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The shell midden of Pico Ramos

(Muskiz, Bizkaia)

Humans on the Basque coast during the 6th and 5th millennium B.C.

- Edited by Lydia Zapata -

TRRRES [Eneko, Leire & Rafa Ajangiz]
Bilbao, 2017
ISBN: 978-84-617-8618-3
Book cover by Eneko Ajangiz

Born in 1965, Lydia left us on January 4th, 2015. We, her family, are committed to make all her research production freely accessible to all. That includes this new volume, which she tried to complete in year 2014. We have respected her work, which is why some pieces are unfinished or not translated into English. Pico Ramos was her seminal archaeological research work, a site that made her grow into the finest archaeologist we all appreciated and loved; Lydia was awarded with the ERC Consolidator Grant in year 2013. All correspondence shall be addressed to enejangiz@gmail.com; rafa.ajangiz@gmail.com.

Humans on the Basque coast during the 6th and 5th millennium B.C. The shell midden of Pico Ramos (Muskiz, Bizkaia)

Edited by Lydia Zapata

E no le pareçiendo buen logar, cató manera de poblar en SomoRostro por consejo de su padre, desiendole que se vaxase a la mar quanto podiese ca en ella fallaría sienpre conducho para amatar la gana del comer,...

Lope García de Salazar, *Las Bienandanzas e Fortunas*, Libro XXI, fol. 49.

Eta hau zuretzat da, Leire.

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Lydia Zapata's contributions

2017

Estudio de los macrorrestos vegetales de Praileaitz I (Deba, Gipuzkoa)
Mónica Ruiz-Alonso, Lydia Zapata
Munibe monográfico, 1 (2017), 201-219.
Full-text (pdf) available

> In this paper we present the results of the study of plant macroremains of the cave of Praileaitz I, including both charcoal and seeds and fruits. Those remains come from different structure combustion and materials scattered in the sediment of the cave. Since the beginning of the research project, we propose a great effort in order to recover all the botanical remains contained in the sediment, processing large amounts of sediment by the method of the flotation. Therefore, we have collected a large amount of remains. The main results show that the best represented charcoal in the all the different areas and along the whole sequence is deciduous Quercus, with Juniperus sp. in some levels. The other taxa reach very low values. In the case of the seeds and fruits, they are virtually absent.

Fuel uses in Cabeço da Amoreira shellmidden: An insight from charcoal analyses
Patrícia Diogo Monteiro, Lydia Zapata, Nuno Bicho.
Quaternary International, 431(A) (2017), 27-38.
Private copy (pdf) available

> Wood charcoal is an important tool for inferring human use of fire and exploitation of woodland resources. Using Cabeço da Amoreira shellmidden as study case, this paper aims to understand fuelwood use in the site, identifying patterns of wood exploitation and combustion related to different activities. Pine wood and presence of oak are the most common and are present in almost every context. Minor taxa is present, but the relation with specific activities in the site is not conclusive. However, data seem to indicate a usage of deadwood and exploitation of the most abundant taxa in the Muge valley.

Humans on the Basque coast during the 6th and 5th millenium B.C. The shell midden of Pico Ramos (Muskiz, Bizkaia)
Lydia Zapata (ed.) Alejandro Cearreta, Eduardo Leorri, Mª José Iriarte-Chiapusso, Ruth Moreno Nuño, Nicky Milner, Igor Gutiérrez-Zugasti, Kenneth Thomas, Eufrasia Roselló-Izquierdo, Arantzazu J. Pérez, Xabier Murelaga, Salvador Bailon, Pedro Castaños, Ziortza San Pedro, Lydia Zapata.
Trrres (Leire, Eneko & Rafa Ajangiz), Bilbao, 2017
Full-text (pdf) available

> Level 4 of the cave of Pico Ramos (Muskiz, Bizkaia) is a shell midden occupied by the humans who visited the cave during the 6th and 5th millennium cal BC. This volumen includes the following studies: excavation, stratigraphy, chronology and materials; Holocene sea-level; vegetation, use of fuelwood and agriculture; identification and exploitation of marine molluscs; a seasonality study and spatial analysis of the oyster shell; land and other non-marine molluscs; fish remains; faunal remains, including taphonomy; and a conclusion chapter to contextualise this archaeological site.

Landscape transformations at the dawn of agriculture in southern Syria (10.7e 9.9 ka cal. BP): Plant-specific responses to the impact of human activities and climate change
Amaia Arranz-Otaegui, José Antonio López-Sáez, José Luis Araus, Marta Portillo, Andrea Balbo, Eneko Iriarte, Lionel Gourichon, Frank Braemer, Lydia Zapata, Juan José Ibáñez.
Quaternary Science Reviews, 158 (2017), 145-163.
Private copy (pdf) available

> In southwest Asia, the accelerated impact of human activities on the landscape has often been linked to the development of fully agricultural societies during the middle and late Pre-Pottery Neolithic B (PPNB) period (around 10.2–7.9 ka cal. BP). This work contributes to the debate on the environmental impact of the so-

called Neolitisation process by identifying the climatic and anthropogenic factors that contributed to change local and regional vegetation at the time when domesticated plants appeared and developed in southern Syria (around 10.7–9.9 ka cal. BP). In this work a multidisciplinary analysis of plant microremains (pollen and phytoliths) and macroremains (wood charcoal) is carried out along with stable carbon isotope discrimination of wood charcoals in an early PPNB site (Tell Qarassa North, west of the Jabal al-Arab area). Prior to 10.5 ka cal. BP, the results indicate a dynamic equilibrium in the local and regional vegetation, which comprised woodland-steppe, Mediterranean evergreen oak-woodlands, wetland vegetation and coniferous forests. Around 10.5–9.9 ka cal. BP, the elements that regulated the vegetation system changed, resulting in reduced proportions of arboreal cover and the spread of cold-tolerant and wetlands species. Our data show that reinforcing interaction between the elements of the anthropogenic (e.g. herding, fire-related activities) and climatic systems (e.g. temperature, rainfall) contributed to the transformation of early Holocene vegetation during the emergence of fully agricultural societies in southern Syria.

Los recursos vegetales en la historia peninsular: la llegada de la agricultura.
Leonor Peña-Chocarro, Guillem Pérez Jordà, Lydia Zapata
Pilar López (coord.) *La Prehistoria en la Península Ibérica*. Akal, Madrid (2017), 297-344.
Private copy (pdf) available

La lectura conjunta de distintos elementos permite plantear la existencia de diferentes sistemas de explotación de la tierra en los 4.500 años analizados. El registro carpológico está marcando diferencias territoriales, pero los cambios parecen afectar fundamentalmente a la diversidad de los cereales cultivados en cada uno de los momentos. Es esta evolución la que permite plantear una hipótesis sobre dos formas de trabajar la tierra: un sistema intensivo u hortícola y un sistema extensivo o de arado.

Selection of firewood in northern Iberia: Archaeobotanical data from three archaeological sites
M. Ruiz-Alonso, L. Zapata, S. Pérez-Díaz, J.A. López- Saéz, J. Fernández-Eraso.
Quaternary International, 431(A) (2017), 61–72.
Private copy (pdf) available

This paper presents the combined results of archaeobotanical studies, of both macro-remains (carbonised wood, seeds and fruit) and micro-remains (pollen, spores and non-pollen microfossils), at three sites in Sierra de Cantabria (Basque Country, northern Iberian Peninsula): Peña Larga, Peña Parda and San Cristóbal, dated from the early Neolithic to the Bronze Age (5500–900 cal BC). The main results show that, despite the abundance of deciduous trees, the taxa used as fuel included both deciduous species (deciduous Quercus, Corylus avellana and birch) and conifers, mainly Taxus baccata. Yew (Taxus baccata) was the wood most used in the Neolithic, but its importance declines in the Chalcolithic and it disappears in the final occupation phases at the rock-shelters, in the Bronze Age. Instead, the use of deciduous Quercus increases.

2016

Crop husbandry activities and wild plant gathering, use and consumption at the EPPNB Tell Qarassa North (south Syria)
Amaia Arranz-Otaegui, Sue Colledge, Juan José Ibañez, Lydia Zapata.
Vegetation History and Archaeobotany, 25:6 (2016), 629-645.
Private copy (pdf) available

The Early Pre-Pottery Neolithic B (EPPNB) in southwest Asia is a fundamental period in research on the origins of domesticated plants. However, there are few archaeobotanical data with which to characterise the plant-based subsistence and crop husbandry activities during this time, which hinders the understanding of the factors that triggered the appearance of plant domestication. In this paper, analyses of non-woody plant macro-remains provide new insights into subsistence activities such as crop cultivation (husbandry activities and storage) and plant use (wild plant gathering and food preparation) during the EPPNB at Tell Qarassa North (south Syria). We make comparisons between Tell Qarassa North and the evidence at earlier and later periods as to how plants were used, and highlight similarities and differences in the practices attested, as well as describing some of the consequences that these plant-related activities may have had in terms of labor and social organization during EPPNB.

El medio natural en la Edad del Bronce

Pico Ramos shell midden: humans on the Basque coast during the 5th and 6th millenium BC

M.J. Iriarte-Chiapusso, L. Zapata
Juantxo Agirre-Mauleon (dir.) *San Adrian-Lizarrate: la historia de Gipuzkoa a través del túnel de San Adrián*. Aranzadi Zientzia Elkartea, 2016, 55-56.
Full-text (pdf) available

Si bien en la actualidad en este bosque domina el haya, en la Edad del Bronce existía una mayor diversidad de especies arboreas caducifolias (avellanos, abedules, robles, tilos, fresnos y hayas) que convivían con el pino.

Hunter-gatherer plant use in south west Asia: the path to agriculture
Amaia Arranz-Otaegui, Juan José Ibáñez, Lydia Zapata.
Karen Hardy and Lucy Kubiak-Martens (eds.) *Wild Harvest: Plants in the Hominin and Pre-Agrarian Human Worlds*. Oxbow Books, Oxford, 2016.
Private copy (pdf) available

This paper focuses on plant use by the last hunter-gatherers in the Levant from the Last Glacial Maximum (LGM) to the first experiments with plant cultivation at the beginning of the Holocene. This review of Epipaleolithic and Early Neolithic plant use summarises available archaeobotanical and technological data. Information far the Early Epipalaeolithic, especially from the site of Ohalo II, shows that, from the LGM, humans had access to exceptionally rich plant,food staples that included smallgrained grasses and wild barley (Hordeum spontaneum) and wild wheat (Triticum dicoccoides). Grasses seem to have been the staple plant foods but other plants were also present: wild pulses, acorns, almonds, pistachios, wild olives, fruits, and berries. Grinding and pounding stone tools were in use at this time far processing plant resources. During the Late Epipaleolithic (Natufian) period plant use intensified, as can be seen in the site of Abu Hureyra. The seed assemblage from Abu Hureyra I may have included more than 120 food types comprising possible staples such as the grain of wild rye (Secale spp.) and wheat (Triticum spp.), feather grasses (Stipa and Stipagrostis spp.), club-rush (Scirpus maritimus), Euphrates knotgrass (Polygonum corrigioloides), small-seeded grasses, and wild shrubby chenopods (Atriplex spp. and others). The presence in Natufian siles of tools with glossy edges that were used for harvesting cereals, and the widespread nature of mortars suggest that cereals were a more common food. During the Pre-Pottery Neolithic A (PPNA), the first experiments with cultivation of morphologically wild cereals, and also probably of legumes, took place. This involved cereals such as wild emmer (T. dicoccoides), wild einkorn (T. boeoticum), wild barley (Hordeum spontaneum) and wild oat (Avena sterilis), and pulses such as rambling vetch (Vicia peregrina) and probably others. Human manipulalion of plant resources opened the path to domestication with the first evidence found during the Early Pre-Pottery Neolithic B (EPPNB). However, the exploitation of wild plants continued to be important far these societies, as is suggested by the admixture of plant exploitation strategies during most of the PPN period and the late establishment of crop 'packages' during the Late PPNB.

On the use of space at La Peña de Estebanvela (Ayllón, Segovia, Spain): An approach to economic and social behaviour in the Upper Magdalenian
Carmen Cacho, Juan A. Martos, José Yravedra, Paula Ortega, Ignacio Martín-Lerma, Bárbara Avezuela, Lydia Zapata, Mónica Ruiz-Alonso, Jesús Valdivia
Quaternary International, 412 (2016), 44-53.
Full-text (pdf) available

The use of space inside La Peña de Estebanvela Rock-shelter and the activities carried out away from the site are analysed in this article in order to reconstruct the economic and social behaviour of the human group that occupied the site in the Upper Magdalenian (15,010-14,610 cal BP and 14,290-13,730 cal BP). Level III, which is geologically homogeneous and has yielded a large lithic and faunal record was selected for this purpose. The micro-spatial analysis of the level has differentiated two significant units in the central sector of the deposit which may correspond to an area used for intensive flint knapping (Unit 2), and a multi-functional area where hunting weapons were prepared, prey was butchered and defleshed, and hides were processed (Unit 3). The study of the use of the territory around the site reveals a strategy of diversified hunting, especially between late spring and early autumn, oriented towards ibex, horse, red deer and, to a lesser extent, chamois, roe deer and lynxes. This activity was complemented by the use of other resources, like fishing and gathering plants. Stocks of flint and personal ornaments made from marine molluscs confirm the territorial mobility of the residents of La Peña de Estebanvela.

Regional diversity on the timing for the initial appearance of cereal cultivation and domestication in Southwest Asia
Amaia Arranz-Otaegui, Sue Colledge, Lydia Zapata, Luis Cesar Teira-Mayolini, Juan José Ibáñez
Proceedings of the National Academy of Sciences, 113:49 (2016).
Full-text (pdf) available

Recent studies have broadened our knowledge regarding the origins of agriculture in southwest Asia by highlighting the multiregional and protracted nature of plant domestication. However, there have been few archaeobotanical data to examine whether the early adoption of wild cereal cultivation and the subsequent appearance of domesticated-type cereals occurred in parallel across southwest Asia, or if chronological differences existed between regions. The evaluation of the available archaeobotanical evidence indicates that during Pre-Pottery Neolithic A (PPNA) cultivation of wild cereal species was common in regions such as the southern-central Levant and the Upper Euphrates area, but the plant-based subsistence in the eastern Fertile Crescent (southeast Turkey, Iran, and Iraq) focused on the exploitation of plants such as legumes, goatgrass, fruits, and nuts. Around 10.7-10.2 ka Cal BP (early Pre-Pottery Neolithic B), the predominant exploitation of cereals continued in the southern-central Levant and is correlated with the appearance of significant proportions (~30%) of domesticated-type cereal chaff in the archaeobotanical record. In the eastern Fertile Crescent exploitation of legumes, fruits, nuts, and grasses continued, and in the Euphrates legumes predominated. In these two regions domesticated-type cereal chaff (>10%) is not identified until the middle and late Pre-Pottery Neolithic B (10.2-8.3 ka Cal BP). We propose that the cultivation of wild and domesticated cereals developed at different times across southwest Asia and was conditioned by the regionally diverse plant-based subsistence strategies adopted by Pre-Pottery Neolithic groups.

San Adrian: un nuevo yacimiento de la Edad del Bronce en el norte de la Península Ibérica
Jesús Tapia, Miriam Cubas, Manuel Cebeiro, Alfredo Moraza, Juantxo Agirre-Mauleon,
Eukene Alonso, Esteban Álvarez-Fernández, Pablo Areso, Ángel Armendariz, Pedro Castaños, Jone Castaños, Francisco Etxeberria, Joseba Garmendia, Lourdes Herrasti, María José Iriarte Chiapusso, Daniel Pérez, Ana Uriz, Lydia Zapata
Munibe (Antropología-Arkeología), 67 (2016), 363-375.
Full-text (pdf) available

Bronze Age studies carried out in the Cantabrian Region have traditionally focused on prestige goods and funerary contexts. As a result of this, the lack of information about daily activities, subsistence strategies, and human settlement on a regional scale is evident in the state of art. However, current research has achieved new discoveries in recent years, allowing a reconstruction of some aspects of the economic structure, settlements, material culture and the palaeoenvironment during the Bronze Age. Indeed, besides the funerary practices discovered in 1983 in San Adrian (Parztuergo Nagusia, Gipuzkoa), research has now revealed the presence of Upper Palaeolithic and Early Bronze Age occupations. This paper presents a first characterization of the retrieved evidence and a preliminary evaluation of the archaeological site and its environment. San Adrian is a tunnel-shaped cave located at 1,000 meters a.s.l. in the Aizkorri mountain range, opening a passage beneath the Atlantic-Mediterranean watershed in northern Iberia. The strategic character of this mountain site is demonstrated by the presence of Upper Palaeolithic and Bronze Age occupations, and by the construction of a road passing through it and the fortification of both its entrances in the Middle Ages. The aim of the archaeological survey started in 2008 was to identify, describe and evaluate the heritage potential of the cave, because previous fieldwork had only managed to make surface finds in the side galleries, including a medieval hoard and Bronze Age human remains. The work carried out by our research group at San Adrian includes a series of test pits and the excavation of an area nine square metres in size following stratigraphic criteria. In the current state, we identified at least two contexts corresponding to Late Upper Palaeolithic and Bronze Age occupations in the cave. Fieldwork included the sieving and flotation of sediment and the collection of samples for different types of analysis: palynology, carpology, sedimentology, and radiocarbon dating. The evidence is being studied by a multidisciplinary team according to expertise requirements for each topic: palaeobotany and environment, archaeozoology, sedimentology, geology, physical anthropology, prehistoric industries (lithics, pottery and bone) and archaeological and historical documentation. Because of its recent discovery, Upper Palaeolithic evidence remains still under study, but first results on Bronze Age layers can be presented. The ongoing archaeobotanical and archaeozoological studies reveal the exploitation of domestic plants and fauna complemented by hunting and foraging of wild species. At the same time, the archaeological artefacts and their production sequences show the exploitation of nearby resources on both sides of the mountain range, while prestige goods are absent. This evidence is also used to estimate the regularity of cave occupations and to propose a model of seasonal

exploitation of the mountain environment. The results obtained reveal the exploitation of resources from both the Mediterranean and Atlantic basins, and contribute towards an understanding of the daily activities of Bronze Age societies. In addition, the evidence shows the exchange and circulation of quotidian products between the Cantabrian region and inland Iberia in other networks than those of prestige goods.

2015

A palaeoenvironmental and palaeoeconomic approach to the Early Middle Age record from the village of Gasteiz (Basque Country, Northern Iberian Peninsula)
Sebastián Pérez-Díaz, Mónica Ruiz-Alonso, José Antonio López-Sáez, José Luis Solaun-Bustinza, Agustín Azkarate, Lydia Zapata.
Vegetation History and Archaeobotany, 24 (2015), 683-697.
Full-text (pdf) available

An integrated archaeobotanical study carried out in the medieval village of Gasteiz (Basque Country, Northern Iberian Peninsula) was able to establish a diachronic view of the evolution of the vegetal landscape, the plant economy and the forest management in this rural community between the 8th and 12th centuries AD, through the study of seeds, fruits, firewood, pollen, spores and nonpollen palynomorphs. The main results show the presence of an anthropogenic vegetal landscape, shaped by the economic activities of the inhabitants of the village, based on cereal crops, legumes and animal husbandry. Also new data are provided about forest management related to metallurgical activities.

A thousand years in flames, a diachronical perspective on fuelwood use in Cabeço da Amoreira (Muge shell middens, Portugal)
Patricia Monteiro, João Cascalheira, João Marreiros, Telmo Pereira, Cláudia Umbelino, Rita Dias, Célia Gonçalves, Olívia Figueiredo, Marina Évora, Eduardo Paixão, Nuno Bicho, Lydia Zapata.
Paper presented at *Meso2015, The Ninth International Conference on the Mesolithic in Europe*, At Belgrade, Serbia, 2015.
Full-text (pdf) available

Atthe Muge shellmiddens, Cabeço da Amoreira (8000-7000 cal BP) had several occupations for almost a thousand years and the charcoal remains are abundant in habitational, midden and funerary levels. From the analyses of different contexts (structures, pits, burials, hearths, shell midden layers) more than 4000 charcoal fragments have been identified. Taxonomic and taphonomic observation allowed the identification of Pinus as the main fuelwood, used in combination with Quercus, mainly large size pieces. Other less represented taxa are also present (Arbutus unedo, Pistacia lentiscus, Salix, Monocot.) and the variation between contexts suggest a differential use of some species for specific contexts over time.

Beginnings, settlement and consolidation of the production economy in the Basque region
Javier Fernandez-Eraso, José Antonio Mujika-Alustiza, Lydia Zapata-Peña, María-Jose Iriarte-Chiapusso, Ana Polo-Díaz, Pedro Castaños, Antonio Tarriño-Vinagre, Sergio Cardoso, Jesús Sesma-Sesma, Jesús García-Gazolaz
Quaternary International, 364 (2015), 162-171.
Full-text (pdf) available

The introduction of the Neolithic cultural and economic practices in the Basque region has been traditionally understood as a late process, in parallel to the achievement of the production of the first metals in neighbouring areas where the production economy has been considered to arrive much earlier. This paper presents an updated view of the beginnings and consolidation of the Neolithic practices in the Basque area and the current state of knowledge based on data from recent excavations and advances in 14C dating and micro/macro-plant remains, fauna, lithic raw materials, artefact and micromorphological analysis. The results challenge traditional interpretations and provide a timeframe and cultural and palaeoenvironmental characterisation of the Early, Middle and Late Neolithic periods in the region through data currently available from rockshelter, cave and open-air site deposits.

Ethnobotany of millet cultivation in the north of the Iberian Peninsula
Aitor Moreno-Larrazabal, Andrés Teira-Brión, Itsaso Sopelana-Salcedo, Amaia Arranz-Otaegui, Lydia Zapata.
Vegetation History and Archaeobotany, 24:4 (2015), 541-554.
Full-text (pdf) available

Having found Setaria italica (foxtail millet) and Panicum miliaceum (broomcorn millet) still being cultivated traditionally in the north of the Iberian Peninsula, we carried out ethnographic interviews with farmers to help us document an agricultural process on the verge of extinction. Crop processing of S. italica and P. miliaceum varies depending on the use of either plant. In Asturias, Setaria italica is harvested while green and used as fodder. In Galicia and in the north of Portugal, P. miliaceum grain is used mainly for human consumption. This distribution of millet in the north of the Iberian Peninsula appears to have been the case in prehistory too, although this will need to be confirmed by future research.

Interpreting a ritual funerary area at the Early Neolithic site of Tell Qarassa North (South Syria, late 9th millennium BC)
J. Santana, J. Velasco, A. Balbo, E. Iriarte, L. Zapata, L. Teira, C. Nicolle, F. Braemer, J.J. Ibáñez.
Journal of Anthropological Achaeology, 37 (2015), 112-127.
Full-text (pdf) available

The analysis of a funerary area dated to the late 9th millennium BC (Early to Middle PPNB) sheds new light on the ritual practice of the first farming communities in Southern Syria. Deceased individuals were buried in oval graves, placed on their side in a flexed position and oriented along an E-W axis. Skulls and, in some cases, long bones were later extracted for certain funerary rituals in which the memory of the deceased was relevant and which were carried out in an abandoned house and its attached courtyard. However, veneration seems to be not the only aim of these practices and many other lines of interpretation (worship, revenge, divination, protection, propitiation, relief, witchcraft, etc.) should also be explored. Secondly, without invalidating the fact that communal and prearranged ritual ceremonies may have existed during the PPN, our study stresses the importance of the funerary practices as the result of numerous rituals repeated on the initiative of small groups of individuals to satisfy diverse and unsuspected needs.

Lighting the dark: Wood charcoal analysis from Cueva de Nerja (Málaga, Spain) as a tool to explore the context of Palaeolithic rock art
Mª Ángeles Medina-Alcaide, José Luis Sanchidrián Torti, Lydia Zapata Peña.
Comptes Rendul Paleovol, 14:5 (2015), 411-422.
Full-text (pdf) available

This study examines 100 charred plant macroremains from the inner galleries of Cueva de Nerja in order to better understand the context of Palaeolithic rock art and obtain information about possible lighting systems. The remains were retrieved on the surface, very close to Palaeolithic cave paintings, and also from inside possible points of fixed lighting. The predominant wood-type is Pinus sp., especially Pinus tp. sylvestris/nigra. The taphonomic alterations recorded are attributable to the combustion process (vitrification and cracks), the possible gathering of dead wood (fungal hyphae/mycelia), the use of branches and twigs (reaction wood) and the burning of resinous taxa (resin marks). The identification of a vegetative bud of Pinus sylvestris furnishes information about the use of tree branches, as well as the time of year at which the Cueva de Nerja may have been frequented by prehistoric groups.

Restos vegetales en la Cueva de la Covaciella (Inguanzo, Asturias)
Mª Ángeles Medina-Alcaide, Lydia Zapata
Marcos García-Díez, Blanca Ochoa, José Adolfo Rodríguez Asensio (eds.) *Arte rupestre paleolítico en la Cueva de la Covaciella (Inguanzo, Asturias).* Gobierno del Principado de Asturias (2015), 50-55.
Full-text (pdf) available

El estudio antracológico de los restos vegetales carbonizados de La Covaciella aporta información sobre las especies vegetales empleadas para la iluminación y decoración de la cavidad en la Prehistoria. La muestra de carbón procedente del cuerno del bisonte ha sido caracterizada como conífera. También se ha documentado el tipo Pinus sylvestris/nigra en un fragmento de carbón localizado al pie del Panel Principal. Además ha sido identificado Corylus avellana en la pared de la Galería de las Pinturas, junto con Betula sp. en el piso y a nivel superficial en la sala del Enlace. Las alteraciones tafonómicas detectadas están relacionadas con el proceso de combustión al que ha sido sometida la madera (vitrificación y grietas radiales), con la resina que contienen en el caso de los fragmentos identificados dentro del grupo de las coníferas (vitrificación y estigmas de resina) y con el diámetro del leño de procedencia de algunos restos (madera de reacción). El hallazgo y la datación C14 AMs de un fragmento de carbón de madera adherido a la pared de la Galería de las Pinturas en 2.390±30 BP (2.677-2.346 calBP), localizado a escasos metros del Panel Principal, atestigua la frecuentación y visita de esta zona decorada de la cavidad durante la Edad del Hierro.

Storage in traditional farming communities of the western Mediterranean: Ethnographic, historical and archaeological data
Leonor Peña-Chocarro, Guillem Pérez Jordà, Jacob Morales Mateos, Lydia Zapata.
Environmental Archaeology: The Journal of Human Palaeoecology, 20:4 (2015), 379-389.
Full-text (pdf) available

This paper presents ethnographic, historic and archaeological data from the western Mediterranean in order to explore the variability of storage methods and the various strategies that may have existed in the past in this region. The paper includes ethnographic information on traditional storage methods collected in farming communities in northern Morocco (Rif area). We record the use of plant fibres such as canes (Arundo donax), dwarf palm (Chamaerops humilis), esparto grass (Stipa tenacissima) and dis (Ampelodesmos mauritanica) to make containers. Recipients made of cow dung and unfired clay, as well as underground silos, have been also used in this region to store food. In addition, we explore historical and ethnohistorical data on the use of large storage structures, including the study of communal granaries, a particular type of granary located at inaccessible places, such as cliff faces or mountain tops, or within fortified buildings, from which harvests can be easily protected and defended. We also examine the archaeological evidence of storage strategies in the Iberian Peninsula during prehistoric times. The paper informs of the large variety of systems and materials used, the functioning of storage structures, and more generally, provides a framework for reflecting on the enormous diversity of solutions that could have existed in the past and that may have left little or none archeological traces.

The Midden is on fire! Charcoal analyses from Cabeço da Amoreira (Muge shellmiddens)
Patricia Monteiro, Nuno F. Bicho, Lydia Zapata.
Nuno Bicho, Cleia Detry, T. Douglas Price, Eugénia Cunha (eds.) *Muge 150th: The 150th Anniversary of the Discovery of Mesolithic Shellmiddens*. Cambridge Scholars Publishing, Cambridge, 2015, 161-176.
Full-text (pdf) available

Fire represents an important issue in the economies of past societies. Charcoal analyses focus on charred wood remains and the identified taxa provide information on the available woodland resources and on the gathering and use of wood on archaeological sites. This paper discusses the results from the wood charcoal analyses carried out with materials from the Cabeço da Amoreira shell midden since 2000, comparing them with other palaeoenvironmental data from the Muge valley. Over 2500 charcoal fragments have been analysed from different areas of Cabeço da Amoreira. The main identified taxa are Pinus pinaster, Pinus tp. sylvestris and Pinus sp. but the presence of Quercus in every context is also noted. Other minor taxa such as Arbutus unedo and Pistacia lentiscus were also observed.

Transformation and human use of forests in the Western Pyrenees during the Holocene based on archaeological wood charcoal
M. Ruiz-Alonso, L. Zapata.
Quaternary International, 364 (2015), 86-93
Full-text (pdf) available

In this paper, we present a synthetic view of the results of anthracological studies in the Western Pyrenean Region during the Holocene. With this aim, we have compiled the results of wood charcoal analyses from archaeological sites taking into account that this region can be divided into several biogeographic areas. Firstly, we present the Aizpea archaeological site in the Pyrenees. Secondly, the deposits of Pico Ramos, Kobeaga II and El Mirón in the Coastal Area are described. Moving to the central part, into the Transition area, we describe the data of Mendandia as the main representative site, although the nearby sites of Atxoste, Kampanoste, and Kanpanoste Goikoa are also mentioned. Finally, for the southern sector of the Ebro Valley, we explain the archaeological sites of Peña Parda and Peña Larga. In addition, some specific issues that have been observed in some plant species found in this environment are also addressed. The main results show the use of different types of wood located near the archaeological sites and, in some particular cases, the selection of one of them.

Widespread exploitation of the honeybee by early Neolithic farmers
Alan Outram, Mélanie Roffet-Salque, Pascale Gerbault, Simona Mileto, Jessica Smyth, Lucija Soberl, Helen Whelton, Alfonso Alday, lotfi belhouchet, Mihael Budja, Gabriel Cooney, Miriam Cubas, Mariana Diniz, Cristina Fabbri, Jesus Gonzalez Urquijo, Daniela Hofmann, Isabel Hohle, James Mallory, Olga Perić, Anne-Marie

Pétrequin, Peter Stadler, Dushka Urem-Kotsou, Nenad Tasic, sabine wolfram, Jasna Vukovic, Pierre Pétrequin, Simone Mulazzani, Friedrich Lueth, Martin Mc Gonigle, Alasdair Whittle, Lydia Zapata.
Nature, 527 (2015), 226-230.
Full-text (pdf) available

The pressures on honeybee (Apis mellifera) populations, resulting from threats by modern pesticides, parasites, predators and diseases, have raised awareness of the economic importance and critical role this insect plays in agricultural societies across the globe. However, the association of humans with A. mellifera predates post-industrial-revolution agriculture, as evidenced by the widespread presence of ancient Egyptian bee iconography dating to the Old Kingdom (approximately 2400 BC). There are also indications of Stone Age people harvesting bee products; for example, honey hunting is interpreted from rock art in a prehistoric Holocene context and a beeswax find in a pre-agriculturalist site. However, when and where the regular association of A. mellifera with agriculturalists emerged is unknown. One of the major products of A. mellifera is beeswax, which is composed of a complex suite of lipids including n-alkanes, n-alkanoic acids and fatty acyl wax esters. The composition is highly constant as it is determined genetically through the insect's biochemistry. Thus, the chemical 'fingerprint' of beeswax provides a reliable basis for detecting this commodity in organic residues preserved at archaeological sites, which we now use to trace the exploitation by humans of A. mellifera temporally and spatially. Here we present secure identifications of beeswax in lipid residues preserved in pottery vessels of Neolithic Old World farmers. The geographical range of bee product exploitation is traced in Neolithic Europe, the Near East and North Africa, providing the palaeoecological range of honeybees during prehistory. Temporally, we demonstrate that bee products were exploited continiuously, and probably extensively in some regions, at least from the seventh millennium cal BC, likely fulfilling a variety of technological and cultural functions. The close association of A. mellifera with Neolithic farming communities dates to the early onset of agriculture and may provide evidence for the beginnings of a domestication process.

2014

All about yew: on the trail of Taxus baccata in SW Europe by means of integrated archaeobotanical and ethnographical studies
Paloma Uzquiano, Ethel Allué, Ferran Antolín, Francesc Burjachs, Llorenç Picornell, Raquel Piqué, Lydia Zapata
Vegetation History and Archaeobotany (2014) 24:1, 229-247.
Full-text (pdf) available

This paper reviews the palaeobiogeography of Taxus baccata (yew) and the human social customs and traditions relating to this tree in southwest Europe. Pollen and archaeobotanical (charcoal, seeds and manufactured tools) evidence supplemented by some data from ethnographical sources have been considered in an integrated approach focused on the Holocene. The geographical scope covers northern Spain, including both sides of the Pyrenees to southeast France, northeast Spain and the Balearic islands. Although the first archaeobotanical occurrences of yew have been recorded at 12–8 cal. kyr bp, the highest values have been found between 7,000 and 2,000 cal. bp as reflected in its maximum pollen curves in the study area. According to the pollen records this taxon had a first significant presence within the mixed oak woods and then it gradually disappeared (ca. 3,000 bp) from middle altitudes. This might be due to a combination of changing climatic conditions responsible for the major Holocene vegetation changes and increasing human pressure. A wide diversity of human uses is observed in the record of yew macroremains from archaeological sites. The presence of charcoal, potentially consumed fruits, manufactured tools and other archaeobotanical evidence of yew associated with livestock activities lead us to propose a set of past uses that may have contributed to its clear decrease in the late Holocene. Despite this intensive exploitation it is also rather common to find old specimens of planted yew throughout the study area, witnessing its endurance in the memories of people wherever it has remained.

Arqueología de la cueva de Balzola
Lydia Zapata, Encarnación Regalado, Ziortza San Pedro
Ayuntamiento de Dima (ed.) *Baltzola, entrañas de Amalur*, 2014, 27-40.
Full-text (pdf) available

Historia de las intervenciones arqueológicas en la Cueva de Balzola (Dima, Bizkaia), desde las primeras investigaciones en 1866 por el alemán R. Jaggor, de la Sociedad Antropológica de Berlín, pasando por la

excavación del ingeniero de minas A. de Gálvez-Cañero en 1912, los trabajos de J.M de Barandiarán en 1932 y de E. Berganza, de la Universidad de Deusto, en 1977, hasta el proyecto multidisciplinar puesto en marcha por la Dra. L. Zapata de la Universidad de País Vasco, entre 2006-2015.

Crop diversity in the Neolithic of the Iberian Peninsula
Leonor Peña-Chocarro, Lydia Zapata Peña
Alexandre Chevalier, Elena Marinova, Leonor Peña-Chocarro (eds.) *Plants and People: Choices and Diversity through Time*. Oxbow Books, Oxford 2014, 96-100.
Full-text (pdf) available

Crop diversity in the Iberian Neolithic was high; farmers grew a wide variety of crops which probably fulfilled their basic food needs and satisfied specific requirements in the sphere of human beliefs and practices. Crop diversity implied a good knowledge of the growth needs, processing and uses of the particular species cultivated, as well as considerable skills in coping with environmental forces.

Exploring diversity in the past and in the present
Lydia Zapata, Linda Scott Cummings, José Luis Mingote Calderón, Marie Russel, François Sigaut, Susana González Reyero, Gisella Cruz-García
Alexandre Chevalier, Elena Marinova, Leonor Peña-Chocarro (eds.) *Plants and People: Choices and Diversity through Time*. Oxbow Books, Oxford 2014, 15-58.
Full-text (pdf) available

The change to farming gave rise to a real revolution in human history. A wide spectrum of cultivated plants was used in some places even during the early Neolithic, but new crops continued to be added. How far these changes in plant use depended on real human choices and culture or on environmental triggers is a subject of debate and robust sets of raw data are needed. In this chapter dealing with the methodological approach, we have tried to show that the necessary over-specialisation of the researchers as well as the limitations and incomplete nature of many of our sources makes interdisciplinarity obligatory.

Fuelwood, crops and acorns from Iritegi cave (Oñati, Basque Country)
Aitor Moreno-Larrazabal, Eloisa Uribarri, Xabier Peñalver, Lydia Zapata
Environmental Archaeology, 19:2 (2014), 166-175.
Full-text (pdf) available

We present the analyses of plant macroremains from Iritegi, a cave from Northern Iberia with archaeological levels dated from the Chalcolithic to the Iron Age. Wood charcoal assemblages are dominated throughout the sequence by Fraxinus. Other important taxa are Quercus subg. Quercus, followed by Corylus avellana, Fagus sylvatica, Ilex aquifolium, Taxus baccata and Ulmus. Acer, Alnus and Maloideae occur in very low numbers. The high percentages of Fraxinus are possibly result from the selection of ash for fodder. Evidence for the use of crops (Hordeum vulgare, Triticum aestivum/durum) comes only from the Chalcolithic contexts. The identification of acorns in one Chalcolithic hearth shows that roasting of these nuts was taking place maybe to improve taste and to facilitate further processing or to improve storage conditions. The results show that plant food gathering still played a role within the subsistence of farming human groups in the region.

La Peña de Estebanvela
C. Cacho, J.A. Martos, J. Jordá-Pardo, J. Yravedra, M. Ruiz, L. Zapata, C. Sesé, B. Avezuela, J. Valdivia, P. Ortega, D. Arceredillo
R. Sala Ramos, E. Carbonell, J. M. Bermúdez de Castro, J. L. Arsuaga (eds.) *Pleistocene and Holocene hunter-gatherers in Iberia and the Gibraltar strait. The current archaeological record*. Universidad de Burgos - Fundación Atapuerca, Burgos 2014, 568-573.
Full-text (pdf) available

Regarding the exploitation model of the territory during the Magdalenian, data from La Peña de Estebanvela indicates recurrent use of the immediate surroundings for hunting ungulates and some carnivores, trout fishing and possible gathering of wild fruit and nuts.

La Peña de Estebanvela
C. Cacho, J.A. Martos, J. Jordá-Pardo, J. Yravedra, M. Ruiz, L. Zapata, C. Sesé, B. Avezuela, J. Valdivia, P. Ortega, D. Arceredillo
R. Sala Ramos, E. Carbonell, J. M. Bermúdez de Castro, J. L. Arsuaga (eds.) *Los cazadores recolectores del Pleistoceno y del Holoceno en Iberia y el estrecho de Gibraltar. Estado actual del conocimiento del registro arqueológico*. Universidad de Burgos - Fundación Atapuerca, Burgos 2014, 568-573.
Full-text (pdf) available

El modelo de explotación del territorio durante el Magdaleniense de La Peña de Estebanvela nos habla de un aprovechamiento recurrente de su entorno más cercano para la caza de ungulados, así como algún carnívoro, la pesca de truchas y posiblemente la recolección de frutos silvestres. La Peña de Estebanvela es el principal referente de la investigación del Magdaleniense en la Meseta. Su secuencia estratigráfica ha sido sometida a un amplio control cronoestratigráfico. La serie de dataciones radiocarbónicas obtenidas, la más amplia para el rango geográfico analizado, ha permitido avanzar en la definición del marco cronológico del Pleistoceno superior final en este área.

Macrorrestos vegetales de Santa Catalina (Lekeitio, Bizkaia): carbones y bellotas del Tardiglaciar
Mónica Ruiz-Alonso, Paloma Uzquiano Ollero, Lydia Zapata Peña
Kobie Serie Excavaciones Arqueológicas en Bizkaia, 4 (2014), 75-92.
Full-text (pdf) available

The recovery of acorns in a Palaeolithic chronology suggests their use in human diet and constitutes one of the oldest evidence in Europe.

Parching and dehusking hulled wheats
Leonor Peña-Chocarro, Lydia Zapata
Patricia C. Anderson, Leonor Peña-Chocarro (eds.) *Early Agricultural Remnants and Technical Heritage (EARTH): 8,000 Years of Resilience and Innovation* (Volume 2). Oxbow Books, Oxford 2014, 226-232.
Full-text (pdf) available

Although parching was in the past acknowledged as an important stage in the hulled wheat dehusking process, experimental work and ethnographic information have demostrated that parching was not a necessary operation. Dehusking may have alternative methods other than the use of mortars and pestles and the use of mills in their multiple forms.

Selection of wood fuels in the South of Álava (Basque Country, Northern Iberia): Archaeobotanical data
Mónica Ruiz-Alonso, Lydia Zapata, Sebastián Pérez-Díaz, José Antonio López- Saéz, Javier Fernández-Eraso.
Poster presented at the *XVII World UISPP Congress*, Burgos, 1-7 September 2014.
Full-text (pdf) available

The integration of data provided by different archaeobotanical disciplines, in this case and palynology and anthracology, offers interesting possibilities in paleoenvironmental studies. While both offer different information, both are complementary. The results obtained in the Sierra de Cantabria archaeobotanical studies indicate the presence from the Early Neolithic of deciduous forests, which are reduced gradually due to human action. Deforestation is increasing along the sequence in parallel with the progressive introduction of agriculture and pastures for livestock. From all the fuels that are available in the environment, human groups selected the most appreciated according to their needs: yew and deciduous Quercus.

Storage in the Western Rif (Morocco): baskets and clay/dung containers
Leonor Peña-Chocarro, Lydia Zapata
Patricia C. Anderson, Leonor Peña-Chocarro (eds.) *Early Agricultural Remnants and Technical Heritage (EARTH): 8,000 Years of Resilience and Innovation* (Volume 2). Oxbow Books, Oxford 2014, 208-209.
Full-text (pdf) available

This contribution focuses on two storage techniques documented in the western Rif. Although different techniques were documented using various types of structures and materials such as canes, dung, clay, plant fibres and cork, this paper focuses on the most common types: the sulla, large baskets made of cane (Arundo donax), and the clay or dung recipients called tonna.

Versatile hulled wheats: farmers' traditional uses of three endangered crop species in the western Mediterranean
Leonor Peña-Chocarro, Lydia Zapata
Alexandre Chevalier, Elena Marinova, Leonor Peña-Chocarro (eds.) *Plants and People: Choices and Diversity through Time*. Oxbow Books, Oxford 2014, 276-281.
Full-text (pdf) available

Hulled wheats have been an important resource in Mediterranean mountain areas, not only for their multipurpose character, but also for their capacity to cope with harsh conditions and poor soils. They provided human and animal food as well as material for many different purposes beyond nutrition.

2013

A modo de conclusión. Ocupaciones magdalenienses en La Peña de Estebanvela
Carmen Cacho, Juan Antonio Martos, Jesús Jordá Pardo, Carmen Sesé, José Yravedra, Lydia Zapata
Carmen Cacho (coord.) *Ocupaciones magdalenienses en el interior de la Península Ibérica: la Peña de Estebanvela (Ayllón, Segovia)*. Junta de Castilla y León/CSIC, Madrid 2013, 535-544.
Full-text (pdf) available

This last chapter provides an overall interpretation of the La Peña de Estebanvela site, the result of multidisciplinary research. Studies of the geoarchaeological, chronostratigraphic, taxonomic, zooarchaeological, taphonomic, anthracological and phytological records allow the chronology of the site's occupations to be determined. Sometimes even the seasonality of occupation can be established, and patterns of territory exploitation discerned. The results of technotypological, traceological and spatial analyses show a marked internal structuring of the site's space, and provide clues on the possible functions of the site. Finally, the detailed examination of the site's ornamental pieces and decorated stones shows the groups that used the rock shelter sometimes travelled great distances.

Agricultura altomedieval y usos forestales en Gasteiz. Datos carpológicos y antracológicos
Lydia Zapata, Mónica Ruiz-Alonso
Agustín Azkarate, José Luis Solaun (eds.) *Arqueología e Historia de una ciudad. Los orígenes de Vitoria-Gasteiz (I)*. Universidad del País Vasco, Vitoria-Gasteiz 2013, 253-278.
Full-text (pdf) available

A partir de los datos estudiados en el estudio carpológico de Gasteiz durante los siglos VIII-XII se puede concluir la existencia de una agricultura de base cerealista complementada con el cultivo de leguminosas y en los primeros momentos de lino. La importancia de frutales parece muy limitada y la vid está totalmente ausente de las muestras. En relación al entorno de bosque, los resultados antracológicos registran una mayor diversidad de taxones en los primeros siglos, incluidas las muestras relacionadas con instalaciones siderometalúrgicas, lo que sugiere una explotación diversificada y quizá oportunista. A partir de la segunda mitad del siglo XI se explota casi exclusivamente roble y haya, lo que sugiere un uso reglamentado y gestionado de robledales y hayedos.

All about yew: on the trail of Taxus baccata in SW Europe by means of integrated archaeobotanical studies
Paloma Uzquiano, Ethel Allué, Ferran Antolín, Francesc Burjachs, Raquel Piqué, Mónica Ruis-Alonso, Lydia Zapata
Poster presented at the *16th Conferente on the International Workgroup for Palaeoethonobotany*, Thessaloniky, Greece (2013).
Full-text (pdf) available

The integration of different disciplines in the study of Taxus baccata indicates the presence of this taxon in SW Europe since the middle Pleistocene. However the bulk of archaeobotanical information comes from the Holocene. Both Palynological and Anthracological approaches are chronologically and palaeoecologically consistent. Once the yew appears and develops among deciduous forest formation without establishing real plant communities, it is exploited by human groups. According to charcoal data this exploitation starts since the Epipalaeolithic-Mesolithic but it is during the Neolithic when the taxon is largely exploited throughout all the area under study, reaching its highest values during the Chalcolithic and Bronze Age. Historical and ethnographic sources also revealed a continuous exploitation of this tree for multiple purposes. Not only humans have exerted a strong pressure on this tree but the ruminants with their constant grazing have also

contributed to the regression of yew to the most inaccessible areas of mountains. The various place names related to yew that have been found over the geography of the studied area, testify the former extension reached by this tree in the past. An enlarged number of yews planted from ancient times besides old churches, cemeteries or in the squares of villages (more than 250 yews only in Asturian territory) witnesses the old cult that has always been given to this tree ruling for centuries the destiny of the living and honoring the memory of the dead.

Baltzola (Dima, Bizkaia) 2013. Estudio de los materiales arqueológicos de la galería principal
Lydia Zapata Peña (ed.) Encarni Regalado Bueno, Ziortza San Pedro Calleja, Izaskun Gallaga, Arantzazu Pérez, Naiara Argote, Pedro Castaños, Jone Castaños, Miriam Cubas, Maite García, María José Iriarte, Andoni Tarriño, Alejandro García, Eneko Iriarte, A. Aranburu, Naroa García-Ibaibarriaga, Salvador Bailón, Juan Rofes, Ana Polo, Xabier Murelaga, Amaia Ordiales, Neskutz Izagirre, Conchi de la Rúa, Montserrat Hervella.
Informe técnico a la Diputación Foral de Bizkaia (2013)
Full-text (pdf) available

Los resultados obtenidos en las diversas zonas en las que hemos actuado son de alto interés para el conocimiento de diversos periodos de la Prehistoria y podrían dar lugar a un trabajo de campo más prolongado. Sin embargo, consideramos que, dada la cantidad de material recuperado y el interés que presenta, era adecuado parar la actividad en el yacimiento, llevar a cabo estudios detallados y realizar la primera publicación en formato de monografía para ser publicado por la Diputación Foral de Bizkaia. La primera monografía incluye: 1) la caracterización general del yacimiento y su entorno (Cuadros S43 y S45), y 2) la presentación de los niveles excavados en la zona baja del yacimiento, todos niveles con cerámica de probable adscripción a la Edad del Bronce. Este trabajo presenta los resultados llevados a cabo por el equipo científico que forma parte del proyecto. Queremos subrayar que una parte importante del trabajo se ha realizado con financiación propia, asumida por los propios investigadores, y por el proyecto del Plan Nacional de I+D+i HAR2011-23716 dirigido por Lydia Zapata.

Contribution à l'étude de la néolithisation dans la Région Cantabrique. La Grotte de Los Gitanos (Cantabrie, Espagne)
Roberto Ontañón, Miriam Cubas, Jesús Altuna, Esteban Álvarez Fernández, Adriana Chauvin, Raquel Fernández, Yves Gruet, María José Iriarte, Inés L. López-Dóriga, Koro Mariezkurrena, Lydia Zapata
Marie-Yvane Daire, Catherine Dupont, Anna Baudry, Cyrille Billard, Jean-Marc Large, Laurent Lespez, Eric Normand and Chris Scarre (eds.) *Anciens peuplements littoraux et relations Homme /Milieu sur les côtes de l'Europe atlantique*. BAR International Series, 2570 (2013), 383-390.
Full-text (pdf) available

Au long des 5ème et 4ème millénaires cal BC, l'évidence premièrement sur l'activité cynégétique d'ongulés, la cueillette d'espèces végétales sylvestres et l'exploitation probablement intensive des ressources marines. Les nouvelles activités productives (agriculture et élevage) de subsistance mixte évolue vers une importance croissante au début du 3ème millénaire cal BC on observe une transformation dans la gestion du territoire de la part des communautés qui habitaient la grotte, ainsi que certaines céramique (introduction de nouveaux dégraissants, plus de variations morphologiques et apparition de récipients décorés). Par contre, les ressources marines (et même la technologie lithique) révèlent une continuité marquée tout au long de la séquence néolithique du site, ce qui pourrait être interprété comme le maintien des pratiques economiques « traditionnelles », ancrés dans des modes prédateurs mésolithiques. L'évidence archéologique provenant du gisement de Los Gitanos démontre que les sociétés du 5ème au 3ème millénaire cal BC y maintiennent une intense exploitation du milieu littoral, spécialement des mollusques marins.

Crops and people. Diffusion of farming in South-Western Europe
Leonor Peña-Chocarro, Lydia Zapata-Peña
Eduardo Blasco Ferrer, Paolo Francalacci, Alberto Nocentini, Giuseppina Tanda (eds.) *Iberia e Sardegna. Legami linguistici, archeologici e genetici dal Mesolitico all'Età del Bronzo*. Le Monnier Università / Studi, 2013, 277-288
Full-text (pdf) available

En este artículo se presenta una revisión de la expansión de la agricultura en el suroeste de Europa a través la evidencia arqueobotánica. Se analizan los datos existentes en este amplio territorio y, en particular, en el País Vasco. En la costa mediterránea de la Península Ibérica los cereales datados más antiguos se sitúan entre el 5600-5500 cal BC. Las primeras plantas cultivadas incluyen diferentes tipos de trigos, cebadas y

leguminosas procedentes del Próximo Oriente y desconocidas hasta el momento en nuestra zona de estudio. En el Golfo de Bizkaia la agricultura se documenta a partir de 5200-4600 BC, casi un milenio más tarde que en otras áreas peninsulares. En esta zona, la importancia de los grupos mesolíticos sugiere que las poblaciones indígenas locales adoptaron la agricultura.

Cueva de Baltzola (Dima, Bizkaia), V campaña de excavaciones
Lydia Zapata, E. Regalado, Z. San Pedro, I. Gallaga, A. Pérez, N. Argote, J. Castaños, P. Castaños, M. Cubas, M. García, M.J. Iriarte, A. Tarriño, A. San Emeterio.
Arkeoikuska 2013, Gobierno Vasco, Vitoria-Gasteiz, 2013, 196-199.
Full-text (pdf) available

During this campaign, we excavated several stratigraphic units which reveal a sequence that includes a possible Mousterian context (Middle Palaeolithic). All are rich contexts in terms of lithic and faunal assemblages.

Expansion and decline of yew (Taxus baccata L.) in the Basque Mountains (Northern Iberian Peninsula) during the Holocene
Sebastián Pérez Díaz, José Antonio López Sáez, Mónica Ruiz-Alonso, Lydia Zapata
Poster presented at the 2nd International APLE-APLF Congress *Pollen biotechnology, diversity and function in a changing environment,* celebrado en Madrid del 17 al 20 de septiembre 2013
Full-text (pdf) available

Palaeobotanical data show that during the middle Holocene a major expansion of yew populations occurred, occupying places that were not previously registered.

Explotación forestal en la vertiente atlántica del País Vasco durante la Edad del Hierro: una aproximación antracológica
Aitor Moreno-Larrazabal, Gustavo Renobales Scheifler, Lydia Zapata
Cuadernos de la Sociedad Española de Ciencias Forestales, 38 (2013), 19-24.
Full-text (pdf) available

Se presenta una primera síntesis de los estudios antracológicos en yacimientos de la Edad del Hierrro del País Vasco. El material procede de tres tipos de yacimientos diferentes: poblados fortificados, santuario y cueva. Destaca el uso de Quercus subg Quercus. Fresno, avellano y haya están también presentes en todos los yacimientos.

Holocene environmental change and human impact in NE Morocco: Palaeobotanical evidence from Ifri Oudadane
Lydia Zapata, José Antonio López-Sáez, Mónica Ruiz-Alonso, Jörg Linstädter, Guillem Pérez-Jordà, Jacob Morales, Martin Kehl, Leonor Peña-Chocarro
The Holocene, 23:9 (2013), 1286-1296.
Full-text (pdf) available

The littoral site of Ifri Oudadane is one of the most important recently excavated sites in the Mediterranean Maghreb. The shelter presents Epipalaeolithic and Neolithic layers and therefore offers the possibility to investigate the Neolithic transition in the region. Besides introducing the archaeological context, this paper focuses on palaeobotanical data in order to reconstruct Holocene environmental change and human use of plant resources for the period c. 11 to 5.7 ka cal. BP. Results show intense landscape transformations resulting from anthropic and climatic factors. First human occupations start at the beginning of the Holocene with favourable conditions in this otherwise harsh semi-arid stretch of land. A wooded environment with evergreen sclerophyllous oaks and riparian forests is documented and exploited by hunter-gatherers. From c. 7.6 ka cal. BP farming activities are well attested together with significant human impact, herding pressure and a progressive decline of arboreal components. After 6.6 ka cal. BP conditions become less favourable and markers for aridity increase. Riparian taxa disappear (Alnus) or decrease (Fraxinus, Populus, Salix); shrubs (Tamarix) and grasses (Artemisia) increase with a degradation of forest into shrubland (macchia). During 6.6 and 6.0 ka cal. BP there is a general occupation gap in arid and semi-arid Morocco and evidence for that change is also found in the alluvial deposits of the Moulouya, NE Morocco. Indicators for food production decrease at the same time and the site is abandoned during the first half of the 6th millennium cal. BP.

Holocene history of Taxus baccata in the Basque Mountains (Northern Iberian Peninsula)
Sebastián Pérez-Díaz, José Antonio López-Sáez, Mónica Ruiz-Alonso, Lydia Zapata, Daniel Abel-Schaad
Lazaroa, 34 (2013), 29-41.
Full-text (pdf) available

Palaeobotanical studies are a very interesting tool for evaluating past vegetation, climatic variability and human pressure on the landscape. In this paper we offer an overview of Holocene evolution of the yew (Taxus baccata L.) in the Basque Mountains (Northern Iberian Peninsula). For this purpose, we have collected all macro- and micro-remain evidence of the presence of yew within its chronological framework. The results suggest the existence of a period of expansion of yew populations during the Middle Holocene and a regression phase in the Late Holocene.

Intervención arqueológica en la galería principal de Baltzola
E. Regalado, A.J. Pérez-Fernández, X. Murelaga, M. J. Iriarte-Chiapusso, A. Ordiales, J. Castaños, P. Castaños, A. Polo-Díaz, E. Iriarte-Avilés, M. García-Rojas, A. Tarriño, Z. San Pedro, M. Cubas, N. Argote, A. San Emeterio, A. García-Moreno, I. Gallaga, L. Zapata
Poster presentado en el Congreso *El Cuaternario en la región pirenaica occidental: investigación multidisciplinar,* Bilbao, octubre 2013.
Full-text (pdf) available

En la Galería Principal hemos documentado una secuencia de 1,60 m de profundidad con varias unidades estratigráficas que incluyen cerámica, restos de cultivos y fauna doméstica. La datación de un hueso de bóvido de la base del sondeo ha proporcionado una cronología que corresponde a la Edad del Bronce (Beta 317437: 4240-4010 cal BP / 2290-2060 cal BC) y que es coherente con toda la secuencia.

Landare baliobideen ustiaketa Burdin Aroan, Bolunburuko herri harresitua (Zalla, Bizkaia)
Aitor Moreno-Larrazabal, Mónica Alonso-Eguiluz, María José Iriarte, Juan José Cepeda Ocampo, Lydia Zapata
Poster presentado en *El Cuaternario en la Región pirenaica occidental Workshop*, Bilbao 14-16 octubre, 2013.
Full-text (pdf) available

El Cerco de Bolunburu (Zalla, Bizkaia), situado a 320 m. de altitud, alberga los restos de una pequeña aldea fortificada, habitada entre el siglo IV a.C. y la primera mitad del siglo I d.C. Con valores superiores al 50%, los robles de tipo caducifolio (Quercus subg. Quercus) predominan en el conjunto antracológico. El segundo taxón en importancia es el cerezo (Prunus tp. avium), con una representatividad cercana al 15%. Le seguiría el castaño (Castanea sativa) con valores similares, en caso de confirmarse su identificación. Con un porcentaje de en torno al 5% aparece el acebo (Ilex aquifolium). La presencia de las Rosáceas, el olmo (Ulmus sp.), el aliso (Alnus sp.) o el avellano (Corylus avellana) es casi anecdótica (1%).

Lower Paleolitihic charcoal from Irikaitz-Geltoki sector (Basque Country, Spain)
Mónica Ruiz-Alonso, Lydia Zapata y Álvaro Arrizabalaga
Freddy Damblon (ed) *Proceedings of the Fourth International Meeting of Anthracology Brussels, 8-13 September 2008*. BAR International Series, 2486, 2013, 233-240.
Full-text (pdf) available

We present the results of the charcoal analysis of the site of Irikaitz (Zestoa, Basque Country, Spain). This is an open air site with an archaeological sequence which includes Lower Palaeolithic, Upper Palaeolithic and post-Palaeolithic, the only site so far with Lower Palaeolithic occupations in primary position in the Basque region. Archaeobotanical studies of these early chronologies in the Iberian Peninsula are particularly scarce. Irikaitz adopted from the beginning of the research project a systematic sampling strategy and recovery methodology through flotation in order to retrieve all types of plant macro-remains. Some finds have also been hand-picked in situ. Macro-remains recovered at the site present a very good preservation. 2878 charcoal fragments have been analysed. The most important taxon in all samples is Quercus subgenus Quercus (deciduous oaks). Some species possibly linked to wet soils along streams are also very important, such as: Corylus avellana (hazel), Salix (willow) and Fraxinus excelsior (ash). Taxa linked to shrub and open communities have also been identified (Ericaceae, Leguminosae). The general results suggest species living under mild climatic conditions which might correspond to the Eemian or the Holsteinian.

Macrorrestos vegetales arqueológicos
Lydia Zapata Peña, Leonor Peña Chocarro
Marcos García-Díez, Lydia Zapata (eds.) *Métodos y Técnicas de análisis y estudio en arqueología prehistórica. De lo técnico a la reconstrucción de los grupos humanos*. UPV/EHU, Bilbao 2013, 303-314.
Full-text (pdf) available

La arqueobotánica de macrorrestos vegetales se ha centrado con frecuencia en el estudio del origen de la agricultura y en las sociedades campesinas. Por ello son escasos los datos sobre el uso de los recursos vegetales por parte de los cazadores-recolectores. Así mismo, diferentes tradiciones investigadoras y la propia conservación de los materiales limitan la recuperación de los restos. En este texto se hará un breve repaso a las principales cuestiones relacionadas con la recuperación, identificación e interpretación de los macrorrestos vegetales, con especial hincapié en el estudio de la madera (antracología) y las semillas y frutos (carpología).

Measuring grain size and assessing plant management during the EPPNB, results from Tell Qarassa (southern Syria)
A. Arranz, S. Colledge, J.J. Ibáñez, L. Zapata-Peña
Poster presented at the *IWGP 2013*, preliminar results.
Full-text (pdf) available

Modern seed measurements from 1g and 2g einkorn and emmer show that wild and domestic cereals can be differentiated on the basis of breadth and thickness and with only few exceptions, seed size does not overlap. These results suggest that seed size can also be used to distinguish between ancient wild and cultivated cereal grains. Scatter-plots from 1g and 2g einkorn, emmer and barley show that some seeds from EPPNB Qarassa overlap in size with domestic seeds from Bronze Age Qarassa and Ais Yiorkis, although there are also smaller seeds that do not fit within this size range. From these comparative metrical analyses it seems clear that the sample of Qarassa EPPNB cereal grains comprises two populations on the basis of thickness and breadth measurements: the smaller corresponds to wild type seeds and the larger to domestic type grains. This is in accordance with results from standard deviation since in populations that apparently comprise only wild or only domestic cereals standard deviation is smaller than that found at EPPNB Qarassa. The data presented here suggests that there was gathering of cereals from the wild and also, from the larger size of some grains (domestic-type cereal specimens) that there may have been cultivation (i.e. pre-domestication cultivation) since activities related to this practice such as weeding, tillage or cultivation of larger grains selected by sieving, could result in increasing grain size. Except for emmer, for which the limited data suggest slightly smaller breadth than wild barley at Çayönü, the average measurements of cereals from EPPNB Qarassa are larger than wild cereals from earlier and contemporaneous sites. The larger seed sizes at the site could be explained in terms of differences in plant exploitation strategies (e.g. higher reliance on cultivation) but this should be explored with future work.

Métodos y Técnicas de análisis y estudio en arqueología prehistórica. De lo técnico a la reconstrucción de los grupos humanos
Marcos García-Díez, Lydia Zapata (eds.)
UPV/EHU, Bilbao 2013
Index (pdf) available

En los últimos años la prehistoria ha sufrido una profunda transformación. Procedimientos, protocolos y técnicas de la geología, biología, antropología, arte, etc. se han ido incorporando a "lo prehistórico", nutriendo y enriqueciendo el estudio e interpretación de las conductas humanas pasadas. Con este libro, estructurado a modo de manual, se pretende dar al lector las claves para el estudio de los materiales arqueológicos: huesos, piedras, obras artísticas, carbones, sedimento, etc. Por ello se aborda, de modo multi e interdisciplinar y en 31 capítulos escritos por especialistas de cada materia, una amplia variedad de temas de conocimiento: la prospección y excavación, la cronología, el análisis de los depósitos arqueológicos, el análisis macro y microespacial, analíticas de índole ambiental y de explotación del paisaje, estudio de huesos humanos y de animales, estudio de materiales arqueológicos (líticos, óseos, cerámicos, metalúrgicos, etc.) y gráficos, funcionalidad, arqueología experimental y enfoques etnográficos básicos en muchos casos para la interpretación.

Neolithic plant use in the Western Mediterranean region: preliminary results from the AGRIWESTMED project
Leonor Peña-Chocarro, Guillem Pérez Jordà, Jacob Morales Mateos, Lydia Zapata
Annali di Botanica, 3 (2013), 135-141.
Full-text (pdf) available

This contribution focuses on the preliminary results of the AGRIWESTMED project which focuses on the archaeobotanical analyses of early Neolithic sites in the western Mediterranean region (both in Iberia and in northern Morocco). A large number of sites has been studied producing an interesting dataset of plant remains which places the earliest examples of domesticated plants in the second half of the 6th millennium cal BC. Plant diversity is high as it is shown by the large number of species represented: hulled and naked wheats, barley, peas, fava beans, vetches, lentils and grass peas. To more crops, poppy and flax, are also part of the first agricultural crops of the area. Although agriculture seems to occupy a first place in the production of food, gathering is well represented in the Moroccan sites where a large number of species has been identified.

Paisaje y uso de la vegetación durante el Magdaleniense en La Peña de Estebanvela (Segovia): análisis antracológico y fitolitológico
Mónica Ruiz-Alonso, Laurent Marquer, Leonor Peña-Chocarro, Diego Sábato, Lydia Zapata
Carmen Cacho (coord.) *Ocupaciones magdalenienses en el interior de la Península Ibérica: la Peña de Estebanvela (Ayllón, Segovia)*. Junta de Castilla y León/CSIC, Madrid 2013, 93-126.
Full-text (pdf) available

This chapter reports the results of archaeobotanical analyses of the Middle Magdalenian (ca. 14.450-14.200 BP), Upper Magdalenian (ca. 12.530-12.070 BP) and Late Magdalenian (ca. 11.700-10.640 BP) of La Peña de Estebanvela (Ayllón, Segovia). Palynological and carpological analyses provided no significant results. Among the anthracological samples, the wood of Salix sp. was the most common throughout the sequence, particularly so in the Middle and Upper Magdalenian layers. This is probably related to the exploitation of the forested area close to the River Aguisejo. Greater anthracological diversity was recorded for the Late Magdalenian, with significant numbers of rosaceas (Prunus and pomoideas) detected. This might be the consequence of an increase in forest diversity or of a change in the areas where wood was collected. Levels V, IV and III are characterised by the very infrequent presence of tree phytoliths and an abundance of Poaceae specimens, while Levels II and I show an increase in tree phytoliths and a reduction in Poaceae specimens.

Plant Use during the Mesolithic along European coastlines
Lydia Zapata, Karen Hardy, Meriel McClatchie, Welmoed A. Out
Presentation at *Muge 150th*, March 2013, Portugal.
Full-text (pdf) available

Very abrupt change in terms of plant exploitation. Chronology: Northern Iberia c 5000 cal BC.; The Netherlands: 5300 cal BC (south) / 4100 cal BC (central and coastal wetlands); Britain: 4000 cal BC; Ireland: sometime after 3800 cal BC. Gathered remains, particularly hazelnuts and acorns, remain important foodstuffs.

Por un paisaje con figuras
Maria José Iriarte, Lydia Zapata
Revista Arkeogazte, 3 (2013), 23-25.
Full-text (pdf) available

Centrémonos en el estudio del pasado y convengamos luego cuál ha sido, en cada momento, el papel que han desempeñado las comunidades humanas en su desarrollo, porque si sólo nos interesa el pasado humano y consideramos a paleoambientalistas o antropólogos biológicos, -entre otros-, comparsas de nuestras investigaciones, propiciaremos el divorcio entre disciplinas. Y los paleoambientalistas pueden caer entonces en el error de describir un Paisaje sin figuras.

Técnicas de almacenamiento de alimentos en el mundo rural tradicional: experiencias desde la etnografía
Leonor Peña-Chocarro, Jesús Emilio González Urquijo, Juan José Ibáñez, Lydia Zapata
Alfonso Vigil-Escalera Guirado, Giovanna Bianchi, Juan Antonio Quirós Castillo (eds.) *Horrea, barns and silos. Storage and Incomes in Early Medieval Europe*. UPV/EHU, Vitoria, 2013, 209-216.
Full-text (pdf) available

Se presenta un resumen del trabajo etnoarqueológico desarrollado en el Rif marroquí en un medio mediterráneo en relación con las técnicas tradicionales de almacenamiento de alimentos en el mundo rural. En concreto, se describen las «sulla» realizadas con caña, los contenedores de estiércol y arcilla sin cocer, los hórreos y los silos. Algunos de estos elementos presentan muy baja visibilidad arqueológica. Las comunidades estudiadas suelen utilizar diferentes sistemas de alma-cenamiento como estrategia destinada a gestionar la conservación y uso de la producción agraria.

The Early Natufian Site of Jeftelik (Homs Gap, Syria)
Amelia Rodríguez, Maya Haïdar-Boustani, Jesus Gonzalez-Urquijo, Juan J. Ibáñez, Michel Al-Maqdissi, Xavier Terradas, Lydia Zapata
Ofer Bar-Yosef, François R. Valla (eds.) *Natufian foragers in the Levant, terminal Pleistocen social changes in Western Asia*. International Monographs in Prehistory, Ann Arbor, 2013, 61-72.
Full-text (pdf) available

In this paper, we bring the evidence uncovered in the third trial excavation, whose surface is 27 m2 and where we have found four pits of different sizes, dug out after the Natufian occupation. According to the study of the pottery found in the filling of the pits, Jeftelik has been occupied during the Bronze Age, the late Roman or Byzantine and the Ottoman periods. The most important of these pits in terms of size and remains of its filling is context SU 314/26. In fact, this pit badly affected the underlying Natufian occupation, so a large amount of material belonging to this period was found among its filling. The most interesting artifact found in this pit is a flat, polished pebble engraved with chevron patterns covering one of its faces. The decoration is arranged in two halves, separated by two central parallel lines.

The origins of agriculture in North-West Africa: macro-botanical remains from Epipalaeolithic and Early Neolithic levels of Ifri Oudadane (Morocco)
Jacob Morales, Guillem Pérez-Jordà, Leonor Peña-Chocarro, Lydia Zapata, Mónica Ruíz-Alonso, José Antonio López-Sáez, Jörg Linstädter
Journal of Archaeological Science, 40:6 (2013), 2659–2669.
Full-text (pdf) available

This research aims to shed light on the early stages of agricultural development in Northern Africa through the analysis of the rich macro-botanical assemblages obtained from Ifri Oudadane, an EpipalaeolithiceEarly Neolithic site from North-East Morocco. Results indicate the presence of domes-ticated plants, cereals (Hordeum vulgare, Triticum monococcum/dicoccum, Triticum durum and Triticum aestivum/durum) and pulses (Lens culinaris and Pisum sativum) in the Early Neolithic. One lentil has been dated to 7611 AE 37 cal BP representing the oldest direct date of a domesticated plant seed in Morocco and, by extension, in North Africa. Similarities in both radiocarbon dates and crop assemblages from Early Neolithic sites in Northern Morocco and the Iberian Peninsula suggest a simultaneous East to West maritime spread of agriculture along the shores of the Western Mediterranean. Wild plants were abundantly collected in both the Epipalaeolithic and the Early Neolithic periods pointing to the important role of these resources during the two periods. In addition to fruits and seeds that could have been consumed by both humans and domesticated animals, fragments of esparto grass (Stipa tenacissima) rhizomes have been identified. This is a western Mediterranean native plant that may have been used as a source of fibres for basketry.

2012

A los dos lados del Estrecho: las primeras hoces líticas y evidencias de agricultura en el sur de la Península Ibérica y el norte de Marruecos
Juan Francisco Gibaja, Leonor Peña-Chocarro, Juan José Ibáñez, Lydia Zapata, Amelia Rodríguez, Jörg Linstädter, Guillem Pérez, Jacob Morales, Bernard Gassin, Antonio Faustino Carvalho, Jesús Emilio González, Ignacio Clemente
Rubricatum, 5 (2012), 87-93.
Full-text (pdf) available

During the last years different research projects are allowing us to study the earliest farming evidences in the Iberian Peninsula and Northern Morocco. The analyses of plant macroremains and use wear of lithic tools, in relation to the chronology of the sites, are the subjects we deal with in this paper. When the number of studied sites increases in the near future the analyses will allow us to address the origin of the Neolithic in the Western Mediterranean.

Aizpea
Lydia Zapata y Leonor Peña
José S. Carrión (coord) *Paleoflora y paleovegetación de la Península Ibérica e Islas Baleares: Plioceno-Cuaternario*. Ministerio de Economía y Competitividad y Universidad de Murcia, Murcia 2012, 185-187.
Full-text (pdf) available.
Full volume available at: http://www.paleodiversitas.org/

De cazadores-recolectores a agricultores y ganaderos en Siria Centro-Occidental y del Sur: campaña de 2010
Juan José Ibañez, Amaia Arranz, Andrea Balbo, Ángel Armendáriz, Encarnación Regalado, Eneko Iriarte, Esper Sabrine, Frank Braemer, Joana Boix, Jonathan Santana, Khaled Abdo, Luis Teira, Lydia Zapata Peña, Manuel Lagüera, Maya Haïdad-Boistani, Miguel Angel Núñez, Miguel del Pino, Nelly Abboud, Xavier Terradas Batlle, Joaquín García, Inés López, Unai Perales Barrón, Maryam Bshesh,Lionel Gourichon, David Ortega
Informes y Trabajos, 7 (2012), 295-308
Full-text (pdf) available

Early agriculture in Northern Africa: first archaeobotanical data from sites in Marocco
Leonor Peña-Chocarro, Jacob Morales, Guillem Pérez-Jordà, Lydia Zapata, Youssef Bokbot, Juan Carlos Vera-Rodríguez
Poster presented at the *Environmental Archaeologies of Neolithisation. Autumn Conference 2012*. Association for Environmental Archaeology & University of Reading (UK), At University of Reading (UK), 9-12 November 2012.
Full-text (pdf) available

Two Neolithic sites from Northern Morocco, Khil and Kaf Taht El-Ghar, have been re-excavated during 2011 and 2012 as part of the AGRIWESTMED (ERC) project on the origins and spread of agriculture in the Western Mediterranean. The systematic recovery and flotation of sediments in these two sites has provided a broad assemblage of domesticated and wild plants remains from Early Neolithic levels.

Exploring medieval farming, archaeobotanical data from the Iberian Peninsula
Itsaso Sopelana, Lydia Zapata, Leonor Peña-Chocarro
Presentation at the *Archaeology of farming and animal husbandry in Early Medieval Europe (5th-10th centuries)*, Vitoria-Gasteiz, 5-6 November 2012.
Full-text (pdf) available

El combustible en la producción prehistórica de sal de Villafáfila (Zamora)
Lydia Zapata
Francisco Javier Abarquero Moras, Elisa Guerra Doce, Germán Delibes de Castro, Ángel Luis Palomino Lázaro, Jesus María del Val Recio (eds.) *Arqueología de la Sal en las lagunas de Villafáfila (Zamora)*, Junta de Castilla y León, Valladolid, 2012, 467-476.
Full-text (pdf) available

Los carbones suelen ser el macrorresto vegetal más habitual en los yacimientos arqueológicos. Su estudio permite obtener información sobre el medio vegetal en el pasado y, en particular, sobre el uso de los bosques por parte del ser humano. Esta información etnobotánica es especialmente significativa en yacimientos que responden a actividades artesanales o protoindustriales como es el caso que nos ocupa. En estos contextos la selección de los combustibles suele ser mayor con el fin de cumplir las exigencias de un proceso productivo muy especializado. Con los datos que manejamos, en los yacimientos del entorno de Villafáfila (Fuente Salina, Santioste y Molino Sanchón II) la producción prehistórica de sal mediante la ebullición de la salmuera a través de su calentamiento al fuego durante el Calcolítico y la Edad del Bronce se realizó fundamentalmente con leña de encina. A una amplia disponibilidad de leña de encina en este momento, documentada por el análisis palinológico, se une el hecho de que se trata de un combustible excelente. Es posible que otras materias de menor visibilidad arqueobotánica -tallos de gramíneas de pequeño tamaño por

ejemplo- se utilizaran puntualmente. Se ha podido observar la utilización de ramas de encina de pequeño tamaño y otras de calibre medio (6 – 10 cm Ø) sin que, dada la fragmentación de los restos, se pueda descartar el uso de piezas mayores. Las vitrificaciones observadas en fragmentos de encina de Santioste y Molino Sanchón II podrían asociarse al uso de madera verde, recién cortada y sin secar y quizá a la existencia de altas temperaturas durante la combustión.

Exploitation of fuelwood in Gasteiz (Basque Country, northern Iberia) during the Middle Ages (700-1200 AD)
Mónica Ruíz-Alonso, Agustín Azkarate, José Luis Solaun, Lydia Zapata
Saguntum, extra 12 (2012), 227-236.
Full-text (pdf) available

The excavation of medieval contexts linked to the restoration works carried out in the cathedral of Vitoria-Gasteiz has allowed to recover different archaeobotanical assemblages that help us understand past agrarian practices and human exploitation of woodlands. Here we summarize the results of the wood charcoal analysis from samples dated c. 700-1200 AD. Quercus subg. Quercus, Fagus sylvatica and Rosaceae would have been the main fuels used in domestic activities with Fagus increasing through time. In contexts related to metallurgy, Prunus and Pomoideae were the most abundant taxa.

Holocene wood charcoal from El Mirón Cave: vegetation and wood use
Lydia Zapata
Straus, L.G. and González Morales, M.R. (eds.) *El Mirón Cave, Cantabrian Spain. The Site and Its Holocene Archaeological Record.* University of New Mexico Press, Albuquerque, 2012, 174-196.
Full-text (pdf) available

Wood charcoal is the most frequent macro-archaeobotanical material found at El Miron. The wood was most likely brought to the cave as fuel for domestic hearths and also for other purposes, such as animal fodder, construction, or crafts. The subproducts of these activities could also end up in the fire. Unlike pollen, charcoal in an archaeological site is a direct product of human activities, but it also reflects, at least partially, the woody vegetation of the vicinity of the site. The aims of the charcoal analysis at El Miron are (1) to help reconstruct the past vegetation near the site during the Holocene, (2) to assess environmental change through time, (3) to study the diversity of exploited woods, and (4) in combination with other archaeobotanical remains, to develop the ethnoecological modeling of plant resources exploited by humans. El Miron is a large cave located on Monte Pando, at about 250 m above sea level in one of the coastward ranges of the Cantabrian Cordillera, at the eastern edge of the province of Cantabria. It is immediately surrounded by peaks that reach 600-900 m. It is about 100 m above the bed of the Calera river (a tributary of the Ason) and 20 km away from the coast of the Bay of Biscay as the crow flies. Present climatic conditions are oceanic, with mild temperatures and very high rainfall (1,707 mm in Ramales, 80 m above sea level). Good syntheses of the present vegetation of the areas of the Ason basin and adjacent western Vizcaya can be found in Herrera (1995) and Onaindia (1986) respectively. The modern theoretical climax vegetation of the area is assumed to be dominated by forests, which have been decimated by human action. Two important climatic vegetation series that currently grow on well-drained soils are Polysticho setiferi-Fraxineto excelsioris S. and Hyperico pulchri-Querceto roboris S., both with Quercus robus as the main arboreal component of mature phases together with other trees, such as Corylus avellana and Fraxinus excelsior. In siliceous hilly areas with poor, dry soils Melampyro-Querceto pyrenaicae S. is also present, with Quercus pyrenaica as the main arboreal component. In rocky calcareous areas with dry soils Lauro nobilis-Querceto ilicis S. grows. There can be an evergreen forest where Quercus ilex dominates, along other trees such as Phillyrea latifolia, Rhamnus alaternus, and Arbutus unedo. The series of Hyperico androsaemi-Alneto glutinosae S. spreads along the rivers in areas with permanent water. Here Alnus glutinosa is the main component, although Quercus robur, Fraxinus excelsior, and Betula celtiberica are also present (Herrera 1995). The excavation of El Miron Cave has been concentrated since 1996 mainly in two areas of the large vestibule (10 m wide × 30 m deep × 13 m high), the Cabin and the Corral. Each excavation block is at most about 10 m2 in size, and they have been connected by a continuous stratigraphic trench. The cultural sequence includes contexts pertaining to the Mousterian, Early Upper Paleolithic, Solutrean, Magdalenian, Azilian, Mesolithic, Neolithic, Chalcolithic, and Bronze Age periods, with traces of medieval occupations. In this work we will only deal with the Holocene wood charcoal record from the outer vestibule (Cabin) area (Levels 10.1-10.2) and the Mid-Vestibule Trench (Levels 303.1-303).

Human landscapes of the Late Glacial Period in the interior of the Iberian Peninsula: La Peña de Estebanvela (Segovia, Spain)
C. Cacho, J.A. Martos, J. Jordá-Pardo, J. Yravedra, C. Sesé, L. Zapata, B. Avezuela, J. Valdivia, M. Ruiz, L. Marquer, I. Martín-Lerma, J.M. Tejero
Quaternary International, 272-273 (2012), 42-54.
Full-text (pdf) available

The chronostratigraphic framework of the Magdalenian in the interior of the Iberian Peninsula currently covers the period 21,440e21,040 cal BP (level 2 of the Cueva del Gato site at Epila, Province of Zaragoza) to 12,770e12,570 cal BP (level I of the La Peña de Estebanvela site, Ayllón, Province of Segovia). These dates embrace times of strong climatic oscillation, beginning with very rigorous environmental condi-tions (stage GS2) and ending with a temperate climate (Alleröd); over this period, extreme events such as Heinrich event 1 occurred. However, little information is available that would allow the environments through which human groups moved during the Late Last Glacial of the Iberian interior to be charac-terised. The La Peña de Estebanvela site is something of an exception in that its archaeological features allow the reconstruction of the surrounding environment, and provide information on how natural resources may have been used. The faunal remains represented at this site reflect changes in palae-oecology over time. Taphonomic analysis of recovered macromammals and lagomorphs shows that these animals were brought to the site, butchered and consumed. The available data on seasonality fix the occupation of levels IeIII from the spring to the autumn. Certain types of wood were collected for use as firewood. Other elements found in the record (personal ornaments, mobiliary art and raw materials) provide evidence that the people that occupied the site moved over a more extensive territory.

La campaña de excavación 2011 en las Cuevas de El Khil (Achakar, Tánger, Marruecos)
Leonor Peña-Chocarro, Mustapha Nami, Lydia Zapata, Amelia Rodríguez Rodríguez, Eneko Iriarte, Juan Francisco Gibaja, Rafael Mª Martínez-Sanchez, Bokbot Youssef, Elena López-Romero, Guillem Perez
Ministerio de Educación, Cultura y Deporte (2012) *Informes y Trabajos: excavaciones en el exterior 2011*, 546-561.
Full-text (pdf) available

This paper presents preliminary information on the excavation of El Khil Caves (Achakar, Tanger, Morocco)carried out in September 2011. The aim was to obtain detailed data on the first farming communities in the northern part of Morocco. Two test pits were dug in Grotte B and Grotte C and bioarchaeological samples (both archaeobotanical and zooarchaeological) were taken with the aim of reconstructing the subsistence system of these communities and the origins of farming. In addition, geoarchaeological sampling was also carried out which will allow reconstructing the palaeoenvironmental history of the region.

La tecnología cerámica de los niveles IV y III en el yacimiento de Kobaederra (Cortézubi, Bizkaia): Aprovisionamiento y modificación de las materias primas
Miriam Cubas, Manuel García-Heras, David Méndez, Imanol de Pedro, Lydia Zapata, Juan José Ibáñez, Jesús Emilio González Urquijo
Trabajos de Prehistoria, 69:1 (2012), 51-64.
Full-text (pdf) available

The technological study of ceramic materials requires the application of archaeometric analytical techniques to approach both their mineralogy and chemical composition, with the aim of identifying steps in their production sequence. This paper presents the technological analysis of the Neolithic pottery documented in the lower levels of the Kobaederra site (Cortezubi, Bizkaia) on the basis of their mineralogical (petrography and X-ray diffraction, XRD) and geochemical (SEM-EDS) analysis. Its goal is to discriminate the possible areas of raw materials supply and their modification through the addition of tempers. Finally, the implications of the results in relation to the rest of available archaeological evidences from the IV and the III levels of the Kobaederra site are discussed.

La transición tardiglaciar en la costa oriental de Bizkaia: el yacimiento de Santa Catalina, resultados preliminares
Eduardo Berganza, José Luis Arribas, Pedro María Castaños Ugarte, Mikelo Elorza Espolosin, Jesús Emilio González Urquijo, Juan José Ibáñez Estévez, María José Iriarte Chiapusso, Arturo Morales Muñiz, Eduardo Pemán Monterde, Teresa Rosales, Eufrasia Roselló Izquierdo, Rosa Ruiz Idarraga, Ana Uriz, Paloma Uzquiano, Víctor Vásquez, Lydia Zapata Peña

Pablo Arias Cabal, María Soledad Corchón Rodríguez, Mario Menéndez Fernández, José Adolfo Rodríguez Asensio (eds.) *El Paleolítico Superior Cantábrico: actas de la Primera Mesa Redonda, San Román de Candamo (Asturias), 26-28 de abril de 2007*. Instituto Internacional de Investigaciones Arqueológicas de Cantabria, 3 (2012), 171-182.
Full-text (pdf) available

The archaeological intervention realized in the site of Santa Catalina cave has provided a sequence of the advanced Magdalenian and Azilian occupations. The archaeological register is really abundant not only in industrial remains but also in palaeofauna collections. It includes an interesting collection of craft furniture on a lithium and osseus support.

Las transformaciones económicas del Neolítico en la Península Ibérica: la agricultura
Leonor Peña-Chocarro, Lydia Zapata Peña
M.A. Rojo Guerra, R. Garrido Pena, I. García Martínez de Lagrán (eds.): *El Neolítico en la Península Ibérica y su contexto europeo*. Cátedra, Madrid, 2012, 95-106
Full-text (pdf) available

Durante el 6º milenio cal. a.C. se ha identificado en la Península Ibérica una gran variedad de cultivos que incluyen varias especies de trigos y cebadas, vestidos y desnudos, así como varias leguminosas. Esta diversidad agraria implica en nuestra opinión la existencia de una agricultura madura que desde un principio lleva implícita un vasto conocimiento sobre prácticas agrarias y sobre cómo manejar, procesar, consumir y utilizar todos los productos (granos) y subproductos (paja, cascabillo, malas hierbas) de las cosechas. La posible especialización o uso preferente de cereales vestidos en algunos yacimientos como Los Cascajos o el conjunto de Ambrona podría relacionarse con factores específicos como los condicionantes ecológicos, las preferencias humanas o ciertos usos concretos que habrá que explorar en el futuro.

Squaring the Circle. Social and Environmental Implications of Pre-Pottery Neolithic BuildingTechnology at Tell Qarassa (South Syria)
Andrea L. Balbo, Eneko Iriarte, Amaia Arranz, Lydia Zapata, Carla Lancelotti, Marco Madella, Luis Teira, Miguel Jiménez, Frank Braemer, Juan José Ibáñez
Plos One, 7:7 (2012), e42109
Full-text (pdf) available

We present the results of the microstratigraphic, phytolith and wood charcoal study of the remains of a 10.5 ka roof. The roof is part of a building excavated at Tell Qarassa (South Syria), assigned to the Pre-Pottery Neolithic B period (PPNB). The Pre-Pottery Neolithic (PPN) period in the Levant coincides with the emergence of farming. This fundamental change in subsistence strategy implied the shift from mobile to settled aggregated life, and from tents and huts to hard buildings. As settled life spread across the Levant, a generalised transition from round to square buildings occurred, that is a trademark of the PPNB period. The study of these buildings is fundamental for the understanding of the ever-stronger reciprocal socio-ecological relationship humans developed with the local environment since the introduction of sedentism and domestication. Descriptions of buildings in PPN archaeological contexts are usually restricted to the macroscopic observation of wooden elements (posts and beams) and mineral components (daub, plaster and stone elements). Reconstructions of microscopic and organic components are frequently based on ethnographic analogy. The direct study of macroscopic and microscopic, organic and mineral, building components performed at Tell Qarassa provides new insights on building conception, maintenance, use and destruction. These elements reflect new emerging paradigms in the relationship between Neolithic societies and the environment. A square building was possibly covered here with a radial roof, providing a glance into a topologic shift in the conception and understanding of volumes, from round-based to square-based geometries. Macroscopic and microscopic roof components indicate buildings were conceived for year-round residence rather than seasonal mobility. This implied performing maintenance and restoration of partially damaged buildings, as well as their adaptation to seasonal variability.

Wood charcoal analyses from the Muge shell middens: results from samples of the 2010/2011 excavations at Cabeço da Amoreira (Santarém, Portugal)
Patricia Diogo Monteiro, Lydia Zapata, Nuno Bicho
Ernestina Badal, Yolanda Carrión, Miguel Macías, María Ntinou (eds.) Wood and charcoal evidence for human and natural history, *Saguntum*, extra 13 (2012), 25-31.
Full-text (pdf) available

Wood charcoal analyses were carried out at Cabeço da Amoreira (Muge shell middens), a Mesolithic settlement dated from 8100 to 7500 cal BP. The charcoals were scattered in the sediments and samples were collected from different areas of the site. Here we present the results of the analysis of 1601 charcoal fragments retrieved during the 2010/2011 excavations from three different contexts. The results reveal a clear predominance of pine and conifer wood in the assemblage. Evergreen and deciduous Quercus are also present as well as one fragment of Arbutus unedo in one of the contexts.

2011

Anthracological analysis of an Early PPNB roof from Tell Qarassa North (southern Syria)
Amaia Arranz, Andrea Balbo, Frank Braemer, Juan José Ibañez, Eneko Iriarte, Lydia Zapata
Saguntum, extra 11 (2011), 125-126.
Full-text (pdf) available

This work presents the results of the analysis of wood charcoal remains from a roof found in Tell Qarassa North (Early PPNB), southern Syria. The analysis was carried out in 50 burnt beams found in situ, as well as in 3 flotation samples from the same structure and in a flotation sample retrieved from a post hole. The taxa selected to build up the roof were Pistacia terebinthus/palaestina, Salicaceae and to a lesser extent Amygdalus sp. The structure was composed at least of a post of Pistacia wood which supported a structure made of branches and medium size trunks orthogonally disposed. The wood structure was covered with non-woody plant parts and adobe layers. Abundant xylophagous galleries and fungi remains identified in the charcoal remains point to a deterioration of the wooden structure previous to its burning.

Carbón y polen, un ejemplo de comparación de dos registros arqueobotánicos en Álava durante la Edad del Bronce: Peña Parda
Mónica Ruiz Alonso, Sebastián Pérez Díaz, José Antonio López Sáez, Lydia Zapata Peña
Kobie, 30 (2011), 63-72.
Full-text (pdf) available

This paper presents a comparative study of the results obtained from two different archaeobotanical analyses from the archaeological site of Peña Parda (Laguardia, Álava). Thanks to the combination of both types of analyses , wood charcoal and pollen, we try to carry out a more accurate reconstruction of the vegetal landscape and the anthropic dynamics at this area of the Sierra de Cantabria during the Bronze Age.

Cueva de Balzola, IV Campaña
Lydia Zapata, E. Regalado, Z. San Pedro, I. Gallaga, M. García, A. Pérez
Arkeoikuska 2011, Gobierno Vasco, Vitoria-Gasteiz, 2011, 238-240.
Full-text (pdf) available

During this campaign, we excavated several stratigraphic units which reveal a sequence that includes a possible Mousterian context (Middle Palaeolithic). All are rich contexts in terms of lithic and faunal assemblages.

De cazadores recolectores a agricultores y ganaderos: investigaciones arqueológicas en Qarassa (Siria del sur), campaña de 2009
Juan José Ibáñez, Xavier Terradas, Eneko Iriarte, Andrea Balbo, Joana Boix, Esper Sabreen, Frank Braemer, Jonathan Santana, Lydia Zapata, Manuel Angel Lagüera, Khaled Abdo, Encarnación Regalado, Luis Teira, Miguel Angel Núñez, Lionel Gourichon
Informes y Trabajos, 5 (2011), 292-307.
Full-text (pdf) available

The work carried out in 2010 consisted of the excavation of the Natufian sites at Jeftelik (west of Homs, West-Central Syria), the Qarassa 3 Natufian sites (Sweida, South Syria) and the early Pre-Pottery Neolithic B levels of the Tell Qarassa North site (Swedia, South Syria). In Jeftelik (12000 BC) the Natufian architectural structure located in previous years was defined. It is a conical structure of land, about 6 m in diameter, with its walls lined with river pebbles. At the Qarassa 3 site (11000 BC), we completed the

surveying, studying the more than 80 mortars excavated in the rock and we dug up half of the E10 cabin. In the early Pre-Pottery B levels of Tell Qarassa North (8500 bc) we researched two construction phases of the house discovered in 2009 with an intermediate level of fire and destruction. In another Tell area, we located other architectural levels also attributable to Preottery Neolithics. This sector unveiled the discovery of two deposits of skulls arranged in a circle in one of the rooms.

Historia de las ferrerías en el País Vasco: técnica y cultura del hierro
Manuel Laborde, Mercedes Urteaga, Blanca López Arbeloa, Lydia Zapata
Etor-Ostoa, Lasarte Oria, 2011.
Full-text (pdf) available

Human landscapes of the Late Glacial Period in the interior of the Iberian Peninsula: La Peña de Estebanvela (Segovia, Spain)
C. Cacho, J.A. Martos, J. Jordá-Pardo, J. Yravedra, L. Zapata, M. Ruiz, B. Avezuela, J. C. Sesé, B. Sánchiz, S. Bailon, L. Marquer
Poster presented at the *XVIII INQUA Congress: The Magdalenian: Human Adaptations to the Late Last Glacial in Western and Central Europe*, Berna, 2011.
Full-text (pdf) available

The chronostratigraphic framework of the Magdalenian in the interior of the Iberian Peninsula currently covers the period 21,440-21,040 cal BP (level 2 of the Cueva del Gato site at Epila, Province of Zaragoza) to 12,770-12,570 cal BP (level I of the La Peña de Estebanvela site, Ayllón, Province of Segovia). These dates embrace times of strong climatic oscillation, beginning with very rigorous environmental conditions (stage GS2) and ending with a temperate climate (Alleröd); over this period, extreme events such as Heinrich event 1 occurred. However, little information is available that would allow the environments through which human groups moved during the Late Last Glacial of the Iberian interior to be characterised. The La Peña de Estebanvela site is something of an exception in that its archaeological features allow the reconstruction of the surrounding environment, and provide information on how natural resources may have been used. The faunal remains represented at this site reflect changes in palaeoecology over time. Taphonomic analysis of recovered macromammals and lagomorphs shows that these animals were brought to the site, butchered and consumed. The available data on seasonality fix the occupation of levels I-III from the spring to the autumn. Certain types of wood were collected for use as firewood. Other elements found in the record (personal ornaments, mobiliary art and raw materials) provide evidence that the people that occupied the site moved over a more extensive territory.

Identification of archaeological wood remains from the roman mine of Arditurri 3 (Oiartzun, Basque Country)
Aitor Moreno-Larrazabal, Mertxe Urteaga, Lydia Zapata
Saguntum, extra 11 (2011), 159-160.
Full-text (pdf) available

The study of the wood assemblage from the Roman mine of Arditurri 3, mining district of Oiasso, has focused on different types of materials in terms of sizes, use and mode of preservation. Bigger pieces of worked wood mostly preserved through waterlogging include Quercus, Fagus, Corylus, Acer and Fraxinus. Smaller fragments of charcoal probably related to the roasting involved in ore extraction include a bigger spectrum of taxa which may respond to a less selected and more opportunistic use of woodland resources.

Informe de la excavación arqueológica y memoria científica de la cueva de Baltzola (Dima, Bizkaia), IV Campaña
Lydia Zapata Peña, Encarni Regalado Bueno, Ziortza San Pedro Calleja (eds.), Izaskun Gallaga, Arantzazu Pérez, Maite García, Naiara Argote, Eneko Iriarte, Pedro Castaños, Xabier Murelaga, Diego Gárate, Sonia Anibarro.
Informe técnico a la Diputación Foral de Bizkaia (2011)
Full-text (pdf) available

En la excavación efectuada y hasta la base que hemos alcanzado en los cuadros AF55 y AG55 hemos podido documentar nuevas unidades estratigráficas que se añaden al contexto arqueológico anteriormente excavado para ayudarnos a comprender la secuencia cronológica de esta cavidad.

Les occupations du Natoufien et du PPNB ancien à Qarassa (Suweida, Syrie du Sud), premiers résultats et perspectives
Juan José Ibáñez, Frank Braemer, Amaia Arranz, Andrea Balbo, Joana Boix, Lionel Gourichon, Mahjoub Himi, Eneko Iriarte, David Ortega, Jonathan Santana, Luis Teira, Xavier Terradas, Lydia Zapata
Tempora: Annales d'histoire et d'archéologie, 20-21 (2011-2012), 39-54.
Full-text (pdf) available

> Les sites archéologiques autour du paléolac de Qarassa ont été découverts lors des prospections du Leja, menées entre 2005 et 2008 dans le cadre du projet « Atlas archéologique des sites pré-et protohistoriques de la Syrie du Sud ». Dans le Tell Sud, des niveaux archéologiques de l'Âge du Bonze et de l'Âge du Fer ont été repérés. Le Tell Nord est formé par des niveaux d'occupation datant du PPNB, du Néolithique Céramique et du Chalcolithique.

New samples of wood charcoal from Cabeço de Amoreira (Muge, Portugal)
Patricia Diogo Monteiro, Lydia Zapata Peña, Nuno Ferreira Bicho
Saguntum, extra 11 (2011), 127-128.
Full-text (pdf) available

> We present data on the ongoing analysis of plant macroremains from the site of Cabeço da Amoreira, a Mesolithic settlement which integrates in the Muge shellmiddens in Portugal. Available data so far point to an extensive use of conifer wood.

Woodland use in Gasteiz during the Middle Ages (700-1200 AD)
Mónica Ruiz-Alonso, Lydia Zapata, Agustín Azkarate, Jose Luis Solaun
Poster presented at the *5th International Meeting of Charcoal Analysis*, Valencia, 5-9 September 2011.
Full-text (pdf) available

Woodland use in Gasteiz during the Middle Ages (700-1200 AD)
Mónica Ruiz-Alonso, Lydia Zapata, Agustín Azkarate, Jose Luis Solaun
Saguntum, extra 11 (2011), 173-174.
Full-text (pdf) available

> Wood charcoal retrieved from archaeological contexts dated ca. 700-1200 AD in Vitoria-Gasteiz (Northern Iberia) suggests that Quercus subg. Quercus, Fagus sylvatica and Rosaceae where the main fuels used in domestic activities. The use of Fagus increases through time and Prunus and Pomoideae are very important in contexts related to metallurgy.

2010

A Tale of Two Shell Middens: The Natural versus the Cultural in "Obanian" Deposits at Carding Mill Bay, Oban, Western Scotland
László Bartosiewicz, Lydia Zapata, Clive Bonsall
Amber M. VanDerwarker, Tanya M. Peres (eds.) *Integrating Zooarchaeology and Paleoethnobotany: A Consideration of Issues, Methods, and Cases*. Springer, New York, 2010, 205-225.
Full-text (pdf) available

> Composed largely of mollusc shells resulting from food procurement activities, coastal shell middens have been regarded as valuable sources of information about past human exploitation of coastal and marine resources. It is less widely appreciated that these sites, which lie at the interface between the sea and the land, have significant potential to inform us about the terrestrial environment and its resources. In this chapter, an attempt has been made to integrate results of paleoethnobotanical and zooarchaeological studies with existing archaeological knowledge concerning Mesolithic and Neolithic environments and subsistence at a shell midden site on the west coast of Scotland. We compare and contrast the information derived from macrobotanical and vertebrate faunal remains from two locations at the site of Carding Mill Bay. Although the midden deposits were also studied from the malacological point of view, the shellfish remains are not considered here as they characterize only the marine environment. Moreover, the terrestrial component of a midden may tell us more about post-depositional taphonomic processes than the marine component.

Antracología y yacimientos dolménicos: el caso de Mendigana (Areatza, Bizkaia)
Mónica Ruiz Alonso, Amagoia Guenaga, J.C. López Quintana, Lydia Zapata Peña
Munibe, 32 (2010), 566-581.
Full-text (pdf) available

This paper discusses the potential and limits of wood charcoal analysis in dolmen sites. For that purpose, we present the case of the study of plant macroremains from Mendigana dolmen in Gorbeia. The sampling strategy has considered all the areas in which there has been an archaeological intervention (chamber, frontal stratigraphic section, sondage) and there have been analyses of both, samples collected in situ and flotation processed samples. Other plant macroremains are very few, mostly fragments of hazelnut pericarp, a poorly represented taxon among wood charcoal. The main component of carbonized wood samples, are deciduous oaks with an important presence of bushy taxons of leguminous and heathers. Birch and beech are also significant taxons in some samples, while ash, hazel, alder and willow are present in low percentages. Thus, wood charcoal suggests the presence of several plant communities in the surroundings of the dolmen: a mixed oakwood, a beechwood and open formations of heathers. The diversity of results in the analyzed contexts will allow us to discuss some questions about the method and the potential of wood charcoal analysis as independent contextual evidence and to understand the dynamic of formation, use and alteration of the archaeological structures.

Cueva de Baltzola (Dima. Bizkaia), III campaña de excavaciones
Lydia Zapata, I. Gallaga, M. García Rojas, E. Regalado, M. Ruiz Alonso, Z. San Pedro
Arkeoikuska 2010, Gobierno Vasco, Vitoria-Gasteiz, 2010, 220-221.
Head director of excavation: Lydia Zapata. Working team: Z. San Pedro, E. Regalado, M. García Rojas, I. Gallaga, A. Pérez
Full-text (pdf) available

During 2010 we continued the archaeological excavation in the cave of Baltzola (Dima, Bizkaia). Levels 6 and 7 (12.440 ± 60 BP) have been finished in the opened area. Both are rich contexts in terms of lithic and faunal assemblages. A new square (Z57) has been opened up, revealing an interesting sequence which includes Upper Paleolithic/Azilian and successive stabling contexts.

Dinámica vegetal y antropización en la Sierra de Cantabria (Álava) desde el Neolítico a la Edad del Bronce
S. Pérez-Díaz, M. Ruiz-Alonso, J.A. López Sáez, L. Zapata Peña
Polen, 20 (2010), 25-40.
Full-text (pdf) available

This paper presents an overview of the vegetation history and human influence in the Sierra de Cantabria (Álava) during the Middle/Late Holocene. this takes into account the results of palynological, anthracological and carpological studies of three archaeological sites, covering a time frame from the Early Neolithic to the bronze Age. It has been detected some climatic variability, from warm and humid to more dry conditions and agro-pastoral practices have also been detected.

Early Agriculture and woodland use in the Near East: the case of Tell Qarassa (southern Syria)
Amaia Arranz, Sue Colledge, Juan Jose Ibañez, Lydia Zapata
Paper presented at the *Congress IWGP 2010 Wilhelmshaven*.
Full-text (pdf) is not available

Excavación arqueológica de la cueva de Baltzola (Dima, Bizkaia), III Campaña de excavación
Lydia Zapata (dir), Encarni Regalado Bueno, Ziortza San Pedro Calleja, Eneko Iriarte Avilés, Maite García Rojas.
Informe técnico a la Diputación Foral de Bizkaia (2010)
Full-text (pdf) available

En la excavación realizada y hasta la base que hemos alcanzado en los cuadros AE54, AE55, AF55 y AG55 hemos podido documentar la gran potencia de la U.E. 6, alcanzando su máxima dimensión en el cantil Oeste, debido al buzamiento NE-SW que sufre el área de trabajo. Es sorprendente la gran cantidad de restos óseos recuperados, que a pesar de presentar de su alto grado de fragmentación, su estado de conservación se puede considerar bueno, ya que permiten identificar taxonómica y anatómicamente el fósil, así como su posterior estudio tafonómico. En cuanto a los hallazgos, los macrorrestos óseos son más numerosos en el nivel 6, mientras que en el nivel 7, los porcentajes entre los fragmentos óseos y líticos se igualan. En ambos niveles destacan los restos de ciervo.

Jeftelik: a new Early Natufian site in the Levant (Homs Gap, Syria)
Amelia Rodríguez-Rodríguez, Maya Haïdar-Boustani, Jesús E. González-Urquijo, Juan José Ibáñez, Michel Al-Maqdiss, Xavier Terradas, Lydia Zapata
Antiquity, 84:323 (online), Junio 2010.
Full-text (pdf) available

The results of the first fieldwork season in Jeftelik suggest that this is a Natufian site with a very rich lithic industry, some symbolic objects and architectural remains. If this is confirmed during the next campaigns, then Jeftelik could be classified within the group of base-camps (Belfer-Cohen & Bar-Yosef 2000). Its location in a woodland area with a Mediterranean climate is similar to that of sites of the same kind in southern Levant. The early date of the site (12 000 cal BC), which is outside the Natufian homeland, could call the model of the spread of the Natufian beyond its core area into question. The data from Jeftelik seems to suggest that, either the time of the spread of the Natufian outside the core area should be put back to the Early Natufian, or the geographical area of the so-called Natufian homeland or core area should be enlarged towards the north. The research that will be carried out in coming years will enable us to complete the view we have of this period in an area so little known until now.

Neolithic agriculture in southwestern mediterranean region
Leonor Peña-Chocarro, Lydia Zapata
J.F. Gibaja, A. Faustino Carvalho (eds): *Os últimos caçadores-recolectores e as primeiras comunidades produtoras do sul da Península Ibérica e do norte de Marrocos*. Promontoria Monográfica, 15 (2010), 191-198.
Full-text (pdf) available

Cultivated crops are present in Andalusia and Mediterranean Morocco at least from the second half of the 6th millennium cal BC. Free-threshing and hulled wheat and barley have been identified but the naked types are more abundant. Legumes show a high diversity: lentil, broad bean, pea, grass pea and bitter vetch. Flax has been identified at least from the late Neolithic and there might be a case of local cultivation and domestication of poppy. Wild plant foods are still present but it is difficult to evaluate their relative contribution to human diet.

The last hunterer-gatherers and the first farming communities in the South of the Iberian Peninsula and North Morocco: a socio-economic approach through the management of production instruments and explotation of the domestic resources: primeros resultados
António Faustino Carvalho, Juan Francisco Gibaja, Eduardo Arroyo, Nuno F. Bicho, Joao Luís Cardoso, Enrique Cerrillo Cuenca, Miguel Cortés Sánchez, Rebecca Dean, Laure Dubreuil, Eva Fernández, Gabriel Martínez, Antoni Palomo, Leonor Peña Chocarro, Manuel Rojo Guerra, Mª. Dolores Simón, Eulalia Subirà, Xavier Terradas, Mario Varela Gomes, Juan Carlos Vera-Rodríguez, Lydia Zapata
I Congreso de Prehistoria de Andalucía, Antequera, septiembre 2010.
Full-text (pdf) available

Las diferentes teorías que pretenden explicar el neolítico desde posicionamientos migracionistas o indigenistas excluyentes no llegan a dar respuestas satisfactorias a la complejidad inherente al proceso de adquisición de la economía productora. Desde este marco conceptual era necesario plantear un proyecto, necesariamente internacional por su contexto geográfico y pluridisciplinar por los ámbitos de estudio abarcados, que a través de la colaboración con otros equipos e investigadores del sur peninsular y norte de África, avanzase en el estudio de registros novedosos o ya previamente conocidos mediante nuevos enfoques metodológicos que dieran contenido a determinadas lagunas de información empírica, cuyos resultados contribuyesen a los actuales debates teóricos relativos a la neolitización en dichos territorios.

The early PPNB levels of Tell Qarassa North (Sweida, southern Syria)
Juan José Ibañez, Andrea Balbo, Frank Braemer, Lionel Gourichon, Eneko Iriarte, Jonathan Santana, Lydia Zapata
Antiquity, 84:325 (online), September 2010.
Full-text (pdf) available

The Early PPNB (pre-pottery Neolithic B) period is crucial to the understanding of the emergence of farming in the Levant. The process of domestication of animals and plants characterises PPNB communities, and is associated with the appearance of complex buildings, the transition from rounded to squared houses and the appearance of technological (i.e. naviform debitage or long tanged projectile points) and symbolic innovations (i.e. the generalisation of human iconography). In spite of its centrality to the understanding of

domestication and permanent settlement, the Early PPNB remains poorly understood, especially in the central and southern Levant. A new research project has recently been set up at Tell Qarassa to fill this gap. Tell Qarassa is located to the south of the Leja region, 20km west of the city of Sweida, next to a dry lake surrounded by archaeological sites from different periods (Natufian, PPNB, PN, Bronze and Iron Ages). In 2007, the Syrian-French Archaeological Mission directed by Frank Braemer (CNRS) discovered extremely well preserved PPNB architectural remains on the northern tell. In 2009, the Spanish team directed by Juan José Ibáñez (IMF-CSIC) took over the excavation of the PPNB levels of Tell Qarassa North as part of a collaborative project with the Syrian-French Mission.

Variabilité des techniques de récolte et traitement des céréales dans l'Occident méditerranéen au Néolithique ancien et moyen: facteurs environnementaux, économiques et sociaux
Bernard Gassin, Nuno F. Bicho, Laurent Bouby, Ramón Buxó y Capdevila, Antonio F. Carvalho, Ignacio Clemente Conte, Juan Francisco Gibaja, Jesús Gonzàlez Urquijo, Juan José Ibàñez Estévez, Jimmy Linton, Philippe Marinval, Belén Márquez, Leonor Peña-Chocarro, Guillem Pérez Jordà, Sylvie Philibert, Amelia del Carmen Rodríguez Rodríguez, Lydia Zapata
Alain Beeching, Éric Thirault, Joël Vita (dirs.) Économie et Société à la fin de la Préhistoire: Actualité de la recherche. *Actes des 7e Rencontres méridionales de Préhistoire récente tenues à Bron (Rhône), les 3 et 4 novembre 2006*. Publications de la Maison de l'Orient et de la Méditerranée, Lyon, 2010, 19-38.
Full-text (pdf) available

The restitution of prehistoric agricultural techniques is a key element to understand the diffusion of farming in Western Mediterranean. The aim of this paper is to present the preliminary results of a European working group composed of Spanish and French use-wear analysts and archaeobotanists. Cereal harvesting methods during the Early and Middle Neolithic in the Iberian Peninsula and the South of France were studied. Three major areas were distinguished. In the South-East of Spain, curved sickles with short flint elements inserted obliquely are characteristic. In Catalonia, Languedoc and Provence, most of the sickles are made with long blades inserted in parallel to the handle, but other ways of hafting the blade have been documented. In the Cantabrian Spain, cereals were harvested, in the beginning of the Neolithic, without sickle. This variability is here discussed taking into account different factors: ecology, variety of cultivated crops, aims of cereal cultivation (craft vs food), methods of cereal conservation, role of the cereal agriculture in the economy, historical dynamics of the spread of agriculture and of Neolithic innovations.

2009

Baltzola (Dima, Bizkaia), II campaña de excavaciones
Lydia Zapata, Z. San Pedro, E. Regalado, M. García Rojas, I. Gallaga, A. Pérez
Arkeoikuska 2009, Gobierno Vasco, Vitoria-Gasteiz, 2009, 224-227.
Full-text (pdf) available

The 2009 season of excavations focused on stratigraphic unit n. 6, dating from the Late/End Magdaleniense/Aziliense era. The unit is of rich archaeozoological and taphonomic interest due to the high concentration of macro-vertebrate animal fossil animal remains, with evidence of intense use of fauna by human groups.

Dos contextos, una misma historia: Paleopaisaje y Paleoeconomía de Vitoria-Gasteiz (Álava) durante la Edad Media
Sebastián Pérez Díaz, José Antonio López Saéz, Lydia Zapata Peña, Lourdes López Merino, Mónica Ruiz Alonso, Agustín Azkarate Garai-Olaun, José Luis Solaun Bustinza
Cuaderno de la Sociedad Española de Ciencias Forestales, 30 (2009), 115-120.
Full-text (pdf) available

En el presente trabajo se ha llevado a cabo la reconstrucción paleoecológica y paleoeconómica, mediante análisis polínico, carpológico y antracológico del entorno de Vitoria-Gasteiz (Alava), complementando dos tipos de contextos sedimentarios: el yacimiento arqueológico de la catedral de Santa María de Vitoria, y la turbera de Prados de Randulanda en el Condado de Treviño. En conjunto, ambos contextos nos han permitido realizar una lectura diacrónica de la historia de la vegetación y las bases paleoeconómicas del área

de estudio entre los siglos VI a XV d.C., tanto a nivel local como regional. La reconstrucción paleoambiental da cuenta de un paisaje antropizado desde el siglo VI, con un elenco arbóreo relativamente rico de quercíneas caducifolias y perennifolias, hayedos, abedules, etc. Ganadería y agricultura parecen ser los factores que delimitan la dinámica antrópica de estos ecosistemas, detectándose desde el siglo VIII, en el entorno de la catedral, el cultivo de trigo, cebada, y leguminosas; entre los siglos XII-XIV se detecta el cultivo de centeno.

Einkorn (*Triticum monococcum* L) cultivation in mountain communities of the western Rif (Morocco): an ethnoarchaeological project
Peña-Chocarro, L., Zapata, L., González Urquijo, J.E. & Ibáñez, J.J.
A.S. Fairnbairn, E. Weiss (eds.) *From foragers to farmers. Gordon Hillman Festschrift*. Oxbow, Oxford, 2009, 103-111.
Full-text (pdf) available

The survival of traditional einkorn cultivation in the western Rif of Morocco allowed the recording of the techniques used in its management and processing. Although information about its cultivation during the last century was very scarce, fieldwork suggests that einkorn was a common crop in the recent past. Unfortunately, no archaeobotanical studies are available for the area to investigate its ancient use more fully. Einkorn played an important role within the household economy, providing food for both people and livestock. In addition, its straw is highly valued in house construction, as a thatching material. Straw was also an important product for stuffing mattresses, cushions and saddles. In fact, einkorn straw was such a highly prized resource that reduction in thatching now threatens its survival. Moreover, this study is a clear example of how minor crops may continue to be grown because of a connection to a specific craft activity outside of food production. Use of einkorn in similar craft activities could in part explain its recurrent appearance in small quantities throughout the archaeological record of the old world until recent times.

Evolución del paisaje vegetal durante el Holoceno en Euskal Herria. Un punto de vista desde los macrorrestos vegetales
Mónica Ruiz-Alonso, Lydia Zapata Peña
Cuaderno de la Sociedad Española de Ciencias Forestales, 30 (2009), 57-63.
Full-text (pdf) available

Los resultados disponibles hasta el momento para Euskal Herria en los primeros milenios del Holoceno muestran en la vertiente atlántica una explotación intensiva de las formaciones de robledal de Quercus subg. Quercus (roble albar, pedunculado, pubescente, quejigo, melojo), mientras que en la vertiente meditárrena el protagonismo es para el pino, siendo posteriormente sustituido por el roble.

Excavación arqueológica de la cueva de Baltzola (Dima, Bizkaia), II campaña de excavaciones
Lydia Zapata Peña (dir), Encarni Regalado Bueno, Ziortza San Pedro Calleja, Arantza Aranburu Artano, Eneko Iriarte Avilés, Maite García Rojas, Zaira Marcos Gómez
Informe técnico a la Diputación Foral de Bizkaia (2009)
Full-text (pdf) available

En la excavación realizada y hasta la base que hemos alcanzado en los cuadros AE54, AE55, AF55 y AG55 hemos podido documentar la gran potencia del U.E. 6 que todavía está por concluir. Es sorprendente la gran cantidad de restos óseos recuperados, que a pesar de presentar de su alto grado de fragmentación, su estado de conservación se puede considerar bueno, ya que permiten identificar taxonómica y anatómicamente el fósil, así como su posterior estudio tafonómico. U.E. 6: se caracteriza por presentar un sedimento arenoso blanquecino, extremadamente suelto y seco con frecuentes clastos calizos de tamaño medio (3-4 cm, los mayores de 12-17 cm). Muchos de los clastos calizos y de los cantos de areniscas han sufrido alteraciones térmicas descomponiendo estos materiales. UE 16: (Fosa) Lentejón de color rojizo arenoso, seco, de grano muy fino y suelto. Probablemente se deba esta coloración a la existencia de un hogar Los macrorrestos óseos componen el 94% de la totalidad del material recuperado y muy por debajo se encuentra los restos líticos hallados, 6%. En ambos niveles, entre la fauna, destacan los restos de ciervo. Las dataciones confirman la cronología de algunos de los contextos más interesantes del yacimiento, valorados originalmente a partir de la industria lítica, con la siguiente adscripción cultural: UE 9: Aziliense. UE 7: Magdaleniense superior final. UE 8: Magdaleniense superior final.

La ocupación prehistórica al oeste de Homs: Campañas de 2008
A. Balbo, J. Boix, J.J. Ibañez, E. Iriarte, X. Terradas, M. Haïdar-Boustani, M. Al-Maqdissi, A. Armendariz, J. González Urquijo, T. Lauzen, J. Tapia, L. Teira, A. Rodríguez, J. Santana, L. Zapata, M. Himi
Informes y Trabajos, 3 (09/2009), Excavaciones en el Exterior 2008, Instituto del Patrimonio Cultural de España, 209-227.
Full-text (pdf) available

Jeftelik is an example of a site with early Natufian levels, dated around 12,000 cal BC. At the moment we have detected elements of a building structure. This is a pit whose walls were reinforced with stones. Its size and shape suggest that this building was a human dwelling. Parallels are known of half-buried huts, with stone walls reinforcing the pit walls, at several Natufian sites, like Ain-Mallaha, Baaz or Dederiyeh. The test excavations at Tell Marj have revealed a pottery Neolithic site, dated to about 6000 calBC. The site of Tell Ezou has revealed Bronze Age and Chalcolithic archaeological levels. The megalithic necropolis at Orontes (Qattina) and the Bouqaia, pose interesting interpretation problems in terms of the identification of the human groups who built these tombs. The geoarchaeological survey of the Bouqaia basin has demonstrated the enormous potential of the area for the study of environmental changes during the Holocene.

Los carbones de Ratinhos (Morua, Portugal)
Mónica Ruiz-Alonso, Lydia Zapata
Suplemento nº5 O Arqueólogo Português (2009), 312-318.
Full-text (pdf) available

El número de muestras y carbones analizados en este trabajo es bajo (6 muestras y un total de 9 fragmentos o piezas de madera), por lo que las conclusiones relacionadas con la explotación de los recursos forestales del entorno de Ratinhos son necesariamente limitadas. En todo caso, la presencia mayoritaria de Pinus tp Pinus sylvestris indica que probablemente existieron formaciones de pinar en las inmediaciones del poblado. Así mismo, podemos constatar el uso de esta madera con fines constructivos (vigas en las Muestras 2, 4, 5 y 6)

Macrorrestos vegetales de Santa María la Real de Zarautz (País Vasco): cultivos y bosques en época romana y altomedieval
Mónica Ruiz Alonso, Lydia Zapata
Munibe, 27 (2009), 132-150.
Full-text (pdf) available

We present the result of the analyses of plant macroremains (charcoal, fruits and seeds) from the archaeological excavation carried out at Santa María La Real (Zarautz). One group of samples is dated to the roman age and the others are medieval. The earliest ones include a bigger diversity of crops (hulled wheats such as Triticum dicoccum and Triticum spelta, free-threshing wheats, barley and Italian millet). The most recent ones include wheat and Italian millet. In both cases Setaria italica (Italian millet) is the most abundant crop. A minimum number of 15 arboreal species are represented in the charcoal analysis. Deciduous oaks sum more than half the fragments followed by alder.

Macrorrestos vegetales del Yacimiento Arqueológico de las Eras de San Martín (Alfaro, La Rioja)
Mónica Ruiz-Alonso, Jose Manuel Martínez Torrecilla, Lydia Zapata
Kobie, 28 (2009), 153-170.
Full-text (pdf) available

In this paper we present the results of the analyses of plant macroremains from the Early medieval site (8th century AD) of Las Eras de San Martín (Alfaro, La Rioja, Spain). The cereals identified are: hulled barley (Hordeum vulgare vulgare), einkorn (Triticum monococcum), naked wheat (Triticum aestivum/durum) and millet (cf. Panicum miliaceum). Among the fruits, we have retrieved olive and vine. The main wood charcoal taxa are: Vitis vinifera (vine) and olive tree (Olea europaea). Other trees have a lower representation (Pinus sylvestris, Acer sp., Corylus avellana, Ericaceae, Pomoideae, Prunus sp., Quercus subg. Quercus, Quercus ilex/coccifera and Salix).

Madera carbonizada recuperada en el dolmen de Katillotxu V (Mundaka): datos preliminares del análisis antracológico
Mónica Ruiz Alonso, Lydia Zapata Peña
Illunzar, 7 (2009), 139-142.
Full-text (pdf) available

La madera carbonizada recuperada en el sepulcro megalítico de Katillotxu V está formada por los siguientes taxones: Acer, Alnus, Betula, corylus avellana, Ericaceae, Leguminosae, quercus subg. quercus, Quercus ilex/coccifera y Prunus. La madera de roble tipo caducifolio es la más abundante (64% del total) y es el único taxón que se ha identificado en todos los contextos analizados. Ha sido datada en el núcleo terroso del dolmen formado con material aportado, en una cronologla de Neolítico avanzado (4050-3960 cal. BC). Además, la presencia preferente de madera de Quercus caducifolio en el único hogar individualizado (Smk-c, Smk-h1) nos confirma el uso y posible selección de esta madera como combustible. Este hogar corresponde posiblemente a la fase de clausura del monumento y ha sido datado en 3000-2880 cal. BC.

Primeros resultados de los estudios carpológicos de despoblado de Zornoztegi (Salvatierra-Agurain, Álava)
Itsaso Sopelana, Lydia Zapata
J. A. Quirós Castillo (ed.) *The archaeology of Early Medieval villages in Europe*. UPV/EHU, Bilbao, 2009, 437-441
Full-text (pdf) available

El texto que presentamos a continuación trata de esclarecer de forma preliminar el resultado de los estudios carpológicos del despoblado de Zornoztegi en el año 2006. En este yacimiento, localizado en un cerro cerca de Salvatierra (Álava), se hallaron una serie de unidades domésticas en cuya proximidad aparecieron un número importante de silos. Este elemento de almacenaje, por sus características constructivas, crea en su interior una atmósfera anaeróbica que permite una óptima conservación de los restos vegetales. El estudio de los restos botánicos es posible gracias a la recogida sistemática de muestras de tierra, que hacen factible el procesamiento de las muestras en el laboratorio. Posteriormente nos centraremos en explicar el tratamiento de la tierra, donde intervienen distintos procesos que van desde el sistema de flotación hasta la cuantificación e identificación de taxones. Este estudio se encuentra en una fase inicial, a expensas de concluir los análisis tanto de Zornoztegi como de otros yacimientos del horizonte alavés.

2008

Arqueología de las plantas: cultivos y bosques en época medieval
Lydia Zapata
Juan José Larrea Conde, Ernesto Pastor Díaz de Garayo (eds.) *La historia desde fuera: VIII Jornadas de Estudios Históricos*, Universidad del País Vasco, Vitoria-Gasteiz 2008, 121-138.
Full-text (pdf) available

Se revisan los estudios arqueobotánicos en curso de los yacimientos altomedievales del norte de la Península Ibérica y se destaca el alto potencial que tienen para generar conocimiento histórico. Con muy poco esfuerzo en la fase de muestreo se recuperan cientos de semillas identificables y cuantificables (cultivos, malas hierbas, plantas recolectadas) y fragmentos de madera. Dado que el registro escrito altomedieval es limitado y que para algunos periodos y zonas difícilmente crecerá, la arqueología y en concreto la arqueobotánica se revela como una herramienta de primera mano para afrontar con nuevos y abundantes datos la Historia agraria y forestal.

Baltzola (Dima, Bizkaia) I campaña de excavaciones
Lydia Zapata, I. Gallaga, M. García Rojas, E. Regalado, M. Ruiz-Alonso, Z. San Pedro
Arkeoikuska 2008, Gobierno Vasco, Vitoria-Gasteiz, 2008, 249-250.
Full-text (pdf) available

After two survey campaigns, in 2008 it's initiated a multi-year excavation campaign. During this first year, diverse stratigraphic units were excavated containing pottery remains in an Aziliense context.

Bellotas de cronología neolítica para consumo humano en la cueva de Chaves (Bastarás, Huesca)
Lydia Zapata, Vicente Baldellou, Pilar Utrilla
Mauro S. Hernández Pérez, Jorge A. Soler Díaz, Juan Antonio López Padilla (eds.) *IV Congreso del Neolítico Peninsular.* Museo Arqueológico de Alicante – MARQ, Alicante, 2008, 402-410.
Full-text (pdf) available

A significant number of charred acorns has been identified on the prepyrenean cave of Chaves. AMS radiocarbon dating of one specimen (6.380 ± 40 BP) confirms the Early Neolithic chronology of the remains. The recovery of acorns in a Neolithic context shows that plant gathering could have played an important role among first farmers' subsistence strategies in Northem Iberia. Some possible processing techniques are suggested.

Excavación arqueológica de la cueva de Balzola (Dima, Bizkaia), I Campaña
Lydia Zapata Peña (dir), Encarnación Regalado Bueno, Ziortza San Pedro Calleja
Informe técnico a la Diputación Foral de Bizkaia (2008)
Full-text (pdf) available

En la excavación realizada y hasta la base que hemos alcanzado en los cuadros AE54, AE55, AF55 y AG55 hemos podido documentar nuevas unidades estratigráficas que se suman a las individualizadas en los sondeos realizados en las campañas anteriormente. Éstas presentan alteraciones mínimas y abundantes materiales arqueológicos que corresponden en su gran mayoría a cronologías preneolíticas y claramente paleolíticas.

Paleobotánica del Epipaleolítico y Mesolítico vascos
Mª J Iriarte, S. Pérez Díaz, M. Ruiz-Alonso, L. Zapata
Veleia, 24-25 (2008), 629-642.
Full-text (pdf) available

This work summarizes the main palaeobotanical data available for the Basque Epipalaeolithic- Mesolithic. The Holocene climatic improvement resulted in the colonization of the territory by the arboreal stratum and the progressive retreat of taxa such as Pinus, Betula and steppic plants like Ephedra and Artemisia. In the Atlantic part of the Basque Country mixed oak-forests prevail with Corylus and Quercus as main components but also with an interesting group of other arboreal taxa (Fagus, Quercus ilex tp., Castanea, Fraxinus, Juglans, Tilia…). The main fuel used on archaeological sites is oak. To the south of the watershed, including the western Pyrenean region, the presence of Pinus is significant. Plant foods identified are acorns, apple and Sorbus pomes and, particularly, hazelnuts.

Rapport de terrain 2008. Mission syro-libano-espagnole à l'ouest de Homs
Juan José Ibáñez, Maya Haïdar-Boustani, Michel Al Maqdiss, Jesús González Urquijo, Ángel Armendáriz, Andrea Balbo, Joana Boix, Mahjoub Himi, Eneko Iriarte, Manuel Lagüera, Talía Lazuén, Amelia Rodríguez, Esper Sabren, Jonathan Santana, Jesús Tapia, Luis Teira, Xavier Terradas, Lydia Zapata
Instituto del Patrimonio Histórico Español (Ministerio de Cultura), 2008.
Full-text (pdf) available

Memoria de los trabajos de campo de 2008 de la Misión siro-líbano-española al oeste de Homs (Siria). Nous avons continué le catalogue des monuments mégalithiques dans la zone du lac Qattina. La prospection détaillée des mégalithes situés sur les collines entourant la Bouqaia, a permis de repérer de grands monuments funéraires de l'Âge du Bronze. De morphologie rectangulaire, ces monuments sont dotés de plusieurs chambres funéraires construites sur deux plateformes.

2007

Cazadores-recolectores y recursos vegetales
Lydia Zapata
Conferencia en el Museo Arqueológico Nacional, Madrid, 2007
Full-text (pdf) available

En este trabajo realizamos una revisión de los datos aportados por la arqueobotánica al conocimiento de las sociedades de cazadores-recolectores. Tras una introducción sobre el estado de la investigación, se resumen los escasos conocimientos disponibles sobre el componente vegetal de la dieta de las sociedades paleolíticas y mesolíticas peninsulares. A continuación se discuten las principales técnicas arqueobotánicas utilizadas en la reconstrucción del paisaje vegetal haciendo hincapié en los límites y posibilidades del estudio antracológico. In this paper we focus on the available archaeobotani-cal data applied to the knowledge of hunter-gatherer prehistoric groups. After an introduction on the state of the research, we summarize the limited information on plant foods among Palaeolithic and Mesolithic groups of the Iberian Peninsula. Also, the main archaeobotanical techniques used for vegetation reconstruction are discussed, focussing particularly on the limits and possibilities of the analysis of archaeological wood charcoal.

Cueva de Baltzola (Dima, Bizkaia), II Campaña de sondeos
Head of excavation: Lydia Zapata. Field work team: I. Gallaga, M. García Rojas, E. Regalado, M. Ruiz-Alonso, Z. San Pedro
Arkeoikuska 2007, Gobierno Vasco, Vitoria-Gasteiz, 2007, 223-224.
Full-text (pdf) available

During this excavation year, diverse stratigraphic units were excavated containing pottery remains and an Aziliense context.

El yacimiento prehistórico al aire libre de Mandañu (Gorliz, Bizkaia)
Joseba Rios Garaizar, Diego Garate Maidagan, Lydia Zapata Peña, Zaira Marcos Gómez, Encarnación Regalado Bueno
Kobie 27 (2007), 59-72
Full-text (pdf) available

El yacimiento de Mandañu ha sido localizado durante una campaña de prospección arqueológica al aire libre en la comarca de Uribe Kosta. Se compone de un conjunto de 237 restos líticos, asignables en su mayoría al Neolítico Final-Calcolítico. El estudio de los sistemas de talla permite identificar una producción laminar de calidad destinada a la producción de soportes muy regulares que frecuentemente se localizan en yacimientos funerarios y de habitación de este periodo. Palabras clave: prospección, neolítico, calcolítico, tecnología lítica, Uribe Kosta. Mandañu's site has been located during a campaign of archaeological surface prospecting in Uribe Kosta's region. It contains a set of 237 lithic remains, most of them may be assigned to the Final Neolithic-Calcolithic. The technological analysis have allowed the identification of a high quality blade production system destined to the obtention of very regular supports that frequently are located in funeral deposits and habitats of this period.

El origen de la agricultura en Euskal Herria
Lydia Zapata
Aunia, 20 (2007), 6-26.
Full-text (pdf) available

First farmers along the coast of the Bay of Biscay
Lydia Zapata
Sue Colledge, James Conolly (eds.) *The Origins and Spread of Domestic Plants in Southwest Asia and Europe*. Left Coast Press. 2007, 189-208.
Full-text (pdf) available

The main conclusions of this work are that this indigenous populations along the coast of the Bay of Biscay adopted farming. According to pollen data, the first crops were present from at least ca. 5200–4700 cal BC and macro-remains (caryopses of wheat and barley) have only been identified in contexts dated from ca. 4700 BC. Thus, there is a time lag between the first agriculture in the region compared with that in the other Iberian regions (Catalonia, Valencia, northern Meseta and Andalucía), where radiocarbon dates carried out on cereals are as early as ca. 5600–5100 cal BC. This gap may, however, only be due to the lack of archaeological information for the fourth millennium cal BC in the Basque-Cantabrian region. I do not think it is a question of 'resistance' to the adoption of farming, as has been documented in other European coastal territories. In fact, the high values of domestic fauna in Arenaza, Kobaederra and El Mir´on from 5100–4500 cal BC suggest that there may have been an earlier transitional phase.

Early Neolithic in Northern Iberia
Alfonso Alday, Lydia Zapata
Paper presented at the *Conference Living Landscapes: Exploring Neolithic Ireland and its Wider Concept*, Belfast, 31 May 2007.
Full-text (pdf) available

AMS dating of cereals in Iberia is starting to provide a better chronological framework for the origins of agriculture. The first dates cluster in the central and second part of the 6th millenium BC, although they are later for the northern Atlantic coast. This delay in the north might be a result of current research although some have proposed a resistance to the adoption of agriculture in an Ertebølle-like scenario.

Pico Ramos cave shell midden: the Mesolithic-Neolithic transition in the Bay of Biscay
Lydia Zapata, Nicky Milner, Eufrasia Roselló
N. Milner, O.E. Craig, G.N. Bailey (eds.) *Shell middens in Atlantic Europe*. Oxbow, Oxford, 2007, 28-36.
Full-text (pdf) available

Seasonality might have been a key factor for early farming societies. If the people occupying Pico Ramos or Herriko Barra had incipient farming practices, maybe with poor results, the months before the harvesting of cereals would be the most critical time, the lean period when they might rely on wild products. This is of course the time when red deer was hunted and brought back to sites like Herriko Barra and molluscs were gathered and consumed in the cave at Pico Ramos We might also question how the landscape was used. In the large cave sites domestic animals dominate, but whenever cereal macro-remains are present, they only offer a few remains of clean grain with no weeds or chaff. This suggests that agricultural activities most probably took place somewhere else and that caves from the Neolithic are likely to have been used for particular activities (Bouby 2003) such as storage places, areas for keeping animals, or ritual space.

Uso humano de la vegetación durante el Paleolítico en la mitad norte de la Península Ibérica. Bosques, refugios y alimentación.
Lydia Zapata
Inédito (2007)
Full-text (pdf) available

Proyecto investigador para la habilitación nacional de profesorado universitario.

Segunda campaña de sondeos arqueológicos en la cueva de Balzola (Dima, Bizkaia)
Lydia Zapata (dir), Encarnación Regalado, Ziortza San Pedro, Mónica Ruiz-Alonso, Izaskun Gallaga
Informe técnico a la Diputación Foral de Bizkaia (2007)
Full-text (pdf) available

Los hallazgos arqueológicos son numerosos en toda la secuencia sondeada. Cabe destacar la escasez de la cerámica en los contextos en los que aparece (UE 9). El material arqueozoológico es muy abundante. Cabe destacar el alto grado de fragmentación y deficiente estado de conservación de los restos de UE 6. Toda la fauna identificada por el momento es salvaje con un alto componente de ciervo en todas las unidades estratigráficas que han sido examinadas de forma preliminar por el Dr. P. Castaños. También están presentes el corzo y el sarrio. Son frecuentes así mismo los cantos rodados con huellas de uso. La industria lítica en sílex es muy abundante, aunque presenta en toda la secuencia elementos de sustrato no muy diagnósticos (raspadores y láminas). Los dorsos son comunes en algunas unidades estratigráficas como la base de la UE 9. Destacamos en esta campaña el hallazgo de material adscribible al Paleolítico Antiguo, quizá musteriense, de la UE 11. A pesar de la escasa superficie excavada para esta unidad estratigráfica, se han encontrado restos líticos en lutita y sílex que permiten sugerir esta cronología. Todos estos materiales están en proceso de análisis.

2006

Agricultura altomedieval en Vitoria-Gasteiz: la aportación de la arqueobotánica
Agustín Azkarate, Lydia Zapata
J. Bolòs, A. Jarne, E. Vicedo (eds.) *Condicions de vida al món rural. V Congrés sobre sistemes agraris, organització social i poder local*, Lleida, Institut d'Estudis Ilerdencs, 2006, 701-710.
Full-text (pdf) available

Siglos VIII-X: predominio del trigo común, cebada vestida y panizo. Fuerte consumo de madera del entorno.

Agricultura prehistórica en el País Vasco litoral
Lydia Zapata Peña
Munibe, 57:1 (2005-2006), 553-561.
Full-text (pdf) available

Plant macro-remains analyses show that cereal agriculture is present from at least mid- 5th millennium cal BC by the coast of the Basque Country. During the Neolithic barley (Hordeum vulgare) and emmer wheat

(Triticum dicoccum) are the only cereals identified so far. In the Bronze Age, the cave of Arenaza suggests that free-threshing wheats (Triticum aestivum/durum) had become the main crop of the region and millet (Setaria italica) is present. During the Iron Age the hillfort of Intxur shows a complex and diverse agriculture with spelt (Triticum spelta) being a very important crop.

Análisis de macrorrestos vegetales recuperados en sondeos del área de Portuzarra (Gernika-Lumo, Bizkaia)
Lydia Zapata
Illunzar 6 (2006), 69-81.
Full-text (pdf) available

Se distinguen los siguientes conjuntos: 1. Conjuntos botánicos de posible origen antrópico en cotas superiores con elementos indicadores de presencia de coníferas y carbón de madera. En el Sondeo ER-1 este episodio se ha datado por 14C c. s. XVI-XVIII pero hay elementos más modernos 2. Conjuntos botánicos de origen natural: se trata de tallos, tejidos de epidermis, raíces, musgos, semillas, floema o cortezas de árboles. Algunas de estas muestras tienen un gran interés paleoambiental por la alta frecuencia y diversidad de los materiales.

Cueva de Baltzola (Dima, Bizkaia) I campaña de sondeos
Head of excavation: Lydia Zapata. Field work team: I. Gallaga, E. Regalado, M. Ruiz-Alonso, Z. San Pedro, F. Savanti.
Arkeoikuska 2006, 142-145
Full-text (pdf) available

The general objective was to assess the archaeological interest and level of preservation of the site, a large cave in the Atlantic Basque Country. Two zones of interest were identified. One of them contains a long Holocene sequence with domestic fauna and ceramic fragments. The second one contains wild fauna and at least a Magdalenian context.

Estudio arqueológico y paleoambiental del área de Portuzarra (Gernika-Lumo, Bizkaia), conclusiones
Juan Carlos López Quintana, Alejandro Cearreta, José Miguel Herrero, Eneko Iriarte, Manu Monge, Iñaki Yusta, Lydia Zapata
Illunzar, 6 (2006), 101-102.
Full-text (pdf) available

Los macrorrestos vegetales del yacimiento de Mendandia
Lydia Zapata, Leonor Peña-Chocarro
Alfonso Alday (coord.) *El legado arqueológico de Mendandia: los modos de vida de los últimos cazadores en la Prehistoria de Trebiño*. Junta de Castilla y León, Valladolid, 2006, 419-434.
Full-text (pdf) available

Se presentan los resultados del análisis de los macorrestos vegetales recuperados en Mendandia tanto en la criba como mediante flotación. Los restos carpológicos son prácticamente inexistentes, con la excepción de unos fragmentos de cáscara de avellana. Los restos antracológicos sugieren que c. 8500-6500 BP el entorno inmediato del abrigo estaba dominado por formaciones de coníferas (*Pinus*) y de frondosas en una dinámica de competencia que se resolvió a favor éstas. La madera de haya se identifica en Mendandia desde c. 7200 BP.

Poblamiento y paisaje vegetal en Urdaibai durante el Pleistoceno superior y los inicios del Holoceno: estado de la cuestión
M.J. Iriarte, M. Agirre, J.C. López Quintana, L. Zapata
J.A. Cadiñanos et al. (eds.) *III Congreso Español de Biogeografía, comunicaciones*. Gobierno Vasco, Vitoria-Gasteiz, 2006, 107-112.
Full-text (pdf) available

Archaeobotanical analyses of pollen and plant macroremains as seeds and wood charcoal have been carried out at the Estuary of Urdaibai (Bizkaia). They show a wooded environment developed from the Early Holocene with presence of mixed decidious forests dominated by Quercus Robur and Corylus. Farming practices are present from at least 5500 BP.

Primera campaña de sondeos arqueológicos en la cueva de Balzola (Dima, Bizkaia)
Lydia Zapata Peña
Informe técnico a la Diputación Foral de Bizkaia (2006)
Full-text (pdf) available

The general objective was to assess the archaeological interest and level of preservation of the site, a large cave in the Atlantic Basque Country. Two zones of interest were identified. One of them contains a long Holocene sequence with domestic fauna and ceramic fragments. The second one contains wild fauna and at least a Magdalenian context.

2005

An ethnoarchaeological project in the Western Rif (Northern Morocco): First results.
L. Peña-Chocarro, L. Zapata, J.E. González Urquijo, J.J. Ibáñez Estévez, M. Moreno García
Richerche e Studi 1998-2000, Laboratorio di Archeobiologia, Como, 2005, 21-32
Full-text (pdf) available

Over the past four years an ethnoarchaeological research project has been carried out at the most northern part of Morocco, in the Jbala region. The main aim of the project is to provide archaeologists with a set of ethnographic data which may allow to adress new questions to the archaeological record and to put forward new interpretative hypothesis.This paper presents some ethnographical information dealing with different aspects of the project: 1) Use of domestic plants: cultivation of einkorn (Triticum monococcum), agrarian practices and processing, and cultivation of olives and methods of oil extraction; 2) Conservation and storage of plant foods; 3) Use of wild plants 4) Fuelwood: use, collection, leaf-foddering residues and woodland conservation; 5) Use of cow dung as fuel, tempering of floors and walls and for recipient making; 6) Animal husbandry; 7) Pottery making; 8) Metalworking activities; 9) Skin preparation and tanning.

Difusión de la agricultura en la Península Ibérica
Lydia Zapata Peña, Leonor Peña-Chocarro, Guillem Pérez Jordá, Hans-Peter Stika
Roberto Ontañón Peredo, Cristina García-Moncó Piñeiro, Pablo Arias Cabal (eds.): *Actas del III Congreso del Neolítico en la Península Ibérica: Santander, 5 a 8 de octubre de 2003*. Universidad de Cantabria, Santander, 2005, 103-110.
Full-text (pdf) available

La difusión de la agricultura en la Península Ibérica se registra desde al menos c. 5500-5200 cal BC aunque la información carpológica es inexistente o incompleta para amplias zonas. Los datos arqueobotánicos reflejan un sistema agrario importado que se muestra complejo desde un primer momento. Sin embargo, el panorama agrícola con anterioridad al 4000 cal BC no es homogéneo y puede reflejar una gran diversidad regional y local. The spread of agriculture in the Iberian Peninsula is documented from at least c 5500-5200 cal BC although botanical data are absent or incomplete for large areas. Archaeobotanical data show an imported agrarian system which is complex from the beginning. However, the farming situations in Iberia prior to 4000 cal BC are not homogeneous and may reflect a great regional and local diversity.

L'agriculture néolithique de la Façade Atlantique Européenne
L. Zapata, L. Peña-Chocarro
Bulletin de la Société Préhistorique Français, Memoire XXXVI (2005), 189-199.
Full-text (pdf) available

We summarize the available data about neolithic agriculture from the European atlantic façade, discussing some common assumptions for this area: continuity between the Mesolithic and the Neolithic, limited importance of the first crops and high mobility. The first crops reach Atlantic Europe in the Vth millenium cal BC. Atlantic agriculture is, particularly in the North, related to its European foci but it also presents peculiar features such as the cultivation of crops adapted to wetter conditions (hulled wheats like emmer and barley) and the selection of agrarian practices like the harvesting of cereals without sickles. There seems to exist a long period in which wild foods play an important role in human subsistence. However, the lower visibility of cereals when compared to other foods needs to be taken into account. The type of sites that have been sampled –almost exclusively caves in southern areas- may be biasing the general picture.

The oldest agriculture in northern Atlantic Spain: new evidence from El Mirón Cave (Ramales de la Victoria, Cantabria)
Leonor Peña-Chocarro, Lydia Zapata, Maria José Iriarte, Manuel González Morales, Lawrence Guy Straus
Journal of Archaeological Science, 32 (2005), 579-587.
Full-text (pdf) available

Emmer wheat (Triticum diccocum) 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 14C-dated to 5550G40 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 adaptationsdalready present about a millennium earlier not only along the Mediterranean coast, but also much closer, to the southeast of the Cordilleradwere 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.

The spread of agriculture in northern Iberia: new archaeobotanical data from El Mirón cave (Cantabria) and the open-air site of Los Cascajos (Navarra)
Leonor Peña-Chocarro, Lydia Zapata Peña, Jesús García Gazólaz, Manuel González Morales, Jesús Sesma Sesma, Lawrence G. Straus
Vegetation History and Archaeobotany, 14 (2005), 268-278.
Full-text (pdf) available

This paper presents archaeobotanical results from the Neolithic levels (5,300–4,000 b.c.) of two recently excavated sites in northern Iberia: El Mirón cave (Cantabria) and the open-air site of Los Cascajos (Navarra). A cereal grain from El Mirón is currently the earliest domesticated plant remain from this region. Despite the large number of samples examined, plant remains are few. They include basically cereals (Triticum monococcum, T. dicoccum, T. aestivum/durum/turgidum and Hordeum vulgare) and some nuts and fruits (Corylus avellana, Quercus sp., Vitis sp., etc.). The presence of free-threshing wheats at El Mirón opens up an interesting subject for debate, as until now naked wheats have been absent from the early Neolithic archaeobotanical record of the coastal Cantabrian region. Hulled wheat chaff is the main plant component from Los Cascajos, south of the Cantabrian Cordillera in Navarra, indicating waste from processing activities. The association of barley almost exclusively with both a burial and a ritual vase in Los Cascajos could be related specific rituals or ceremonies.

Trade and new plant foods in the Western Atlantic Coast: The Roman Port of Irun (Basque Country)
Leonor Peña-Chocarro, Lydia Zapata
M.M. Urteaga Artigas, M.J. Noain Maura (eds): *Mar Exterior. El Occidente Atlántico en época romana. Actas del Congreso Internacional. Pisa, 6-9 noviembre 2003*. Escuela Española de Historia y Arqueología en Roma-CSIC, Roma, 2005, 169-177.
Full-text (pdf) available

The analysis of plant remains from Irun has provided an important assemblage of more than 6000 remains from which a large part is composed of economic species. The assemblage includes many fruits and nuts well documented also in the literary sources. Looking at the possible origin of the species, we put forward the following classification: Imported species: olives. Species likely to have been imported, although they may have been already introduced, and therefore, locally cultivated: plums, cherries, peaches, almonds and figs. Species cultivated from prehistoric times, but that could have been subjected to trade: wheat and grapes. Species gathered in the surroundings from wild stands of managed plants: sloes, walnuts, pine, hazelnuts, acorns, Rubus sp.

2004

Datación de varios fragmentos de madera carbonizada del yacimiento de Antoliñako Koba (Gautegiz-Arteaga, Bizkaia)
Mikel Aguirre, Lydia Zapata
Inédito (2004)
Full-text (pdf) available

Se presentan los resultados de la datación por 14 C AMS de cuatro fragmentos de madera carbonizada recuperados en niveles de Paleolítico superior del yacimiento arqueológico de Antoliñako Koba. Sólo una de las dataciones resulta a nuestro entender coherente con la secuencia estratigráfica y la industria a la que se asocia. Se trata de la muestra GrA-23.898: 29.990 + 230 b.p. que marca la terminación del Auriñaciense en el yacimiento. El artículo valora los resultados obtenidos así como el interés de realizar este tipo de análisis con macrorrestos vegetales. We present here the result of radiocarbon dating by AMS of four fragments of wood charcoal retrieved from Upper Palaeolithic levels from the cave of Antoliñako Koba. Only one of the dates is consistent with the stratigraphic sequence and with the industry it is associated with: GrA-23.898: 29.990 ± 230 b.p. This date corresponds to the end of the Aurignacian period on the site. This paper reviews the radiocarbon results and evaluates the interest of dating plant macro-remains.

Early Neolithic Agriculture in the Iberian Peninsula
Lydia Zapata, Leonor Peña-Chocarro, Guillem Pérez-Jordá, Hans-Peter Stika
Journal of World Prehistory, 18:4 (2004), 283-325.
Full-text (pdf) available

The spread of agriculture in the Iberian Peninsula is documented from at least ca. 5600–5500BC, although botanical data are absent or very limited for large areas. Archaeobotanical information shows from the beginning an imported agrarian system with a great diversity of crops: hulled and naked wheats and barleys, legumes such as pea, lentil, fava bean, vetches and grass peas, flax and poppy. This diversity of plants with different requirements, processing and uses, implies that the first farmers quickly imported or acquired a wide range of agrarian knowledge. Regional and inter-site agrarian differences are discussed in relation to factors like ecology, culture, use of the cultivated plants and management of the risk of crop failure. The adoption of farming resulted in significant ecological, economic, dietary, and social changes for the Neolithic people of Iberia.

La adopción de la economía de producción: la aportación de la arqueobotánica
Mª José Iriarte, Lydia Zapata
K*obie Anejos*, 6 (2004), 203-216.
Full-text (pdf) available

First archaeobotanical analyses in the Basque Country were carried out during the 50s but it is not until the 80/90s that they spread. From the 90s they become general in Holocene deposits, particularly archaeological ones, which provide interesting contributions on past vegetal landscape and on the adoption of farming. First cereal crops are documented on the coast from at least the 6th rnillenium BP along with a progressive human impact on the landscape. This work reviews the available information on these issues and on the new research subjects.

2003

Análisis antracológico del yacimiento arqueológico de Peña Parda
Mónica Ruiz Alonso, Lydia Zapata Peña
Cuadernos de Arqueología de la Universidad de Navarra, 11 (2003),217-251.
Full-text (pdf) available

We present the charcoal analyses of samples from the rock-shelter of Peña Parda (Laguardia, Álava). Level HI (Chalcolithic) is stratigraphically the most reliable since Level I most probably includes modern plant material. In Level HJ box is the most abundant wood (42%) followed by yew (33%). Other minor taxa, with percentages smaller than 5% are: juniper, pine, bearberry/strawberry tree, dogwood, ash, ivy, leguminosae, pomoideae, cherry tree, oak, currant and wayfaring tree. We suggest that at the moment of this occupation box tree formations must have been important in the vicinity of the rock shelter. The presence of yew must respond to its ability to colonize thin and rocky soils.

Carbones y semillas en los yacimientos dolménicos: posibilidades y límites del análisis arqueobotánico
Lydia Zapata, Isabel Figueiral
Ramón Buxó, Raquel Piqué (dirs.) *La recogida de muestras en arqueobotánica: objetivos y propuestas metodológicas. La gestión de los recursos vegetales y la transformación del paleopaisaje en el Mediterráneo occidental*, Encuentro, Barcelona, 2003, 55-65.
Full-text (pdf) available

El cultivo del trigo en el siglo XX en la Euskal Herria Atlántica: Apuntes etnoarqueológicos
Leonor Peña-Chocarro, Lydia Zapata Peña
Zainak, 22 (2003), 171-185.
Full-text (pdf) available

> Este trabajo presenta datos sobre el cultivo de cereales en la Euskal Herria atlántica durante este siglo analizándose las diferentes prácticas y tareas agrícolas. Los datos etnográficos obtenidos constituyen un elemento importante para justificar la existencia de una agricultura cerealista en esta zona en época prehistórica.

Ethnoarchaeology in the Moroccan Jebala (Western Riff): Wood and dung as fuel
Lydia Zapata Peña, Leonor Peña-Chocarro, Juan José Ibáñez Estévez, Jesús Emilio González Urquijo
Africa Praehistorica, 15 (2003), 163-175.
Full-text (pdf) available

> There are different activities that require the use of fire: cooking and water heating, bread making and pottery firing (open fires). Women do not express clear preferences in the fuel they use for domestic hearths. However, the use of tree fodder for domestic animals may lead to intensive selection. The byproduct of this activity ends up as fuel. Mix of fuels. Charcoal can be re-used, stored and transported from one structure to another.

Las casas de cubierta vegetal del Rif occidental: aspectos arquitectónicos, simbólicos y sociales
Lydia Zapata Peña, Juan J. Ibáñez, Jesús E. González Urquijo, L. Peña-Chocarro
El Pajar: Cuaderno de Etnografía Canaria, 14 (2003), 136-143.
Full-text (pdf) available

> Estudio constructivo, simbólico y social de casas tradicionales con cubierta de paja en la Yebala marroquí.

Las huertas en el ámbito rural de Euskal Herria: aproximación etnográfica en los municipios de Otxandio, Zaldibar y Zalla
Araceli González Vázquez, Lydia Zapata Peña
Zainak, 22 (2003), 184-214.
Full-text (pdf) available

> Aproximación de carácter etnográfico al estudio de las huertas en el ámbito rural de Euskal Herria. Nuestra área de estudio corresponde a tres municipios vizcaínos: Otxandio, Zaldibar y Zalla. Analizamos las posibilidades que ofrece este área de investigación y alcanzamos algunas conclusiones sobre el cultivo de las huertas familiares en el ámbito rural.

Post-harvest processing of hulled wheats. An ethnoarchaeological approach
Leonor Peña-Chocarro, Lydia Zapata
P.C. Anderson, L.S. Cumrnings, T.K. Schippers, B. Simonel (eds.) *Le traitement des récoltes: un regard sur la diversité, du Néolithique au présent. Actes des XXIIIe rencontres internationales d' archéologie et d'histoire d'Antibes*. Éditions APDCA, Antibes, 2003, 99-113.
Full-text (pdf) available

> Ethnographic research carried out in different parts of Spain and Morocco where hulled wheats are still cultivated using traditional methods has allowed study of the range of operations involved in their processing. This paper focuses on some post-harvest procedures, eg threshing, parching and dehusking. The controversial issue of parching is analysed in detail through the examination of both literary sources and ethnographic evidence.

Uso y gestión del bosque en la Euskal Herria atlántica: Aprovechamiento tradicional de los recursos forestales en Encartaciones y Gorbea
Lydia Zapata Peña, Leonor Peña-Chocarro
Zainak, 22 (2003), 155-169.
Full-text (pdf) available

Se han realizado entrevistas a campesinos con el fin de obtener información acerca del aprovechamiento tradicional de los recursos forestales en Bizkaia. Las maderas más apreciadas como combustibles son la encina, el brezo, la argoma y el haya. Las gestión tradicional en podas regulares (cíclicas) de los bosques de castaño y roble ha sido una actividad habitual, hoy en extinción. El consumo de hojas, tubérculos o raíces de plantas silvestres es muy limitado. En cambio, los frutos (avellanas, moras...) son muy apreciados. La bellota sólo se ha utilizado en la alimentación animal.

2002

Charcoal analysis from Basque archaeological sites: new data to understand the presence of Quercus ilex in a damp environment
Lydia Zapata Peña
Stéphanie Thiébault (ed.) *Charcoal Analysis, methodological approaches, palaeoecological results and wood uses*. BAR International Series, 1063 (2002), 121-126
Full-text (pdf) available

Results of several archaeobotanical analyses which allow to reviewtraditional interpretations on the origin and chronology expansion of evergreen Quercus forests on the coast of Biscay. In some of the areas where these formations exist today decidious oaks seem to have been the main arboral component from the Mesolithic to the Bronze Age (6500-1900 cal BC). The expansion of evergreen oak may have been linked to increasing human action after this period.

El origen de las sociedades agrícolas en el País Vasco litoral: datos arqueológicos
Lydia Zapata
XV Congreso de Estudios Vascos: Donostia-Baiona 2001. Ciencia y cultura vasca, y redes telemáticas. Eusko Ikaskuntza, Donostia-San Sebastián, 2002, 153-159.
Full-text (pdf) available

Se analiza la cronología y características de la primera agricultura en el territorio costero del País Vasco. Con los datos que manejamos, podemos decir que los primeros cultivos –trigos y cebadas- existen en esta zona desde al menos el V milenio a.C. Se señalan algunas de las cuestiones peor conocidas: importancia relativa de la agricultura y de los yacimientos al aire libre, entre otros.

Los macrorrestos arqueobotánicos: técnicas de estudio e importancia en el análisis estratigráfico
Lydia Zapata
KREI, 6 (2001-2002), 105-132.
Full-text (pdf) available

Propuesta de incluir el estudio de los macrorrestos vegetales en el diseño y análisis estratigráfico de toda excavación arqueológica.

Mesolithic plant use in the western Pyrenees: implications for vegetation change, use of wood and human diet
Lydia Zapata, Ana Cava, María José Iriarte, José Pablo Baraybar, Concepción de la Rua
Sarah L.R. Mason, Jon G. Hather (eds.) *Hunter-gatherer archaeobotany: perspectives from the northern temperate zone*, Institute of Archaeology, University College London, 2002, 96-107.
Full-text (pdf) available

Mesolithic site of Aizpea. During the late Mesolithic Quercus forest dominated, together with Corylus and Tilia. The most widely used fuelwood on the site was Quercus and Prunus cf. espinosa. Corylus nuts and Pomoidae fruits may have been an important resource. Analysis carried out on the remains of the only individual recovered on the site suggest that the diet of this Mesolithic woman depended more heavily on carbohydrates than animal protein.

Origen de la agricultura en el País Vasco y transformaciones en el paisaje: análisis de restos vegetales arqueológicos
Lydia Zapata Peña
Kobie, anejo 4 (2002), monográfico.
Full-text (pdf) available

Esta tesis doctoral aborda tres cuestiones principales: (1) el origen y el desarrollo de la agricultura en Euskal Herria, (2) la importancia de la recolección en la subsistencia humana prehistórica y (3) la antropización del medio como consecuencia de las actividades productoras. El punto de partida son los nuevos datos ofrecidos por el análisis de los macrorrestos vegetales (carbones, semillas y frutos) de 16 yacimientos arqueológicos del norte peninsular que abarcan desde c. 6600 a.C. cal. hasta la época romana. Las interpretaciones dominantes en la arqueología vasca, a pesar de contar con escasos datos directos, han asumido que la ganadería precedió a la agricultura en Euskal Herria y que la adopción o el desarrollo de la agricultura cerealista fue tardía, particularmente en la vertiente atlántica. Las actividades de recolección y la importancia del componente vegetal en la dieta humana han sido frecuentemente infravaloradas a favor de los recursos de origen animal. El principal problema que subyace en estas interpretaciones ha sido la falta de datos directos. Esta ausencia es de origen esencialmente metodológico ya que las excavaciones no suelen incluir programas específicos de muestreo que ayuden a recuperar macrorrestos botánicos derivados de las actividades agrícolas o de la recolección de vegetales. El resto más antiguo de agricultura identificado en las muestras procede del yacimiento de Kobaederra (Kortezubi, Bizkaia) donde se ha recuperado cebada datada c. 4360-3990 cal. a.C. Además, hemos identificado otros granos de cereal neolítico en Lumentxa (Lekeitio, Bizkaia). Por la inexistencia de muestreos, por el momento no contamos con datos de cronología neolítica para la zona situada al sur de la franja costera. Atendiendo a la información arqueozoológica y a la cronología de las primeras prácticas de producción de alimentos en los territorios inmediatos, creemos que el País Vasco pudo adoptar la agricultura al menos desde el periodo 5000-4500 a.C. cal. aunque esto es algo que la investigación futura tendrá que explorar. Teniendo en cuenta diferentes argumentos -presencia de cereales vestidos como la ezkandia (Triticum dicoccum), condiciones ecológicas húmedas y de montaña, baja intensidad de las técnicas agrícolas, ausencia de piezas de hoz-, planteamos la posibilidad de que durante el Neolítico en la zona costera la cosecha del cereal se realizara con métodos diferentes a la hoz: arrancado de las espigas a mano o con útiles como las mesorias asturianas. Tanto en yacimientos de agricultores como en los de cazadores-recolectores hemos identificado un conjunto importante de plantas recolectadas: avellanas, bellotas, pomos y fragmentos de tejido parenquimático. La agricultura se adoptó en un contexto de expansión de los bosques caducifolios, principalmente los robledales. Los primeros indicios claros de impacto antrópico en el Pirineo occidental se observan a partir de c. 5300 a.C. La expansión de las prácticas agrícolas y ganaderas durante el Calcolítico y hasta la Edad del Hierro dio lugar a profundas transformaciones en el paisaje vegetal del País Vasco atlántico, esencialmente tres: (1) la intensificación de los procesos deforestadores; (2) la extensión de comunidades nuevas como los hayedos; y (3) la transformación de algunas de las comunidades existentes. Existen indicios de que la producción de alimentos vegetales se intensifica y diversifica en la época romana. En Irún hemos identificado un gran número de restos procedentes de la arboricultura: uva, ciruela, guinda, melocotón, higo y aceituna. Algunos, como la aceituna, son necesariamente importados, consecuencia de actividades comerciales. Otros podrían responder al cultivo local de árboles introducidos durante este periodo.

2001

Agricultura cerealista en África Septentrional
Leonor Peña Chocarro, Lydia Zapata Peña
El Pajar: Cuaderno de Etnografía Canaria, 10:8 (2001), 75-80.
Full-text (pdf) is not available

Análisis paleoambientales en el dolmen de Collado, La Rioja (Trevijano, La Rioja): viabilidad y trabas de la paleoecología vegetal en estructuras dolménicas
Lydia Zapata Peña, María José Iriarte Chiapusso, Carlos López de Calle Cámara
Zubía, Extra 13 (2001), 65-96
Full-text (pdf) available

El núcleo del trabajo que presentamos se centra en los datos paleoecológicos obtenidos en Collado del Mallo (Trevijano, La Rioja), uno de los sepulcros megalíticos excavados en la sierra de Cameros. Una sucinta

explicación sobre los caracteres de estas estructuras funerarias y un comentario en torno a las posibilidades y problemas que plantean las excavaciones en dólmenes para el análisis paleoambiental completan este trabajo. This work focuses on palaeoecological data from Collado del Mallo (Trevijano, La Rioja), one of the megalithic burial sites excavated at the Cameros Sierra. We offer a summary about the main features of these funerary structures and discuss the possibilities and limitations raised by paleoenvironmental analyses carried out in dolmens.

Argile et bouse de vache. Les récipients de la région Jbâla (Maroc)
Juan José Ibáñez, Leonor Peña-Chocarro, Lydia Zapata, Jesús Emilio González Urquijo, Marta Moreno García
Techniques & Culture, 38 (2001), 175-194.
Full-text (pdf) available

Clay and cow dung. The earthenware containers of the Jbâla region (Morocco)In the Jbâla region, North Western Morocco, we have studied the traditional making of containers (tonna and tabtoba) from 1) cow dung, 2) unfired clay, and 3) clay mixed with cow dung. The making of these objects for domestic use represented a general technical knowledge shared by all women in the region and disappeared twenty or thirty years ago. These containers were used for storing cereals and other dry products, for feeding livestock and for transporting cereal to the quern.

El uso de los recursos vegetales en Aizpea (Navarra, Pirineo Occidental): la alimentación, el combustible y el bosque
Lydia Zapata Peña
Ignacio Barandiarán y Ana Cava (eds.) *Cazadores-recolectores en el Pirineo navarro. El sitio de Aizpea entre 8.000 y 6.000 años antes de ahora*. Anejos de Veleia, series maior 10 (2001), 325-359.
Full-text (pdf) available

Uso de los recursos vegetales durante el Mesolítico final y el comienzo del Neolítico en el norte de Navarra. En un primer momento de ocupación del abrigo (7800-7100 BP): roble, avellano, olmo, fresno, aliso. A partir de 6370 BP los valores de polen arbóreo empiezan a descender por impacto de la acción humana. Se documenta boj, tejo. Se identifican fragmentos de pricarpio de avellana y frutos de pomoideas; acción de tostado, asado o calentado de los frutos.

Estudio etnoarqueológico sobre la cerámica Gzaua (Marruecos). Técnica y contexto social de un artesanado arcaico
Jesús González Urquijo, Juan José Ibáñez Estévez, Lydia Zapata, Leonor Peña Chocarro
Trabajos de Prehistoria 58:1 (2001), 5-27.
Full-text (pdf) available

The women pottery-makers in the Gzaua tribe (Chefchaouen, NW Morocco), who are part of the Berber pottery tradition of the north of the Mahgreb, still make ceramics with very archaic techniques. Pottery is constructed by slab building, open fired and exchanged in very restricted geographical area. The study of the techniques and of the social organization of production and use represents a relevant reference for the specialists in pottery technology and, in general, for those interested in the topic of craft specialization. Las ceramistas de la tribu Gzaua (Chefchauen, Marruecos), dentro del contexto de producción de la cerámica beréber del norte del Magreb, emplean técnicas de fabricación mediante urdido, cocción en fuegos abiertos y distribución por trueque o venta en ámbitos geográficos restringidos. El estudio sobre las técnicas de fabricación y el contexto social de producción y uso de estas cerámicas ofrece una referencia relevante para la comprensión de las cerámicas de época prehistórica y sobre la cuestión de la especialización artesanal.

Harvesting without sickles: Neolithic examples from humid mountain areas
J.J. Ibáñez, J.E. González, L. Peña-Chocarro, L. Zapata, V. Beugnier
S. Beyries, P. Petrequin (eds.) *Ethno-archaeology and its transfers, 5th Meeting of the EAA, Bournemouth, 1999.* British Archaeological Report, International Series (2001), 9-23.
Full-text (pdf) available

Neolithic in the Cantabrian Spain and the French Jura are both affected by the sickle paradox: the presence of cereal agriculture without any evidence of lithic sickles for harvesting it. Ethnography provide us with examples. We examine the factors that may be involved and we study various alternative techniques.

Informe arqueobotánico del yacimiento de la calle Tadeo Murgia (Irun, Gipuzkoa)
Leonor Peña-Chocarro, Lydia Zapata Peña
Informe técnico, 2001
Full-text (pdf) available

Conjunto compuesto por más de 5000 restos de especies vegetales de importancia económica. Bellotas, endrinas y piñones recolectados en el entorno; avellanas y nueces de espacios gestionados; melocotones, ciruelas, cerezas/guindas y almendras pudieron ser introducidas por la población romana. Ubicación de Irun como nudo de comunicaciones.

La función de los útiles en sílex del Yacimiento de Pico Ramos (Muskiz, Bizkaia)
Juan José Ibañez, Lydia Zapata
Isturitz, 11 (2001), 245-257.
Full-text (pdf) available

El yacimiento en cueva de Pico Ramos (Muskiz, Bizkaia) presenta dos niveles arqueológicos: un nivel de ocupación fechado a principios del 5o milenio cal. BC y otro sepulcral suprayacente de mediados del 4o milenio cal BC. En este artículo se estudia la función del utillaje lítico de los útiles de ambos niveles. En el nivel más antiguo se ha documentado la existencia de elementos de proyectil, trabajos de carnicería y labores someras de reparación de utillaje. En el nivel Calcolítico destaca la presencia de puntas de flecha, algunas láminas empleadas para el corte de la piel y otras usadas para el corte de cereales.

Un proyecto etnoarqueológico y antropológico en el Rif occidental marroquí: avance sobre los resultados del trabajo de campo del año 2000
Jesús Emilio González Urquijo, Araceli González Vázquez, Leonor Peña Chocarro, Eloy Gómez Pellón, Lydia Zapata Peña, Juan José Ibáñez Estévez, Rosa Ruiz Idarraga, Marta Moreno García
E*dades: Revista de Historia*, 8 (2001), 91-104.
Full-text (pdf) available

El objetivo principal de este proyecto es crear modelos interpretativos que ayuden a explicar el registro arqueológico. Se centra en una diversidad de actividades y tecnologías: la agricultura, conservación y almacenamiento de cereales vestidos como la escanda; el aprovechamiento de recursos vegetales silvestres; el aprovechamiento del bosque, sobre la madera como combustible; la ganadería; la artesanía de la cerámica y de la piel; y la construcción de la vivienda, el hábitat y uso del territorio.

2000

Agricultura, alimentación y uso del combustible: aplicación de modelos etnográficos en Arqueobotánica
Leonor Peña-Chocarro, Lydia Zapata, Jesús E. González Urquijo, Juan J. Ibáñez Estévez
Saguntum, extra 3 (2000), 403-420.
Full-text (pdf) available

Ethnographical information from the Hbala region in northern Marocco. Subjects: cultivation of einkorn, agrarian practices and proccessing; conservation and storage of plan foods; use of cow dung as fuel, tempering of floors and walls and for recipient making: fuelwood: use, collection, leaf-foddering residues and woodland conservation.

Análisis de los macrorrestos vegetales de Kobeaga II: la explotación del bosque
Lydia Zapata
Illunzar, 4 (1998-2000), 177-183
Full-text (pdf) available

No se han identificado macrorrestos botánicos tipo semilla o fruto. Domina Quercus subg. Quercus. Robledales y bosques mixtos fueron las formaciones principales en el País Vasco atlántico en el VII milenio BC. La escasa presencia de encina contrasta con su extensión actual. Presencia de haya traída de otros lugares.

Condiciones ambientales y aprovechamiento de recursos durante el Neolítico. El yacimiento arqueológico de Kobaederra (Oma-Kortezubi)
Lydia Zapata, Jesus Emilio González Urquijo, Juan José Ibáñez Estévez, J. Altuna, Koro Mariezkurrena, Concepción de la Rúa
Mónica Díez et al. (coord..) *Investigación aplicada a la reserva de la biosfera de Urdaibai*. Gobierno Vasco y Unesco Etxea, Bilbao, 2000, 221-228
Full-text (pdf) available

Los primeros campos cultivados se establecen en el V milenio a.C. en un paisaje de robledal, en pequeños claros antrópicos o naturales, probablemente aprovechando los suelos de ladera, más potentes en la época y más fáciles de trabajar y limpiar que los profundos y boscosos suelos de valle. El aprovechamiento de los frutos recolectados se mantiene centrado básicamente en los mismos productos que abastecieron a las poblaciones del Mesolítico local, y es muy probable que hayan tenido un importante papel en la subsistencia humana por la posibilidad de desarrollo de técnicas de conservación mediante el tostado y el secado. La ganadería está basada en obicápridos, bóvidos y cerdo y se encuentra en un proceso de expansión a largo plazo. Sin embargo, continúa la explotación de ungulados salvajes y el aprovechamiento de los recursos marisqueros, sobre todo los procedentes de los especialmente ricos estuarios del V milenio a.C. El bosque va sufriendo una profunda alteración. En el Holoceno medio encontramos instalado un denso robledal que aprovecha las excelentes condiciones de humedad y temperatura del período Atlántico, apenas alterado por las prácticas de los cazadores-recolectores mesolíticos. La introducción de la agricultura y de la ganadería y un aprovechamiento más intensivo de algunos recursos vegetales llevan a una apertura de claros, primero de forma tímida y acelerada más tarde. La intensificación de estas prácticas produce una alteración más generalizada que probablemente afecta a la cubierta edáfica y favorece con posterioridad la instalación de los encinares en los suelos cálcicos adelgazados.

La recolección de plantas silvestres en la subsistencia mesolítica y neolítica, datos arqueobotánicos del País Vasco
Lydia Zapata Peña
Complutum, 11, 2000: 157-169.
Full-text (pdf) available

Archaeobotanical analyses carried out in Mesolithic and Neolithic contexts from Basque caves show that hazelnuts, acorns and Pomoideae fruits are the wild plant foods more frequently preserved. The visibility of these products is related to the physical properties of the tissues they are formed with and also to the practices related to their consumption, processing and discarding. Archaeological and environmental information shows that during the Mesolithic and the Neolithic wild plant foods might have been intensively gathered. However, the data are still very limited in order to assess adequately their real importance in human diet. Los análisis arqueobotánicos de cronología mesolítica y neolítica realizados en cuevas del País Vasco indican que las avellanas, bellotas y los frutos de las pomoideas son los restos vegetales recolectados que se conservan con mayor frecuencia. La visibilidad arqueológica de estos productos se relaciona con las propiedades físicas de los tejidos vegetales que los forman así como con las prácticas relacionadas con su consumo, desecho y procesado. La información arqueológica y las reconstrucciones paleoambientales indican que durante el Mesolítico y Neolítico pudo darse una explotación intensa de los productos vegetales silvestres. Sin embargo, los datos son todavía escasos como para poder valorar adecuadamente su importancia real en la dieta humana.

La transición al Neolítico en la región cantábrica: **estado de la cuestión**
Pablo Arias Cabal, Jesús Altuna, Áangel Armendariz, Jesús Emilio González Urquijo, Juan José Ibáñez Estévez, Roberto Ontañón Peredo, Lydia Zapata
Neolitizaçao e Megalitismo da Península Ibérica. Actas del 3º Congresso de Arqueología Peninsular, ADECAP, Porto, 2000, 115-133.
Full-text (pdf) available

Principales novedades en el estudio de la neolitización del Cantábrico. Las especias domésticas, tanto animales como vegetales, se introdujeron en la región a comienzos del V milenio cal BC, integrándose de forma paulatina en el sistema económico de comunidades indígenas que siguieron practicando una estrategia de subsistencia de espectro amplio, no muy diferente de la del Mesolítico. Será a partir del IV milenio cal BC cuando se empiecen a detectar indicios de preferencia hacia las actividades agropecuarias, junto con manifestaciones relativamente completas de comportamiento ritual.

Vegetación y subsistencia durante la Edad del Bronce en el Cantábrico oriental: La cueva de Arenaza (S. Pedro de Galdames, Bizkaia)
Paloma Uzquiano, Lydia Zapata
Neolitizaçao e Megalitismo da Península Ibérica. Actas del 3º Congresso de Arqueología Peninsular, ADECAP, Porto, 2000, 51-68.
Full-text (pdf) available

Resultados de los análisis de macrorrestos vegetales en Arenaza), Edad de Bronce. La diversidad ecológica obtenida permite deducir explotación y selección de combustible. La comunidad vegetal mejor representada es el bosque caducifolio de Quercus. El estudio de frutos y semillas constata la presencia de diferentes especies de cereales. Los recursos vegetales silvestres continuan presentes en la dieta de los humanos que habitaron la cueva.

1999

Cueva de Kobaederra (Kortezubi). V Campaña
Juan José Ibañez, Lydia Zapata, Jesús González Urquijo
Arkeoikuska, 99 (1999), 70-72.
Full-text (pdf) available

The excavation at the Kobaederra site has progressed over the past five years, within the project designed to study the introduction of a production economy in neolithic Cantabria. The information thus culled has given us a picture of agricultural practice in the V millennium and has also allowed us to identify other economic activities such as cattle rearing and use of forest resources. An environmental reconstruction was also undertaken to assess the impact of human activity on the natural environment during this period. The V campaign carried out in 1999 in Kobaederra marks the last archaeological excavation at the site within the remit of this research project.

El combustible y la agricultura prehistórica. Estudio arqueobotánico de los yacimientos de Arenaza, Kanpanoste Goikoa y Kobaederra
Lydia Zapata Peña
Isturitz, 10 (1999), 305-337.
Full-text (pdf) available

Se presentan los resultados de los análisis de macrorrestos vegetales de tres yacimientos vascos. Las muestras proceden de niveles que se enmarcan desde el Mesolítico a la Edad del Bronce. En los tres yacimientos existen evidencias de agricultura (cebada, trigo y mijo). Los restos de agricultura más antiguos proceden de Kobaederra y han sido datados en 5375 ± 90 BP. Los análisis antracológicos reflejan el uso preferente como combustible del pino, Quercus, avellano, rosáceas, madroño, fresno y laurel. Vegetal macrorremain evidences from three archaeological sites in the Basque Country dating from Mesolithic to Bronze Age. In the three of them there is evidence of agriculture (barley, wheat, millet). Oldest ones are Kobaederra's, dating 5375 ± 90 BP. Anthacological analysis reveal common use of pine tree, Quercus, hazel, Rosaceae, arbutus, ash tree and laurel.

El poblado de montaña calcolítico al aire libre de Ilso Betaio (Bizkaia): estructuras de habitación, materiales arqueológicos, estudio palinológico y antracológico
Xabier Gorrotxategi, Mª José Yarritu, Mertxe Kandina, Mª José Sagarduy, Mª José Iriarte, Lydia Zapata
Isturitz, 10 (1999), 3-204.
Full-text (pdf) available

Se estudian las estructuras y los materiales arqueológicos procedentes de las excavaciones arqueológicas realizadas en el poblado calcolítico de montaña de Ilso Betaio (Enkarterria, Bizkaia) durante los años 1981-1990. Se consideran los siguientes aspectos: el proceso de excavación del asentamiento, con la exhumación de estructuras y materiales; la caracterización de las estructuras evidentes y latentes, constituidas por suelos de cabaña, hogares de diferente tipo (excavados en el terreno, en forma de placa de piedras), elementos constructivos como apoyos de pies derechos, distribución de artefactos y restos de talla en el espacio, densidades de tierras cenicientas, distribución de carbones por cuadro; y por último, las categorías y frecuencias de tipos de útiles y restos de talla lítica en el poblado. Finalmente se realizan algunas consideraciones sobre el espacio natural en el que se inscribe el poblado a partir de los datos paleobotánicos existentes.

El uso de los recursos vegetales durante la Prehistoria. Técnicas de recuperación y análisis de macrorrestos vegetales
Leonor Peña-Chocarro, Lydia Zapata Peña
Rodrigo de Balbín, Primitiva Bueno (eds.) *II Congreso de Arqueología Peninsular: Zamora, del 24 al 27 de septiembre de 1996*. Fundación Rei Alfonso Henriques, Alcalá de Henares, 1999, 667-672.
Full-text (pdf) available

Presentación de la metodología relacionada con el estudio de los macrorrestos vegetales procedentes de yacimientos arqueológicos: sistemas de recuperación, tafonomía e identificación. Para definir la interacción de los seres humanos con el medio vegetal e y reconstruir los modos de subsistencias de las poblaciones del pasado.

El V milenio Cal BC en el País Vasco atlántico: la introducción de la agricultura y la ganadería
Jesús Emilio González Urquijo, Juan José Ibáñez Estévez, Lydia Zapata Peña
Saguntum, extra 2 (1999), 559-564.
Full-text (pdf) available

La ganadería y la agricultura se introducen en el País Vasco atlántico en el V milenio, según las últimas evidencias conocidas. Los ovi-cápridos y los bóvidos fueron las primeras especies animales domésticas mientras la agricultura cerealera se practicó con la cebada y la escanda (Triticum dicoccum). La explotación de recursos silvestres continúa siendo importante en este periodo incluyendo la caza de ungulados salvajes, la recolección marisquera y el aprovechamiento de frutos recolectados, estos últimos a menudo tratados para permitir su conservación. New archaeological evidences show the appearence of the first groups of farmers in the Atlantic coast of the Basque Country during the 5th millenium Cal BC. Pastoralism of ovicaprines and bovines and cultivation of barley and emmer were carried out. However, the use of wild resources was still very important during this period, including hunting of ungulates and gathering of shellfish and fruits, the later probably being processed to ensure their preservation.

History and traditional cultivation of Lathyrus sativus L. and Lathyrus cicera L. in the Iberian peninsula
Leonor Peña-Chocarro, Lydia Zapata Peña
Vegetation History and Archaeobotany, 8 (1999), 49-52.
Full-text (pdf) available

Recent ethnographic research carried out in Spain has allowed the cultivation of Lathyrus sativus L. and L. cicera L. to be documented. Both species already appear in the Spanish archaeological record. Grown under traditional farming systems, L. sativus L. and L. cicera L. are still used for human consumption (only L. sativus L.) and both are used for fodder. Data on cultivation history, fanning practices, crop processing sequence and uses are here presented, which will enable a better understanding of their possible roles in prehistoric times.

Investigación interdisciplinar del dolmen de La Cabaña 4 (Karrantza, Bizkaia)
Mª José Yarritu, Xabier Gorrotxategi, Lydia Zapata, Mª José Iriarte
Isturitz, 10 (1999), 205-245.
Full-text (pdf) available

Memoria de la excavación del dolmen de La Cabaña 4 (Karrantza, Bizkaia). Se muestra el estado del monumento al comenzar la excavación, la metodología de los trabajos arqueológicos realizados, el proceso de excavación en las diferentes áreas del dolmen (cámara, túmulo y exterior), la estructura constructiva del monumento, el ajuar asociado y la interpretación general sobre la estructura funeraria. Además se incluyen los estudios antracológico y palinológico.

Lathyrus sativus en Euskal Herria
Leonor Peña-Chocarro, Lydia Zapata
Isturitz, 10 (1999), 279-285.
Full-text (pdf) available

La prospección del territorio de Navarra y parte de Álava ha proporcionado interesantes datos sobre el cultivo del aizkol (Lathyrus sativus) que hoy en día se creía desaparecido de Euskal Herria. Se ha puesto de manifiesto que jugó un papel importante en la economía de la mayoría de las familias campesinas así como

que todavía se cultiva en zonas aisladas de Navarra. Hemos recogido información sobre el ciclo agrario y sus usos en Navarra. Field work carried out in Navarra and parts of Álava has shown interesting data on the cultivation of aizkol (Lathyrus sativus) still cultivated in Euskal herria. It has been shown that it played an important role within domestic economies and that it is still cultivated in isolated areas of Navarra. We have collected information on the agrarian cycle as well as on uses.

La inhumación de Kobaederra en el contexto de los enterramientos neolíticos del País Vasco
Juan José Ibañez, Jesús Emilio González, Lydia Zapata, Concepción de la Rúa, Marie-Agnes Courty
Saguntum, extra 2 (1999), 447-452.
Full-text (pdf) available

The site of Kobaederra (Kortezubi, Biscay), being excavated from 1995, has provided new data of the first Neolithic communities during the 5th millenium cal BC in the Atlantic coast of the Basque Country. In this paper, the Neolithic burial of Kobaederra, dating from the end of the 5th millenium, is shown. This burial is related with some other Neolithic burials in the region, which seem to be slightly previous to the spread of Megalitism, at 4.000 cal BC.

Nuevas aportaciones al conocimiento de las primeras sociedades productoras en la región Cantábrica
Pablo Arias Cabal, Jesús Altuna, Ángel Armendariz, Jesús Emilio González Urquijo, Juan José Ibañez Estevez, Roberto Ontañón Peredo, Lydia Zapata
Saguntum, extra 2 (1999), 549-557.
Full-text (pdf) available

Presentation of the results of the project "The origins of peasant societies in the Cantabrian region". This research has documented several stratigraphic sequences, which may contribute to a better definition of the evolution of the societies living in that part of Iberia from the Mesolithic to the Bronze Age. Concerning the Neolithic, it must be stressed that the groups occupying the region were practising agriculture and stock herding since, at least, the second third of fifth millennium cal BC.

1998

Bibliografía sobre arqueoetnobotánica. El uso humano del medio en el pasado: alimentación vegetal, agricultura prehistórica y combustible.
Lydia Zapata, Leonor Peña-Chocarro
Zainak, 17 (1998), 273-288.
Full-text (pdf) available

Cueva de Kobaederra en Oma (Kortezubi), IV campaña
Juan José Ibañez, Lydia Zapata, Jesús González Urquijo
Arkeoikuska, 98 (1998), 110-113
Full-text (pdf) available

Excavation of a Neolithic tomb containing one individual, complex structure but without funerary deposits. Opening of a new sector reveals Bronze Age and Chalcolithic levels.

Estudio arqueobotánico de los macrorrestos vegetales de El Campillo: agricultura y alimentación en Vitoria-Gasteiz en los siglos XIV-XV
Lydia Zapata
Informe técnico, 1998.
Full-text (pdf) available

Hulled wheats in Spain: history of minor cereals
Leonor Peña-Chocarro, Lydia Zapata-Peña
A.A. Jaradat (ed.) *Triticeae III*, Science Pub Inc, 1998, 45-52.
Full-text (pdf) available

For millennia, hulled wheats (einkorn, emmer and spelt) have been cultivated in Spain. Isolated in mountain areas, small pockets of hulled wheats associated with traditional agriculture have survived. These are the last

examples of our highly threatened crop genetic and cultural heritage. We present an overview of the history of these three minor crops; archaeobotanical and ethnographic data are provided in order to understand the role of these crops during past and present times.

La explotación del medio vegetal en Kanpanoste Goikoa (Álava): combustible y alimentación
Lydia Zapata
Alfonso Alday (ed.) *El depósito prehistórico de Kanpanoste Goikoa (Vírgala, Alava), memoria de las actuaciones arqueológicas 1992 y 1993*, Diputación Foral de Alava, Vitoria-Gasteiz, 1998, 95-103.
Full-text (pdf) available

Explotación del medio, recolección y agricultura en un yacimiento con secuencia Epipaleolítica-Neolítica.

Las primeras comunidades campesinas en la región cantábrica. El aporte de la etnoarqueología en Marruecos. Memoria de las actividades realizadas en 1998.
Jesús Emilio González Urquijo, Juan José Ibáñez Estévez, El-Arby en-Nachioui, Leonor Peña Chocarro, Lydia Zapata Peña
Memoria entregada a la Fundación Marcelino Botín, 1988
Full-text (pdf) available

Informe etnoarqueológico sobre las tradiciones en el Rif con una lectura aplicada al neolítico de la península ibérica.

La historia del bosque y su explotación en el pasado: evidencia arqueológica y etnográfica
Lydia Zapata y Leonor Peña-Chocarro
Zainak, 17 (1998), 87-99.
Full-text (pdf) available

El bosque se ha utilizado desde la prehistoria como fuente de comida y combustible. Repasamos algunas evidencias arqueológicas de yacimientos vascos relacionadas con la alimentación vegetal y con el uso de la madera.

Procesos de antropización y cambios en el paisaje vegetal del País Vasco atlántico en la prehistoria reciente: su incidencia en la expansión de hayedos y encinares
L. Zapata Peña, G. Meaza Rodríguez
Munibe, 50 (1998), 21-35
Full-text (pdf) available

The results of several archaeobotanical studies which allow us to evaluate human impact on the transformation of the vegetal landscape of the Atlantic Basque Country during the late Holocene are presented in this paper. The traditional interpretations about the chronology and the reasons for the expansion of beech and coastal evergreen Quercus forests are reviewed.

1997

Cueva de Kobaederra (Oma, Kortezubi), III campaña
Juan José Ibañez, Lydia Zapata, Jesús Emilio González
Arkeoikuska, 97 (1997), 130-133
Full-text (pdf) available

Dating from the earliest occupations, middle of V millenium BC, cereal grains and (probably domestic) animal remains have been recovered from level with abundant pottery artefacts. At level II, an individual tomb has been found, dating, by its stratigraphic position, from the IV millenium BC.

El Triticum dicoccum (ezkandia) en Navarra: de la agricultura prehistórica a la extinción de un trigo arcaico
Leonor Peña-Chocarro, Lydia Zapata Peña
Zainak, 14 (1997), 249-262.
Full-text (pdf) available

Se han prospectado los territorios de Álava, Navarra y Baja Navarra con el fin de recuperar datos acerca del cultivo tradicional de Triticum dicoccum Schübl. (ezkandia). La especie se encuentra en la actualidad extinguida. Sin embargo, se ha contactado con personas que la han sembrado hasta al menos 1960. La zona donde se ha utilizado corresponde a la Navarra Media y el fin del cultivo era exclusivamente pienso para ganado.

El uso del combustible en la ferrería medieval de Oiola IV: implicaciones ecológicas y etnobotánicas
Lydia Zapata
Kobie, 24 (1997), 197-115
Full-text (pdf) available

Charcoal from the medieval iron working site of Oiola IV (Trapagaran, Biscay). Oak, beech, alder and hazel are the most frequent species. Willow, birch, Rosaceae, strawberry tree, alder buckthron, ash and holly oak have also been identified. It reflects the presence of different plant communities: at least oak, beech and alder forests must have existed in the area in medieval times. Oak is the most used fuel in the site.

El yacimiento de la cueva de Kobaederra (Oma, Kortezubi, Bizkaia). Resultados preliminares de las campañas de excavación 1995-97
Lydia Zapata Peña, Juan José Ibañez Estévez, Jesús González Urquijo
Munibe, 49 (1997), 51-63.
Full-text (pdf) available

En este artículo se presentan los resultados preliminares de la excavación del yacimiento de la cueva de Kobaederra. La estratigrafía conocida por el momento - de más de dos metros de potencia - abarca desde el Neolítico antiguo (mediados de V Milenio cal. B.C.) hasta la Edad del Bronce. La información más interesante se refiere a la agricultura prehistórica. El estudio de los restos macrobotánicos ha revelado la presencia de cebada (Hordeum vulgare) en las ocupaciones más antiguas; también se encuentra cebada (Triticum dicoccum) y mijo (Panicum/Setaria) en el nivel superior.

Higos, ciruelas y nueces: aportación de la arqueobotánica al estudio del mundo romano
Leonor Peña-Chocarro, Lydia Zapata Peña
Isturitz, 9 (1997), 679-690.
Full-text (pdf) available

Trata del potencial de los estudios arqueobotánicos de macrorrestos vegetales para conocer los diferentes aspectos de la vida cotidiana en la Euskal Herria de época romana. La comunicación se centra en aspectos metodológicos, utilizando como referencia los resultados del análisis del yacimiento de la Calle Santiago de Irun (Gipuzkoa).

Identificación de varios fragmentos de madera carbonizada del yacimiento arqueológico de Kukuma (Araia, Álava)
Lydia Zapata
Amelia Baldeón, Eduardo Berganza (eds.) *El yacimiento epipaleolítico de Kukuma, un asentamiento de cazadores-recolectores en la llanada alavesa (Araia, Álava)*, Diputación Foral de Álava, Vitoria-Gasteiz, 1997, 77-79.
Full-text (pdf) available

Presence of Corylus and Quercus in the Epipalaeolithic site of Kukuma.

1996

Cueva de Kobaederra (Oma, Kortezubi), II campaña
Juan José Ibañez, Lydia Zapata, Jesús Emilio González
Arkeoikuska, 96 (1996), 91-93.
Full-text (pdf) available

El paisaje vegetal prehistórico en el País Vasco
María José Iriarte, Lydia Zapata
Diputación Foral de Álava, Vitoria-Gasteiz, 1996.
Full-text (pdf) available

Evolution of landscape during Prehistory in the Basque Country

Euskal Herriko landare paisaia prehistorikoa
María José Iriarte, Lydia Zapata
Diputación Foral de Álava, Vitoria-Gasteiz, 1996.
Full-text (pdf) available

Los recursos vegetales en el mundo romano: estudio de los macrorrestos botánicos del yacimiento Calle Santiago de Irún (Guipúzcoa)
Leonor Peña-Chocarro, Lydia Zapata Peña
Archivo Español de Arqueología, 69:173-174 (1996), 119-134.
Full-text (pdf) available

The results of the archaeobotanical analysis of three samples from the Roman site CSI (Irún, Basque Country, I - III A.D.) are presented. They correspond to a port zone where material from different proveniences has met: estuarine and river-close areas, urban waste and altered places. The human population of the Roman Oiasso had access to a wide range of plant foods, wild as well as domestic ones. Economically interesting species which have been imported or introduced at this time have been identified.

Modos de subsistencia en el Cantábrico oriental durante el cuarto milenio B.C.
Lydia Zapata
Rubricatum, 1 (1996), 101-108
Full-text (pdf) available

The human groups that lived on then Basque coast during the beginning of the 4th millenium BC developed broad spectrum subsistence strategies where plant foods could have played a major role. It is not known when agricultural practices started, although it is suggested that they were very previous or parallel to the building of megaliths.

1995

Aplicación del cluster analysis a fragmentos de cráneo de la cueva sepulcral de Pico Ramos (Bizkaia, País Vasco)
Lydia Zapata, Rafael Ajangiz
I. Pujana, Luis Valdés, I. Arenal (coords.) *Aplicaciones informáticas en arqueología: teorías y sistemas*, Denboraren Argia, Bilbao, 1995, 539-544.
Full-text (pdf) available

A cluster analysis is carried out with pieces of human skull recovered from the Chalcolithic burial deposit of Pico Ramos (Muskiz, Bizkaia) in order to notice where meaningful concentrations occur.

Cueva de Kobaederra (Kortezubi), sondeo
Juan José Ibañez Estévez, Lydia Zapata Peña, Jesús Emilio González Urquijo
Arkeoikuska, 95 (1995), 153-158.
Full-text (pdf) available

El yacimiento arqueológico de la cueva de Pico Ramos (Muskiz, Bizkaia)
Lydia Zapata
Isturitz, 6 (1995), 251-257.
Full-text (pdf) available

The cave of Pico Ramos (Muskiz, Biscay) has got two archaeologically interesting levels. Nivel 4 is a shell midden dated in 5860 ± 65 B.P non calibrated. It has got faunal remains of only wild animals and scarce lithic material with microliths, including two bi-directional backed crescents. Nivel 3 is a burial Chalcolithic deposit where the remains of at least 104 individuals have been recovered. The non calibrated dates of this context are: 4790 ± 110,4210 ± 110 y 4100 ± 110 B.P Together with the human bones, numerous ornamental elements and artifacts made of flint, bone, ceramics, lignif, molluscs, copper and polished stone have been recovered. The human group that used the cave practised broad subsistence strategies which included hunting-gathering as well as farming.

El depósito sepulcral Calcolítico de la cueva Pico Ramos (Muskiz, Bizkaia)
Lydia Zapata (dir.), P. Areso, A. Uriz, J.Gorrochategui, M.J. Yarritu, J.M. Salgado, F. Juárez, M.J. Sagarduy, G. Aja, J.P. Baraybar, C. de la Rúa, P. Castaños, F. Hernández, R. Moreno
Munibe, 47 (1995), 33-197.
Full-text (pdf) available

The results of the archaeological excavation of levels 1, 2 and 3 of the cave Pico Ramos (Biscay, Basque Country) are explained. On the level 3 of this site a Chalcolithic burial has been recovered. Non calibrated 14 C dates are: 4790 ± 110, 4210 ± 110 and 4100 ± 110 B.P. The cave was used for funerary purposes from the beginning of the Chalcolithic until Beaker times. The ritual of this multiple tomb consists of an accumulation of individual priman/ deposits and the m.n.i. is 104. Together with the human bones, numerous artifacts made of flint, bone, ceramics, lignit, moluscs, copper and polished stone have been recovered, all of them within tipical Chalcolithic types of Western Europe. The human group that used the cave practised broad subsistence strategies which included hunting-gathering as well as farming.

Paleometalurgia del hierro en Bizkaia, las ferrerías de monte altomedievales
Javier Gorrochategui, María José Yarritu, Lydia Zapata
Estanislau Tomàs i Morera (ed.) *La farga catalana en el marc de l'arqueología siderúrgic*, Gobierno de Andorra, 1995, 229-248.
Full-text (pdf) available

Iron palaeometallurgy in Biscay, the iron foundry in the Early Middle Ages.

1993

Haizeoletarako egur erabilpena Bizkaian
Lydia Zapata
Ikuska agerkari berria, 2 (1993), 55-58
Full-text (pdf) available

1991

Cueva sepulcral de Pico Ramos (Muskiz)
Lydia Zapata
Arkeoikuska, 91: 141-144
Full-text (pdf) available

Report of the 1st excavation campaign of the burial cave of Pico Ramos (Muskiz, Bizkaia)

Las ferrerías en Bizkaia
Blanca López Arbeloa, Lydia Zapata Peña
Ibaiak eta Haranak, 4: 139-172. Etor, Donostia-San Sebastián, 1991.
Full-text (pdf) available

Smithies in Biscay, from the Iron Age to the 17th Century.

1990

Cuevas sepulcrales en la cuenca baja del río Barbadun
Itziar Abarrategi, Fernando Juárez, Lydia Zapata
Proyectos, 5 (1990)(Ayuntamiento de Muskiz), fascículo coleccionable
Full-text (pdf) available

Inventory of prehistorical burial caves in the Barbadun river area (Biscay, Basque Country)

1988

Demografía de la parroquia de Santa Cruz de Labarrieta, zona minera de Sopuerta (Bizkaia), 1900-1930
Fernando Juárez, Lydia Zapata, Arantza Zubizarreta
Congreso de Historia de Euskal Herria, Tomo IV (La crisis del Antiguo Régimen), II Congreso Mundial Vasco, Xertoa, San Sebastián, 1988, 65-82.
Full-text (pdf) available

Análisis del impacto de la explotación del hierro en la demografía de la zona minera vizcaina

1987

Zona minera de Labarrieta de Abajo, Labarrieta de Arriba, El Sel y Alen (Sopuerta, Bizkaia), 1900-1930
Fernando Juárez, Mª Carmen Prieto, Lydia Zapata, Arantza Zubizarreta
Kobie (Serie Antropología cultural), 2 (1987), 179-226
Full-text (pdf) available

In this article the Labarrieta de Arriba, de Abajo, El Sel and Alén mining communities in Sopuerta, Bizkaia (Basque Country) are studied. Until the end of the nineteenth century the area was partly uninhabited. From that period of time on, the iron mining working conditioned the welfare as well as the decline of such nuclei. Analyses on the production, the mining work, the habitat, the demography and the society of the period are included. The migratory moves (immigration and emigration) determined the demographic evolution of the area. The mining top was here ulterior to the rest of Bizkaia and the destiny of the production was the export to England. The piece-work was the working system used at the mine. The article also studies the infrastructure developed at the area to make it inhabitable. The workers' unions and that moment's social and economic conflicts also enter this analysis.