standalone vats / treading equipment	Number		
Number of contiguous vats / treading equipment	Number		
<i>Number of rinsing basins (fullery)</i>			
Number of rinsing basins	Number		
Number of standalone rinsing basins	Number		
Number of contiguous rinsing basins	Number		
<i>Spatial Organization - Equipment Sizes</i>			
<i>Sizes of vats (fish-salting workshop) / treading stalls (fullery)</i>			
Two or more vats / treading stalls of same size?	Text (radio button)	Yes, No, Cannot determine	
Multiple sizes of vats / treading stalls?	Text (radio button)	Yes, No, Cannot determine	
<i>Sizes of treading tubs/vats (fullery)</i>			
Two or more treading tubs/vats of same size?	Text (radio button)	Yes, No, Cannot determine	
Multiple sizes of treading tubs/vats?	Text (radio button)	Yes, No, Cannot determine	
<i>Sizes of rinsing basins (fullery)</i>			
Two or more rinsing basins of same size?	Text (radio button)	Yes, No, Cannot determine	
Multiple sizes of rinsing basins?	Text (radio button)	Yes, No, Cannot determine	
<i>Spatial Organization - Equipment Locations</i>			
Vats (fish-salting) / treading or rinsing equipment (fulling) inside a building?	Text (radio button)	Yes, No, Cannot determine	
Vats (fish-salting) / treading or rinsing equipment (fulling) outside a building?	Text (radio button)	Yes, No, Cannot determine	
Vat (fish-salting) / treading equipment (fulling) arrangements	Text (checkbox)	Scattered, Joined, Grid, Line, L-shaped, Parallel, U-shaped, Rectangle, Unknown	
Vat (fish-salting) / treading equipment (fulling) arrangement (primary)	Text (radio button)	Scattered, Joined, Grid, Line, L-shaped, Parallel, U-shaped, Rectangle, Unknown	
Vat (fish-salting) / treading equipment (fulling) arrangement (entire)	Text (checkbox)	Yes, No	

Rinsing basin locations (fulling)	Text (checkbox)	Center, Side, Cannot determine	
<i>Spatial Organization - Workshop</i>			
Courtyard present?	Text (radio button)	Yes, No, Cannot determine	
Describe courtyard	Text		
Step-like features in any vats (fish-salting)?	Text (radio button)	Yes, No, Cannot determine	
Describe step-like features in vats	Text		
Containers embedded near treading equipment (fullery)?	Text (radio button)	Yes, No, Cannot determine	
Describe containers embedded near treading equipment	Text		
Working floor in front of treading equipment (fullery)?	Text (radio button)	Yes, No, Cannot determine	
Describe working floor in front of treading equipment	Text		
<i>Spatial Organization – Workshop in the Built Landscape</i>			
Workshop relationship to other structures	Text (radio button)	Associated with villa, Associated with other structure, Just workshop, Cannot determine	
Workshop relationship to human settlement	Text (radio button)	Urban, Suburban, Semi-urban settlement, Rural, Unknown	

Table 2.5. Fields in the *Omitted Workshops* database table

Field	Type	Values	Comments
<i>Same as Workshops, but with one additional field:</i>			
Reason for omission	Text (checkbox)	Not the industry, Not enough information, Encountered late	

2.2.3 Equipment

The information captured about the most important types of fish-salting and fulling equipment was comparable across the two types of installations, but the types of equipment were

different enough to be stored as separate entities (for the processes of these industries and the roles of this equipment, see Chapter 4, section 4.1.3, and Chapter 5, section 5.1.3; for detailed analyses and explanations of each recorded element of this equipment, see sections 4.3.1 and 5.3.1). The *Fish-Salting Vat* and *Fulling Equipment* entities were structurally identical: each represents a set of equipment with the same defining characteristics within a single workshop. A new equipment set was created for each combination of values entered into the equipment set description fields; for example, even though both S23 and S29 in fullery V.vii.3 at *Ostia* (see Fig. 2.5) had round terracotta tubs, they were recorded in different sets because S23 did not feature stall walls while S29 did. This method enabled efficient data entry when recording workshops with many pieces of equipment and it highlights the morphological similarities and differences between and within workshops. Equipment sets were assigned sequential letter codes within each workshop; because these entities were intended to aid in the recording of equipment rather than the creation of universal typologies, the letter codes do not indicate connections across workshops, even within the same industry (for example, fish-salting vat Set A at Belém is not the same as fish-salting vat Set A at Portopalo).

2.2.3.1 Fish-salting vats

Several pieces of predominantly morphological information were coded and recorded (Table 2.6).⁸ The shape in plan of each vat set was entered, as was the shape in plan of its vertical corners (for example, all the vats in Workshop 1 at *Lixus* were rectangles with rounded corners; see Fig. 2.5). The construction of vat walls was described in plain text and one or more basic material types were assigned. Any visible vat lining received a description and was

⁸ The definitions of the attributes and their values will be discussed fully in Chapter 4, part 4.3.

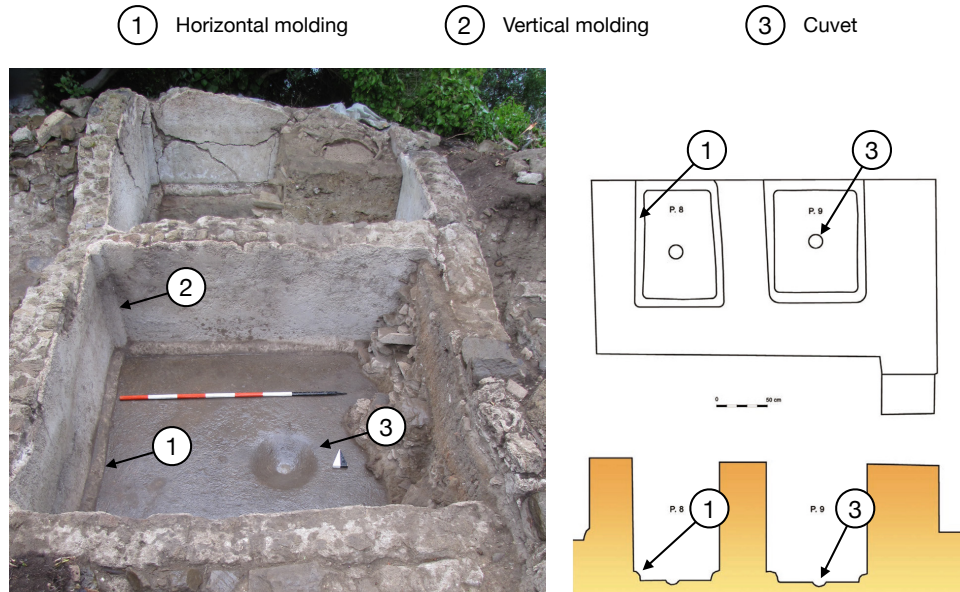


Fig. 2.6. Diagram of vat lining features (A: after photograph courtesy of Archaeodig; B: after Arévalo and Bernal Casasola 2007a, 123 fig. 37)

assigned to one or more basic material types or construction styles, and the presence, absence, or indeterminacy of the following interior features was marked (Fig. 2.6): convex molding around the vat floor, at the join of the floor and walls; convex molding in the vertical corners, at the joins between walls; the continuation of any lining over the upper edge of the vat; and a concave depression in the floor of the vat. The number of vats of this set within the workshop was counted and their individual numbers or other designations were listed. A section for notes captured any further comments about their construction that I felt to be necessary.

The beginning and end of each vat’s estimated date of construction was recorded. Each vat was assigned to a single century to facilitate mapping and quantitative analysis, using the same process that was employed for workshop construction dates.

Not every attested vat was able to be “parsed,” or described and assigned to a vat set. Fourteen workshops contained a total of 50 vats that had been mentioned and counted in

previous publications but had not been described, photographed, or drawn in sufficient detail to allow any useful descriptive information to be extracted.

Table 2.6. Fields in the *Fish-Salting Vats* database table

Field	Type	Values	Comments
Vat UUID	Text		Primary key
Workshop UUID	Text		Foreign key
<i>Vat Set Description</i>			
Workshop vat set (letter code)	Text		
Number of vats	Number		
Vat identifiers	Text		
Notes	Text		
Shape in plan	Text (drop-down list) ⁹	Square, Rectangle, Rectangular, ¹⁰ Circle, Oval, Irregular, <i>Dolium</i>	Criterion for new set
Shape of vertical corners	Text (radio button)	Sharp, Rounded, Cannot determine	Criterion for new set
Vat wall construction	Text (checkbox)	Masonry, Carved stone, Entirely bedrock, Part bedrock/part masonry, Terracotta, Sediment, Wood, None survives, Unknown	Criterion for new set
Vat lining material	Text (checkbox)	<i>Opus signinum</i> , Crushed stone and mortar, Ash mortar, Mortar without ceramics, <i>Opus figlinum</i> , Other, Type unknown, None survives, Unknown	Criterion for new set
Horizontal molding around floor of vat?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Vertical molding at vat wall joins?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Lining continues over edge of vat?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Cuvet in floor of vat?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
<i>Dates</i>			
Construction date (start)	Number		Criterion for new set

⁹ Drop-down lists allow only one value.

¹⁰ The “rectangular” value indicates a vat that was clearly rectilinear but had fewer than four partially visible sides.

Construction date (end)	Number		Criterion for new set
Construction date (century)	Number		Criterion for new set

2.2.3.2 Fulling equipment

Two basic types of equipment were recorded: treading equipment and rinsing basins (Table 2.7; see, for example, the plan of fullery V.vii.3 at *Ostia* [Fig. 2.5], on which the prefix “S” designates treading equipment and the prefix “B” designates rinsing basins). For each group of equipment, several pieces of predominantly morphological information were coded and recorded.¹¹

For treading equipment, the shape in plan of each treading tub set was entered, as was the shape in plan of its vertical corners. The construction of the tub was described in plain text, one or more basic material types were assigned, and any inscriptions were noted. The presence or absence of stall walls, such as those shown in Fig. 2.7, was recorded; if they were present, additional information was gathered as described below.

A consistent set of information was recorded for treading stalls, treading vats, and rinsing basins. The shape in plan of each equipment set was entered, as was the shape in plan of its vertical corners. The construction of the stall, vat, or basin walls was described in plain text and one or more basic material types were assigned. Any visible lining received a description and was assigned to one or more basic material types or construction styles, and the presence, absence, or indeterminacy of the following interior features was marked: convex molding around the stall, vat, or basin floor, at the join of the floor and walls; convex molding in the vertical corners, at the joins between walls; the continuation of any lining over the upper edge of the

¹¹ The definitions of the attributes and their values will be discussed fully in Chapter 5, part 5.3.



Fig. 2.7. Treading stalls with terracotta tubs in fullery I.xiii.3, Ostia (Pietrogrande 1976, pl. 4.1)

walls; and a bench or stairs. Additional data was gathered for particular types of equipment: whether treading stalls were open on one side (see Fig. 2.7); the presence or absence of a concave depression in the floor of each treading vat and rinsing basin; and the nature of any water supply into, and drainage from, each rinsing basin.

The number of installations of each set within the workshop was counted and their individual numbers or other designations were listed. Additional comments about their construction were recorded in a field for notes.

The beginning and end of each piece of equipment’s estimated date of construction was recorded. Each piece of equipment was assigned to a single century to facilitate mapping and quantitative analysis, using the same process that was employed for workshop construction dates.

Every attested piece of fulling equipment was able to be parsed.

Table 2.7. Fields in the *Fulling Equipment* database table

Field	Type	Values	Comments
Fulling equipment UUID	Text		Primary key
Workshop UUID	Text		Foreign key

<i>Equipment Set Description</i>			
Workshop equipment set (letter code)	Text		
Number of equipment	Number		
Equipment identifiers	Text		
Notes	Text		
Fulling equipment type	Text (radio button)	Treading equipment, Rinsing basin	Criterion for new set
Tub shape in plan	Text (drop-down list)	Square, Rectangle, Rectangular, Circle, Oval, Irregular, Unknown, No separate tub ¹²	Criterion for new set
Tub shape of vertical corners	Text (radio button)	Sharp, Rounded, Cannot determine	Criterion for new set
Tub construction	Text (checkbox)	Stone, Bedrock, Terracotta, Wood, Masonry, None survives, Unknown	Criterion for new set
Equipment inscribed?	Text (checkbox)	Yes [True/False]	Criterion for new set
Stall walls present	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Stall open on one side	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Stall / vat / basin shape in plan	Text (drop-down list)	Square, Rectangle, Rectangular, Circle, Oval, Irregular	Criterion for new set
Stall / vat / basin shape of vertical corners	Text (radio button)	Sharp, Rounded, Cannot determine	Criterion for new set
Stall / vat / basin wall construction	Text (checkbox)	Masonry, Carved stone, Stone slabs, Bedrock, Terracotta, Sediment, Wood, None survives, Unknown	Criterion for new set
Stall / vat / basin lining material	Text (checkbox)	<i>Opus signinum</i> , Brick paving, Stone paving, <i>Opus tessellatum</i> , <i>Opus spicatum</i> , Wall cap slabs, Wood, Other, Type unknown, None survives, Unknown	Criterion for new set
Horizontal molding around floor of stall / vat / basin?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Vertical molding at stall / vat / basin wall joins?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Lining continues over edge of stall / vat / basin?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Bench or stairs inside stall / vat / basin?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set
Cuvet in floor of vat / basin?	Text (radio button)	Yes, No, Cannot determine	Criterion for new set

¹² This value was used when recording one-piece treading vats.

Water supply into rinsing basin?	Text (radio button)	Yes, Indirect, No, Cannot determine	Criterion for new set
Drainage from rinsing basin?	Text (radio button)	Yes, Indirect, No, Cannot determine	Criterion for new set
Dates			
Construction date (start)	Number		Criterion for new set
Construction date (end)	Number		Criterion for new set
Construction date (century)	Number		Criterion for new set

2.2.4 Secondary entities

The *Bibliography* entity (Table 2.8) stores bibliographic references that can be linked to several other entities. The *Media* entity (Table 2.9) contains photos and drawings associated with a workshop.

Table 2.8. Fields in the *Bibliography* database table

Field	Type	Values	Comments
Bibliography UUID	Text		
Bibliographic resource	Text		Primary key; Human-readable identifier
Authors	Text		
Year	Number		
Bibliographic entry (short)	Text		

Table 2.9. Fields in the *Media* database table

Field	Type	Values	Comments
Media UUID	Text		Primary key
File name	Text		Human-readable identifier
Media	Container		
Caption	Text		
Media type	Text (drop-down list)	Plan, Section, Map, Photo, Drawing, Reconstruction	

2.2.5 Join entities

The *BibliographyJoin* and *MediaJoin* entities enable many-to-many relationships between records. The *BibliographyJoin* entity (Table 2.8) links multiple *Bibliography* records with multiple *Site*, *Workshop*, and *Media* records, with each link containing further details such as page numbers, figure numbers, and notes. The *Media* entity (Table 2.9) links multiple *Media* records with multiple *Workshop* records.

Table 2.10. Fields in the *BibliographyJoin* database table

Field	Type	Values	Comments
BibliographyJoin UUID	Text		Primary key
<i>Foreign Keys</i>			
Bibliographic resource	Text		Foreign key A
Site UUID	Text		Foreign key B1
Workshop UUID	Text		Foreign key B2
Media UUID	Text		Foreign key B3
<i>Bibliographic Information</i>			
Page or other ID	Text		
Chapter, volume, or other group ID	Text		
Image reference type	Text		
Figure or plate ID	Text		

Table 2.11. Fields in the *MediaJoin* database table

Field	Type	Values	Comments
MediaJoin UUID	Text		Primary key
<i>Foreign Keys</i>			
Media UUID	Text		Foreign key A
Workshop UUID	Text		Foreign key B