# VALLE DE VIDRIALES

INFORMATION ABOUT THE ITINERARY AND ACTIVITIES.



INSTITUTO DE EDUCACIÓN SECUNDARIA



LEÓN FELIPE

# **INDEX:**

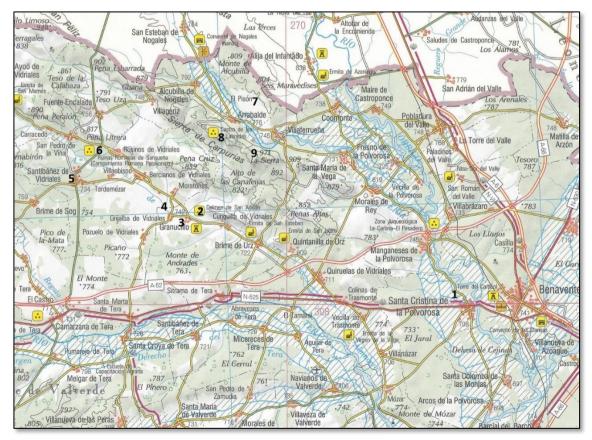
INTRODUCTION	2
First stop: SANTA CRISTINA DE LA POLVOROSA	3
— Centenary sequoia.	
Second stop: GRANUCILLO DE VIDRIALES	5
<ul> <li>— San Adrián Dolmen and San Adrián hermitage</li> </ul>	
Third stop: GRANUCILLO DE VIDRIALES	8
— Palatial medieval castle.	
Fourth stop: GRANUCILLO DE VIDRIALES	11
— Las Peñezuelas Dolmen	
Fifth stop: SANTIBÁÑEZ DE VIDRIALES	13
<ul> <li>— Mr. Romero's centenary secuoias.</li> </ul>	
Sixth stop: ROSINOS DE VIDRIALES	15
— Petavonium Roman camp .	
Seventh stop:: ARRABALDE	19
— Casetón de los Moros Dolmen.	21
Eighth stop:: ARRABALDE	21
Ninth stop: VILLAFERRUEÑA – VILLAGERIZ	27
— Las Labradas wind farm	27
PARTICIPANTS IN THIS INTERDISCIPLINARY PROJECT	31

# INTRODUCTION

This work wants to value the rich historical, biological, geological and human heritage that the Vidriales Valley region offers us, in the province of Zamora.

To carry it out, a group of teachers from the IES León Felipe, Benavente, from different subjects, has coordinated to make a tour of the region, pointing out a series of points of interest where these values can be appreciated and that our students can have knowledge of these. This document shows the basic information necessary to carry out a didactic outing that allows knowing the fundamental aspects from an interdisciplinary point of view.

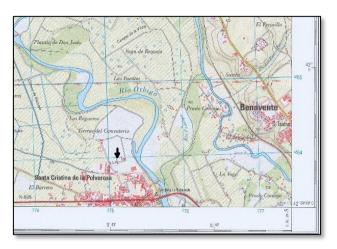
Below is the general route, with the stops that will be individualized later. There are about 60 km in total, which can be done in a single day, and are very well signposted and easily accessible.



Itinerary with stops (from 1 to 9)

# FIRST STOP: SANTA CRISTINA DE LA POLVOROSA.

# **GEOGRAPHICAL COORDINATES** 42º 00′ 19′′ N 05° 42′ 54′′ W 739 metres



Each square is 1 km<sup>2</sup>

# POINT OF INTEREST INFORMATION: CENTENARY SEQUOIA.



Giant sequoia



Needles



Sequoia cone



Beside Cupressaceae

ACCESS: Manganeses de la Polvorosa road detour, in the municipal nursery, very close to the town and are visible from the entire region.

## POINT OF INTEREST INFORMATION

Scientific name: Sequoiadendron giganteum L. Giant sequoia.

Order: Coniferales. Family: Taxodaciae.

Year of plantation: 1928. Height of 36 meters and diameter of the trunk 5.37 meters.

The oldest is 3,200 years old and 105 meters high and comes from California. It is the vegetable with the largest known volume.

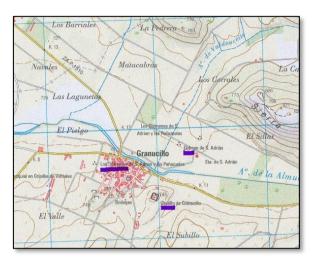
They produce 10,000 cones and about 200,000 seeds. They take 2 years to mature. Further on we will see another sequoia, the red species, with smaller cones. It will be in Santibáñez de Vidriales.

# **ACTIVITIES:**

- 1st- Observe the type of leaf, cone, stem and size of the specimen.
- 2nd- Calculate the height of this conifer by mathematical methods.
- 3rd- Measure the perimeter of the tree at the base and the volume of wood in the trunk.

# SECOND STOP: GRANUCILLO DE VIDRIALES.

**GEOGRAPHICAL COORDINATES :** 42° 03′ 14′′ N 5° 55′ 10′′ W 733 metres



Each square is 1 km<sup>2</sup>

# POINT OF INTEREST: SAN ADRIÁN DOLMEN AND HERMITAGE



Road access to the dolmen



Dolmen



Hermitage



Orthostats

## POINT OF INTEREST INFORMATION:

It is located in the plain of the Almucera stream, taking advantage of a small elevation of the land. It consists of eight slabs and three foundation pits.

The grave goods found in this dolmen are made up of a necklace bead and several slate discoids, an arrowhead and a set of geometric mycoliths, a quartz prism and ceramic fragments from the Bronze Age. To restore it, the orthostats were placed, maintaining their original positions and covering the gaps with new pieces, until completing the perimeter of a circular chamber. The megalithic structure was covered by a circular mound of earth and stones reinforced at its base by a ring of medium-sized stones.

The hermitage, for its part, dates back to the end of the Romanesque period, a very important style in Zamora and along the Vía de la Plata (as a pilgrimage route). It was built in the s. XIII and preserves typical attributes of the style, as well as engravings on the ashlars.

## **REPRESENTATIVE BIOLOGY**

In addition to the two olive trees that can be seen next to the church and the only oak near the dolmen, you can see the maiden grass or <u>Vinca mayor</u> L.



Maiden grass



Holm oak

#### **ACTIVITIES:**

1st- Determine the approximate weight of one of the blocks that make up the dolmen.

2nd- How do you think these megaliths were placed more than 5000 years ago, if at that time there were no cranes or state-of-the-art technology? What knowledge could the men of that time have?

3rd- Calculate the distance, using the topographic map, between the dolmen and the castle.

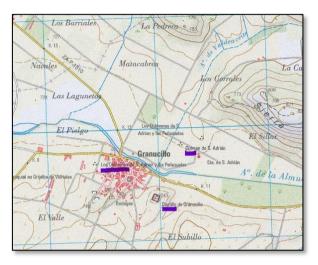
4th- Using compasses, elucidate the orientation of both the dolmen and the church (take the opportunity to explain the importance of the stars in the traditions of both cultures).

5th- Why do you think there are two olive trees planted in the area of the hermitage.

6th- Find the geocache <a href="https://www.geocaching.com/geocache/GC1ZJ8E">https://www.geocaching.com/geocache/GC1ZJ8E</a>

# THIRD STOP: GRANUCILLO DE VIDRIALES.

**GEOGRAPHICAL COORDINATES** 42° 02′ 57′′ N 5° 55′ 30′′ W 740 metrs.



Each square is 1 km<sup>2</sup>

# POINT OF INTEREST: PALATIAL MEDIEVAL CASTLE. PRIVATE TODAY.



Granucillo castle





ACCESS: seen from the road, entering the village, on our left.

# POINT OF INTEREST INFORMATION: GRANUCILLO CASTLE

It is located on a witness hill, next to the Almucera river, at an altitude of 650 m and dates from the 14th century (it is actually known that it is prior to 1446, so it could already be from the 15th century). It became the property of the Counts of Benavente (Pimentel family) in the 15th century. BIC 1949.

It has a square floor plan, with masonry walls, battlements and a semicircular arch at the north entrance. The start of the homage tower is preserved in a dilapidated state. Use last years agricultural livestock, to collect animals.

# **REPRESENTATIVE BIOLOGY**

The area has been modified by the action of man into dryland cereal crops and vineyards and in recent years the presence of a fruit farm can be seen, an area with photovoltaic panels. Next to the castle there are two old abandoned cellars. Own species are identified on roadsides such as <u>Foeniculum vulgare</u> L. or fennel, which smells of anise, <u>Isatis tictoria</u> L. and a <u>Prunus domestica</u> L. plum tree pollinated by a worker bee, <u>Apis</u> <u>mellifera</u> L.



Fennel



Isatis tictoria



Pollination

#### **ACTIVITIES:**:

1st- Appreciate a witness hill and why the castle was built on it. Compare the location with that of the town of Benavente and draw analogies (elevation of the land and geography as an intervening factor in history). Locate more possible defensive systems of the fortress.

2nd- Calculate the perimeter of the castle. Were castles comfortable? Do all castles have a keep?

3rd-What is a BIC?

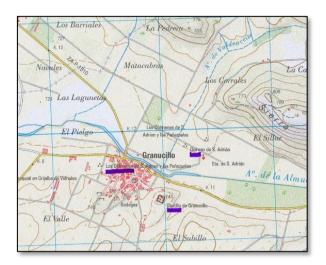
4th- Carry out the chemical analysis of the soil.

5th-Look for a flower in the environment and identify the sepals, petals, stamens and pistil, with the number of each of them. Take a photo of it as detailed as possible and compare it with your partner's..

6th- Find the geocache <u>https://www.geocaching.com/geocache/GC76KTR</u>

# FOURTH STOP: GRANUCILLO DE VIDRIALES.

**GEOGRAPHICAL COORDINATES:** 42° 03′ 04′′ N 5° 55′ 46′′ W 733 metres



Each square is 1 km<sup>2</sup>

POINT OF INTEREST: LAS PEÑEZUELAS DOLMEN



Dolmen



Orthostats

ACCESS: out of town on a dirt road and very close to it.

**INFORMATION** ON THE POINT OF INTEREST: DOLMEN OR BURIAL PLACE.

Approximate age 3500 years before Christ. Built by quartzite orthostats and entrance facing SE.

Excavated by Father Morán in 1930, only 6 original stones remain and the path eliminated part of the site. Data similar to San Adrián village.

# **REPRESENTATIVE BIOLOGY**

This area has been completely transformed for agricultural use and has been plowed up to the vicinity of the dolmen, so that no peculiar and noteworthy flora can be seen. See the photo of April 13, 2022



Current state of the dolmen

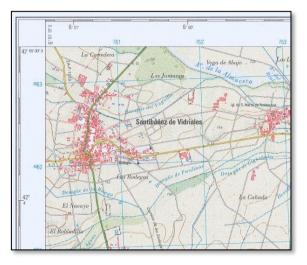
# ACTIVITIES:

- 1st- See the orientation of the dolmen and compare it with that of San Adrián.
- 2nd- Appreciate the importance of preserving our heritage, in this historical case.
- 3rd- Identify some of the characteristic floral species with their parts in the area.

4th- Identify the elements of the periodic table that form the dolmen.

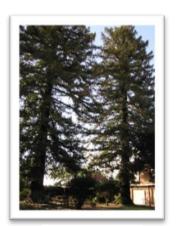
# FIFTH STOP: SANTIBÁÑEZ DE VIDRIALES.

**GEOGRAPHICAL COORDINATES** 42° 04′ 25′′ N 6° 00′ 55′′ W 781 metres



1 side of the square = 1Km

**POINT OF INTEREST:** CENTENARY SEQUOIAS on the property of Mr. Romero.



Red sequoia



Young shoot on the stem of a sequoia



Acicular leaves



Young plant

ACCESS: inside the town, on a private estate, heading towards La Bañeza.

## POINT OF INTEREST INFORMATION: RED SEQUOIAS.

Scientific name: <u>Sequoia sempervirens</u> L.

Age close to 150 years. Heights of 23, 25 and 27 meters. Perimeter about 4 meters.

TienIt has cones 3 cm smaller than the giant. The highest in the world 115 m. Its longevity varies between 1200 and 1800 years.

The shape of the leaves changes with age and its seeds are winged for 100m dispersal.

In the town there is a stone pine, <u>Pinus pinea</u> L., over 100 years old and 15 meters high, near the nursing home.

## **ACTIVITIES**:

1st- Check how the leaves of sequoias vary depending on their age.

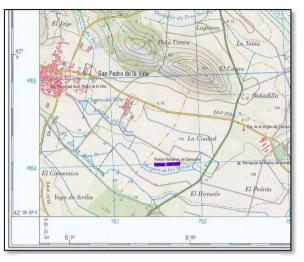
2nd- Measure the perimeter of the tree at the base and the volume of the trunk of the sequoias.

3rd- Find the history of these giants and the uses that man has made of them.

4th- In what other town in Zamora are there several sequoias, together with other trees of floristic interest for the province.

# SIXTH STOP: ROSINOS DE VIDRIALES. CAMPAMENTO PETAVONIUM

# **GEOGRAPHICAL COORDINATES** 42° 05′ 22′′ N 5° 59′ 49′′ W 737 metres



1 side of the square = 1Km

# POINT OF INTEREST: PETAVONIUM ROMAN CAMP



Legion dependencies



Military barracks



Site wall with moat



Legion dependencies



Vigilance towers

**ACCESS:** in the middle of the road between Santibáñez de Vidriales and Rosinos de Vidriales.

#### POINT OF INTEREST INFORMATION: PETAVONIUM.

It is a military compound with an area of 17 hectares (equivalent to 26 soccer fields) and which at the time was occupied by 5,000 legionnaires belonging to the Legio X Gemina.

In 27 BC the Legio X Gemina arrived in Hispania. Its objective was to recount the movements of the Asturian peoples, which caused so many problems for the Romans until their conquest, undertaken by Augustus, in order to establish a stable and uniform administrative organization on the Iberian Peninsula (and Western Europe in general). Other reasons focused on the medium term would be the use of mining resources, especially gold and silver, but also tin since the time of Publius Crassus and Julius Caesar.

The Legio X protected the transport of gold from the Las Médulas gold mines. From this camp the legion carried out various tasks of control, pacification and administration of the territory. It is known that in the year 63 the X legion left Hispania to fight on the Danube border, leaving the camp uninhabited for centuries. At the end of the 1st century, an auxiliary cavalry unit was installed inside the old camp, Wing II Flavia, dedicated to monitoring the trade in gold extracted from the mines in the north. This new camp will be built inside the existing one, and will remain in use until the 3rd century, occupying a quarter of the previous one. Only the outer wall took advantage of the former. Supposedly, because the buildings found in the new camp are attached to the new wall.

In turn, remains of several buildings related to the residence and activities of the troops (crafts, kitchen, food store, etc.) have been discovered. It was common for large groups of civilians to move and establish themselves together with the troops: relatives of the soldiers, merchants, slaves, etc., who accompanied the armies and settled in their vicinity, giving rise to the formation of hamlets. This settlement was the focus of attraction for the indigenous population.

Es This is how an urban nucleus is configured around both camps, mentioned in the classic texts with the name of PETAVONIUM. It had its heyday during the 2nd and 3rd

16

centuries. From the findings it is known that it had its urban center in the surroundings of the current hermitage of Nuestra Señora del Campo, and had a monumental area with public baths and a temple dedicated to Hercules, continuing its existence during the 4th and 5th centuries.

# SAINT PETER OF THE VINEYARD. ROMAN FOUNTAIN

Linked to this point, two kilometers away in San Pedro de la Viña, there is a Roman fountain and the laundry room, which was used much later, is also striking. Have a look at the photos..



Roman fountain



Current washing place

In Rosinos de Vidriales, four towers, a stretch of wall and the decuman gate of the Petavonium camp have been rebuilt, as well as the officers' quarters. The Petavonium archaeological classroom functions as an interpretation center of the historical evolution of the camp-city from its birth to its decline. It is located in the premises of the old schools of the town next to the Town Hall.

At this stop the floristic interest is scarce because it has been transformed by man as farmland and the species that dominate the area are annual herbaceous.

## **ACTIVITIES**:

1st- Identify elements of the periodic table that were used in Roman times, classifying them in their groups.

2nd- Determine the location of the Castro de las Labradas, using a map, from this camp and why you think it was built here.

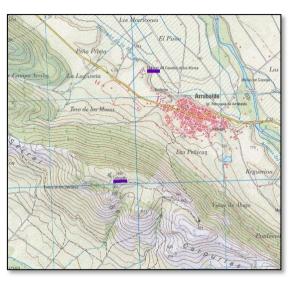
3rd- A compass will be distributed to groups of 4 students to locate the coordinates of the camp, which they will write down in a notebook, along with other curiosities.

4th- A search for clues with a QR code will be carried out in the different parts of the Roman camp. Phone required.

5th- We will have a sandbox where the students will be able to act as archaeologists.

# SEVENTH STOP: ARRABALDE (Casetón de los Moros Dolmen).

**GEOGRAPHICAL COORDINATES** 42°06'45.1"N 5°54'05.1"W 779 metres



Each square is 1 km<sup>2</sup>

# POINT OF INTEREST: CASETÓN DE LOS MOROS DOLMEN





Eria river valley

Dolmen



Casetón de los Moros dolmen

ACCESS: entrance of the town, coming from Alcubilla de Nogales, left margin.

#### INFORMATION ON THE POINT OF INTEREST: DOLMEN OR BURIAL PLACE.

Approximate age 3500 years before Christ, Neolithic. Made up of orthostats, with a circular chamber, with an access corridor in a SE direction. Twelve new stones, rest original.

It is located on a fluvial terrace of the river Eria, which has been left hanging, and has excavated a floodplain or fertile plain, currently used for agriculture. Valley in troughshaped.

Humans are natural and cultural beings. Regardless of the culture to which we belong, there are a series of elements that are repeated, the cultural universals. Among them are the rites (a set of actions that have a symbolic character). Remains of flint tools and some necklace beads were found in the Arrabalde dolmen. It was part of the funerary ritual that the deceased were buried with some objects. It is thought that this construction was used as a collective pantheon of some lineage or social group, although later it could have other non-funerary uses.

There is a great change around the mortuary rites. In the most primitive peoples death caused terror, some of them thought that the spirit could torment the rest of the population. For this reason all his belongings were burned and even his name became taboo. In the Neolithic this conception has been overcome and an interest in dead relatives appears because the wealth of the deceased was inherited.

#### **ACTIVITIES**:

1st- Reflect and compare what Neolithic mortuary rites have in common with those of today.

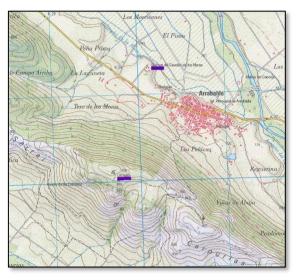
2nd- See the orientation of the dolmen and compare it with that of San Adrián and that of Las Peñezuelas.

3rd- What are fluvial terraces. Identify where the Eria River flows.

20

# **EIGHTH STOP: ARRABALDE (Las Labradas Fort)**

**GEOGRAPHICAL COORDINATES** 42º 06′ 03′′N 05º 54′24′′W 996 metres



Each square is 1 km<sup>2</sup>

POINT OF INTEREST: "LAS LABRADAS" FORT.





Castro wall

Castro restored gate



Castro (inside)



Rest of the old wall

**ACCESS:** high part of the Carpurias mountain, Arrabalde, through a somewhat rocky forest road but you can have access in your private car.

## **INFORMATION** OF THE POINT OF INTEREST: CASTRO.

The site called Castro de Las Labradas is an Astur oppidum from the 2nd Iron Age (second half of the 1st millennium B.C., although the archaeological remains suspect the occupation of the enclave from the 3rd millennium B.C.) located on the highest of the Sierra Carpurias, castro arriscado according to the name coined by Ángel Esparza Arroyo, in the municipality of Arrabalde (Zamora).

It is located on Ordovidian quartzites (metamorphic rock originating from sand deposited 450 million years ago), with a northeast-southeast orientation, which make up the Sierra Carpurias and separate the Vidriales and Eria valleys, with detrital materials from the Tertiary and superficial formations from the Quaternary, gravel, pebbles, sand and silt, mainly. This relief stands out for its great hardness, and whose cliffs served as a natural wall in some sections of its perimeter.

Separated by a deep hollow to the east, the *Pozo los Cuernos*, there is another fort called *El Marron*, which some authors consider to be part of the same Asturian fortification. "*In some aerial frames and in a detailed tour of the terrain, the existence of an underground wall that unites both fortifications can be seen*" according to Patrica Fuentes Melgar.

Without taking this other castro into account, Las Labradas, due to its size and the complexity of its defensive system, is one of the most important in Asturian territory and one of the largest in the entire northwest: Its extension is 23 ha, adding the intermediate space between it and El Marron, the enclave would reach 46 ha. To this must be added the two famous treasures of Arrabalde, found in the 1980s, exponents of pre-Roman archeology in the region and which can be seen in the Archaeological Museum of Zamora.

With the intention of protecting the Las Labradas castro, it was declared an asset of cultural interest in 1988 and declared an Archaeological Zone on February 2, 2006. Jesús C. Misiego Tejada, in the publication *El castro de Las Labradas (Arrabalde, Zamora) : an* 

exceptional example of the defense of a territory against the threat of Rome refers to this enclave in the following terms: «The fort has ceased to be a mere complement to the two exceptional treasures located there, and in a way has become to be a reference of the protohistoric archeology of the peninsular northwest due to its singularity and exceptionality».

The latest actions in the fort correspond to the first decade of this 21st century, with the enhancement of the fort, through the reconstruction of part of its walls, signage of an explanatory itinerary and conditioning of an archaeological classroom in the old schools of Arrabalde.

The identification of this location with the Validissima Civitas de Lancia of the classic texts according to some authors such as Santos Yanguas, Vicente González and Hierro Gárate, has renewed interest in recent years for the Castro de Las Labradas, without, however, being carried out. new archaeological interventions in the area that shed light on this issue.

Other authors, however, consider that the magnitude of the enclave is located only in the period in which Roman legions settled in the area during the *Bellum Asturicum* (c. 25 BC), or at least the *Legio X Gemina* in the nearby site of *Petavonium*, a period in which the surrounding Asturians would take refuge in Las Labradas and which would be abandoned after its conquest, leaving the famous treasures hidden behind.

#### ARRABALDE TREASURE

It was located in Arrabalde, inside "Benavente y los Valles" region, province of Zamora, in the 80th decade from the last century, by chance.

Due to the danger of disappearance of the pieces, part of the General Archeology Subdirection moved the pieces to the Zamora Museum.

Among the pieces, we can mention several torques, fibulas, bracelets and glasses.



This village has important arqueological remains, among them the remains of an Astur settlement from the Iron Age.

# **REPRESENTATIVE BIOLOGY**

The Castro de las Labradas area has great floristic diversity since it has not been transformed for agricultural activities in recent years and we can see species such as those related: <u>Narcisus triandrius</u> L. <u>Narcisus speudonarcisus</u> L. <u>Erica australis</u> L. <u>Sedum sp</u>, <u>Paeonia sp</u>, <u>Chamaespartium tridentatum</u> L .... along with others such as gamón, thyme, lavender, heather, orchids... and the holm oak Quercus ilex as the dominant tree species.



White daffodil

Yellow daffodil

Heather



Sedum

Peony

Bush

#### **ACTIVITIES**:

1st- Investigate the appearance of the two treasures of Arrabalde (1980 and 1987) and the novel El Tesoro, by Miguel Delibes. What special circumstances occurred? Delibes's novel is also about the appearance of a treasure in a town, but it also shows certain social behaviors. What is he criticizing? Do you consider that circumstances have changed since then?

#### Fragment of The Treasure (Editorial Planeta):

—Pablito me llamó anoche desde Valladolid —prosiguió—. El asunto no está claro, pero parece fuera de duda que habrá que indemnizar. Un tipo descubrió el tesoro en un cortafuegos. Según él, tropezó con la tinaja por casualidad, pero yo no me creo esa historia ni loco, oye. Ese tipo ha ido con un detector a por ello. Pero ¿cómo se lo demuestras?

Se afianzó las gafas y miró de reojo a Jero. Añadió:

-El asunto parece importante, oye. Nunca he visto a Pablito tan aturdido. Habla de docenas de torques, brazaletes y broches del siglo I antes de Cristo. ¡Vete a saber! Tiene al tipo con él, claro. Un tal don Lino, un abogado doblado de agricultor, de Pobladura de Anta. ¡Buena pieza! -rió-. El tipo lo descubrió el miércoles pasado, échale, pero ha estado callado, a lo zorro, hasta ayer, que no se sabe por qué se acoquinó y telefoneó a Pablito. Al parecer, Pablito y él se conocen de atrás. El tal don Lino pretendía callarse, pero a última hora lo pensó mejor y se arrugó. Pablito, naturalmente, porfía que el hallazgo fue casual pero yo no me lo trago ni loco. Ese tipo fue con el detector, eso no hay quien me lo saque de la cabeza. Está demasiado pateado ese castro como para admitir una tinaja en superficie sin que nadie lo haya advertido antes. 2nd-Identify, if conditions allow, a plant species adapted to different environments in the area and with different sizes: herbaceous, bulbous, thicket, shrub, tree, rock...

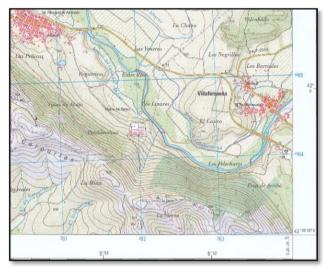
3rd Climb a route at the Arrabalde climbing school. Here you have the sketch of climbing routes equipped by the Club Deportivo Montañero Benaventano <u>https://cdmb.es/guias/</u>

4th What are the torques?

5th What were the fibulas used for?

6th Find the geocache https://www.geocaching.com/geocache/GC1C82H

# NINTH STOP: VILLAFERRUEÑA - VILLAGERIZ



**GEOGRAPHICAL COORDINATES :** 42º 05´20´´ N 05º 52´57´´ W 950 metres

Each square is 1 km<sup>2</sup>

# POINT OF INTEREST: LAS LABRADAS WIND FARM



Wind park

Carpurias mountain range



Wind park in Villageriz area. At the other side of las Labradas fort.

**ACCESS:** It can be seen at the top of the mountain range from various points along the route. The easiest access route is to take the Benavente – Alcubilla de Nogales highway at km 19, at the Villaferrueña crossroads, turn left towards Brime de Urz. After about four kilometres, there will be a path on the right where we will find a sign indicating access to the Park, which will be from that moment on dirt roads.

**INFORMATION** ON THE POINT OF INTEREST: Las Labradas wind farm.

It owes its name to the Castro de las Labradas. It is located on the Sierra Carpurias, on land belonging to 4 municipalities: Alcubilla de Nogales, Arrabalde, Villaferrueña and Villageriz., and it is a place with constant movements of air masses throughout the year.

The connection date was December 12, 2001 and the inauguration date was October 4, 2002. Initially, 28 Gamesa G52-850kW model wind turbines were installed (52 m turning diameter, 44 m tower height).

On November 13, 2003, the Expansion of the Labradas Wind Farm was connected with 15 more model G58-850kW wind turbines (blades 3 meters longer).

After the two extensions, it has a total installed capacity of 36.55MW, enough to supply electricity to more than 25,000 families, that is, it has the capacity to supply energy to practically the entire region if the wind conditions are suitable.

## **REPRESENTATIVE BIOLOGY**

The area of the wind turbines corresponds to the highest parts of the mountain range and in it the oak forest has been replaced by pines: <u>Pinus pinaster</u> L. but rockroses are still seen: <u>Cistus ladanifer</u> L. lavenders: <u>Lavandula stoechas</u> L. thymes: <u>Thymus</u> sp ... as reflected here ...



Pine tree



Rock rose



Aromatic plant

# **ACTIVITIES**:

1st- Locate the substation and medium voltage line where the energy produced comes out. Could you tell how far that line goes and to which urban substation it is connected? (Answer: substation in Benavente, on Ctra. León).



2nd- If each wind turbine has the capacity to produce 850 kW and each family consumes an average of 1.5 kW, for how many homes will it be producing at the time the wind farm is being observed?

3rd- Do you observe any wind turbine stopped despite there being wind? How do you get it? What will be the reason? (Answer: the blades rotate parallel to the wind, possibly for maintenance reasons).

4th-Despite being an area with constant air movements, in the highest part of the Sierra Carpurias, Las Labradas (996 m), no wind turbine was installed. Could you say why? (Answer: the protected historic site of Castro de las Labradas is located in this area. As it does not have protection, if wind turbines were installed to the southwest, in Castro de La Torre and where the Iron Mine exploited by Asturians and and which gives its name to the town of Villaferrueña. Its construction in this area destroyed part of the archaeological remains of this fort now linked to Las Labradas).

5th- Benefits and damages caused by the wind farm (possible answers: energy production with little or no CO2 emission, visual impact, impact on cultural heritage (in fact, they were not installed in the Castro de las Labradas, but now there are studies that extend the perimeter of the castro and are now deteriorated by the infrastructure, for example, the environment of the pre-Roman iron mine that gives Villaferrueña its name), effects on fauna, especially birds).

6th- Identify other types of renewable energy that could be installed in the area (Answer: solar photovoltaic, mini-hydraulic...).

7th- What applications do the species you see have for man and their usefulness over time.

# PARTICIPANTS IN THIS INTERDISCIPLINARY PROJECT

This work has been developed by teachers of the IES León Felipe, Benavente, during the current academic year 2021-2022, with the intention of giving visibility and valuing the rich historical, landscape, geomorphological, floristic, ethnographic heritage... of the region of the Vidriales valley and for this the following teachers have participated:

- Dª. Tania Velasco Mota, Phylosophy department.
- D<sup>a</sup>. Pilar Fernández Mateos, Physics and Chemistry department.
- D<sup>a</sup>. María Pilar Gutiérrez Álvarez, Biology and Geology department.
- D.- José María Prieto Ramos, Biology and Geology department
- Dª.- Rosa María Barreñada Baños, Counselling department.
- Dª.- Roxana Pérez Hidalgo, Spanish Language and Literature department
- D.- Emilio Grande del Canto, Technology department.
- Dª.- Manuela Nieto Quintanilla, History department.
- D.- Ángel Alfonso Díez Rojo, History department.
- Dª.- Josefa Alonso Álvarez, English department.
- D.- Javier Prieto Paramio, Physical Education department.
- D.- David Engels, French department.