

# The oldest agriculture in northern Atlantic Spain: new evidence from El Mirón Cave (Ramales de la Victoria, Cantabria)

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## Abstract

Emmer wheat (*Triticum diccocus*) has been positively identified from the stratigraphically oldest ceramic- and domesticated livestock-bearing level of El Mirón Cave in the Cantabrian Cordillera. The grain is AMS <sup>14</sup>C-dated to 5550±40 BP. This date is congruent with six others from the same layer, higher within which were found other grains of wheat, including einkorn as well as emmer. Although wild ungulates (mainly red deer) were still hunted, abundant ovicaprines, together with small numbers of cattle and pigs, appear in this level—for the first time in the 40,000-year record at El Mirón. Potsherds (undecorated, but of very good quality) also appear abruptly and abundantly. However, the associated lithic assemblage contains specific tool types also found in late Mesolithic contexts in Cantabrian Spain. In addition to the full suite of Neolithic indicators at El Mirón, as confirmed by less unambiguous early agro-pastoral evidence from other sites in the Vasco-Cantabrian region, there are megalithic monuments both in the vicinity of the cave and throughout the region that are similarly dated. All these data tend to suggest that Neolithic adaptations—already present about a millennium earlier not only along the Mediterranean coast, but also much closer, to the southeast of the Cordillera—were quickly adopted as “a package” by Cantabrian Mesolithic foragers, possibly as a consequence of social contacts with Neolithic groups in southern France and/or the upper Ebro basin of north-central Spain.

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## 1. Introduction

Particularly since the synthetic work of Zvelebil and Rowley-Conwy [47], there has been considerable interest in and debate about the nature and timing of the transition from foraging to farming along the Atlantic facade of western Europe. That synthesis had been produced against the backdrop of the influential “demic

diffusion” model of Ammerman and Cavalli-Sforza [4–6], which emphasized actual westward human migrations as the mechanism for the spread of agricultural adaptations across Europe. The more complex (“mosaic”) model favored by Zvelebil and Rowley-Conwy stressed the active role of extant Mesolithic hunter-fisher-gatherers in resisting and ultimately incorporating elements of or adopting the complete socio-economic package of agro-pastoralism into their lifeways at differing rates in the various regions of Atlantic Europe. Coastal Atlantic regions with relatively high densities of forager populations, which seem to have had limited mobility because of locally rich wild food resources,

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present interesting cases for asking by what means, with how great a time-lag, how fast, to what extent and why food production (with its attendant changes in social organization and ideology) was ultimately adopted (e.g., Refs.[12,19,24–29,38,43,44,46]). If coastal Atlantic forager populations were so secure in their subsistence during the mid-Holocene, how and why did they ultimately (albeit tardily) become incorporated into the world of Neolithic farmers and herders? In the three decades since Ammerman and Cavalli-Sforza first proposed their straightforward migration model for substantial population replacement, alternative models have proliferated (e.g., subsistence pressure caused by population packing and/or encroachment, environmental change, forager–farmer symbiosis, competition, warfare, inter-marriage, navigation, trade/exchange, expropriation/ raiding, agriculturalist in-filling of “empty” or lightly populated areas, forager acquisition or imitation of high-status goods). Diverse specific process models could have been applicable to the many different and fluid ecological situations that existed among the complex physical and human geographies of Europe during the early-mid Holocene. The Cantabrian case, with inlets and small estuaries lined by Mesolithic shell-middens immediately adjacent to a densely wooded, mountainous interior only lightly exploited by hunter-gatherers, is both similar and different from other examples of the late adoption of agro-pastoralism and Neolithic technologies along the Atlantic facade (e.g., southern and central Portugal, Aquitaine, Brittany, Britain, Scotland, Ireland, Denmark) [17,31,32,35]. It is similar in that diversified foraging systems heavily dependant on marine resource exploitation seem to have had relatively low mobility and were very late to adopt agriculture or pastoralism relative to the situation in the Mediterranean Basin. It is different from other regions, such as Portugal or northwestern continental Europe, in that the entire region was characterized by Mesolithic adaptations until the abrupt appearance of Neolithic traits which seem to have been adopted rapidly, without evidence of continued Mesolithic “hold-outs”. It is the *diversity* of modes and tempos that is now recognized to characterize the spread of the Neolithic into the westernmost regions of Europe. While instructive, models developed for Portugal, Denmark, or England, for example, cannot be directly applied to the Cantabrian situation, due to its particular topographic, climatic and edaphic conditions, as well as to its own regional historical background.

The antiquity and rapidity of the establishment of agriculture and Neolithic lifeways in eastern and southern Spain and southern Portugal are well established at ca. 6600 BP uncal. (= 5500 cal BC) [13,45]. Ceramics and food production were quickly adopted by local Mesolithic foragers in the interior of Mediterranean Iberia, including the upper Ebro basin, by ca. 6500

BP [1,20]. However, the situation was radically different on the nearby Atlantic side of the Cantabrian Cordillera, a humid, equable, and densely forested region, ecologically distinct from the rest of Spain. There is controversy about the nature and timing of the adoption of agriculture and associated changes in technology and society in Cantabrian Spain: was “the Neolithic” an intrusive package that abruptly, completely replaced local Mesolithic lifeways or were certain aspects of the Neolithic system grafted onto those Mesolithic adaptations to produce a kind of hybrid culture in which foraging was not completely abandoned [10]? Was the transition to food production a gradually staged process or did all classic aspects of Neolithic culture—including the construction of megalithic monuments—appear essentially simultaneously [15]? Here we report on the first unambiguous case of the early appearance of the full suite of Neolithic attributes—cereal grain, domesticated livestock and well-developed ceramics—associated with Mesolithic-like stone tools in the context of a large, clearly stratified, carefully excavated and extensively <sup>14</sup>C-dated site in the northern fore-ranges of the Cantabrian Cordillera: El Mirón Cave (Ramales de la Victoria, Cantabria, Spain).

## 2. The Neolithic of El Mirón Cave

El Mirón is located at ca. 260 m above sea level in the upper Río Asón valley, some 25 km inland of the Holocene shore in eastern Cantabria. Surrounded by Cordilleran peaks near or above 1000 m a.s.l., El Mirón is strategically situated on historic avenues of communication between coastal Cantabria and both the Basque Country and the northern *meseta* of Old Castile (Fig. 1). On a steep, rocky cliff, the cave is in caprine habitat. However, there are areas of well-watered valley floor below the cave that would have been suitable for agriculture. Facing due west, El Mirón has a sheltered, dry, sunlit vestibule: 30 m deep by 8 m wide and 13 m high (Fig. 2)[33,34,36,37].

Excavations directed by LGS and MGM since 1996 have concentrated on two 9 m<sup>2</sup> areas in the vestibule, connected by a 8 × 1 m dogleg trench. All sediments are water-screened through 2 mm and 4 mm mesh and large samples are subjected to flotation, with collection in 250 µm mesh. The complete culture–stratigraphic sequence spans the period between the Middle Paleolithic and the Middle Ages, with 54 radiocarbon dates spanning the period between 41,000 BP (uncal.) and AD 1400 (cal). The Neolithic has been found in the outer vestibule (“Cabin”) excavation area and in the adjacent western half of the connecting trench. It consists of a series of clearly defined levels, rich in charcoal and ash, ceramics and animal bones, as well as smaller quantities

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