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UNIVERSITAT  
POLITÈCNICA  
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## **Analysis and proposals for the recreation improvement in the *Les Rodanes* Natural Site in *Vilamarxant* (Valencia, Spain)**

TRABAJO FIN DE MÁSTER

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## Abstract

### **Analysis and proposals for the recreation improvement in the *Les Rodanes* Natural Site in *Vilamarxant* (Valencia, Spain)**

The aim of this project, based on the Management Plans for Natural Resources in Spain, is to analyze the area of *Les Rodanes* Natural Site in the region of *Vilamarxant*, Valencia, at historical, economic, environmental and natural levels to determine which aspects can be improved or maximized and which should be changed.

To accomplish a better analysis and to have a better understanding of the site, all of the area of the Natural Park that includes *Les Rodanes* (Túria River Natural Park) is taken into consideration. Then, focusing on the Natural Site of *Les Rodanes*, a SWOT analysis for recreational potential in the area is done, which includes the conclusions and main objectives.

The result of the project is a series of improvement proposals for the recreation activities that are focused on a sustainable development in *Les Rodanes*.

**Key words:** leisure, public use, environment, sustainable development, protected areas, SWOT analysis

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# Resumen

## **Análisis y propuestas de mejora para la actividad recreativa en el Paraje Natural de Les Rodanes (Vilamarxant, España)**

El objetivo de este proyecto, que se fundamenta en los Planes de Gestión de Recursos Naturales en España, es analizar las actividades de ocio del área del Paraje Natural de Les Rodanes en el término municipal de Vilamarxant, en la provincia de València, desde una perspectiva histórica, económica, ambiental y natural para determinar qué aspectos de las actividades recreativas pueden ser mejorados.

Se toma como ámbito del análisis, la totalidad del área del Parque Natural en la que se incluye Les Rodanes (Parque Natural del Río Túria), para lograr una mejor comprensión de la zona. A continuación, centrándose en el Paraje Natural de Les Rodanes, se realiza un análisis DAFO para determinar el potencial recreativo en la zona, que incluye las estrategias y los principales objetivos.

El resultado del trabajo es una serie de propuestas específicas de mejora para la recreación que mantengan un desarrollo sostenible en Les Rodanes.

**Palabras clave:** ocio, uso público, medio ambiente, desarrollo sostenible, análisis DAFO, áreas protegidas

Ana Trilles Andreo

*To my tutors, from Spain and in special from Brno, for being patient with me and helping me to work this out in the best way possible.*

*To my brother and parents that never stop believing in me, especially to the second ones, who have made possible for me to live such an experience as an Erasmus here.*

*And last but of course not least, to my roommates Kata and Inés,*

*For being always there as help or support,*

*And for being the best roommates I could ever have.*

*And to Javi,*

*Because he never stops encouraging me to do my best and gets the best out of me.*

*My most sincere appreciation.*

*Brno, 16 of May of 2018*

# INDEX

1.	INTRODUCTION .....	8
2.	GOAL AND AIM .....	9
3.	BACKGROUND INFORMATION.....	10
4.	METHODOLOGY .....	13
5.	DESCRIPTION.....	15
5.1.	Túria River Natural Park.....	15
5.2.	<i>Les Rodanes</i> Natural Site.....	19
	<b>Public and recreational use infrastructures in <i>Les Rodanes</i></b> .....	20
5.3.	Abiotic environment .....	22
	<b>Climatology</b> .....	22
	<b>Geology</b> .....	22
	<b>Geomorphology</b> .....	23
	<b>Hydrology</b> .....	23
	<b>Soils</b> .....	24
5.4.	Biotic medium .....	24
	<b>Flora</b> .....	24
	<b>Fauna</b> .....	26
6.	RESULTS AND DISSCUSION .....	27
6.1.	SWOT analysis .....	29
6.2.	Improvement proposals.....	36
7.	LIMITATIONS OF THE STUDY.....	40
8.	CONCLUSSIONS .....	41
9.	REFERENCES .....	43
10.	ANEXES.....	45
10.1.	Annex I .....	45
10.2.	Annex II .....	49
10.3.	Annex III.....	54
10.4.	Annex IV .....	63

## INDEX OF FIGURES

- Fig. 1:** Location of the Park (PORN of the Túria River Natural Park)
- Fig. 2:** Surface of the park in each region (PORN of the Túria River Natural Park)
- Fig. 3:** Roads to access the park (Valencian Cartographic Institute, viewer)
- Fig. 4:** Túria River in Pedralba municipality (Wikipedia.org)
- Fig. 5:** "La Vallesa" (tourism website for excursions)
- Fig. 6:** Visitors center from the Túria River Natural Park (Image from google maps)
- Fig. 7:** *Les Rodanes* Natural Site (Valencian Cartographic Institute, viewer)
- Fig. 8:** *Ulex parviflorus* (es.wikipedia.org)
- Fig. 9:** *Quercus coccifera* (es.wikipedia.org)
- Fig. 10:** *Falco tinnunculus* (avesrapaces.wiki, website for raptor birds)
- Fig. 11:** *Otus scops* (image of Valentín Moreno in "Projecte Mussols")
- Fig. 12:** Natural and anthropic dynamics scheme in *Les Rodanes* (own elaboration)
- Fig. 13:** Anthropic factors near the Natural Site (own elaboration)

## INDEX OF TABLES

**Table 1:** Methodology calendar

**Table 2:** SWOT analysis in the touristic point of view

**Table 3:** SWOT analysis in the environmental point of view

**Table 4:** execution plan for the proposals in weeks.

# 1. INTRODUCTION

The Túrria Natural Park is an important park in the region of Valencia because is one of the larges lungs for the area. As every green area we have it is very important to take care of it. Not only for environmental reasons, but for social, economic and protective reasons. If there is a good management in the area, these objectives may be accomplished. It is very important nowadays to get a combination of these 4 aspects to manage the forest, because it takes into account the interest of every part that is going to participate in activities in the forest.

In Spain, there are management plans for the protected areas, these type of plans have to be prepared with a very strong analyse of the dynamics and situations of the park to design a good improvement proposal. So, the purpose of this project is to analyse the situation in the Natural Park of the Túrria River in Valencia, Spain. More specifically, to bring forward improvement proposals for recreation in the area of *Les Rodanes*, a forest area of this Natural Park.



## 2. GOAL AND AIM

The general objective of this project is to analyze and identify natural and socio-economic resources of the park, and after that, of *Les Rodanes* to get an improvement in the site. To do that it have been defined the following specific objectives:

- Analysis of the area to become acquainted of the state of the Natural Site and surroundings (Natural Park).
- Identify threat or value factors and analyze them through SWOT analysis.
- Favor and enhance sustainable development and territorial protection and conservation in the compilation of the improvement proposals.
- Extract the main conclusions of the whole analysis.

### 3. BACKGROUND INFORMATION

The Forest policy in Spain is regulated by the Spanish Constitution and by the Mountains Law, in Spanish *Ley de Montes*. Most of the regions of Spain regulate their own laws within the Mountains Law framework. More specifically and the interest for this project, in Valencia, forestry planning is governed by the PATFOR (Plan de Acción Territorial Forestal de la Comunidad Valenciana, meaning in English: *Forest Territorial Action Plan of the Valencian Community*). The aim of PATFOR is to define the forest model of Valencia's region, based on its integration with rural development, in sustainable management, multifunctionality of forests and the conservation of biological diversity and landscape. For this, a series of strategies, guidelines and measures are elaborated. The plan has an indefinite term with revisions every 10 years.

The distribution of the management of protected areas is done in two ways, the National Parks are regulated by the State and the Natural parks and other figures of protection (+40 denominations) are regulated by each region. Almost all of the Natural Protected Areas in Spain are part of the Natura 2000 Network (*Annex I*).

In the international point of view in Spain, there is the National Strategic Plan for Natural Heritage and Biodiversity regulated by the Law of Natural Heritage and Biodiversity that comes from the international agreement for natural environment CBD, the Convention on Biological Diversity. This Plan has the aim to stop the loss of biodiversity and the degradation of the services of the ecosystems and face their restoration.

And the National Action Program Against Desertification regulated by both the Mountains Law and the Forestry Law that comes from the international agreement from UNCD, United Nations Convention to Combat Desertification, that has for goal the sustainable development of arid, semi-arid and sub-humid zones and the prevention or reduction of degradation, rehabilitation of partially degraded lands and the recovery of desertified lands.

As for the European Union policies, Spain has the two different protection instruments from Natura Network 2000, the Places of Community Interest that appear in the Management Plans (also the Special Protection Places) and the Places of Special Protection for Birds, both of them financed by the FEADER (European Rural Development Fund) and the FEDER (European Regional Development Fund), and also the Cohesive Fund.

In Spain there are 15 National Parks (map in *Annex I*), almost 130 Natural Parks and 160 Natural Reservoirs and also lots of Protected Landscapes and Natural Monuments. There is a total of 27.9% of the surface protected (from a total surface of 505 990 km<sup>2</sup>), that means around 153 725 km<sup>2</sup> protected, from which more than 100 000 km<sup>2</sup> are forest surface (Forest National Inventory, 2007), and normally, for each of the protected areas, a PORN (Plan for the Management of Natural Resources) should be done.

A PORN, by definition, is an instrument from the Spanish legal system of territorial planning that allows the management of resources (especially of the natural spaces and species) according to the nature conservation policy (Law 42/2007, 2007). The objective of a PORN is to define the management of the Protected Natural Spaces (ENP) that are in the study area of the PORN.

The main objectives of a PORN are:

- ✓ Define and indicate the conservation status of the territory's natural resources
- ✓ Assess the current situation and predict the future of the local population
- ✓ Evaluate the state of conservation and apply some of the protection figures established in the "Law of the ENP"
- ✓ Formulate specific objectives for the different areas that were defined according to the state of conservation, determining the potential of the activities economic and social conditions compatible with the conservation of space by helping socio-economic progress of populations

Focusing on these objectives and the main purpose of a management plan, an analysis of the zone has to be done to evaluate the recreational potential, as one of the important aspects to take in account in a PORN.

The aim of a management plan is to improve the potential of the area in many different aspects and in a sustainable way, maximizing the opportunities of the surface that the area has, dividing it into zones that will follow a purpose specifically designated depending on the characteristics of each one.

To accomplish this aim, normally a SWOT analysis has to be done, to study all of the details in the region to study and manage.

A SWOT is a type of analysis for which it has to be done a good recompilation of information about the site to analyze. The historic, natural and anthropic dynamics of the area have to be understood before starting with the SWOT, and once this is complete, the

main point of it is to extract from the information the Strengths, Weaknesses, Opportunities or Threats in the area, being these defined as:

- **Strengths:** they already are or happen in the present time in the area, meaning positive points.
- **Weaknesses:** same as strengths but opposite idea, as being something negative, they already are or happen in the present time in the area.
- **Opportunities:** future profitable options in the area from what you have in the present or could have in the future.
- **Threats:** future problems or threats you may have in the area with the actual situation or future scenarios.

And, after evaluating all of these four aspects, the main conclusions have to be extracted to define a series of objectives to accomplish, meaning an improvement for the main problems in the area.

From these objectives and applying the SMART method, as far as possible, a series of improvement proposals will be redacted.

The SMART method is a way of analysis to purpose objectives that may be action oriented, concrete detailed, focused, well-defined and straight-forward, following the rule of Specific, Measurable, Assignable, Relevant and Time-Oriented, being defined like:

- **Specific:** target a specific area for improvement. Should answer to: who, what, when, where and why. It has to define what needs to be done and in a timeframe for completion.
- **Measurable:** quantify or suggest an indicator of progress. Numeric or descriptive. Should include numeric or descriptive measures that define quantity, quality, cost, etc.
- **Assignable:** the objective should be within the staff's member control and influence, in a goal, things have to be well defined but some flexibility has to exist. Takes in account resources and time, answers to who will do it.
- **Relevant/ Realistic:** state what results can realistically be achieved and the importance given the available resources. Goal should be instrumental to the aim of the project/department.
- **Time-Oriented:** defined with a target date or time period for completion and/ or frequencies to specify action steps that are important to achieve the goal.

## 4. METHODOLOGY

The methodology followed to accomplish the objectives of this project is the one shown in the *table 1* and described as:

### FIRST PHASE

- A) **Determination of the objective:** the first thing is to determine which the specific objectives are in the project to achieve the main one. This part will lead the rest of the project.
- B) **Documents research and data collection:** research for all the information necessary to accomplish the objectives and collect the important and necessary one. The research may be done from all possible and reliable sources like internet, public opinion or literature, as well as other projects with information from the area or surroundings.
- C) **Visiting the area for a better understanding and data collection:** trip to the area to study for a better understanding of the area and collect the information necessary, like the state of the hiking routes and maintenance of the existing infrastructures.

### SECOND PHASE

- D) **Analysis of the information in recreational purpose:** analyze all the information collected and compare all of the perspectives and dynamics in the area in a recreational point of view to be able to prepare a good SWOT.
- E) **SWOT analysis:** determine which are the strengths, weaknesses, opportunities and threats in the area from different points of view.
- F) **Conclusions and objectives from SWOT:** extract the conclusions from the analysis done and design the objectives to achieve.

### THIRD PHASE

- G) **Planning for improvement proposals:** define a series of concrete improvement proposals to solve defined and located problems in the area. The SMART analysis method is used to achieve this.

## **FOURTH PHASE**

**H) Extracting conclusions from project:** conclusions from the whole process.

**TABLE 2: METHODOLOGY CALENDAR**

Analysis of the Les Rodanes Natural Site in Vilamarxant (Valencia, Spain) and the proposals of the improvement							
	nov-17	dec-17	jan-18	feb-18	mar-18	apr-18	may-18
1st Phase							
Determination of the objective							
Documents research and data collection							
Visiting the area for a better understanding and data collection							
2nd Phase							
Analysis of the information in recreational purpose							
SWOT analysis							
Conclusions and objectives from SWOT							
3rd Phase							
Planning for improvement proposals							
4rd Phase							
Extracting conclusions from project							

## 5. DESCRIPTION

The description is going to be done for all of the area of the Natural Park, to understand better its dynamics.

The park's original name is *Bosc del Túria*, which means *Forest of Túria* (in Fig. 1). It comprises three forested areas (*Vallesa*, in Fig. 4, *Les Rodanes*, the one to analyse, and *La Pea*) and the riversides of the Túria River.



FIG. 1: LOCATION OF THE PARK (PART OF THE TÚRIA RIVER NATURAL PARK)

### 5.1. Túria River Natural Park

The Túria is a river of Spain in the region of *Comunitat Valenciana* (Annex I). Also called in its first section Guadalaviar. The Túria is located in the east of the Iberian Peninsula and it is born in the *Muela de San Juan*, municipality of Guadalaviar, in the surroundings of *Montes Universales*, from *Sierra de Albarracín* (Teruel) and flows into the city of Valencia after 280 km. The Túria Natural Park is one of the 22 natural parks in *Comunidad Valenciana*, as it can be observed in the Annex I, identified with the number 11 (*Bosque Rupícola Del Túria*) with the other 21 natural parks. It starts in the municipality of Quart de Poblet and goes up the river, crossing the terms of Manises, Paterna, Ribarroja Del Túria, La Eliana, Benaguacil, Lliria and *Vilamarxant* until Pedralba, as it is shown in Fig. 2. The biggest areas of the Natural Park are in the regions of *Vilamarxant* and *Riba-Roja del Túria*.

The decision to protect the river Túria was made in 2006 (although the idea came from civil society more than a decade ago).

The *Consell* (executive body that governs the Valencian Community and that directs the Administration of the *Generalitat*) declared in July of 2006 the second natural park (Túria Natural Park) of the metropolitan area of Valencia after *La Albufera*. A process that culminated on April 13, 2007. The Túria Park has 4,480 hectares, 35 kilometers long, and begins in *Quart de Poblet* and will go up the river, crossing all of the terms. It extends in an area subjected to an important urban pressure and large public works in project (the second bypass and the dam of *Vilamarxant*, included in the National Hydrological Plan of the Ebro Transfer).

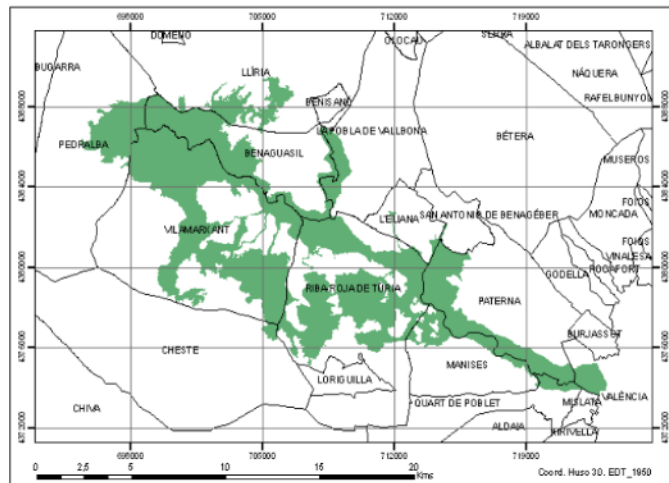


FIG. 2: SURFACE OF THE PARK IN EACH REGION (PORN OF THE TÚRIA RIVER NATURAL PARK)

As the park is located between the municipalities of Paterna and Pedralba and it is very big, to access, there are different ways (roads seen in *Fig. 3*):

- Access from road CV-35 Valencia-Ademuz to Valencia
- Access from the road CV-35 Valencia-Ademuz to Ademuz
- Access from the A-7 highway
- Access by subway to the visitor's center of the park with line 1

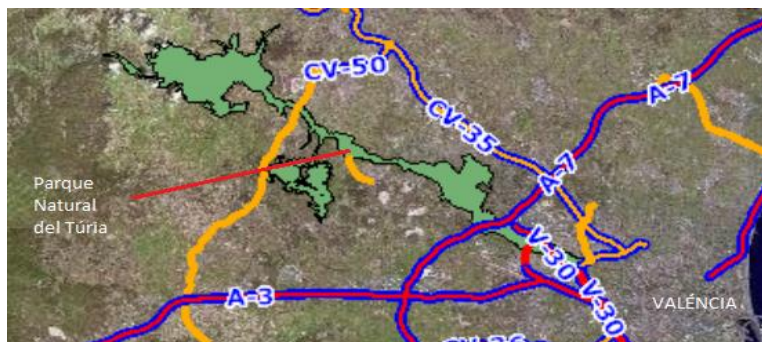


FIG. 3: ROADS TO ACCESS THE PARK (VALENCIAN CARTOGRAPHIC INSTITUTE, VIEWER)



The park has a varied landscape (La Vallesa, *Fig. 4* and riverside near Pedralba in *Fig. 5*) and has diversity of habitats and species of flora and fauna. The riverbank has an ecological interest because there are Mediterranean forests of typical scrub and pines and it also has the typical landscape of the region: the Valencian cultivates with medieval origin. The landscapes are formed by soft hills separated by valleys and ravines that verge to the river, and topped by calcareous lakes. Near the alluvial plain of the *Túria*, about 6 km before it opens to the sea in the coastal depression of the *Gulf of València*, the river is carved several tens of meters into a crusted glaxis, which constitutes a topographic element of transition between the coastal plain and the mesocenozoic saws, formed on a tertiary substrate of marine facies.

The section of waterway and banks of the river, located between the municipalities of Pedralba and Paterna, is one of the last forest lungs that survives in the area of the metropolitan area of Valencia. In this space the encounter between the orographic reliefs of the Iberian System and the alluvial plain of the river takes place, forming a flat landscape, with the reference of the channel and the bank of the river, surrounded by soft undulations crossed by ravines that converge in the waterway.

The abundance of water and the aptitude of the soils for agriculture have favored the settlement of human groups since ancient times.



FIG. 4: "LA VALLESA" (WIKIPEDIA.ORG)



FIG. 5: TÚRIA IN PEDRALBA MUNICIPALITY (TOURISM WEBSITE FOR EXCURSIONS: VENDEEXCURSIONCONRAQUEL.WORDPRESS.COM)

However, prior to the Bronze Age, the information is limited to the Paleolithic sites of *El Prat de Lliria* and *Cueva de los Murciélagos de Vilamarxant*; to the Mesolithic site of the Cave of the Salto del Lobo de Pedralba and to the Puntal on the *Rambla Castellarda de Lliria*, of calcolitic chronology.

The settlement of the Bronze Age is the best known in the area highlighting the location of the settlements in small elevations next to the river, close to the water courses, to the farmland and pastures for livestock.

In general, these are small peasant villages, in which the *Lloma de Betxí* (Paterna) stands out on the northern margin of the Túria, a site of the Bronze Plenum, in which archaeological excavation campaigns have been carried out since the 1980s and which currently constitutes the best representation of the archaeological heritage of the Park, given the excellent conservation of its architectural remains and the richness of its material culture.

Other sites of the Bronze Age are: *Despeñaperros* (Paterna), *Els Carassols* (Riba-roja de Túria); *L'Alteret*, *Ermita de Montiel* and *Llomet del Tio Figuetes* (Benaguasil); *The Gargao* (*Vilamarxant*), and the southwestern slope of the *Tossal de Sant Miquel*, the *Turret* and the *Cova del Cavall* (Llíria), some of which were subsequently occupied during the Iberian Culture, especially during the Iberian Plenary (III-II centuries BC), like in the case of *Despeñaperros*, *Llomet del Tio Figuetes* or the own *Tossal de Sant Miquel*, where the well-known Iberian city of *Edeta* is located.

The *Romanization* of the Valencian lands is evident in the area with the proliferation of rustic Roman villas such as those found in the *Barranco de Cano* and *La Font*, in the *Barranquet de Sau*, in *Císcar*, *La Loma*, *Mas de Vélez* and in several points of *The Vallesa de Mandor*. And also there are remains of aqueducts of the *Séquia Del Diable*, *Canyada de la Penya*, and in the ravines of *Cano*, *Fondo*, *Dels Naps* and *D'Endolça*, or in the *Pla de Vélez*. Highlighting elements related to the use of water resources, dams, aqueducts and other water architectures.

Also indicate as an important part of the recent historical heritage of the area the set of trenches, pillboxes and anti-aircraft protection (*Annex II*), of the defensive line known as *La Inmediata*, inheritance of the Civil War of 1936-1939, and uniting *Sagunto* with *Riba-roja Del Túria*. Highlighting the existing ones in the *Vallesa*, *València la Vella* and *Les Rodanes*.

It is also important the existence of archaeological remains, the paleontological site of *The Vallesa*, from the Miocene sea, with more than sixty species of foraminifera, molluscs and crustaceans.

As for recreative infrastructures there are several cycling route that go to Túria River Natural Park, but to highlight the most significant one to this project is the one that goes from the city of Valencia to *Vilamarxant* village. It has a distance of 25.15 km and goes through the village of Riba-Roja Del Túria (*Annex IV*) and can connect with the cycle-tourist route in *Les Rodanes* that starts also in *Vilamarxant*.

There is also a visitor's center in the town of *Vilamarxant*, where the people in charge of management of the Natural Park work, located in CV-50, *Fig. 6*.



FIG. 6: VISITORS CENTER FROM THE TÚRIA RIVER NATURAL PARK (IMAGE FROM GOOGLE MAPS)

## 5.2. *Les Rodanes* Natural Site

*Les Rodanes* was declared a Natural Site for the article 9 of chapter 2 of the *Law 11/94 of Protected Natural Spaces* and *Decree 161 / 2004 of Municipal Natural Sites*. After that, the *Decree 176/2012*, of November 30, of the Consell, expanded the area. Furthermore, having the micro reserves of: *Alt de la Rodana Gran*, *El Massis* and *Racó de Zamora*, is affected by the *Order of July 17, 2006 of the Department of Territory and Housing* by declaring 16 micro vegetable reserves in the province of Valencia.

The limits for the SWOT analysis and improvement proposals in this project are those established for the Natural Site of *Les Rodanes*.

The Natural Site of *Les Rodanes* (*Fig. 6* and *Annex II*) is placed in the south area of the park in the region of *Vilamarxant*. It is located in the mount with the same name (Mount

*Les Rodanes*), and it has four foothills called: *La Rodana Gran* (345 m of height), *Rodana Del Pic* (321 m.), *Rodana Parda* (227 m.) and *Rodana Del Oro* (297 m, situated between *Racó Del Perot* and *la Cova Del Colom*). It has an area of 591.77 ha.

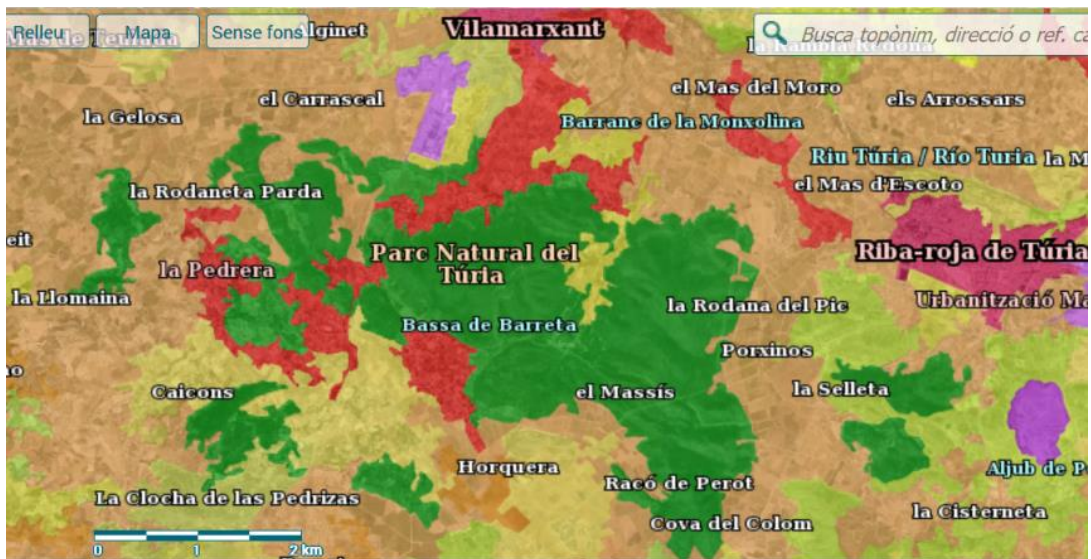


FIG. 6: LES RODANES NATURAL SITE (VALENCIAN CARTOGRAPHIC INSTITUTE, VIEWER)

The place has a high natural value, and can be classified as a lithological singularity, even from the Valencian Community, due to siliceous lithologies of Triassic sandstone of the Buntsandstein facies, known as *rodano* (that's why the place is called *Les Rodanes*) and which are so scarce in the rest of Valencia, where Cretaceous and Jurassic limestones and dolomites predominate. The *rodano* is a sandstone from a detrital type, variable in color that contains sand-sized clasts.

It also presents a developed hypogeal geomorphology, consisting of 11 caves and chasms. The presence of these lithologies originate, together with the different environmental factors, that characteristic soils that support a high number of plant species are developed, accounting for a total of 170 taxa distributed among the different plant associations present in *Les Rodanes*. The characteristic vegetation of poor soils in developed bases on the sandstones and argillites of the Buntsandstein, dominated by formations of black steppe and Moorish jaguarzo.

### **Public and recreational use infrastructures in *Les Rodanes***

In the Natural Site there are infrastructures for recreational use or public use like the routes below and some equipment for public use (like in the recreational area):

**Cycle-tourist route:** this route goes through the surroundings of *Les Rodanes* from the village of *Vilamarxant* as it can be seen in the map from *Annex II*. It has a distance of 17.96 km, and also goes through the insides of the Natural Site.

**Trail PR-283:** this path continues through the municipalities of Loriguilla and Ribarroja. Link with the PR-V 175 and is accessed by the municipal cemetery of *Vilamarxant*. It is 20.5 km long with pointed slopes (*Annex II*).

**Trail PR-V 175:** It starts from the municipal cemetery. Its 13 km, run by: the *Rodana Del Pic*, *Rodaneta Blanca*, ravine of *La Muntxolina* and the *Great Rodaneta*. The difficulty of this path it is low except for the section of *Rodana Gran* (*Annex II*).

**Variant Trail PR-V 175 (Les Trinxeres):** This trail, of 4 km, crosses the resource patrimony of the trenches of the *Ferraura* and the *Clau*. You can start from the right, going up the *Rodana Del Pic* or on the left, a few minutes of the only machine gun nest in the area (*Annex II*).

**Adapted path Bassa Barreta:** It is an exclusively pedestrian route, adapted to people with reduced mobility, aimed at hikers and people with reduced mobility, 1 km long and 1.5 m wide, generally on a flat area. The equipment that counts are: wooden path, footbridges and bridges. Here you can also find the *Arboreto and Rocalla* that represent a part of the Mediterranean ecosystem through pedestrian paths of 120 m in length. The map in *Annex V* shows the location of: traditional crops (A), oak (B), cork oak (C), ravines (D), deciduous mountain vegetation (E), high mountain representatives (F) and pebbles of aromatic plants (G) (*Annex II* and *Annex IV*).

**Recreational area La Pedrera del Rei:** This branch goes to the only recreational area of the place. In this area there is: parking with capacity for 50 cars (also park slot for disabled people), barbecues, tables and benches, services, bar and pole for mooring horses (*Annex II*).

Apart from this, in *Les Rodanes*, there are signals for the hiking routes that indicate the difficulty and information panels.

### 5.3. Abiotic environment

#### Climatology

The climate of the Valencian Community has mild winter and a strong summer drought. The most important climatic characteristic is its low rainfall, which is also distributed irregularly throughout the year. The heaviest rains take place in the autumn, specifically during the October with monthly rainfall that sometimes reaches 25% of the total annual. During the winter the rains decrease to present another maximum in spring but less marked than autumn. In summer the lack of rain is the note predominant, although the meager precipitation is stormy and very punctual (*Annex III*).

The entire province of Valencia is classified at the climatic type level as Mediterranean. The study area is affected by a climate of dry Thermo-Mediterranean type, with rainfall of 400-500 mm per year and average annual temperature higher than 17 °C. Both temperatures and rainfall are greatly influenced for the orography. The arrangement of the relief, causes the existence of dry valleys. So the climate in *Vilamarxant*, and for all of the natural park is like in the region of spring: Dominant of East, strong or medium. Secondary of the Northwest, the West and the Southeast, means in intensity and route.

- Summer: Dominant of East, with intensities and high courses. Secondary of the Southeast and Northwest, means.
- Autumn: Dominant of West, with intensities and high courses. Secondary North and East, with intensities and medium-high routes.
- Winter: Dominant of West, strong. Secondary of the Northwest, means

The annual average wind paths, regardless of the direction, are left included for the whole area represented between 10 and 15 km / hour.

#### Geology

The field has a wide variety of materials that correspond to rocks of type limestone dolomite of tabular arrangement belonging to the eastern foothills of the Iberian Mountain Range. The lower areas (alluvial sediments), are filled with detrital and limestone materials that are used agriculturally. In this area there are frequent Mesozoic residual reliefs like the *Sierra de La Rodana (Vilamarxant)*, *Montiel (Benaguasil)* and *Buitreras (Lliria)*.

The Turia River crosses the entire area from West to East, and is flanked by numerous tributaries that usually operate in a torrential regime in rainy seasons. The most important are *Rambla Primera* and *Rambla Castellana*.

The Tertiary (Neogene) presents a sedimentary manifestation of origin marine and another continental-lacustrine. Finally, sediments of Quaternary age result of interest for its variety and extension.

In the regional tectonic scheme the general style of folding of the east Iberian Range is observed, consisting in the development of wide folds in chest with flanks very compressed and failed and soft nuclei.

### **Geomorphology**

The study area is located in a transition zone between the mountain ranges surrounding the north (*Portaceli* and *Calderona*), west (*Los Bosques* and *Andilla*) and south (*Ave*) of the area and plain that extends towards the east, in the watershed and river mouth of the Túría River. In this sense, it is a zone of gentle slopes that develop on sediments. Detrital and tertiary and quaternary carbonates, with isolated Mesozoic enclaves. The General morphology of the reliefs responds to a system of tables, slopes, and hills. The main morph dynamic agent is water that acts by dissolving soluble materials (carbonates and plasters) and eroding poorly consolidated materials. However, weathering processes are very slow due to the lack of rainfall and the winter temperatures.

### **Hydrology**

The surface hydrology is articulated around the lower course of the river Túría that runs from west to east.

The Túría does not have, in the study area, any reservoir that regulates it, however, it is predicted the construction of the *Vilamarxant* dam. Upstream, the water is collected in the reservoirs of *Loriguilla* and *Benagéber*. There is also the reservoir of *Buseo* that regulates the waters of the *Sot* River, tributary of the Túría. In these conditions the flow that transports the waterway to the passage through the region, is controlled and depends on the water needs of the district of *L'Horta* that has a lot of crops. Within the scope there is a reservoir, *La Vallesa*, which collects the waters of the nearest canyons and ditches. It is located in a wooded area, owned private, between the municipalities of *Paterna* and *Riba-Roja de Túría*.

The secondary drainage network is of great importance from the point of view of interconnectivity of natural systems. The ravines are characterized by having an intermittent flow throughout the year depending on rainfall. Any water circulation in them is actually an avenue that is generated when a threshold runoff value is exceeded, which is variable in each case and depends on the characteristics of the basin (lithology, type and state of soil, amount and intensity of precipitation, vegetation, etc.).

From the hydrogeological point of view the territorial scope of the Túria Natural Park settles on the Aquifer Systems No. 51, *Plana de València*, and nº 53, *Medio Túria Mesozoic North Valencian*, according to the classification of the Mining Geological Institute of Spain (IGME, 1993).

System No. 51 includes two aquifers on 51.01, *Miocuaternario* and 51.02, *Miocene Inferior*. And system No. 53 has the Subsystem 53.03 *Buñol-Casinos*, which includes the aquifers 53.03.01 *Buñol-Cheste* and 53.03.02 *Aquifer Lliria-Casinos*.

### Soils

The quality and productivity of the soil in the area has led to an intense use agrarian, especially in alluvial soils, citrus being the main crops (orange trees) and vegetables.

- Soils whose depth is limited by the presence of rock or by consolidated materials less than 30 cm from the surface, or are soils formed from unconsolidated rocky materials, with less horizons.
- Soils on the hills formed by detrital materials and clays, from unconsolidated materials with scarce morphological differentiation and with similar chemical characteristics within the first 50 cm superficial. Its physical and chemical properties are inherited from the lithological material from which they were formed, being directly related texture, salinity and carbonate content.

## 5.4. Biotic medium

### Flora

The repeated action of the hand of man has given rise to a wide agricultural-forest mosaic. The formations correspond, almost completely, to pine, secondary pine forests (*Pinus halepensis*). These pine forests are located in most of the hills of the area, areas that, due to their topographic and edaphic characteristics, present lower aptitude for its agricultural



exploitation. On the other hand, irrigated crops like orange trees (*Citrus sinensis*), mandarins (*C. nobilis*, *C. deliciosa*) and horticultural, as well as those of dry land like carob trees (*Ceratonia siliqua*), olive trees (*Olea europaea*) and, to a lesser extent, almond trees (*Prunus dulcis*), occupy areas of flat topography in the sedimentary basin of the river Túria, more than half of the territory covered by the management plan are crops.

In the management plan, there are described different units of vegetal landscape in the Natural Park (*Annex III*), but in the Natural Site of *Les Rodanes*, the main type of unite is pine forests.

These pine forests of *Pinus halepensis* are the mainly forest vegetation of the Natural Park due to the hardness of the growing conditions. The clear masses of pines allow the existence of a stratum slightly developed shrub formed by: rosemary (*Rosmarinus officinalis*), wild olives (*Olea europaea var. sylvestris*), thyme (*Thymus sp.*), rosemary male (*Cistus clusii*), lavender (*Lavandula stoechas*), gorse (*Ulex parviflorus*, *Fig. 7*), garrigue with mastic (*Pistacea lentiscus*), heather (*Erica multiflora*), coscoja (*Quercus coccifera*, *Fig.8*), palm trees (*Chamaerops humilis*), albaida (*Anthyllis cytisoides*) and other typical species from Mediterranean shrubs (*Annex III*).



FIG. 7: *ULEX PARVIFLORUS*  
(ES.WIKIPEDIA.ORG)

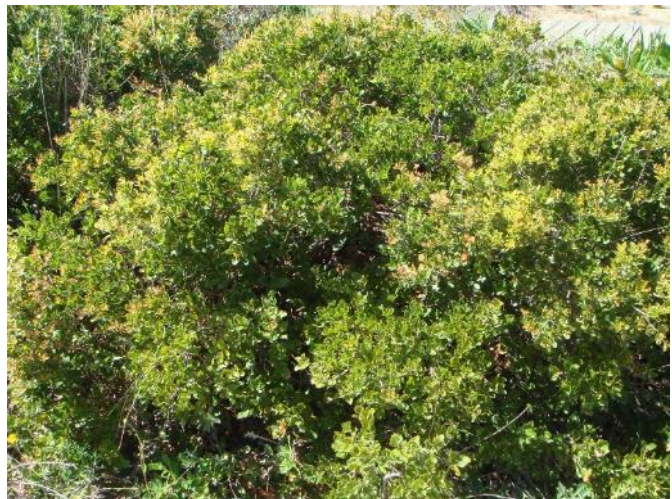


FIG. 8: *QUERCUS COCCIFERA* (ES.WIKIPEDIA.ORG)

The areas of pine forests that are located in the Natural Park apart from *Les Rodanes* are:

- The *Vallesa Del Mandor* and *La Canyada*, on the left bank of the Túria River, southwest of T.M. of Paterna.
- The *Muntanya Del Flare* and *La Canyada de la Millana*, in the westernmost area of T.M de Riba-Roja de Turia.

- *Racó del Fumeral*, in the border area between the T.M. of *Vilamarxant* and *Riba-Roja Del Túria*.
- *La Lomaina*, south of the municipality of *Vilamarxant*, Public Utility Mount.
- The Cave of *Caudete and Palmeral* located northeast of T.M. from *Pedralba*, next to the left bank of the *Túria* River.
- *La Pea*, Mount of Public Utility located northeast of T.M. of *Vilamarxant*.
- *Les Travesses* in the south of T.M. of *Llíria*,

Pine forests occupy an important area within the scope of the management plan (around 20% of its surface), its conservation status is good and they play an important ecological role, among other issues as a brake on erosion, and landscaping.

The Natural Site of *Les Rodanes* possesses a high position value as it constitutes the best preserved vegetable mass in the metropolitan area of Valencia.

### Fauna

The inventory of fauna (found in *Annex III*) that appears in the management plan was made based on the data that contributes the Biodiversity Data Bank from *Generalitat Valenciana*.

In the Natural Site of *Les Rodanes* the fauna is well represented, highlighting the group of birds with about 50 species present like the common buzzard (*Buteo buteo*), the kestrel (*Falco tinnunculus*, Fig.9), the common owl (*Bubo bubo*), the *autillo* (*Otus scops*, Fig.10) and the *mochuelo común* (*Athene noctua*) and that of mammals with 15, highlights the weasel (*Mustela nivalis*), the fox (*Vulpes vulpes*) and the wild boar (*Sus scrofa*).



FIG. 9: *FALCO TINNUNCULUS* (AVESRAPACES.WIKI, WEBSITE FOR RAPTOR BIRDS)



FIG. 10: *OTUS SCOPS* (IMAGE OF VALENTÍN MORENO IN " PROYECTO MUSSOLS")

## 6. RESULTS AND DISCUSSION

Before starting the SWOT analysis and for a better understanding of the dynamics of the Natural Site, the main factors have to be explained. For that reason there is a scheme in the *Fig. 11* to support and explaining the main ones.

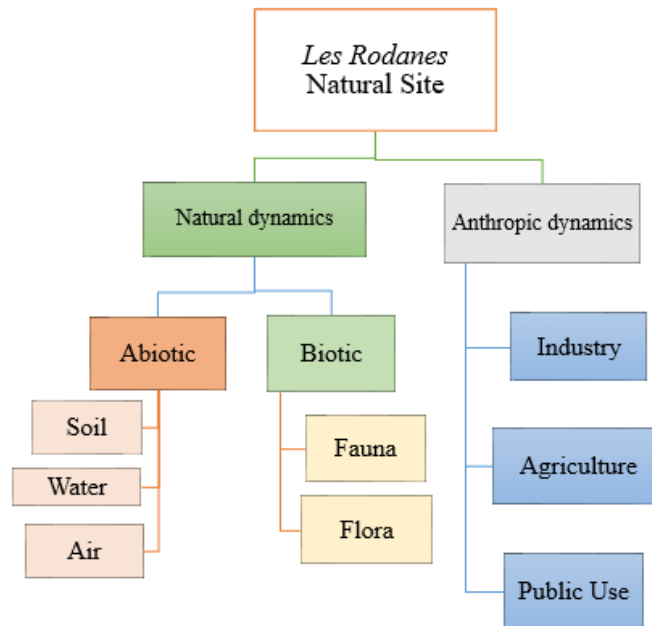


FIG. 11: NATURAL AND ANTHROPIC DYNAMICS SCHEME IN *LES RODANES* (OWN ELABORATION)

As for the natural dynamics there are two groups, abiotic and biotic ones in the abiotic medium 3 factors are found:

- **Soil:** an important characteristic to highlight in the soil of *Les Rodanes* is the *rodano* or *psamita* a type of sandstone that is rarely found in the region of *Valencia* apart from this Natural Site.
- **Water:** There is water raft in the Natural Site, and the *Túria* River in the other side of the village of *Vilamarxant*.
- **Air:** Due to the orography of the territory, gusts of high-medium velocity winds are frequent, this can help to pollination and also to natural regeneration.

And, in the other hand, for the biotic medium there is fauna and flora:

- **Fauna:** most important thing to highlight are the different species of birds that nest in the mount (*Annex III*).
- **Flora:** due to the characteristic soil there can be found lots of different species of plants in the area (*Annex III*).

Furthermore, to take in account the importance of the surroundings in the biotic aspect, it can be a reasonable main factor the proximity of the other protected areas to the Natural Site that can be found in the *Annex II*.

For the anthropic dynamics, it has been differenced three groups:

- **Industry:** there are quite few industries in the surroundings, there is also, very near, the race track from Cheste *Ricardo Tormo* (circled in orange color in *Fig. 12*).
- **Agriculture:** the main economic activity in the region is the agriculture, being the main crops oranges, mandarins and olive.
- **Public use:** different roads, a cycle route, hiking routes and some recreation infrastructures and information panels. There is also a visitor's center for the Natural Park in the village of *Vilamarxant*.

The most important things to understand are that in area there is a very significant place for nature and recreational activities and that the economy is based on agriculture and industry in the surroundings.

Also it is important to know that there are residential urbanizations in the surroundings of the mount and different villages are very near of it as it can be seen circled in red in *Fig. 12* (apart from the red circles, all of the surroundings of the mount are residential areas). This can be important for the recreational aspect.

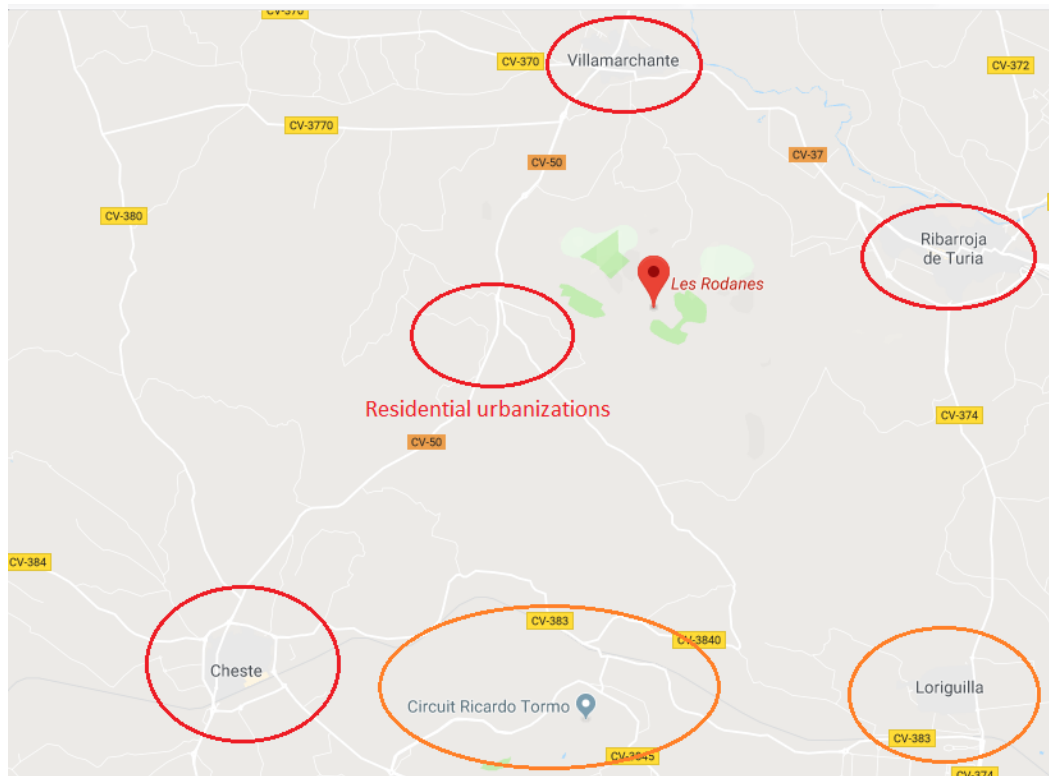


FIG. 12: ANTHROPIC FACTORS NEAR THE NATURAL SITE (OWN ELABORATION)

### 6.1. SWOT analysis

For a better analysis of the recreational potential and state of the area, it has been decided to do a comparison of two different points of view. To achieve this, two SWOT analysis are going to be done.

In the tables below, the strengths, weaknesses, opportunities and threats are written to make it easier for the extraction of objectives and conclusions that will lead to the improvement of recreational potential.

In the first one, the *Table 2*, the SWOT analysis is going to be done from the touristic point of view, analysing the four components strictly for recreation and touristic purpose together with public use.

In the other hand, in the second table, the *Table 3*, the SWOT analysis is going to be done from the environmental point of view, analysing the four components for a responsible tourism point of view together with a sustainable development and environmental friendly aspect.

To understand some of the point in both of the SWOT analysis there are some proves as photographs in the Annex IV.

## SWOT ANALYSIS IN THE TOURISTIC POINT OF VIEW

TABLE 2: SWOT ANALYSIS IN THE TOURISTIC POINT OF VIEW

Strengths	Weaknesses		
S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12, S13, S14, S15	W1, W2, W3, W4, W5, W6, W7		
Ob1, Ob2, Ob7	Ob4, Ob5, Ob8, Ob9	O1, O2, O3, O4, O5	Opportunities
Ob6	Ob3	T1, T2	Threats

### STRENGTHS

**S1:** Three different hiking routes in the Natural Site: trail PR-283 with 20.5km, trail PR-V 175 with 13km and variant trail PR-V 175 with 4km.

**S2:** Route adapted for people with disabilities: adapted path *Bassa Barreta*, lasting 1km and with 1.5m wide.

**S3:** Cycling route in the surroundings, from Valencia City to *Vilamarxant* village, with a distance of 21.15 km.

**S4:** Cycling route (cycle-tourist route) from *Vilamarxant* village to (and through) *Les Rodanes* with a distance of 17.96km.

**S5:** Informational panels and indications for the hiking routes.

**S6:** Near to the city of Valencia, 40 minutes by car, 30km.

**S7:** Easy to get from the village of *Vilamarxant* that is 10 minutes from it. Also combining both cycling routes.

**S8:** Restaurants and hotels in the villages near, there are more than four hotels at less than 15 minutes far in the villages in the surroundings and also several restaurants and service areas in *Vilamarxant* and villages in the surroundings.

**S9:** Proximity with Túrria River. The Natural Site is just 6km far from the Túrria River Natural Park.

**S10:** Arboretum area in the route for disabled people with attraction for visitors due to diversity of flora species.

**S11:** Information panels for blind people in the route for disabled people.

**S12:** Barbecue and picnic area *La Pedrera Del Rei* near the Natural Site, 3.8km far from the centre of *Les Rodanes* and almost the same distance from *Vilamarxant*.

**S13:** Beautiful views of the different landscapes (other mountains or Spanish typical crops landscape) in the surroundings from some points in the hiking routes, the most singular the ones situated on top of the hills or mounts.

**S14:** The Natural Site is a good area quiet for relaxing profitable not only for tourist but population from villages near.

**S15:** Bunkers and historical heritage from the Civil War in Spain located in the Natural Site.

## **WEAKNESSES**

**W1** Some of the informational panels are in bad conditions and it is not possible to read what it is written

**W2:** The route path made for disabled people is in bad cleaning conditions from vegetation rests and it is difficult to walk through it or to access with wheels chair.

**W3:** There are not much visitors in the area in all of the seasons. Visits are most concentrated in spring, with Easter holiday period.

**W4:** There are no recreational infrastructures for children in the Natural Site.

**W5:** There are some panels that have the information written in too small letter or are very high for people to be able to read them comfortably

**W6:** There are television or radio antenna and satellite dishes in the top of La Rodana Gran that are very disruptive and negative to the habitat and landscape.

**W7:** There are no picnic or resting areas inside of the Natural Site, for example for old people or people or disabled people.

### **OPPORTUNITIES**

**O1:** Promote the ecotourism and rural tourism via internet and also in the villages of the surroundings through informational pamphlets in town halls or bars.

**O2:** Restoration of the infrastructures or signals that are not good in the hiking routes, as well as designing panels easier to read with bigger letter and more interactive.

**O3:** Maintenance and cleaning of the Natural Site and also cleaning the branches or needles rests that prevent disabled people to access the path.

**O4:** Creating jobs due to maintenance and cleaning tasks in the area of the Natural Site but also in the recreational area near.

**O5:** Educational days in the Natural Site together with guided hiking for all ages, also to the historical heritage from Civil War.

### **THREATS**

**T1:** If the health of the Natural Site decreases it will affect to the tourism and visitors, creating a feeling of discontent in the population.

**T2:** Infrastructures being destroyed due to vandalism or climate conditions (sun and very high temperatures, strong storms and rains in the end of summer or autumn).

After this SWOT analysis, a series of **objectives** for touristic purpose are extracted and redacted from it:

**Ob1:** Promoting the area via internet with social media or information pamphlets always focusing on responsible tourism.

**Ob2:** Programming educational days in the Natural Site that include different ranges of age (from children to adults), also being useful the visitors center in *Vilamarxant*.



**Ob3:** Restoration of all the infrastructures that need it and maintenance of all of them in a constant time lapse (for example every month)

**Ob4:** Instauration of infrastructures for bird watching that don't generate a big impact on the area and landscape.

**Ob5:** Relocation of the TV or radio antennas or satellite dishes to another place out from the Natural Site.

**Ob6:** Cleaning the Natural site in a constant lapse of time and location of trash cans in some few points like entrance or exits (monthly for example)

**Ob7:** Cycling routes that connect the one that comes from Valencia with the one that goes through *Les Rodanes* (meaning 6 km)

**Ob8:** Maintenance of the historical heritage (like bunkers) for people to be able to visit and locate informational panels near.

**Ob9:** Programming volunteering camp for young people to achieve maintenance tasks in summer and fire vigilance as well as educative tasks in the Visitors Center.

## SWOT ANALYSIS IN THE ENVIRONMENTAL POINT OF VIEW

TABLE 3: SWOT ANALYSIS IN THE ENVIRONMENTAL POINT OF VIEW

Strengths	Weaknesses		
S1, S2, S3, S4, S5, S6	W1, W2, W3, W4, W5, W6, W7, W8		
Ob1	Ob3, Ob4	O1, O2, O3, O4, O5, O6	<b>Opportunities</b>
Ob5	Ob2	T1, T2, T3, T4, T5	<b>Threats</b>

## **STRENGTHS**

**S1:** Lots of different species of vegetation that make beautiful and diverse ecosystems in the Natural Site, and also in the Natural Park.

**S2:** Proximity with the Túria River is an advantage for the species (vegetation and animals) to reproduce and for birds to nest.

**S3:** The arboretum area in the route for disabled people means also a reservoir for the vegetation species.

**S4:** The restored pond in the route for disabled people means reservoir for fauna species like reptiles and amphibians and also invertebrates.

**S5:** Presence of many autochthonous species of the Mediterranean region and Iberian Peninsula like *Chamaerops humilis* or *Ceratonia siliqua*.

**S6:** Interesting species of birds (owls or raptors birds specially) in the Natural Site that attract birds tourism and bird watching activities.

## **WEAKNESSES**

**W1:** Plague found in some pines in the Natural Site (*Tomicus sp.*)

**W2:** The area is not protected by Natura 2000, disadvantage for birds protection and birds nesting, and also for vegetation and other animals.

**W3:** Low maintenance of forest and shrubs in the area (silviculture) that can affect negatively in case of fire.

**W4:** Low cleaning and maintenance in the hiking routes and the route for disabled people and it is a negative impact for biodiversity and health of ecosystems.

**W5:** Low maintenance of the water pond affects negatively to the biodiversity and health of ecosystems.

**W6:** Due to the climate change, there are problems with species of flora and fauna and the drying is affecting also the water level in the pond.

**W7:** There are interesting species of flora and fauna that can attract people to keep them or get them out of their habitats or ecosystems, making big disruptions and causing negative impacts.

**W8:** Due to the climate in the area that is very dry, and the type of vegetation that burns very easily, together with the low cleansing, there is a high possibility to have fires in summer that may destroy the Natural Site.

### **OPPORTUNITIES**

**O1:** Design and locate panels with information about birds to promote and teach about them the visitors and also, locate some infrastructures for bird watching (like shelters or towers) that won't disturb the birds nor the landscape when watching.

**O2:** Inventory to control and prevent the level of the plagues in the Natural Site each year and apply solutions environmentally friendly.

**O3:** Maintenance of the water pond could mean an introduction of new water ecosystem or, at least, could allow new species to live in there and reproduce.

**O4:** Cleansing the area of the Natural Site and recreational area for an improvement of the health of ecosystems.

**O5:** Cleaning and maintenance of fire protection areas to prevent fires.

**O6:** Creation of a green corridor due to the proximity with the Natural Park of Túrria River

### **THREATS**

**T1:** If in spring or summer seasons there is too much tourism or visits, it can disrupt the ecosystems with contamination: noise, cars pollution, rubbish (both flora and fauna).

**T2:** Industry in the surroundings can disrupt the ecosystems with pollution and noise contamination.

**T3:** Fire started in barbecue area due to people using it without permission or in red and orange alerts to fires periods

**T4:** If there is big affluence to the hiking routes that can produce big environmental impact to the nature.

**T5:** If there is a big plague in the site it could destroy most of the habitats.

The main **objectives** redacted and extracted from the second SWOT analysis that has an environmental point of view are:

**Ob1:** Design protection areas for nesting birds in the nesting or reproductive season.

**Ob2:** Take phytosanitary care of the Natural Site in a constant lapse of time.

**Ob3:** Connect the Natural Site with the Túria River through a natural corridor to improve the natural connectivity for protected areas in the region of Valencia.

**Ob4:** Maintenance of water pond and protection of the area to benefit flora and fauna species.

**Ob5:** Maintenance and cleaning of the hiking routes after trail marathons happening.

After the two SWOT analysis, the main conclusions to extract are that the Natural Site has a lot of potential but it needs a task of restoration, cleaning and maintenance to keep it in good shape and health, and for visitors to be able to go through it and enjoy it.

There are also things that could be improved or changed like the disruption of the landscape with some anthropic infrastructures that will be better if they were relocated but this will mean a big amount of money.

## 6.2. Improvement proposals

To solve the problems found with the comparison of the two points of view in the SWOT analysis and after redacting the main objectives to accomplish in the Natural Site, some improvement proposals have been designed as SMART objectives to achieve:

- I. Inventory of the information panels, signals and infrastructures that need restoration or renovation (including the ones that are not able to be read), evaluation and study for the possibility of a new better location for panels or signals that may need it for an improvement of the public use, elaboration and preparation of the new infrastructures and panels and location in the most appropriate location points. Time lapse for the process comprehending 2 days for

the previous inventory, 1 day for better location examination, for 2 weeks to 1 month for new panels or infrastructures and restoration of the existing ones, 1 week for relocation and painting of new signals. The task will be done by the qualified personal of the Natural Park and the pertinent printing company. The panels can be elaborated by the personal in the Park if they are qualified or they can be purchased to a pertinent company.

- II.** Instauration of one infrastructure for bird watching and the pertinent information panel (with information about species and nesting periods when people should not disturb, responsible tourism and respect with birds) near the pond in the path for disabled people *Bassa Barreta* and adapted for them (wheels chair for example). Select the best infrastructure for this aim and purchase it from the pertinent company (1 week maximum) by the qualified personal in the park. Location of the infrastructure in the selected point (from 1 week to 1 month, depending on the company efficiency) by the company and supervised by the qualified personal from park.
- III.** Promotion of the area via internet and social network, creating a page on Facebook and Instagram account for the Natural Site of *Les Rodanes*, sharing photos three times a week and informing the population about activities (guided hiking routes or trails, tourism or recreation like specific periods for bird watching, periods of bird nesting for people not to disturb, activities for children, volunteering campaigns, maintenance and improvements in the Natural Site...), the task will be done by the qualified personal in the Natural Park. Creation of the Facebook page and Instagram account: 1 week (due to compilation of information and images to include).
- IV.** Examination of the points that need rest benches or infrastructures or where it may be appropriate to locate them (2 days, with a maximum of 8 infrastructures that will be enough to cover the Natural Site surface and main resting points or pints that would need resting areas, like top of hills or pints with good views). Selection and purchase of the most appropriate infrastructures in each location point, taking in account to locate at least two infrastructures adapted for disabled or old people in the adapted path *Bassa Barreta* (from 2 weeks to 1 month maximum, depending on the infrastructures provider efficiency). After, location of the infrastructures in the selected points by the qualified personal from the Park (maximum 1 week).

- V. Maintenance and cleaning of the route for disabled people for them to be able to pass through with wheels chair. This implies the cleaning of the path from fallen branches and needles and other rests (2 weeks), and restoration of broken wooden planks from the path (1 week). The tasks will be done by the qualified personal from the park and broken wooden planks distributed by the pertinent company.
- VI. Maintenance or restoration of the bunkers. This implies cleaning the area (if there are vandalism paintings, restoration of the walls) and, in case they are not apt to be visited inside, conditioning of the structure of the bunker buildings. This task will be taken care from the qualified personal of the park, and in case it needs major work, a qualified person, like mason or painter, will be hired. Also, design and location of an information panel with information about the use of the structures in the Civil War or restoration of the existents in case it is needed. The task is also done by the qualified personal from the park. Period of time stipulated for the task from 2 weeks to 1 month and a half.

After explaining all of the six proposals and what do they consist of, a priority process is going to be done to take in account the most urgent aspects to improve in the area, that is shown, together with the duration of the execution in the *table 4* below. Highlight the fact that, as it is been explained that most of the tasks are going to be done by the qualified personal from the Natural Park of Túrria River that includes the Natural Site of Les Rodanes, the execution plan is designed in a way that each tasks begins when the one before is done.

TABLE 4: EXECUTION PLAN FOR THE PROPOSALS IN WEEKS.

Execution plan for the improvement proposals (in weeks)																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
<b>FIRST PRIORITY</b>																												
Proposal I																												
Proposal V																												
<b>SECOND PRIORITY</b>																												
Proposal IV																												
Proposal VI																												
<b>THIRD PRIORITY</b>																												
Proposal II																												
Proposal III																												

**FIRST PRIORITY:** proposals I and V. Restoration of panels and signals that need it and restoration of the disabled people path in *Bassa Barreta*. These two are the

most important to take care of firstly. It will take an estimated time lapse of 2 months approximately.

**SECOND PRIORITY:** proposals IV and VI. Location of benches or resting areas and restoration of the Bunkers. The resting areas are important due to the need of it because of the diversity in the visitors that the Natural Site has. The restoration of the bunkers is important because it is something that already exists in the area, it is historically important and it can be very profitable from the touristic and educative points of view. To carry out these proposals would take an estimated time lapse of 3 months approximately.

**THIRD PRIORITY:** proposals II and III. Location of a bird watching infrastructure and promotion via internet. As far as it can be understood that these two proposals are not of main and principal priority, the location of a bird watching infrastructure is a new thing to the area that would contribute a lot to the tourism attraction and also together with the informational panel can be educative, and the promotion via internet is something really easy and fast to reach the population nowadays.

## 7. LIMITATIONS OF THE STUDY

For the achievement of the objectives of this project there have been some problems like for example the data collection process, because most likely all of the data has been collected via internet, apart from some inventories or knowledge of the area.

Also it has not been possible to collect data from public opinion but indeed, there has been some public opinion on blogs and websites also.

It could have been very good for a better understanding to do a bigger analysis through cartography and a better design for infrastructure location but it has not been possible with the resources that have been found and used.

In the end, after going through all of these, the proposals that have come from it are still realistic and profitable.



## 8. CONCLUSSIONS

The analysis done in the Natural Site of *Les Rodanes* in *Vilamarxant* has been done for the purpose of evaluating the most important aspects to improve in a recreational purpose (and always based in a sustainable development and management).

For the achievement of this, a recompilation and collection of all different types of data has been done. From qualitative to quantitative data. Going through basic information found in universal websites or national, regional and local websites to other specific information like photographs and opinions from some blogs or touristic sides (as for hiking or cycling). This has been the most challenging point of the project due to the distance from Brno to *Vilamarxant* that made it harder to evaluate the state of the area. But after a big time-inversion research, some good results have come out in the form of interesting and sufficient information to go through the analysis (taking also into account the own knowledge from the area).

Once the information have been processed, the SWOT analysis is started, and after some rectifications, it is done in a two sided point of view, from touristic to environmental. The process of going through all of the possible strengths, weaknesses, opportunities and threats is also challenging due to the imagination factor that has to hand in hand with reality, being always focused on recreation.

After these two analysis the main conclusion is that a good way to manage this Natural Site, and probably all of natural areas susceptible of tourism and public use should be to make an analysis with a comparison and combination of both touristic and environmental points of view.

Once the SWOT is done, a series of objectives that would improve the potential of the area have been designed and described, from which the main and realistic ones have been used to design and specify a series of improvement proposals.

The six improvement proposals that have come out of this are designed based on the SMART analysis, being specific, measurable, assignable, relevant and time-bound in as much as possible.

They are based on a realistic point of view for an improvement of the area taking in account both points of view (touristic and environmental) and for the wellness of the

population in the surroundings of the area that are the ones that most advantage take from having this Natural Site near their homes.

The six proposals ordered from more to less priority embrace topics or problems like the maintenance and restoration of the infrastructures or signals that need it in all of the Natural Site (like information panels, wooden planks from paths or hiking signals or including some benches or resting areas) to some new ideas based on the promotion of the area via internet, the responsible tourism and education (also from panels and internet), the bird watching tourism or the conditioning of historic heritage from Civil War like bunkers.

Of course, this is an analysis and a design of some proposals that would need, if they were to be carried out, the solicitation of the pertinent permissions to the city council of *Vilamarxant* and the approval of its estimated budget by the same.

It is very important to acknowledge that The Natural Site of *Les Rodanes* is a very interesting place and it has lot of potential for recreation (there is a lot of biodiversity that comes from diversity of ecosystems, there are beautiful views from top of the hills...), and it also would be better if it was more connected to the area of the Túria River, being useful as a green natural corridor for the region of Valencia, but, being realistic, as it is now, the area needs, at least, some basic maintenance and restoration together with some promotion to be in a healthy environmental and recreational state and for it to be in its maximum potential point to be visited and taken advantage of. There are lots of things that can be improved and some of them would mean great changes, so after the analysis and the comparison of both aspects the improvement proposals have come up in the most realistic point of view.

And, for the ending of these conclusions, highlight the fact that the Natural Site needs a task of constant maintenance that will prevent its state and health to decay again.

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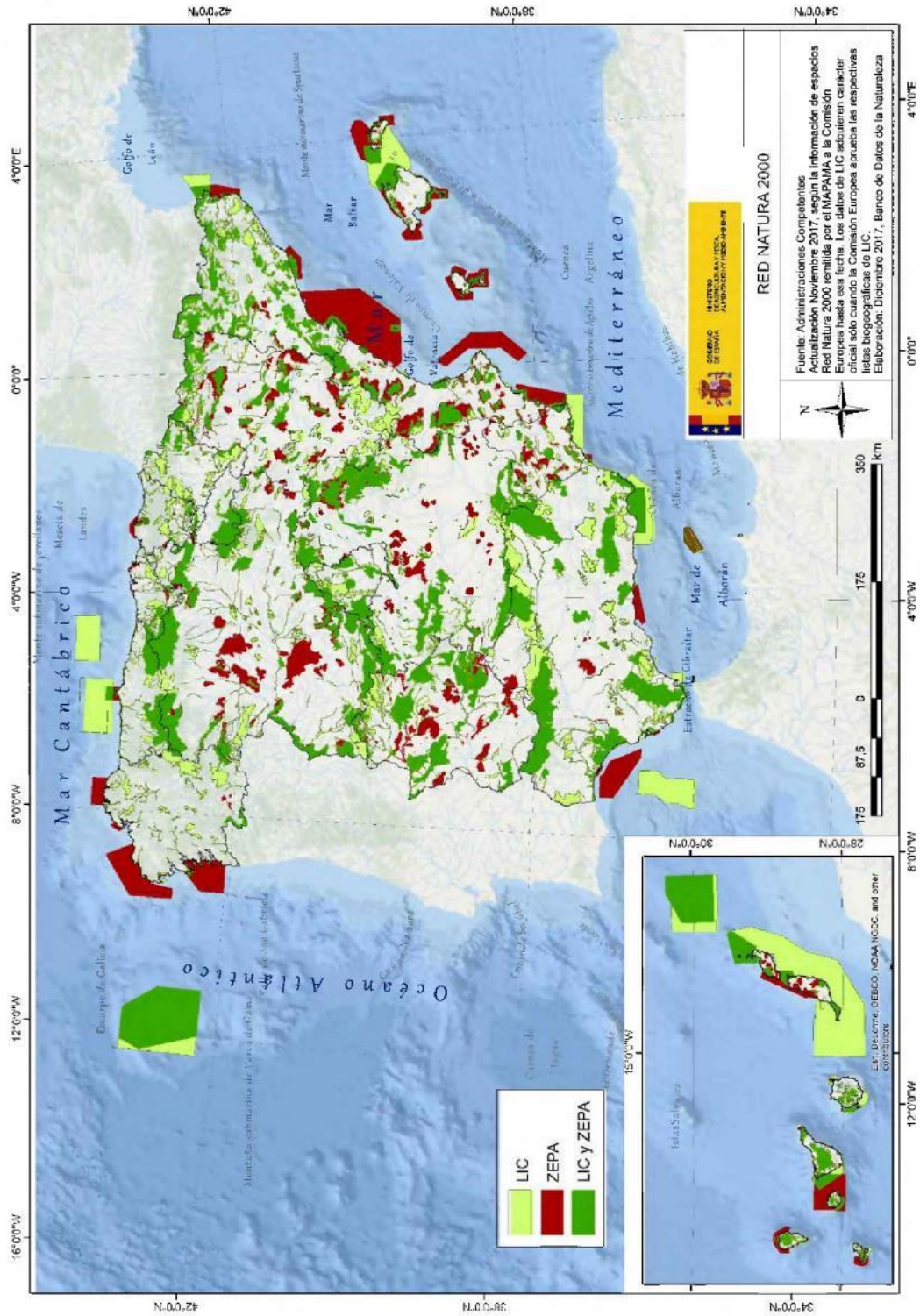
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# 10. ANEXES

## 10.1. Annex I

**Natura 2000 Network in Spain** (information from *Banco de Datos de la Naturaleza*, Nautre Data Bank)



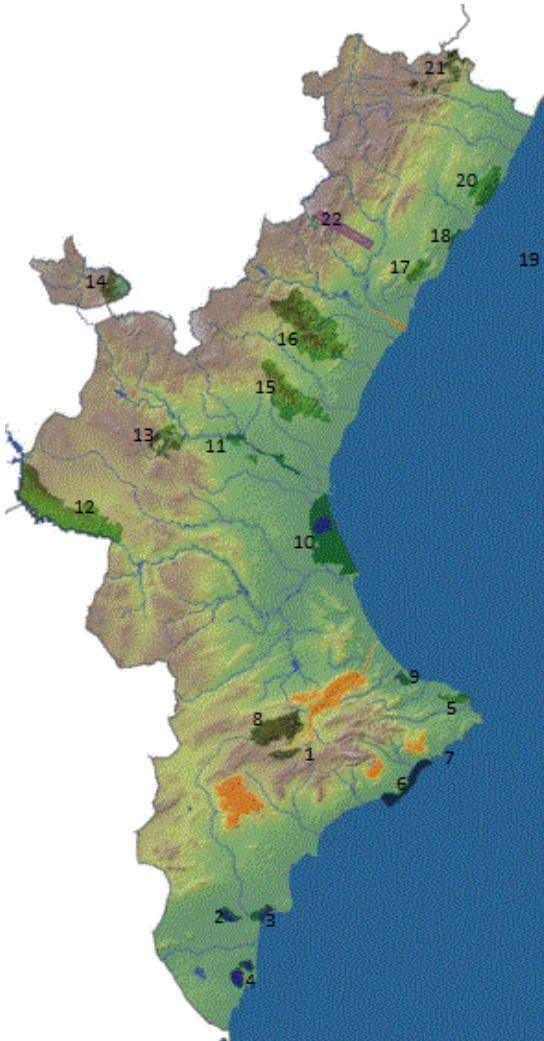
**National Parks in Spain** (data from *Junta de Andalucía* website)



**Rivers in Comunidad Valenciana** (information from *wikipedia.org*)



**Natural Parks in Comunidad Valenciana** (information from *wikipedia.org*)



	Parque Natural	Provincia(s)	Superficie (ha)
1	Carrascal de la Fuente Roja	Alicante	2.450
2	El Hondo	Alicante	2.495
3	Salinas de Santa Pola	Alicante	2.574
4	Lagunas de la Mata y Torrevieja	Alicante	3.743
5	Macizo de Montgó	Alicante	2.092
6	Sierra Helada	Alicante	5.655
7	Peñón de Ifach	Alicante	47
8	Sierra de Mariola	Alicante Valencia	17.257
9	Marjal de Pego-Oliva	Alicante Valencia	1.250
10	Albufera de Valencia	Valencia	21.120
11	Bosque rupícola del Turia	Valencia	4.480
12	Hoces del Cabriel	Valencia	31.446
13	Chera-Sot de Chera	Valencia	6.451
14	Puebla de San Miguel	Valencia	6.300
15	Sierra Calderona	Valencia Castellón	17.772
16	Sierra de Espadán	Castellón	31.182
17	Desierto de las Palmas	Castellón	3.293
18	Prado de Cabanes-Torreblanca	Castellón	865
19	Islas Columbretes	Castellón	19
20	Sierra de Irta	Castellón	7.744
21	Tenencia de Benifasar	Castellón	4.965
22	Peñagolosa	Castellón	1.094

Fuente: Conselleria de Infraestructuras, Terr



## 10.2. Annex II

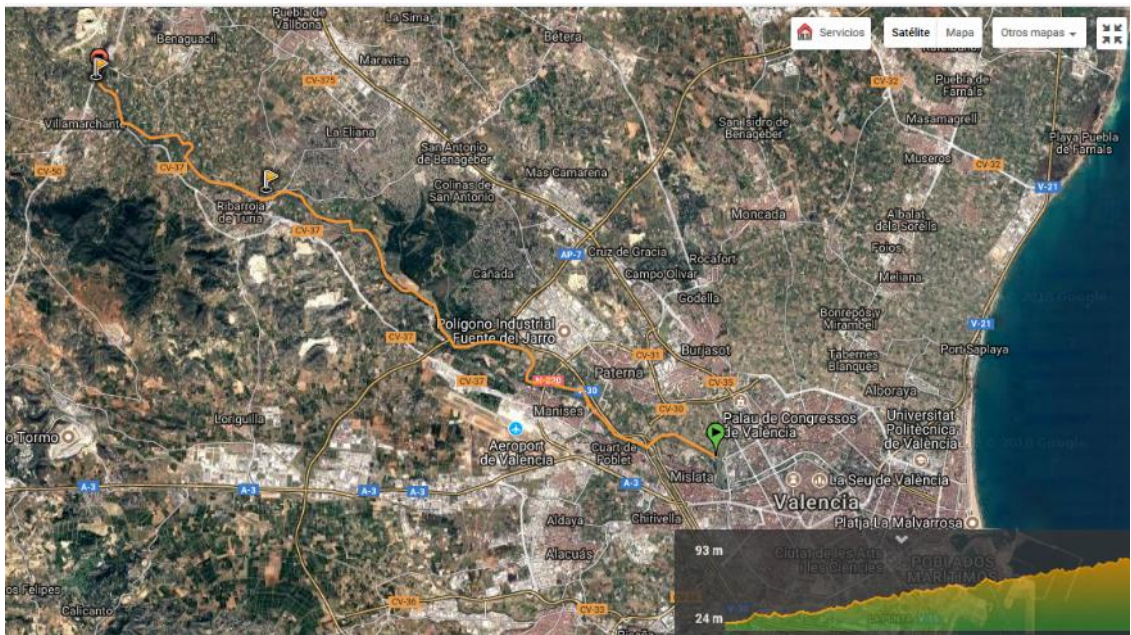
**Image from bunker left from Civil War in *Les Rodanes* and information signal (wikipedia.org)**



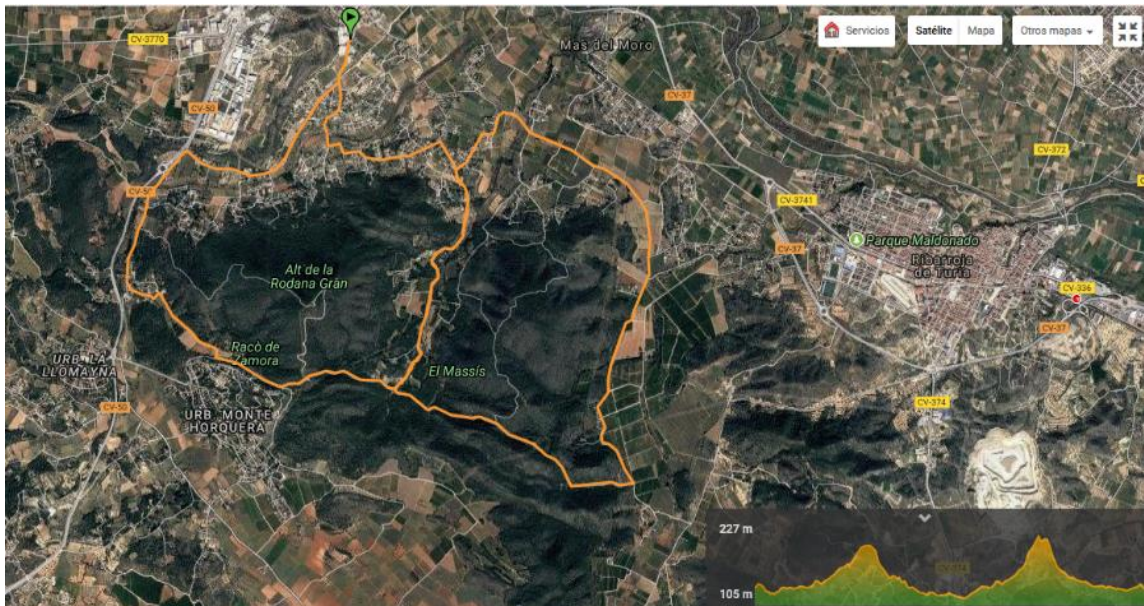
More detailed images from *Les Rodanes* (Valencian Cartographic Institute, viewer)



**Cycling route from Valencia to Vilamaxant** (es.wikiloc.com, hiking and cycling routes website)



**Cycle-tourist route from Vilamarchant to Les Rodanes** (es.wikiloc.com, hiking and cycling routes website)



## Routes in *Les Rodanes*

Trail PR-V 175 (es.wikiloc.com)



Adapted path *Bassa Barreta*:



**Map of the adapted path Bassa Barreta** (*Proposal of programs for the implementation of a Public Use Plan for Les Rodanes Natural Site. Bachelor's Final Project*)

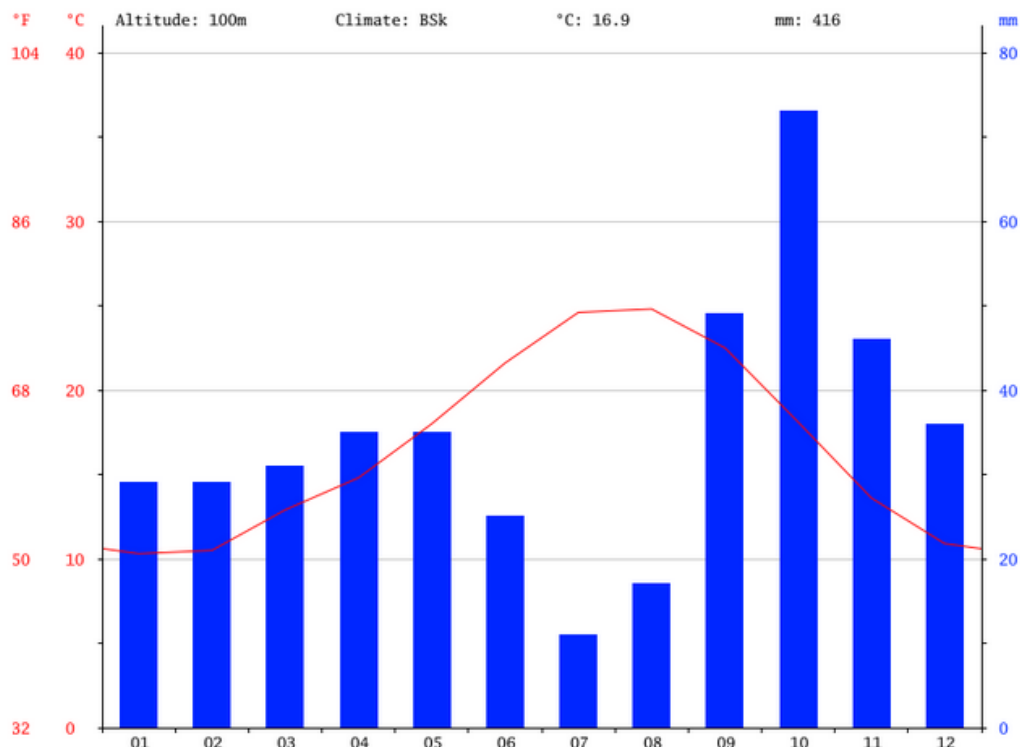


**Recreational area *La Pedrera Del Rei*** (Levante newspaper website)



### 10.3. Annex III

#### Climogram of *Vilamarxant* (es.climate-data.org)



#### Type of soils in Túría River Natural Park (Management Plan of the Natural Resources of the Túría River Natural Park)

There are different types of soil in the study area like:

- Soils that develop on lake limestones and proceed of the residual material product of the dissolution of the limestones. They contain little amount of calcium carbonate and the cambic horizon presents a color of dark brown to red. The most important limitations of use that present are less thickness and rocky outcrops. On these floors we found woody crops.
- Young and deep soils, formed from recent alluvial materials, including terraces, alluvial plains and glacia accumulation.
- Soils that are characterized by having a profile dominated by the presence of calcium carbonate, which accumulates in the form of calcic horizons or powdery limestone. The dedication of these soils is agricultural.
- Soils that have a horizon of clay accumulation. They are usually associated with limestone materials, since its dissolution product brings about the formation of the clays and the evolution towards the formation of the argillic horizon.

## Vegetation in the Túria River Natural Park (Management Plan of the Natural Resources of the Túria River Natural Park)

Other types of units of vegetation found in the Natural Park:

**Riparian vegetation:** It includes plant formations whose presence depends on the appearance of edaphic humidity, normally linked to the presence of a river. In the case of the study area the Ribera Del Túria has the best representation of this type of vegetation. The species that can be found are: *Populus alba*, *Populus nigra*, *Salix elaeagnos*, *Salix purpurea*, *Salix alba* and some elm trees (*Ulmus minor*). The action of man on the bank of the Turia has caused the passage to successive stages of simplification, first with the reduction of the malls to high willow trees, after high pure or monospecific willow trees (*Salix atrocinerea*) to mixed shrubs, to which follows the reeds (*Phragmites sp.*), reedbeds (*Arundo sp.*), *espadañares* (*Thypha latifolia*), and *junqueras* (*Scirpus*, *Juncus sp.*), etc. The vegetation of best preserved riparian forest is formed by poplar, willow and reed beds accompanied by other species such as, elm (*Ulmus minor*), *Tamarix gallica*, *Nerium oleander*, hawthorn (*Crataegus monogyna*), blackberries (*Rubus ulmifolius*), *Pistacia lentiscus*, fennel (*Foeniculum vulgare*), rosebush (*Rosa arvensis*) and shrub of the gallery forest. Accompanying this vegetation is a understory, coming from the adjacent ecosystems, scrubland and / or pine forests, that are introduced in the riverside giving rise to a great diversity of species such as *Pinus halepensis*, carob tree (*Ceratonia siliqua*), *coscoja* (*Quercus coccifera*), black hawthorn (*Rhamnus lycioides*), wild olive (*Olea europaea var. sylvestris*), etc.

The best preserved riparian vegetation is located in the following areas:

- Left bank of the Rambla Primera among the T.M. of *Llíria* and *Benaguasil*.
- Margins of the Túria River as it passes through the T.M. of *Pedralba*.

The areas where there is a lower conservation of vegetation in the area of study are:

- Margins of the Turia River in the northwestern tip of the T.M. of *Riba-Roja* from *Túria*
- Left bank of the Túria River between the T.M. of *Paterna* and *Manises*.

The areas subjected to greater anthropic pressure, have less diversity and worse state of conservation, in many cases the predominance of the reeds does not develop the riparian vegetation.

On the other hand the vegetation associated with the ravines (watercourses not permanent) that end in the Túria is almost constituted exclusively by cane fields, although some have small poplar Mediterranean riparian thickets such as oleanders (*Nerium oleander*), mastic trees (*Pistacia lentiscus*) and wild olive trees (*Olea europaea var. Sylvestris*), accompanied also of some bushes and herbaceous as myrtle (*Myrtus communis*), blonde wild (*Rubia peregrina*), wild rosebushes, *tamarix* (*Tamarix sp.*) or fennel (*Foeniculum vulgare ssp. Piperitum*).

**Scrub and vegetation from lower mount (Garriga):** This unit is formed by a community of low and dense shrub that is on limestone soils, with a rather poor and herbaceous substrate, given the density of the shrub,

which prevents the arrival of the light. The species that dominates these areas is the Kermes oak (*Quercus coccifera*). The variability of the scrubland is high, in terms of its composition. In general, it covers almost all the soil and forms a dense carpet that reaches an average size of 1 m, in which appears *Quercus coccifera*, *Pistacia lentiscus*, *Ulex parviflorus*, wild olive (*Olea europaea* var. *Sylvestris*), carob tree (*Ceratonia siliqua*), black hawthorn (*Rhamnus lycioides*), juniper (*Juniperus oxycedrus*), palmito (*Chamaerops humilis*), rosemary (*Rosmarinus officinalis*), male rosemary (*Cistus lusii*), thyme (*Thymus vulgaris*), heather (*Erica multiflora*), asparagus (*Asparagus acutifolius*), *Rubia peregrina* and *Smilax aspera*, and the herbaceous *Brachypodium retisum*, *Ononis minutissima* and *Phlomis Lychnitis*.

The vegetation from lower mount (*garriga*), besides playing the role of accompanying scrub of pine forests, are also its substitution stages (after the fires). The great extent of these scrubs indicates the intense degradation that has suffered the territory. In general, the distribution of scrub in the field of study coincides with those areas in which, due to the slope, it has not been possible to implant citrus, *Ceratonia siliqua* or almond crops. Thus, the scrubland is located within the scope of study mainly in:

- Between the pine forests of *La Vallesa* and *La Canyada* on the left bank of the river Turia, south and southwest of T.M. of Paterna.
- *La Mallada*, *Raço Cerveró*, *Colom Oca*, in the vicinity of *La Muntanya del Flare* and *La Canyada de la Millana*, in the westernmost area of T.M de Riba-Roja de Túria.
- At the southern end between the T.M. of *Vilamarxant* and Riba-Roja de Túria in the place called *Raço de Perot*.
- In the areas of *Lloma Del Tío Figuetes* and *Els Cabeços*, it is located west from the town of *Benaguasil*.
- On both banks of the Túria River, in the area of *Salto Del Lobo*, between T.M. of *Pedralba* and *Vilamarxant*.
- In the area known as *Buitrera* and *La Cova del Caval* south of T.M. from Llúria.

**Dry land crops:** The carob trees (*Ceratonia siliqua*), olive trees (*Olea europaea*) and to a lesser extent, almonds (*Prunus dulcis*) that can be find in mosaic form or as monocultures. The surface dedicated to dry farming has been in decline for decades due to the conversion to irrigation of many areas.

**Irrigated crops:** The most representative irrigated crops in the area are the citrus, especially orange, and horticulture. Citrus fruits are grown in flat terrain with slopes that usually oscillate between 1.5 and 6%, where the construction of more or less extensive terraces homogenizes the inclination of the cultivated area, being on average 3%. The crops of citrus fruits are formed by orange, mandarin and to a lesser extent lemon trees. As for the orchard crops are very scarce and are relegated to the plains and low zones of the alluvial left by the Túria, reigning the horticultural plants of annual cycle, consisting mainly of onions, artichokes, lettuce, potatoes, green beans and tomatoes in summer and cabbage, and cauliflower in winter.

**Ruderal vegetation:** This type of vegetation is located between the plots of the crops and on the margins of roads. It includes a great diversity of species, being the most frequent: acacias (*Robinia pseudoacacia*),



fig trees (*Ficus carica*), Medlars (*Eriobotrya japonica*), wild olive trees (*Olea europaea* var. *wild*), almond trees (*Prunus dulcis*), pomegranates (*Punica granatum*), palm trees (*Chamaerops humilis*), *Nerium oleander*, brambles (*Rubus ulmifolius*), rose bushes (*Rosa arvensis*), carob tree (*Ceratonía siliqua*), etc.

**Species from an inventory in *Les Rodanes* (Source: own elaboration, species management, 2016)**

Especies	
<i>Pinus halepensis</i> Miller (Pino carrasco)	<i>Rubia peregrina</i> L. (Rubia)
<i>Brachypodium retusum</i> (Pers.) Beauv. (Lastón)	<i>Sedum sediforme</i> L. (raimet de pastor)
<i>Phyllerea angustipholia</i>	<i>Asparagus horridus</i> L.
<i>Quercus coccifera</i> L. (Coscoja)	<i>Arbutus unedo</i>
<i>Pistacea lentiscus</i> L. (Lentisco)	<i>Cistus albidus</i> L. (Jara blanca)
<i>Cistus salvifolius</i> L. (Estepa borrera)	<i>Lonicera implexa</i>
<i>Thymus vulgaris</i> L. (Tomillo)	<i>Globularia alypum</i> L. (Corona de fraile)
<i>Doricionium pentaphyllum</i>	<i>Teucrium polium</i>
<i>Carex muricata</i>	<i>Psolarea bituminosa</i>
<i>Olea europaea</i> L. (Acebuche)	<i>Eringium campestre</i>
<i>Erica multiflora</i> L. (Brezo)	<i>Bupleurum rigidum</i>
<i>Chamaerops humilis</i> L. (Palmito)	<i>Phlomis lychnitis</i> L. (Oreja de liebre)
<i>Centaurea saguntina</i>	<i>Hiparrhenia hirta</i>
<i>Rhamnus lycioides</i> L. (Espino negro)	<i>Stipa tenacissima</i>
<i>Rhamnus alaternus</i> L. (Aladierno)	<i>Quercus rotundifolia</i>
<i>Juniperus oxycedrus</i> L. (Enebro)	<i>Erica arborea</i>
<i>Antyllis cytisoides</i> L. (Albaida)	<i>Aristolochia pistoloquia</i>
<i>Helianthemum violaceum</i>	<i>Lavandula stoechas</i>
<i>Asparagus acutifolius</i> L. (Esparraguera triguera)	<i>Coronilla juncea</i> L.
<i>Asphodelus ramosus</i>	<i>Fumana ericoides</i> (Cav.) Gand.
<i>Atractylis humilis</i> L. (Cardo heredero)	<i>Lapiedra martinezii</i>
<i>Teucrium pseudochamaepitis</i>	
<i>Ceratonía siliqua</i>	
<i>Ulex parviflorus</i> Pourret (Aliaga)	
<i>Smilax aspera</i> L. (Zarzaparrilla)	

Images from typical vegetation in *Les Rodanes* (es.wikipedia.org)

*Anthyllis cytisoides*



*Chamaerops humilis*



*Pistacia lentiscus*



*Ceratonia siliqua*



## Inventory of fauna in the Natural Park (Management Plan of the Natural Resources of the Túrria River Natural Park)

Nombre científico	Nombre vulgar	HÁBITATS					
		Vegetación de ribera y medio acuático.	Cultivos	Pinares	Matorrales	Cantiles	Medio antrópico
<b>PECES</b>							
<i>Anguilla anguilla</i> *	Anguila*	P					
<i>Barbus guiraonis</i> *	Barbo mediterráneo*	P					
<i>Chondrostoma tuiense</i> *	Madrilla*	P					
<i>Cobitis paludica</i> *	Colmilleja*	P					
<i>Cyprinus carpio</i>	Carpa	P					
<i>Oncorhynchus mykiss</i>	Trucha arco iris	P					
<i>Squalius pyrenaicus</i>	Cacho	P					
<b>ANFIBIOS</b>							
<i>Alytes obstetricans</i>	Sapo partero	P	P				
<i>Bufo bufo</i>	Sapo común	P	P	P	P	P	
<i>Bufo calamita</i>	Sapo corredor	P	P	P	P		
<i>Pelobates cultripes</i> *	Sapo de espuelas*	P	P				
<i>Pelodytes punctatus</i>	Sapillo moteado	P			P		
<i>Rana perezi</i>	Rana común	P					
<b>REPTILES</b>							
<i>Malpolon monspessulanus</i>	Culebra bastarda				P		
<i>Acanthodactylus erythrurus</i>	Lagartija colirroja				P	P	
<i>Blanus cinereus</i>	Culebrilla ciega		P	P	P		
<i>Chalcides bedriagai</i>	Eslizón ibérico	P	P				
<i>Coluber hippocrepis</i>	Culebra de herradura			P	P		
<i>Coronella girondic</i>	Culebra lisa meridional			P	P		
<i>Elaphe scalaris</i>	Culebra de escalera		P	P	P		
<i>Lacerta lepida</i>	Lagarto ocelado		P	P	P	P	
<i>Mauremys leprosa</i> *	Galápago leproso*	P					
<i>Natrix maura</i>	Culebra viperina	P					
<i>Natrix natrix</i>	Culebra de collar	P					
<i>Podarcis hispanica</i>	Lagartija ibérica		P	P	P	P	P
<i>Psammodromus algirus</i>	Lagartija colilarga			P	P	P	
<i>Psammodromus hispanicus</i>	Lagartija cenicienta			P	P		
<i>Tarentola mauritanica</i>	Salamanquesa común		P	P	P	P	P
<i>Vipera latasti</i>	Víbora hocicuda			P	P		
<b>AVES</b>							
<i>Accipiter nisus</i> *	Gavilán común*			P			
<i>Acrocephalus scirpaceus</i>	Carricero común	P					
<i>Actitis hypoleucos</i>	Andarrios chico	P					
<i>Alcedo atthis</i> *	Martín pescador*	P					
<i>Alectoris rufa</i>	Perdiz común		P		P		
<i>Ardea cinerea</i>	Garza real	P					
<i>Ardea purpurea</i> *	Garza Imperial*	P					
<i>Apus apus</i>	Vencejo común		P			P	P
<i>Athene noctua</i>	Mochuelo Europeo		P				
<i>Caprimulgus europaeus</i>	Chotacabras europeo				P		
<i>Carduelis carduelis</i>	Jilguero		P				
<i>Carduelis chloris</i>	Verderón común		P	P			
<i>Certhia brachydactyla</i>	Agateador común	P		P			
<i>Cettia cetti</i>	Ruiseñor bastardo	P					

Nombre científico	Nombre vulgar	HÁBITATS					
		Vegetación de ribera y medio acuático.	Cultivos	Pinares	Matorrales	Cantiles	Medio antrópico
<i>Circaetus gallicus</i>	Águila Culebrera			P			
<i>Circus aeruginosus</i> *	Aguilucho lagunero*	P					
<i>Glaucopis glandarius</i> *	Críalo europeo*			P			
<i>Columba palumbus</i>	Paloma torcaz		P	P		P	P
<i>Delichon urbica</i>	Avión Común					P	P
<i>Erithacus rubecula</i>	Petirrojo	P		P		P	P
<i>Falco tinnunculus</i>	Cernícalo vulgar		P				
<i>Galerida theklae</i>	Cogujada Montesina				P		
<i>Hieraaetus fasciatus</i> *	Águila perdicera*			P		P	
<i>Hieraaetus pennatus</i> *	Aguililla calzada*			P			
<i>Hirundo rustica</i>	Golondrina Común		P				
<i>Ixobrychus minutus</i> *	Avetorillo común*	P					
<i>Lanius senator</i>	Alcaudón común				P		
<i>Loxia curvirostra</i>	Piquituerto común			P			
<i>Luscinia megarhynchos</i>	Ruiseñor Común	P					
<i>Luscinia svecica</i>	Pechiazul	P				P	
<i>Nycticorax nycticorax</i>	Martinete común	P					
<i>Oenanthe hispanica</i>	Collalba Rubia				P	P	
<i>Oenanthe leucura</i>	Collalba Negra				P	P	
<i>Oenanthe oenanthe</i>	Collalba Gris				P	P	
<i>Oriolus oriolus</i>	Oropéndola	P					
<i>Parus ater</i>	Carbonero garrapinos			P			P
<i>Parus caeruleus</i>	Herrerillo común	P		P			P
<i>Parus cristatus</i>	Herrerillo capuchino			P			
<i>Parus major</i>	Carbonero común	P		P			P
<i>Passer domesticus</i>	Gorrion Común		P			P	P
<i>Passer montanus</i>	Gorrion Molinero		P				
<i>Phoenicurus ochruros</i>	Colirrojo Tizón				P	P	
<i>Phylloscopus collybita</i>	Mosquitero común	P					
<i>Pica pica</i>	Urraca		P				P
<i>Picus viridis</i>	Pito real			P			
<i>Rallus aquaticus</i>	Rascón Europeo	P					
<i>Regulus ignicapillus</i>	Reyezuelo listado			P			
<i>Remiz pendulinus</i>	Pájaro moscón	P					
<i>Riparia riparia</i> *	Avión Zapador*	P					
<i>Saxicola torquata</i>	Tarabilla Común		P		P		
<i>Streptopelia decaocto</i>	Tórtola turca		P				P
<i>Serinus serinus</i>	Verdecillo			P			
<i>Sturnus unicolor</i>	Estomino negro		P			P	P
<i>Sylvia atricapilla</i>	Curruca capirotada			P			
<i>Sylvia cantillans</i>	Curruca carrasqueña				P	P	
<i>Sylvia undata</i>	Curruca rabilarga				P	P	
<i>Tachybaptus ruficollis</i>	Zampullín Común	P					
<i>Turdus merula</i>	Mirlo Común						P
<i>Turdus philomelos</i>	Zorzal Común			P			
<i>Upupa epops</i>	Abubilla		P				
<b>MAMÍFEROS</b>							
<i>Apodemus sylvaticus</i>	Ratón de campo	P	P	P	P	P	

Nombre científico	Nombre vulgar	HÁBITATS						
		Vegetación de ribera y medio acuático.	Cultivos	Pinares	Matorrales	Cantiles	Medio antrópico	
<i>Arvicola algirus</i>	Rata de agua	P						
<i>Atelerix algirus</i>	Erizo moruno		P		P			
<i>Crocidura rusula</i>	Musaraña común		P	P	P	P		
<i>Eliomys quercinus</i>	Lirón careto			P				
<i>Erinaceus europaeus</i>	Erizo común	P		P				
<i>Eptesicus serotinus</i>	Murciélago hortelano		P					
<i>Genetta genetta</i>	Gineta			P		P		
<i>Lepus granatensis</i>	Liebre ibérica		P					
<i>Felis silvestris</i> *	Gato montés*			P		P		
<i>Martes foina</i>	Garduña	P	P	P				
<i>Microtus duodecimcostatus</i>	Topillo común	P	P					
<i>Mustela nivalis</i>	Comadreja	P	P	P				
<i>Mustela putorius</i> *	Turón común*	P						
<i>Myotis capaccinii</i>	Murciélago ratonero						P	
<i>Oryctolagus cuniculus</i>	Conejo común		P		P			
<i>Rattus norvegicus</i>	Rata común	P	P	P	P	P	P	
<i>Rattus rattus</i>	Rata campestre			P	P	P		
<i>Sciurus vulgaris</i>	Ardilla común			P				
<i>Sus scrofa</i>	Jabalí	P	P	P	P			
<i>Talpa occidentalis</i>	Topo ibérico		P					
<i>Vulpes vulpes</i>	Zorro común			P	P			

\* Especies catalogadas como amenazadas.

**P= presence**

**Translation of table columns:**

**Nombre científico:** scientific name

**Nombre vulgar:** common name in Spanish

**Habitats:** habitats

**Vegetación de ribera y medio acuático:** Riverside vegetation and aquatic medium

**Cultivos:** crops

**Pinares:** pine forest

**Matorrales:** shrub

**Cantiles:** terrain forming steps

**Medio antrópico:** anthropic medium

**Peces:** Fishes

**Anfibios:** Amphibians

**Reptiles:** Reptiles

**Aves:** Birds

**Mamíferos:** Mammals

Images from typical fauna in *Les Rodanes* (es.wikipedia.org)

*Mustela nivalis*



*Bubo bubo*



*Buteo buteo*



*Athene noctua*



## 10.4. Annex IV

**Images from the disabled people route in *Bassa Barreta*. (Data from: [rutasparatodaslas edades.blogspot.es](http://rutasparatodaslas edades.blogspot.es))**



**BROKEN WOODEN PLANKS IN THE PATH ADAPTED FOR DISABLED PEOPLE**



**PATH FOR DISABLED PEOPLE COVERED WITH BRANCHES**



**INFORMATION PANEL IN THE PATH ADAPTED FOR DISABLED PEOPLE**



**BROKEN SIGNAL IN THE PATH ADAPTED FOR DISABLED PEOPLE**



**PATH FOR DISABLED PEOPLE COVERED WITH NEEDLES FROM PINES**



SIGNAL WRITTEN ALSO IN BRAILLE IN THE PATH ADAPTED FOR DISABLED PEOPLE



INFORMATIONAL PANELS IN THE ADAPTED PATH FOR DISABLED PEOPLE



**Images from *Les Rodanes* Natural Site.** (Data from: es.wikiloc.com)



**PATH IN A HIKING ROUTE IN *LES RODANES* NATURAL SITE**



**PATH IN A HIKING ROUTE IN *LES RODANES* NATURAL SITE**



INFORMATION PANELS, SIGNALS AND INDICATIONS IN THE HIKING ROUTES



INFORMATION PANELS AND SIGNALS IN THE HIKING ROUTES



TV AND RADIO ANTENNA IN THE TOP OF LA RODANA GRAN



INFORMATION PANELS FOR DIRECTIONS IN THE HIKING ROUTES



VIEWS FROM THE HIKING ROUTE



SIGNAL FROM THE HIKING ROUTE



VIEWS FROM THE HIGHEST POINTS IN THE HIKING ROUTES OF *LES RODANES*



VIEWS FROM A POINT IN THE HIKING ROUTE AND COLOUR SIGNAL

