HeiM HERITAGE IN MOTION

INNOVATIVE METHODOLOGIES FOR ADULT EDUCATION IN CULTURAL HERITAGE & ACTIVE AGEING

Co-funded by the Erasmus+ Programme of the European Union

Serra Gelada and the Roman Villa of l'Albir

ROUTE SP 5

Presentation of the route

Serra Gelada is a unique place due to its strategic location, its geological singularity and its flora micro-reserves. Features like these earned it the declaration as the first maritime-terrestrial Natural Park in the Valencian Autonomous Region, where it also stands out for being the most visited protected natural area.

Optimal for various fauna and flora species, this rugged landscape characterized by ravines, slopes, lack of water or poor soils did not allow humans to settle permanently in the mountains.

Romans began to settle Hispania from 218 B.C. The Roman Villa of L'Albir, located in the municipality of L'Alfàs del Pi, is one of the archaeological sites which has preserved evidence about what life was like in a rural property during the last phase of the Roman Empire. Although the flat lands near the sea offered a more favourable terrain for settlement, the mountains offered resources that were difficult to ignore.

The proposed route follows the path of L'Albir lighthouse, which already has many explanatory panels on different subjects. On this route, however, we will observe the environment from a completely new perspective, stopping to enjoy some elements of the landscape in Serra Gelada and commenting on utilities, curiosities or legends that were known by Romans centuries ago.

This tour will be followed by a visit to the Open-Air Museum of the Roman Villa of L'Albir, which shows how the mountain resources were used. This can help us better understand Romans' lifestyle with the help of the new technologies offered by the museum.

The total route length is nearly 7 km on even surfaces, with 92-meter difference in level. It takes about four hours.

- https://www.youtube.com/watch?v=ZyY0WdGRaKM

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Waypoint	Lighthouse road
   	The HeiM Project aims to design active and healthy routes; hence why we will start the itinerary at the beginning of Camí Vell del Far Street, and then walk up to Serra Gelada Natural Park and follow the path along which Romans used to walk.

Parking	Entrance to Serra Gelada Natural Park
   	Access to the natural park is free. There are parking spaces for those who decide to start the walk from this point. Electric wheelchairs are allowed, as well as bicycles and non-motorised vehicles. Toilets are available in the information building, though not inside the park. Together with a recreational area placed at the disposal of visitors at the entrance to the park with tables, benches and a drinking water fountain, there are plenty of benches and shaded areas along the way where they can take a break. Despite the fact that some plants may temporarily or permanently disappear from the coordinates where they have been located, there is a wide representation of them all around the park and it will not be difficult to find new specimens. Finally, it is worth highlighting that a number of properties that Romans attributed to plants have not been scientifically proven.

Fountain	Aleppo pine (Pinus halepensis)
  	We start this route with the most symbolic tree of this population: the pine tree. Although those we can see at the entrance to the park come from reforestation, pines were one of the most frequent trees on the dry Mediterranean coast in Roman times. Albeit smaller than Scots pine (Pinus pinea), its pine nuts were also consumed in times of scarcity. Brutia wine, a resinous wine firstly famous in Greece and subsequently in Rome, was made by flavouring it with pine resin. According to Pliny and Columella, Hispania wine was particularly appreciated because it did not go sour. The resin obtained by distillation, known as Greek fish, was used for waterproofing. In addition, Greek fish was part of the psilothrum and dropax, creams with which the Romans waxed their armpits and legs. It often appeared in Roman gardens as an ornamental tree and Marcial, the

	Spanish poet, wrote that there was no greater pride for an owner than a leafy pine forest.

Waypoint	Cat's Claw (Sedum sediforme)
  	Both sides of the road show us this crass plant that stores water inside so that it can survive in times of drought. It is a sub-crop species, i.e. it can grow not only on rocky areas with little substrate but also on esparto grass, and even on walls and roofs. Valencian folklore has left the song: "Què coses més bones / que cria el Senyor: / per dalt les teulades / raïm de pastor" [Such good things / are raised by the Lord: / above roofs / cat's claw]. Romans soaked the seeds of cereals with water and cat's claw juice for one night before planting them. This prevented underground pests from gnawing at the roots of already-grown corn ears. Crushed or boiled, sedum leaves were used as a healing plaster, especially for iron wounds or burns. These leaves, which were macerated in vinegar to be consumed with season food, served to marinate olives too. The custom of scalding cat's claws, pickling them in salt and vinegar and eating them as an appetiser or to accompany salads, still survives on the northern coast of the Alicante province.

Waypoint	Friar's lamps (Arisarum vulgare)
 	Friar's lamps spread out on the right side of the path, permanently looking for the most fertile soil and the shade of bushes or rocks. Lamps have an unpleasant smell and bulbs which are toxic to humans; however, they were cooked and eaten for their starch during shortage times. Some wild animals, such as wild boars, eat both the bulb and the berry clusters that appear at the end of the summer. Romans prepared poultices to cure skin ulcers, to close and heal fistulas, and to sterilize animals.

Waypoint	Esparto (Stipa tenacissima)
   	Esparto is a grass plant like wheat, barley or oats; however, unlike them, it has a perennial nature and can fix and regenerate skeletal soils. This plant extends over large areas, forming atochares like the one we can see at the bottom of the slope on our right. Its fibre, native to Southeast Spain and Northern Africa, was already used to make fabrics in the Iberian Peninsula at least 7,000 years ago. When Romans arrived in Hispania, they discovered the multiple uses of esparto grass and promoted its cultivation, transformation and exportation. The plant leaves, also known as atocha, proved useful to make baskets, sluices, curtains, sacks and the

	ropes needed for industry, construction and navigation. Roman writers tell us that esparto grass was utilised to fill mattresses as well as to prepare torches and shoes; and shepherds even made their own clothes with it.

Waypoint	Sarsaparilla (Smilax aspera)
   	Sarsaparilla is a climbing plant with bright green leaves and often thorny edges. It appears in shady places, where it seeks protection from other plants, becomes entangled in them and climbs to find light. Its fruits are arranged in clusters, this bramble thus looking like a grill (small vine). Romans used it as a protective amulet, and it served to prepare an antidote against deadly poisons. The leaves and its ground fruits were also given to new-born babies to help them develop immunity against poisons. However, the most widely used medicinal part was the root, to which Dioscorides —Emperor Nero's physician— attributed tonic and aphrodisiac properties.

Waypoint	Coscoja/Kermes oak (Quercus coccifera)
	The low rainfall levels recorded in Serra Gelada —below 400 l/m²— explains why kermes oak is the only species belonging to the Quercus genus that can develop on its slopes. Tanners valued the tannins extracted from its root and bark to work and dye the leather, while women to used them to darken their hair. Kermes oak was one of the most widely used plants for making charcoal due to its high calorific value. However, the most appreciated dye offered by coscoja/kermes oak was that produced by kermes, an insect which lays its eggs on the leaves to feed its larvae. As a defence, the plant creates a gill, a kind of insulating capsule called "kermes grana", where the young concentrate. After the dye —which only females can generate— had been extracted, it was mixed with vinegar and dried in the sun. The dye obtained, of a maroon or crimson colour, was reserved for the clothing of the Roman elite (e.g. senators' tunics, generals' cloaks…). Grana in turn allowed poorer Hispanics to pay half of their taxes; and it was a lucrative business for rich.

Waypoint	Asparagus plant (Asparragus acutifolius)
 	Asparagus has been cultivated in Egypt for over 6,000 years, but it was apparently the Romans who extended its cultivation all over the Mediterranean. Here can be found up to three species of asparagus, all of them edible. The straight, thicker garden asparagus (Asparragus officinalis) has nothing to do with the thin, slightly bitter wild asparagus.

	This area features all three edible varieties on the edges of roads or in the middle of terraces, protected by thorns, and associated with kermes oaks, junipers or hawthorns. Asparagus was present in Roman cuisine: Cato explains its growing in great detail and Apicius suggests several recipes made with this vegetable in his cookbook "De re coquinaria". The consumption of asparagus in Hispania declined at the same time as Roman culture.

Mine	Ochres
    	After almost 2 km, a narrow path with stone steps leads to the ochre mines. Being in good physical shape becomes a must for you to do this easily. Romans must have already extracted yellow ochre —or limonite— and red ochre —or almagre— from the mines in Serra Gelada. These minerals have been used since prehistoric times in cave paintings and funeral rituals or to decorate ceramics, amongst other purposes. Cinnabar was used to achieve the intense red colour of friezes and wall paintings in the most affluent Roman houses. Nevertheless, while a pound (327 g) of cinnabar cost 70 sesterces by law, one of ochre was worth between 30 and 48 sesterces, which made it more affordable. In the early fourth century, house painters charged 75 dinars a day, while an imaginarium (imaginary artist) entrusted with decorating walls with scenes earned a daily wage of 150 dinars. Roman women used plaster or albayalde (lead carbonate) to make their skin white, malachite as eye shadow, and ochre mixed with oil to give colour to their cheeks and lips, because they did not known how toxic all these products were.

Fauna	Dolphins (Tursiops truncatus)
    	Greeks and Romans regarded dolphins as gods' animals and as a symbol of good luck too; so, pay attention and see if you can identify one from this vantage point. Mythology tells numerous stories about these animals, including that of god Apollo who, converted into a dolphin, founded the sanctuary at Delphi where the faithful could learn about their future. Pliny claimed that no animal was faster than a dolphin, not even birds. For that reason, they became the messengers of Neptune, god of the sea. Romans had a deep knowledge of these animals and appreciated them: they knew that dolphins were friendly mammals, that they lived ca. 30 years, and even that they loved the music of hydraulic organs. Roman fishermen believed that dolphins came closer to boats to help them in their work. The real reason, though, was the same one that still brings them to these waters today: the search for food. The nearby fish farms are a suitable place to achieve that food. A final piece of advice: if you have not seen any

	dolphins yet, try calling them as Romans did: "Simone, Simone!" And good luck!

Waypoint	Mastic (Pistacia lentiscus)
  	Mastic is a common perennial species along the Mediterranean coastline due to its tolerance to salinity and water shortage. This plant usually develops as a shrub reaching a height of up to 2 m, but it can grow into a tree as well. Although most of its tree forms disappeared from Spanish coasts because they were used to make charcoal, both mastic trees and mastic bushes are present in the park. Mastic or tears of Chios, a resin extracted from the mastic tree trunk, was highly appreciated in the Greco-Roman world, to such an extent that the Eastern Roman Emperor monopolised its trade. Mastic dissolves well in alcohol, and Romans used it to aromatise wines —amongst others, the so-called "marvellous wine" (conditum paradoxum)— with pepper, laurel, saffron and dates. Romans used this resin to whet the appetite. In the 2nd century, the writer and comedian Luciano de Samosata criticised its use by the rich before going to banquets: "You are hungry, and you still want to chew mastic?! Mastic tree was an oral hygiene product too: its resin was chewed to avoid bad breath and to strengthen the gums, wooden sticks serving as toothpicks. Women would mix the resin with other cosmetics to make their faces look shiny and for eyelash firming too. Blackbirds fed on mastic fruits, amongst other things, and cooks sought after these birds to prepare one of the most sophisticated delicacies in Roman gastronomy: blackbird tongue cake.

Waypoint	Carob tree (Ceratonia siliqua)
 	This tree is perfectly adapted to the rocky and low-quality soil cliffs of Serra Gelada. Animals also eat the lower leaves, but the interest as far as humans are concerned lies in its fruits —horn-shaped pods known as keratos. Poor Romans kept them on the roofs of their houses and, together with lupins, they were their staple food in times of shortage. Green pods were used as a therapy against constipation because of their fibre content. Egyptians used ripe pods to produce molasses; in addition, tannins made them suitable to treat diarrhoea and stomach problems. Carob seed was used as a weight measure for its uniform value —between 195 and 199 g— in Rome, under the name of carat (keration). In the 4th century, the time of greatest splendour for the Roman Villa of L'Albir, Emperor Constantine added new pieces to the Roman monetary system. To quote but two of them, the siliqua was a one-carat silver coin, and the solidum, made of solid gold, was divided into 24 siliquas or carats. Carob seeds were likewise used to weigh pearls, precious stones, medicines or exotic

	spices such as pepper. Today they are the basis of locust bean gum or E410, one of the best food thickeners.

Waypoint	Lavender (Lavandula dentata)
	The dry and sunny limestone soils are ideal for the development of lavender, a melliferous plant with numerous species. Pliny, Roman procurator in Hispania, described what lavender is believed to be as one of the most widely used plants in Roman times, both because of its perfume and for its medicinal properties. Perfumes, usually burned in censers, were criticised by more austere Romans, who considered it a waste to pay for something that vanished into thin air (pro fumo); this did not stop perfumes being used, though. In the case of cosmetics for the elite, perfumes were made with good quality oils and the essence of flowers such as rose, tuberose or lavender; oils of poor quality and plants such as fragrant reed were used for popular classes' perfumes instead. Lavender was often planted in gardens, and its dried flowers served to keep the most troublesome insects out of the house and to protect clothes from moths.

Waypoint	Sea fennel (Crithmum maritimum)
	The popular name for this wild species stems from its similarity to common fennel (Foeniculum vulgare). It grows in poor, stony soil and in rock crevices, usually near the sea. Its great resistance to drought is due, on the one hand, to the fact that its roots penetrate deeply into moist soil; and, on the other hand, to its fleshy leaves —covered with a waxy surface— which protect the plant from water evaporation and salt penetration. Between July and September, when the heat is more intense and most of the vegetation begins to languish, the sea fennel fills the cliffs with white flowers. Its intense aroma, between fennel and mint, gave it a place in Roman gastronomy. Columella, the Roman agronomist born in Gades (present-day Cadiz), explains how the tender leaves and the stem —or "pie de Milano"— were pickled in two parts of vinegar and one part of a strong brine to remove the bitterness and keep them preserved. The sprouts were also eaten fresh or cooked. The fruit, the leaves and the roots in infusion, decoction or in wine, proved useful in diuretic and hepatic treatments. A few of these uses have remained in the Mediterranean for centuries until today. In turn, mass harvesting has threatened the survival of sea fennel; hence the decision to turn it into a protected species adopted by some regions.

Waypoint	Juniper, cade (Juniperus oxycedrus)
   	Pliny the Elder distinguishes two varieties of juniper, the largest of which grows in Serra Gelada. This variety, which can be a medium-sized tree, was named after its sharp leaves (oxus - spike). Greeks had already known about its resin —converted into cedria oil (or cade oil for Romans) after distillation— at least since the 5th century BC. Archaeology has confirmed that Egyptians used this oil to embalm and anoint corpses. In livestock farming, it served to cure animal scabies, to remove ticks and to heal the wounds suffered by sheep during shearing. And as a fungicide, it protected objects such as wooden statues or books from woodworm. As for juniper wood, it was used as an incense to purify the air and cleanse it of disease. Its endurance made it suitable for building walls and towers or for shoring up underground works. Pliny the Elder tells us that the juniper columns at the Temple of Diana in Sagunto were still in use after two hundred years. The resin obtained by distillation was the tar or caulking used for coating and waterproofing boats and containers.

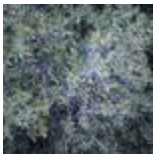
Waypoint	Dwarf palm, European fan palm (Chamaerops humilis)
  	Dwarf palm stands out for being the only autochthonous palm species in the Iberian Peninsula. Fan palm leaves were used for basketwork and various textiles, on its own or associated with esparto and palm (Phoenix dactylifera). Its tender buds and fruit shoots are edible —they become rough and astringent later— and sucrose can be obtained from its roots. In the old days, it was used in gardening as an ornamental shrub.

Panorama	Amerador Cove (Cala del Amerador)
 	The esparto grass industry started with the harvest in July and August, and the subsequent drying of beams in the sun. Although it could be used green —i.e. freshly harvested— the most usual thing was to "cook" it or "dunk" it by putting the esparto grass bundles in sea water for thirty or forty days to soften them. In L'Albir, dried esparto grass was "cooked" in Cala del Amerador, far from the inhabited area, to keep the intense smell of the soaked plant away from the people who lived there. After taking it out of the water, esparto grass was spread out in the sun in bundles, and once dried, it went through "picado" (chopping), a process during which fibres were hit with sledgehammers to detach their hard parts. Finally, the procedure known as 'raking' or 'combing' served to remove the impurities

	that had been detached during the grinding, after which esparto grass was ready to be woven. Due to the abundance of raw material, the ease of transformation and its resistance to humidity, the nets with which Romans fished in L'Albir were undoubtedly made of esparto grass.

Waypoint	Rosemary (Rosmarinus oficcinalis)
  	Being a shrub that does not require much water, rosemary grows all over the Mediterranean. Many powers were assigned to rosemary in ancient times, including those of fostering love, fertility and fidelity. Seeking to attract these gifts, brides and bridegrooms often wore rosemary crowns at wedding ceremonies. This plant also formed part of funeral rituals, being placed in the arms of the deceased or in their graves to symbolise immortality. Rosemary was offered to worship gods and lares —the divinities that protected the home. Rosemary crowns were highly appreciated for their power to stimulate memory and to improve Greek and Roman students' concentration. Besides, placing this plant under the pillow or blocking the ears during the night granted protection against evil spirits and nightmares. Rosemary was a must in the kitchen, both for preserving meat and for disinfecting and seasoning food: game marinades, ham seasoning, piglet stuffing, wine flavouring... In medicine, it was recommended as a remedy for stomach, liver and spleen diseases. According to Hippocrates, a Greek physician of the 5th century BC, vegetables should be cooked with rosemary to avoid problems in those organs. Mixed with oil, it had healing and muscle-relaxing properties, and a lotion against dandruff and hair loss could be made by combining rosemary with other plants and berries. It was used in gardening, either on its own or shaping hedges.

Waypoint	Rue (Ruta angustifolia)
  	The properties of rue, especially the one which could induce abortion if consumed in large doses, were already known in antiquity. Romans regarded it as magical and, mixed with wine, as a protection against poisons. It was part of gardens as an ornamental, insecticide and aromatic plant. Pliny tells us that Roman painters used it to succeed in improving their creativity, since it was considered a mental stimulant. In the kitchen, it was not only prepared as a salad but also added as a spice into various recipes, amongst them moretum —a cheese paste that served as an accompaniment to other dishes and was consumed by Roman peasants for breakfast.

Waypoint	Olive tree (Olea europea)
  	Perhaps no tree represents the Mediterranean world better than the olive tree. Although it had already been cultivated by Phoenicians and Greeks, Romans spread its products all over the Empire. The specimens that we can see here were replanted in the park some years ago. The wild variety —wild olive tree— grew freely in fields without the need for farmers' care. Columella and Pliny left an extensive work that allows us to acquire an in-depth knowledge about olive grove cultivation. Apart from the use of wood or olives in Roman diet, the most appreciated product was oil, which appeared in many aspects of everyday life: e.g. lighting, toilets, cosmetics, cooking or offerings, to quote but a few. Hispanic oil was one of the most demanded products in the capital of the Empire, as evidenced by Mount Testaccio —artificially created with the ceramic waste from the oil amphoras that came mainly from Hispania. The allegorical image of Hispania —which could be no other than an olive branch— was established in the second century, during the Hispanic Emperor Hadrian's reign.

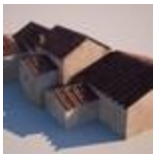
Waypoint	Former Police Barracks
    	Prior to arriving at the museum, a stop is proposed at the garden of the former Police Barracks which features many of the park plants —olive tree, dwarf palm, lavender, rosemary and even a vine, one of the key plants for the Roman Villa's economy— grow in an orderly manner.

Museum	Open Air Museum "Roman Villa of L'Albir"
 	Alfàs del Pi Town Council has preserved in this museum the archaeological remains of a rural villa which was in use between the 4th and 5th centuries AD —i.e. during the Roman Empire. This villa a mare, owned by a family belonging to the Roman social elite, was a farm located closer to the sea than it is today. It can be deduced from the objects found


during the excavations that the vine, the olive tree and fishing were the bases of its industrial production dedicated to local commercialisation: iron pruning hooks for vines and oil press elements, along with numerous hooks and weights of fishing nets. After the tour of Serra Gelada, we can picture how resources could have been implemented in agricultural work. They used esparto grass or dwarf palm leaves to weave the tools needed to produce wine and oil, as well as for fishing and navigation: baskets for vine and olive harvesting; packsaddles and serones [baskets with four handles] for transport; pressing mats for oil and wine presses; nets for fish; ropes for the boats that carried the goods. Juniper tar would waterproof boats and nets, while pine pitch did so with amphorae, barrels and wine skins.

Archaeological site	Virtual reconstruction of the roman baths



In addition to the rustic part dedicated to commercial exploitation, these villas had a luxurious residential area. Commercial agreements were discussed and closed in each entrepreneur's property, success directly depending on their public image as well as the ability to impress their respective partners or clients. That is why the owner carried out refurbishments in some of its buildings in the 5th century AD. Being well aware of the difficulty to interpret the archaeological remains, the technicians working at the Villa Romana of L'Albir have applied the most modern technology, so that what visitors can see resembles as much as possible what they looked like when they were inhabited. When it comes to the baths, users have at their disposal an augmented-reality-based guide that allows them to enter the different rooms and see their reconstruction and recreation without losing sight of the original remains preserved.

Archaeological site	The functioning of thermal baths



First of all, the ovens needed plenty of wood to heat the water of pools. They had many varieties of firewood —mastic, juniper, pine, wild olive…— in Serra Gelada. Within the baths circuit, it is worth stopping at the tepidarium (warm room), where one of the owner's servants massaged guests with oil —most probably olive oil here. The use of oils not only had therapeutic and relaxing properties but also served to clean the body, since Romans did not use soap for body hygiene. To promote a cosy atmosphere as well as to make business success easier, the hot water bath in the caldarium (hot and steamy room) could be scented with the relaxing aroma of lavender. The owner's towels or clothes might also give off this scent, as clothes were stored with lavender flowers to keep the

	moths away. The hostess, who would later join the guests at the banquet, would put herself in the hands of her ornatrix to offer her best image. After depilating her with an ointment based on Greek tar dissolved in oil, the maid never forgot to complete her make-up with ochre dissolved in oil, which she used to apply on her lady's cheeks; the crimson of kermes oak or wine dregs would bring out the red of her lips, and the mastic resin on her face and eyelashes provided a shining touch. The owner usually dressed up for the occasion too, using rosemary lotion to combat dandruff and hair loss, choosing his best tunic and the leather shoes that the local tanner looked after with kermes oak tannins.

Archaeological site	The banquet room
 	Both the owners and their guests would finally go to the oecus, the most sumptuous room in the house dedicated to banquets. The real visit to Villa de L'Albir is completed with a virtual one —special VR glasses allow us to attend the party as if we were guests. This room's walls probably boasted paintings of natural scenes or landscapes. The family would pay their good solids to the best imaginarius in the area, who used to put the limonite and ochre taken from Sierra Helada mines on his palette. The natural scenery and a little bit of rue would inspire him to paint the blossoming trees and bushes that decorated the large room. As for the menu, if the season was favourable, we would suggest a recipe of wild asparagus in a tasty sauce as a gustatio or a starter, together with olives from their own trees seasoned with sea fennel and rosemary. Fresh fish —regarded as a delicacy— would be the main dish seasoned with salt and pepper (carefully weighed with carob seeds). To impress with its products, the convivium (banquet) never lacked a wonderful wine flavoured with mastic and oil produced by the host himself. Satisfied with the meeting outcome, the lord of the villa was able to borrow Pliny's words and say: "Two liquids exist which are especially pleasant for the human body: wine on the inside and oil on the outside. They are both the most outstanding products of trees, but oil is an absolute necessity, and man has not erred in devoting his efforts to obtain it." To cut a long story short, with such care for detail, and especially in view of the remains that have come down to us, there is no doubt whatsoever that the owners of Villa Romana de L'Albir managed to close many succulent deals.