

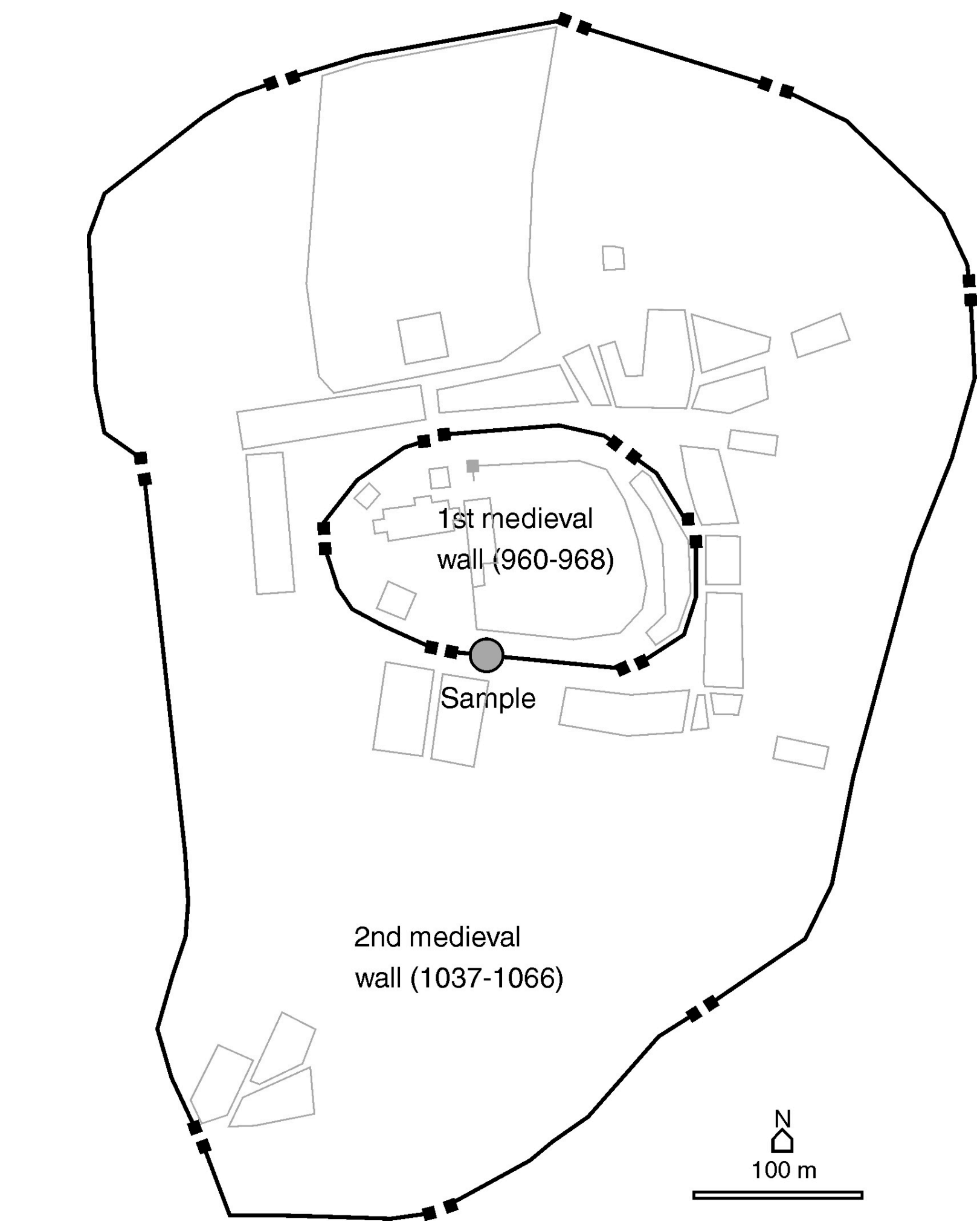
A TIME CAPSULE. SEEDS IN THE DITCH OF THE FIRST MEDIEVAL WALL OF SANTIAGO DE COMPOSTELA (NW IBERIA)

Introduction

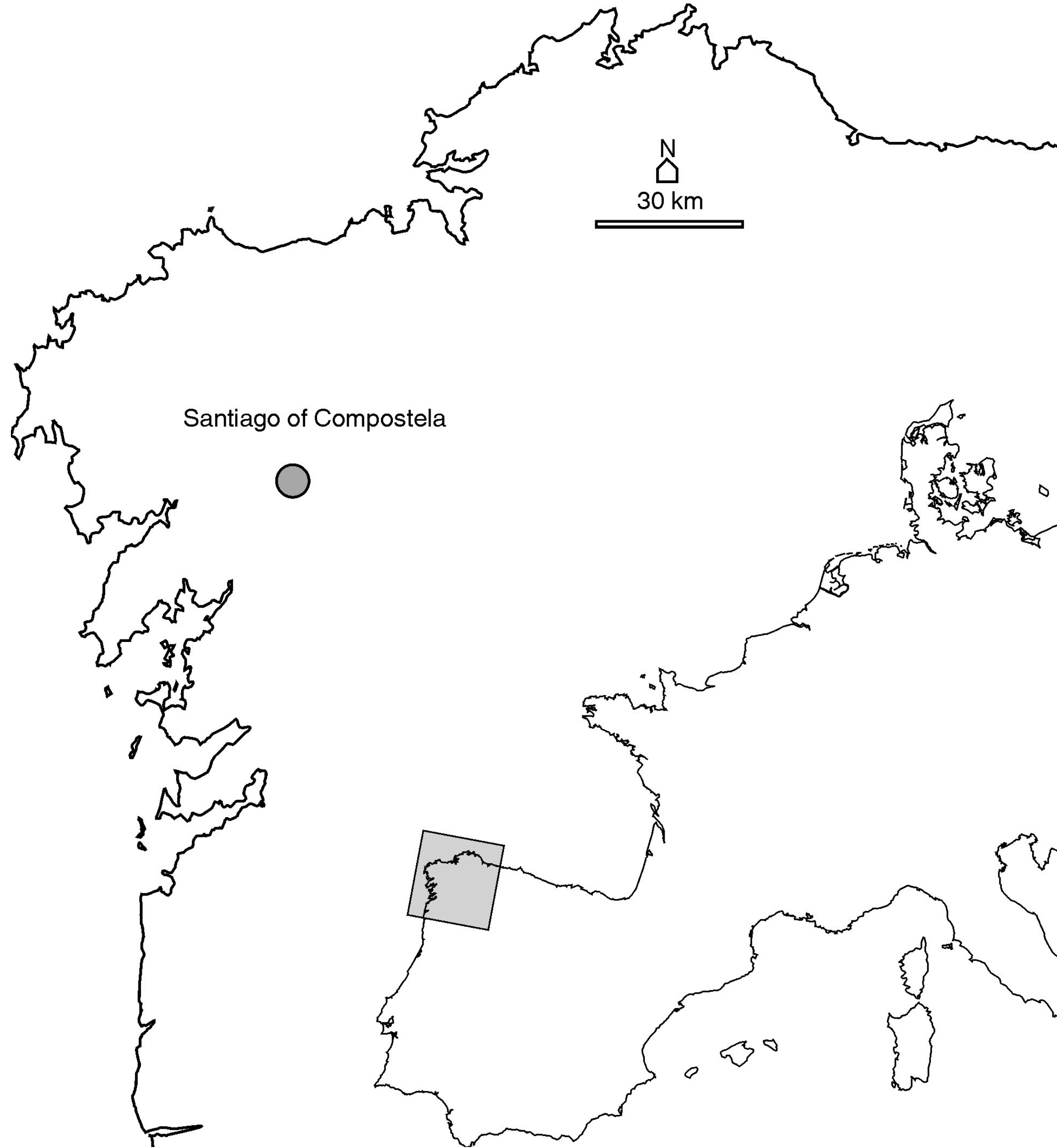
The decrease in tree coverage registered in pollen analysis and the appearance of newly created population centres indicate that there was an intensification of agricultural pressure on the environment in Galicia (Northwest Iberia) during the Medieval Warm Period in the Early Middle Ages, which continued into the first centuries of the Later Middle Ages.

In comparison to other historic and prehistoric periods, archaeological investigation of the medieval period in this region is underdeveloped, with research confined primarily to the study of documentary sources, both ecclesiastical and aristocratic. It must also be noted that the acidity of most soils has been problematic for the conservation of organic remains. As such, the presence of archaeological contexts with a high degree of preservation of such evidence represents a great opportunity.

The discovery of waterlogged seeds from the fill of the ditch of the 10th century city wall (960-968) of Santiago de Compostela enables us to better understand medieval agrarian practices. Following the construction of a new city wall (1037–1066), the earlier enclosure fell into disuse, and as the ditch silted up these seeds were deposited from the 11th to 12th century. This represents a period which witnessed the growth of Santiago as a population centre, and its consolidation, with the help of the ruling monarchy, as a centre of European pilgrimage through the Camino de Santiago.



Map of the borough of Santiago de Compostela in the medieval period showing the location of the analysed sample within the urban fabric.

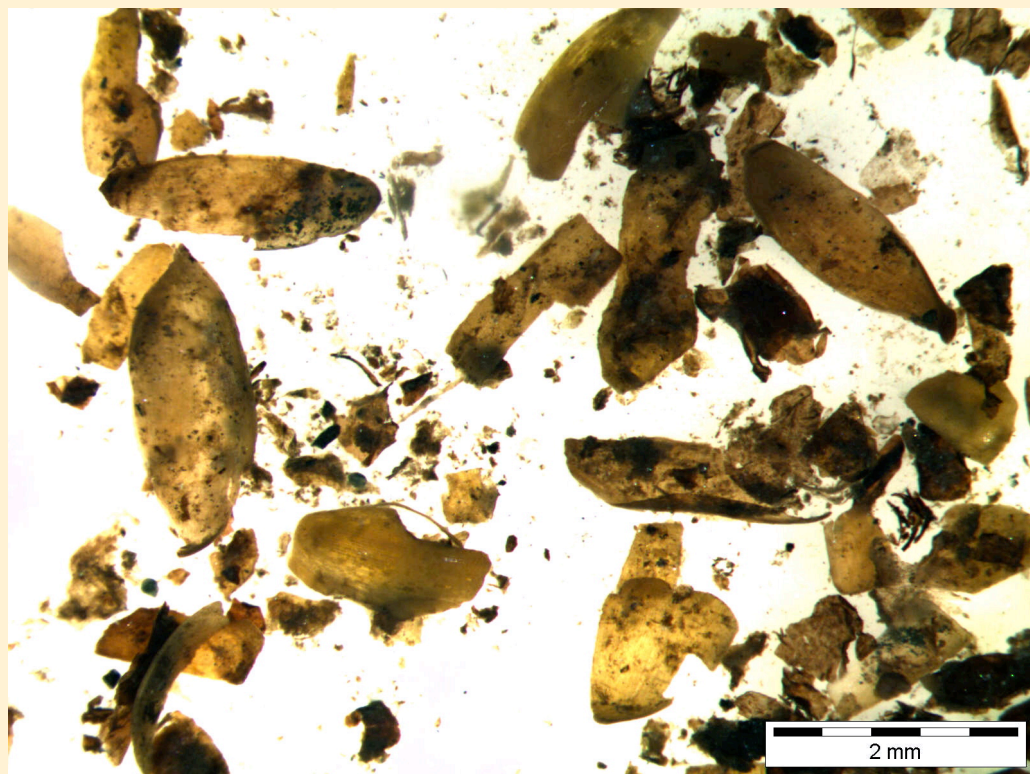


Material and method

The sample, 0.5 litres in volume, was collected from a specific sample of a concentration of *Prunus avium/cerasus* and associated sediment.

Using 2, 1 and 0.5mm meshes the soil was wet sieved so as to not accelerate the process of degradation. The remains were observed stereoscopically using a binocular microscope (1x-7x) and an optical microscope (20x-400x). The morphometry and ornamentation of the surfaces were analysed. A specialised bibliography and reference collection were used in determining taxa.

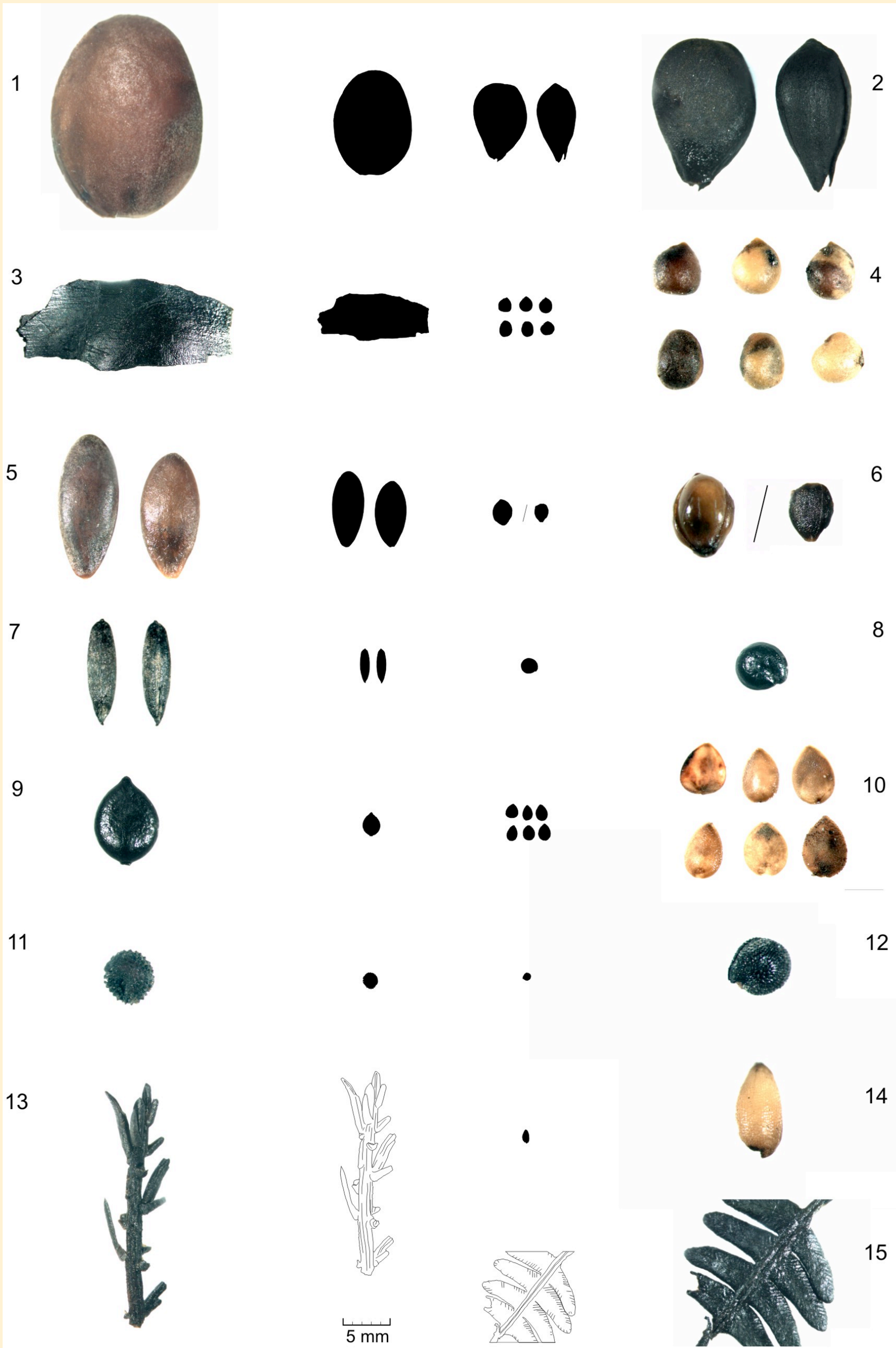
In the count of paleas/lemmas of *Panicum/Setaria* a sorting of 1/32 of the entire sample was undertaken. Distinguishable united casings were counted as individuals.



Glumes, paleas and lemmas fragments from millets (*Panicum/Setaria*) in the wet screening of sediment.

Of particular interest among the seeds recovered from the ditch are those of fruit-bearing tree species (*Prunus avium*, *Malus* sp., *Ficus carica*, *Castanea sativa*), and seeds indicative of the introduction of new plants during this period, such as the cucumber (*Cucumis sativus*). However, the most frequent remains were the large quantity of fragmented glumes, paleas, and lemmas of *Panicum/Setaria*, although seeds of these species were absent. In some cases it was possible to determine the taxon by the casings, with millet (*Panicum miliaceum*) and foxtail millet (*Setaria italica*) identified in this way.

The rest of the plants could have grown spontaneously in the site or have been transported. Some like *Juncus* sp. grow in humid environments and *Urtica* sp. in humanized areas. Species like cf. *Pteridium aquilinum* and *Ulex* sp. have traditionally been used as bedding for livestock, and others, like *Avena* sp., were cultivated at this time. However, the absence of diagnostic elements, as well as the limited representative nature of the plant remains, precludes confirmation of these exploitations.



Photographs of the identified species. The remains are shown to scale in the outline illustration. 1) *Prunus avium/cerasus*, 2) *Malus* sp., 3) *Castanea sativa* 4) *Ficus carica*, 5) *Cucumis sativus*, 6) Palea and lemma from *Panicum miliaceum* / palea from *Setaria italica*, 7) *Avena* sp., 8) *Chenopodium album*, 9) *Polygonum lapathifolium*, 10) *Urtica urens*, 11) *Silene latifolia/vulgaris*, 12) *Portulaca oleracea*, 13) *Ulex* sp., 14) *Juncus* sp., 15) cf *Pteridium aquilinum*.

Discuss & conclusion

The sample from the ditch contains a representation of fruit tree species that are frequently referred to in medieval documents in Northwest Iberia, and in particular it has preserved a large and interesting quantity of fragmented remains of paleas, lemmas, and glumes of *Panicum miliaceum* and *Setaria italica*.

While the absence of seeds of both millet species could correspond to a degradation of the caryopses in water-logged environments, their fragmentary nature and high concentration suggests that another hypothesis is more likely. In ethnographic studies of the region, reported in a communication of this congress (Moreno-Larrazábal *et al.* “Ethnobotany of millet cultivation in Northern Iberia”), numerous examples have been documented of the *chaîne opératoire* (technical operative chain) of millet processing, where the species have been used for both human consumption and as animal fodder. Among these they have documented the dehiscing of seeds of *Panicum miliaceum* to remove the inedible seed casings – a practice related to the processing of this species for human consumption.

What at first was originally treated as a specific sample has, due to its context and high degree of preservation, enabled the reconstruction of a concrete environment, in a particular moment in time (11th – 12th centuries). For an area where carpological analyses of medieval sites are infrequent, and the relevant information primarily reconstructed from written sources, the current analysis has enabled the verification of a number of species destined for consumption, as well as shedding light on parts of the *chaîne opératoire* of the millets.



Pounding millet. Photography from Regional Museum of Paredes de Coura (North of Portugal)

Acknowledgements

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