

5 TYPOLOGICAL CATALOGUE OF WEIGHING DEVICES

In this chapter, I provide a full catalogue of all the weighing devices that form the dataset on which all the analyses in this book were conducted. The sample collected in this book includes 696 balance weights and 18 balance beams, unevenly distributed between Italy, Eastern Europe, Central Europe, Western Europe and the British Isles, roughly encompassing the whole duration of the Bronze Age and the very beginning of the Early Orientalizing period, *c.* 2300-700 BCE.

Each morphological type is introduced by a detailed overview of their typology, chronology, geographical distribution, and functional features. Distribution maps and general quantification graphs are provided for each morphological type.

The numbering of the objects is incremental, starting with 1 and ending with 714. All objects provided with an illustration appear in the plates, and are identified with the same number given in the catalogue.

All objects are illustrated by a detailed description, based on the following template:

- object number (cat. no.);
- the site name, as known in the literature;
- site number (site no.), site type [in square brackets];
- levels of administrative denomination, from local to supralocal (in round brackets);
- archaeological context, *e. g.*, level, stratum, house, grave;
- chronological phase (in round brackets, relative chronological phase for the specific region);
- short description of typological features that are not encompassed by the general description of the type or variant;
- if the object is part of a weighing set, information about the composition of the set (in round brackets: object numbers of the items included in the set);
- if there are associations, description of the associated objects/features;
- state of preservation, *i. e.*, complete/fragmented;
- construction material;
- mass in grams, either complete or reconstructed (in round brackets: original mass if the weight was reconstructed);
- linear dimensions, in cm;
- physical location of the find (in round brackets: inventory number if available);
- if the object was previously published, bibliographic reference, if not, 'unpublished'.

The full database is freely available for download on ZENODO:

IALONGO, N. (2024): *Ialongo_2024_book_supplement_Bronze_Age_Weights_Database*. – (Zenodo). doi: 10.5281/ZENODO.13903718.

5.1. BALANCE BEAMS

- *number of objects*: 18
- *chronological range*: Phase 3-4 (c. 1400-800 BCE)
- *material*: bone + copper/bronze
- *14 sites*: site no. 52, 53, 54, 103, 105, 109, 113, 114, 115, 121, 122, 131, 139, 140
- *6 sets*: site no. 103, 105 (3 sets), 109, 115
- *length range (complete/reconstructed)*: 9.5-21.3 cm

Distribution maps: fig. 5.1.-4.

Composition of the sample: fig. 5.5.-6.

Typology and comparisons

Equal-arm balance scales are the earliest type of balance, and the only one attested until the appearance of the steelyard in Roman times (DAMEROW *et al.* 2002). While in eastern Mediterranean and Levantine Bronze Age contexts most of the documentation is provided by balance pans (normally made of bronze), beams are the only preserved parts of balance scales in pre-literate Bronze Age Europe (*i. e.*, west of Greece). There are 18 known balance beams from European Bronze Age contexts, all made of bone. When fully preserved, beams always have perforations for the fulcrum and on both extremities in order to fix the strings from which pans or bags were hanging. Some objects have loops of bronze/copper wired secured inside perforations. When preserved, the loops always present an elongated 'omega' shape.

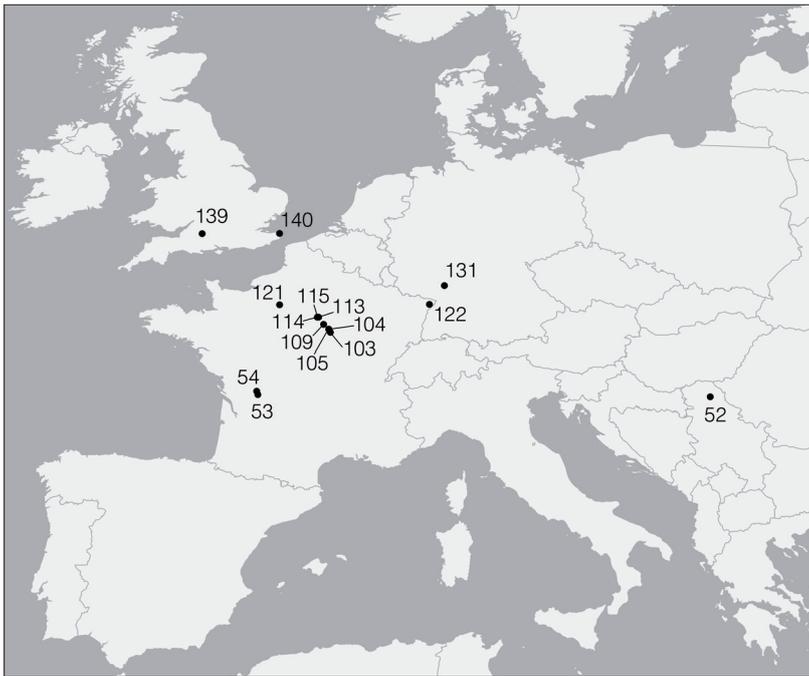
Balance beams can be subdivided into three typological variants, based on their overall shape and the position/orientation of their perforations. Variant 1 is characterised by a rectangular cross-section, with vertical perforations on the fulcrum and the extremities. The only object pertaining to V1 (1) is decorated with concentric circles on both faces, and has all its metal loops still secured inside the perforations.

Variant 2 has circular cross-section, the body is slightly tapered, and the extremities are plain and flat. Three small transversal perforations are present on the fulcrum and on the extremities. The only object classified in V2 (2) is the longest beam preserved so far (21.3 cm).

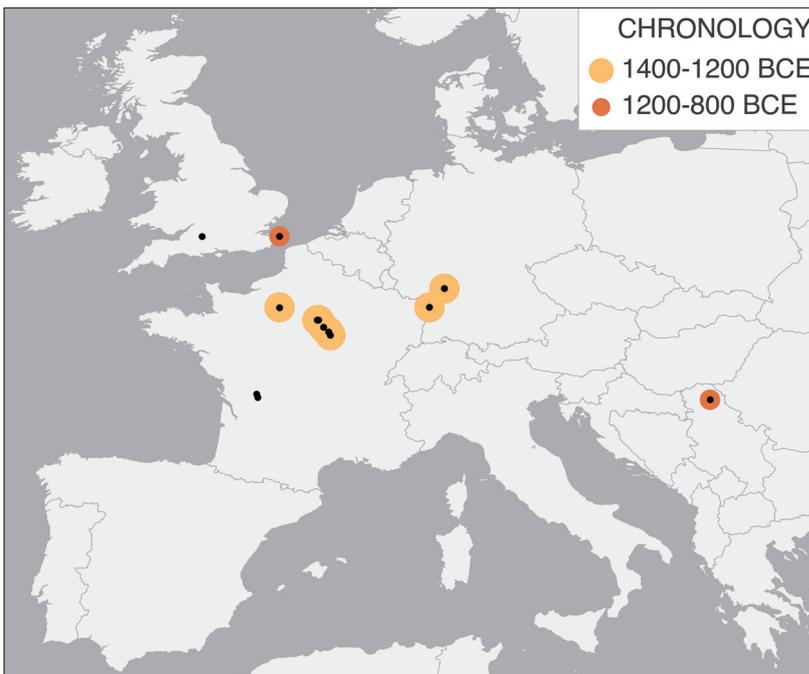
Variant 3 has a round cross-section and tapered body similar to V2, but the extremities are expanded in a trumpet-like shape. The fulcrum is obtained through a transversal perforation. In nine out of ten objects (cat. no. 3, 5-12), the perforations on the extremities have an oblique orientation, running from the centre of the round expansion to the base of the expansion itself. In one case (cat. no. 4) the perforations are parallel to the beam, and run from the lower side of the round expansion to the base of the expansion itself. Object cat. no. 6 has a metal loop still preserved in the fulcrum.

Six fragmented objects with round cross-section and missing extremities cannot be assigned to either V2 or V3 (cat. no. 13-18). Five of these beams have a metal loop preserved in the fulcrum (cat. no. 13, 15-18).

Bone balance beams appear between Greece and Mesopotamia in the 3rd millennium BCE (RAHMSTORF 2022, 528-535). An object similar to V1 comes from the Early Bronze Age settlement of Tell Fadous-Kfarabida, in Lebanon (GENZ 2011). A tapered beam with plain extremities analogous to V2 is attested at the western Anatolian site of Bözöyük, also dated to the EBA (RAHMSTORF 2022, 531, fig. 168.4). Both objects are roughly 1,000 years earlier than their European counterparts. Between the Aegean and the Near East, no bone balance beams are known for the 2nd millen-



▲ Fig. 5.1. Balance beams. Geographical distribution: site ID.



▲ Fig. 5.2. Balance beams. Geographical distribution: chronology.

nium BCE, whereas balance scales are mostly documented by frequent finds of bronze pans (PARE 1999). For the 1st millennium BCE, at least two bone beams with expanded extremities – similar to V3 – are attested in the Levant at Megiddo and Lachish (PEYRONEL 2011).

Chronology and geographical distribution

The earliest securely-dated balance beams are attested in Central Europe in the Br D phase (c. 1350-1200 BCE), between eastern France and western Germany (Fig. 5.2.). Twelve of the 13 beams dated to this chronological phase all come from burials, with a notable concentration in mixed-ritual burial sites of the Yonne basin in Bourgogne-Franche-Comté (ROSCIO *et al.* 2011). A fragmented beam (cat. no. 8) is documented at the fortified settlement of Fort Harrouard, in Centre-Val de Loire (site no. 121). Seven of the 13 beams dated to Phase 3 are classified into V3 (cat. no. 4, 7-12), one in V1 (1) and five are fragmented objects belonging to either V2 or V3 (cat. no. 13-15, 17-18). Two balance beams are dated to Phase 4 (c. 1200-800 BCE): a complete beam from the Serbian settlement of Bordjoš (cat. no. 2, site no. 52), and a fragmented one from the burial area of the midden site of Cliffs End Farm, in south-eastern England (cat. no. 16, site no. 140). Finally, there are three objects (cat. no. 3, 5-6) coming from mixed deposits, generically datable to the Bronze Age.

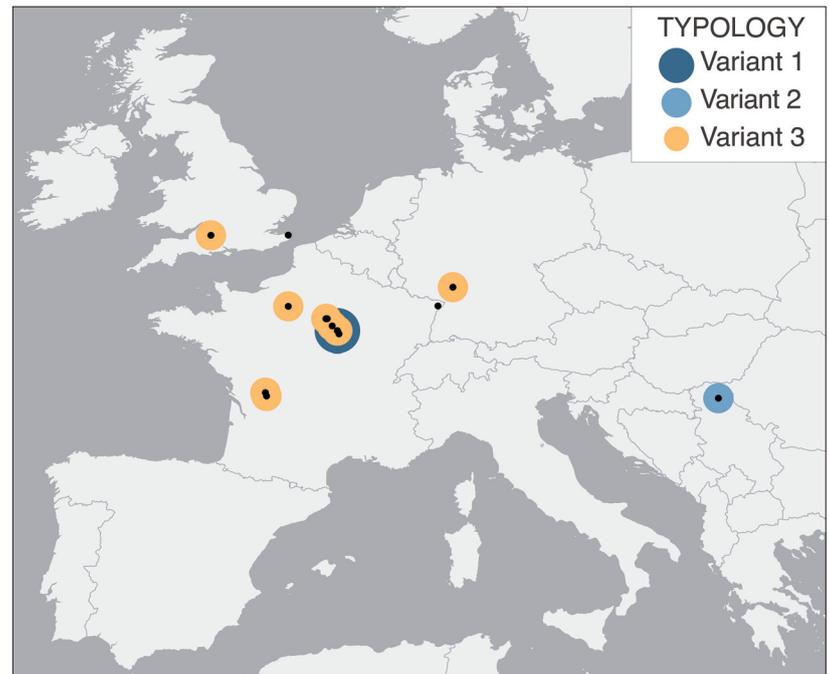
Contexts

Most known balance beams come from Central European graves dating to the Br D phase (Fig. 5.2.; 5.4.; 5.6.), several of which are associated with sets of balance weights. The inhumation grave no. 298 at the site of Migennes – Le petite Moulin (site no. 105) represents an exceptional case, with two balance scales (cat. no. 1, 4) belonging to two separate weighing sets (ROSCIO *et al.* 2011). Approximately dating to the same chronological horizon, a fragmented balance beam (cat. no. 8) from the fortified settlement of Fort Harrouard in France (site no. 121) is associated with several fragments of clay tuyère (MOHEN/BAILLOUD 1987, fig. 85.8). In the settlement of Bordjoš in Slovenia (site no. 52), a balance beam (cat. no. 2) was found in a small pit, together with eight natural pebbles (MEDOVIĆ 1995). It is theoretically possible that these pebbles were used as balance weights, but they are too few to be tested statistically (RAHMSTORF 2014). Finally, three objects come from generically dated deposits, one from a midden site in England (cat. no. 3, site no. 139) and two from two different caves in France (cat. no. 5-6, site no. 53-54).

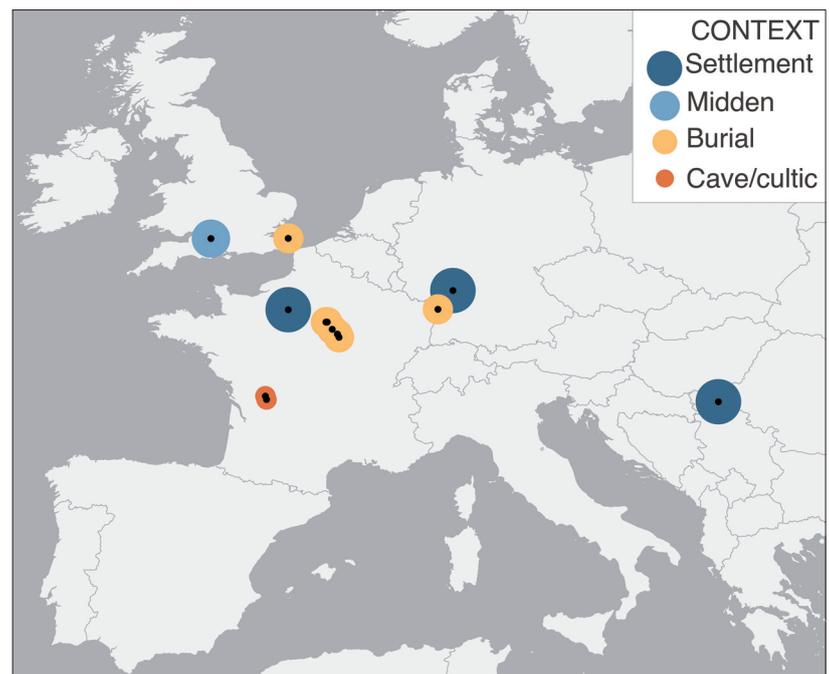
Accuracy and function

The only technical requirements for an equal-arm balance are a symmetrical shape about its middle point and a clearly marked fulcrum. Equal-arm balance scales are null instruments, *i. e.*, measuring

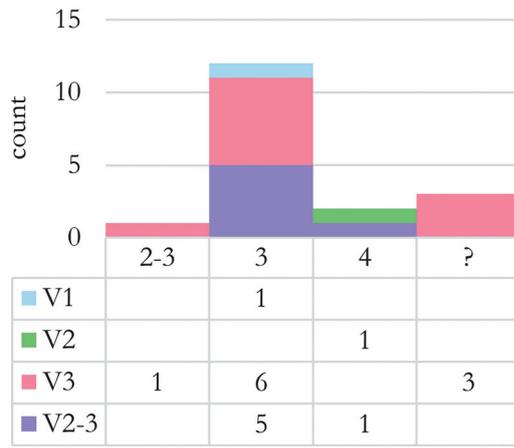
devices that balance an unknown value against a known one in order to obtain a zero sum. Null instruments can be very precise. However, as they cannot directly quantify magnitude, their error is always relative to the quantity being measured, *i. e.*, is expressed in percentage rather than in absolute values. The accuracy of balance scales was a known issue since their inception: cuneiform texts of the 3rd millennium BCE report an average accuracy of c. 3 % of the quantity being measured, a value confirmed by a recent experiment (IALONGO *et al.* 2021). A simulation based on 3D models suggests



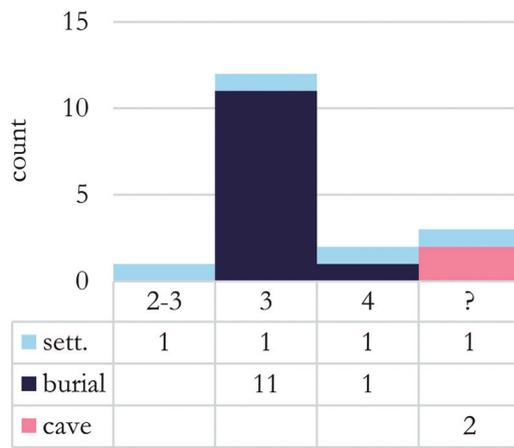
▲ Fig. 5.3. Balance beams. Geographical distribution: typology.



▲ Fig. 5.4. Balance beams. Geographical distribution: site type.



► Fig. 5.5. Balance beams. Quantification: typology vs chronology.

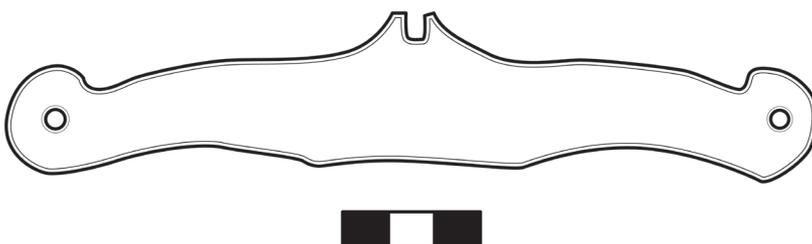


► Fig. 5.6. Balance beams. Quantification: site type vs chronology.

that the smallest quantity that could be measured on Bronze Age scales ranged between *c.* 0.1-0.5 g (POIGT *et al.* 2021). This figure is compatible with the mass of the smallest known balance weight in Bronze Age Europe, equal to 1.6 g (cat. no. 288).

A recent study produced accurate replicas of all the types of bone balance beams documented in BA Europe, and demonstrated that their overall loading capacity ranged between *c.* 7-30 kg (HERMANN *et al.* 2020) macromolecular chemistry and material science. Although possible, it is unlikely that balance scales were regularly used at full capacity. Heavy loads were probably measured with bigger scales made of wood, of which there is for now no direct evidence in the archaeological record of Western Eurasia. Images of large wooden balance scales, however, are attested in Egypt already during the Old Kingdom (RAHMSTORF 2022, 533-534), and described in cuneiform texts of the 3rd millennium BCE (PEYRONEL 2011).

▼ Fig. 5.7. Bronze object from the Early/Middle Bronze Age tomb of Castelluccio (Sicily, Italy), sometimes interpreted as a balance beam.



West of Greece, there is so far no archaeological evidence of balance pans. As equal arm balance scale – in most use-scenarios – require containers hanging from the extremities on which to lay balance weights and the quantity to be measured, one must conclude that these containers were made of perishable materials. R. HERMANN *et al.* (2020), for example, equipped their experimental replicas with leather pans. However, pans can also be replaced with bags.

Weighing with equal-arm balance scales is in principle extremely easy: One lays the quantity to be measured on a pan hanging from one of the two extremities and balance weights on the opposite pan until the beam is horizontal. This basic technique can have several variants, for example:

- A- *Additive weighing.* The quantity to be measured is put on a pan or inside a bag on one side, and balance weights are added to the opposite pan/bag until equilibrium is achieved.
- B- *Counterweighing.* A known quantity of one or more balance weights is put on a pan or inside a bag, and an unknown quantity is added to the opposite pan/bag until equilibrium is achieved. The same operation can be executed with a balance weight directly hanging from one extremity; in this scenario, the weight requires a perforation or a means to fix a cord, *i. e.*, a metal loop or an annular groove. Several balance weights attested in BA Europe present these characteristics.
- C- *Subtractive weighing.* The quantity to be measured is put on a pan or inside a bag on one side, and balance weights are added to the opposite pan/bag, or hang directly from the extremity as counterweights. If the mass of the balance weights is excessive, further balance weights can be added to the quantity being measured until equilibrium is achieved. The quantity to be measured is calculated by subtracting the mass of the balance weights lying together with the quantity to be measured from the mass of the balance weights on the opposite side.

Other potential balance beams

Over the years, a few objects of uncertain function have been singled out from Bronze Age contexts in Europe, and tentatively interpreted as potential balance beams (*e. g.*, CARDARELLI *et al.* 2001; RAHMSTORF 2014). As they never present a fulcrum, their identification as balance beams is highly dubious, and they were not included in this study.

A. CARDARELLI *et al.* (2001) singled out five objects from Italian contexts dating to the Middle and Late Bronze Age, tentatively proposing to identify them as balance beams. The first of these objects – from the Early/Middle Bronze Age grave of Castelluccio, in Sicily – is made of bronze, and has a symmetrical shape with two perforations at the

extremities (Fig. 5.7.). The central perforation that would have been used as fulcrum – if this object were actually a balance beam – is, however, open towards the top, not broken, and hence could not be used to fix a suspension cord. The remaining four objects (one made of wood and three of bronze) do not have any central perforation that could serve as fulcrum. L. RAHMSTORF (2014) – in addition to some of the balance beams considered in this book – reconsiders the four doubtful objects identified by A. Cardarelli *et al.* and adds two further ones from Central European contexts: a fragment of an elongated bone object with a terminal perforation, and a long, slightly bent bronze bar with two hanging rings attached to its extremities. None of these two objects, however, has a fulcrum.

Variant 1: Rectangular cross-section (cat. no. 1)

1. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 2 weights and 1 balance beam (cat. no. 1, 152, 309). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Bone. Mass: n/a. Dimensions: 13.8 cm x 1.4 cm x 0.7 cm - ROSCIO *et al.* 2011, fig. 5.13.

Variant 2: Round cross-section, simple extremities (cat. no. 2)

2. Bordjoš [site no. 52, settlement] (Banat, Novi Bečej, Serbia). Pit. Phase 4 (Ha A1) - Associations: 8 pebbles - Complete. Bone. Mass: n/a. Dimensions: 21.3 cm x 1.1 cm - MEDOVIĆ 1995, fig. 4.

Variant 3: Round cross-section, expanded extremities (cat. no. 3-12)

- *number of objects*: 10
 - *chronological range*: Phase 3-4 (c. 1350-800 BCE)
 - *material*: bone and bronze
 - *8 sites*: site no. 53, 54, 105, 109, 114, 121, 131, 139
 - *2 sets*: site no. 105, 109
3. Potterne [site no. 139, midden] (County Wiltshire, England). Undetermined chronology (Bronze Age) - Complete. Bone. Mass: n/a. Dimensions: 12.3 cm x 0.8 cm - LAWSON (ed.) 2000, 236.
 4. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Bone. Mass: n/a. Dimensions: 10.3 cm x 0.8 cm - ROSCIO *et al.* 2011, fig. 2.35.
 5. Agris, Grotte de Perrats [site no. 54, cave] (Charente, Nouvelle-Aquitaine, France). Undetermined

chronology (Bronze Age) - Complete. Bone. Mass: n/a. Dimensions: 9.5 cm x 0.7 cm - PEAKE *et al.* 1999, fig. 1.2.

6. Vilhonneur, Grotte de la Cave Chaude [site no. 53, cave] (Charente, Nouvelle-Aquitaine, France). Undetermined chronology (Bronze Age) - Metal loop preserved. Complete. Bone. Mass: n/a. Dimensions: 17.8 cm x 0.9 cm - PEAKE *et al.* 1999, fig. 1.3.
7. La Croix de la Mission [site no. 114, burial] (Marolles-sur-Seine, Seine-et-Marne, Île-de-France, France). Cremation grave 13. Phase 3 (Br D) - Associations: 2 bronze hinges (organic container), gold and bronze fragments, tweezers, pebble weights (?) - Complete. Bone. Mass: n/a. Dimensions: 11.3 cm x 0.6 cm - PARE 1999, fig. 22.1.
8. Fort Harrouard [site no. 121, settlement] (d'Eure-et-Loir, Centre-Val de Loire, France). B. 543. Phase 2-3 (Bronze Moyen-Bronze Final I) - Associations: several tuyère fragments - Fragmented. Bone. Mass: n/a. Dimensions: 5.5 cm x 0.6 cm - MOHEN/BAILLOU 1987, pl. 85.8.
9. Mannheim-Wallstadt [site no. 131, settlement] (Baden-Württemberg, Germany). Fundstelle 17. Phase 3 (Br D) - Thin rib at the base of the expanded extremity. Fragmented. Bone. Mass: n/a. Dimensions: 6.2 cm x 0.7 cm - GÖRNER 2003, fig. 21, 71.3.
10. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Incineration 284. Phase 3 (Br D) - Associations: fragments of bronze, destroyed by fire - Fragmented. Bone. Mass: n/a. Dimensions: 7.5 cm x 0.5 cm - ROSCIO/MARCIGNY 2022, fig. 3.284.6.
11. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Fragmented. Bone. Mass: n/a. Dimensions: 8.1 cm x 0.5 cm - Musées de Sens - ROSCIO 2018, pl. 85.28.
12. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 267. Phase 3 (Br D) - Associations: 3 bronze hinges (organic container), dagger, amber, flint, animal bone - Fragmented. Bone. Mass: n/a. Dimensions: 1.2 cm x 0.5 cm - MULLER 2009, fig. 5b.5.

Variant 2 or 3: Fragmented beams (cat. no. 13-18)

- *number of objects*: 6
 - *chronological range*: Phase 3-4 (c. 1350-800 BCE)
 - *material*: bone and bronze
 - *6 sites*: site no. 103, 105, 113, 115, 122, 140
 - *3 sets*: site no. 103, 105, 115
13. Gours-aux-Lions [site no. 115, burial] (Marolles-sur-Seine, Seine-et-Marne, Île-de-France, France). Cremation grave 5. Phase 3 (Br D) - Associations: 3 bronze hinges (organic container), dagger, chisel, tweezers, 3 bronze fragments, 3 gold fragments,

- stone axe - Metal loop preserved. Part of a set of 2 balance weights and 1 balance beam (cat. no. 13, 29, 31). Fragmented. Bone. Mass: n/a. Dimensions: 10.5 cm x 0.6 cm - PARE 1999, fig. 20.14.
14. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 251. Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 14, 275, 276). Associations: 2 lead balance weights, fragment of a bone balance beam, sword, pin, scabbard, applique - Fragmented. Bone. Mass: n/a. Dimensions: 5.0 cm x 0.6 cm - MULLER 2009, fig. 5a.5.
 15. La Croix-Saint-Jacques [site no. 113, burial] (Marolles-sur-Seine, Seine-et-Marne, Île-de-France, France). Cremation grave 61. Phase 3 (Br D) - Metal loop preserved. Fragmented. Bone. Mass: n/a. Dimensions: 4.2 cm x 0.6 cm - DELATTRE/PEAKE 2015, fig. 18.1, pl. 60.
 16. Cliffs End Farm [site no. 140, burial] (Kent, England). Phase 4 (Ewart Park) - Associations: balance weights from the same site - Metal loop preserved. Fragmented. Bone. Mass: n/a. Dimensions: 2.5 cm x 1.1 cm - GRIMM/SCHUSTER 2014, pl. 5.9.1.
 17. Monéteau, "Aux Bries" [site no. 103, burial] (Yonne, Bourgogne-Franche-Comté, France). Phase 3 (Br D) - Metal loop preserved. Part of a set of 2 balance weights and 1 balance beam (cat. no. 17, 273, 274). Associations: 2 lead weights, balance beam, razor - Metal loop preserved. Fragmented. Bone. Mass: n/a. Dimensions: 4.6 cm x 0.7 cm - ROSCIO 2018, pl. 93.3.
 18. Haguenau-Oberfeld [site no. 122, burial] (Bas-Rhin, Grand Est, France). Tumulus 57. Phase 3 (Br D) - Metal loop preserved. Fragmented. Bone. Mass: n/a. Dimensions: 3.6 cm x 0.5 cm - ROSCIO 2018, pl. 20.7.

5.2. PARALLELEPIPED

- *number of objects*: 145
- *objects with known mass (complete/reconstructed)*: 108 (74.5 %).
- *chronological range*: Phase 1-4 (c. 2300-800 BCE)
- *material*: stone (77), copper/bronze (64), lead (4)
- *66 sites*: site no. 3, 5, 6, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 27, 28, 32, 33, 34, 35, 37, 40, 58, 74, 82, 84, 85, 91, 98, 99, 100, 101, 105, 106, 107, 108, 109, 110, 111, 115, 116, 118, 119, 120, 123, 124, 125, 126, 127, 129, 130, 132, 133, 134, 135, 136, 137, 138, 141, 162, 187, 196, 207
- *17 sets*: site no. 3 (2 sets), 105, 107, 108, 109, 115, 118, 119, 123, 124, 127, 130 (2 sets), 132, 137
- *mass range (complete/reconstructed)*: 0.3-469.4 g (5th percentile= 1.41 g; 95th percentile= 182.55 g)

Distribution maps: fig. 5.8.-12.

Composition of the sample: fig. 5.13.-15.

Typology, materials, comparisons, and function

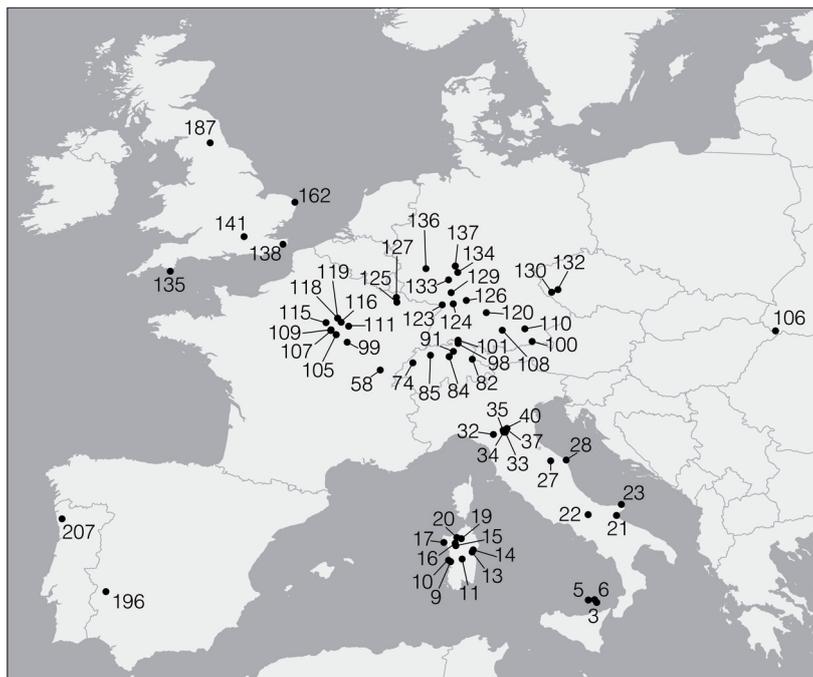
Most parallelepiped weights have a regular, elongated shape with straight or slightly convex sides. The typological variability encompasses objects with a square surface (cat. no. 50-54, 101, 108-109), and with more irregular shapes (cat. no. 57-58, 104-105, 112-113, 140). With 145 objects, parallelepiped weights are the most numerous among the weight types in the *shekel*-range. Parallelepiped weights were first identified in the MBA-LBA of Central Europe by C. PARE (1999).

This type includes four variants. Variant 1 has plain rectangular surfaces, while Variant 2 presents a small circular indentation towards one of the extremities. The two variants present overall the same shape, and both include objects made of stone and metal. The mass values of the objects included in V2 are varied, hence it is unlikely that the circular indentations identify a weight unit. The parallelepiped shape is the most attested in Europe among the balance weights of the *shekel*-range. Having a simple shape, these weights were probably easy to produce and did not require any particular expertise. This shape is also attested in the LBA of the eastern Mediterranean (PULAK 1997, 337, 375), although it is not very common. Variant 3 is one of the most characteristic balance weight shapes in BA Europe. All made of bronze, the objects in this variant all have wavy grooves on two or more faces, some of which include inlaid copper wires. The morphological traits of Variant 4 are the same as V1 and V2, with the difference that they all have a circular perforation towards one of the extremities. While all other variants were simply put on a balance pan, the weights in V4 could also be attached directly to one of the balance arms through a cord. The sample includes fragmented objects that could not be reconstructed, and hence

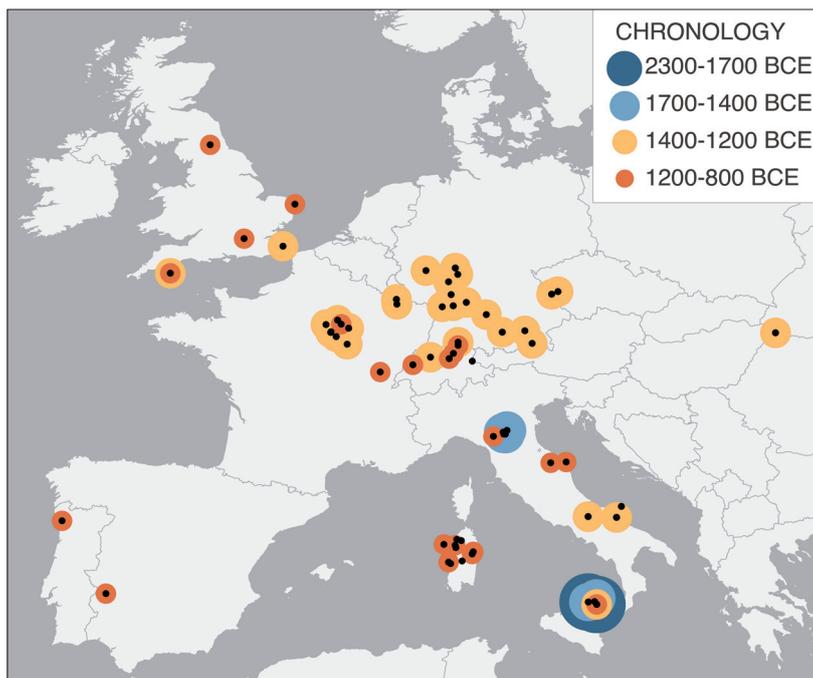
could not be attributed to one of the variants due to their lacking state. Finally, the list also includes four objects from the Bronze Age sites on Lipari, that are described in the publication but could not be found in the museum's storerooms.

Chronology and geographical distribution

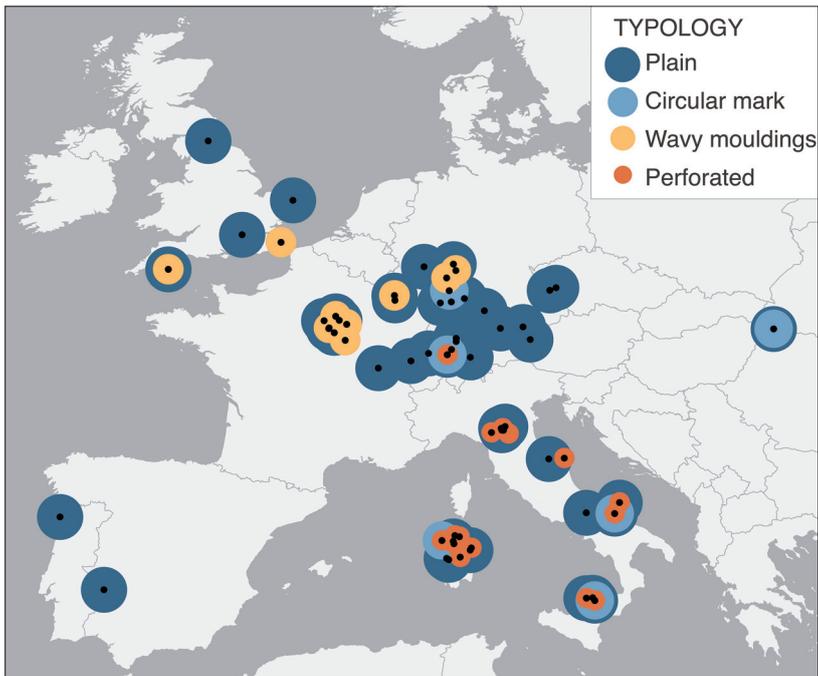
Parallelepiped weights cover a wide chronological interval, being attested in four phases (Fig. 5.9.). Their presence in Early Bronze Age settlements on the Aeolian Islands (site no. 3, 5) make them the earliest type of balance weights attested in Europe,



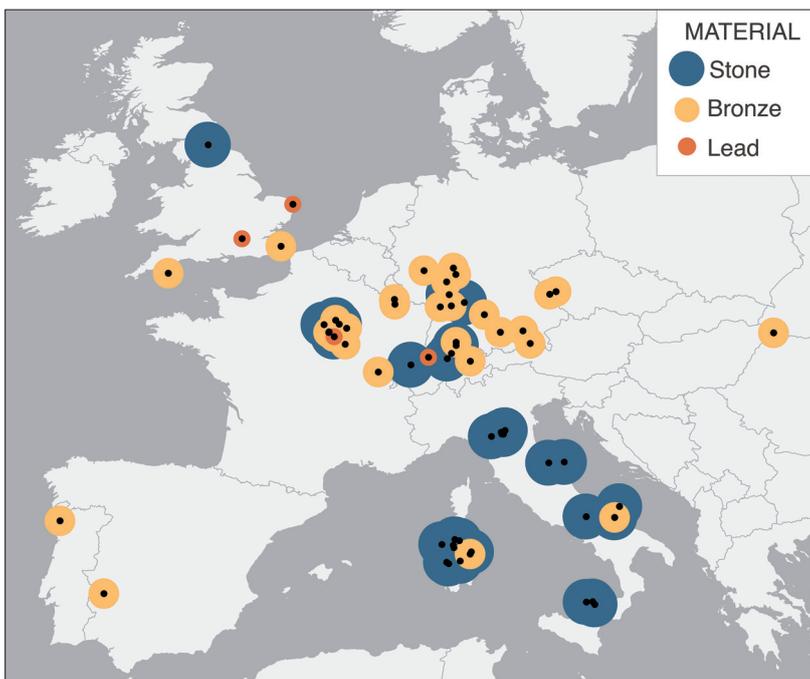
▲ Fig. 5.8. Parallelepiped weights. Geographical distribution: site ID.



▲ Fig. 5.9. Parallelepiped weights. Geographical distribution: chronology.



▲ Fig. 5.10. Parallelepiped weights. Geographical distribution: typology.



▲ Fig. 5.11. Parallelepiped weights. Geographical distribution: materials.

outside of Greece. The chronology of the Aeolian finds is bound to the chronology of the layers in which they were found, ranging *c.* 2300-1700 BCE. The stratigraphy does not allow for a more accurate date, but it cannot be excluded that parallelepiped weights were present along the whole sequence (IALONGO 2019; see chapter contexts). The EBA finds belong to V1, V2, and V4, hence showing that these three variants were already present at the onset of weighing technology in southern Italy. Parallelepiped weights are attested in Phase 2 in northern Italy, are widespread in Central Europe and En-

gland in Phase 3, and appear in the Atlantic façade in Phase 4 (Fig. 5.9.).

Variant 3 – unlike V1, V2, and V4, attested throughout the whole Bronze Age – is exclusive to Phase 3. Weights belonging to V3 occur significantly in burial contexts in Central Europe dating to the Bronze D phase (*c.* 1350-1200 BCE). A weight with wavy mouldings (cat. no. 123) is also present in the underwater assemblage of metal objects of Salcombe (site no. 135), off the south coast of England, in association with a plain bronze weight belonging to V1. This context was interpreted as a possible shipwreck (NEEDHAM *et al.* 2013). The assemblage of Salcombe spans two archaeological phases: Penard (*c.* 1300-1150 BCE) and Wilburton (*c.* 1150-1000 BCE) (ROBERTS *et al.* 2013). Based on its typical shape and well-dated contexts in Central Europe, this object was likely part of the earlier assemblage. The second parallelepiped weight lacks any datable feature. However, bronze parallelepipeds seem to be rather typical of Phase 3; hence, for the sake of simplification, the two weights are hypothetically assigned to the same chronological phase.

In Italy and Atlantic Europe, this type mostly occurs in settlements, with sporadic attestations in hoards, burials, caves, and cult places (Fig. 5.12.), such as Nuragic sanctuaries in Sardinia (cat. no. 51).

Contexts

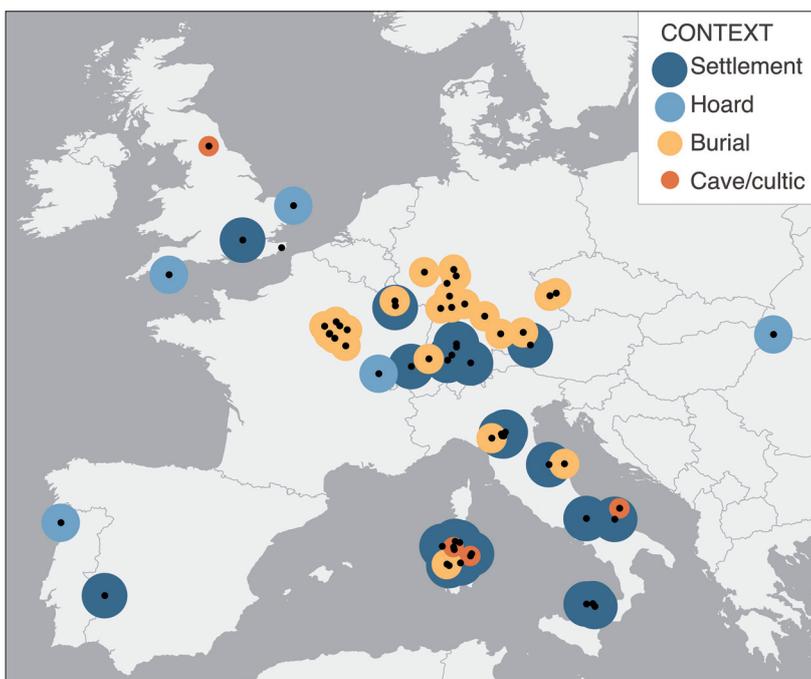
Parallelepiped weights are commonly found in sets in Central European burials dating to the Bronze D phase (*c.* 1350-1200 BCE), and in eastern France they are frequently associated with balance beams (sites no. 8, 9, 12, 14) (see Chapter 3). Weighing sets that include parallelepiped weights can contain up to 18 balance weights of different types; notable cases include Steinfurth in Germany (site no. 137, with 12 weights), Etigny “Le Brassor” grave 90 (France, site no. 109, with 13 weights and a balance beam), and the exceptional grave 298 of Migennes “Le Petite Moulin” (France, site no. 105), containing two distinct weighing sets (18 and 2 weights respectively), each with their own balance beam.

In settlements, parallelepiped weights sometimes occur in association with metallurgy-related facilities, such as smelting/melting pits, for example at ZAC du Sansonnet near Metz in France (cat. no. 96, site no. 125), and at the *terramara* of Gaggio, in northern Italy (cat. no. 52, site no. 40). In the settlement on the acropolis of Lipari, in the Aeolian Islands, parallelepiped weights occur inside houses in association with casting moulds in the Early Bronze Age (*c.* 2300-1700 BCE; cat. no. 43), and in the Final Bronze Age (*c.* 1100-950 BCE; cat. no. 161-162). Metallurgy is not the only trade-related productive activity associated with parallelepiped weights. The fortified settlement of Coppa Nevigata in Apulia, Italy (site no. 21) is renowned for the earliest attestation of purple dye production

from sea molluscs in the Mediterranean (MINNITI/RECCHIA 2018); a parallelepiped weight was found in a room in association with relevant amounts of sea shells, a by-product of purple dye extraction (c. 1600-1500 BCE; cat. no. 23).

Variant 1: Plain parallelepiped (cat. no. 19-109)

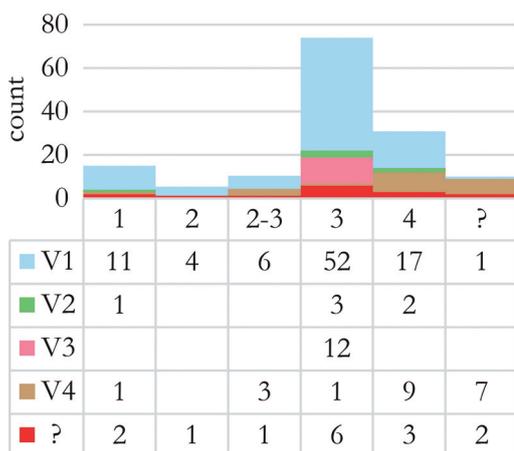
- *number of objects*: 91
- *objects with known mass (complete/reconstructed)*: 84 (92.3 %)
- *chronological range*: Phase 1-4 (c. 2300-800 BCE)
- *material*: stone (40), copper/bronze (47), lead (4)
- *46 sites (16 sets)*: site no. (3, 2 sets), 5, 6, 9, 10, 13, 16, 21, 22, 27, 34, 35, 37, 40, 58, 74, 84, 85, 91, 98, 100, 101, (105, 2 sets), (107), (108), (109), 110, (115), 116, (118), (119), 120, (123), (124), 125, 126, (127), (130, 2 sets), (132), 135, (137), 141, 162, 187, 196, 207
- *mass range (complete/reconstructed)*: 0.3-391.2 g (5th percentile= 1.2 g; 95th percentile= 157.46 g)



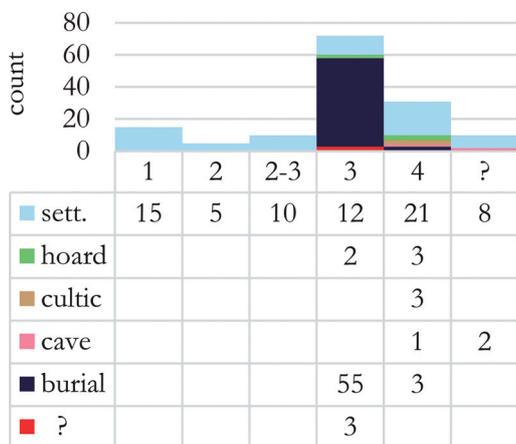
▲ Fig. 5.12. Parallelepiped weights. Geographical distribution: site type.

Stone

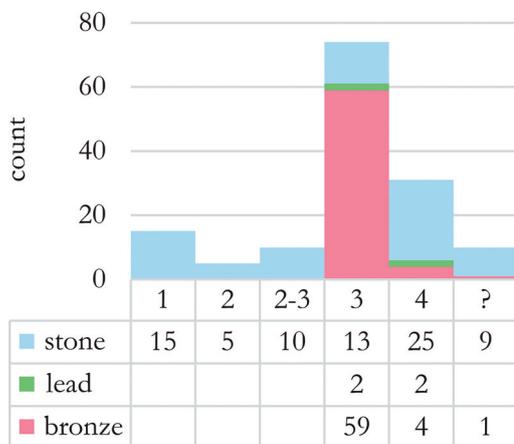
- Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Trench N, Planum 5 (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Complete. Stone (limestone?). Mass: 13.94 g. Dimensions: 4.1 cm x 2.9 cm x 0.9 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 8358) - Unpublished.
- Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta XIV, Area Bh, (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Part of a set of 2 weights (cat. no. 20, 37). Associations: 2 bone spatulae - Complete. Stone (schist). Mass: 18.73 g. Dimensions: 5.0 cm x 2.3 cm x 0.8 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5078) - Unpublished.
- Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Trench N, Planum 2 (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Fragmented (reconstructed in 3D). Stone (lime-



▲ Fig. 5.13. Parallelepiped weights. Quantification: typology vs chronology.



▲ Fig. 5.14. Parallelepiped weights. Quantification: site type vs chronology.



▲ Fig. 5.15. Parallelepiped weights. Quantification: materials vs chronology.

- stone?). Mass: 37.95 g (37.52 g). Dimensions: 6.2 cm x 2.2 cm x 1.3 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 8357) - Unpublished.
22. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House beta IV, dromos, slab pavement. Phase 3 (RBA) - Part of a set of 2 weights (cat. no. 22, 318). Associations: loom weight, high number of spindle whorls - Complete. Stone (schist). Mass: 20.26 g. Dimensions: 5.4 cm x 2.1 cm x 0.9 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 8093) - Unpublished.
 23. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 01, E2O, 3I. Inside a room in the fortification wall, with traces of activities of extraction of purple dye from molluscs. Phase 2-3 (MBA 3) - Associations: found in a small room inside the fortification wall, close to the main gate. Associated with relevant amounts of sea shells, a by-product of purple-dye extraction - Slightly chipped. Stone (greenstone?). Mass: 37 g. Dimensions: 5.7 cm x 2.6 cm x 1.4 cm - Unpublished.
 24. Filicudi, Montagnola di Capo Graziano [site no. 5, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House VI, Plana 1-5, layer on top of the Milazzese soil. Phase 2 (MBA 3) - Fragmented (reconstructed in 3D). Stone. Mass: 19.69 g (19.21 g). Dimensions: 4.6 cm x 2.3 cm x 0.9 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 3976b) - Unpublished.
 25. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta IV, Area O, Strata 3-4 (Capo Graziano). Phase 1 (EBA-MBA 1-2) - Part of a set of 2 weights (cat. no. 25, 28). Associations: bronze awl, 3 bronze fragments - Complete. Stone (limestone). Mass: 6.66 g. Dimensions: 4.9 cm x 1.2 cm x 0.6 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 7583) - Unpublished.
 26. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House alpha I, Trench Z6, Fire layer, last phase, Ausonio II. Phase 4 (FBA) - Associations: spindle whorls - Complete. Stone. Mass: 22.83 g. Dimensions: 6 cm x 2.2 cm x 0.7 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 4650) - Unpublished.
 27. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 30.05 g. Dimensions: 6.7 cm x 2.8 cm x 0.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7823) - Unpublished.
 28. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta IV, Area O, Phase Capo Graziano. Phase 1 (EBA-MBA 1-2) - Part of a set of 2 weights (cat. no. 25, 28). Associations: bronze awl, 3 bronze fragments - Fragmented (reconstructed in 3D). Stone (limestone?). Mass: 62.75 g (62.65 g). Dimensions: 7.5 cm x 3.0 cm x 1.6 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 7676) - Unpublished.
 29. Gours-aux-Lions [site no. 115, burial] (Marolles-sur-Seine, Seine-et-Marne, Île-de-France, France). Inhumation grave 27. Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 13, 29, 31). Associations: bronze hinge (organic container?), scabbard, razor, ring, gold fragment - Complete. Stone (sandstone). Mass: 23.28 g. Dimensions: 6.6 cm x 2.8 cm x 0.7 cm - Musée départemental de Préhistoire d'Île-de-France, Nemours (inv. no. 82.5.93) - PARE 1999, fig. 27.3.
 30. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (slate). Mass: 16.7 g. Dimensions: 5.5 cm x 1.5 cm x 0.8 cm (inv. no. 2549) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2549.
 31. Gours-aux-Lions [site no. 115, burial] (Marolles-sur-Seine, Seine-et-Marne, Île-de-France, France). Inhumation grave 27. Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 13, 29, 31). Associations: bronze hinge (organic container?), scabbard, razor, ring, gold fragment - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 20.48 g (18.79 g). Dimensions: 6.8 cm x 2.9 cm x 0.7 cm - Musée départemental de Préhistoire d'Île-de-France, Nemours - PARE 1999, fig. 27.2.
 32. Filicudi, Montagnola di Capo Graziano [site no. 5, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House XIV, Destruction (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Complete. Stone (schist). Mass: 20.14 g. Dimensions: 7.9 cm x 2.0 cm x 0.6 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 15982) - Unpublished.
 33. Barbuise-Courtavant, Grèves de Frécul [site no. 119, burial] (Aube, Grand Est, France). Grave 1. Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 33, 116). Associations: razor, pottery - Complete. Stone. Mass: 16.29 g. Dimensions: 4.54 cm x 1.475 cm x 1.21 cm - PARE 1999, fig. 15.2.
 34. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 507, Trench 3, VP 3, US 4373, fase 1.3. External productive area, next to a fireplace. Phase 2 (MBA-RBA) - Part of a set of 2 weights (cat. no. 34, 52). Associations: traces of metallurgical activity - Complete. Stone. Mass: 36.02 g. Dimensions: 5.1 cm x 2.2 cm x 1.5 cm - Museo Archeologico Etnografico Modena (inv. no. 4162) - Unpublished.
 35. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). "Capo Graziano Hut", Trench B (outside the acropolis), Plana 22-24 (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Complete. Stone. Mass: 138.41 g. Dimensions: 6.4 cm x 3.4 cm x 3.4 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 4719) - Unpublished.
 36. Heathery Burn Cave [site no. 187, cave] (Stanhope, County Durham, England). Phase 4 (LBA) - Complete. Stone. Mass: 96.1 g. Dimensions: 5.0 cm x 3.2 cm x 3.0 cm - BRITTON/LONGWORTH 1968, no. 182.
 37. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta XIV, Area

- Bh (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Part of a set of 2 weights (cat. no. 20, 37). Associations: 2 bone spatulae - Complete. Stone (steatite?). Mass: 122.56 g. Dimensions: 5.7 cm x 4.1 cm x 2.9 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 7705) - Unpublished.
38. Monte Croce-Guardia [site no. 27, settlement] (Arcevia, Ancona, Marche, Italy). House 3, fase III, US 402. Phase 4 (FBA) - Part of a set of 2 balance weights (cat. no. 38, 120). Associations: concentration of fragmented bronze objects and a casting mould, interpreted as workshop/hoard. Sickle fragment, fibula fragment, bronze wire fragment, glass bead - Complete. Stone (sandstone). Mass: 57.58 g. Dimensions: 4.5 cm x 3.3 cm x 2.2 cm - Unpublished.
39. Oratino [site no. 22, settlement] (Campobasso, Molise, Italy). RO 06, C4 H, Phase III 3a. US 164 E. Phase 3 (RBA) - Complete. Stone (limestone). Mass: 152.3 g. Dimensions: 8.8 cm x 3.4 cm x 2.4 cm - Unpublished.
40. Salina, Villaggio della Portella [site no. 6, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House I, Milazzese layers. Phase 2 (MBA 3) - Complete. Stone. Mass: 137.3 g. Dimensions: 5.9 cm x 4.5 cm x 2.7 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 2268) - Unpublished.
41. Marigny-le-Châtel - Le Pont de Riom [site no. 116, burial] (Aube, Grand Est, France). T. 134. Phase 4 (Ha A2) - Associations: 2 bronze hinges (organic container), fragment of a ribbed pin (balance weight?), awl/chisel, bronze ring, bronze brooch, 3 stone beads, 3 flint blades, 1 fossil (?) - Complete. Stone. Mass: n/a - DOHRMANN/RIQUIER (eds.) 2018, 424-425.
42. Filicudi, Montagnola di Capo Graziano [site no. 5, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Phase 1 (EBA-MBA 1-2) - Fragmented (reconstructed in 3D). Stone (schist). Mass: 151.48 g (145.62 g). Dimensions: 10.7 cm x 4.2 cm x 1.5 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 15987) - Unpublished.
43. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta XII, Area BA-BC (Capo Graziano). Phase 1 (EBA-MBA 1-2) - Associations: 1 mould, 2 stone axes, 2 bronze needles - Fragmented (reconstructed in 3D). Stone (limestone?). Mass: 154.45 g (150.51 g). Dimensions: 12.6 cm x 4.3 cm x 1.4 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 7675) - Unpublished.
44. Oratino [site no. 22, settlement] (Campobasso, Molise, Italy). RO 06, C4 H, Phase III 3a. US 164 E. Phase 3 (RBA) - Complete. Stone (sandstone). Mass: 391.2 g. Dimensions: 16.2 cm x 6.7 cm x 1.8 cm - Unpublished.
45. Neckarsulm [site no. 126, burial] (Heilbronn, Baden-Württemberg, Germany). Grab 18, Individual 1. Phase 3 (Br D) - Associations: 4 bronze hinges (organic container?), sword, scabbard, knife, pin, large stud, 10 rings, 11 bronze fragments - Complete. Stone. Mass: 28.22 g. Dimensions: 7.0 cm x 2.2 cm x 0.8 cm - KNÖPKE 2009, Taf. 38.3.
46. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: n/a. Dimensions: 9.9 cm x 2.6 cm x 1.0 cm - Museo Archeologico Etnografico Modena (inv. s.n. XV) - Unpublished.
47. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 183.14 g. Dimensions: 17.1 cm x 3.7 cm x 1.5 cm - Museo Archeologico Etnografico Modena (inv. s.n. 541) - Unpublished.
48. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 153.3 g. Dimensions: 9.9 cm x 3.7 cm x 2.2 cm - Museo Archeologico Etnografico Modena (inv. no. 1220) - Unpublished.
49. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 300.06 g. Dimensions: 25.2 cm x 6.04 cm x 7.04 cm - Museo Archeologico Etnografico Modena (inv. s.n. XVII) - Unpublished.
50. Oratino [site no. 22, settlement] (Campobasso, Molise, Italy). RO 06, C4 H, Phase III 3a. US 164 E. Phase 3 (RBA) - Complete. Stone (sandstone). Mass: 93.7 g. Dimensions: 6.9 cm x 6.3 cm x 1.1 cm - Unpublished.
51. Monte S. Antonio [site no. 16, nuragic sanctuary] (Siligo, Sassari, Sardegna, Italy). Monumental cluster, paved area, in front of the access to the nuraghe. Phase 4 (EIA) - Associations: bronze fragments, four crucibles - Fragmented. Stone. Mass: 107.6 g. Dimensions: 3.2 cm x 3.0 cm x 1.9 cm - IALONGO 2011, I, 113.
52. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 507, Trench 2, Z I/4, US 3282, fase 1.3. Metallurgical area with smelting pit. Phase 2 (MBA-RBA) - Part of a set of 2 weights (cat. no. 34, 52). Associations: 2-3 casting moulds, crucible, metal slags and fragments - Fragmented (reconstructed in 3D). Stone. Mass: 181.45 g (180.37 g). Dimensions: 5.7 cm x 5.3 cm x 3.2 cm - Museo Archeologico Etnografico Modena (inv. no. 3941) - Unpublished.
53. Sa Osa [site no. 9, settlement] (Cabras, Oristano, Sardegna, Italy). B56, 23-11. Undetermined chronology (Bronze Age) - Complete. Stone (basalt). Mass: 39.31 g. Dimensions: 3.1 cm x 3.2 cm x 3.1 cm - Museo delle Origini, Roma - Unpublished.
54. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld T, Fundkomplex 3655. Phase 4 (Ha A-B) - Complete. Stone. Mass: 19 g. Dimensions: 2.7 cm x 2.5 cm x 1.7 cm (inv. no. 1026) - EBERSCHWEILER *et al.* 2007, Taf. 108.1026.
55. Monte Prama [site no. 10, votive deposition in burial context] (Cabras, Oristano, Sardegna, Italy). US 034. Phase 4 (EIA) - Fragmented (reconstructed in 3D). Stone (schist). Mass: 82.34 g (77.95 g). Di-

- mensions: 5.3 cm x 1.2 cm x 0.8 cm - Museo Civico Giovanni Marongiu, Cabras - Unpublished.
56. Insel Werd [site no. 98, settlement] (Eschenz, Thurgau, Switzerland). Feld X. Phase 4 (Ha A-B) - Complete. Stone. Mass: 100 g. Dimensions: 9.6 cm x 3.0 cm x 2.2 cm (inv. no. 6139) - BREM *et al.* 1987, Abb. 30.S8.
57. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 77.6 g. Dimensions: 4.9 cm x 3.8 cm x 2.7 cm (inv. no. 2927) - LEUVREY 1999, pl. 71.5.
58. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 48.5 g. Dimensions: 5.8 cm x 3.0 cm x 1.4 cm (inv. no. 1090) - LEUVREY 1999, pl. 71.6.
- Bronze**
59. Passy-sur-Yonne, La Sablonnière [site no. 107, burial] (Yonne, Bourgogne-Franche-Comté, France). Richebourg, Enclosure 58, Inhumation grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 59, 61, 62, 63, 269). Associations: 3 bronze hinges (organic container), dagger, awl, razor, pin, stud - Complete. Copper/bronze. Mass: n/a. Dimensions: 0.6 cm x 0.4 cm x 0.3 cm - Musées de Sens - PARE 1999, fig. 28.C.4-5.
60. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 0.32 g. Dimensions: 0.6 cm x 0.3 cm x 0.2 cm - Musées de Sens - ROSCIO 2018, pl. 85.21.
61. Passy-sur-Yonne, La Sablonnière [site no. 107, burial] (Yonne, Bourgogne-Franche-Comté, France). Richebourg, Enclosure 58, Inhumation grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 59, 61, 62, 63, 269). Associations: 3 bronze hinges (organic container), dagger, awl, razor, pin, stud - Complete. Copper/bronze. Mass: n/a. Dimensions: 0.6 cm x 0.6 cm x 0.3 cm - Musées de Sens - PARE 1999, fig. 28.C.4-5.
62. Passy-sur-Yonne, La Sablonnière [site no. 107, burial] (Yonne, Bourgogne-Franche-Comté, France). Richebourg, Enclosure 58, Inhumation grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 59, 61, 62, 63, 269). Associations: 3 bronze hinges (organic container), dagger, awl, razor, pin, stud - Complete. Copper/bronze. Mass: 1.3 g. Dimensions: 0.7 cm x 0.6 cm x 0.5 cm - Musées de Sens - PARE 1999, fig. 28.C.4-5.
63. Passy-sur-Yonne, La Sablonnière [site no. 107, burial] (Yonne, Bourgogne-Franche-Comté, France). Richebourg, Enclosure 58, Inhumation grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 59, 61, 62, 63, 269). Associations: 3 bronze hinges (organic container), dagger, awl, razor, pin, stud - Complete. Copper/bronze. Mass: 1.73 g. Dimensions: 0.9 cm x 0.6 cm x 0.5 cm - Musées de Sens - PARE 1999, fig. 28.C.4-5.
64. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.2 cm x 0.5 cm x 0.25 cm - Historisches Museum der Pfalz, Speyer - PARE 1999, fig. 24.15.
65. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 1.18 g. Dimensions: 1.0 cm x 0.7 cm x 0.2 cm - Musées de Sens - ROSCIO 2018, pl. 85.4.
66. Barbuise-Courtavant, Les Grèves [site no. 118, burial] (Aube, Grand Est, France). Grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 66, 67, 70, 120, 272). Associations: bronze hinge (organic container?), 2 hooks, gold fragment - Complete. Copper/bronze. Mass: 2.91 g (2.42 g). Dimensions: 1.305 cm x 0.65 cm x 0.39 cm - PARE 1999, fig. 16.4; ROTTIER *et al.* (eds.) 2012, fig. 270.4.
67. Barbuise-Courtavant, Les Grèves [site no. 118, burial] (Aube, Grand Est, France). Grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 66, 67, 70, 120, 272). Associations: bronze hinge (organic container?), 2 hooks, gold fragment - Complete. Copper/bronze. Mass: 5.25 g (4.74 g). Dimensions: 1.49 cm x 0.82 cm x 0.49 cm - PARE 1999, fig. 16.2; ROTTIER *et al.* (eds.) 2012, fig. 270.6.
68. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 1.89 g. Dimensions: 1.34 cm x 0.52 cm x 0.41 cm - PARE 1999, fig. 14.9.
69. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 7.6 g. Dimensions: 1.7 cm x 0.75 cm x 0.8 cm - PARE 1999, fig. 14.7.
70. Barbuise-Courtavant, Les Grèves [site no. 118, burial] (Aube, Grand Est, France). Grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 66, 67, 70, 120, 272). Associations: bronze hinge (organic container?), 2 hooks, gold fragment - Complete. Copper/bronze. Mass: 3.74 g (3.51 g). Dimensions: 1.34 cm x 0.69 cm x 0.52 cm - PARE 1999, fig. 16.3; ROTTIER *et al.* (eds.) 2012, fig. 270.5.
71. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhu-

- mation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 1.06 g. Dimensions: 1.0 cm x 0.4 cm x 0.35 cm - ROSCIO *et al.* 2011, fig. 2.65.
72. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.39 g. Dimensions: 1.0 cm x 0.4 cm x 0.15 cm - ROSCIO *et al.* 2011, fig. 2.64.
73. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 1.63 g. Dimensions: 1.2 cm x 0.5 cm x 0.5 cm - ROSCIO *et al.* 2011, fig. 2.53.
74. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 3.16 g. Dimensions: 1.3 cm x 0.6 cm x 0.5 cm - ROSCIO *et al.* 2011, fig. 2.30.
75. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 4.32 g. Dimensions: 1.8 cm x 0.7 cm x 0.5 cm - ROSCIO *et al.* 2011, fig. 2.49.
76. Los Concejiles [site no. 196, settlement] (Lobón, Badajoz, Extremadura, Spain). Unprovenanced. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 6.37 g. Dimensions: 0.7 cm x 1.16 cm x 0.7 cm - VILAÇA *et al.* 2012, fig. 20.3.
77. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 14.55 g. Dimensions: 2.94 cm x 0.83 cm x 0.82 cm - PARE 1999, fig. 14.5.
78. Les Genettes, Larnaud [site no. 58, hoard] (Jura, Bourgogne-Franche-Comté, France). Phase 4 (Ha B1) - Associations: *c.* 1600 objects, dating between Br D and Ha B1, with one EBA pin - Complete. Copper/bronze. Mass: 9.58 g (9.15 g). Dimensions: 2.5 cm x 1.0 cm x 0.3 cm - PARE 1999, fig. 19.3.
79. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 19.89 g. Dimensions: 3.62 cm x 0.84 cm x 0.82 cm - PARE 1999, fig. 17.3.
80. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 6.47 g. Dimensions: 1.7 cm x 0.8 cm x 0.7 cm - Musées de Sens - ROSCIO 2018, pl. 85.8.
81. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 4.86 g. Dimensions: 1.83 cm x 0.9 cm x 0.45 cm - PARE 1999, fig. 14.8.
82. Milavče [site no. 130, burial] (Bohemia, Czech Republic). Tumulus C/1. Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 82, 302). Associations: bronze vase on wheels, 2 bronze cups, sword, razor, knife, 2 phalerae, 4 rings, 23 bronze sheet fragments, 4 pin fragments, rod fragment - Complete. Copper/bronze. Mass: 15.01 g. Dimensions: 3.1 cm x 1.2 cm x 0.65 cm - PARE 1999, fig. 5.11.
83. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 13.72 g. Dimensions: 4.23 cm x 1.13 cm x 0.41 cm - PARE 1999, fig. 14.2.
84. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 4.84 g. Dimensions: 2.32 cm x 0.77 cm x 0.42 cm - PARE 1999, fig. 14.6.
85. Poing [site no. 110, burial] (Ebersberg, Bayern, Germany). Grave 4. Phase 3 (Br D) - Associations: 2 bronze hinges (organic container?), pin, knife, pin-head, 2 rings - Complete. Copper/bronze. Mass: 6.5 g. Di-

- mensions: 2.1 cm x 0.7 cm x 0.55 cm - PARE 1999, fig. 19.2.
86. Hurlach [site no. 108, burial] (Landsberg a. Lech, Bayern, Germany). Phase 3 (Br C-D) - Part of a set of 3 balance weights (cat. no. 86, 100, 191). Associations: cremated remains belonging to 2 individuals, a male and a female, 3 knives, sword, belt hook, several bronze studs, bronze necklace with gold pendant and 3 amber beads, 5 pins, 7 pin heads, gold fragment, pottery - Complete. Copper/bronze. Mass: 8.8 g. Dimensions: 3.3 cm x 1.1 cm x 0.7 cm - PARE 1999, fig. 12.2.
87. Milavče [site no. 130, burial] (Bohemia, Czech Republic). Tumulus C/4. Phase 3 (Br D) - Part of a set of 3 balance weights (cat. no. 87, 312, 313). Associations: sword, spearhead, knife, pin fragment, 3 bronze sheet fragments, bronze fragment - Complete. Copper/bronze. Mass: 8.56 g. Dimensions: 2.85 cm x 0.85 cm x 0.5 cm - PARE 1999, fig. 9.11.
88. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 8.62 g. Dimensions: 2.6 cm x 1.1 cm x 0.6 cm - Musées de Sens - ROSCIO 2018, pl. 85.13.
89. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 7.86 g. Dimensions: 3.37 cm x 0.64 cm x 0.5 cm - PARE 1999, fig. 17.4.
90. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 18.13 g. Dimensions: 2.8 cm x 1.28 cm x 0.67 cm - PARE 1999, fig. 14.4.
91. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 8.2 g. Dimensions: 3.78 cm x 0.96 cm x 0.45 cm - PARE 1999, fig. 14.3.
92. Gondelsheim-Mordäcker [site no. 124, burial] (Karlsruhe, Baden-Württemberg, Germany). Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 92, 98). Associations: bronze hinge (organic container?), 2 pin fragments - Complete. Copper/bronze. Mass: 7.45 g. Dimensions: 1.87 cm x 0.86 cm x 0.65 cm - PARE 1999, fig. 11.2.
93. Singen, Mühlzelgle [site no. 101, settlement] (Konstanz, Baden-Württemberg, Germany). Fundstelle 5. Phase 3 (Br C-D) - Associations: metal working area inside settlement - Complete. Copper/bronze. Mass: 3.19 g. Dimensions: 1.6 cm x 0.7 cm x 0.4 cm - PARE 1999, fig. 19.10.
94. Horušany [site no. 132, burial] (Bohemia, Czech Republic). Tumulus A. Phase 3 (Br D) - Part of a set of 4 balance weights (cat. no. 94, 103, 243, 304). Associations: 3 bronze hinges (organic container?), awl, 3 phalerae, stud, bronze fragment, pottery - Complete. Copper/bronze. Mass: 6.7 g. Dimensions: 2.45 cm x 0.95 cm x 0.45 cm - PARE 1999, fig. 10.1.
95. Rachelburg [site no. 100, settlement] (Flintsbach, Rosenheim, Bayern, Germany). Phase 3 (Br D-Ha A - uncertain) - Complete. Copper/bronze. Mass: 10 g. Dimensions: 2.8 cm x 1.1 cm x 0.5 cm - PARE 1999, fig. 19.10.
96. ZAC du Sansonnet [site no. 125, settlement] (Metz, Moselle, Grand Est, France). Melting pit (surroundings). Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 96, 200). Associations: fire pits, crucibles, metal objects - Complete. Copper/bronze. Mass: 6.94 g. Dimensions: 2.75 cm x 0.91 cm x 0.4 cm - KLAG/WIETHOLD 2020, fig. 11.10.
97. Königsbronn [site no. 120, burial] (Heidenheim, Baden-Württemberg, Germany). Phase 3 (Br D) - Associations: 2 horse bits, 2 side-pieces, 5 rein-knobs, 4 decorative nails, 9 rivets, pin, 3 ornithomorphic ornaments, spearhead, ferrule, wagon-pole cap with ornithomorphic decoration, 2 arm spirals, 2 chisels, pottery - Complete. Copper/bronze. Mass: 43 g. Dimensions: 6.2 cm x 1.5 cm x 0.7 cm - PARE 1999, fig. 19.6.
98. Gondelsheim-Mordäcker [site no. 124, burial] (Karlsruhe, Baden-Württemberg, Germany). Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 92, 98). Associations: bronze hinge (organic container?), 2 pin fragments - Complete. Copper/bronze. Mass: 60.65 g. Dimensions: 5.47 cm x 1.97 cm x 0.87 cm - PARE 1999, fig. 11.1.
99. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 39.27 g. Dimensions: 7.17 cm x 1.44 cm x 0.53 cm - PARE 1999, fig. 17.5.
100. Hurlach [site no. 108, burial] (Landsberg a. Lech, Bayern, Germany). Phase 3 (Br C-D) - The object is fused together with a spherical object and a spiral by corrosion. Part of a set of 3 balance weights (cat. no. 86, 100, 191). Associations: cremated remains belonging to 2 individuals, a male and a female, 3 knives, sword, belt hook, several bronze studs, bronze necklace with gold pendant and 3 amber beads, 5 pins, 7 pin heads, gold fragment, pottery - Complete. Copper/bronze. Mass: n/a. Dimensions: 3.2 cm x 1.6 cm x 0.8 cm - Gäubodenmuseum Straubing - PARE 1999, fig. 12.3.
101. Bouça [site no. 207, hoard] (Meixedo, Viana do Castelo, Minho-Lima, Portugal). Phase 4 (Atlantic FBA III) - Associations: socketed axe and spearhead

- Complete. Copper/bronze. Mass: n/a. Dimensions: 3.2 cm x 3.4 cm x 2.2 cm - COFFYN 1985, pl. XXXVI.8.

102. Salcombe [site no. 135, votive deposition or shipwreck] (Devon, England). Phase 3 (Penard, Ewart Park) - Part of a set of 2 weights (cat. no. 102, 123). Complete. Copper/bronze. Mass: 44.7 g. Dimensions: 2.9 cm x 2.0 cm x 1.1 cm - NEEDHAM 2017, fig. 4.4, 1.

103. Horušany [site no. 132, burial] (Bohemia, Czech Republic). Tumulus A. Phase 3 (Br D) - Part of a set of 4 balance weights (cat. no. 94, 103, 243, 304). Associations: 3 bronze hinges (organic container?), awl, 3 phalerae, stud, bronze fragment, pottery - Complete. Copper/bronze. Mass: 21.4 g. Dimensions: 2.6 cm x 1.7 cm x 0.7 cm - PARE 1999, fig. 10.2.

104. Su Benticheddu [site no. 13, votive deposition] (Oliena, Nuoro, Sardegna, Italy). Phase 4 (EIA 1B) - Associations: 2 bronze vases, 2 daggers, 2 pins, iron rod - Complete. Copper/bronze. Mass: 20 g. Dimensions: 3.3 cm x 2.7 cm x 0.8 cm - LO SCHIAVO 1978, tav. 29.3.

105. Singen, Mühlenzelgle [site no. 101, settlement] (Konstanz, Baden-Württemberg, Germany). Fundstelle 5. Phase 3 (Br C-D) - Associations: many bronze scraps. A loop that might belong to a balance - Triangular cross-section. Complete. Copper/bronze. Mass: 3.66 g. Dimensions: 1.7 cm x 0.75 cm - HOPERT 1995, fig. 14.132.

Lead

106. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Lead. Mass: 0.3 g. Dimensions: 0.6 cm x 0.5 cm x 0.2 cm - ROSCIO *et al.* 2011, fig. 2.67.

107. Galgenrain [site no. 85, burial] (Wängen an der Aare, Bern, Switzerland). Mixed materials from several graves. Phase 3 (Br D) - Complete. Lead. Mass: 13.06 g. Dimensions: 3 cm x 1 cm x 1 cm - PARE 1999, fig. 19.13.

108. West Caister [site no. 162, hoard] (Norfolk, England). Phase 4 (Ewart Park) - Associations: axe, bead, brooch, ring - Complete. Lead. Mass: 158 g. Dimensions: 4.6 cm x 4.8 cm x 1.6 cm - LAWSON 1979, fig. 9.2.E.

109. Runnymede Bridge [site no. 141, settlement] (Berkshire, England). Phase 4 (Ewart Park) - Associations: settlement with evidence of metalworking - Complete. Lead. Mass: 112.3 g. Dimensions: 3.0 cm x 3.0 cm x 1.3 cm - NEEDHAM/HOOK 1988, fig. 2.1.

Variant 2: Small circular indentation on one extremity (cat. no. 110-115)

- *number of objects:* 6
- *objects with known mass (complete/reconstructed):* 4 (67 %)
- *chronological range:* Phase 1-4 (c. 2300-800 BCE)
- *material:* stone (5), copper/bronze (1)
- *6 sites:* site no. 3, 17, 21, 84, 106, 129
- *mass range (complete/reconstructed):* 21.0-469.4 g

Stone

110. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 51 g. Dimensions: 10.4 cm x 1.6 cm x 1.3 cm (inv. no. 2546) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2546.

111. Wäldspitz [site no. 129, burial] (Mannheim, Baden-Württemberg, Germany). Tumulus of 1934. Phase 3 (Br D) - Associations: 3 bronze hinges (organic container?), awl, stone chisel-shaped object, 3 pins, knife, ring, shark tooth, pottery - Complete. Stone. Mass: n/a. Dimensions: 6.7 cm x 2.0 cm x 1.4 cm - Reiss Museum, Mannheim - PARE 1999, fig. 25.13.

112. Nuraghe Palmavera [site no. 17, settlement] (Tula, Sassari, Sardegna, Italy). Hut 42, US 109. Phase 4 (EIA) - Fragmented (reconstructed in 3D). Stone (steatite). Mass: 41.13 g (36.98 g). Dimensions: 6.5 cm x 3.1 cm x 1.1 cm - University of Sassari, storerooms - Unpublished.

113. Coppa Nevigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 11, H3F, 1 Va. Phase 3 (RBA) - Associations: filling layer of a pit (residual) - Drop-shaped. Complete. Stone. Mass: 21 g. Dimensions: 6.6 cm x 2.5 cm x 0.8 cm - Unpublished.

114. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Trench AP, Stratum 3 (Capo Graziano). Phase 1 (EBA-MBA 1-2) - Fragmented (reconstructed in 3D). Stone. Mass: 469.41 g (456.34 g). Dimensions: 15.8 cm x 7.9 cm x 1.8 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no 2997) - Unpublished.

Bronze

115. Tiszabecs [site no. 106, hoard] (Szabolcs-Szatmár, Hungary). Phase 3 (Br D) - Fragmented. Copper/bronze. Mass: n/a (67.7 g). Dimensions: 4.9 cm x 2.3 cm x 0.7 cm - PARE 1999, fig. 19.8.

Variant 3: Wavy mouldings (cat. no. 116-127)

- *number of objects:* 12
- *complete/reconstructed:* 8 (67 %).
- *chronological range:* Phase 3 (c. 1350-1200 BCE)
- *material:* copper/bronze (12)
- *10 sites (4 sets):* site no. 99, (**109**), 111, (**118**), (**119**), (**127**), 133, 134, 135, 138
- *mass range (complete/reconstructed):* 3.86-41.0 g

116. Barbuise-Courtavant, Grèves de Frécul [site no. 119, burial] (Aube, Grand Est, France). Grave 1. Phase 3 (Br D) - Part of a set of 2 balance weights

- (cat. no. 33, 116). Associations: razor, pottery - Complete. Copper/bronze. Mass: 3.86 g (3.53 g). Dimensions: 1.55 cm x 0.845 cm x 0.448 cm - PARE 1999, fig. 15.1.
117. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 4.29 g. Dimensions: 1.5 cm x 0.9 cm x 0.6 cm - Musées de Sens - ROSCIO 2018, pl. 85.16.
118. Düne [site no. 134, burial] (Maintal-Wachenbuchen, Main-Kinzig-Kreis, Hessen, Germany). Grave 6. Phase 3 (Br C-D) - Associations: pottery - Complete. Copper/bronze. Mass: 5.83 g. Dimensions: 1.6 cm x 1.03 cm x 0.49 cm - PARE 1999, fig. 13.1.
119. Auf dem Weidich [site no. 133, unknown context] (Wallerstädten, Groß-Gerau, Hessen, Germany). Phase 3 (Br D) - Fragmented. Copper/bronze. Mass: 6.44 g (5.53 g). Dimensions: 1.6 cm x 1.0 cm x 0.7 cm - PARE 1999, fig. 19.4.
120. Barbuise-Courtavant, Les Grèves [site no. 118, burial] (Aube, Grand Est, France). Grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 66, 67, 70, 120, 272). Associations: bronze hinge (organic container?), 2 hooks, gold fragment - Complete. Copper/bronze. Mass: 13.42 g (13.31 g). Dimensions: 2.5 cm x 1.16 cm x 0.99 cm - PARE 1999, fig. 16.1.
121. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 41 g. Dimensions: 3.3 cm x 1.7 cm x 0.8 cm - PARE 1999, fig. 17.2.
122. Denton with Wootton [site no. 138, unknown context] (Kent, England). Phase 3 (Wilburton-Ewart Park) - Complete. Copper/bronze. Mass: 32.66 g. Dimensions: 2.7 cm x 1.8 cm x 0.9 cm - AHMET 2017.
123. Salcombe [site no. 135, votive deposition or shipwreck] (Devon, England). Phase 3 (Penard, Ewart Park) - Part of a set of 2 weights (cat. no. 102, 123). - Complete. Copper/bronze. Mass: 29.8 g. Dimensions: 2.4 cm x 0.9 cm - NEEDHAM *et al.* 2013, fig. 3.21-S27.
124. Sologne Region [n/a, unknown context] (Centre-Val de Loire, France). Phase 3 (Br D) - Fragmented. Copper/bronze. Mass: n/a (62.78 g). Dimensions: 5.8 cm x 2.0 cm x 0.8 cm - PARE 1999, fig. 19.5.
125. Noyers [site no. 99, burial] (Yonne, Bourgogne-Franche-Comté, France). Phase 3 (Br D) - Associations: bracelet, ribbed pin - Complete. Copper/bronze. Mass: n/a. Dimensions: 5.2 cm x 1.9 cm - CORDIER 1996, fig. 94.3.
126. Rosières-près-Troyes "Les Monts Hauts" [site no. 111, burial] (Aube, Grand Est, France). Phase 3 (Br D-Ha A) - Complete. Copper/bronze. Mass: n/a. Dimensions: 3.9 cm x 2.1 cm x 1.0 cm - ROSCIO *et al.* 2018, fig. 2.4.
127. Rosières-près-Troyes "Les Monts Hauts" [site no. 111, burial] (Aube, Grand Est, France). Phase 3 (Br D-Ha A) - Complete. Copper/bronze. Mass: n/a. Dimensions: 2.3 cm x 2.1 cm x 1.6 cm - ROSCIO *et al.* 2018, fig. 2.4.
- Variant 4: Perforated (cat. no. 128-148)**
- *number of objects*: 21
 - *objects with known mass (complete/reconstructed)*: 12 (80 %)
 - *chronological range*: Phase 1-4 (c. 2300-800 BCE)
 - *material*: stone
 - *15 sites: site no.* 3, 5, 11, 14, 15, 17, 19, 20, 21, 23, 28, 32, 33, 37, 84
 - *mass range (complete/reconstructed)*: 9.8-334.0 g
128. Coppa Nevigata [site no. 21, settlement] (Mantredonia, Puglia, Italy). CN 06, G2G, 1b. Phase 3 (RBA) - Associations: filling layer of the access ramp to the the main gate (residual) - Complete. Stone. Mass: 9.8 g. Dimensions: 5.3 cm x 1.9 cm x 0.7 cm - Unpublished.
129. Serra Orrios [site no. 14, settlement] (Dorgali, Nuoro, Sardegna, Italy). Phase 4 (LBA) - Complete. Stone (schist). Mass: 36.86 g. Dimensions: 7.0 cm x 2.3 cm x 1.3 cm - Museo Archeologico di Dorgali (inv. no. 94656) - Unpublished.
130. Monte Barello [site no. 33, settlement] (Castelvetro, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone. Mass: 59.32 g (58.35 g). Dimensions: 7.1 cm x 2.0 cm x 2.2 cm - Museo Archeologico Etnografico Modena (inv. no. 1909) - Unpublished.
131. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: n/a (32.86 g). Dimensions: 7.4 cm x 1.6 cm x 1.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7817) - Unpublished.
132. Nuraghe Santu Antine [site no. 15, settlement] (Torralba, Sassari, Sardegna, Italy). Undetermined chronology (LBA) - Fragmented (reconstructed in 3D). Stone (steatite). Mass: 17.77 g (17.44 g). Dimensions: 8.6 cm x 2.2 cm x 0.6 cm - Museo Nazionale G.A. Sanna, Sassari (inv. no. 11521) - Unpublished.
133. Sa Mandra Manna [site no. 19, settlement] (Tula, Sassari, Sardegna, Italy). Surface. Undetermined chronology (Bronze Age) - Complete. Stone (steatite). Mass: 50.73 g. Dimensions: 7.7 cm x 3.1 cm x 1.1 cm - University of Sassari, storerooms - Unpublished.
134. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete.

- Stone. Mass: 117.93 g. Dimensions: 6.1 cm x 4.5 cm x 1.9 cm - Museo Archeologico Etnografico Modena (inv. no. 7818) - Unpublished.
135. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (slate). Mass: 25.1 g. Dimensions: 9.9 cm x 1.4 cm x 1.0 cm (inv. no. 2542) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2542.
136. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House alpha II, Wall, base layer. Phase 4 (FBA) - Part of a set of 2 weights (cat. no. 136, 143). Associations: nuragic pottery, 4 loom weights, high number of spindle whorls, bronze chisel, scalpel, bronze fragments, mould, metal hoard (*c.* 75 kg) - Fragmented (reconstructed in 3D). Stone (limestone?). Mass: 216.67 g (216.05 g). Dimensions: 15.2 cm x 2.8 cm x 2.4 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5277) - Unpublished.
137. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone (sandstone). Mass: n/a (52.7 g). Dimensions: 6.8 cm x 2.1 cm x 1.6 cm (inv. no. 2548) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2548.
138. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone (sandstone). Mass: n/a (52.6 g). Dimensions: 9.1 cm x 2.2 cm x 2.0 cm (inv. no. 2547) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2547.
139. Numana [site no. 28, burial] (Arcevia, Ancona, Marche, Italy). Grave 52 (area Quagliotti). Phase 4 (EIA 1) - Associations: awl, knife, razor, pin - Horizontal incision across the perforation. Complete. Stone. Mass: 334 g - Museo Archeologico Nazionale delle Marche, Ancona - LOLLINI 1976, fig. 1.
140. Nuraghe Talei [site no. 11, settlement] (Sorgono, Nuoro, Sardegna, Italy). Trench C. Stratum VII. Undetermined chronology (Bronze Age) - Drop-shaped. Complete. Stone. Mass: 77.33 g. Dimensions: 11.0 cm x 3.8 cm x 1.3 cm - Unpublished.
141. Bismantova, Campo Pianelli [site no. 32, burial] (Reggio Emilia, Emilia-Romagna, Italy). Grave 43. Phase 4 (FBA) - Associations: razor, pin, tweezers, ornaments - Upper hook separated by incised decoration. Complete. Stone (steatite). Mass: 12.88 g. Dimensions: 5.9 cm x 2.0 cm - CATARSI/DALL'AGLIO 1978, tav. 25.8.
142. Sa Tanca 'e sa Idda [site no. 20, settlement] (Martis, Sassari, Sardegna, Italy). N 2000, Nz 167, Sag 2-1, 2-110 120. Undetermined chronology (Bronze Age) - Upper hook separated by incised decoration. Fragmented (reconstructed in 3D). Stone (granite). Mass: 50.59 g (48.66 g) - Museo Archeologico e Paleobotanico di Perfugas (inv. ND) - Unpublished.
143. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House alpha II, Wall, base layer. Phase 4 (FBA) - Part of a set of 2 weights (cat. no. 136, 143). Associations: nuragic pottery, 4 loom weights, high number of spindle whorls, bronze chisel, scalpel, bronze fragments, mould, metal hoard (*c.* 75 kg) - Fragmented. Stone (schist). Mass: n/a (52.72 g). Dimensions: 8.4 cm x 3.7 cm x 1.0 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 4636) - Unpublished.
144. Nuraghe Santu Antine [site no. 15, settlement] (Torralba, Sassari, Sardegna, Italy). Undetermined chronology (LBA) - Fragmented. Stone (steatite). Mass: n/a (15 g). Dimensions: 5.5 cm x 2.8 cm x 0.6 cm - Museo Nazionale G.A. Sanna, Sassari (inv. no. 11581) - Unpublished.
145. Nuraghe Palmavera [site no. 17, settlement] (Alghero, Sassari, Sardegna, Italy). House 8. Phase 4 (EIA) - Fragmented. Stone (limestone). Mass: n/a (53.47 g). Dimensions: 3.0 cm x 2.0 cm x 0.7 cm - University of Sassari, storerooms (inv. no. 67) - Unpublished.
146. Nuraghe Santu Antine [site no. 15, settlement] (Torralba, Sassari, Sardegna, Italy). Undetermined chronology (LBA) - Fragmented. Stone (steatite). Mass: n/a (18.82 g). Dimensions: 5.0 cm x 2.5 cm x 1.0 cm - Museo Nazionale G.A. Sanna, Sassari (inv. no. 11582) - Unpublished.
147. Filicudi, Montagnola di Capo Graziano [site no. 5, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Capo Graziano layers. Phase 1 (EBA-MBA 1-2) - Fragmented. Stone. Mass: n/a (10.81 g). Dimensions: 3.0 cm x 2.4 cm x 1.2 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. SN) - Unpublished.
148. Grotta Manaccora [site no. 23, cave] (Peschici, Puglia, Italy). Big cave, GM 33, A III (66). Undetermined chronology (Bronze Age) - Fragmented. Stone (limestone). Mass: n/a (211.8 g). Dimensions: 8.2 cm x 6.2 cm x 2.3 cm - Museo delle Origini, Roma (inv. no. 4652 bis) - Unpublished.

Undetermined variant: Fragmented
(cat. no. 149-159)

- *number of objects*: 11
- *chronological range*: Phase 1-3 (*c.* 2300-1200 BCE)
- *material*: stone (7), copper/bronze (4)
- *9 sites (1 set)*: site no. 3, 5, 21, 23, 40, 82, (105), 106, 136

Stone

149. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House delta XIV, Area BH (phase Capo Graziano). Phase 1 (EBA-MBA 1-2) - Associations: 2 bone spatulae - Fragmented. Stone (schist). Mass: n/a (9.53 g). Dimensions: 3.0 cm x 2.3 cm x 0.7 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 7706) - Unpublished.
150. Filicudi, Montagnola di Capo Graziano [site no. 5, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House XXIV, Capo Graziano layers. Phase 1 (EBA-MBA 1-2) - Fragmented. Stone. Mass: n/a (25.65 g). Dimensions: 5.3 cm x 2.3 cm x 1.3 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 15981) - Unpublished.
151. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 507, Trench

- 4, UA 4, US 13101, fase 1.2.B, T. 507. Dwelling area. Phase 2 (MBA-RBA) - Fragmented. Stone. Mass: n/a (79.33 g). Dimensions: 5.2 cm x 2.8 cm x 2.3 cm - Museo Archeologico Etnografico Modena (inv. no. 4879) - Unpublished.
152. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 2 weights and 1 balance beam (cat. no. 1, 152, 309). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Fragmented. Stone. Mass: n/a (29.5 g). Dimensions: 1.9 cm x 1.6 cm x 0.6 cm - ROSCIO *et al.* 2011, fig. 5.8; RAHMSTORF 2014, fig. 3.8.
153. Grotta Manaccora [site no. 23, cave] (Peschici, Puglia, Italy). Big cave, GM 33, TG III. Undetermined chronology (Bronze Age) - Fragmented. Stone (limestone). Mass: n/a (78.6 g). Dimensions: 7.0 cm x 3.7 cm x 2.1 cm - Museo delle Origini, Roma (inv. no. 6179) - Unpublished.
154. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 05, E3H, 2Ia (44). Open area. Phase 2-3 (MBA 3) - Associations: domestic structure with cooking facilities - Fragmented. Stone (sandstone). Mass: n/a (41.1 g) - Unpublished.
155. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 11, G2 P, 12. Open area, close to the main gate. Phase 3 (RBA) - Associations: found on a pebble-floor, in an open area close to the main gate. Possibly part of a set of 3 weights (cat. no. 155, 281, 657) - Fragmented. Stone. Mass: n/a (136.5 g). Dimensions: 8.6 cm x 4.6 cm x 2.3 cm - Unpublished.
- Bronze**
156. Wartau-Herrenfeld [site no. 82, settlement] (St. Gallen, Switzerland). Undetermined chronology (Bronze Age) - Fragmented. Copper/bronze. Mass: n/a (19.2 g). Dimensions: 2.8 cm x 1.5 cm x 0.7 cm - PARE 1999, fig. 19.7.
157. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 14, H3 N, 2a I (4). Phase 3 (RBA) - Fragmented. Copper/bronze. Mass: n/a (15.77 g). Dimensions: 2.4 cm x 2.7 cm x 1.1 cm - Unpublished.
158. Tiszabecs [site no. 106, hoard] (Szabolcs-Szatmár, Hungary). Phase 3 (Br D) - Fragmented. Copper/bronze. Mass: n/a (29.7 g). Dimensions: 2.1 cm x 2.0 cm x 1.1 cm - PARE 1999, fig. 19.9.
159. Kobern [site no. 136, burial] (Kobern-Gondorf, Mayen-Koblenz, Rheinland-Pfalz, Germany). Phase 3 (Br D-Ha A1) - Associations: tweezers, 2 studs, pottery - Fragmented. Copper/bronze. Mass: n/a. Dimensions: 4.0 cm x 1.4 cm x 0.2 cm - Rheinisches Landesmuseum, Bonn - PARE 1999, fig. 18.5.
- Undetermined variant:** Mentioned in literature, without image (cat. no. 160-163)
- *number of objects:* 4
 - *chronological range:* Phase 1-3 (c. 2300-1200 BCE)
 - *material:* stone
 - *I site:* site no. 3
160. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Insula IV, Stray find, Planum 3-4 (phase Capo Graziano). Phase 3 (RBA) - Integrity cannot be determined. Stone (schist). Mass: n/a - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 6068) - Unpublished.
161. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Between huts alpha IV and alpha IX, Area C1, Planum 1, fire layers, Ausonio II. Taglio 1, strati incendio Ausonio II (Ausonio II). Phase 4 (FBA) - Integrity cannot be determined. Stone. Mass: n/a - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5629a) - Unpublished.
162. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Trench I, Insula IV, Planum 6, destruction, destruction layer and immediately underneath (phase Ausonio II). Phase 4 (FBA) - Integrity cannot be determined. Stone (schist). Mass: n/a - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5629b) - Unpublished.
163. Lipari, outside the acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Trench AH'. Phase 4 (FBA) - Integrity cannot be determined. Stone. Mass: n/a - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 4798) - Unpublished.

5.3. CUBE

- *number of objects*: 8
- *objects with known mass (complete/reconstructed)*: 8 (100 %).
- *chronological range*: Phase 4-5 (c. 900-675 BCE)
- *material*: stone (2), lead (6)
- *5 sites*: site no. 7, 8, 18, 189, 194
- *1 set*: site no. 7
- *mass range (complete/reconstructed)*: 2.63-63.7 g

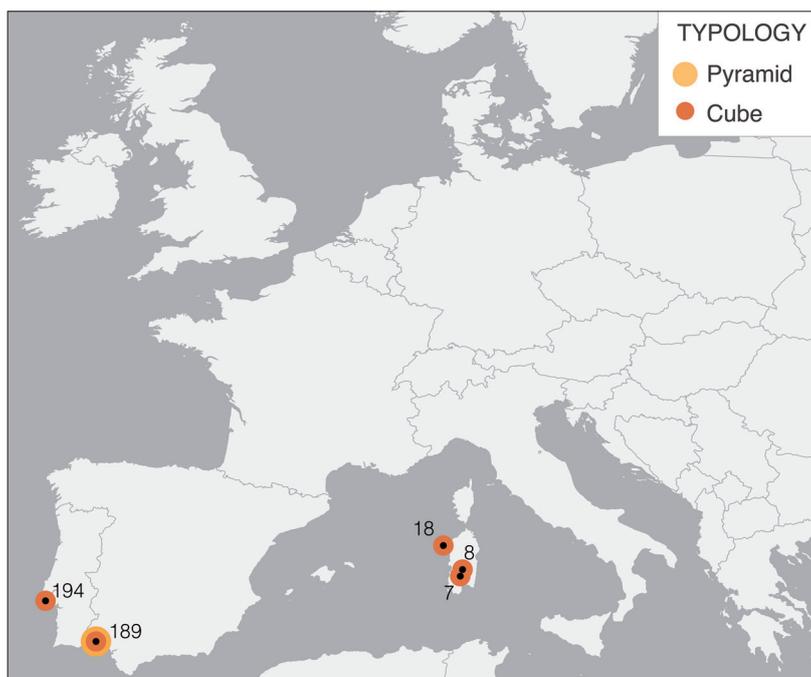
Distribution map: fig. 5.16.

Typology, materials, comparisons, and function

Cubic weights seem to appear very late in the European record, no earlier than c. 850 BCE (Fig. 5.16.), with two objects made of stone and six made of lead. All cubic weights in this catalogue come from sites and regions with frequent relationships with western Phoenicians, namely Sardinia and south-western Iberia. The chronology of all the finds is compatible with the early horizon of Phoenician settlements in the western Mediterranean and the Atlantic coast (GONZÁLEZ DE CANALES CERISOLA *et al.* 2004; TORRES ORTIZ 2008; IALONGO 2017).

The earliest lead cube weight is attested at the site of Nuraghe Sant’Imbenia in Sardinia (cat. no. 168, site no. 18), in a layer dated to the Italian Early Iron Age 2 (c. 850-725 BCE). At Santu Brai (site no. 7) – a small settlement in Sardinia, dated to the Early Orientalizing period (c. 725-675 BCE) – a stone cube weight (cat. no. 164) is part of a weighing set together with two troncoconical weights (cat. no. 307, 308); all weights included in the set bear incised quantity marks. The lead cube weights from the hoard of Forraxi Nioi (Sardinia, Italy; cat. no. 165, site no. 8), the settlement of Quinta do Almaraz (Portugal; cat. no. 166-167, site no. 194), and the site of Huelva – Plaza de las Monjas (Spain; cat. no. 169-171, site no. 189) belong to mixed deposits datable between the 10th and early 7th centuries BCE.

Three cubic weights bear signs that might be interpreted as quantity marks. The stone weight from Forraxi Nioi (cat. no. 165) has a mass of 23.87 g, and has five horizontal incised lines on one face. If one assumes that these lines indicate a denominator, the resulting unit would be 4.8 g. The lead weight from Nuraghe Sant’Imbenia (cat. no. 168) has a mass of 45.52 g, and a single circular indentation on one of its faces. Finally, the stone weight from Santu Brai has an “X” sign across two faces, and a single straight line on another face. The weight has a mass of 63.7 g, but the sign cannot be easily reconnected to any number. Based on the scarce available evidence, the identification of these signs with quantity marks cannot be ascertained.



▲ Fig. 5.16. Pyramid and cubic weights. Geographical distribution: typology and site ID.

164. Santu Brai [site no. 7, settlement] (Sud Sardegna, Sardegna, Italy). Rectangular house. Phase 5 (EIA 2B-EO) - One incised line on one face; two crossed lines across two faces. Part of a set of 4 balance weights (cat. no. 164, 307, 308, 316). Associations: small ceramic jug containing an awl, a small saw, a dagger, and a bronze fragment; Etruscan bucchero - Complete. Stone. Mass: 63.7 g. Dimensions: 3 cm x 3 cm x 3 cm - UGAS 1986, tav. XVI.5.
165. Forraxi Nioi [site no. 8, hoard] (Nuragus, Sud Sardegna, Sardegna, Italy). Phase 5 (EIA 2B-EO) - Five incised lines on one face. Complete. Stone. Mass: 23.87 g. Dimensions: 5.5 cm x 4.8 cm - UGAS 1986, tav. XVII.5.
166. Quinta do Almaraz [site no. 194, settlement] (Cacilhas, Almada, Oeste, Portugal). Phase 4-5 (Atlantic FBA III-Orientalizing) - Complete. Lead. Mass: 6.38 g. Dimensions: 1.7 cm x 1.5 cm x 1.8 cm - VILAÇA 2011, fig. 6.2.
167. Quinta do Almaraz [site no. 194, settlement] (Cacilhas, Almada, Oeste, Portugal). Phase 4-5 (Atlantic FBA III-Orientalizing) - Complete. Lead. Mass: 2.63 g. Dimensions: 1.4 cm x 1.6 cm x 1.5 cm - VILAÇA 2011, fig. 6.1.
168. Nuraghe Sant’Imbenia [site no. 18, settlement] (Alghero, Sassari, Sardegna, Italy). House 48, 19-07-2012, US 396. Phase 4 (EIA) - Circular indentation on one face. - Complete. Lead. Mass: 45.52 g. Dimensions: 1.9 cm x 1.8 cm x 1.7 cm - Storerooms of the archaeological excavations at Sant’Imbenia, Alghero (inv. ND) - Unpublished.
169. Huelva - Plaza de las Monjas [site no. 189, settlement] (Andalucía, Spain). Phase 4-5 (Atlantic FBA III) - Complete. Lead. Mass: 26.62 g. Dimensions: 2.5 cm x 2.6 cm x 2.0 cm - GONZÁLEZ DE CANALES CERISOLA *et al.* 2004, 154-155, fig. 38.13.

5.4. TRUNCATED PYRAMID

- *number of objects*: 2
- *objects with known mass (complete/reconstructed)*: 2 (100 %).
- *chronological range*: Phase 5 (c. 900-675 BCE)
- *material*: lead
- *1 site*: site no. 189
- *mass range (complete/reconstructed)*: 4.45-9.54 g

Distribution map: fig. 5.16.

Two pyramid-shaped made of lead are attested among the mixed materials of the site of Huelva - Plaza de las Monjas (Spain; site no. 189), which include Greek and Phoenician imports. Object cat. no. 171 has a small circular indentation on the

base, probably a quantity mark indicating the unit value; the weight's mass is 9.54 g.

170. Huelva - Plaza de las Monjas [site no. 189, settlement] (Andalucía, Spain). Undetermined chronology (Atlantic FBA III) - Complete. Lead. Mass: 4.45 g. Dimensions: 1.2 cm x 2.2 cm x 1.5 cm - GONZÁLEZ DE CANALES CERISOLA *et al.* 2004, 154-155, fig. 38.10.

171. Huelva - Plaza de las Monjas [site no. 189, settlement] (Andalucía, Spain). Undetermined chronology (Atlantic FBA III) - Circular indentation on the base. Complete. Lead. Mass: 9.54 g. Dimensions: 1.7 cm x 2 cm x 1.8 cm - GONZÁLEZ DE CANALES CERISOLA *et al.* 2004, 154-155, fig. 38.11.

5.5. DISC

- *number of objects*: 91
- *objects with known mass (complete/reconstructed)*: 78 (86 %)
- *chronological range*: Phase 2-4 (c. 1600-800 BCE)
- *material*: stone (9), copper/bronze (73), lead (3)
- *33 sites*: site no. 1, 2, 18, 21, 34, 35, 37, 84, 105, 108, 109, 123, 125, 128, 132, 137, 141, 158, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 206
- *9 sets*: site no. 2, 105, 108, 109, 123, 132, 137, 192, 195
- *mass range (complete/reconstructed)*: 0.36-164.7 g

Distribution maps: fig. 5.17.-21.

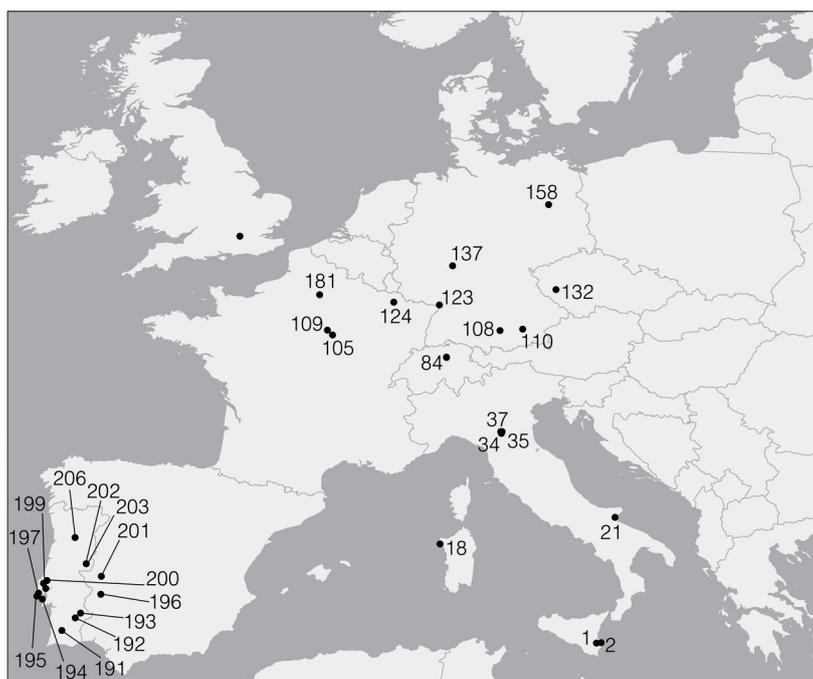
Composition of the sample: fig. 5.22.-24.

Typology, materials, comparisons, and function

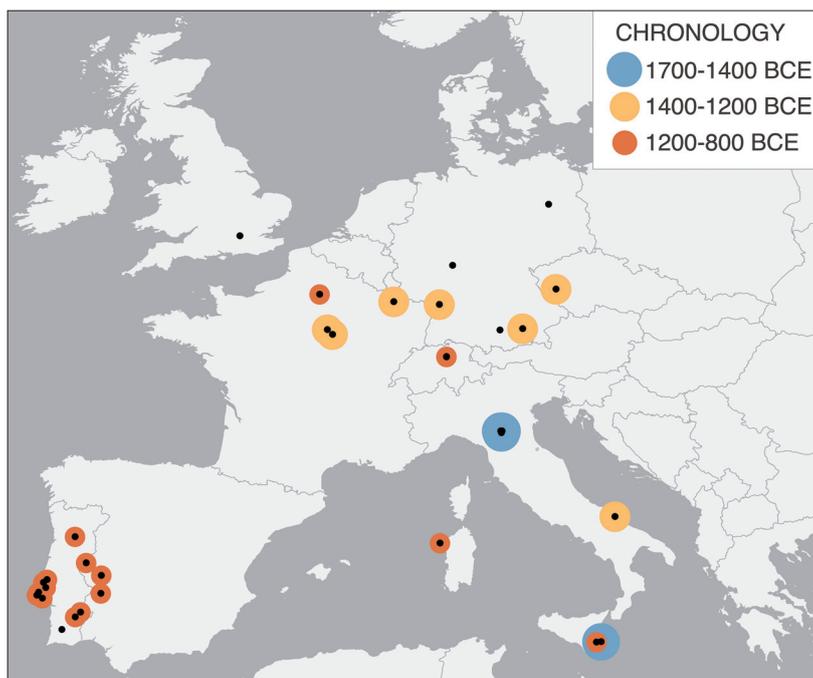
Disc weights are a formally heterogeneous type, grouping small objects with a round upper profile, and most of them have at least one flat base. All objects included in this type could be easily placed on a balance pan; only the weights classified in V3.C and V5 present a perforation (cat. no. 238-243), which suggests that they could also be hanged directly on one of the extremities of a balance scale. This type includes five variants. Objects belonging to Variant 1 are plain discs with two flat bases, most of which (16 objects) are made of bronze, one of lead and five of stone. Five objects with unique characteristics are also included in V1 (cat. no. 194-198): a stone disc with an annular incision (cat. no. 194), a stone disc with a small circular indentation (cat. no. 195), a discoid object made of bronze with slightly irregular shape (cat. no. 196), a fragmentary bronze disc with a relief decoration consisting of two small circular bumps separated by a straight line (cat. no. 197), and a pin-head whose shaft was intentionally removed and any residue grinded away (cat. no. 198). There is no evidence that the decoration of cat. no. 197 (which unfortunately could not be reconstructed) represents a quantity mark. However, one can note that the preserved part of the weight is c. ½, and the current mass is 2.38 g, which would correspond to c. ½ of the theoretical Pan-European unit of c. 9.8 g.

Variant 2 groups nine objects with plano-convex shape, all of which are made of bronze. Two further stone objects with unique features are also included in V2: one with crossing incisions on the upper face (cat. no. 208), and one with hollow base (cat. no. 209).

Variant 3 is the most typologically homogeneous. It includes 35 objects with bi-tronco-conical profile, all made of metal (34 bronze, 1 lead), and is articulated into two sub-variants. Objects classified in V3.A have a plain biconical profile. Object cat. no. 228 from Monte do Trigo (site no. 202), a LBA settlement in Portugal, is fused together to a much smaller weight by corrosion. Object cat. no. 227 comes from the same site, but no indication about the context is unfortunately available (VILAÇA



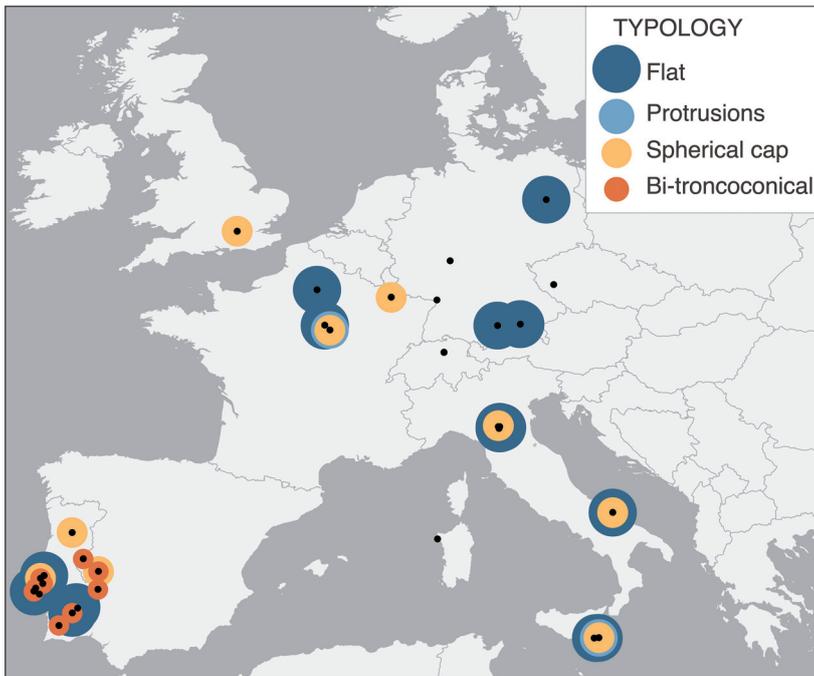
▲ Fig. 5.17. Disc weights. Geographical distribution: site ID.



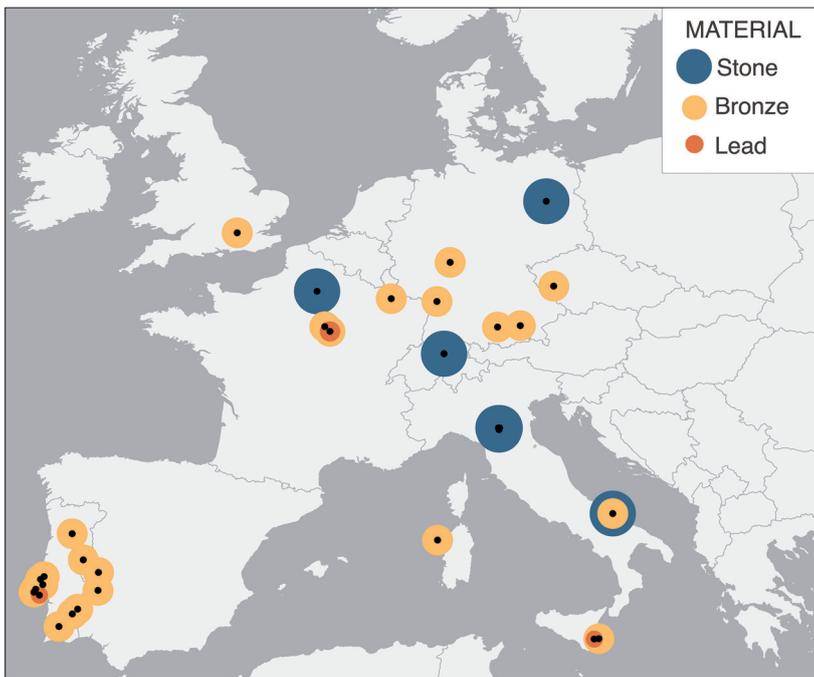
▲ Fig. 5.18. Disc weights. Geographical distribution: chronology.

2003). Four objects included in V3.A are pin-heads, whose shaft was intentionally removed and any residue grinded away. Objects cat. no. 234-235 belong to a common type widespread in Central Europe in the Bronze D phase (c. 1350-1200 BCE), and their shape is undistinguishable from the weights classified in V3.A (PARE 1999). Objects cat. no. 236 and 237 have decorations. V3.B groups six objects with biconical profile and a longitudinal perforation. Object cat. no. 243 is decorated with small grooves.

Objects classified in Variant 4 are all very small, ranging between 0.8-7.66 g. V4 has a characteristic 'spinning-top shape', with one or two tubular



▲ Fig. 5.19. Disc weights. Geographical distribution: typology.



▲ Fig. 5.20. Disc weights. Geographical distribution: materials.

protrusions. Fourteen of 15 objects are made of bronze, all coming from the MBA/RBA necropolis of Thapsos in Sicily (site no. 2, c. 1500-1200 BCE). Object cat. no. 251, made of lead, is part of the weighing set of grave 298 in Migennes - Le Petit Moulin, France (site no. 105, c. 1350-1200 BCE). Objects cat. no. 252-259 all come from the same chamber tomb as cat. no. 245, 247-250. They are heavily corroded, and the drawing could not render their details. However, direct observation suggests that these objects are analogous to those coming from the same tomb.

Finally, Variant 5 includes three discoid elements with longitudinal perforation belonging to the

shaft decoration of a well-known type of pin ('jagged pin') widespread in Central Europe in the Bronze D phase (c. 1350-1200 BCE). They all come from accurately-excavated graves in France, and the absence of the shaft is likely intentional (e.g., ROSCIO *et al.* 2011).

Plain disc weights similar to V1 are rather common in Mediterranean Bronze Age contexts, especially in the Aegean. Several disc weights of the plain variant come, for example, from the Late Minoan/Helladic I-II settlement of Aya Irini on the island of Keos, in Greece (PETRUSO 1992). In the Aegean, however, the vast majority of disc weights is made of lead, and only a small minority is made of stone or bronze. Several of the Aya Irini weights closely resemble the lead weight cat. no. 193, from the necropolis of Pantalica (Sicily, Italy). This weight, however, dates to the Italian Early Iron Age (c. 950-800 BCE), and is much later than the weights from Keos. Disc weights – albeit only a few – are also documented in the Uluburun shipwreck, off the southern coast of Turkey (c. 1350-1300 BCE) (PULAK 1997, 361, 395, 432-434, 437, 463). Plano-convex weights analogous to V2 are well-attested at Uluburun, and are contemporary to weights with the same shape coming from Phase 3 contexts in Italy and France (cat. no. 199-202, 207). Two lead disc weights from Uluburun have a longitudinal perforation (PULAK 1997, no. 108-109), similarly to V3.B from the Iberian Peninsula. It must be considered, however, that the Mediterranean parallels are much earlier than the Iberian objects, which all date to the Bronze Final III (c. 1200-800 BCE, Phase 4).

Chronology and geographical distribution

Disc weights are first attested in southern Italy in Phase 2 (c. 1600-1350 BCE) (Fig. 5.18.). In the chamber tomb 6 of the necropolis of Thapsos (Sicily, site no. 2), 18 disc-weights (all made of bronze) are part of a set, including objects pertaining to Variants 1, 2 and 4. Stone disc weights are also attested in northern Italy, from *Terramare* settlements dating between c. 1600-1200 BCE (Phase 2-3). Disc weights are present in several graves in Central Europe dating to Bronze D, corresponding to Phase 3 (c. 1350-1200 BCE). All of them are made of bronze except cat. no. 251, which is made of lead, and cover the whole typological variability, including at least one object from each variant. A small plano-convex weight made of bronze (cat. no. 200) is attested in the site of ZAC du Sansonnet near Metz (France), interpreted as an open-air metallurgical area (site no. 125). A 14C sample associated with the context provides a 1σ date of 1268-1147 BCE (Poz-72783: 2985 ± 35 BP (KLAG/WIETHOLD 2020), which would be compatible with a late Br D or an early Ha A. A bronze parallelepiped weight comes from the same site (cat. no. 96). Object cat. no. 207 (bronze) from Coppa Nevigata (Italy, site no. 21) comes from a layer dated the RBA, contemporary to Br D.

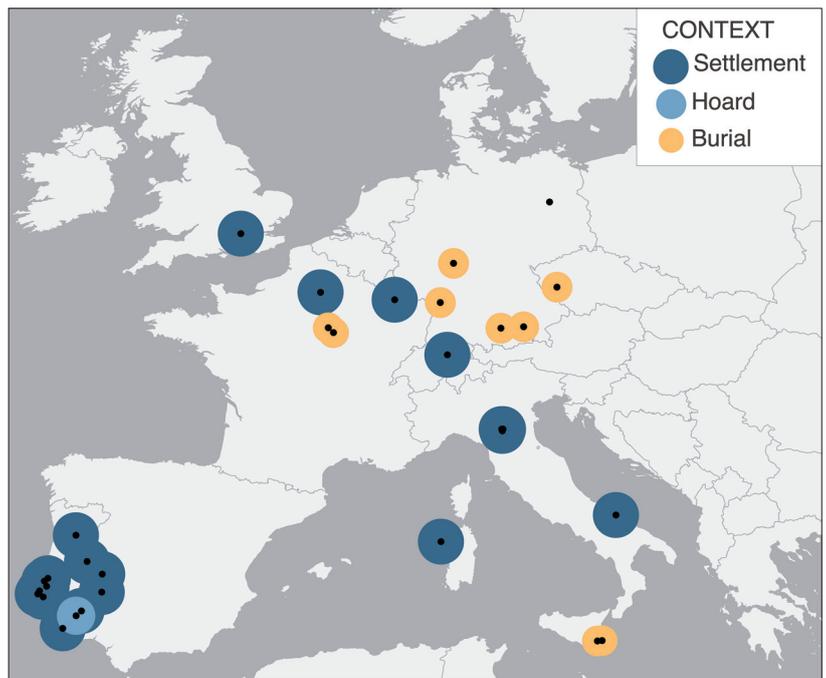
The first attestation of disc weights in the Iberian Peninsula dates to the Atlantic Final Bronze Age III, a rather wide chronological phase spanning *c.* 1200-800 BCE, corresponding to Phase 4 (Fig. 5.18.). Disc weights from the Iberian Peninsula belong to Variants 1, 2 and 3, and come from contexts that cannot be precisely assigned to a specific moment within this time span.

Contexts

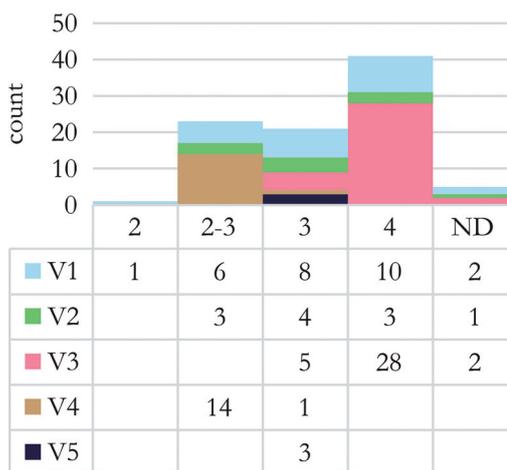
Disc weights are distributed almost equally between settlements (44 objects) and burials (39), with only six objects coming from hoards (Fig. 5.21.; 5.23.). Objects cat. no. 200 and 206 – respectively from the settlements of ZAC du Sansonnet (France, site no. 125) and Runnymede Bridge (England, site no. 141) – are associated with metallurgical facilities. Four disc weights from the LBA settlement of Penha Verde (Portugal, site no. 195, objects cat. no. 185, 187, 212, 219) were found together in the same house, and constitute one of the rare weighing sets attested in dwelling areas. Almost all disc weights from burials (37 objects) belong to weighing sets, twelve of which are associated with a balance beam. The five disc-weights from the hoard of Baleizão (Portugal, site no. 192, objects cat. no. 184, 229, 232, 238, 239, 241) are part of a set of seven balance weights, including an octahedral one (cat. no. 266). Other than the weights, the hoard contained bronze axes, gold torques and several bronze scraps.

Variant 1: Plain disc (cat. no. 172-198).

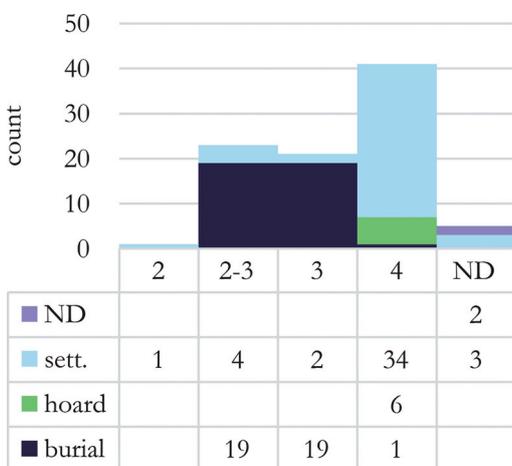
- *number of objects:* 27
- *objects with known mass (complete/reconstructed):* 9 (82 %)
- *chronological range:* Phase 2-4 (*c.* 1600-800 BCE)
- *material:* stone (7), copper/bronze (19), lead (1)
- *17 sites:* site no. 1, 2, 18, 21, 34, 37, 84, 108, 109, 123, 128, 158, 192, 193, 195, 197, 200
- *6 sets:* site no. 2, 108, 109, 123, 192, 195
- *mass range (complete/reconstructed):* 0.36-164.7 g



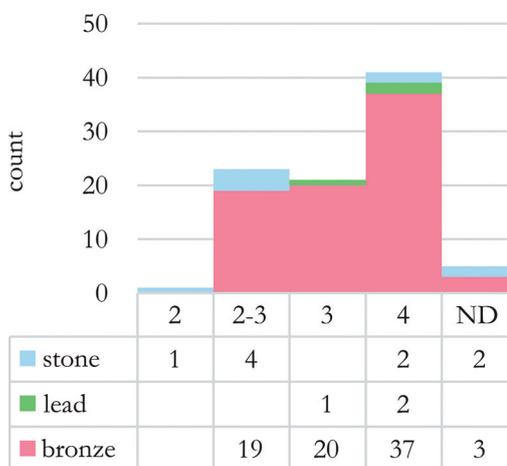
▲ Fig. 5.21. Disc weights. Geographical distribution: site type.



▲ Fig. 5.22. Disc weights. Quantification: typology vs chronology.



▲ Fig. 5.23. Disc weights. Quantification: site type vs chronology.



▲ Fig. 5.24. Disc weights. Quantification: materials vs chronology.

172. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 7.86 g (7.68 g). Dimensions: 3.01 cm x 3.08 cm x 0.86 cm - Museo Archeologico Etnografico Modena (inv. s.n. 99) - Unpublished.
173. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 97, D4L, A-L, S III. Close to the internal side of the fortification wall. Phase 2 (MBA 2) - Associations: disturbed layer - Slightly chipped. Stone (quartzite). Mass: 21.7 g. Dimensions: 3.5 cm x 3.7 cm x 0.9 cm - Unpublished.
174. Saint-Pierre-en-Chastre, Vieux-Moulin [site no. 128, settlement] (Oise, Hauts-de-France, France). Phase 4 (Atlantic FBA III) - Complete. Stone. Mass: n/a - BLANCHET 1984, fig. 147.11.
175. Wustermark [site no. 158, unknown context] (Havelland, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 93 g (56.24 g). Dimensions: 4.7 cm x 4.7 cm x 3.0 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1998-822/782/3) - Unpublished.
176. Wustermark [site no. 158, unknown context] (Havelland, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 94.84 g (86.46 g). Dimensions: 4.1 cm x 4.8 cm x 2.7 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1998-822/920/2) - Unpublished.
177. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 0.36 g. Dimensions: 0.6 cm x 0.6 cm x 0.3 cm - Musées de Sens - ROSCIO 2018, pl. 85.7.
178. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Fused together with a smaller metal object by corrosion. Part of a set of 13 balance weights and 1 balance beam. Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Overweight. Copper/bronze. Mass: n/a (0.93 g). Dimensions: 0.6 cm x 0.7 cm x 0.3 cm - Musées de Sens - ROSCIO 2018, pl. 85.6, 29.
179. Penedo do Lexim [site no. 197, settlement] (Mafra, Lisbon, Portugal). Locus 3b, Intrusion in Chalcolithic context. S.U. 07. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 1.4 g. Dimensions: 0.9 cm x 0.9 cm x 0.4 cm (inv. no. IGN.017.12993) - SOUSA/SOUSA 2018, fig. 10, top.
180. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 2.25 g. Dimensions: 0.8 cm x 0.8 cm x 0.6 cm - Musées de Sens - ROSCIO 2018, pl. 85.5.
181. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 1.68 g. Dimensions: 1.0 cm x 1.0 cm x 0.3 cm - Musées de Sens - ROSCIO 2018, pl. 85.18.
182. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 0.49 g. Dimensions: 1.1 cm x 1.1 cm x 0.1 cm - Musées de Sens - ROSCIO 2018, pl. 85.10.
183. Abrigo Grande das Bocas [site no. 200, settlement] (Rio Maior, Santarém, Portugal). Phase 4 (Bronze Age - uncertain) - Complete. Copper/bronze. Mass: 4.92 g. Dimensions: 1.3 cm x 0.5 cm - VILAÇA 2003, fig. 1.3.
184. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 2.32 g. Dimensions: 1.1 cm x 1.1 cm x 0.3 cm - VILAÇA 2013, fig. 12.7.
185. Penha Verde [site no. 195, settlement] (Sintra, Lisbon, Portugal). House 2. Phase 4 (Atlantic FBA III) - Part of a set of 4 balance weights (cat. no. 185, 187, 212, 219). Associations: fragment of bronze ingot, fragment of bronze armring, gold pin, gold bead - Complete. Copper/bronze. Mass: 2.2 g. Dimensions: 1.0 cm x 0.9 cm x 0.6 cm - CARDOSO 2011, fig. 3.8.
186. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 3.17 g. Dimensions: 1.5 cm x 1.2 cm x 0.5 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.4) - Unpublished.
187. Penha Verde [site no. 195, settlement] (Sintra, Lisbon, Portugal). House 2. Phase 4 (Atlantic FBA III) - Part of a set of 4 balance weights (cat. no. 185, 187,

- 212, 219). Associations: fragment of bronze ingot, fragment of bronze armring, gold pin, gold bead - Complete. Copper/bronze. Mass: 8.5 g. Dimensions: 1.6 cm x 1.7 cm x 0.8 cm - CARDOSO 2011, fig. 3.5.
188. Castro dos Ratinhos [site no. 193, settlement] (Barragem do Alqueva, Moura, Portugal). C1/Sup/001, From the heap of phase 1a. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: n/a (4.5 g). Dimensions: 1.7 cm x 1.7 cm x 0.6 cm - BERROCAL-RANGEL/SILVA 2010, fig. 143.15.
189. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Two small, diametrically-opposite ribs on the diameter, probably due to the casting technique. Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 6.31 g. Dimensions: 1.8 cm x 1.0 cm x 0.5 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.1) - Unpublished.
190. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Two small, diametrically-opposite ribs on the diameter, probably due to the casting technique. Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 4.25 g. Dimensions: 1.65 cm x 1.5 cm x 0.45 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.3) - Unpublished.
191. Hurlach [site no. 108, burial] (Landsberg a. Lech, Bayern, Germany). Phase 3 (Br C-D) - Part of a set of 3 balance weights (cat. no. 86, 100, 191). Associations: cremated remains belonging to 2 individuals, a male and a female. 3 knives, sword, belt hook, several bronze studs, bronze necklace with gold pendant and 3 amber beads, 5 pins, 7 pin heads, gold fragment, pottery - Complete. Copper/bronze. Mass: 11.7 g. Dimensions: 1.8 cm x 1.8 cm x 0.9 cm - PARE 1999, fig. 12.1.
192. Poing [site no. 110, burial] (Ebersberg, Bayern, Germany). Grave 1. Phase 3 (Br D) - Associations: bronze strainer, several bronze fragments, 2 pins, several wagon fittings, several arrowheads, 2 sickles, several fragments of ingots, fra, ring - Complete. Copper/bronze. Mass: 20.8 g. Dimensions: 1.9 cm x 1.9 cm x 1.3 cm - PARE 1999, fig. 19.11.
193. Pantalica [site no. 1, burial] (Siracusa, Sicilia, Italy). North-western necropolis, Grave 9. Phase 4 (FBA-EIA) - Complete. Lead. Mass: 124.85 g. Dimensions: 6.2 cm x 5.3 cm x 0.4 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 15772) - Unpublished.
194. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Annular incision. Complete. Stone. Mass: 30.05 g. Dimensions: 3.5 cm x 2.8 cm x 1.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7822) - Unpublished.
195. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Circular indentation on one face. Complete. Stone (sandstone). Mass: 164.7 g. Dimensions: 7.9 cm x 8.3 cm x 1.6 cm (inv. no. 2550) - BOLLIGER SCHREYER *et al.* 2004, Taf. 228.2550.
196. Nuraghe Sant'Imbenia [site no. 18, settlement] (Alghero, Sassari, Sardegna, Italy). House 48, Sector IV, 07-07-2010. US 50. Phase 4 (EIA) - Irregular shape. Complete. Copper/bronze. Mass: 13.88 g. Dimensions: 2.6 cm x 2.8 cm x 0.5 cm - Storerooms of the archaeological excavations at Sant'Imbenia, Alghero (inv. ND) - Unpublished.
197. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Transversal rib on one face. Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Fragmented. Copper/bronze. Mass: n/a (2.38 g). Dimensions: 1.65 cm x 1.1 cm x 0.4 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.5) - Unpublished.
198. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Copper/bronze. Mass: 8.1 g. Dimensions: 1.3 cm x 1.3 cm - PARE 1999, fig. 24.2.

Variant 2: Plano-convex (cat. no. 199-209).

- *number of objects*: 11
- *objects with known mass (complete/reconstructed)*: 23 (85 %)
- *chronological range*: Phase 2-4 (c. 1600-800 BCE)
- *material*: stone (2), copper/bronze (9)
- *9 sites*: site no. 2, 21, 35, 105, 125, 141, 199, 201, 206
- *2 sets*: site no. 2, 105
- *mass range (complete/reconstructed)*: 0.4-69.89 g

199. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.48 g. Dimensions: 0.6 cm x 0.6 cm x 0.3 cm - ROSCIO *et al.* 2011, fig. 2.48.
200. ZAC du Sansonnet [site no. 125, settlement] (Metz, Moselle, Grand Est, France). Melting pit (surroundings). Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 96, 200). Associations: fire pits, crucibles, metal objects - Complete. Copper/bronze. Mass: 0.4 g. Dimensions: 6.4 cm x 6.4 cm x 0.4 cm - KLAG/WIETHOLD 2019, fig. 11.10.

201. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 1.59 g. Dimensions: 0.9 cm x 0.8 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.61.
202. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 0.89 g. Dimensions: 1.0 cm x 0.8 cm x 0.7 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.13) - Unpublished.
203. Canedotes [site no. 206, settlement] (Vila Nova de Paiva, Viseu, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 3.8 g. Dimensions: 1.0 cm x 0.8 cm - VILAÇA 2003, fig. 1.7.
204. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.34 g. Dimensions: 1.7 cm x 0.5 cm - VILAÇA 2003, fig. 3.16.
205. Cabezo de Araya [site no. 201, settlement] (Arroyo de la Luz, Cáceres, Extremadura, Spain). Stray find. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.3 cm x 1.0 cm - ALMAGRO 1961, fig. 4.24.
206. Runnymede Bridge [site no. 141, settlement] (Berkshire, England). Layer 5a. Undetermined chronology (Bronze Age) - Associations: settlement with evidence of metalworking - Complete. Copper/bronze. Mass: n/a. Dimensions: 2.1 cm x 2.0 cm x 0.64 cm - NEEDHAM 1980, fig. 13.29.
207. Coppa Navigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 14, H3 M, S. Phase 3 (RBA) - Complete. Copper/bronze. Mass: 10.26 g. Dimensions: 2.3 cm x 2.0 cm x 1.2 cm - Unpublished.
208. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Two crossing incised lines on the top. Complete. Stone. Mass: 29.43 g. Dimensions: 3.9 cm x 3.9 cm x 1.4 cm - Museo Archeologico Etnografico Modena (inv. no. 457) - Unpublished.
209. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800, LXV, 98. Phase 2-3 (MBA-RBA) - Concave base. Complete. Stone. Mass: 18.7 g. Dimensions: 4.32 cm x 3.39 cm x 1.34 cm - Museo Archeologico Etnografico Modena (inv. no. 528) - Unpublished.
- VARIANT 3: Biconical (cat. no. 210-244).**
- *number of objects*: 35
 - *objects with known mass (complete/reconstructed)*: 29 (83 %)
 - *chronological range*: Phase 3-4 (c. 1350-800 BCE)
 - *material*: copper/bronze
 - *13 sites*: site no. 132, 137, 191, 192, 194, 195, 196, 197, 198, 199, 201, 202, 203
 - *4 sets*: site no. 132, 137, 192, 195
 - *mass range (complete/reconstructed)*: 1.82-268.7 g
- Sub-variant 3.A: Plain (cat. no. 210-237)**
210. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 1.82 g. Dimensions: 0.8 cm x 0.6 cm - VILAÇA 2003, fig. 3.1.
211. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 2.86 g. Dimensions: 0.9 cm x 0.5 cm - VILAÇA 2003, fig. 3.2.
212. Penha Verde [site no. 195, settlement] (Sintra, Lisbon, Portugal). House 2. Phase 4 (Atlantic FBA III) - Part of a set of 4 balance weights (cat. no. 185, 187, 212, 219). Associations: fragment of bronze ingot, fragment of bronze armring, gold pin, gold bead - Complete. Copper/bronze. Mass: 2.2 g. Dimensions: 1.0 cm x 1.0 cm x 0.5 cm - CARDOSO 2011, fig. 3.7.
213. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 3.87 g. Dimensions: 1.0 cm x 0.7 cm - VILAÇA 2003, fig. 3.10.
214. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.21 g. Dimensions: 1.1 cm x 0.6 cm - VILAÇA 2003, fig. 3.5.
215. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.1 g. Dimensions: 1.1 cm x 0.7 cm - VILAÇA 2003, fig. 3.3.
216. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.08 g. Dimensions: 1.2 cm x 0.6 cm - VILAÇA 2003, fig. 3.6.
217. Penedo do Lexim [site no. 197, settlement] (Mafra, Lisbon, Portugal). Locus 1, Small pit, S.U. 017. Phase 4 (Atlantic FBA III) - Associations: found in a pit in a paved area. On the paved area: chisel, spear head, ring - Complete. Copper/bronze. Mass: 3.69 g. Dimensions: 1.2 cm x 1.2 cm x 0.6 cm (inv. no. IGN.017.05576) - SOUSA/SOUSA 2018, fig. 10, middle.
218. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.79 g. Dimensions: 1.1 cm x 0.8 cm - VILAÇA 2003, fig. 3.4.
219. Penha Verde [site no. 195, settlement] (Sintra, Lisbon, Portugal). House 2. Phase 4 (Atlantic FBA III) - Part of a set of 4 balance weights (cat. no. 185, 187, 212, 219). Associations: fragment of bronze ingot, fragment of bronze armring, gold pin, gold

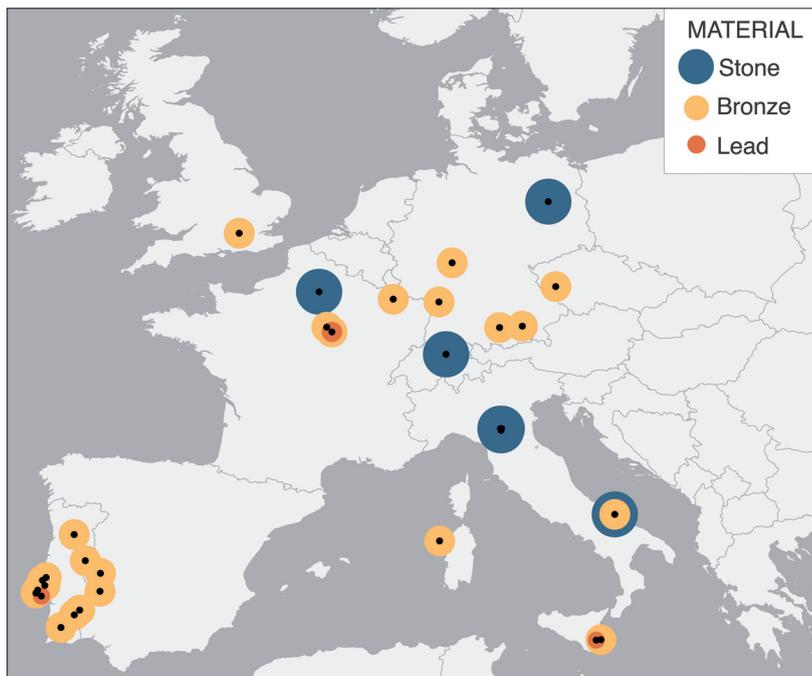
- bead - Complete. Copper/bronze. Mass: 4.54 g. Dimensions: 1.2 cm x 0.6 cm - VILAÇA 2003, fig. 1.2; CARDOSO 2011, fig. 3.6.
220. Castro da Cola [site no. 191, settlement] (Ourique, Beja, Portugal). Undetermined chronology (LBA) - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.2 cm x 1.3 cm - VILAÇA 2011, fig. 8.1.
221. Castro da Cola [site no. 191, settlement] (Ourique, Beja, Portugal). Undetermined chronology (LBA) - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.6 cm x 1.5 cm - VILAÇA 2011, fig. 8.2.
222. Moreirinha [site no. 203, settlement] (Idanha-a-Nova, Castelo Branco, Portugal). Phase 4 (Atlantic FBA) - Complete. Copper/bronze. Mass: 3.98 g. Dimensions: 1.3 cm x 0.4 cm - VILAÇA 2003, fig. 1.4.
223. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 9.32 g. Dimensions: 1.6 cm x 0.7 cm - VILAÇA 2003, fig. 3.8.
224. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 8.7 g. Dimensions: 1.5 cm x 0.8 cm - VILAÇA 2003, fig. 3.7.
225. Castro da Ota [site no. 198, settlement] (Alenquer, Lisbon, Oeste, Portugal). Phase 4 (Bronze Age - uncertain) - Complete. Copper/bronze. Mass: 8 g. Dimensions: 1.6 cm x 0.7 cm - VILAÇA 2003, fig. 1.1.
226. Penedo do Lexim [site no. 197, settlement] (Mafra, Lisbon, Portugal). Locus 2, Intrusion in Chalcolithic context. S.U. 04. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 8.7 g. Dimensions: 1.5 cm x 1.5 cm x 0.8 cm (inv. no. IGN.017.03946) - SOUSA/SOUSA 2018, fig. 10, bottom.
227. Monte do Trigo [site no. 202, settlement] (Idanha-a-Nova, Castelo Branco, Portugal). Phase 4 (Atlantic FBA) - Complete. Copper/bronze. Mass: 9.54 g. Dimensions: 1.5 cm x 1.5 cm x 0.9 cm - VILAÇA 2003, fig. 2.1.
228. Monte do Trigo [site no. 202, settlement] (Idanha-a-Nova, Castelo Branco, Portugal). Phase 4 (Atlantic FBA) - Fused together with a smaller weight by corrosion. Complete. Copper/bronze. Mass: 19.48 g. Dimensions: 1.6 cm x 1.6 cm x 1.1 cm - VILAÇA 2003, fig. 2.2.
229. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 9.67 g. Dimensions: 1.5 cm x 1.5 cm x 0.9 cm - VILAÇA 2013, fig. 12.4.
230. Cabezo de Araya [site no. 201, settlement] (Arroyo de la Luz, Càceres, Extremadura, Spain). Stray find. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.5 cm x 0.8 cm - ALMAGRO 1961, fig. 4.32.
231. Los Concejiles [site no. 196, settlement] (Lobòn, Badajoz, Extremadura, Spain). Unprovenanced. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 19.01 g. Dimensions: 1.77 cm x 1.81 cm x 1.16 cm - VILAÇA *et al.* 2012, fig. 20.1.
232. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 18.64 g. Dimensions: 1.85 cm x 1.85 cm x 0.9 cm - VILAÇA 2013, fig. 12.1.
233. Castro de Pragança [site no. 199, settlement] (Cadaval, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 18.72 g. Dimensions: 1.9 cm x 1.1 cm - VILAÇA 2003, fig. 3.9.
234. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Pin-head. Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 11.26 g. Dimensions: 1.55 cm x 1.55 cm - PARE 1999, fig. 14.14.
235. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Pin-head. Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 13.32 g. Dimensions: 1.87 cm x 1.8 cm - PARE 1999, fig. 14.13.
236. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Pin-head, with three horizontal ribs. Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 19.82 g. Dimensions: 2.1 cm x 2.1 cm - PARE 1999, fig. 14.12.
237. Steinfurth [site no. 137, burial] (Bad Nauheim, Wetteraukreis, Hessen, Germany). Phase 3 (Br D) - Pin-head, with vertical grooves. Part of a set of 12 balance weights (cat. no. 68, 69, 77, 81, 83, 84, 90, 91, 234, 235, 236, 237). Associations: 2 bronze hinges (organic container?), pin - Complete. Copper/bronze. Mass: 6.38 g. Dimensions: 1.33 cm x 1.33 cm - PARE 1999, fig. 14.15.

Sub-variant 3.B: Longitudinal perforation (cat. no. 238-244)

238. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 6.37 g. Dimensions: 1.2 cm x 1.1 cm x 0.8 cm - VILAÇA 2013, fig. 12.5.
239. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 12.78 g. Dimensions: 1.5 cm x 1.5 cm x 0.9 cm - VILAÇA 2013, fig. 12.2.
240. Cabezo de Araya [site no. 201, settlement] (Arroyo de la Luz, Càceres, Extremadura, Spain). Stray find. Phase 4 (Atlantic FBA III) - Complete. Copper/

- bronze. Mass: n/a. Dimensions: 2.0 cm x 1.1 cm - ALMAGRO 1961, fig. 4.23.
241. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 9.75 g. Dimensions: 1.5 cm x 1.5 cm x 1.0 cm - VILAÇA 2013, fig. 12.3.
242. Los Concejiles [site no. 196, settlement] (Lobòn, Badajoz, Extremadura, Spain). Unprovenanced. Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: n/a (14.18 g). Dimensions: 1.94 cm x 1.96 cm x 0.96 cm - VILAÇA *et al.* 2012, fig. 20.2.
243. Horušany [site no. 132, burial] (Bohemia, Czech Republic). Tumulus A. Phase 3 (Br D) - Vertical ribs. Part of a set of 4 balance weights (cat. no. 94, 103, 243, 304). Associations: 3 bronze hinges (organic container?), awl, 3 phalerae, stud, bronze fragment, pottery - Complete. Copper/bronze. Mass: 19.1 g. Dimensions: 2.0 cm x 0.9 cm - PARE 1999, fig. 10.4.
244. Quinta do Almaraz [site no. 194, settlement] (Cacilhas, Almada, Oeste, Portugal). Phase 4 (Atlantic FBA III-Orientalizing) - Mentioned in the original publication, no image. Complete. Lead. Mass: n/a - VALÉRIO *et al.* 2003 (mentioned).
- Variant 4: Plano-convex (cat. no. 245-259).**
- *number of objects*: 15
 - *objects with known mass (complete/reconstructed)*: 23 (85 %)
 - *chronological range*: Phase 2-3 (c. 1600-1200 BCE)
 - *material*: copper/bronze (14), lead (1)
 - *2 sites*: site no. 2, 105
 - *2 sets*: site no. 2, 105
 - *mass range (complete/reconstructed)*: 0.8-7.66 g
245. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 4.65 g. Dimensions: 1.6 cm x 1.3 cm x 0.8 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.2) - Unpublished.
246. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 14, chamber. Phase 2-3 (MBA3-RBA) - Associations: 4 bronze fragments - Complete. Copper/bronze. Mass: 5.85 g. Dimensions: 1.6 cm x 1.4 cm x 0.7 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 5.1) - Unpublished.
247. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 6.92 g. Dimensions: 2.0 cm x 1.55 cm x 1.2 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.21) - Unpublished.
248. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 7.66 g. Dimensions: 1.8 cm x 1.4 cm x 1.4 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.26) - Unpublished.
249. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 5.93 g. Dimensions: 1.6 cm x 1.3 cm x 1.3 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.22) - Unpublished.
250. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Complete. Copper/bronze. Mass: 6.7 g. Dimensions: 1.9 cm x 1.6 cm x 1.2 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.23) - Unpublished.
251. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Lead. Mass: 2 g. Dimensions: 0.9 cm x 0.9 cm x 0.6 cm - ROSCIO *et al.* 2011, fig. 2.62.
252. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 0.8 g. Dimensions: 1.1 cm x 0.8 cm x 0.8 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.12) - Unpublished.
253. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 1.8 g. Dimensions: 1.5 cm x 1.1 cm x 0.7 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.18) - Unpublished.
254. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat.

- no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 1.63 g. Dimensions: 1.35 cm x 1.1 cm x 0.8 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.19) - Unpublished.
255. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 3.06 g. Dimensions: 1.8 cm x 1.2 cm x 0.9 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.15) - Unpublished.
256. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 2.28 g. Dimensions: 1.7 cm x 1.1 cm x 1.1 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.16) - Unpublished.
257. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 3.2 g. Dimensions: 1.2 cm x 1.1 cm x 1.1 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.17) - Unpublished.
258. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Fragmented. Copper/bronze. Mass: n/a (6.1 g). Dimensions: 2.2 cm x 1.5 cm x 1.8 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.25) - Unpublished.
259. Thapsos [site no. 2, burial] (Siracusa, Sicilia, Italy). Northern necropolis, Grave 6, Inner chamber. Phase 2-3 (MBA3-RBA) - Part of a set of 18 weights (cat. no. 186, 189, 190, 197, 202, 245, 247, 248, 249, 250, 252, 253, 254, 255, 256, 257, 258, 259). Associations: tweezers, 4 bronze fragments - Shapeless. Copper/bronze. Mass: 4.92 g. Dimensions: 2.8 cm x 2.0 cm x 1.0 cm - Museo Archeologico Regionale Paolo Orsi, Siracusa (inv. no. 16.24) - Unpublished.
- Variant 5: Pin-jags** (cat. no. 260-262).
- *number of objects*: 3
 - *objects with known mass (complete/reconstructed)*: 3 (100 %)
 - *chronological range*: Phase 3 (c. 1350-1200 BCE)
 - *material*: copper/bronze
 - *2 sites*: site no. 105, 109
 - *2 sets*: site no. 105, 109
 - *mass range (complete/reconstructed)*: 1.89-3.8 g
260. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 3.15 g. Dimensions: 1.6 cm x 1.6 cm x 0.7 cm - Musées de Sens - ROSCIO 2018, pl. 85.15.
261. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 1.89 g. Dimensions: 1.4 cm x 1.4 cm x 0.5 cm - Musées de Sens - ROSCIO 2018, pl. 85.12.
262. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 3.8 g. Dimensions: 2.7 cm x 2.7 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.19.



▲ Fig. 5.25. Octahedral, biconical and conical weights. Geographical distribution: typology and site ID.

5.6. CONE

- *number of objects*: 1
- *objects with known mass (complete/reconstructed)*: 1 (100 %).
- *chronological range*: Phase 3 (c. 1400-1200 BCE)
- *material*: bronze
- *1 site*: site no. 105
- *1 set*: site no. 105
- *mass*: 0.62 g

Distribution map: fig. 5.25.

The only conical weight included in this catalogue is a very small object from grave 298 of the Bronze D burial site of Migennes – Le Petit Moulin, in France (site no. 105) (Fig. 5.25.). The object is part of a set of 18 balance weights and a balance beam.

263. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.62 g. Dimensions: 0.75 cm x 0.5 cm x 0.5 cm - ROSCIO *et al.* 2011, fig. 2.54.

5.7. DOUBLE CONE

- *number of objects*: 2
- *objects with known mass (complete/reconstructed)*: 2 (100 %).
- *chronological range*: Phase 4 (c. 1200-800 BCE)
- *material*: bronze
- *2 sites*: site no. 190, 205
- *mass range (complete/reconstructed)*: 9.1-16.45 g

Distribution map: fig. 5.25.

Two very similar weights with biconical shape are documented in the south-eastern Iberian Peninsula, in the settlement of Nossa Senhora da Guia de Baiões (Portugal, site no. 205) and in the hoard of Ría de la Huelva (Spain, site no. 190) (Fig. 5.25.).

264. Nossa Senhora da Guia de Baiões [site no. 205, settlement] (S. Pedro do Sul, Viseu, Portugal). Phase 4 (Atlantic FBA) - Complete. Copper/bronze. Mass: 9.1 g. Dimensions: 1.4 cm x 1.1 cm - VILAÇA 2003, fig. 1.5.

265. Ría de la Huelva [site no. 190, hoard] (Andalucía, Spain). Phase 4 (Atlantic FBA III-Orientalizing) - Complete. Copper/bronze. Mass: 16.45 g. Dimensions: 1.85 cm x 1.78 cm x 1.78 cm - ALMAGRO GORBEA 1958, fig. 18.20.

5.8. OCTAHEDRON

- *number of objects*: 2
- *objects with known mass (complete/reconstructed)*: 2 (100 %).
- *chronological range*: Phase 4 (c. 1200-800 BCE)
- *material*: bronze
- *2 sites*: site no. 192, 202
- *1 set*: site no. 192
- *mass range (complete/reconstructed)*: 4.56-37.0 g

Distribution map: fig. 5.25.

Two octahedral weights are documented in Portugal, in the hoard of Baleizão (site no. 192) and at the settlement of Monte do Trigo (site no. 202) (Fig. 5.25.). The object from Baleizão (cat. no. 266) is part of a weighing set of seven balance weights.

266. Baleizão [site no. 192, hoard] (Beja, Portugal). Phase 4 (Atlantic FBA III) - Part of a set of 7 balance weights (cat. no. 184, 229, 232, 238, 239, 241, 266). Associations: 3 axes, 7 bronze rings, 6 bronze fragments, 3 gold torques, 7 gold fragments - Complete. Copper/bronze. Mass: 4.56 g. Dimensions: 1.4 cm x 1.0 cm x 1.0 cm - VILAÇA 2013, fig. 12.6.

267. Monte do Trigo [site no. 202, settlement] (Idanha-a-Nova, Castelo Branco, Portugal). Phase 4 (Atlantic FBA) - Complete. Copper/bronze. Mass: 37 g. Dimensions: 2.7 cm x 2.1 cm x 2.1 cm - VILAÇA 2003, fig. 2.3.

5.9. CYLINDER

- number of objects: 13
- objects with known mass (complete/reconstructed): 8 (61 %).
- chronological range: Phase 3-5 (c. 1400-675 BCE)
- material: copper/bronze (6), lead (7)
- 8 sites: site no. 49, 103, 105, 107, 118, 123, 127, 189
- 6 sets: site no. 6, 7, 9, 10, 17, 19
- mass range (complete/reconstructed): 0.49-37.6 g

Distribution map: fig. 5.26.

Composition of the sample: fig. 5.27.-28.

Typology, materials, comparisons, and function

Cylindrical weights have been classified into four variants. Objects in Variant 1 are either made of bronze (cat. no. 268-270) or lead (cat. no. 271-276); they have a thin cross-section, and most of them have an elongated shape (cat. no. 270-276). Based on published drawings, objects cat. no. 273 and 274 seem to have a longitudinal perforation; however, due to the lack of a description it was not possible to verify this. Variant 2 includes intentionally broken fragments of pins with an overall cylindrical shape (cat. no. 277-278). Variant 3 includes a single bronze object with squat cylindrical body and a small loop fixed on its side (cat. no. 279). Finally, Variant 4 is represented by a single lead object with squat body (cat. no. 280).

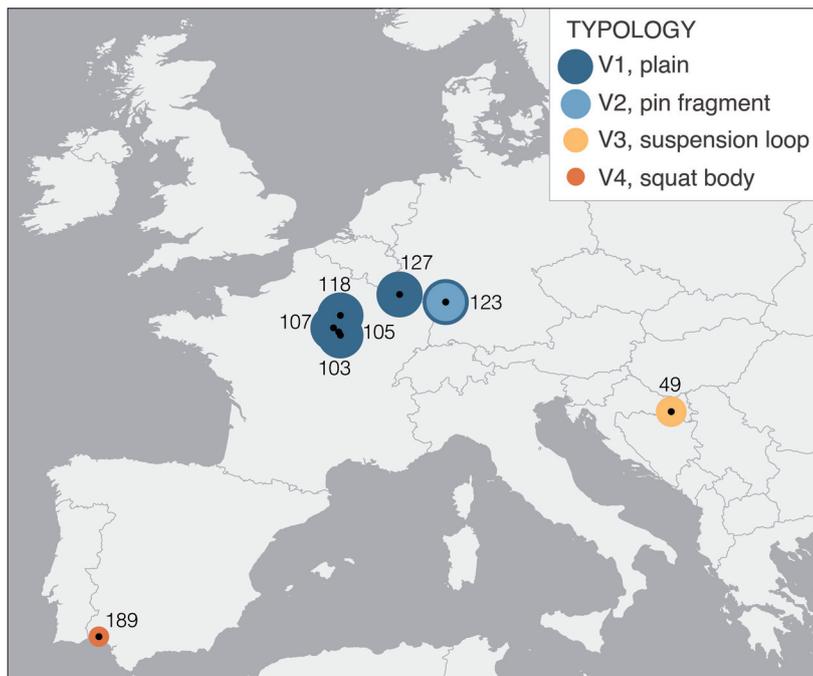
Of all cylindrical weights, the weight classified in Variant 3 is the only one that could be directly fixed to a cord hanging from a balance's arm; all remaining objects could be laid on a pan or in a bag.

All cylindrical weights classified in V1 come from Central European graves dating to the phase Bronze D (c. 1350-1200 BCE), where they are frequently part of weighing sets (Fig. 5.26). The object with the loop comes from a Croatian hoard dated to Ha A1 (site no. 49), while the squat lead weight is part of the mixed deposit of Huelva – Plaza de las Monjas (site no. 189), dated between the 10th and the early 7th century BCE and associated with Greek and Phoenician imports (GONZÁLEZ DE CANALES CERISOLA *et al.* 2004).

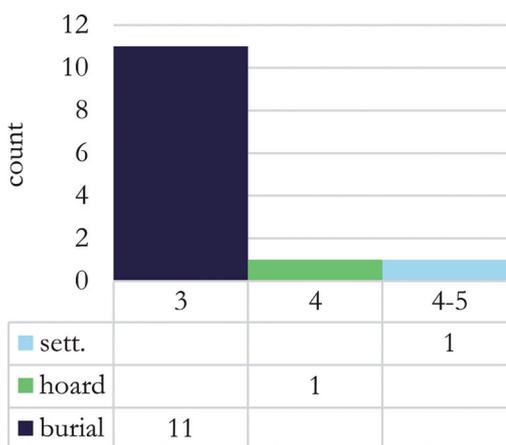
Variant 1: Thin plain cylinder (cat. no. 268-276)

- number of objects: 9
- objects with known mass (complete/reconstructed): 4 (44.44 %)
- chronological range: Phase 3 (c. 1350-1200 BCE)
- material: copper/bronze (3), lead (6)
- 6 sites: site no. 103, 105, 107, 118, 123, 127
- 6 sets: site no. 103, 105 (2 sets), 107, 123, 127
- mass range (complete/reconstructed): 0.49-6.9 g

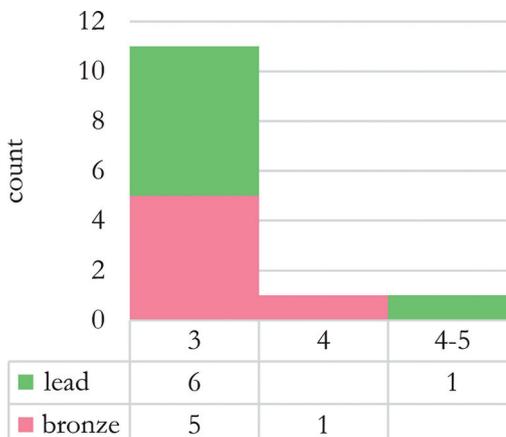
268. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges



▲ Fig. 5.26. Cylindrical weights. Geographical distribution: typology and site ID.



▲ Fig. 5.27. Cylindrical weights. Quantification: site type vs chronology.



▲ Fig. 5.28. Cylindrical weights. Quantification: materials vs chronology.

- (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.49 g. Dimensions: 0.6 cm x 0.4 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.37.
269. Passy-sur-Yonne, La Sablonière [site no. 107, burial] (Yonne, Bourgogne-Franche-Comté, France). Richebourg, Enclosure 58, Inhumation grave 7. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 59, 61, 62, 63, 269). Associations: 3 bronze hinges (organic container), dagger, awl, razor, pin, stud - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.0 cm x 0.5 cm x 0.4 cm - Musées de Sens - PARE 1999, fig. 28.C.4-5.
270. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 3.83 g. Dimensions: 3.3 cm x 0.42 cm x 0.42 cm - PARE 1999, fig. 17.8.
271. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Lead. Mass: 5.5 g. Dimensions: 1.6 cm x 0.7 cm - PARE 1999, fig. 24.10.
272. Barbuise-Courtavant, Les Grèves [site no. 118, burial] (Aube, Grand Est, France). Grave of 1874. Phase 3 (Br D) - Part of a set of 5 balance weights (cat. no. 66, 67, 70, 120, 272). Associations: 2 bronze hinges (organic container?), sword, scabbard, knife, pin, ring, potter - Complete. Lead. Mass: 6.9 g. Dimensions: 2.2 cm x 0.9 cm x 0.8 cm - PARE 1999, fig. 26.3; ROTTIER *et al.* (eds.) 2012, fig. 270.7.
273. Monéteau, "Aux Bries" [site no. 103, burial] (Yonne, Bourgogne-Franche-Comté, France). Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 17, 273, 274). Associations: two lead weights, balance beam, razor - Complete. Lead. Mass: n/a. Dimensions: 3.1 cm x 0.7 cm - ROSCIO 2018, pl. 93.4.
274. Monéteau, "Aux Bries" [site no. 103, burial] (Yonne, Bourgogne-Franche-Comté, France). Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 17, 273, 274). Associations: two lead weights, balance beam, razor - Complete. Lead. Mass: n/a. Dimensions: 3.6 cm x 0.8 cm - ROSCIO 2018, pl. 93.5.
275. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 251. Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 14, 275, 276). Associations: 2 lead balance weights, fragment of a bone balance beam, sword, pin, scabbard, applique - Complete. Lead. Mass: n/a. Dimensions: 2.5 cm x 0.6 cm x 0.6 cm - MULLER 2009, fig. 5a.7.
276. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 251. Phase 3 (Br D) - Part of a set of 2 balance weights and 1 balance beam (cat. no. 14, 275, 276). Associations: 2 lead balance weights, fragment of a bone balance beam, sword, pin, scabbard, applique - Fragmented. Lead. Mass: n/a. Dimensions: 2.9 cm x 0.7 cm x 0.7 cm - MULLER 2009, fig. 5a.6.
- VARIANT 2: Pin fragments (cat. no. 277-278)**
- *number of objects*: 2
 - *objects with known mass (complete/reconstructed)*: 2 (100 %)
 - *chronological range*: Phase 3 (c. 1350-1200 BCE)
 - *material*: copper/bronze
 - *1 site*: site no. 123
 - *1 set*: site no. 123
 - *mass range (complete/reconstructed)*: 2.0-2.1 g
277. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Fragmented. Copper/bronze. Mass: 2 g. Dimensions: 1.0 cm x 0.6 cm x 0.6 cm - PARE 1999, fig. 24.8.
278. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Fragmented. Copper/bronze. Mass: 2.1 g. Dimensions: 1.3 cm x 0.6 cm x 0.6 cm - PARE 1999, fig. 24.9.
- VARIANT 3: Squat body with suspension loop (cat. no. 279)**
279. Slavonski Brod [site no. 49, hoard] (Croatia). Phase 4 (Ha A1) - Slightly chipped. Copper/bronze. Mass: 37.6 g (37.35 g). Dimensions: 2.3 cm x 1.8 cm x 1.8 cm - PARE 1999, fig. 19.12.
- VARIANT 4: Plain squat body (cat. no. 280)**
280. Huelva - Plaza de las Monjas [site no. 189, settlement] (Andalucía, Spain). Phase 4-5 (Atlantic FBA III) - Complete. Lead. Mass: 9.59 g. Dimensions: 2.2 cm x 1.9 cm x 1.8 cm - GONZÁLEZ DE CANALES CERISOLA *et al.* 2004, 154-155, fig. 38.12.

5.10. SPHERE

- number of objects: 26
- objects with known mass (complete/reconstructed): 24 (92 %).
- chronological range: Phase 2-4 (c. 1600-800 BCE)
- material: stone (9), copper/bronze (17)
- 13 sites: site no. 1 21, 35, 23, 155, 105, 199, 205, 204, 123, 130, 132, 102, 109
- 6 sets: site no. 155, 105, 123, 130, 132, 109
- mass range (complete/reconstructed): 0.16-82.4 g

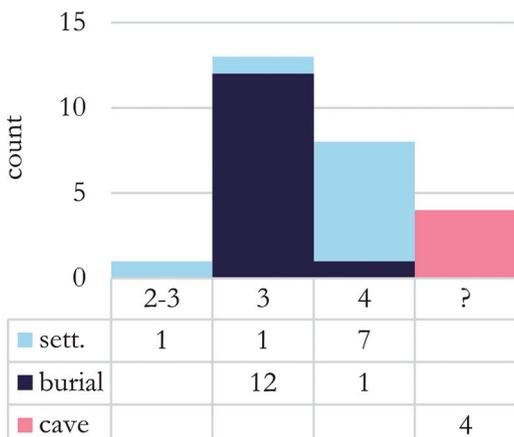
Distribution maps: fig. 5.29.-30.

Composition of the sample: fig. 5.31.-32.

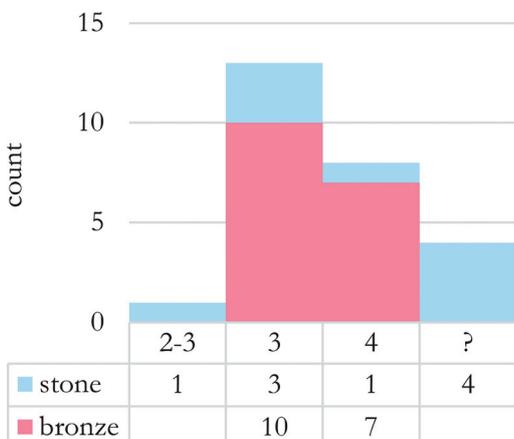
Typology, materials, comparisons, and function

Spherical weights have a simple and homogeneous shape. Most objects are made of bronze (cat. no. 288-302); two of them – both coming from the settlement of Castro de Pragança, Portugal (site no. 199) – present small casting flaws in the shape of short protrusions (cat. no. 294, 297). Objects cat. no. 288-292 from the weighing set of t. 298 of Mi-gennes, Le Petit Moulin (France, site no. 105) have irregular shape, which likely depends on their very small size (0.16-0.45 g). The seven stone objects classified as weights (cat. no. 281-287) all present a

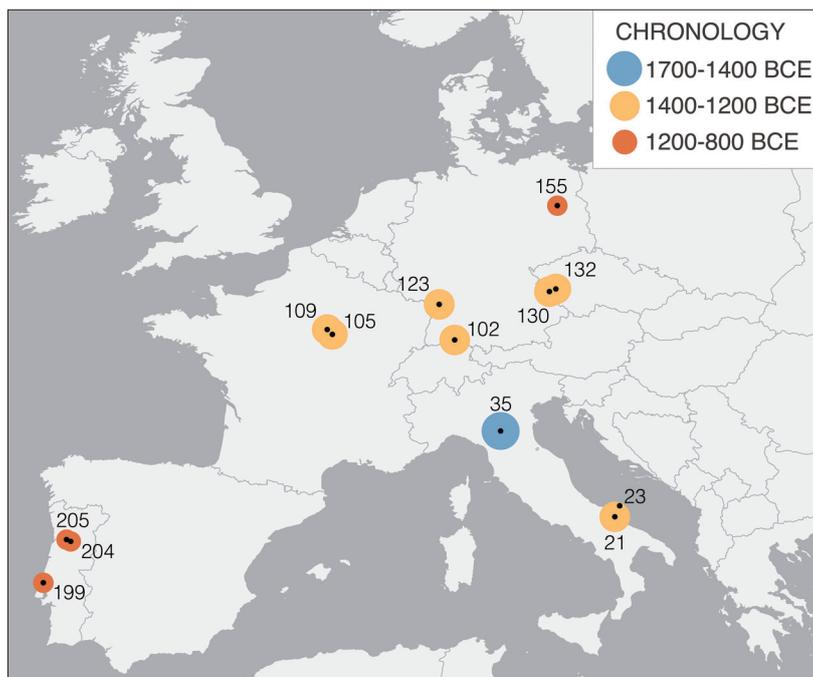
regularly spherical surface that would lead to think that they were intentionally shaped. Object cat. no. 281 has a single incised point. The object’s mass is 8 g, slightly below the error margin of the shekel of c. 9.8 g; however, there is no evidence that the incision represents a quantity mark. The grooves on cat. no. 284 were caused by natural erosion, before the object was modelled into a sphere. The type also includes four pin-heads, whose shaft was intentionally removed (cat. no. 303-306), all coming from burials in Central Europe dated to Br D



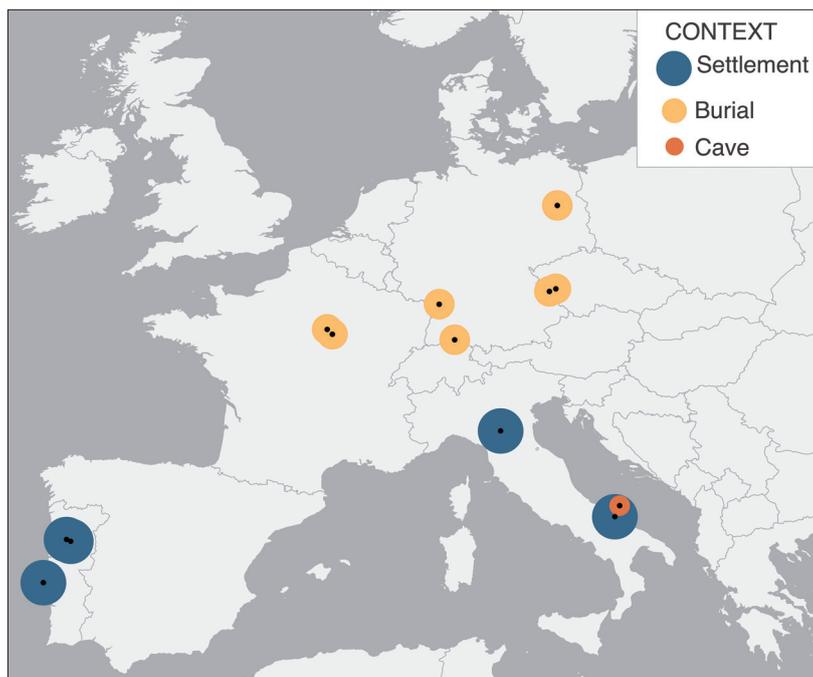
▲ Fig. 5.31. Spherical weights. Quantification: Site type vs chronology.



▲ Fig. 5.32. Spherical weights. Quantification: Materials vs chronology.



▲ Fig. 5.29. Spherical weights. Geographical distribution: Chronology and site ID.



▲ Fig. 5.30. Spherical weights. Geographical distribution: Site type.

(Phase 3, c. 1350-1200 BCE). All spherical weights are small enough to be comfortably used with small balances, laid on pans.

Spherical weights are not at all common in the eastern Mediterranean and in the Levant. K. M. PETRUSO (1992, 4), for example, preliminarily excluded any spherical objects from his analysis of bronze Age weights in the Aegean.

Chronology, geographical distribution and contexts

Spherical weights are not attested in well-dated contexts before Phase 3 (c. 1400-1200 BCE) (Fig. 5.29.). The earliest objects (all made of bronze), come from several burials in Central Europe dated to Br D (cat. no. 288-292, 300-306) – where they are always part of weight sets – and from a settlement in Italy dated to the RBA (cat. no. 281). In Phase 4 (c. 1200-800 BCE), bronze spherical weights are well-attested in the Iberian Peninsula (cat. no. 293-299), and a stone object is present in a cremation burial in Germany (cat. no. 287, site no. 155), and constitutes a set together with two *Kannelurensteine* (cat. no. 422, 450).

Spherical weights (281-306).

281. Coppa Navigata [site no. 21, settlement] (Mantredonia, Puglia, Italy). CN 11, G2 P, 12. Phase 3 (RBA) - Associations: found on a pebble-floor, in an open area close to the main gate. Possibly part of a set of 3 weights (cat. no. 155, 281, 657) - Complete. Stone. Mass: 8 g. Dimensions: 1.9 cm x 1.9 cm x 1.9 cm - Unpublished.
282. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 18 g. Dimensions: 2.7 cm x 2.6 cm - Museo Archeologico Etnografico Modena (inv. Cas. 216) - Unpublished.
283. Grotta Manaccora [site no. 23, cave] (Peschici, Italy). Big cave. Undetermined chronology (Bronze Age) - Complete. Stone. Mass: 41 g. Dimensions: 2.9 cm x 3.0 cm x 2.7 cm - Museo delle Origini, Roma (inv. no. 4033) - Unpublished.
284. Grotta Manaccora [site no. 23, cave] (Peschici, Italy). Big cave. Undetermined chronology (Bronze Age) - Complete. Stone. Mass: 50.5 g. Dimensions: 3.6 cm x 3.4 cm x 3.4 cm - Museo delle Origini, Roma (inv. no. 4033) - Unpublished.
285. Grotta Manaccora [site no. 23, cave] (Peschici, Italy). Big cave. Undetermined chronology (Bronze Age) - Natural grooves. Complete. Stone. Mass: 29.3 g. Dimensions: 3.2 cm x 2.9 cm x 3.1 cm - Museo delle Origini, Roma (inv. no. 4033) - Unpublished.
286. Grotta Manaccora [site no. 23, cave] (Peschici, Italy). Big cave. Undetermined chronology (Bronze Age) - Complete. Stone. Mass: 82.4 g. Dimensions: 3.7 cm x 3.8 cm x 3.8 cm - Museo delle Origini, Roma (inv. no. 4033) - Unpublished.
287. Wilmersdorf [site no. 155, burial] (Dahme-Spree-wald, Brandenburg, Germany). Grave 99-103 (one of five graves). Phase 4 (Period IV-V) - Part of a set of 3 weights (cat. no. 287, 422, 450). Complete. Stone. Mass: n/a. Dimensions: 2.9 cm x 2.6 cm - Museum für Vor- und Frühgeschichte Berlin - Busse 1900, 55.
288. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.16 g. Dimensions: 0.4 cm x 0.3 cm x 0.3 cm - ROSCIO *et al.* 2011, fig. 2.32.
289. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.2 g. Dimensions: 0.5 cm x 0.4 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.36.
290. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.44 g. Dimensions: 0.6 cm x 0.5 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.38.
291. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.39 g. Dimensions: 0.6 cm x 0.6 cm x 0.4 cm - ROSCIO *et al.* 2011, fig. 2.51.
292. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 0.45 g. Dimensions: 0.7 cm x 0.5 cm x 0.5 cm - ROSCIO *et al.* 2011, fig. 2.68.

293. Castro de Pragança [site no. 199, settlement] (Cadaual, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 3.29 g. Dimensions: 1 cm x 1 cm - VILAÇA 2003, fig. 3.12.
294. Castro de Pragança [site no. 199, settlement] (Cadaual, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 3.17 g. Dimensions: 1.1 cm x 0.9 cm - VILAÇA 2003, fig. 3.14.
295. Castro de Pragança [site no. 199, settlement] (Cadaual, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 3.2 g. Dimensions: 1 cm x 1 cm - VILAÇA 2003, fig. 3.13.
296. Castro de Pragança [site no. 199, settlement] (Cadaual, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 4.65 g. Dimensions: 1.1 cm x 1.1 cm - VILAÇA 2003, fig. 3.11.
297. Castro de Pragança [site no. 199, settlement] (Cadaual, Oeste, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: 6.28 g. Dimensions: 1.1 cm x 1.1 cm - VILAÇA 2003, fig. 3.15.
298. Nossa Senhora da Guia de Baiões [site no. 205, settlement] (S. Pedro do Sul, Viseu, Portugal). Phase 4 (Atlantic FBA) - Complete. Copper/bronze. Mass: 6.2 g. Dimensions: 1.2 cm x 1.2 cm - VILAÇA 2003, fig. 1.6.
299. Santa Luzia [site no. 204, settlement] (Viseu, Portugal). Phase 4 (Atlantic FBA III) - Complete. Copper/bronze. Mass: n/a. Dimensions: 1.1 cm x 1.1 cm x 1.0 cm - VILAÇA 2011, fig. 1.4.
300. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Stone (hematite). Mass: 9.9 g. Dimensions: 1.5 cm x 1.5 cm - PARE 1999, fig. 24.4.
301. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Stone (hematite). Mass: 10.8 g. Dimensions: 1.5 cm x 1.5 cm - PARE 1999, fig. 24.5.
302. Milavče [site no. 130, burial] (Bohemia, Czech Republic). Tumulus C/1. Phase 3 (Br D) - Part of a set of 2 balance weights (cat. no. 82, 302). Associations: bronze vase on wheels, 2 bronze cups, sword, razor, knife, 2 phalerae, 4 rings, 23 bronze sheet fragments, 4 pin fragments, rod fragment - Complete. Copper/bronze. Mass: 21.45 g. Dimensions: 1.8 cm x 1.7 cm - PARE 1999, fig. 5.10.
303. Büchelberg [site no. 123, burial] (Germersheim, Rheinland-Pfalz, Germany). Tumulus 3. Phase 3 (Br D) - Part of a set of 8 balance weights (cat. no. 64, 198, 271, 277, 278, 300, 301, 303). Associations: 3 bronze hinges (organic container?), dagger, awl, pottery - Complete. Copper/bronze. Mass: 10.7 g. Dimensions: 1.5 cm x 1.5 cm - PARE 1999, fig. 24.3.
304. Horušany [site no. 132, burial] (Bohemia, Czech Republic). Tumulus A. Phase 3 (Br D) - Part of a set of 4 balance weights (cat. no. 94, 103, 243, 304). Associations: 3 bronze hinges (organic container?), awl, 3 phalerae, stud, bronze fragment, pottery - Fragmented. Copper/bronze. Mass: 16.8 g. Dimensions: 1.7 cm x 1.7 cm x 1.7 cm - PARE 1999, fig. 10.3.
305. Singen, Widerholdstraße [site no. 102, burial] (Konstanz, Baden-Württemberg, Germany). Phase 3 (Br D) - Associations: sword, spearhead - Fragmented. Copper/bronze. Mass: 10.59 g. Dimensions: 1.6 cm x 1.4 cm - PARE 1999, fig. 30.2.
306. Etigny, "Le Brassot" Ouest [site no. 109, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 90. Phase 3 (Br D) - Part of a set of 13 balance weights and 1 balance beam (cat. no. 11, 60, 65, 80, 88, 117, 177, 180, 181, 182, 260, 261, 306). Associations: 3 bronze hinges (organic container), razor, pin, tweezers, ornaments, awl, knife, balance weights - Complete. Copper/bronze. Mass: 3.18 g. Dimensions: 1.4 cm x 0.8 cm - Musées de Sens - ROSCIO 2018, pl. 85.9.

5.11. TRUNCATED CONE

- *number of objects*: 2
- *objects with known mass (complete/reconstructed)*: 2 (100 %).
- *chronological range*: Phase 5 (c. 750-600 BCE)
- *material*: stone
- *1 site*: site no. 7
- *1 set*: site no. 7
- *mass range (complete/reconstructed)*: 25.17-26.8 g

This type includes only two stone objects, both from the Iron Age settlement of Santu Brai in Sardinia (c. 725-675 BCE). The weights have a truncated-conical shape, and both have five incised dots on the flat base. Assuming that these dots can be interpreted as quantity marks, the resulting unit would range between 5.03-5.36 g. These objects are part of a set of four balance weights (cat. no. 164, 307-308, 316).

307. Santu Brai [site no. 7, settlement] (Nuragus, Sud Sardegna, Sardegna, Italy). Rectangular house. Phase 5 (EIA 2B-EO) - Part of a set of 4 balance weights (cat. no. 164, 307, 308, 316). Associations: small ceramic jug containing an awl, a small saw, a dagger, and a bronze fragment; Etruscan bucchero - Five incised dots on the flat face. Complete. Stone. Mass: 26.8 g. Dimensions: 2.4 cm x 2.4 cm x 2.2 cm - UGAS 1986, tav. XVI.4.
308. Santu Brai [site no. 7, settlement] (Nuragus, Sud Sardegna, Sardegna, Italy). Rectangular house. Phase 5 (EIA 2B-EO) - Part of a set of 4 balance weights (cat. no. 164, 307, 308, 316). Associations: small ceramic jug containing an awl, a small saw, a dagger, and a bronze fragment; Etruscan bucchero - Five incised dots on the flat face. Complete. Stone. Mass: 25.17 g. Dimensions: 2.5 cm x 2.5 cm x 1.9 cm - UGAS 1986, tav. XVI.3.

5.12. SPHENDONOID

- *number of objects*: 12
- *objects with known mass (complete/reconstructed)*: 11 (92 %).
- *chronological range*: Phase 1-5 (c. 2300-675 BCE)
- *material*: stone (6), copper/bronze (6)
- *10 sites*: site no. 3, 4, 7, 27, 34, 102, 105, 127, 130, 130
- *5 sets*: site no. 7, 105 (2 sets), 127, 130
- *mass range (complete/reconstructed)*: 2.12-269.72 g
- *Distribution maps*: fig. 5.33.-34.

Typology, materials, comparisons, and function

The term 'sphendonoid' – from the Greek *sphendonos* ('slingshot') – is widely used in Bronze Age metrology, and recalls the elongated ovoid shape of slingshot bullets. The weights here classified as sphendonoid are subdivided into three variants. Variant 1 includes only one stone object with round cross-section and truncated extremities (cat. no. 309). Objects classified in Variant 2 are all made of bronze, and present a dense series of annular ribs. V2 also includes an intentionally fragmented pin shaft with the same characteristics (cat. no. 315). C. PARE (1999) was the first to suggest that these objects could be interpreted as balance weights. A flattened base is the defining trait of Variant 3, which only includes stone objects. Object cat. no. 320 has a transversal perforation.

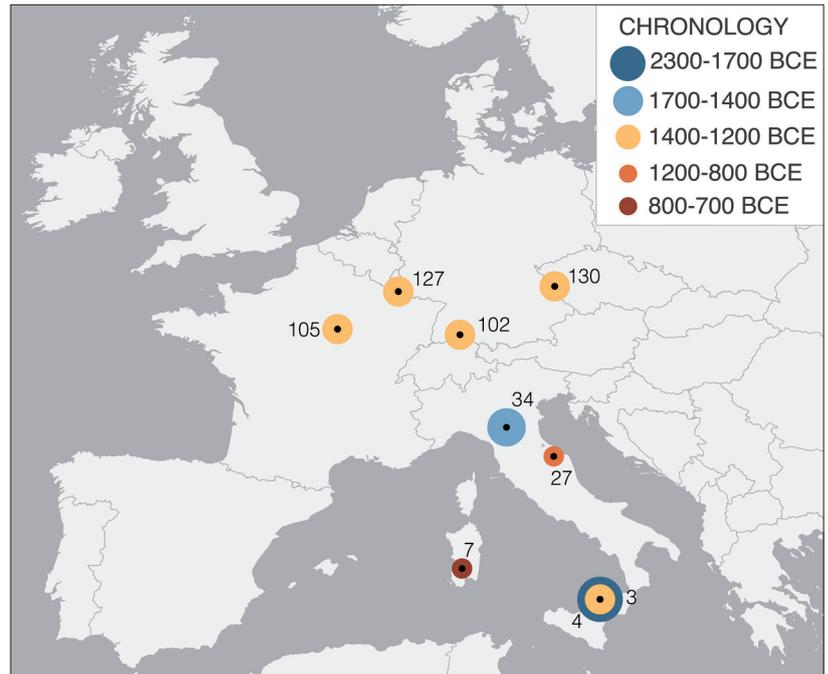
All sphendonoid weights could be easily laid inside a weighing bag, while V3 was best-suited to be put on a flat surface. Object cat. no. 320 could be hung directly on the balance scale through a cord.

While sphendonoid weights are somewhat rare in Europe, are one of the most widespread types of balance weights in Mesopotamia and the Levant in the 2nd millennium BCE, where they are always made of stone (RAHMSTORF 2022, 2-6). Sphendonoid weights with truncated ends – similar to V1 – are extremely common, for example, in the Assyrian *karum* of Kültepe-Kanesh, in central Anatolia (c. 2000-1700 BCE) (KULAKOĞLU 2017). Some of these weights bear perforations similar to the one present on object cat. no. 320, often used to host a metal ring (KULAKOĞLU 2017, fig. 21.1.7, 21.8.110). Perforated sphendonoid weights with suspension rings are also present in the Uluburun shipwreck (PULAK 1997, no. 46, 430). Finally, sphendonoid weights with flattened base seem to become more common in the Late Bronze Age, as attested by the Uluburun shipwreck (PULAK 1997). Bronze sphendonoid weights with annular ribs are not attested outside of Central Europe.

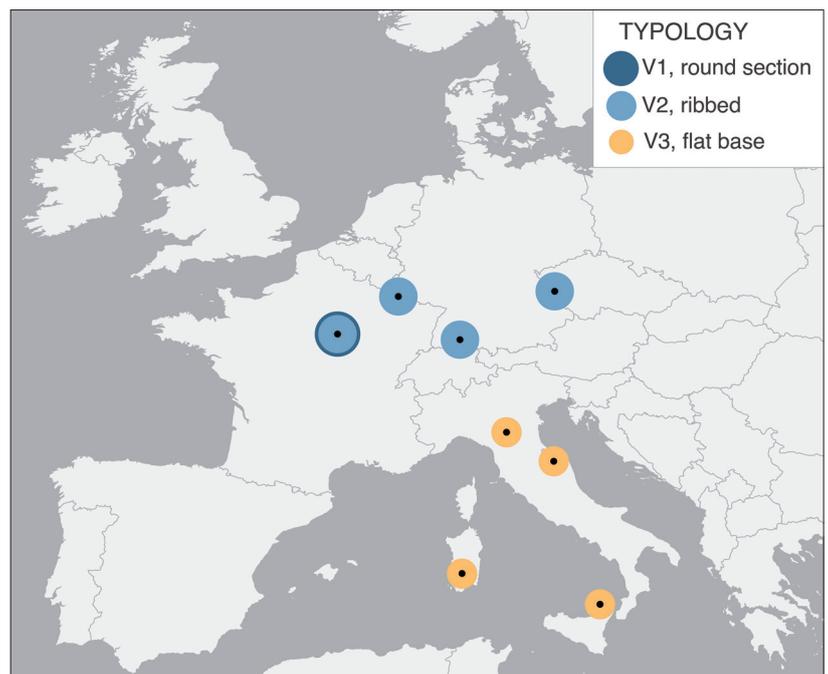
Chronology, geographical distribution, and contexts

While rare, sphendonoid weights have the longest time-span of all balance weight types analysed in this study, being attested from the beginning of the Bronze Age since at least the beginning of the 2nd Iron Age (Fig. 5.33.). The earliest sphendonoid weight (cat. no. 319) is attested in the Aeolian Islands (Italy), in

cremation grave of the cemetery of Contrada Diana (site no. 4), dated to the Early Bronze Age (c. 2300-1700 BCE). The object is somewhat atypical, as it presents a flattened shape that is not recorded elsewhere. A sphendonoid weight with flattened base comes from the 19th century excavation of the settlement of Gorzano, a *Terramara* in the Po Plain (Italy, site no. 34). The mixed materials from the excavation can be dated between the Middle and the Recent Bronze Age (c. 1600-1200 BCE). Sphendonoid weights are first attested in Central Europe in the Bronze D Phase (c. 1350-1200 BCE), where they only



▲ Fig. 5.33. *Sphendonoid weights. Geographical distribution: chronology and site ID.*



▲ Fig. 5.34. *Sphendonoid weights. Geographical distribution: typology.*

occur in burials and are often part of weighing sets. Object cat. no. 320, from the hilltop settlement of Monte Croce-Guardia in Central Italy (site no. 27) (c. 1200-1000 BCE) comes from a house in association with several bronze fragments (CARDARELLI *et al.* 2017, fig. 29.5), interpreted as workshop or a hoard. The latest object (cat. no. 316) is attested at the settlement of Santu Brai in Sardinia (site no. 7), where is part of a set of four balance weights.

VARIANT 1: Circular cross-section, plain surface (cat. no. 309)

- *number of objects:* 1
- *objects with known mass (complete/reconstructed):* 1
- *chronological range:* Phase 3 (c. 1350-1200 BCE)
- *material:* stone
- *1 site:* site no. 105
- *1 set:* site no. 105
- *mass range (complete/reconstructed):* 269,72 g

309. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 2 weights and 1 balance beam (cat. no. 1, 152, 309). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Stone. Mass: 269.72 g. Dimensions: 4.7 cm x 2.2 cm x 2.2 cm - ROSCIO *et al.* 2011, fig. 5.6; RAHMSTORF 2014, fig. 3.13.

VARIANT 2: Circular cross-section, annular ribs (cat. no. 310-314)

- *number of objects:* 6
- *objects with known mass (complete/reconstructed):* 4 (67 %)
- *chronological range:* Phase 3 (c. 1350-1200 BCE)
- *material:* copper/bronze
- *4 sites:* site no. 102, 105, 127, 130
- *3 sets:* site no. 105, 127, 130
- *mass range (complete/reconstructed):* 2.12-55.02 g

310. Migennes, Le Petit Moulin [site no. 105, burial] (Yonne, Bourgogne-Franche-Comté, France). Inhumation 298. Phase 3 (Br D) - Part of a set of 18 weights and 1 balance beam (cat. no. 4, 71, 72, 73, 74, 75, 106, 199, 201, 251, 262, 263, 268, 288, 289, 290, 291, 292, 310). Associations: 6 bronze hinges (organic container), dagger, hammer, awl, tweezers, 3 arrowheads, 2 rings, 7 bronze fragments, 12 gold fragments, 4 amber beads - Complete. Copper/bronze. Mass: 2.12 g. Dimensions: 1.0 cm x 0.8 cm x 0.8 cm - ROSCIO *et al.* 2011, fig. 2.33.

311. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 15.55 g. Dimensions: 3.45 cm x 0.9 cm x 0.9 cm - PARE 1999, fig. 17.7.

312. Milavče [site no. 130, burial] (Bohemia, Czech Republic). Tumulus C/4. Phase 3 (Br D) - Part of a set of 3 balance weights (cat. no. 87, 312, 313). Associations: sword, spearhead, knife, pin fragment, 3 bronze sheet fragments, bronze fragment - Fragmented. Copper/bronze. Mass: n/a (2.24 g). Dimensions: 1.0 cm x 0.9 cm x 0.9 cm - PARE 1999, fig. 9.10.

313. Milavče [site no. 130, burial] (Bohemia, Czech Republic). Tumulus C/4. Phase 3 (Br D) - Part of a set of 3 balance weights (cat. no. 87, 312, 313). Associations: sword, spearhead, knife, pin fragment, 3 bronze sheet fragments, bronze fragment - Fragmented. Copper/bronze. Mass: 8.94 g (6.7 g). Dimensions: 2.4 cm x 1.1 cm x 1.1 cm - PARE 1999, fig. 9.10.

314. Pépinville [site no. 127, burial] (Richemont, Moselle, Grand Est, France). Phase 3 (Br D) - Part of a set of 7 balance weights (cat. no. 79, 89, 99, 121, 270, 311, 314). Associations: sword, tweezers, knife, pin, miniature duck, 2 bronze fragments, 7 bronze cylinders filled with lead - Complete. Copper/bronze. Mass: 55.02 g. Dimensions: 5.63 cm x 1.66 cm x 0.8 cm - PARE 1999, fig. 17.6.

315. Singen, Widerholdstraße [site no. 102, burial] (Konstanz, Baden-Württemberg, Germany). Phase 3 (Br D) - Associations: sword, spearhead - Intentionally fragmented pin. Fragmented. Copper/bronze. Mass: 19.69 g. Dimensions: 5.5 cm x 0.9 cm x 0.9 cm - PARE 1999, fig. 30.3.

VARIANT 3: Flat base (cat. no. 316-320)

- *number of objects:* 5
- *objects with known mass (complete/reconstructed):* 5 (100 %)
- *chronological range:* Phase 1-5 (c. 2300-675 BCE)
- *material:* stone, copper/bronze
- *5 sites:* site no. 3, 4, 7, 27, 34
- *1 set:* site no. 7
- *mass range (complete/reconstructed):* 41.72-137.46 g

316. Santu Brai [site no. 7, settlement] (Nuragus, Sud Sardegna, Sardegna, Italy). Rectangular house. Phase 5 (EIA 2B-EO) - Part of a set of 4 balance weights (cat. no. 164, 307, 308, 316). Associations: small ceramic jug containing an awl, a small saw, a dagger, and a bronze fragment; Etruscan bucchero - Fragmented. Stone. Mass: 64.87 g. Dimensions: 3.5 cm x 2.5 cm x 2.7 cm - UGAS 1986, tav. XVI.6.

317. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 41.72 g. Dimensions: 4.39 cm x 2.68 cm x 2.62 cm - Museo Archeologico Etnografico Modena (inv. V) - Unpublished.

318. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House beta IV, Planum 14 (phase Ausonio I). Phase 3 (RBA) - Part of a set of 2 weights (cat. no. 22, 318). Associations: loom weight, high number of spindle whorls - Fragmented (reconstructed in 3D). Stone (steatite?). Mass:

- 137.46 g (136.4 g). Dimensions: 7.1 cm x 3.7 cm x 3.0 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5129) - Unpublished.
319. Lipari, Contrada Diana [site no. 4, burial] (Aeolian Islands, Messina, Sicilia, Italy). Contrada Diana, Capo Graziano necropolis, Grave 2. Phase 1 (EBA-MBA 1-2) - Complete. Stone (steatite?). Mass: 94.9 g. Dimensions: 7.4 cm x 4.7 cm x 1.6 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 8964) - Unpublished.
320. Monte Croce-Guardia [site no. 27, settlement] (Arcevia, Ancona, Marche, Italy). House 3, fase III, US 403 IIr. Phase 4 (FBA 3) - Transversal perforation. Part of a set of 2 balance weights (cat. no. 38, 120). Associations: concentration of fragmented bronze objects and a casting mould, interpreted as workshop/hoard. Sickle fragment, fibula fragment, bronze wire fragment, glass bead - Transversal perforation. Complete. Stone (limestone). Mass: 112.29 g. Dimensions: 7.6 cm x 3.1 cm x 3.5 cm - CARDARELLI *et al.* 2017, fig. 29.5.

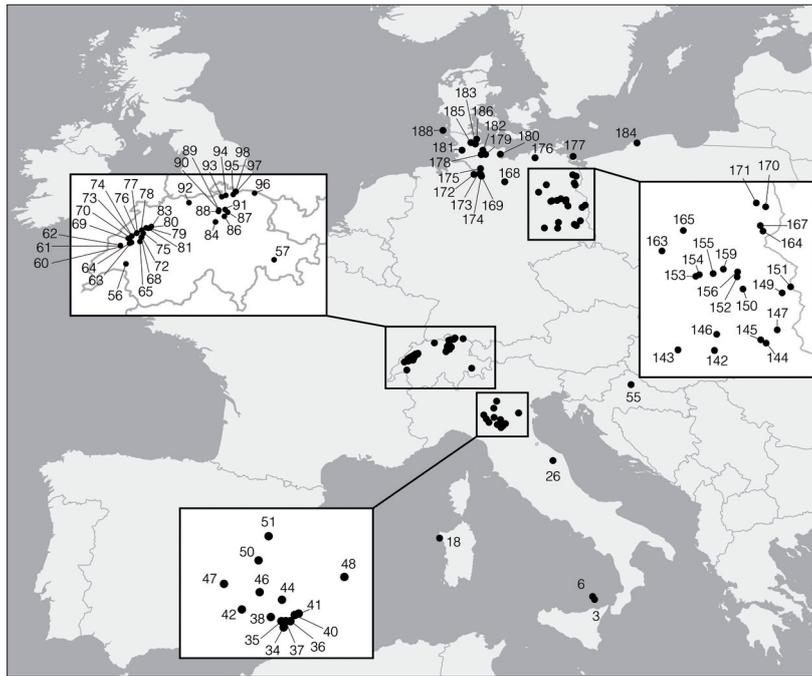
5.13. *KANNELURENSTEINE*

- number of objects: 322
- objects with known mass (complete/reconstructed): 305 (95 %)
- chronological range: Phase 2-4 (c. 1600-800 BCE)
- material: stone
- 92 sites (2 sets): site no. 3, (6), 18, 26, 34, 35, 36, 37, 38, 40, 41, 42, 44, 45, 46, 47, 48, 50, 51, 55, 56, 57, 60, 63, 64, 65, 69, 70, 71, 72, 74, 75, 76, 77, 78, 79, 80, 81, 83, 84, 86, 87,

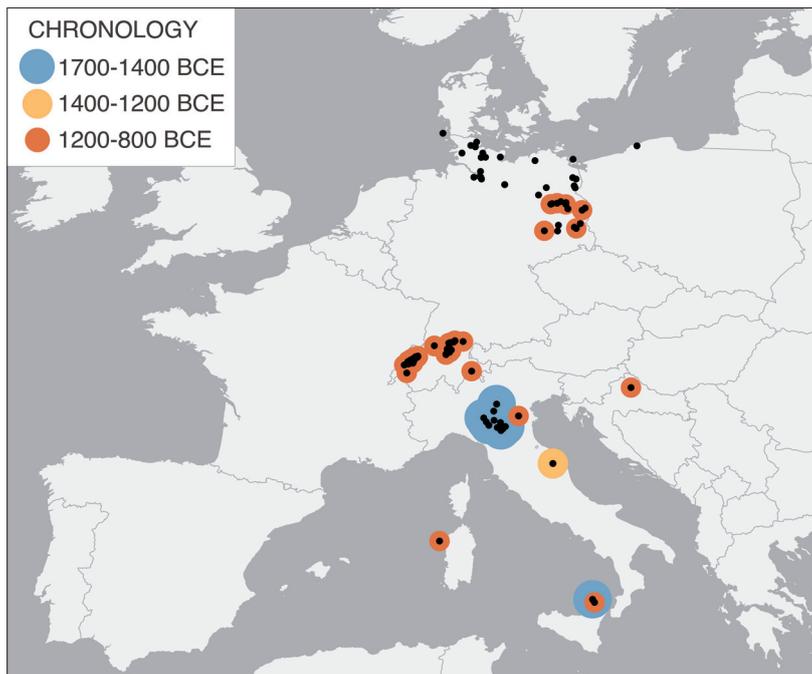
- 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 142, 143, 144, 145, 146, 147, 149, 150, 151, 152, 153, 154, (155), 156, 159, 163, 164, 165, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 188
- mass range (complete/reconstructed): 11.8-5,050.0 g (5th percentile= 133.71 g; 95th percentile= 1,344.2 g)

Distribution maps: fig. 5.35.-38.

Composition of the sample: fig. 5.39.-40.



▲ Fig. 5.35. *Kannelurensteine*. Geographical distribution: site ID.



▲ Fig. 5.36. *Kannelurensteine*. Geographical distribution: chronology.

Sample selection

The term *Kannelurenstein* (English: ‘grooved stone’; sometimes *Rillenstein*, with the same meaning) is commonly used in German-speaking literature to identify roughly globular/lenticular stone objects with a characteristic annular groove, widespread between northern Italy and Central Europe in the Middle and Late Bronze Age. The first systematic study of *Kannelurensteine* was published by F. HORST (1981), who collected nearly 1,000 objects but did not propose an interpretation for their function. A. CARDARELLI *et al.* (2001; 2004) were the first to propose the identification of *Kannelurensteine* with balance weights, based on a sample from MBA and LBA settlements in northern Italy.

F. Horst reports nearly 1,000 *Kannelurensteine* between Switzerland and Denmark, with more than half of the finds concentrated in eastern Germany. The mass values of the objects are never indicated. Only for c. 100 objects an image is provided, and nearly half of them do not correspond to the formal criteria of *Kannelurensteine* adopted in the present study. The lack of graphic documentation and the approximate selection criteria make it impossible to validate F. Horst’s identification and distribution maps, and hence his catalogue was not included in the database. A. CARDARELLI *et al.* (2001; 2004) published 39 objects from northern Italy, with mass values. M. Trachsel kindly provided his database, containing the mass values of 122 complete *Kannelurensteine* from Bronze Age sites in Switzerland. During research for the preparation of this book, I documented 98 unpublished objects from museums in Italy and Germany, and collected 63 more from publications.

Typology, geographical distribution and chronology

Kannelurensteine are the most characteristic type of balance weight of Bronze Age Europe, and the most numerous in the *mina*-range with 322 objects. They do not have typological parallels in the eastern Mediterranean. All *Kannelurensteine* are made of stone. Most variants have a squat body, with the characteristic annular groove on the diameter. Instead of a marked groove, some variants present a flattened surface. In northern Italy, these objects are often referred to as ‘lenticular weights’, after the most recurrent body shape in Italian contexts.

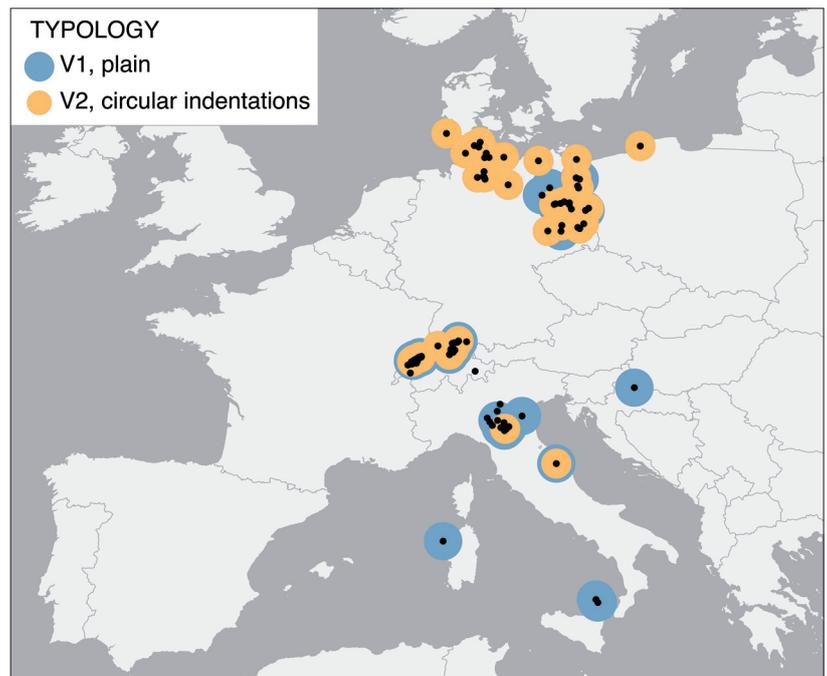
Their most significant typological trait is the presence/absence of two circular indentations, on the upper and lower faces. This trait allows separating *Kannelurensteine* into two main variants, each with peculiar chronological range and geographical distribution (Fig. 5.36-37.). The variant with plain surfaces (V1) is the earliest. Eight objects pertaining to V1 are attested in at least two short-lived MBA contexts (Phase 2, c. 1600-1350 BCE): three at Salina – Villaggio della Portella in the Aeolian Islands (site no. 6; cat. no. 336, 340, 360), and five at Gaggio di Castelfranco in northern Italy (site no. 40; cat. no. 337, 347, 372, 414, 509). The chronology of V1 is not limited to Phase 2, but extends to Phase 4 throughout the entire distribution area. Variant 2 with circular indentations is overall later. Only two objects come from a Phase 3 settlement in central Italy (Moscosi – Piano di Fonte Marcosa, site no. 26; cat. no. 329, 427), while all remaining ones are attested in Phase 4 contexts in Italy, Switzerland, Germany, and Croatia.

The two main variants are further divided into subgroups based on the overall shape of their body. In general, body shape does not seem to indicate relevant chronological and distribution patterns, except in two cases. Italian contexts show prominently lenticular *Kannelurensteine*, but the same shape is also attested in Central Europe. Ovoid shapes, on the other hand, seem to be exclusive to northern Italy.

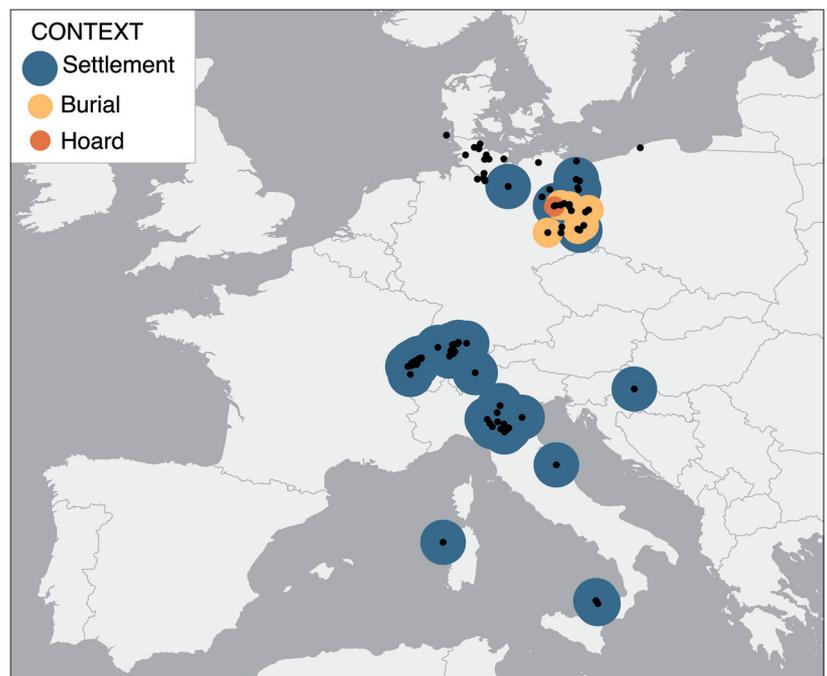
150 objects were mentioned in reliable, previously published detailed lists, which indicated the objects' mass values but did not provide an image. These objects were included in the catalogue, but were not typologically classified.

Function

It has been proposed that *Kannelurensteine* were used as fixed pulleys (LEUVREY 1999, 79-81), based on the relatively frequent occurrence in Swiss sites of the type with opposed circular indentations. According to J. M. Leuvrey, the indentations would have been used as pivots for wooden poles. This interpretation, however, is extremely unlikely, because it would require the objects to be completely perforated. Moreover, only a limited number of *Kannelurensteine* present the circular indentations, and Italian ones almost never do. These objects are sometimes interpreted generically as “working tools”, without further specification. However, the low occurrence of use wear makes it unlikely that they were systematically used for working activities. Moreover, the generic working-tool hypothesis does not explain the grooves and the indentations. Similar objects are documented at the Celtic site of Manching, and were interpreted as ‘door-holders’, hanging from a cord (JACOBI 1974, 243-244). There is no chronological continuity between the Bronze Age *Kannelurensteine* and the objects from Manching, therefore their respective functions can be completely different. However, a

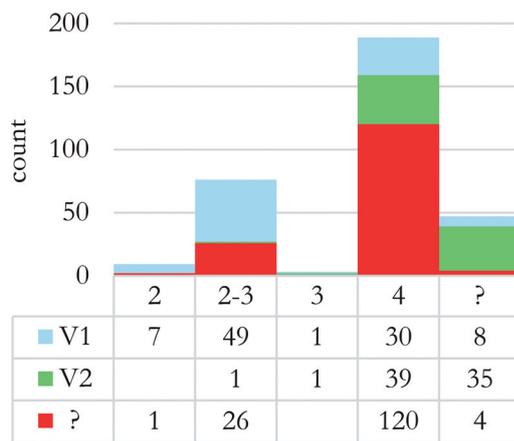


▲ Fig. 5.37. *Kannelurensteine*. Geographical distribution: typology.

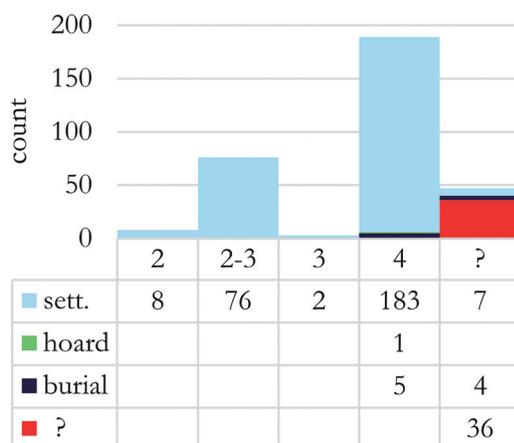


▲ Fig. 5.38. *Kannelurensteine*. Geographical distribution: site type.

similar interpretation does not seem plausible for the Bronze Age objects. First of all, not all *Kannelurensteine* have a groove; second, the weight range is too wide, including objects that are either too light or too heavy for the purpose; and third, they are documented in open air smelting facilities and burials, where doors were probably of little use. For the eastern German sample, F. HORST (1981) emphasized that even though the majority of the known *Kannelurensteine* are single finds, there are indications of a connection to craftsmanship and especially metalworking.



► Fig. 5.39. *Kannelurensteine*. Quantification: typology vs chronology.



► Fig. 5.40. *Kannelurensteine*. Quantification: site type vs chronology.

The balance weight hypothesis – supported by the statistical analyses – provides plausible explanations for all those specific traits of *Kannelurensteine* that were used in previous studies to support different interpretations. The use wear that is sometimes observed in the groove – which, it is safe to remind, is not always present – can be explained with the frequent use of a cord to keep the weight hanging from one extremity of an equal-arm balance. If the much later objects from Manching were also used as balance weights, the function of the cord may have been taken over by the metal clamp. While it is likely that in the Bronze Age most balance beams were made of wood (PEYRONEL 2011; IALONGO 2019), it has been recently demonstrated that even the tiniest and most fragile bone beams (frequently contained in LBA burials) could support a weight of at least 5 kg (HERMANN *et al.* 2020) macromolecular chemistry and material science, and thus they were perfectly capable of handling *Kannelurensteine*, either hanging directly from one of the arms or lying on one of the pans. The groove and the occasional presence of circular indentations – used to propose the unlikely interpretation as fixed pulleys – can be easily explained by the manufacture process of balance weights. The only way to construct a stone weight is to progressively remove material, until the desired mass is obtained. As balance weights, *Kannelurensteine* were meant to possess an approximately specific form, *i. e.*, a finely shaped, approximately lenticular object. The groove and the in-

dentations may have been required to further carve the object in order to obtain the desired mass, once the crafter had already achieved the desired proportions. This also explains why the groove and the indentations are not present in all exemplars. Finally, the occasional occurrence of use wear can be explained with a possible reuse as a tool (as it is documented in the Bronze Age Aegean: RAHMSTORF 2016c), and even with the practice related to the use of balance weights. Weights are, after all, still tools: They are often picked up and dropped on different surfaces during their use-lives, and rough movements can produce chipping and permanent traces. Finally, the significant spread of the size of *Kannelurensteine* (11.8-5,050 g) further supports the interpretation as balance weights, and is not compatible with other interpretations.

Contexts

Unfortunately, most *Kannelurensteine* are stray finds, or come from old excavations lacking documentation. Only in a few cases do contexts provide clues for their interpretation. In the Middle Bronze Age settlement of Salina, in the Aeolian Islands (site no. 6), two *Kannelurensteine* are associated with a casting mould and a clamp made of pure tin, probably imported as an ingot (BETTELLI/CARDARELLI 2005). In the site of Kalnik-Igrišće, in Croatia (site no. 55), *Kannelurensteine* are associated with smelting facilities (VRDOLJAK/FORENBAHER 1995).

Kannelurensteine are documented in burials only in eastern Germany and western Poland in the Lusatian culture (Ha A-B) (Fig. 5.38.). In the cemetery of Battaune, Kr. Delitzsch in Saxony (site no. 143), such an object was found together with two casting moulds in a cremation grave (SCHMALFUSS 2008). This burial from Saxony provides a clear reference to metallurgy. Also, in western Poland *Kannelurensteine* were placed in cremation graves like in the cemetery of Wartosław, ca. 60 km northwest of Poznań, which is not included in this study. While some of the *Kannelurensteine* (KRZYSZOWSKI (ed.) 2019, pl. 36) were found in excavations in the 19th century, recently excavated burials at the same site confirmed the fact that they were placed with the cremation urns and other vessels, like in the case of grave no. 200 (KRZYSZOWSKI (ed.) 2019, 55, 229 no. 227, pl. 95,5). The large grave no. 198 from the excavation in 2009 contained the cremated bodies of at least eight individuals, 70 pottery vessels, two metal objects, a stone axe, a stone mould and 33 stone objects – pebbles but also shaped stones. Some of them, if not all, seem to be balance weights as one bears a clear marking in the shape of a cross (KRZYSZOWSKI (ed.) 2019, pl. 27,7, 95,4, photo 60). Finally, the hoard of Krampnitz, Potsdam (site no. 153), in Brandenburg in eastern Germany is the only documented hoard containing a *Kannelurenstein*. It includes a spearhead, ornaments, scrap metal and an awl with a preserved wooden handle (REINBACHER 1956).

VARIANT 1: Plain surfaces (cat. no. 321-415)

- *number of objects*: 95
- *objects with known mass (complete/reconstructed)*: 91 (96%)
- *chronological range*: Phase 2-4 (c. 1600-800 BCE)
- *material*: stone
- *24 sites (1 set)*: site no. 3, (6), 18, 26, 34, 35, 36, 37, 38, 40, 46, 48, 55, 74, 76, 79, 84, 91, 98, 150, 154, 163, 165, 170
- *mass range (complete/reconstructed)*: 11.8-2,928 g

Sub-variant 1.A: Spool-shaped (cat. no. 321-327)

321. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 235.67 g (226.17 g). Dimensions: 4.0 cm x 6.2 cm x 5.8 cm - Museo Archeologico Etnografico Modena (inv. no. 1251) - Unpublished.
322. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone. Mass: n/a (751.8 g). Dimensions: 9.2 cm x 9.2 cm x 5.6 cm - LEUVREY 1999, pl. 81.1.
323. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 337.4 g. Dimensions: 6.3 cm x 6.2 cm x 6.0 cm - Museo Archeologico Etnografico Modena (inv. no. Cas. 234) - Unpublished.
324. Friedersdorf [site no. 150, settlement] (Dahme-Spreewald, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 361.07 g. Dimensions: 6.1 cm x 6.0 cm x 5.8 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2009-2002/74) - Unpublished.
325. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone. Mass: 360.4 g (335.97 g). Dimensions: 6.4 cm x 5.0 cm x 7.0 cm - Museum für Vor- und Frühgeschichte Berlin (inv. aus BB 122) - Unpublished.
326. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone (limestone). Mass: 453.35 g (446.57 g). Dimensions: 7.4 cm x 6.8 cm x 6.1 cm - Museum für Vor- und Frühgeschichte Berlin (inv. aus BB 122) - Unpublished.
327. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Br C-Ha B) - Fragmented (reconstructed in 3D). Stone. Mass: 737.06 g (730 g). Dimensions: 9.1 cm x 7.3 cm x 7.6 cm - Museum für Vor- und Frühgeschichte Berlin (inv. aus BB 122) - Unpublished.

Sub-variant 1.B: Biconical (cat. no. 328-329)

328. Frattesina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 361 g. Dimensions: 9.0 cm x 9.0 cm x 4.8 cm (inv. B) - CARDARELLI *et al.* 2001, fig. 16.6.

329. Frattesina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 440 g. Dimensions: 10.1 cm x 7.8 cm x 6.0 cm (inv. C) - CARDARELLI *et al.* 2001, fig. 16.8.

Sub-variant 1.C: Bi-troncoconical (cat. no. 330)

330. Kalnik-Igrišće [site no. 55, settlement] (Croatia). Phase 4 (Ha B3) - Associations: casting moulds and metalworking facilities - Fragmented. Stone. Mass: n/a. Dimensions: 12.9 cm x 13.4 cm x 8.6 cm - VRDOLJAK/FORENBAHER 1995, fig. 4.

Sub-variant 1.D: Lenticular (cat. no. 331-371)

331. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 600.2 g. Dimensions: 9.3 cm x 4.5 cm x 4.8 cm - LEUVREY 1999, pl. 79.2.
332. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 780 g. Dimensions: 9.8 cm x 10.4 cm x 5.0 cm - LEUVREY 1999, pl. 80.1.
333. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 707.6 g. Dimensions: 10.0 cm x 9.6 cm x 5.3 cm - LEUVREY 1999, pl. 79.4.
334. Frattesina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 440 g. Dimensions: 9.6 cm x 9.5 cm x 3.8 cm (inv. no. 89897) - CARDARELLI *et al.* 2001, fig. 16.4.
335. Michaelisbruch [site no. 163, unknown context] (Ostprignitz-Ruppin, Brandenburg, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 339.6 g. Dimensions: 7.4 cm x 7.2 cm x 4.1 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. If 22107) - Unpublished.
336. Salina, Villaggio della Portella [site no. 6, settlement] (Aeolian Islands, Messina, Sicilia, Italy). Phase 2 (MBA 3) - Complete. Stone (sandstone). Mass: 275.43 g. Dimensions: 8.4 cm x 7.0 cm x 3.3 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 24885) - Unpublished.
337. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 505, Trench 11. US 20013, fase 2. Phase 2 (MBA-RBA) - Complete. Stone. Mass: 489.63 g. Dimensions: 7.7 cm x 8.2 cm x 5.2 cm - Museo Archeologico Etnografico Modena (inv. no. 2848) - Unpublished.
338. Nuraghe Sant'Imbenia [site no. 18, settlement] (Alghero, Sassari, Sardegna, Italy). A6, 04-07-2011. US 51. Phase 4 (EIA) - Complete. Stone. Mass: 398.49 g. Dimensions: 8.6 cm x 8.4 cm x 4.0 cm - Storerooms of the archaeological excavations at Sant'Imbenia, Alghero (inv. ND) - Unpublished.
339. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 92, BB 16a. US 172, pit filling. Phase 3 (MBA-RBA) - Fragmented. Stone (limestone). Mass: n/a (200.19 g). Dimensions: 8.6 cm x 4.6 cm x 3.9 cm - Biblioteca Comunale di Cingoli (MC) - Unpublished.

340. Salina, Villaggio della Portella [site no. 6, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House R2, US 49 III. Phase 2 (MBA 3) - Part of a set of 2 balance weights (cat. no. 340, 360). Associations: tin ingot, casting mould - Fragmented. Stone (limestone?). Mass: n/a (1,260 g). Dimensions: 12.7 cm x 10.1 cm x 7.2 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. ND) - Unpublished.
341. Scandiano [site no. 38, settlement] (Reggio Emilia, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (porphyry). Mass: 436 g. Dimensions: 7.9 cm x 7.7 cm x 5.1 cm (inv. no. 3176) - CARDARELLI *et al.* 2001, fig. 13.3.
342. Frattesina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 362 g. Dimensions: 8.4 cm x 6.9 cm x 4.1 cm (inv. no. 32981) - CARDARELLI *et al.* 2001, fig. 16.3.
343. Santa Rosa di Poviglio [site no. 46, settlement] (Reggio Emilia, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 545 g. Dimensions: 9.4 cm x 9.2 cm x 4.3 cm - CARDARELLI *et al.* 2001, fig. 13.4.
344. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 654.3 g. Dimensions: 9.1 cm x 9.7 cm x 5.2 cm - LEUVREY 1999, pl. 79.1.
345. Frattesina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 490 g. Dimensions: 7.8 cm x 7.6 cm x 5.0 cm (inv. I.G. 17309) - CARDARELLI *et al.* 2001, fig. 16.5.
346. Lipari, acropolis [site no. 3, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House beta IV, Trench BR, Plana 10-11, 4th floor (Ausonio II). Phase 4 (FBA) - Complete. Stone. Mass: 341.3 g. Dimensions: 7.8 cm x 6.7 cm x 5.3 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 5922) - Unpublished.
347. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 507, Trench 9, UB 16. US 9010, fase 2. Phase 2 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone. Mass: 466.2 g (450.99 g). Dimensions: 7.8 cm x 8.2 cm x 4.7 cm - Museo Archeologico Etnografico Modena (inv. no. 1775) - Unpublished.
348. Schwanow [site no. 165, unknown context] (Ruppiner, Brandenburg, Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone. Mass: 291.86 g (290.46 g). Dimensions: 7.1 cm x 7.0 cm x 3.9 cm - Museum für Vor- und Frühgeschichte Berlin (inv. Slg. Schulze no. 1956:80) - Unpublished.
349. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 715.3 g. Dimensions: 8.6 cm x 9.6 cm x 6.7 cm (inv. no. 2512) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2512.
350. Groß-Glienicke [site no. 154, settlement] (either Berlin or Potsdam, either Berlin or Brandenburg, Germany). Undetermined chronology (Bronze Age) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 336.97 g (317.73 g). Dimensions: 8.1 cm x 7.9 cm x 3.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2009-1737/07) - HENSEL 2009.
351. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 521.7 g. Dimensions: 5.9 cm x 7.9 cm x 7.1 cm - Museo Archeologico Etnografico Modena (inv. no. 7751) - Unpublished.
352. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 521.73 g. Dimensions: 5.9 cm x 8.0 cm x 7.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7731) - Unpublished.
353. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 389.01 g. Dimensions: 5.5 cm x 7.8 cm x 6.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7722) - Unpublished.
354. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 250.9 g. Dimensions: 6.2 cm x 6.4 cm x 4.6 cm (inv. no. 2511) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2511.
355. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (marble). Mass: 429 g. Dimensions: 8.1 cm x 8.1 cm x 4.1 cm (inv. no. 7705) - CARDARELLI *et al.* 2001, fig. 13.1.
356. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 241.9 g. Dimensions: 7.3 cm x 7.1 cm x 4.0 cm (inv. no. 2510) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2510.
357. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,375.3 g. Dimensions: 11.05 cm x 10.35 cm x 7.9 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7882) - BERNATZKY-GOETZE 1987, 208, Taf. 167.4.
358. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 1,257.9 g. Dimensions: 12.2 cm x 10.6 cm x 8.1 cm (inv. no. 2509) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2509.
359. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 984.9 g. Dimensions: 10.55 cm x 8.5 cm x 7.25 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7883) - BERNATZKY-GOETZE 1987, 208, Taf. 167.5.
360. Salina, Villaggio della Portella [site no. 6, settlement] (Aeolian Islands, Messina, Sicilia, Italy). House R. Phase 2 (MBA 3) - Part of a set of 2 balance weights (cat. no. 340, 360). Associations: tin

- ingot, casting mould (adjacent structure R2) - Complete. Stone. Mass: 2,928 g. Dimensions: 15.5 cm x 12.0 cm x 8.7 cm - Museo Archeologico Regionale Eoliano Luigi Bernabò Brea (inv. no. 24943) - Unpublished.
361. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld P, Halde, Fundkomplex 5918. Phase 4 (Ha A-B) - Complete. Stone (quarzite). Mass: 266 g. Dimensions: 6.3 cm x 5.8 cm (inv. no. 1021) - EBERSCHWEILER *et al.* 2007, Taf. 107.1021.
362. Hauterive-Champpréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 332.2 g. Dimensions: 6.5 cm x 7.0 cm x 4.9 cm - LEUVREY 1999, pl. 79.3.
363. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld N, Fundkomplex 4126. Phase 4 (Ha A-B) - Complete. Stone (quarzitic sandstone). Mass: 270 g. Dimensions: 6.8 cm x 7.3 cm x 4.2 cm (inv. no. 1020) - EBERSCHWEILER *et al.* 2007, Taf. 107.1020.
364. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld A, Halde, Fundkomplex 1315. Phase 4 (Ha A-B) - Complete. Stone (amphibolite). Mass: 722 g. Dimensions: 9.0 cm x 9.3 cm x 5.1 cm (inv. no. 1015) - EBERSCHWEILER *et al.* 2007, Taf. 107.1015.
365. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld N, Fundkomplex 4096. Phase 4 (Ha A-B) - Complete. Stone (quarzite). Mass: 807 g. Dimensions: 9.1 cm x 10.5 cm x 5.5 cm (inv. no. 1016) - EBERSCHWEILER *et al.* 2007, Taf. 107.1016.
366. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 1,273 g. Dimensions: 12.0 cm x 10.3 cm x 7.8 cm (inv. no. 2525) - BOLLIGER SCHREYER *et al.* 2004, Taf. 225.2525.
367. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld F, Halde, Fundkomplex 4296. Phase 4 (Ha A-B) - Associations: axe, two awls - Complete. Stone (quarzitic sandstone). Mass: 1,309 g. Dimensions: 12 cm x 9 cm (inv. no. 1014) - EBERSCHWEILER *et al.* 2007, Taf. 107.1014.
368. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 428 g (inv. no. 7786) - CARDARELLI *et al.* 2001, fig. 14.4.
369. Gazzade [site no. 36, settlement] (Varese, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 533 g (inv. no. 192) - CARDARELLI *et al.* 2001, fig. 13.2.
370. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone (sandstone). Mass: 41 g (36.5 g) - CARDARELLI *et al.* 2004, fig. 1.5.
371. Battin [site no. 170, unknown context] (Prenzlau, Brandenburg, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 11.8 g. Dimensions: 2.3 cm x 2.3 cm x 1.5 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. If 265777) - Unpublished.
- Sub-variant 1.E: Ovoid (cat. no. 372-409)**
372. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 507, Trench 5, TM 5. US 10122, fase 1.2, ditch. Phase 2 (MBA-RBA) - Complete. Stone. Mass: 416.64 g. Dimensions: 7.3 cm x 6.0 cm x 6.6 cm - Museo Archeologico Etnografico Modena (inv. no. 3572) - Unpublished.
373. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 414.64 g (402.03 g). Dimensions: 6.8 cm x 6.8 cm x 6.0 cm - Museo Archeologico Etnografico Modena (inv. no. 238) - Unpublished.
374. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 375.74 g (373.37 g). Dimensions: 7.8 cm x 6.7 cm x 5.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7731) - Unpublished.
375. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 588.04 g. Dimensions: 9.62 cm x 6.1 cm x 7.08 cm - Museo Archeologico Etnografico Modena (inv. no. 1234) - Unpublished.
376. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 299.06 g (274.74 g). Dimensions: 7.5 cm x 6.4 cm x 5.1 cm - Museo Archeologico Etnografico Modena (inv. s.n. 210) - Unpublished.
377. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 341.86 g (341.05 g). Dimensions: 7.6 cm x 6.7 cm x 5.3 cm - Museo Archeologico Etnografico Modena (inv. no. 7726) - Unpublished.
378. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 383.39 g (360.55 g). Dimensions: 8.0 cm x 6.3 cm x 5.8 cm - Museo Archeologico Etnografico Modena (inv. no. 460) - Unpublished.
379. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 319.91 g. Dimensions: 8.0 cm x 6.7 cm x 5.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7763) - Unpublished.
380. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 317.95 g. Dimensions: 8.9 cm x 5.7 cm x 3.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7758) - Unpublished.
381. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excava-

- tion '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 409.02 g. Dimensions: 8.8 cm x 6.9 cm x 4.6 cm - Museo Archeologico Etnografico Modena (inv. no. 7727) - Unpublished.
382. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 381.39 g. Dimensions: 7.2 cm x 6.1 cm x 5.3 cm - Museo Archeologico Etnografico Modena (inv. s.n. 206) - Unpublished.
383. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 407.57 g. Dimensions: 8.3 cm x 7.0 cm x 4.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7759) - Unpublished.
384. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 345.02 g. Dimensions: 7.5 cm x 5.5 cm x 5.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7767) - Unpublished.
385. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 327.19 g (324.76 g). Dimensions: 7.5 cm x 5.6 cm x 5.1 cm - Museo Archeologico Etnografico Modena (inv. no. 7784) - Unpublished.
386. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 387.38 g. Dimensions: 9.0 cm x 6.3 cm x 4.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7732) - Unpublished.
387. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 558.36 g. Dimensions: 7.9 cm x 7.2 cm x 6.8 cm - Museo Archeologico Etnografico Modena (inv. no. 7728) - Unpublished.
388. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 397.71 g. Dimensions: 6.5 cm x 6.5 cm x 6.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7740) - Unpublished.
389. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 477.08 g (475.62 g). Dimensions: 6.4 cm x 6.9 cm x 6.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7741) - Unpublished.
390. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 375.27 g (369.48 g). Dimensions: 7.3 cm x 6.9 cm x 5.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7773) - Unpublished.
391. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 377.64 g (373.08 g). Dimensions: 7.3 cm x 6.7 cm x 5.9 cm - Museo Archeologico Etnografico Modena (inv. no. 7750) - Unpublished.
392. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 427.46 g. Dimensions: 5.6 cm x 7.6 cm x 7.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7786) - Unpublished.
393. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 446.58 g. Dimensions: 8.0 cm x 7.18 cm x 8.12 cm - Museo Archeologico Etnografico Modena (inv. no. Cas. 158) - Unpublished.
394. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 332.52 g (328.75 g). Dimensions: 6.9 cm x 6.6 cm x 5.6 cm - Museo Archeologico Etnografico Modena (inv. no. 7781) - Unpublished.
395. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 453.02 g (447.21 g). Dimensions: 7.0 cm x 6.8 cm x 6.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7739) - Unpublished.
396. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 365.46 g (360.66 g). Dimensions: 7.0 cm x 7.2 cm x 6.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7712) - Unpublished.
397. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 381.03 g (355.28 g). Dimensions: 7.5 cm x 6.6 cm x 7.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7742) - Unpublished.
398. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 390.06 g. Dimensions: 7.5 cm x 6.2 cm x 5.5 cm - Museo Archeologico Etnografico Modena (inv. no. 7729) - Unpublished.
399. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 397.09 g (390.02 g). Dimensions: 7.0 cm x 7.1 cm x 5.5 cm - Museo Archeologico Etnografico Modena (inv. no. 7708) - Unpublished.

400. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 388.83 g (385.56 g). Dimensions: 8.4 cm x 7.6 cm x 5.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7759) - Unpublished.
401. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld M, Fundkomplex 3339. Phase 4 (Ha A-B) - Associations: axe, hammer, five awls, two knives - Complete. Stone (sandstone). Mass: 255 g. Dimensions: 5.6 cm x 5.7 cm (inv. no. 1022) - EBERSCHWEILER *et al.* 2007, Taf. 107.1022.
402. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 431.06 g (402.06 g). Dimensions: 7.0 cm x 6.7 cm x 6.0 cm - Museo Archeologico Etnografico Modena (inv. no. 451) - Unpublished.
403. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 420.8 g (403.94 g). Dimensions: 7.9 cm x 6.3 cm x 6.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7713) - Unpublished.
404. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 382.91 g (374.9 g). Dimensions: 7.3 cm x 6.6 cm x 5.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7720) - Unpublished.
405. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 334.44 g (329.22 g). Dimensions: 8.6 cm x 6.6 cm x 4.9 cm - Museo Archeologico Etnografico Modena (inv. no. 7757) - Unpublished.
406. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 380.7 g (358.92 g). Dimensions: 7.4 cm x 6.4 cm x 5.8 cm - Museo Archeologico Etnografico Modena (inv. no. sn209) - Unpublished.
407. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 387.82 g. Dimensions: 6.5 cm x 7.02 cm x 6.26 cm - Museo Archeologico Etnografico Modena (inv. no. 1261) - Unpublished.
408. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 36.8 g. Dimensions: 3.18 cm x 3.47 cm x 2.34 cm - Museo Archeologico Etnografico Modena (inv. no. Gor. 1248) - Unpublished.
409. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 338.81 g. Dimensions: 6.7 cm x 6.4 cm x 5.7 cm - Museo Archeologico Etnografico Modena (inv. no. 340) - Unpublished.

Sub-variant 1.F: Transversal groove
(cat. no. 410-412)

410. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 399.68 g. Dimensions: 7.6 cm x 7.7 cm x 5.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7777) - Unpublished.
411. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (granite). Mass: 1,200.4 g. Dimensions: 13.4 cm x 11.1 cm x 6.4 cm (inv. no. 2521) - BOLLIGER SCHREYER *et al.* 2004, Taf. 224.2521.
412. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,133.4 g. Dimensions: 6.1 cm x 4.9 cm x 3.3 cm - LEUVREY 1999, pl. 88.3.

Sub-variant 1.G: Criss-crossing grooves
(cat. no. 413-415)

413. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 432.46 g. Dimensions: 7.8 cm x 6.6 cm x 5.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7699) - Unpublished.
414. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). T. 505, Trench 11, US 20013, fase 2. Phase 2 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone. Mass: 427.87 g (372.68 g). Dimensions: 8.7 cm x 6.9 cm x 4.8 cm - Museo Archeologico Etnografico Modena (inv. no. 2850) - Unpublished.
415. Insel Werd [site no. 98, settlement] (Eschenz, Thurgau, Switzerland). Feld XII. Phase 4 (Ha A-B) - Complete. Stone. Mass: 862 g. Dimensions: 9.5 cm x 9.5 cm x 6.0 cm (inv. no. 6322) - BREM *et al.* 1987, Abb. 29.S5.

VARIANT 2: Circular indentations (cat. no. 416-491)

- *number of objects*: 76
- *objects with known mass (complete/reconstructed)*: 64 (84 %)
- *chronological range*: Phase 3-4 (c. 1350-800 BCE)
- *material*: stone
- *43 sites (1 set)*: site no. 26, 37, 70, 74, 76, 79, 84, 91, 92, 98, 142, 143, 144, 145, 146, 147, 149, 151, 152, 153, (155), 156, 159, 164, 167, 168, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 188
- *mass range (complete/reconstructed)*: 87.78-3,073.02 g

Sub-variant 2.A: Spool-shaped (cat. no. 416-420)

416. Kr. Sorau (former) [site no. 142, unknown context] (Brandenburg, Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone. Mass: 120 g (119.7 g). Dimensions: 5.0 cm x 5.1 cm x 2.6 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. II 8968) - Unpublished.
417. Müllrose [site no. 149, burial] (Oder-Spree, Brandenburg, Germany). Phase 4 (Period IV-V) - Associations: 6 small pebbles, pottery - Complete. Stone (sandstone). Mass: 125.08 g. Dimensions: 5.2 cm x 4.9 cm x 2.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2003-74) - Unpublished.
418. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 1,195.3 g. Dimensions: 12.6 cm x 11.0 cm x 5.6 cm (inv. no. 2518) - BOLLIGER SCHREYER *et al.* 2004, Taf. 224.2518.
419. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 604.2 g. Dimensions: 7.8 cm x 8.3 cm x 7.5 cm (inv. no. 2517) - BOLLIGER SCHREYER *et al.* 2004, Taf. 224.2517.
420. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 1,005.1 g. Dimensions: 11.0 cm x 8.0 cm x 8.3 cm (inv. no. 2516) - BOLLIGER SCHREYER *et al.* 2004, Taf. 224.2516.

Sub-variant 2.B: Bi-troncoconical (cat. no. 421-438)

421. Frankfurt "Nussweg" [site no. 151, burial] (Frankfurt (Oder), Brandenburg, Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 132.59 g. Dimensions: 5.0 cm x 5.0 cm x 3.6 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1992-626/21) - Unpublished.
422. Wilmersdorf [site no. 155, burial] (Dahme-Spree-wald, Brandenburg, Germany). Grave 99-103 (one of five graves). Phase 4 (Period IV-V) - Part of a set of 3 weights (cat. no. 287, 422, 450). - Complete. Stone. Mass: 123.4 g. Dimensions: 5.4 cm x 5.4 cm x 2.7 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. If 6651) - BUSSE 1900, 55.
423. Starkowo [site no. 184, unknown context] (formerly in Bomst, Brandenburg, Germany). Undetermi-

ned chronology (LBA) - Complete. Stone (sandstone). Mass: 120.2 g. Dimensions: 5.4 cm x 5.4 cm x 2.6 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. Id 473a) - Unpublished.

424. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 127 g. Dimensions: 5.6 cm x 5.5 cm x 2.6 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. Id 684a) - Unpublished.
425. Schönermark [site no. 167, unknown context] (Angermünde, Uckermark, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 87.78 g (82.98 g). Dimensions: 5.1 cm x 5.5 cm x 2.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1965:23/75/2) - Unpublished.
426. Linden [site no. 181, unknown context] (Dithmarschen, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 202.4 g. Dimensions: 6.2 cm x 5.9 cm x 3.6 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1920-5.1) - Unpublished.
427. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 92, AA 16, US 193b. Phase 3 (MBA-RBA) - Fragmented. Stone (limestone). Mass: n/a (340.78 g). Dimensions: 8.2 cm x 7.5 cm x 3.9 cm - Biblioteca Comunale di Cingoli (MC) - Unpublished.
428. Krampnitz [site no. 153, hoard] (Potsdam, Brandenburg, Germany). Found together with pottery sherds and "wood coal" (possibly a burial?). Phase 4 (Period IV) - Associations: spearhead, awl, fibula, 2 bracelets, 3 rings, hook, 3 bronze spirals, 4 sickle fragments, 3 rod fragments - Complete. Stone (sandstone). Mass: 112.23 g. Dimensions: 5.4 cm x 5.1 cm x 3.1 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1001:3864) - REINBACHER 1956, Taf. 29.g.
429. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 297.84 g. Dimensions: 6.9 cm x 6.9 cm x 4.5 cm - Brandenburgisches Landesamt für Denkmalpflege und archäologisches Landesmuseum (inv. no. ON 229) - Unpublished.
430. Insel Werd [site no. 98, settlement] (Eschenz, Thurgau, Switzerland). Feld VIII. Phase 4 (Ha A-B) - Complete. Stone. Mass: 939.8 g. Dimensions: 7.0 cm x 10.1 cm (inv. no. 1234) - BREM *et al.* 1987, Abb. 22.B12.
431. Kochendorf [site no. 183, unknown context] (Windeby, Rendsburg-Eckentörde, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 453.9 g. Dimensions: 7.8 cm x 8.2 cm x 4.7 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1837-5.1) - Unpublished.

432. Tungendorf [site no. 178, unknown context] (Neumünster, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone. Mass: 475.2 g. Dimensions: 7 cm x 7 cm x 6 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1936-31.1) - Unpublished.
433. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 885.1 g. Dimensions: 10.3 cm x 10.5 cm x 5.9 cm - LEUVREY 1999, pl. 83.1.
434. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 858.7 g. Dimensions: 9.7 cm x 9.9 cm x 5.2 cm - LEUVREY 1999, pl. 83.3.
435. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 969.5 g. Dimensions: 10.1 cm x 10.3 cm x 7.5 cm (inv. no. 2514) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2514.
436. Borstel [site no. 175, unknown context] (Sülfeld, Segeberg, Schleswig-Holstein, Germany). Fundplatz R8. Undetermined chronology (MBA-LBA) - Fragmented (reconstructed in 3D). Stone (quartzite). Mass: 998.36 g (982 g). Dimensions: 9.7 cm x 10.3 cm x 7.4 cm - Archäologisches Museum Hamburg (inv. no. HM 63552) - Unpublished.
437. Dollrothfeld [site no. 186, unknown context] (Süderbraup, Schleswig-Flensburg, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone. Mass: 1,131.8 g. Dimensions: 9.3 cm x 9.0 cm x 8.9 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1959-24.1) - Unpublished.
438. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 876.9 g. Dimensions: 10.8 cm x 9.25 cm x 5.9 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7876) - BERNATZKY-GOETZE 1987, 208, Taf. 166.2.
- Sub-variant 2.C: Lenticular (cat. no. 439-482)**
439. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Bronze Age) - Fragmented. Stone (granite?). Mass: n/a (358.59 g). Dimensions: 6.7 cm x 6.9 cm x 5.5 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. ON240) - Unpublished.
440. Germany (unknown provenance) [n/a, unknown context] (Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 236.27 g. Dimensions: 6.0 cm x 6.1 cm x 4.2 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. ON 223) - Unpublished.
441. Felchow [site no. 164, settlement] (Uckermark, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 179.95 g. Dimensions: 5.4 cm x 5.7 cm x 3.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2006-1023/2) - Unpublished.
442. Kleinflintbeck [site no. 182, unknown context] (Flintbeck, Rendsburg-Eckernförde, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 347.2 g. Dimensions: 7.0 cm x 6.9 cm x 4.8 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1483-1.1) - Unpublished.
443. Hamburg-Marmstorf [site no. 174, unknown context] (Hamburg, Germany). Undetermined chronology (MBA-LBA) - Complete. Stone (quartzite). Mass: 330.18 g. Dimensions: 7.3 cm x 7.5 cm x 4.1 cm - Archäologisches Museum Hamburg (inv. no. V54:375) - Unpublished.
444. Greifensee-Böschen [site no. 91, settlement] (Zürich, Switzerland). Feld H, Fundkomplex 2438. Phase 4 (Ha A-B) - Complete. Stone. Mass: 256 g. Dimensions: 6.5 cm x 6.0 cm x 4.4 cm (inv. no. 1017) - EBERSCHWEILER *et al.* 2007, Taf. 107.1017.
445. Hitzacker [site no. 168, settlement] (Lüchow-Danenberg, Niedersachsen, Germany). Fundstelle 10. Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 235.2 g. Dimensions: 6.8 cm x 6.6 cm x 3.2 cm - Niedersächsisches Landesamt für Denkmalpflege (inv. no. 6903) - Unpublished.
446. Klein Görigk [site no. 144, settlement] (Neuportershain, Oberspreewald-Lausitz, Brandenburg, Germany). Pit 265, Bottom. Phase 4 (Period IV-V) - Complete. Stone (sandstone). Mass: 194.28 g. Dimensions: 5.7 cm x 5.9 cm x 3.4 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2006-760) - UHL/BÖNISCH 2007, fig. 171.
447. Klockow [site no. 171, settlement] (Uckermark, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 119.05 g (66.6 g). Dimensions: 3.7 cm x 6.2 cm x 3.1 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 2008-700) - Unpublished.
448. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 125.2 g. Dimensions: 6.05 cm x 5.4 cm x 3.5 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7503) - BERNATZKY-GOETZE 1987, 208, Taf. 167.6.
449. Berlin-Rahnsdorf [site no. 152, burial] (Berlin, Germany). Grave 79. Phase 4 (Period IV-V) - Associations: pin with biconical head - Complete. Stone. Mass: n/a. Dimensions: 2.0 cm x 5.4 cm x 5.6 cm - SEYER 1967, fig. 1.c.
450. Wilmersdorf [site no. 155, burial] (Dahme-Spreewald, Brandenburg, Germany). Grave 99-103 (one of five graves). Phase 4 (Period IV-V) - Part of a set of 3 weights (cat. no. 287, 422, 450). Complete. Stone. Mass: n/a - Museum für Vor- und Frühgeschichte Berlin - BUSSE 1900, 55.
451. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 786.5 g. Dimensions: 8.5 cm x 8.4 cm x 5.9 cm - LEUVREY 1999, pl. 80.3.

452. Wankendorf [site no. 179, unknown context] (Plön, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 616.9 g. Dimensions: 7.6 cm x 7.6 cm x 7.2 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1875-3.1) - Unpublished.
453. Moisburg [site no. 172, unknown context] (Harburg, Hamburg, Germany). Undetermined chronology (MBA-LBA) - Complete. Stone (granite). Mass: 579.34 g. Dimensions: 8.2 cm x 8.8 cm x 5.8 cm - Archäologisches Museum Hamburg (inv. no. 60885) - Unpublished.
454. Greifensee-Böschchen [site no. 91, settlement] (Zürich, Switzerland). Feld R, Fundkomplex 2860. Phase 4 (Ha A-B) - Fragmented. Stone (quartzite). Mass: n/a (764 g). Dimensions: 9.1 cm x 9.1 cm x 5.8 cm (inv. 1019) - EBERSCHWEILER *et al.* 2007, taf. 107.1019.
455. Greifensee-Böschchen [site no. 91, settlement] (Zürich, Switzerland). Feld T, Fundkomplex 3580. Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 714 g. Dimensions: 9.2 cm x 8.7 cm x 6.1 cm (inv. no. 1018) - EBERSCHWEILER *et al.* 2007, Taf. 107.1018.
456. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 1,204.1 g. Dimensions: 11.8 cm x 10.3 cm x 6.7 cm (inv. no. 2513) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2513.
457. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone. Mass: n/a (847.4 g). Dimensions: 10.0 cm x 10.4 cm x 5.8 cm - LEUVREY 1999, pl. 80.4.
458. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 982.9 g. Dimensions: 10.5 cm x 8.4 cm x 7.7 cm - LEUVREY 1999, pl. 81.2.
459. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone. Mass: n/a (914.2 g). Dimensions: 11.0 cm x 10.0 cm x 5.6 cm - LEUVREY 1999, pl. 82.1.
460. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 854.8 g. Dimensions: 9.7 cm x 9.9 cm x 6.7 cm - LEUVREY 1999, pl. 82.2.
461. Stepnitzer Moor [site no. 176, unknown context] (Kammin, Vorpommern-Greifswald, Mecklenburg-Vorpommern, Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone (sandstone?). Mass: 1,394.77 g (1,355 g). Dimensions: 12.5 cm x 12.5 cm x 7.0 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. MM II 7362) - Unpublished.
462. Hauterive-Champréveyres [site no. 76, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 923.2 g. Dimensions: 11.6 cm x 10.8 cm x 5.2 cm - LEUVREY 1999, pl. 80.2.
463. Hitzacker [site no. 168, settlement] (Lüchow-Dannenberg, Niedersachsen, Germany). Fundstelle 10. Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 905.6 g. Dimensions: 9.4 cm x 9.6 cm x 6.1 cm - Niedersächsisches Landesamt für Denkmalpflege (inv. no. 663-7) - Unpublished.
464. Unknown [n/a, unknown context] (north-western Germany, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 752.9 g. Dimensions: 9.1 cm x 9.5 cm x 5.5 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. Ug. 20294) - Unpublished.
465. Fleestedt [site no. 173, unknown context] (Harburg, Hamburg, Germany). Fundplatz 3/1. Undetermined chronology (MBA-LBA) - Complete. Stone (granite). Mass: 779 g. Dimensions: 9.3 cm x 9.7 cm x 5.4 cm - Archäologisches Museum Hamburg (inv. no. V61:35) - Unpublished.
466. Insel Werd [site no. 98, settlement] (Eschenz, Thurgau, Switzerland). Feld X. Phase 4 (Ha A-B) - Complete. Stone. Mass: 918 g. Dimensions: 6 cm x 10 cm x 10 cm (inv. no. 6203) - BREM *et al.* 1987, Abb. 22.B13.
467. Cortaillod-Est [site no. 70, settlement] (Station Est, Neuchâtel, Switzerland). Phase 4 (Ha B2) - Complete. Stone. Mass: 810 g. Dimensions: 10.1 cm x 10.1 cm x 5.8 cm - Latènum, Hauterive (inv. no. Cort. 1593) - RIBAUX 1986, 95, Taf. 16.25.
468. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 909 g. Dimensions: 10.5 cm x 9.8 cm x 5.8 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7875) - BERNATZKY-GOETZE 1987, 208, Taf. 166.1.
469. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 917.5 g. Dimensions: 10.1 cm x 10.0 cm x 5.8 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7881) - BERNATZKY-GOETZE 1987, 208, Taf. 166.6.
470. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 900.9 g. Dimensions: 9.1 cm x 9.0 cm x 5.9 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7880) - BERNATZKY-GOETZE 1987, 208, Taf. 167.1.
471. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 945.8 g. Dimensions: 10.05 cm x 9.65 cm x 5.8 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7884) - BERNATZKY-GOETZE 1987, 208, Taf. 167.2.
472. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,313.1 g. Dimensions: 11.85 cm x 11.6 cm x 5.75 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7879) - BERNATZKY-GOETZE 1987, 208, Taf. 166.5.
473. Hitzacker [site no. 168, settlement] (Lüchow-Dannenberg, Niedersachsen, Germany). Fundstelle 10. Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 1,245 g. Dimensions: 12.2 cm x 13.3 cm x 4.9 cm - Niedersächsisches Landesamt für Denkmalpflege (inv. no. 7062) - Unpublished.

474. Kampen [site no. 188, unknown context] (Sylt, Nordfriesland, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 1,432.2 g. Dimensions: 13.2 cm x 13.2 cm x 6.1 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH9999-195.1) - Unpublished.
475. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,428.6 g. Dimensions: 10.75 cm x 10.4 cm x 8.7 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7878) - BERNATZKY-GOETZE 1987, 208, Taf. 166.4.
476. Unknown [n/a, unknown context] (Brandenburg, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 2,788.2 g. Dimensions: 15.2 cm x 14.9 cm x 9.4 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. SM 2017-01964) - Unpublished.
477. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Complete. Stone (sandstone). Mass: 934.1 g. Dimensions: 10.4 cm x 9.4 cm x 8.1 cm (inv. no. 2508) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2508.
478. Wittnau [site no. 92, settlement] (Wittnauer Horn, Aargau, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: n/a - Rheinfelden, Museum - BERSU 1945, Taf. 35.3.
479. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 886.6 g. Dimensions: 9.1 cm x 8.8 cm x 7.6 cm - LEUVREY 1999, pl. 83.2.
480. Schleswig [site no. 185, unknown context] (Schleswig-Flensburg, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 177.5 g. Dimensions: 5.8 cm x 5.7 cm x 3.9 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1877-2.1) - Unpublished.
481. Kölpinsee [site no. 177, unknown context] (Mecklenburgische Seenplatte, Mecklenburg-Vorpommern, Germany). Undetermined chronology (LBA) - Complete. Stone (sandstone). Mass: 121.8 g. Dimensions: 5.6 cm x 5.9 cm x 2.2 cm - Museum für Vor- und Frühgeschichte Berlin - Unpublished.
482. Schlieben [site no. 146, unknown context] (Elbe-Elster, Brandenburg, Germany). Undetermined chronology (Ha A-B) - Complete. Stone. Mass: 235.92 g. Dimensions: 6.4 cm x 6.4 cm x 4.1 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. II 106) - Unpublished.
484. Bollensdorf [site no. 156, unknown context] (Neuenhagen bei Berlin, Märkisch-Oderland, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 185.1 g. Dimensions: 6.1 cm x 5.4 cm x 3.8 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1975-1) - Unpublished.
485. Pritzen [site no. 145, burial] (Altdöbern, Oberspreewald-Lausitz, Brandenburg, Germany). Undetermined chronology (Bronze Age) - Complete. Stone (sandstone). Mass: 385.82 g. Dimensions: 8.2 cm x 7.9 cm x 3.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1985-2/1/6/10) - Unpublished.
486. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,321 g. Dimensions: 11.65 cm x 10.7 cm x 6.9 cm - Bern, Bernisches Historisches Museum (inv. no. BHM 7877) - BERNATZKY-GOETZE 1987, 208, Taf. 166.3.
487. Zug-Sumpf [site no. 84, settlement] (Zug, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone (sandstone). Mass: n/a (974.3 g). Dimensions: 12.9 cm x 11.1 cm x 6.0 cm (inv. no. 2515) - BOLLIGER SCHREYER *et al.* 2004, Taf. 223.2515.
488. Berlin, Weissensee, Hohenschoenhausen [site no. 159, unknown context] (Berlin, Germany). Undetermined chronology (Ha A-B) - Fragmented (reconstructed in 3D). Stone (granite?). Mass: 3,073.02 g (2,950 g). Dimensions: 16.4 cm x 16.4 cm x 8.6 cm - Museum für Vor- und Frühgeschichte Berlin (inv. no. Bez. 18) - Unpublished.
489. Cottbus-Schmellwitz [site no. 147, burial] (Brandenburg, Germany). Undetermined chronology (Br D-Ha A) - Associations: vases and 3 fragments of bronze sheet, burned with the human bones - Complete. Stone (sandstone). Mass: n/a. Dimensions: 5.3 cm x 8.5 cm x 8.9 cm - Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum (inv. no. 1996-58/6/1) - MEERHEIM 1998, fig. 3.5.
490. Merkendorf [site no. 180, unknown context] (Schashagen, Ostholstein, Schleswig-Holstein, Germany). Undetermined chronology (LBA) - Fragmented. Stone (sandstone). Mass: n/a (147.8 g). Dimensions: 6.5 cm x 6.9 cm x 3.1 cm - Museumsinsel Schloss Gottorf, Schleswig (inv. no. SH1919-3.1) - Unpublished.

Sub-variant 2.D: Multiple horizontal grooves (cat. no. 483-490)

483. Battaune [site no. 143, burial] (Doberschütz, Niedersachsen, Sachsen, Germany). Grab 1. Phase 4 (Ha A-B) - Associations: 3 casting moulds - Complete. Stone (sandstone). Mass: n/a. Dimensions: 6 cm x 6 cm x 3 cm - SCHMALFUSS 2008, Taf. 2.7.

Sub-variant 2.E: Transversal groove (cat. no. 491)

491. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 438.72 g. Dimensions: 9.0 cm x 6.6 cm x 4.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7756) - Unpublished.

Unclassified objects (cat. no. 492-642)

- *number of objects*: 151
 - *objects with known mass (complete/reconstructed)*: 151 (100 %)
 - *chronological range*: Phase 2-4 (c. 1600-800 BCE)
 - *material*: stone
 - *39 sites*: site no. 35, 36, 37, 40, 41, 42, 44, 45, 47, 48, 50, 51, 56, 57, 60, 63, 64, 65, 69, 71, 72, 75, 77, 78, 79, 80, 81, 83, 86, 87, 88, 89, 90, 93, 94, 95, 96, 97, 169
 - *mass range (complete/reconstructed)*: 22.54-5,050,0 g
492. Basilicanova [site no. 42, settlement] (Parma, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 299 g - CARDARELLI *et al.* 2001.
493. Peschiera del Garda [site no. 51, settlement] (Verona, Veneto, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 304 g (inv. L) - CARDARELLI *et al.* 2001.
494. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 388 g (inv. no. 7722) - CARDARELLI *et al.* 2001.
495. Peschiera del Garda [site no. 51, settlement] (Verona, Veneto, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 415 g (inv. H) - CARDARELLI *et al.* 2001.
496. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 417 g (inv. no. 7715) - CARDARELLI *et al.* 2001.
497. Casaroldo [site no. 47, settlement] (Mantova, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 419 g - CARDARELLI *et al.* 2001.
498. Bellanda [site no. 50, settlement] (Gazoldo degli Ippoliti, Mantova, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 424 g (inv. no. 242/37) - CARDARELLI *et al.* 2001.
499. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 442 g (inv. no. 7721) - CARDARELLI *et al.* 2001.
500. Peschiera del Garda [site no. 51, settlement] (Verona, Veneto, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 443 g (inv. F) - CARDARELLI *et al.* 2001.
501. Redù [site no. 41, settlement] (Nonantola, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 492 g (inv. no. R75554) - CARDARELLI *et al.* 2001.
502. Cornocchio [site no. 45, settlement] (Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 494 g (inv. no. B 130) - CARDARELLI *et al.* 2001.
503. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 520 g (inv. no. 7731) - CARDARELLI *et al.* 2001.
504. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 520 g (inv. no. 7714) - CARDARELLI *et al.* 2001.
505. Reggiano [n/a, settlement] (unknown provenance, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 525 g (inv. no. 1872) - CARDARELLI *et al.* 2001.
506. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 539 g (inv. no. 7724) - CARDARELLI *et al.* 2001.
507. Redù [site no. 41, settlement] (Nonantola, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 542 g (inv. no. 811) - CARDARELLI *et al.* 2001, fig. 14.3.
508. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 546 g (inv. no. 217) - CARDARELLI *et al.* 2001.
509. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). Phase 2 (MBA-RBA) - Complete. Stone. Mass: 548 g (inv. no. 22a) - CARDARELLI *et al.* 2001.
510. Redù [site no. 41, settlement] (Nonantola, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 549 g (inv. no. 73865) - CARDARELLI *et al.* 2001.
511. Gazzade [site no. 36, settlement] (Varese, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 559 g (inv. no. 190) - CARDARELLI *et al.* 2001.
512. Savana di Cibeno [site no. 44, settlement] (Carpì, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 580 g - CARDARELLI *et al.* 2001.
513. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 630 g (inv. no. 7772) - CARDARELLI *et al.* 2001.
514. Gazzade [site no. 36, settlement] (Varese, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 633 g (inv. no. 193) - CARDARELLI *et al.* 2001.
515. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 650 g (inv. no. 7752) - CARDARELLI *et al.* 2001.
516. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 664 g (inv. no. 453) - CARDARELLI *et al.* 2001.
517. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 850 g (inv. no. 7770) - CARDARELLI *et al.* 2001.
518. Gazzade [site no. 36, settlement] (Varese, Lombardia, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 876 g (inv. no. 191) - CARDARELLI *et al.* 2001.
519. Frattresina [site no. 48, settlement] (Fratta Polesine, Rovigo, Veneto, Italy). Phase 4 (RBA-FBA) - Fragmented. Stone. Mass: 385 g (inv. no. I.G. 328656) - CARDARELLI *et al.* 2001.

520. Ramelsloh [site no. 169, unknown context] (Hamburg, Hamburg, Germany). Undetermined chronology (MBA-LBA) - Complete. Stone. Mass: 1,350 g - Archäologisches Museum Hamburg - Unpublished.
521. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 729.1 g. Dimensions: 9.5 cm x 9.1 cm x 5.1 cm - Biel, Musée Schwab (inv. no. E 11378) - M. Trachsel database (unpublished).
522. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 260.1 g. Dimensions: 6.65 cm x 6.45 cm x 3.5 cm - Biel, Musée Schwab (inv. no. E 11370) - M. Trachsel database (unpublished).
523. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 259 g. Dimensions: 6.8 cm x 6.5 cm x 3.45 cm - Biel, Musée Schwab (inv. no. E 11368) - M. Trachsel database (unpublished).
524. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 471.4 g. Dimensions: 6.8 cm x 6.0 cm x 7.9 cm - Biel, Musée Schwab (inv. no. E 11473 (alte Nr. 2348)) - M. Trachsel database (unpublished).
525. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 759.6 g. Dimensions: 8.2 cm x 7.7 cm x 6.5 cm - Basel, Museum der Kulturen (inv. no. I 1326) - M. Trachsel database (unpublished).
526. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,119.7 g. Dimensions: 9.8 cm x 9.7 cm x 6.85 cm - Basel, Museum der Kulturen (inv. no. I 1325) - M. Trachsel database (unpublished).
527. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 908.3 g. Dimensions: 9.0 cm x 8.0 cm x 8.4 cm - Bern, Bernisches Historisches Museum (inv. no. 9096) - M. Trachsel database (unpublished).
528. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 276.4 g. Dimensions: 6.25 cm x 6.0 cm x 4.1 cm - Bern, Bernisches Historisches Museum (inv. no. 9098) - M. Trachsel database (unpublished).
529. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 872.4 g. Dimensions: 9.9 cm x 9.25 cm x 6.5 cm - Bern, Bernisches Historisches Museum (inv. no. 9097 (altes Etikett: B 245)) - M. Trachsel database (unpublished).
530. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 240.3 g. Dimensions: 5.4 cm x 4.85 cm x 5.45 cm - Bern, Bernisches Historisches Museum (inv. no. 9101) - M. Trachsel database (unpublished).
531. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 779.1 g. Dimensions: 7.85 cm x 7.25 cm x 8.65 cm - Bern, Bernisches Historisches Museum (inv. no. 9099) - M. Trachsel database (unpublished).
532. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 254.3 g. Dimensions: 5.95 cm x 5.0 cm x 5.55 cm - Bern, Bernisches Historisches Museum (inv. no. 9100) - M. Trachsel database (unpublished).
533. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 937.1 g. Dimensions: 9.35 cm x 8.3 cm x 8.0 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 6929) - M. Trachsel database (unpublished).
534. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 3,756.2 g. Dimensions: 21.7 cm x 14.8 cm x 8.0 cm - Lausanne, Musée d'Archéologie (inv. no. 13199) - M. Trachsel database (unpublished).
535. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 789.1 g. Dimensions: 10.15 cm x 9.0 cm x 5.7 cm - Lausanne, Musée d'Archéologie (inv. no. 12005) - M. Trachsel database (unpublished).
536. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 799.9 g. Dimensions: 11.0 cm x 11.0 cm x 4.1 cm - Lausanne, Musée d'Archéologie (inv. no. 13259) - M. Trachsel database (unpublished).
537. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 942.2 g. Dimensions: 10.35 cm x 10.05 cm x 6.4 cm - Lausanne, Musée d'Archéologie (inv. no. 10203) - M. Trachsel database (unpublished).
538. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 931.2 g. Dimensions: 10.1 cm x 10.1 cm x 7.7 cm - Lausanne, Musée d'Archéologie (inv. no. 10202.IV) - M. Trachsel database (unpublished).
539. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 834.4 g. Dimensions: 9.45 cm x 8.0 cm x 7.35 cm - Lausanne, Musée d'Archéologie (inv. no. 11904) - M. Trachsel database (unpublished).
540. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 870.6 g. Dimensions: 8.2 cm x 7.6 cm x 8.1 cm - Bern, Bernisches Historisches Museum (inv. no. 25872) - M. Trachsel database (unpublished).
541. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 852.1 g. Dimensions: 10.7 cm x 9.4 cm x 6.15 cm - Bern, Bernisches Historisches Museum (inv. no. 9764) - M. Trachsel database (unpublished).
542. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 791.2 g. Dimensions: 9.8 cm x 9.7 cm x 5.1 cm - Lausanne, Musée d'Archéologie (inv. no. 13273) - M. Trachsel database (unpublished).
543. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 829.3 g. Dimensions: 9.7 cm x 9.2 cm x 5.6 cm - Lausanne, Musée d'Archéologie (inv. no. 10093.IV) - M. Trachsel database (unpublished).

544. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 684 g. Dimensions: 9.9 cm x 9.7 cm x 4.5 cm - Lausanne, Musée d'Archéologie (inv. no. 10839 IV) - M. Trachsel database (unpublished).
545. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 889.2 g. Dimensions: 9.6 cm x 9.1 cm x 6.0 cm - Lausanne, Musée d'Archéologie (inv. no. 10204) - M. Trachsel database (unpublished).
546. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 266.1 g. Dimensions: 6.2 cm x 4.4 cm x 5.8 cm - Lausanne, Musée d'Archéologie (inv. no. 13504) - M. Trachsel database (unpublished).
547. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 836.3 g. Dimensions: 10.4 cm x 10.3 cm x 7.0 cm - Lausanne, Musée d'Archéologie (inv. no. 12582 IV) - M. Trachsel database (unpublished).
548. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 914.3 g. Dimensions: 10.65 cm x 9.7 cm x 6.0 cm - Lausanne, Musée d'Archéologie (inv. no. 12760.IV) - M. Trachsel database (unpublished).
549. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 910.6 g. Dimensions: 10.5 cm x 9.9 cm x 6.9 cm - Lausanne, Musée d'Archéologie (inv. no. 10096.IV) - M. Trachsel database (unpublished).
550. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 864.7 g. Dimensions: 10.1 cm x 9.4 cm x 5.6 cm - Lausanne, Musée d'Archéologie (inv. no. 22682.IV) - M. Trachsel database (unpublished).
551. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 761.4 g. Dimensions: 10.0 cm x 9.6 cm x 6.35 cm - Lausanne, Musée d'Archéologie (inv. no. 20225.IV) - M. Trachsel database (unpublished).
552. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 978.9 g. Dimensions: 10.6 cm x 10.2 cm x 5.9 cm - Lausanne, Musée d'Archéologie (inv. no. 13749) - M. Trachsel database (unpublished).
553. Grandson-Corcelettes [site no. 60, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,179 g. Dimensions: 11.2 cm x 9.9 cm x 6.7 cm - Lausanne, Musée d'Archéologie (inv. no. 10095 IV) - M. Trachsel database (unpublished).
554. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 22.54 g. Dimensions: 3.1 cm x 3.0 cm x 1.6 cm - Bern, Bernisches Historisches Museum (inv. no. 7860) - M. Trachsel database (unpublished).
555. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 948.5 g. Dimensions: 9.5 cm x 9.35 cm x 5.8 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26093) - M. Trachsel database (unpublished).
556. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 922.8 g. Dimensions: 9.6 cm x 9.2 cm x 6.8 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26091) - M. Trachsel database (unpublished).
557. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 962.8 g. Dimensions: 9.4 cm x 9.3 cm x 7.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26092) - M. Trachsel database (unpublished).
558. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 729 g. Dimensions: 10.0 cm x 5.9 cm x 7.6 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26095) - M. Trachsel database (unpublished).
559. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 937.4 g. Dimensions: 9.7 cm x 9.4 cm x 6.0 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26101.X) - M. Trachsel database (unpublished).
560. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 953.9 g. Dimensions: 9.8 cm x 9.4 cm x 6.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26100) - M. Trachsel database (unpublished).
561. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 939 g. Dimensions: 9.55 cm x 8.9 cm x 6.75 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26099) - M. Trachsel database (unpublished).
562. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 927.9 g. Dimensions: 11.2 cm x 8.4 cm x 6.5 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26106) - M. Trachsel database (unpublished).
563. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 909.4 g. Dimensions: 10.3 cm x 9.8 cm x 6.65 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26105) - M. Trachsel database (unpublished).
564. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 953.7 g. Dimensions: 9.45 cm x 9.3 cm x 6.4 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26103) - M. Trachsel database (unpublished).
565. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 942.2 g. Dimensions: 8.95 cm x 8.35 cm x 7.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26102) - M. Trachsel database (unpublished).
566. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 944.1 g. Dimensions: 10.0 cm x 9.6 cm x 5.9 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26107.1 X (neu: 26104)) - M. Trachsel database (unpublished).
567. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 931.9 g. Dimensions: 9.4 cm x 9.2 cm x 7.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26107) - M. Trachsel database (unpublished).

568. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 955.9 g. Dimensions: 9.6 cm x 9.4 cm x 6.9 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26109) - M. Trachsel database (unpublished).
569. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 978.1 g. Dimensions: 9.7 cm x 9.5 cm x 6.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26114) - M. Trachsel database (unpublished).
570. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 900 g. Dimensions: 9.4 cm x 8.6 cm x 7.1 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26111) - M. Trachsel database (unpublished).
571. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 950.1 g. Dimensions: 9.4 cm x 9.3 cm x 8.3 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26117) - M. Trachsel database (unpublished).
572. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 958.7 g. Dimensions: 10.5 cm x 10.3 cm x 7.3 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26116) - M. Trachsel database (unpublished).
573. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 908.7 g. Dimensions: 10.7 cm x 9.5 cm x 6.45 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26108) - M. Trachsel database (unpublished).
574. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 947.6 g. Dimensions: 9.45 cm x 9.4 cm x 7.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26791) - M. Trachsel database (unpublished).
575. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 928 g. Dimensions: 9.4 cm x 9.3 cm x 6.05 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26886.1 (neu: 26787)) - M. Trachsel database (unpublished).
576. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 911.5 g. Dimensions: 10.0 cm x 9.7 cm x 6.95 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26794) - M. Trachsel database (unpublished).
577. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 981 g. Dimensions: 10.8 cm x 10.6 cm x 5.4 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26835) - M. Trachsel database (unpublished).
578. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 891.1 g. Dimensions: 10.2 cm x 10.2 cm x 5.3 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 26795) - M. Trachsel database (unpublished).
579. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 876.9 g. Dimensions: 11.0 cm x 10.55 cm x 4.35 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 46575) - M. Trachsel database (unpublished).
580. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 719.5 g. Dimensions: 9.3 cm x 9.0 cm x 6.0 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26788) - M. Trachsel database (unpublished).
581. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,014.4 g. Dimensions: 11.2 cm x 8.8 cm x 6.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 26789) - M. Trachsel database (unpublished).
582. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha B1/2) - Complete. Stone. Mass: 861 g - Zürich, Kantonsarchäologie (inv. no. FK Q217) - M. Trachsel database (unpublished).
583. Zürich-Grosser Hafner [site no. 89, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 881.7 g. Dimensions: 8.85 cm x 8.5 cm x 6.5 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 47437) - M. Trachsel database (unpublished).
584. Zürich-Grosser Hafner [site no. 89, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 914.7 g. Dimensions: 10.4 cm x 9.4 cm x 6.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 11497) - M. Trachsel database (unpublished).
585. Zürich-Grosser Hafner [site no. 89, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 941.8 g. Dimensions: 10.3 cm x 9.9 cm x 5.0 cm - Zürich, Unterwasserarchäologie (inv. no. Zürich/Rb-Grosser Hafner 2000/R173) - M. Trachsel database (unpublished).
586. Zürich-Grosser Hafner [site no. 89, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 943.3 g. Dimensions: 9.8 cm x 9.5 cm x 6.6 cm - Zürich, Unterwasserarchäologie (inv. no. Zürich/Rb-Grosser Hafner 1998/R104) - M. Trachsel database (unpublished).
587. Zürich-Grosser Hafner [site no. 89, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 708.7 g. Dimensions: 9.6 cm x 6.5 cm x 8.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM A 74184 ("103" in rot)) - M. Trachsel database (unpublished).
588. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 933.9 g. Dimensions: 10.1 cm x 9.0 cm x 6.5 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1141) - M. Trachsel database (unpublished).
589. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 873.4 g. Dimensions: 10.0 cm x 9.9 cm x 7.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1139) - M. Trachsel database (unpublished).
590. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 966.6 g. Dimensions: 9.1 cm x 8.9 cm x 6.8 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1143) - M. Trachsel database (unpublished).
591. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 912.7 g. Dimensions: 10.85 cm x 9.0 cm x 7.35 cm

- Zürich, Schweizerisches Landesmuseum (inv. no. 1140) - M. Trachsel database (unpublished).
592. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 868.5 g. Dimensions: 10.1 cm x 9.9 cm x 5.6 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1146) - M. Trachsel database (unpublished).
593. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 958.9 g. Dimensions: 9.35 cm x 9.15 cm x 7.1 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1144) - M. Trachsel database (unpublished).
594. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 949.3 g. Dimensions: 10.6 cm x 9.9 cm x 5.3 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1147) - M. Trachsel database (unpublished).
595. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 960 g. Dimensions: 10.4 cm x 9.5 cm x 6.3 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1148) - M. Trachsel database (unpublished).
596. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 955.4 g. Dimensions: 9.55 cm x 9.3 cm x 7.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1142) - M. Trachsel database (unpublished).
597. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,382 g. Dimensions: 11.8 cm x 10.05 cm x 5.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1145) - M. Trachsel database (unpublished).
598. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 245.5 g. Dimensions: 6.8 cm x 6.8 cm x 3.15 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1151) - M. Trachsel database (unpublished).
599. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 260 g. Dimensions: 6.5 cm x 5.4 cm x 4.8 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1149) - M. Trachsel database (unpublished).
600. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 228.5 g. Dimensions: 6.3 cm x 5.75 cm x 4.1 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 1150) - M. Trachsel database (unpublished).
601. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 748.5 g. Dimensions: 8.4 cm x 8.2 cm x 7.2 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 30473) - M. Trachsel database (unpublished).
602. Andelfingen [site no. 94, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 898.8 g. Dimensions: 9.9 cm x 5.7 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 2308) - M. Trachsel database (unpublished).
603. Autavaux [site no. 64, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 863.8 g. Dimensions: 10.1 cm x 9.8 cm x 5.0 cm - Fribourg, SACF (inv. no. MAHF 2883) - M. Trachsel database (unpublished).
604. Avenches [site no. 65, settlement] (Eau Noir, Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 853.5 g. Dimensions: 10.0 cm x 9.7 cm x 5.5 cm - Lausanne, Musée d'Archéologie (inv. no. 33387 VII) - M. Trachsel database (unpublished).
605. Berg am Irchel [site no. 93, settlement] (Ebersberg, Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 890.6 g. Dimensions: 9.7 cm x 9.5 cm x 5.6 cm - Zürich, Schweizerisches Landesmuseum (inv. no. SLM 2303.8) - M. Trachsel database (unpublished).
606. Bevaix [site no. 69, settlement] (Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 801.1 g. Dimensions: 9.2 cm x 8.8 cm x 5.95 cm - Biel, Musée Schwab (inv. no. BX 8127 (alte Nr. 2555)) - M. Trachsel database (unpublished).
607. Eschenz [site no. 97, settlement] (Thurgau, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: n/a - M. Trachsel database (unpublished).
608. Forel [site no. 56, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 782.1 g. Dimensions: 9.6 cm x 8.9 cm x 5.4 cm - Biel, Musée Schwab (inv. without no.) - M. Trachsel database (unpublished).
609. Guévaux [site no. 71, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 831.3 g. Dimensions: 8.45 cm x 8.2 cm x 8.1 cm - Lausanne, Musée d'Archéologie (inv. no. 10742.VI) - M. Trachsel database (unpublished).
610. Haut-Vully [site no. 72, settlement] (Guévaux, Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 821.6 g. Dimensions: 8.1 cm x 7.8 cm x 7.2 cm - Biel, Musée Schwab (inv. no. GX 21091) - M. Trachsel database (unpublished).
611. Haut-Vully [site no. 72, settlement] (Guévaux, Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 876.9 g. Dimensions: 9.1 cm x 6.75 cm x 8.8 cm - Biel, Musée Schwab (inv. no. GX 21090) - M. Trachsel database (unpublished).
612. Ins [site no. 75, settlement] (Witzwil, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 277 g - Witzwil, Strafanstalt - M. Trachsel database (unpublished).
613. Le Landeron [site no. 78, settlement] (Grand Marais, Neuchâtel, Switzerland). Phase 4 (Ha B2) - Complete. Stone. Mass: 810 g - Fribourg, Musée d'Art et d'Histoire (inv. no. Le La 1968, 440, H 12) - M. Trachsel database (unpublished).
614. Meilen [site no. 86, settlement] (Rohrenhaab, Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 949.1 g. Dimensions: 9.5 cm x 9.3 cm x 6.0 cm - Zürich, Unterwasserarchäologie (inv. no. Meilen-Rohrenhaab 1999/D78) - M. Trachsel database (unpublished).
615. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,374.2 g. Dimensions: 10.0 cm x 7.6 cm x 11.6 cm - Zürich, Schweizerisches Landesmuseum (inv. no. 87443 (alt: 69; 183 (Tabula ansata) und A 779)) - M. Trachsel database (unpublished).

616. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 728.5 g. Dimensions: 7.85 cm x 7.85 cm x 6.65 cm - Biel, Musée Schwab (inv. no. N 13816) - M. Trachsel database (unpublished).
617. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 969.1 g. Dimensions: 10.4 cm x 10.1 cm x 6.0 cm - Biel, Musée Schwab (inv. no. N 6257) - M. Trachsel database (unpublished).
618. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 272 g. Dimensions: 5.9 cm x 5.8 cm x 4.7 cm - Biel, Musée Schwab (inv. no. N 13120) - M. Trachsel database (unpublished).
619. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 733.9 g. Dimensions: 9.65 cm x 9.5 cm x 4.55 cm - Biel, Musée Schwab (inv. no. N 13580) - M. Trachsel database (unpublished).
620. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 907.5 g. Dimensions: 10.0 cm x 9.75 cm x 6.25 cm - Biel, Musée Schwab (inv. no. N 13114) - M. Trachsel database (unpublished).
621. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 924.9 g. Dimensions: 9 cm x 9 cm x 7 cm - Biel, Musée Schwab (inv. no. N 6258) - M. Trachsel database (unpublished).
622. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 953.2 g. Dimensions: 9.1 cm x 9.0 cm x 6.8 cm - Basel, Museum der Kulturen (inv. no. I 5635) - M. Trachsel database (unpublished).
623. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 941.9 g. Dimensions: 9.8 cm x 9.5 cm x 6.1 cm - Basel, Museum der Kulturen (inv. no. I 5636) - M. Trachsel database (unpublished).
624. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 78.6 g. Dimensions: 5.2 cm x 4.95 cm x 2.1 cm - Basel, Museum der Kulturen (inv. no. I 6670) - M. Trachsel database (unpublished).
625. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 138.2 g. Dimensions: 5.5 cm x 5.4 cm x 3.6 cm - Basel, Museum der Kulturen (inv. no. I 6671) - M. Trachsel database (unpublished).
626. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,222.2 g. Dimensions: 12.0 cm x 11.6 cm x 5.8 cm - Basel, Museum der Kulturen (inv. no. I 6677) - M. Trachsel database (unpublished).
627. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 878.9 g. Dimensions: 9.9 cm x 8.9 cm x 6.2 cm - Biel, Musée Schwab (inv. no. 9743 (alte Nr. 82)) - M. Trachsel database (unpublished).
628. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,374.2 g. Dimensions: 11.1 cm x 10.9 cm x 7.1 cm - Biel, Musée Schwab (inv. no. 9744 (alte Nr. 83)) - M. Trachsel database (unpublished).
629. Nidau [site no. 80, settlement] (Steinberg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 848 g. Dimensions: 10.4 cm x 9.9 cm x 6.5 cm - Biel, Musée Schwab (inv. no. 9745 (alte Nr. 84)) - M. Trachsel database (unpublished).
630. Port [site no. 83, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 2,105.4 g. Dimensions: 18.5 cm x 10.8 cm x 7.1 cm - Biel, Musée Schwab (inv. no. Port 1936) - M. Trachsel database (unpublished).
631. Saint-Blaise [site no. 77, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 252 g. Dimensions: 6.85 cm x 6.5 cm x 3.55 cm - Basel, Museum der Kulturen (inv. no. I 6235) - M. Trachsel database (unpublished).
632. Savognin [site no. 57, settlement] (Padnal, Graubünden, Switzerland). Phase 4 (Ha B) - Complete. Stone. Mass: 433.5 g. Dimensions: 6.4 cm x 6.3 cm x 6.4 cm - Haldenstein, ADG (inv. no. Sp 72/50) - M. Trachsel database (unpublished).
633. Scherzingen [site no. 96, settlement] (westl. des Klosters Münsterlingen (735240/277080), Thurgau, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,410 g. Dimensions: 13.1 cm x 10.0 cm x 7.0 cm - Private collection - M. Trachsel database (unpublished).
634. Twann [site no. 81, settlement] (St. Petersinsel, Heidenweg, Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 243.8 g. Dimensions: 6.5 cm x 6.3 cm x 3.7 cm - Bern, Bernisches Historisches Museum (inv. no. 8993) - M. Trachsel database (unpublished).
635. Ürschhausen [site no. 95, settlement] (Horn, Thurgau, Switzerland). Phase 4 (Ha B3) - Complete. Stone. Mass: 718.3 g. Dimensions: 10.4 cm x 9.1 cm x 6.3 cm - Frauenfeld, Kantonsarchäologie (inv. no. ÜH-70-27) - M. Trachsel database (unpublished).
636. Ürschhausen [site no. 95, settlement] (Horn, Thurgau, Switzerland). Phase 4 (Ha B3) - Complete. Stone. Mass: 773 g - Frauenfeld, Kantonsarchäologie (inv. no. ÜH-85-134.1) - M. Trachsel database (unpublished).
637. Ürschhausen [site no. 95, settlement] (Horn, Thurgau, Switzerland). Phase 4 (Ha B3) - Complete. Stone. Mass: 899 g. Dimensions: 9.85 cm x 9.45 cm x 5.55 cm - Frauenfeld, Kantonsarchäologie (inv. no. ÜH-86-1221.4) - M. Trachsel database (unpublished).
638. Ürschhausen [site no. 95, settlement] (Horn, Thurgau, Switzerland). Phase 4 (Ha B3) - Complete. Stone. Mass: 187 g - Frauenfeld, Kantonsarchäologie (inv. no. ÜH-85-646.2) - M. Trachsel database (unpublished).
639. Uster-Riedikon [site no. 87, settlement] (zwischen Uster und Riedikon, Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 5,050 g. Dimensions: 21.7 cm x 12.4 cm x 11.3 cm - Zürich, Schwei-

- zerisches Landesmuseum (inv. no. 2375 (“12” in rot)) - M. Trachsel database (unpublished).
640. Switzerland (unknown provenance) [n/a, unknown context] (unknown provenance, Switzerland). Undetermined chronology (Ha A-B) - Complete. Stone. Mass: 1,378.5 g. Dimensions: 12.2 cm x 10.9 cm x 6.8 cm - Lausanne, Musée d'Archéologie (inv. without no.) - M. Trachsel database (unpublished).
641. Switzerland (unknown provenance) [n/a, unknown context] (unknown provenance, Switzerland). Undetermined chronology (Ha A-B) - Complete. Stone. Mass: 715.2 g. Dimensions: 9.5 cm x 8.65 cm x 5.6 cm - Lausanne, Musée d'Archéologie (inv. without no.) - M. Trachsel database (unpublished).
642. Switzerland (unknown provenance) [n/a, unknown context] (unknown provenance, Switzerland). Undetermined chronology (Ha A-B) - Complete. Stone. Mass: 1,005.1 g. Dimensions: 9.3 cm x 8.6 cm x 8.0 cm - Murten, Museum (inv. no. Fu 2827) - M. Trachsel database (unpublished).

5.14. PIRIFORM

- *number of objects*: 58
- *objects with known mass (complete/reconstructed)*: 49 (84.5 %).
- *chronological range*: Phase 2-4 (c. 1600-800 BCE)
- *material*: stone (55), copper/bronze (1), lead (2)
- *26 sites*: site no. 21, 24, 25, 26, 29, 30, 31, 33, 34, 35, 37, 39, 40, 41, 43, 51, 59, 60, 66, 67, 70, 74, 79, 90, 112, 117
- *mass range (complete/reconstructed)*: 36.5-1,413.2 g

Distribution maps: fig. 5.41.-43.

Composition of the sample: fig. 5.44.-46.

Typology, materials, comparisons, and function

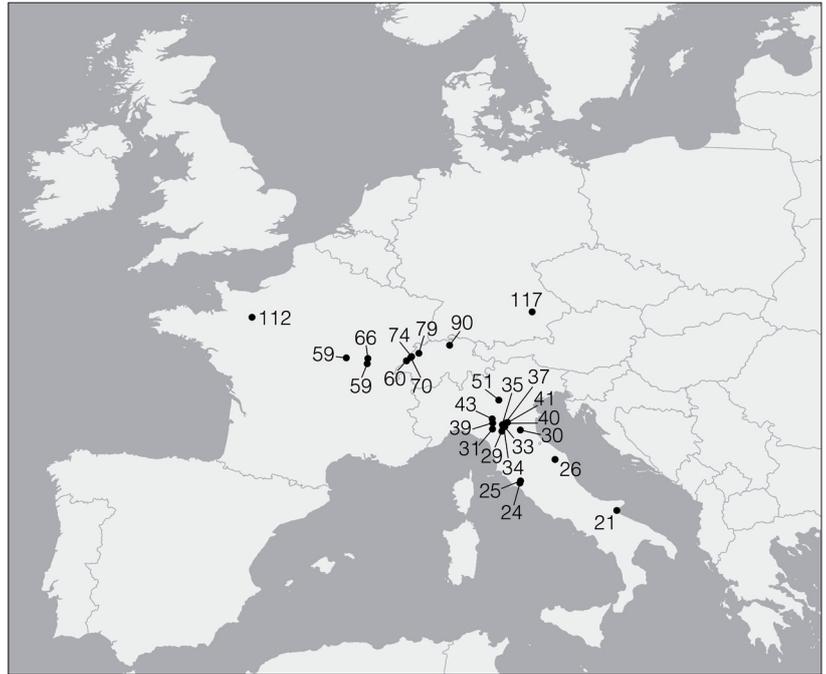
Piriform weights were first identified as a formal type by A. CARDARELLI *et al.* (2001) in northern Italy. A roughly globular body (ranging from elongated/ovoid to squatted) and an upper protrusion (with or without perforation) give them their characteristic pear-shaped profile. Piriform weights are articulated into two main variants, based on the presence (Variant 1) or absence (Variant 2) of a perforation on the upper protrusion. The presence/absence of a perforation determines a partial difference in terms of functionality between the two variants. While both could be easily laid on balance pans, Variant 1 could also be hung directly on one extremity of a balance beam.

Variant 1 is further subdivided into seven sub-variants, based on different decoration techniques. A further sub-variant groups smaller weights with upper perforation that vaguely resemble the general shape of bigger piriform weights (cat. no. 675-677). Object cat. no. 673 from the *Terramara* of Montale (Italy) has a small V-shaped sign incised on the body. However, there is no basis to interpret this sign as a quantity mark. Object cat. no. 674 from the *Terramara* of Gaggio di Castelfranco (Italy) provides an example of a possible restoration of a balance weight after fracture. Originally, the object had a perforated protrusion on top. After the protrusion was lost (either intentionally or accidentally), the fracture was polished and rendered smooth. In addition, an annular groove was carved across the vertical diameter, making the object very similar to a *Kannelurenstein*, and hence suggesting that piriform weights and *Kannelurensteine* were somehow interchangeable.

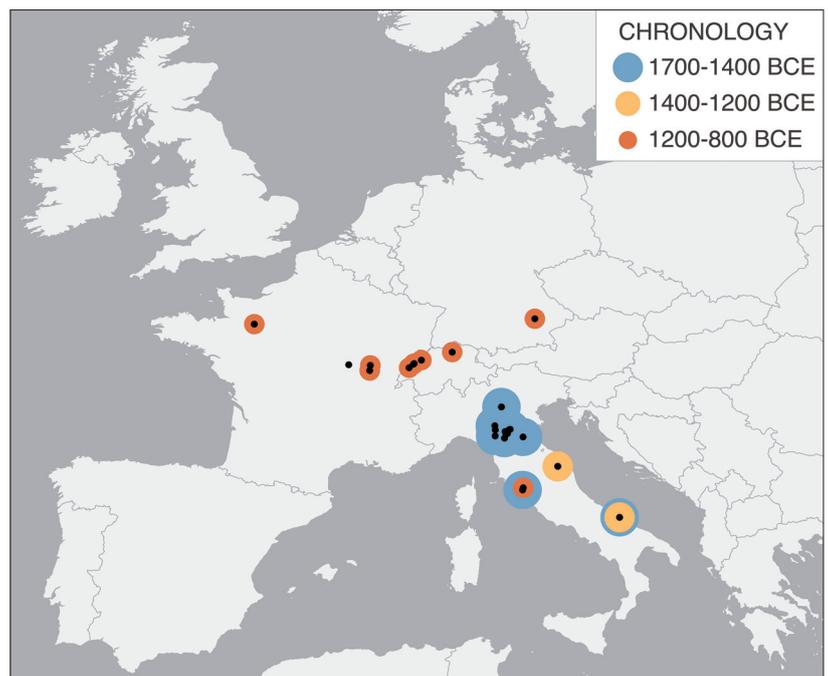
Variant 2 includes six stone objects with remarkably similar features, all presenting a globular body, no decoration, and a chiselled circular knob on the upper part (cat. no. 678-683). Object cat. no. 681 from the settlement of Moscosi - Piano Fonte Marcosa (Italy) provides a unique case of a likely unfinished weight. The object was only roughly modelled, with the final shaped only hinted at by the rudimentary upper protrusion. In total, seven piriform weights are recorded from the same site – three with perforation (cat. no. 646, 655, 661) and four without (cat. no. 678, 679, 680, 681) – all made of the same material, probably travertine.

There are finally 17 objects from Italian contexts mentioned in A. CARDARELLI *et al.* (2001), for which images are not available and hence could not be classified.

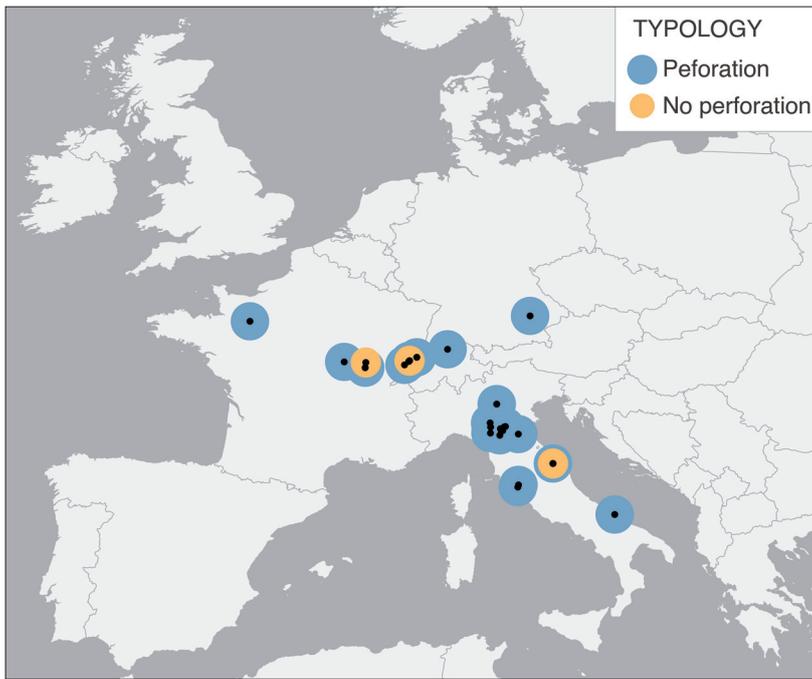
Most objects (55 out of 58) are made of stone (Fig. 5.45.). Two of them (652 from an unknown context in Ouroux-sur-Saône in France, and 653 from the pile-dwelling settlement of Grandson-Corcelettes, in Switzerland), have a metal loop attached on the top of the upper protrusion, in place of the more frequent perforation. Three objects are made of metal: cat. no. 658 (hoard of



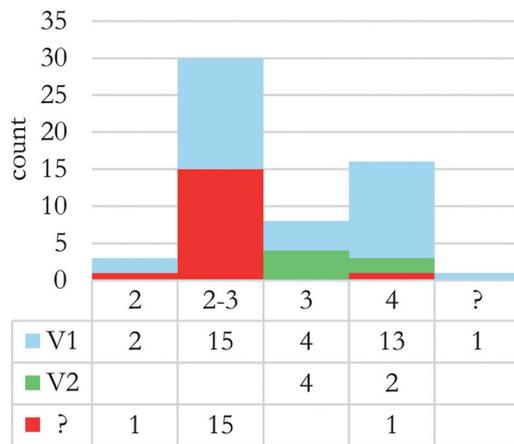
▲ Fig. 5.41. Piriform weights. Geographical distribution: site ID.



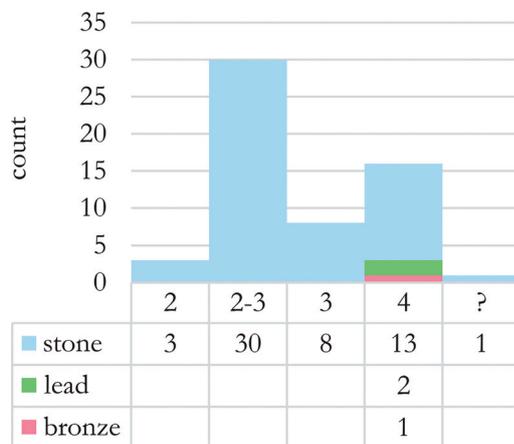
▲ Fig. 5.42. Piriform weights. Geographical distribution: chronology.



▲ Fig. 5.43. Piriform weights. Geographical distribution: typology.



▲ Fig. 5.44. Piriform weights. Quantification: typology vs chronology.



▲ Fig. 5.45. Piriform weights. Quantification: materials vs chronology.

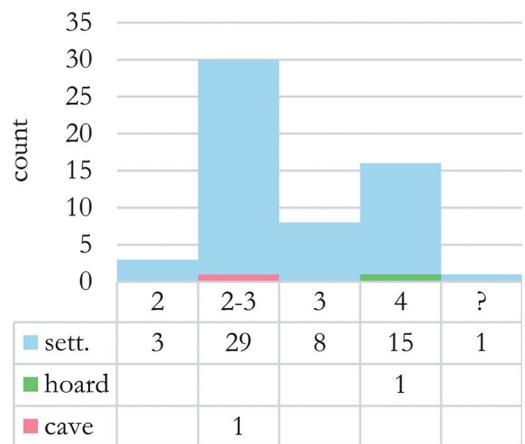
Saint-Léonard-des-Bois, eastern France) and cat. no. 684 (pile-dwelling settlement of Auvernier, Switzerland) are made of lead, while cat. no. 663 (pile-dwelling settlement of Cortaillod-Est, Switzerland) is made of bronze.

Piriform weights are not very common in the eastern Mediterranean and the Near East. Two lead piriform weights with upper knob without perforation are present in the Late Minoan I settlement at Tyllisso (c. 1700-1400 BCE), in Crete (PETRUSSO 1992, fig. 15.163-164), and are roughly contemporaneous with the earliest piriform weights from secure contexts in northern Italy (objects cat. no. 648, 674, 700). In Mesopotamia, the piriform shape is documented since the 3rd millennium BCE (RAHMSTORF 2022, 285).

Chronology and geographical distribution

The earliest piriform weights are documented in the Terramara of Gaggio di Castelfranco (site no. 40), in northern Italy, in the MBA. Objects cat. no. 648 and 674 (both belonging to Variant 1) come from well-dated layers of the second occupation phase of the settlement (BALISTA *et al.* 2008), dating to the Italian MBA 2 (c. 1600-1500 BCE). In Phases 2-3 (c. 1600-1200 BCE), piriform weights are only documented in the Italian Peninsula (Fig. 5.42). Several objects come from contexts dating between Phase 2 and 3 (MBA and RBA in Italian chronology), while well-dated contexts belonging to Phase 3 (c. 1350-1200 BCE) are located in central and southern Italy (sites no. 21, 26). North of the Alps, piriform weights are only documented in contexts dating to Phase 4 (Ha A-B, c. 1200-800 BCE), with a distribution area reaching northern France to the west, and southern Germany to the east. Most objects come from pile-dwelling settlements in Switzerland.

Based on available data, the earliest objects belonging to Variant 2 are documented in the Phase 3 site of Moscosi – Piano di Fonte Marcosa, in central Italy (site no. 21). However, since Variant 2 includes only six objects, it cannot be excluded that earlier ones are simply not documented yet.



▲ Fig. 5.46. Piriform weights. Quantification: site type vs chronology.

Contexts

Piriform weights are mostly documented in settlements, only once in a hoard, in one case in a cave, and never in burials (Fig. 5.46.). They never occur in sets. Most piriform weights come from old excavations, and lack specific indication of provenance. Only two objects are documented in closed settlement contexts with meaningful associations. In Gaggio di Castelnuovo (site no. 40, northern Italy), a piriform weight (cat. no. 674) comes from a sector of the settlement interpreted as an area devoted to metallurgy (dated to the MBA, c. 1600-1500 BCE), and is associated with two casting moulds (BALISTA *et al.* 2008). In the fortified settlement of Coppa Nevigata (site no. 21, southern Italy), a piriform weight (cat. no. 657) belonged to a tight concentration of finds located near the settlement's main gate. This concentration (dated to the RBA, c. 1350-1200 BCE), included a piriform weight, a bronze knife, 33 bronze studs, 5 bronze spirals, a decorated bone element, and perforated crystal sphere. The context was interpreted as a workshop (CAZZELLA/RECCHIA 2017).

Variant 1: With perforation (cat. no. 643-677)

- *number of objects*: 35
- *objects with known mass (complete/reconstructed)*: 29 (83 %)
- *chronological range*: Phase 2-4 (c. 1600-800 BCE)
- *material*: stone (33), copper/bronze (1), lead (1)
- *21 sites*: site no. 21, 25, 26, 29, 30, 31, 34, 35, 37, 40, 41, 43, 59, 60, 67, 70, 74, 79, 90, 112, 117
- *mass range (complete/reconstructed)*: 36.5-1,413.2 g

Sub-variant 1.A: Plain (cat. no. 643-664)

643. Bismantova, settlement [site no. 31, settlement] (Castelnuovo ne' Monti, Reggio Emilia, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (sandstone). Mass: 391 g. Dimensions: 6.2 cm x 7.2 cm - CARDARELLI *et al.* 2001, fig. 10.7.
644. Sorgenti della Nova [site no. 25, settlement] (Farnese, Viterbo, Lazio, Italy). Settore IV, cave, niche. Stratum 1B. Phase 4 (FBA 3) - Complete. Stone. Mass: n/a - CREMONESI 2006, tav. 2.6.
645. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Worn (reconstructed in 3D). Stone (sandstone). Mass: 296.54 g (294.24 g). Dimensions: 8.5 cm x 6.7 cm x 6.6 cm - Museo Archeologico Etnografico Modena (inv. no. 7743) - Unpublished.
646. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 86, Alpha, 91. 2. Phase 3 (MBA-RBA) - Fragmented. Stone (travertino). Mass: n/a (264.72 g). Dimensions: 6.0 cm x 6.3 cm x 6.1 cm - Museo Archeologico di Cingoli (inv. no. 52090) - Unpublished.
647. Landshut [site no. 117, settlement] (Bayern, Germany). Phase 4 (Ha A-B) - Complete. Stone. Mass: 777 g. Dimensions: 10.0 cm x 7.8 cm - FETH 2014, fig. 2.5.
648. Gaggio di Castelnuovo [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). Phase 2. Phase 2 (MBA) - Complete. Stone. Mass: 450 g - BALISTA *et al.* 2008, fig. 22.5; CARDARELLI *et al.* 2004, fig. 1.7.
649. Auvèrnier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,320 g. Dimensions: 11.6 cm x 9.6 cm x 9.6 cm - FETH 2014, fig. 2.6.
650. Auvèrnier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 1,413.2 g. Dimensions: 5.9 cm x 5.0 cm x 4.6 cm (inv. no. 1804) - LEUVREY 1999, pl. 78.2.
651. San Giuliano in Toscanella [site no. 30, settlement] (Bologna, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (limestone). Mass: 420 g. Dimensions: 6.9 cm x 6.7 cm x 6.7 cm (inv. no. 32759) - CARDARELLI *et al.* 2001, fig. 10.6.
652. Ouroux-sur-Saône [site no. 59, settlement] (Saône-et-Loire, Bourgogne-Franche-Comté, France). Phase 4 (Ha A-B) - Attached metal hook. Complete. Stone. Mass: 741 g. Dimensions: 11.6 cm x 9.0 cm - FETH 2014, fig. 2.7.
653. Corcelettes [site no. 60, settlement] (Grandson, Vaud, Switzerland). Phase 4 (Ha A-B) - Attached metal hook. Complete. Stone. Mass: 922 g. Dimensions: 9.3 cm x 8.9 cm x 8.9 cm - FETH 2014, fig. 2.10.
654. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented. Stone (sandstone). Mass: n/a (453.62 g). Dimensions: 8.0 cm x 8.8 cm x 8.4 cm - Museo Archeologico Etnografico Modena (inv. no. 7724) - Unpublished.
655. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM, Surface, Stray find. Phase 3 (MBA-RBA) - Complete. Stone (travertino). Mass: 446.82 g. Dimensions: 8.3 cm x 7.4 cm x 7.5 cm - Museo Archeologico di Cingoli (inv. no. 52153) - Unpublished.
656. Zürich-Alpenquai [site no. 90, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Fragmented. Stone. Mass: n/a (810 g). Dimensions: 8.7 cm x 9.0 cm - FETH 2014, fig. 2.3.
657. Coppa Nevigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). CN 11, G3D, 5.1. Before the gate. Phase 3 (RBA) - Associations: context described as "workshop". Bronze knife, 33 bronze studs, 5 bronze spirals, decorated bone element, perforated crystal sphere. Possibly part of a set of 3 weights (cat. no. 155, 281, 657) - Complete. Stone (sandstone). Mass: 450 g. Dimensions: 6.9 cm x 8.3 cm - CAZZELLA/RECCHIA 2017, fig. 2.3.
658. Saint-Léonard-des-Bois [site no. 112, hoard] (Sarthe, Pays de la Loire, France). Phase 4 (Ha A-B) - Lead weight with bronze loop. Complete. Lead. Mass: 700 g. Dimensions: 4.4 cm x 5.9 cm - FETH 2014, fig. 3.6; CHARNIER *et al.* 1999, fig. 5.35.
659. Ouroux-sur-Saône [site no. 59, settlement] (Saône-et-Loire, Bourgogne-Franche-Comté, France). Phase 4 (Ha A-B) - Complete. Stone. Mass: 592 g. Dimensions: 7.8 cm x 7.9 cm - FETH 2014, fig. 2.8.

660. Redù [site no. 41, settlement] (Nonantola, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone (marble). Mass: 385 g (inv. no. 813) - CARDARELLI *et al.* 2001, fig. 14.1.
661. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 91, Z 16d, US 159. Phase 3 (MBA-RBA) - Fragmented. Stone (travertino). Mass: n/a (550.48 g). Dimensions: 8.4 cm x 9.0 cm x 7.0 cm - Museo Archeologico di Cingoli (inv. no. 52091) - Unpublished.
662. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Thick hook. Complete. Stone (sandstone). Mass: 425.01 g. Dimensions: 10.1 cm x 7.6 cm x 7.2 cm - Museo Archeologico Etnografico Modena (inv. no. 7746) - Unpublished.
663. Cortailod-Est [site no. 70, settlement] (Station Est, Neuchâtel, Switzerland). Phase 4 (Ha B2) - Complete. Copper/bronze. Mass: 212 g. Dimensions: 3.8 cm x 4.3 cm - FETH 2014, fig. 3.12.
664. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone (alabaster). Mass: 36.6 g. Dimensions: 3.6 cm x 3.1 cm x 2.7 cm (inv. no. 455) - CARDARELLI *et al.* 2001, fig. 10.2.
- Sub-variant 1.B: Incised decoration (cat. no. 665)**
665. Mont Beuvray-Bibracte [site no. 67, settlement] (Saône-et-Loire, Bourgogne-Franche-Comté, France). Stray find. Undetermined chronology (Bronze Final) - Thick hook, incised decoration. Complete. Stone. Mass: n/a. Dimensions: 5.6 cm x 3.9 cm x 4.2 cm - GABILLOT *et al.* 2016, fig. 3.B.
- Sub-variant 1.C: Horizontal grooves at the base of the upper protrusion (cat. no. 666-668)**
666. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Incised decoration. Fragmented. Stone (rosa ammonitico). Mass: 392 g. Dimensions: 6.8 cm x 6.7 cm x 6.6 cm (inv. no. 7811) - CARDARELLI *et al.* 2001, fig. 10.4.
667. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 98.5 g. Dimensions: 4.5 cm x 4.9 cm - FETH 2014, fig. 2.2.
668. Mörigen [site no. 79, settlement] (Bern, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 850 g. Dimensions: 9.0 cm x 8.7 cm - FETH 2014, fig. 2.9.
- Sub-variant 1.D: Horizontal grooves on the body (cat. no. 669)**
669. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 941 g. Dimensions: 9.9 cm x 9.2 cm x 9.2 cm - FETH 2014, fig. 2.4.
- Sub-variant 1.E: Horizontal ribs on the body (cat. no. 670-672)**
670. Quingento [site no. 43, settlement] (San Prospero, Parma, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone (limestone). Mass: 340 g. Dimensions: 9.1 cm x 7.2 cm - CARDARELLI *et al.* 2001, fig. 10.5.
671. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone. Mass: 394.8 g (391.9 g) (inv. no. SN 98) - CARDARELLI *et al.* 2001.
672. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (sandstone). Mass: 294.38 g (280.84 g). Dimensions: 7.8 cm x 8.4 cm x 8.0 cm - Museo Archeologico Etnografico Modena (inv. no. 7812) - Unpublished.
- Sub-variant 1.F: Vertical ribs and incised mark (cat. no. 673)**
673. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Vertical ribs on the body, incised v-shape sign. Fragmented. Stone (barite). Mass: 43.2 g. Dimensions: 2.8 cm x 3.2 cm x 3.1 cm (inv. no. 7802) - CARDARELLI *et al.* 2001, fig. 10.3.
- Sub-variant 1.G: Vertical annular groove (cat. no. 674)**
674. Gaggio di Castelfranco [site no. 40, settlement] (Modena, Emilia-Romagna, Italy). Phase 2. Phase 2 (MBA) - Associations: 2 casting moulds, crucible, bronze dagger, bronze pins - Fragmented (reconstructed in 3D). Stone. Mass: 348.91 g (343.69 g). Dimensions: 6.4 cm x 6.3 cm x 6.1 cm - Museo Archeologico Etnografico Modena (inv. no. 256910 (433)) - BALISTA *et al.* 2008, fig. 22.4.
- Sub-variant 1.H: Other small weights with perforation (cat. no. 675-677)**
675. Gorzano [site no. 34, settlement] (Maranello, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Biconical body. Complete. Stone (sandstone). Mass: 38.23 g. Dimensions: 3.57 cm x 3.51 cm x 3.34 cm - Museo Archeologico Etnografico Modena (inv. no. 1249) - Unpublished.
676. Gaiato [site no. 29, settlement] (Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone (marble). Mass: 36.5 g. Dimensions: 3.4 cm x 2.6 cm x 2.7 cm - CARDARELLI *et al.* 2001, fig. 10.1.
677. Casinalbo [site no. 35, settlement] (Formigine, Modena, Emilia-Romagna, Italy). Excavation '800. Phase 2-3 (MBA-RBA) - Fragmented. Stone (sandstone). Mass: n/a (25.86 g). Dimensions: 4.2 cm x 3.2 cm x 2.9 cm - Museo Archeologico Etnografico Modena (inv. no. s.n. 545) - Unpublished.

- Variant 2:** Without perforation (cat. no. 678-683)
- *number of objects:* 6
 - *objects with known mass (complete/reconstructed):* 4 (67 %)
 - *chronological range:* Phase 3-4 (c. 1350-800 BCE)
 - *material:* stone (6)
 - *3 sites:* site no. 26, 66, 74
 - *mass range (complete/reconstructed):* 350.06-877.5 g
678. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 91, BB 16d, US 155. Phase 3 (MBA-RBA) - Fragmented (reconstructed in 3D). Stone (travertino). Mass: 556.41 g (435.19 g). Dimensions: 7.8 cm x 6.2 cm x 8.7 cm - Museo Archeologico di Cingoli (inv. no. 52092) - Unpublished.
679. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 91, AA 1bc, US 155. Phase 3 (MBA-RBA) - Complete. Stone (travertino). Mass: 350.06 g. Dimensions: 7.8 cm x 6.5 cm x 6.6 cm - Museo Archeologico di Cingoli (inv. no. 52089) - Unpublished.
680. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM, Surface, Stray find. Phase 3 (MBA-RBA) - Fragmented. Stone (travertino). Mass: n/a (194.18 g). Dimensions: 4.9 cm x 6.8 cm x 7.9 cm - Museo Archeologico di Cingoli (inv. no. 52154) - Unpublished.
681. Moscosi Piano Fonte Marcosa [site no. 26, settlement] (Cingoli, Macerata, Marche, Italy). PFM 91, BB 16a, US 155. Phase 3 (MBA-RBA) - Unfinished object. Fragmented. Stone (travertino). Mass: n/a (401.19 g). Dimensions: 8.9 cm x 6.5 cm x 7.5 cm - Museo Archeologico di Cingoli (inv. no. 52088) - Unpublished.
682. Allerey-sur-Saône [site no. 66, settlement] (Saône-et-Loire, Bourgogne-Franche-Comté, France). Phase 4 (Ha A-B) - Complete. Stone. Mass: 770 g. Dimensions: 8.0 cm x 8.6 cm x 8.6 cm - FETH 2014, fig. 2.11.
683. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 877.5 g. Dimensions: 8.9 cm x 9.0 cm x 9.0 cm - FETH 2014, fig. 2.12.
- Undetermined variant:** Mentioned in literature, without image (cat. no. 684-700)
- *number of objects:* 17
 - *chronological range:* Phase 2-4 (c. 1600-800 BCE)
 - *material:* stone
 - *1 site:* site no. 21, 24, 33, 37, 39, 40, 51, 74
 - *mass range (complete/reconstructed):* 295-842 g
684. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 730 g - FETH 2014.
685. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 295 g (inv. no. 7748) - CARDARELLI *et al.* 2001.
686. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 309 g (inv. no. 7812) - CARDARELLI *et al.* 2001.
687. Servirola San Polo [site no. 39, settlement] (Reggio Emilia, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 343 g (inv. no. 92) - CARDARELLI *et al.* 2001.
688. Servirola San Polo [site no. 39, settlement] (Reggio Emilia, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 347 g (inv. no. 91) - CARDARELLI *et al.* 2001.
689. Monte Barelo [site no. 33, settlement] (Cuneo, Piemonte, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 348 g (inv. no. 2028) - CARDARELLI *et al.* 2001.
690. Peschiera del Garda [site no. 51, settlement] (Verona, Veneto, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 376 g (inv. B) - CARDARELLI *et al.* 2001.
691. Peschiera del Garda [site no. 51, settlement] (Verona, Veneto, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 417 g (inv. I) - CARDARELLI *et al.* 2001.
692. Grotta Nuova [site no. 24, cave] (Viterbo, Lazio, Italy). Phase 2-3 (MBA-RBA) - Complete. Stone. Mass: 453 g - CARDARELLI *et al.* 2001.
693. Montale [site no. 37, settlement] (Castelnuovo Rangone, Modena, Emilia-Romagna, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 461 g (inv. no. 7704) - CARDARELLI *et al.* 2001.
694. Reggiano [n/a, settlement] (unknown provenance, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 524 g (inv. no. 96 (p9110)) - CARDARELLI *et al.* 2001.
695. Coppa Nevigata [site no. 21, settlement] (Manfredonia, Puglia, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 539 g - CARDARELLI *et al.* 2001.
696. Monte Barelo [site no. 33, settlement] (Cuneo, Piemonte, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 590 g (inv. no. 1) - CARDARELLI *et al.* 2001.
697. Reggiano [n/a, settlement] (unknown provenance, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 636 g (inv. no. 1181/65 (p7326)) - CARDARELLI *et al.* 2001.
698. Reggiano [n/a, settlement] (unknown provenance, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 641 g (inv. no. 1180-63) - CARDARELLI *et al.* 2001.
699. Reggiano [n/a, settlement] (unknown provenance, Italy). Phase 2-3 (MBA-RBA) - Fragmented. Stone. Mass: 842 g (inv. no. 76) - CARDARELLI *et al.* 2001.
700. Gaggio di Castelfranco [site no. 40, settlement] (Emilia-Romagna, Modena, Italy). Phase 2 (MBA) - Complete. Stone. Mass: 448.25 g. Dimensions: 6.8 cm x 6.4 cm x 8.2 cm - Museo Archeologico Etnografico Modena (inv. no. 256911 (698)) - CARDARELLI *et al.* 2004, fig. 1.7.

5.15. OTHER HANGING WEIGHTS

- *number of objects*: 14
- *objects with known mass (complete/reconstructed)*: 13 (93 %).
- *chronological range*: Phase 3-4 (c. 1350-800 BCE)
- *material*: stone (2), copper/bronze (1), lead (11)
- *12 sites*: site no. 12, 25, 60, 61, 62, 63, 68, 73, 74, 88, 121, 140
- *mass range (complete/reconstructed)*: 102.3-2,128.0 g

This section groups balance weights in the *mina*-range with heterogeneous shapes, but all provided with features that can be used to fix a suspension cord. Weights classified in Variant 1 (cat. no. 701-705) are round with a bi-concave cross-section. They are all made of lead except cat. no. 702, which is made of stone, and have a bronze wire loop fixed on the upper side. They all come from Late Bronze Age pile-dwelling settlements in Switzerland. Variant 2 includes two roughly made lead objects with hemispherical shape (cat. no. 706-707), both of which have a thin indentation on the upper side, suitable to host a loop of metal wire. V2 is attested in northern France at the settlement of Fort Harrouard (site no. 121, c. 1500-1200 BCE) and in southern England from a burial in the midden site of Cliffs End Farm (site no. 140, c. 950-725 BCE). Variant 3 includes a single object with spherical-cap shape and a metal loop fixed on the upper side (cat. no. 708), from the Swiss pile-dwelling settlement of Zürich-Wollishofen (site no. 88). The weights classified in Variant 4 are spherical (cat. no. 709-712). Object cat. no. 709 – from the Late Bronze Age settlement of Sorgenti della Nova (Italy, site no. 25) – is made of stone, with a U-shaped perforation on the upper side. The lead objects cat. no. 710-712 come from pile-dwelling settlements in Switzerland, and all have a metal loop fixed on the upper side. The bell-shaped lead weight with metal loop from the pile-dwelling settlement of Estavayer-le-Lac (site no. 12) is classified in Variant 5. Finally, Variant 6 has a parallelepiped shape with an upper protrusion, around which a bronze ring is fixed through a bronze wire. The only weight classified in V6 comes from the Nuragic Sanctuary of Abini, in Sardinia (site no. 12), dated c. 950-800 BCE.

Variant 1: Bi-concave cross-section (cat. no. 701-705)

- *number of objects*: 5
- *objects with known mass (complete/reconstructed)*: 5 (100 %)
- *chronological range*: Phase 4 (c. 1150-800 BCE)
- *material*: stone (1), lead (4)
- *4 sites*: site no. 61, 62, 74, 88
- *mass range (complete/reconstructed)*: 102.3-735.0 g

701. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 731.7 g. Dimensions: 5.7 cm x 5.5 cm x 3.7 cm - RYCHNER 1979, pl. 130.11.

702. Concise [site no. 62, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Stone. Mass: 102.3 g. Dimensions: 4.25 cm x 4.25 cm x 2.6 cm - FETH 2014, fig. 2.1.

703. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 735 g. Dimensions: 5.8 cm x 5.8 cm - FETH 2014, fig. 3.11.

704. Auvernier [site no. 74, settlement] (Boudry, Neuchâtel, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 734 g. Dimensions: 5.4 cm x 5.4 cm - FETH 2014, fig. 3.10.

705. Onnens [site no. 61, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 615.5 g. Dimensions: 5.5 cm x 5.7 cm - FETH 2014, fig. 3.9.

Variant 2: Hemispherical (cat. no. 706-707)

- *number of objects*: 2
- *objects with known mass (complete/reconstructed)*: 2 (100 %)
- *chronological range*: Phase 3-4 (c. 1350-800 BCE)
- *material*: lead (2)
- *2 sites*: site no. 121, 140
- *mass range (complete/reconstructed)*: 144-284 g

706. Fort Harrouard [site no. 121, settlement] (d'Eure-et-Loir, Centre-Val de Loire, France). B. 558 bis. Phase 2-3 (Bronze Moyen-Bronze Final I) - Complete. Lead. Mass: 284 g. Dimensions: 4.7 cm x 4.6 cm x 2.6 cm - MOHEN/BAILOUD 1987, pl. 89.25.

707. Cliffs End Farm [site no. 140, burial] (Kent, England). Phase 4 (Ewart Park) - Associations: balance beam from the same site - Complete. Lead. Mass: 144 g. Dimensions: 3.0 cm x 3.3 cm x 3.2 cm - GRIMM/SCHUSTER 2014, fig. 5.9.11.

Variant 3: Spherical cap (cat. no. 708)

708. Zürich-Wollishofen [site no. 88, settlement] (Zürich, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 728 g. Dimensions: 3.1 cm x 6.5 cm - FETH 2014, fig. 3.8.

Variant 4: Spherical (cat. no. 709-712)

- *Number of objects*: 4
- *objects with known mass (complete/reconstructed)*: 3 (75 %)
- *chronological range*: Phase 4 (c. 1150-800 BCE)
- *material*: stone (1), lead (3)
- *4 sites*: site no. 25, 60, 68, 73
- *mass range (complete/reconstructed)*: 387-389 g

709. Sorgenti della Nova [site no. 25, settlement] (Farnese, Viterbo, Lazio, Italy). Settore IV, cave, niche. Stratum 1B. Phase 4 (FBA 3) - Complete. Stone. Mass: n/a - CREMONESI 2006, tav. 2.5.

710. Colombier [site no. 73, settlement] (Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 387 g. Dimensions: 4.3 cm x 4.3 cm x 4.3 cm - FETH 2014, fig. 3.2.

711. Corcelettes [site no. 60, settlement] (Grandson, Vaud, Switzerland). Phase 4 (Ha A-B) - Fragmented. Lead. Mass: 388 g (387 g). Dimensions: 4.6 cm x 4.3 cm x 4.3 cm - FETH 2014, fig. 3.3.
712. Vallamand [site no. 68, settlement] (Vully-les-lacs, Vaud, Switzerland). Phase 4 (Ha A-B) - Complete. Lead. Mass: 389 g. Dimensions: 5.6 cm x 5.1 cm - FETH 2014, fig. 3.4.
- Variant 5: Bell-shaped (cat. no. 713)**
713. Estavayer-le-Lac [site no. 63, settlement] (Fribourg, Switzerland). Phase 4 (Ha A-B) - Fragmented. Lead. Mass: 615 g (552 g). Dimensions: 5.3 cm x 5.0 cm - FETH 2014, fig. 3.5.
- Variant 6: Parallelepiped with upper protrusion (cat. no. 714)**
714. Abini [site no. 12, nuragic sanctuary] (Teti, Nuoro, Sardegna, Italy). Phase 4 (EIA) - Complete. Copper/bronze. Mass: 2,128 g. Dimensions: 13.9 cm x 11.6 cm x 3.6 cm - LO SCHIAVO 2006, fig. 5.

