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# Assessment of the Ecotourism Potential of Hiking Trails in Castro Laboreiro

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Thesis Submitted to the Faculty of Sciences of the University of  
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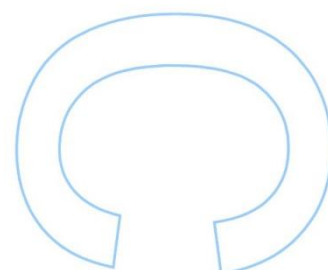
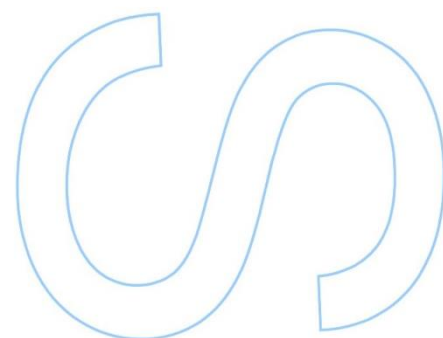
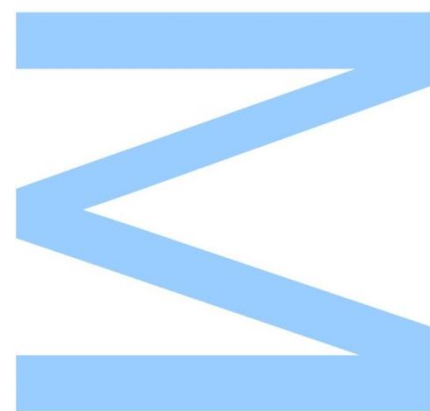
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*"Take nothing but pictures, leave nothing but footprints"*

Chief Seattle

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# Abstract

Ecotourism is a very widely used term, although it lacks an agreed definition. Many research is being made in this area regardless almost of them investigate the social benefits to local communities or the impacts of ecotourism projects in protected areas. Very few combine biological, ecological and cultural data.

National Parks and other protected areas show high potential for the development of ecotourism projects, but they actually face huge damages caused by human pressure. So, ecotourism needs new approaches that combine both ecological and anthropogenic variables, allowing scattering tourists among the year, lessening the negative impacts caused by the recreational activities.

Here it was proposed a novel approach that helps entities to manage activities in sensitive habitats in protected areas and enable to stimulate environmental awareness in tourists.

Eight criteria were evaluated in order to achieve the ecotourism potential value of five trails, namely: species richness; number of habitats; medium value of habitats; number of natural marks; number of anthropogenic marks; landscape diversity; vertebrate conservation status and plant range distribution; and number of endemisms. Those were evaluated by season (except 'number of habitats', 'medium value of habitats' and 'landscape diversity') in order to realize spatial and temporal differences of the potential of those trails for the development of ecotourism activities. Ecotourism potential value was calculated in two different ways in order to understand if weighing criteria differently influence the final results.

Ecotourism potential value was higher in all seasons for two of the studied trails – Trail 1 and Trail 5 – especially in spring. Although the first is explainable due to the highest number of species recorded, natural marks and anthropogenic marks; and due to the landscape diversity and vertebrate conservation status-plant range distribution highest values, the second is explained mostly by the great number of habitats it comprises and the respective medium value of habitats, as well as the most valuable anthropogenic marks recorded.

It was also verified that when we opt for an approach where we weigh more some criteria than others, ecotourism potential value of trails by season may vary from the results obtained when we weighed all criteria the same.

By accomplish a spatial and temporal evaluation, it could be possible to answer where and when recreational activities should take place, scattering them through the year, lessening the negative impacts of the mass tourism in summer. Also this study provided relevant information that helps to manage ecotourism activities in protected areas, achieving

one of the main goals of ecotourism: sustainability. Yet, it contributes to update information on local biodiversity data, which in turn may protect more efficiently species under threat or still less known. Moreover, this kind of evaluation can be applied in further ecotourism studies.

# Resumo

O termo ecoturismo tem sido amplamente usado, mas que carece de uma definição consensual. Muitos estudos têm sido realizados nesta área, apesar de a maioria se focar apenas na análise dos benefícios sociais para as comunidades locais ou nos impactos dos projetos de ecoturismo em áreas protegidas. Muito poucos combinam informação biológica, ecológica e cultural.

Os Parques Nacionais e outras áreas protegidas apresentam um elevado potencial para o desenvolvimento de projetos de ecoturismo, mas sofrem atualmente elevados danos causados pela pressão humana. Desta forma, o estudo do ecoturismo precisa de novas abordagens, que combinem variáveis tanto ecológicas como antrópicas, permitindo dispersar turistas pelas quatro estações do ano, diminuindo dessa forma os impactos negativos associados às atividades de recreio.

Foi proposta uma abordagem original, que poderá ajudar as entidades a gerir as atividades de lazer em habitats sensíveis nas áreas protegidas, permitindo ao mesmo tempo uma maior consciencialização ambiental por parte dos turistas.

Foram avaliados oito critérios diferentes, a fim de perceber o potencial ecoturístico de cinco trilhos, nomeadamente: riqueza específica de espécies; número de habitats; valor médio dos habitats; número de elementos naturais; número de elementos antropogénicos; diversidade paisagística; estatuto de conservação de vertebrados e distribuição geral de plantas; e número de endemismos. Estes foram avaliados para as quatro estações anuais, para compreender se existiam diferenças espaciais e temporais no potencial desses trilhos para o desenvolvimento de atividades de ecoturismo. O potencial ecoturístico foi calculado segundo duas abordagens, de forma a perceber se ponderando os critérios de forma distinta se obtêm resultados diferentes.

O potencial ecoturístico foi maior nas quatro estações do ano para dois dos trilhos analisados – o Trilho 1 e o Trilho 5 – principalmente na primavera. Embora o primeiro seja explicado devido ao maior número de espécies, de elementos naturais e antropogénicos, e devido ao elevado valor obtido para a diversidade paisagística e estatutos de conservação de vertebrados-distribuição geral das plantas, o segundo é explicado principalmente pelo elevado número de habitats que compreende, bem como pelo maior valor respeitante às estruturas antropogénicas.

Verificou-se ainda que quando optamos por ponderar mais uns critérios do que outros, o valor do potencial ecoturístico dos trilhos por estação anual pode variar face ao mesmo valor obtido quando se considera que cada critério contribui de igual forma para o cálculo.



Ao realizar uma avaliação espacial e temporal foi possível responder onde e quando devem decorrer as atividades de recreio, dispersando-as ao longo do ano e permitindo dessa forma diminuir os impactos negativos associados ao turismo de massa no verão. Ademais, este estudo forneceu informações relevantes que ajudam a gerir as atividades de lazer em áreas protegidas, permitindo alcançar um dos principais objetivos do ecoturismo: a sustentabilidade. Este tipo de estudos permite ainda atualizar as bases de dados sobre a biodiversidade de um local, o que poderá ser um apoio à conservação de espécies ameaçadas ou ainda pouco conhecidas. Para além disso, este tipo de avaliação pode ser aplicado em futuros estudos na área do ecoturismo.

# Table of Contents

<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>1.1. General framework.....</b>	<b>1</b>
<b>1.2. Ecotourism definition and sustainability.....</b>	<b>1</b>
<b>1.3. Ecotourism in Protected Areas .....</b>	<b>3</b>
<b>1.4. Current ecotourism research and the need of new evaluation .....</b>	<b>5</b>
<b>1.5. Trail analysis .....</b>	<b>6</b>
<b>1.6. Objectives .....</b>	<b>6</b>
<b>2. Materials and Methodology .....</b>	<b>8</b>
<b>2.1. Study area.....</b>	<b>8</b>
<b>2.2. Methods .....</b>	<b>9</b>
<b>2.2.1. Field work .....</b>	<b>9</b>
<b>2.2.2. Characterization of the hiking trails.....</b>	<b>9</b>
<b>2.2.3. Data analysis .....</b>	<b>10</b>
<b>3. Results .....</b>	<b>16</b>
<b>3.1. Description of the trails .....</b>	<b>16</b>
<b>3.2. Criteria analysis and evaluation of EPV .....</b>	<b>32</b>
<b>3.3. Local biodiversity update .....</b>	<b>37</b>
<b>4. Discussion of the results .....</b>	<b>39</b>
<b>4.1. Statistical Analysis .....</b>	<b>39</b>
<b>4.2. Databases updated on new species .....</b>	<b>46</b>
<b>5. Conclusions.....</b>	<b>47</b>
<b>6. References.....</b>	<b>49</b>
<b>7. Appendices.....</b>	<b>57</b>

# List of Figures

**Fig. 1: Geographical framework of the study area. Location of the Peneda-Gerês National Park in the northern Portugal (upper pictures) and the mountain parish of Castro Laboreiro (bottom picture). .....8**

**Fig. 2. Anthropogenic marks with the correspondent weigh according to the date of construction. a) Granary, a construction of the Modern Age with a value of 1. b) Aqueduct, a construction with a high representativeness in the local culture with a value of 2. c) Bridge of Cava da Velha, a modern build that links the two margins of the river with a value of 3. d) Bridge of Dorna, from the Roman period with a value of 4. e) Tumuli with approximately six thousand years with a value of 5. ....12**

**Fig. 3. Number of LME present in a landscape unit. a) Only one LME present - the vegetation. b) Two LME present - vegetation and water. c) Landscape unit with three LME present - geology; topography and vegetation. d) Four LME present - vegetation; topography; geology; human constructions. e) Five LME present - vegetation; water; geology; topography and geology..... 13**

**Fig. 4. Values attributed to vertebrates, according to their conservation status. a) *Emberiza cia*, a LC bird with a value of 1. b) *Lacerta schreiberi*, a NT reptile that was weighed with 2 points. c) *Vipera latastei ssp. latastei*, a VU reptile weighed with 3 points. d) *Circus pygargus*, an EN bird with a value of 4. e) *Salmo trutta*, a CR fish in Portugal, weighed with 5 points.....14**

**Fig. 5. Weighs attributed to the plants according to their range of distribution. a) *Eucalyptus globulus*, an exotic plant that contribute to the criterion with 1 point. b) *Arenaria montana ssp. montana*, a plant high spread in the country with a value of 2. c) *Ajuga pyramidalis ssp. meonantha*, an autochthonous plant confined to Northern Portugal with a value of 3. d) *Narcissus triandrus ssp. triandrus*, an Iberian endemism that contributes with 4 points to the overall value of VCS-PRD. e) *Ceratocapnos claviculata ssp. picta*, a Portuguese endemism that contributes for the overall value of VCS-PRD with the highest value of 5 (photo by P.V. Araújo) . ....14**

**Fig. 6. Detail of the localization of the five trails through the study area, with emphasizing of medium altitudes where they are located. .... 16**

<b>Fig. 7: Draw and topographic profile of the trail number one – Ameijoeira Trail. ....</b>	<b>17</b>
<b>Fig. 8. Draw and topographic profile of the trail number two – Matança trail. ....</b>	<b>23</b>
<b>Fig. 9: Draw and topographic profile of the trail number three – Castrejo trail. ....</b>	<b>25</b>
<b>Fig. 10: Draw and topographic profile of the trail number four – Transfonteiriço trail. .</b>	<b>28</b>
<b>Fig. 11. Draw and topographic profile of the trail number five – Plateau trail. ....</b>	<b>31</b>

# List of Tables

<b>Table 1. Species richness by season and by trail.....</b>	<b>32</b>
<b>Table 2. Number of Different Habitats and the Medium Value of Habitats (MVH) for each trail. ....</b>	<b>33</b>
<b>Table 3. Number of Natural Marks by season in each trail.....</b>	<b>33</b>
<b>Table 4. Number of Anthropogenic Marks (AM) by season in each trail, with concerning of its global value. ....</b>	<b>34</b>
<b>Table 5. Landscape Diversity (LD) relative value, calculated by dividing the sum of Landscape Main Elements (LME) (or Overall value) present in all points of scenery appreciation by the total length of the trail. ....</b>	<b>34</b>
<b>Table 6. Relative values of Vertebrate Conservation Status – Plant Range Distribution (VCS-PRD) by season and by trail. The relative values were obtained by dividing the sum of all VCS-PRD of each species by Species Richness (S). ....</b>	<b>35</b>
<b>Table 7. Number of Endemisms (NE) by season and by trail.....</b>	<b>36</b>
<b>Table 9. EPV calculated by weighing differently each criterion.....</b>	<b>37</b>

# Abbreviations

AM – Number of Anthropogenic Marks

Amp – Amphibians

Bi – Birds

CIMO – Iberian Mountaineering and Guidance Club

CR – Critically endangered

EN – Endangered

ENDI – Iberian endemism

ENDP – Portuguese Endemism

EPV – Ecotourism Potential Value

EXO – Exotic

Fis – Fishes

Fun – Fungi

ICNF – Institute for the Conservation of Nature and Forests

Inv – Invertebrates

IUCN – International Union for Conservation of Nature

LD – Landscape diversity

LME – Landscape main elements

Mam – Mammals

MVH – Medium Value of Habitats

NE – Number of Endemisms

NH – Number of Habitats present

NM – Number of Natural Marks

Pla – Plants

PNPG – Peneda-Gerês National Park

RBVP – Red Book of Vertebrates of Portugal

Rep – Reptiles

S – Species Richness

SIC – Site of Community Importance

VCS-PRD – Vertebrate Conservation Status–Plant Range Distribution

VU – Vulnerable

ZPE – Specially Protected Site for Birds

# 1. INTRODUCTION

## 1.1. General framework

Ecotourism has been referred by many authors as a potential tool for biodiversity conservation and rural communities' development (Ross & Wall, 1999; Pinedo, 2011; Baral *et al.*, 2012; Santo (s/d)). However, a report by Goodwin (1996) describes it as a powerful economic system but also as a form of impacting the ecosystems in many protected areas.

Most of the scientific research directed to ecotourism tries to achieve the impacts on particular wildlife species and/or on particular sensitive habitat (ecological dimensions); while others want to optimize social-cultural impacts on rural communities (ethical dimensions) (Weaver & Lawton, 2007). The study of ecotourism needs different approaches, with more biological, ecological and cultural information linked as one, as well as studies that address all the four seasons, so it can achieve both the conservation and the development of communities that live in natural areas, key issues to the sustainability of ecotourism.

The promotion of an area as a favorite ecotourism destination sensitizes tourists of the ecological importance of an area and can create awareness about the sensitive local economy (Slinger, 2000). In these terms, the Peneda-Gerês National Park (PNPG) presents a great potential for the development of ecotourism projects since its biodiversity, ecological importance and cultural heritage support the promotion of ecotourism (Álvares & Petrucci-Fonseca, 2002).

With this work it is expected that the knowledge of local and temporal differences in biodiversity of a specific area can offer a new way to determine where and when ecotourism activities should be implemented, so it can function as a conservation tool for protected areas.

## 1.2. Ecotourism definition and sustainability

Ecotourism is a very widely used term, although it lacks an agreed definition (Donohoe & Needham, 2006; Weaver & Lawton, 2007; Hunt & Stronza, 2009). The International Ecotourism Society (TIES, 2001) defines it as “responsible travel to natural areas that conserves the environment and improves the well-being of local people”, but many other definitions have been adopted by other authors in the last years. Ayala (1995) referred by Lim & McAleer (2004) defines ecotourism as a form of tourism that allows the enjoyment and the understanding of nature and culture of a destination while producing economic

benefits and actively promoting environmental conservation. According to Weaver & Lawton (2007), ecotourism should satisfy three core criteria, namely: (1) attractions should be predominantly nature-based, (2) visitor interaction with those attractions should be focused on learning or education, (3) experience and product management should follow principles and practices associated with ecological, socio-cultural and economic sustainability. Similarly, Donohoe & Needham (2006) point six main traits of ecotourism: nature-based, conservation, education, sustainability, distribution of benefits and ethic awareness.

In general, all definitions aim to promote environmental conservation and ecological sustainability; generate socio-economic benefits for people who live in natural areas by their direct involvement in the projects; and preserve both natural and cultural attractions (Ross & Wall, 1999; Reimer & Walter, 2013).

Many complex issues of sustainability in ecotourism have been explored in last years, including sustainable use of land and natural resources and environmental conservation, especially in less developed countries (Bookbinder *et al.*, 1998). Also, cultural preservation and deterioration (Donohoe, 2011); visitor education and impacts; issues on indigenous people rights (Stern, 2008); environmental impacts and ecotourism effects on local culture (it is stated that ecotourism is less culturally intrusive than other forms of tourism) and visitor education at the form of building environmental awareness (Donohoe, 2011) are also key issues in what concerns to sustainable ecotourism.

Ecotourism provides direct financial benefits for conservation in several ways: by park entrances fees (Krüger, 2003); voluntary donations to environmental and conservation initiatives; allocating the revenues generated to conservation initiatives (Brightsmith, *et al.*, 2008); and sometimes by increasing the size of areas under jurisdiction like national parks (Honey, 2008) or creating new protected areas (Krüger, 2003). Furthermore, it is stated that it has the capability to improve the well-being of rural communities and to generate economic benefits through the employment and the involvement of locals in recreational activities (Opoku, 2011; Zhou *et al.*, 2013).

It is stated that to achieve its principal objectives, this form of tourism should be at the same time financially viable and culturally appropriate (Wall, 1997; Barkin, 2002). One direct effect of sustainable ecotourism is that new areas can receive protection or existing protected areas can be conserved more effectively because of a higher incentive to do so (Krüger, 2003). Also, it led to changes in land-use patterns by local communities, especially reducing the activities of daily life that harm wildlife (Langholz, 1999 referred by Stronza & Pêgas, 2008). Moreover, sustainable tourism can contribute to the quality of the environment; economic development; the well-being of rural communities and the high-quality experience for the ecotourist (Lim & McAleer, 2004). If it is well managed, it should contribute to the protection and conservation of biodiversity (Ross & Wall, 1999).



Whereas some authors argue that tourism of any kind is a threat to protected areas (Barkin, 2002), or consider ecotourism and conservation antagonisms (Isaacs, 2000), others highlight its potential for the protection of nature (Gossling, 1999; Stronza & Pêgas, 2008).

Ecotourism can only be sustainable if its key issues can be achieved. Otherwise it will not be much different from the conventional tourism (Monteros, 2002). For it benefits the area where it is based in, the revenues generated should be reinvested into conservation initiatives (Brightsmith, *et al.*, 2008). Also, it is extremely important that local communities can obtain part of the economic profits from the protected areas (Lim & McAleer, 2004) so they will be less likely to overexploit them and otherwise help and invest in local biodiversity conservation (since tourism gives them the profits needed or generates employment opportunities) (Loubser *et al.*, 2001). The involvement of local communities is important for the long-term conservation of wildlife (Gurung, & Seeland, 2008). On the one hand the opportunity to interact with local people and the experience of different cultural views can enhance the ecotourist experience (Ross & Wall, 1999). On the other hand, if these communities don't receive benefits from ecotourism, attitudes towards biodiversity are more likely be negative and activities such as poaching; fire burns; overfishing; disrespect of outsiders and overexploitation of natural resources will continue to be a constant (Reimer & Walter, 2013).

Although ecotourism builds on these bases previously detailed, a new critical question has arisen: whether the ecotourism projects are sustainable in terms of achieving the three main key issues of economic, environmental and socio-cultural development (Baral *et al.*, 2012).

### **1.3. Ecotourism in Protected Areas**

Honey (2008) relates the travel to natural destinations to be areas under some kind of national or international protection, where may be inhabited by human beings and Zhou *et al.* (2013) state that protected areas offer a great potential for ecotourism. Notwithstanding, given the rapid growth of this kind of tourism, several protected areas should experience an increasing number of visitors which will, in turn, present substantial challenges to protected area managers (Deng *et al.*, 2002). It is stated that ecotourism can benefit protected areas in various ways (Monteros, 2002), but this is not always true.

Ross & Wall (1999) stated that ecotourism in North Sulawesi, Indonesia, is not sustainable. They demonstrated that tourism revenues were being monopolized by tour companies and no profits were distributed to the parks. Also, they stated that there was no opportunity for visitors to make donations to conservation initiatives. The authors concluded that both active conservation practices and tourism management were inadequate in the

study area and neither biodiversity neither local people were benefited from the ecotourism operators.

Likewise, Barkin (2002) highlighted the few employment opportunities created by ecotourism in the Monarch Butterfly Reserve in Mexico and the continued logging activities practiced by local communities.

Also negatively, Bookbinder *et al.* (1998) verified that only six percent of the local people in Royal Chitwan National Park, Nepal – where ecotourism activities take place – earned incomes from ecotourism. They stated that it provides very little employment opportunities and few benefits to the community.

Contrary to the previous works, in the Pacific mid-coast region of British Columbia, Canada, a study showed that female brown-bears (*Ursus arctos*) with cubs spent less time capturing fish when male brown-bears were present than when tourists were the only threat (Nevin & Gilbert, 2005). Authors concluded that female bears responded to humans as a lesser predator than male bears, demonstrating that appropriately managed human activities can enhance feeding opportunities to vulnerable reproductive periods of large carnivores and helps its conservation.

Similarly, Lindsey *et al.* (2005) demonstrated that ecotourism can benefit the conservation of the African wild dogs (*Lycaon pictus*) in situ. The authors studied the willingness of visitors to pay to see wild dogs at their dens and concluded that the revenues generated by this kind of ecotourism can subsidize wild dog reintroduction in nature reserves and support their conservation in situ. However, they pointed the failure benefit to the species provided by ecotourism if the common political instability affects the area, which can correspond to a decrease in revenues generated.

In a fishing village of Bahia, Brazil, researchers found that ecotourism provide jobs and economic benefits to local people which, in turn, have reduced the harvest of threatened sea turtles by the resident fisher workers. Despite this, they also noted the harvest of turtles persist in the village, namely by newly arrived workers and immigrants that have no knowledge about the conservation initiatives (Pegas & Stronza, 2010)

Loubser *et al.* (2001) affirmed in their research that a high percentage of tourists showed an interest in local heritage linked with fauna and flora and demonstrated a high willingness to pay for good brochures with quality information. Also, they assert the necessity of creating more tourist awareness due to the high endemic percentage of the herpetofauna of the Namaqua National Park and point that by supplying quality information of the natural fauna that occur in this park the tourism season can be extended and diversified and, in turn, the ecotourist experience enhanced.

In Castro Verde, a specially protected site for birds (ZPE) in Portugal, LPN (Liga para a Protecção da Natureza) developed in nineties a successful ecotourism project with the

objective of conserve the stepper birds and its associated ecosystem and the promotion of local socio-economy. This project highlighted the synergy between development and conservation in that area. Also, it could sensitize local population about the potential of the area and the natural and cultural heritage it houses (Alho, 2004).

Similarly, a study conducted by Bacelar (2006) in Trás-os-Montes, northeast Portugal, demonstrated the huge ecotourism potential offered by the Miranda-endemic donkey (*Equus asinus*) in recreational activities, especially in terms of the socially inclusion of people with special needs – by the application of a therapy denominated “Asinomediação”.

Wildlife viewing recreation in protected areas can offer opportunities for educating people about biodiversity (Booth *et al.*, 2011), but ecotourism presents for itself a challenge to PNPG, since this natural area is characterized by species of priority conservation (Gomes, 2007). Also, some authors state that some habitats – notably mountain regions and islands – because of its fragility are more exposed to environmental damage, through effects of pollution; trail erosion and wildlife disturbance (Zhou *et al.*, 2013).

In order to overcome this situation some authors highlight the importance of the use of flagship species in ecotourism. Krüger (2003) emphasizes that to ecotourism be sustainable, it should make use of flagship species that can allure the general public to remote areas. The ecotourism enterprise ECOTURA headquartered in our study area has the Iberian-wolf (*Canis lupus ssp. signatus*) as flagship species and it has been a success, attracting dozens of tourists every year to the region to see its tracks and heritage linked to this endangered carnivore.

#### **1.4. Current ecotourism research and the need of new evaluation**

Banerjee (2012) referred the little criteria used to access ecotourism potential in natural areas. It is recommended novel approaches based mostly on ecological information, considering the biological diversity of the study area (Monteros, 2002).

The tourist numbers over a sensitive period, like the breeding season, may have a negative impact on the survival of certain species, so the tourism should be dispersed in the year. With an ecological approach, with means of biodiversity occurring in a given area, the tourism season can be extended and diversified and, in turn, the ecotourism experience can be enhanced (Loubser *et al.*, 2001). Obuga (1996) referred in his work the necessity of knowing the conservation status of species affected by recreational activities such as ecotourism to protect more efficiently the biological diversity of the park where those activities take place and the species “that are likely to experience further disturbance by recreational activities”. Yet, the landscape degradation in natural areas and the loss of local identity due to high human pressures has been a key issue in the management of tourism

recreation (Aranzabal *et al.*, 2009).

The promotion of diverse tourism products has been referred as a way to spread tourists both temporally and spatially, preventing local congestion and high impacts on local biodiversity (Barkin, 2002; Gurung & Seeland, 2008). Also, knowing the biodiversity of an area will increase public awareness and contribute to its conservation (Walter, 2013).

Deng *et al.* (2002) referred that as ecotourism continues to grow, sensitive areas like national parks will assist an increase in human pressure. So it is urgently to seek for new approaches in ecotourism research, namely in national parks, where tourism has been damaging the environment for decades.

## 1.5. Trail analysis

Pedestrian trails offer a great potential to enjoy unique sceneries and natural resources. These trails can link people to landscapes; to history and heritage; and to rural communities (Fraga, 2005). Particularly, the landscape can attract tourists by their scenic beauty (Nohl, 2001) although this appreciation may vary from one tourist to another and should be evaluated with awareness on the heterogeneity of preferences in this field (Arnberger & Elder, 2011).

Also, it allows the observation of the diversity of the flora and the fauna occurring in a given area, as well as the geological formations, promoting both environmental respect and conservation (Braga, 2006). This author highlights some issues in the definition of this type of trails as we describe shortly. First of all, he state that paved roads should be avoided in the definition of new greenways; whereas localities should be crossed, by praising the contact with people and their culture, promoting at the same time the local commerce. He classifies trails as to its function (recreational and educational or only recreational); shape (linear, circular, eight shape, contiguous rings, satellite rings or labyrinth); difficulty (classified into very easy, easy, middle or difficult or, in a different perspective, into plan, wavy or hilly); resources used in environmental interpretation (guided or auto guided); and its extension (characterized into great route, small route, local routes or urban routes).

The length of the route is also a measure to take into account and according to the same author it depends on the extension of the trail, topography, unevenness, difficulty, etc.

## 1.6. Objectives

The main goal of this study is to apply an approach that prove to be useful in further ecotourism studies and in ecotourism impacts assessment, combining both biological, ecological and cultural relevant information. The results can serve as a model for further

**investigation of the ecotourism potential on National Parks and to stimulating environmental awareness.**

Also, we aim to answer the following questions:

- (1) Can the assessment of the spatiotemporal biodiversity differences be useful to the ecotourism research?
- (2) Can other seasons (rather than the summer) offer adequate conditions (from biological point of view) to the visitation of the National Park Peneda-Gerês?
- (3) Shall this work contribute to the scatter of ecotourists by the four seasons to avoid the negative effects of the mass tourism?
- (4) Can this study offer a new form to assess the impacts on the areas or species on which ecotourism projects are founded?
- (5) May this study contribute to update the existing information on local biodiversity?

## 2. Materials and Methodology

### 2.1. Study area

This study was conducted in Castro Laboreiro (Figure 1), a parish located in the northern Portuguese municipality of Melgaço with 8844ha, belonging to the Peneda-Gerês National Park (PNPG) (Município de Melgaço, 2006).

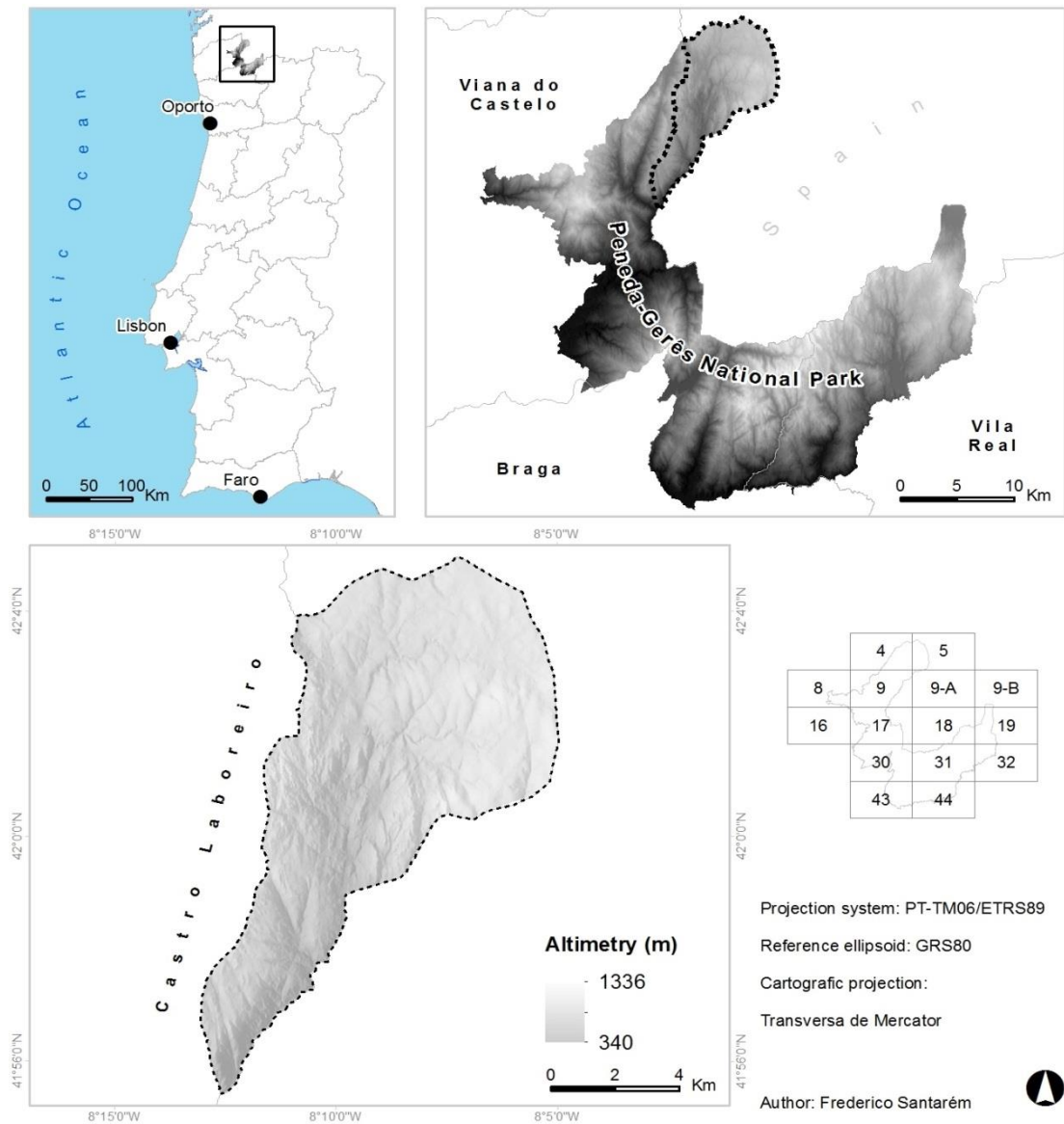


Fig. 1: Geographical framework of the study area. Location of the Peneda-Gerês National Park in the northern Portugal (upper pictures) and the mountain parish of Castro Laboreiro (bottom picture).

Established in 1971 by the Decree-Law nº 187/71 of 8 May it is the only National Park in Portugal. It is a Specially Protected Site for Birds (ZPE) and Site of Community Importance (SIC) included in the Natura 2000 network. Also, it contains the Biogenetic Reserve of Palheiros-Albergaria woods. It is part of the Gerês-Xurés border park created in 1997 (ICNB, 2008a) and became part of the Pan Parks network in 2008 – and the only one in Iberian Peninsula – that works to safeguard Europe’s wilderness areas (PANPARKS, 2013).

Castro Laboreiro is a complex mountain with peaks and valleys ranging in altitudes from 301 to 1332m; steep slopes to the south and slightly to the north (AFN, 2006). Due to this relief, it is mainly influenced by Atlantic climate, although there is some Semi-Mediterranean influence further south (Honrado, 2003; ICNB, 2008a). It is characterized by an average mean temperature of 14.4°C and a total annual precipitation between 2400mm e 2800mm, which is one of the highest values in Europe (Paredes, 2001; AFN, 2006). The highest precipitations occur in the highest area of the territory, the plateau (Honrado, 2003).

This area also has an ancient and rich historical and archaeological heritage, including the largest megalithic complex of the Iberian Peninsula at the plateau; the Castro Laboreiro castle (classified as a national monument); medieval bridges and elements with high representativeness in local culture such as churches, community ovens and mills (Lima, 1996). There is a particular form of migration, known as transhumance, where population move from valley settlements (called *Inverneiras*, where weather is milder) to plateau settlements (called *Brandas* or *Verandas* where weather is more rigorous) at summer; and conversely at winter (Geraldès, 1996).

## **2.2. Methods**

### **2.2.1. Field work**

With GPS program (App “My Tracks” for smartphones) and photographic equipment (Nikon Coolpix L310) a survey was conducted in five trails – defined by the ecotourism enterprise ECOTURA headquartered in Castro Laboreiro – from September 2012 to August 2013. For each season, fauna, flora and fungi data were collected and organized with software Excel 2010. Other data like natural and anthropogenic marks; landscape diversity; habitats comprised; endemisms; etc. were also recorded as described in subchapter 2.2.3.

### **2.2.2. Characterization of the hiking trails**

For the characterization of the hiking trails we followed the model proposed by Braga, 2006.

The characterization of each one includes information about its shape; difficult degree; extension; elevation points (highest and lowest); approximate duration of the crossing; and information concerning to biological variables (such as fauna and flora that are probable to be observed) ecological variables (like the type of habitats present; and information concerning to landscape) and to anthropogenic variables (villages crossed; human legacy as tumuli, cruises, aqueducts, granaries, etc.; and the presence of the autochthonous animal breeds). The draw of each trail and the respective topographic profiles were obtained with the smartphone app “My Tracks”, were worked in geographic information systems (ArcMap 10.0) and are shown in the description of each trail.

Points of interest (namely riparian galleries, potential sites for bird watching, anthropogenic marks and cultural heritage, etc.) were added to the respective leaflets (Appendices VI to X) and detailed in the trails description.

Habitat types were assessed and verified by the Sector Plan of the Natura 2000 Network (ICN, 2006).

### 2.2.3. Data analysis

The **Ecotourism Potential Value (EPV)** was calculated based on several valuation parameters. Species Richness (S); Number of different Habitats present (NH); Medium Value of the Habitats present (MVH); Number of Natural Marks (NM); Number of Anthropogenic Marks (AM); Landscape Diversity (LD); Vertebrate Conservation Status-Plant Range Distribution (VCS-PRD) and Number of Endemisms (NE) were the set of criteria evaluated. **EPV** was calculated to achieve differences not only between trails (spatial diversity) but also between seasons (temporal diversity).

First, **Species Richness (S)** was calculated by simple counting the species present in each trail for each season. Fauna, flora (except bryophytes) and fungi (only fruiting bodies - mushrooms) data were collected once a season.

The **Number of different Habitats present (NH)** is simply the count of how many different types of habitats are present in a given trail. It was counted only once.

**Medium value of the habitats present (MVH)** is a measure that takes into account the rarity of a specific habitat at a local level (see Appendix I for details of the weighing of the habitats). The values range from one (1) to five (5), being the lowest values attributed to the more common habitats in the region and the highest values to the rarest: 1 – dry heaths; 2 – Galician-Portuguese oak woods; Birch riparian galleries and Temperate Atlantic wet heaths; 3 – Northern Atlantic wet heaths and Alder riparian galleries 4 – Transition mires and quaking bogs; 5 – altitude meadows. This criterion was valued only once. We divided the sum of the weighs of habitats by the number of habitats present in each trail to obtain a value that allows



the comparison between trails. The formula is the follow:

$$MVH = \frac{\sum Weights\ of\ habitat\ types}{Number\ of\ different\ habitat\ types}$$

The **Number of Natural Marks (NM)** and the **Number of Anthropogenic Marks (AM)** represents the total number of natural and anthropogenic elements, respectively, present in each trail or easily seen from a given point, with concerning to their weighs. Natural elements regards to watercourses (brooks; principal rivers; lakes; cascades; etc.); geological elements (stratigraphic folds or faults; very large stones and significant outcrops); riparian galleries; natural caves; etc.; where anthropogenic ones regards to old villages; ancestral tumuli; ancestral bridges; cruises; shepherd shelters; granaries; etc. We considered the autochthonous animal breeds as an anthropogenic mark too, since they constitute part of the Minho cultural heritage. All natural marks were given a valor of one (1). Anthropogenic marks were valued according to their dates of construction (except for the autochthonous breeds of the Castro Laboreiro dog; the Barrosão ox and Garrano horse, which was assigned the valor 2 as they are related with the local culture). Thus, the oldest buildings (from the time of Romans or even older) obtained the highest values; medieval buildings obtained medium values; and modern ones the lowest ones (see Appendix II for details). Values ranged from one to five: 1 – modern buildings like concrete or stone bridges; granaries in villages or villages themselves; 2 – modern buildings with high representativeness in local culture like aqueducts; shepherd shelters; churches; concrete cruisers; community ovens or mills; or autochthonous dog, ox and horse breeds; 3 – medieval buildings like bridges of the Middle Ages or Castles; 4 – buildings of the Roman period like bridges or roads; 5 – Ancestral anthropogenic marks like tumuli or menhir. Physical structures were counted only once as they are immutable and variable ones (like the autochthonous breeds) were counted by season (Figure 2).

For the **Landscape Diversity (LD)** we followed a characterization similar to that adopted by Honrado & Alonso (2010). The evaluation of the landscape comprises the identification of different elements – generically defined as landscape main elements (LME) – present in a given landscape unit that are sufficient distinct to stimulate the observer (Figure 3). We defined five LME (topography; geology; vegetation; water; and human constructions) (see Appendix III for details about LME and LD evaluation). Points of scenery appreciation were defined for each trail and the number of LME present in each point was counted – this gives a global valor of the LD. To be possible to compare the landscape value between the trails we divided the overall value for the length of the circuit, to obtain a relative value that permits the trail comparison. The formula for this criterion is:

$$Relative\ value\ of\ LD = \frac{\sum LME\ by\ trail}{Total\ Length\ of\ trail}$$



Fig. 2. Anthropogenic marks with the correspondent weigh according to the date of construction. a) Granary, a construction of the Modern Age with a value of 1. b) Aqueduct, a construction with a high representativeness in the local culture with a value of 2. c) Bridge of Cava da Velha, a modern build that links the two margins of the river with a value of 3. d) Bridge of Dorna, from the Roman period with a value of 4. e) Tumuli with approximately six thousand years with a value of 5.

**Vertebrate Conservation Status-Plant Range Distribution (VCS-PRD)** is a weighing of the importance of a given species to the area. For vertebrates we considered their conservation status following the Red Book of Vertebrates of Portugal (RBVP) (Cabral *et al.*, 2005) and the IUCN Red List of Threatened Species (IUCN, 2013). However, between the two lists, we only took into account the conservation status that protects more a given species (ex: if a given species is near threatened in IUCN Red List but has a vulnerable status in the RBVP, we considered the second as it protects more efficiently the species). We considered animal tracks and excrements like a direct observation of the animal. If there was an excrement or track easily recognizable we counted the presence of the species in that specific season and trail.

We attributed values that range from one (1) to five (5), valuing more the species that are more likely to face extinction sooner: 1 – Least Concern (LC); 2 – Near Threatened (NT); 3 – Vulnerable (VU); 4 – Endangered (EN); 5 – Critically Endangered (CR) (Figure 4). Similarly, for plants we attributed different values according to its global distribution. Plants which are endemic of the Iberian Peninsula or Portugal have the highest values; median values were attributed to the autochthonous but not endemics; and the exotics had the

lowest values. The values ranged from one to five: 1 – exotics; 2 – high spread in Portugal; 3 – high spread in the PNPG or Northern Portugal; 4 – Iberian Peninsula endemism; 5 – Portugal endemism (Figure 5). Flowering/ fructification season was considered by allocating over 0.5 to the original value, i.e. if a given plant is endemic to Iberian Peninsula and has its flowering season coincident with the spring and the summer it has a valor of 4.5 instead of only 4. Invertebrates, domestic animals and fungi were valued 0.5 points (see Appendix IV for details of this weighing). One final weighting was carried out by dividing the sum of VCS/PRD by the total number of species (S). This provides insights of the general conservation status (for the case of animals and fungi) and the general distribution range (for the case of plants) of all species recorded in a trail. By dividing VCS/PRD by S it is possible to get an idea of the conservation and management needs of a specific trail. The formula adopted was the follow:

$$\text{Relative value} = \frac{\sum VCS - PRD}{S}$$



Fig. 3. Number of LME present in a landscape unit. a) Only one LME present - the vegetation. b) Two LME present - vegetation and water. c) Landscape unit with three LME present - geology; topography and vegetation. d) Four LME present - vegetation; topography; geology; human constructions. e) Five LME present - vegetation; water; geology; topography and geology.



Fig. 4. Values attributed to vertebrates, according to their conservation status. a) *Emberiza cia*, a LC bird with a value of 1. b) *Lacerta schreiberi*, a NT reptile that was weighed with 2 points. c) *Vipera latastei ssp. latastei*, a VU reptile weighed with 3 points. d) *Circus pygargus*, an EN bird with a value of 4. e) *Salmo trutta*, a CR fish in Portugal, weighed with 5 points.

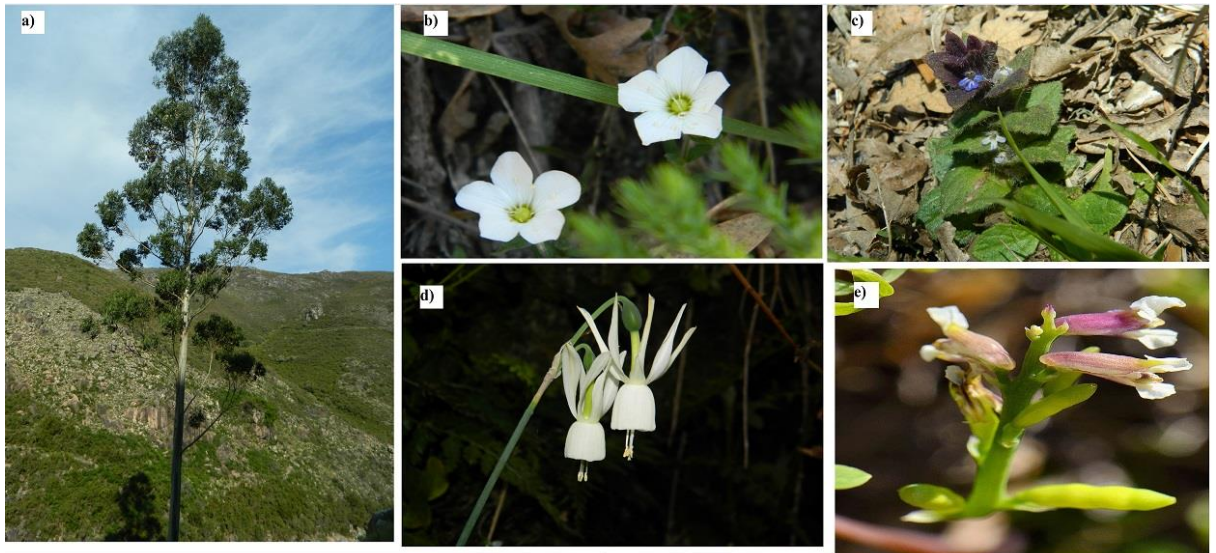


Fig. 5. Weights attributed to the plants according to their range of distribution. a) *Eucalyptus globulus*, an exotic plant that contribute to the criterion with 1 point. b) *Arenaria montana ssp. montana*, a plant high spread in the country with a value of 2. c) *Ajuga pyramidalis ssp. meonantha*, an autochthonous plant confined to Northern Portugal with a value of 3. d) *Narcissus triandrus ssp. triandrus*, an Iberian endemism that contributes with 4 points to the overall value of VCS-PRD. e) *Ceratocarpus claviculata ssp. picta*, a Portuguese endemism that contributes for the overall value of VCS-PRD with the highest value of 5.

Finally, the **Number of Endemisms (NE)** is simply the count of how many endemic species (Iberian or Portuguese only) are present in a given trail for each annual season. It

was counted once per season.

After the analysis of previous criteria, **Ecotourism Potential Value (EPV)** could be calculated. This value provides information on the potential of the trails for the development of tourism activities and the respectively season where these activities have more potential to happen.

EPV was calculated by two different approaches. In the first case, all criteria have the same weigh for the calculation of this value. In the second one each criteria contribute to the final value with a different weigh (see appendix V). NH and MVH are the least valued criteria. NM is worth twice more than the previous. S is worth three times more than NH and MVH. NE and LD contribute four times more for the EPV than the first criteria. The relative value of VCS-PRD and AM are the criteria with the more weigh in this calculation, since tourists are attracted primarily by species that undergo a high risk of extinction and by the cultural heritage (Santo (s/d)). We divided the final value by the number of criteria considered to obtain easily interpretable values. The formula is the follow:

$$EPV = \frac{\sum \text{values obtained for each criteria}}{\text{Number of Criteria analysed}}$$

### 3. Results

#### 3.1. Description of the trails

Five trails across the parish were explored throughout one year. Their names were assigned according to the region where they are inserted or specific locations they passed (Figure 6).

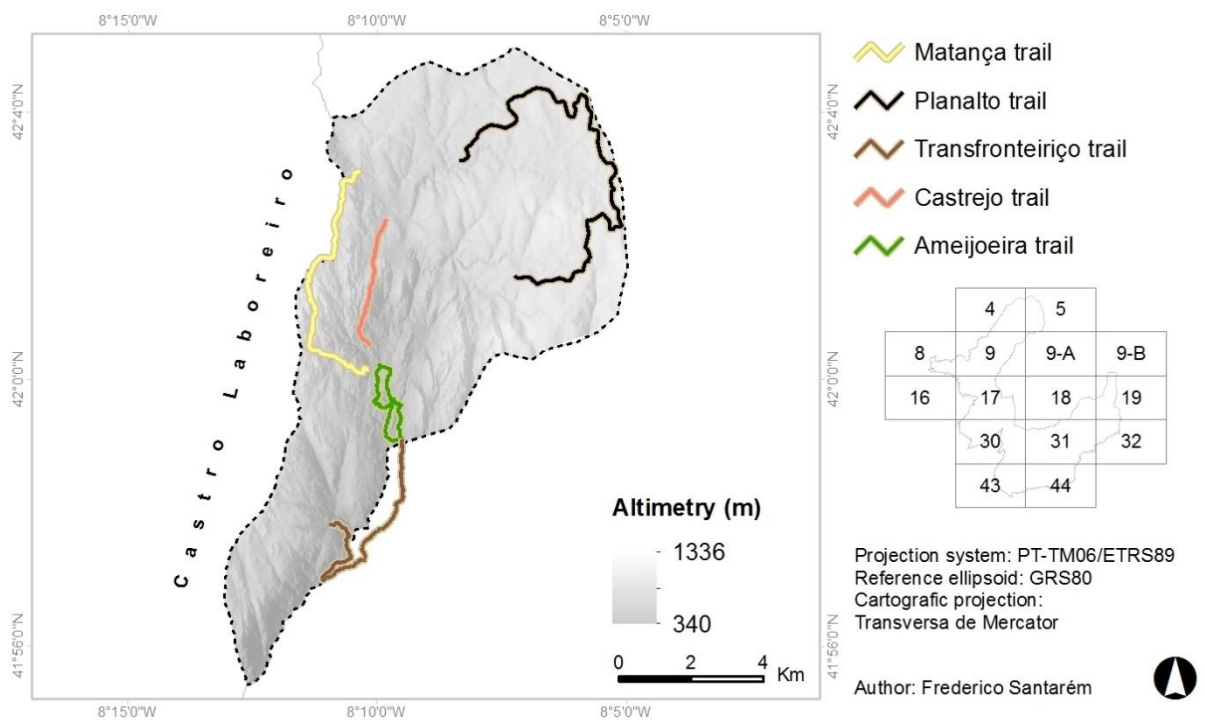


Fig. 6. Detail of the localization of the five trails through the study area, with emphasizing of medium altitudes where they are located.

#### Trail One – Trail of Ameijoeira

This is a cultural-landscape oriented trail, characterized by a shape of an eight (double ring), which comprises a high number of anthropogenic marks that allows a great interpretation of the heritage of this particular region. It is a short distance path with an extension of five thousand five hundred and twenty meters (5520m), with the highest point situated at eighty hundred and fifteen meters (815m) and the lowest at seven hundred and twenty-four meters (724m) (Figure 7). It takes approximately of three hours to complete it. It has bit steep slopes, which allied to it short distance and the type of the terrain (mainly rocks and dead layer) makes its difficulty level moderate.

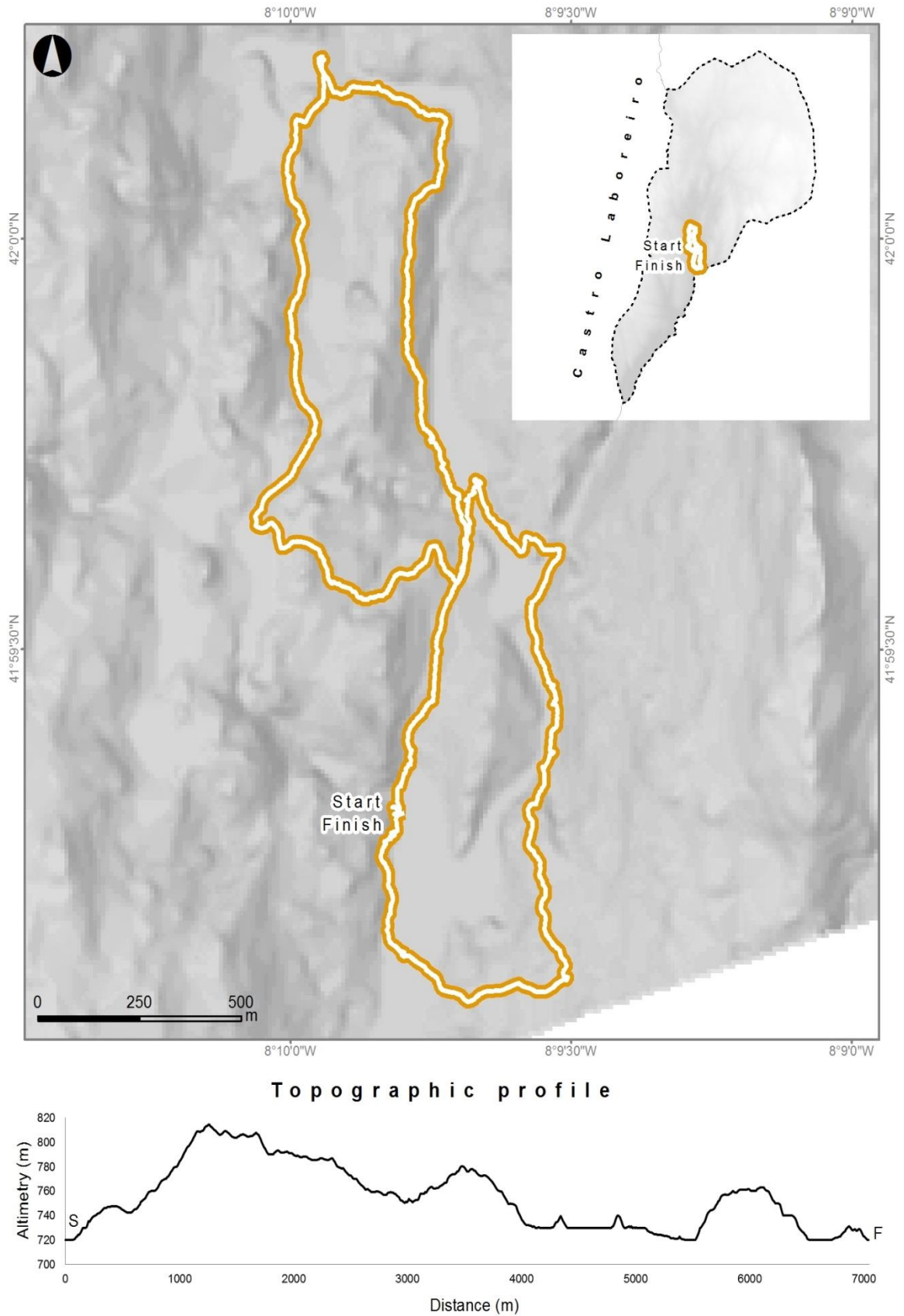


Fig. 7: Draw and topographic profile of the trail number one – Ameijoeira Trail.

It crosses important points in Castro Laboreiro, mostly related to the life of its

ancestral population, like the medieval bridges, the community oven and the aqueduct that once irrigated the fields, being an important piece of the agriculture and the cattle breeding practiced here. They allow knowing the way of life of this people and their ancestral relationship with the natural resources.

The community oven, in the beginning of the trail at *Inverneira* of Pontes, from an indeterminate time was built taking advantage of two large boulders that serve both as cover and sidewalls. This was used for baking rye bread and wheat and it is no longer used (Lima, 1996).

The aqueduct was built in the forties of the twentieth century by a local priest. It was once an important piece in the agriculture exercised near the river and is no longer used since the nineties. Near it is one cement cruise, denoting the presence of the Catholicism in the region (Lima, 1996).

The trail crosses three highly important bridges, namely New Bridge or Cava da Velha's Bridge, Assureira's Bridge and Dorna's Bridge. The first one consists of two round arches – one of approximately ten meters and the other one of seven meters – used for rural and agricultural purposes, connecting the villages located in both borders of the Laboreiro River (IGESPAR, 2013a) and it is classified as National Monument by the Decree-law number 1/86 of 3 January. The bibliography points no exactly date of construction of the monument, although its name points to the modern age. The second bridge belongs to a set constituted by the São Brás Chapel, Water Mill and the bridge itself (IGESPAR, 2013b). It is classified as Building of Public Interest by the Decree-law number 26-A/92 of 21 June and, although it was first built by the romans, it was subject of a comprehensive reform in the twelfth century, when the chapel and the mill was probably built, too. The final one is also classified as Building of Public Interest by the decree-law number 1/86 of 3 January and there is no certainty of the date of construction (IGESPAR, 2013c). Despite this, it is thought that have been built in the roman period, having been subsequently intervened in the Middle Age. It is three meters and fifty in length and two meters fifty tall and it is believed that once the area was crossed by a road that linked the Portela-do-Homem to Castro Laboreiro, crossing the river in this particular point. There is one more concrete bridge, part of the road that link Ameijoeira to Pontes villages, which is not classified as monument.

The trail crosses three main villages – Pontes, Assureira and Ameijoeira. All are part of the valley of *Inverneiras* (Geraldes, 1996), but the first two are uninhabited and the third is partially habited and is bordered by Spain, constituting one of the accesses to the Park, via the north. There is a chapel in Ameijoeira village named Chapel of Senhor da Boa Morte.

The trail begins in the *Inverneira* of Pontes, with a short of a very immature oak forest (*Quercus robur*) in its sequence, which is broken by an even shorter dry scrub (habitat 4030pt2) constituted by few species, namely Heaths (*Erica umbellata*); Dwarf Gorses (*Ulex*



*minor*) and some Portuguese Brooms (*Cytisus striatus*) and the aqueduct and the cruise described before. The most common animal species that occur here are the Bocage's Wall Lizard (*Podarcis bocagei*) and the Common Toad (*Bufo bufo*).

After this, it crosses a medium portion of oak forest, mainly the English Oak (*Quercus robur*) (habitat 9230pt1). It is an immature forest, probably grew after the abandonment of the village, where it is sporadically present the Alder Buckthorn (*Frangula alnus*) and species of the genus *Erica* (*Erica australis* and *Erica arborea*) in the shrub stratum.

After four hundred and fifty meters the trail crosses the river to the northwest. Here there is a dominance of the Grey Willow (*Salix atrocinerea*); the White Birch (*Betula pubescens*) and the European Alder (*Alnus glutinosa*) – moreover, it is the only trail where the last species were observed (habitat 91E0pt1 and habitat 91E0pt2). Also species like *Omphalodes nitida*, *Blechnum spicant* and *Dryopteris sp.* appears at the herbaceous substrate. The Brown Trout (*Salmo trutta*) can be observed here, as well as bird species like Tits (*Parus sp.*)

Again, it crosses again a path of oak forest constituted by the English Oak (*Quercus robur*) and the Pyrenean Oak (*Quercus pyrenaica*) (habitat 9230pt1). There are present examples of Alder Buckthorns (*Frangula alnus*) and Tree Heaths (*Erica arborea*) in the shrub stratum.

It follows a dry scrub dominated by the Dwarf Gorse (*Ulex minor*), the Carqueja (*Pterospartum tridentatum subs. cantabricum*) and the Heath (*Erica umbellata*) (habitat 4030pt2) until the Cava da Velha's Bridge where the landscape is replaced by a riparian corridor where dominates *Quercus robur* and *Betula pubescens*. The Longed-tail Tit (*Aegithalos caudatus*) is commonly observed.

The trail continues through the *Inverneira* of Assureira where it crosses the complex constituted by the São Brás' church; and the mill and the roman bridge of Assureira. At the village, it is common to observe the European Serin (*Serinus serinus*); the Black Redstart (*Phoenicurus ochruros*) and lizards (*Podarcis hispanica* and *Podarcis bocagei*). Follows a very immature oak forest composed mainly by the English Oak (*Quercus robur*) and the Portuguese Broom (*Cytisus striatus*), alternating with open fields where formerly practised the agriculture and now are abandoned.

The trail get in the asphalted road for approximately one hundred meters until the roman bridge of Dorna, where it denotes the presence of the trees White Birch (*Betula pubescens*) and Grey Willow (*Salix atrocinerea*) (habitat 91E0pt2), with the St. Patrick's Cabbage (*Saxifraga spathularis*), the Common Dog-violet (*Viola riviniana*) and the Forget-me-nots (*Myosotis welwitschii*) at the lower layer.

The rest of the trail alternates between dry scrubs (habitat 4030pt2) – dominated by Heaths (*Erica umbellata* and *Erica australis*); Dwarf Gorses (*Ulex minor*) and Carqueja

(*Pterospartum tridentatum* ssp. *cantabricum*) – and immature oak forest (*Quercus robur* and *Quercus pyrenaica*) with open fields appearing sporadically, most of them abandoned, until arrival at Ameijoeira. At the open spaces that characterize the dry scrubs, it can be observed the Bocage's Wall Lizard (*Podarcis bocagei*); the Iberian Wall Lizard (*Podarcis hispanica*); the Ocellated Lizard (*Timon lepidus*) and, rarely, the Large Psammodromus (*Psammodromus algirus*) in areas further south. What concerns to amphibians, the Iberian Frog (*Rana iberica*) is the most probable to observe near the water courses. At the village the Eurasian Stonechat (*Saxicola torquatus*); the House Sparrow (*Passer domesticus*); the European Serin (*Serinus serinus*); the Common Blackbird (*Turdus merula*); and in the summer season, the Barn Swallow (*Hirundo rustica*) are the most common birds. Special attention should be given to the presence of the Dog of Castro Laboreiro (*Canis lupus subs. familiaris*), a dog breed of the livestock guardian type original from this parish of the northern Portugal.

The trail continues in asphalted road until the end, where it finds the village of Pontes again and completes the double ring shape (see Appendix VI for trail brochure).

### Trail Two – Trail of Matança

This is an 8280 meters linear trail for nature interpretation. It crosses different types of habitats, making it one of the most attractive for the knowledge of the biodiversity concerning to Castro Laboreiro. It is a short distance path with the highest point at 1155 meters and the lowest at 794 meters (Figure 8) and it needs approximately four hours and twenty minutes to cross it totally. Although it is considered a short distance path, the steep slopes allied to the high vegetation in some points (tall shrubs) that blocks the accesses and the hard areas to cross such as bogs and stone paths, it is considered a hard trail (see Appendix VII for trail brochure).

This trail has no obvious anthropogenic marks in all its length, with the abandoned *Inverneira* of Podre at the very final being the only trace of the ancestral human presence. Allied to the different types of habitats it crosses and the high diversity of fauna and flora that it contains, this trail is recommended for nature interpretation only.

It starts in the north near the fixed place of Portelinha, though it doesn't cross it, ending in the *Inverneira* of Podre. It is characterized by dry heaths (habitat 4030pt2) – where predominates the Heath (*Erica umbellata* and *Erica australis*), the Carqueja (*Pterospartum tridentatum* ssp. *cantabricum*) and the Dwarf Gorse (*Ulex minor*) – that alternate with Northern Atlantic wet heaths (habitat 4010) – dominated by Bryophytes of the genus *Sphagnum* and Cross-leaved Heaths (*Erica tetralix*) – and Temperate Atlantic wet heaths (4020pt1) – with dominance of Dorset Heaths (*Erica ciliaris*); Common-heathers (*Calluna*

*vulgaris*); Dwarf Gorse (*Ulex minor*) and, rarely, Common sundews (*Drosera rotundifolia*). It is common to observe the endemics Bocage's Wall Lizard (*Podarcis bocagei*) and the Iberian Wall Lizard (*Podarcis hispanica*) at the driest zones. The Natter-jack Toad (*Epidalea calamita*) and the Iberian frog (*Rana iberica*) are common near the bogs. What concerns to birds, the Rock Bunting (*Emberiza cia*) and the Eurasian Stonechat (*Saxicola torquatus*) appear all year. It is common to observe rare bird species in the summer season, like the Griffon Vulture (*Gyps fulvus*) and eagles like the Short-toed Snake Eagle (*Circaetus gallicus*).

After this, there is an immature forest composed by Scots Pines (*Pinus sylvestris*) at the left side of the trail and a wood composed by White Birches (*Betula pubescens*) at the right side (habitat 91E0pt2). The vegetation diversity is poor, with only ferns and some Tree Heaths (*Erica arborea*) appearing punctually. The most probable animal species to observe are the bird Chaffinch (*Fringilla coelebs*) and the European Wild Deer (*Capreolus capreolus*). Droppings of the Iberian Wolf (*Canis lupus ssp. signatus*) denote the presence of this species all year and are common in the middle of the track.

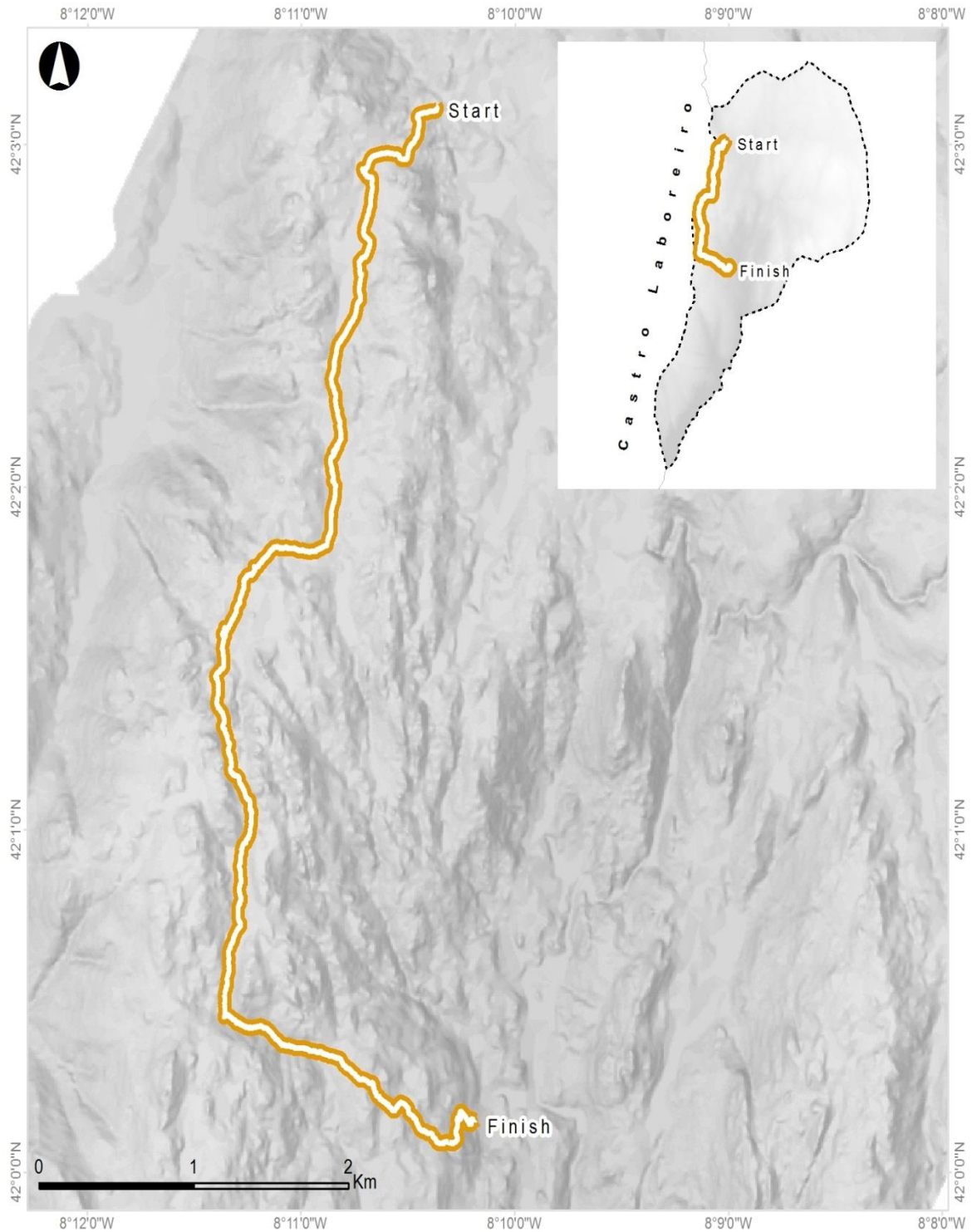
Dry scrubs appear again (habitat 4030pt2), mainly constituted by Carqueja (*Pterospartum tridentatum ssp. cantabricum*); Dwarf Gorse (*Ulex minor*) and species of Heaths (*Erica umbellata* and *Erica australis*). Here it is also common to observe species of the Cistaceae family, like the Woolly Rock-rose (*Halimium lasianthum subs. alyssoides*); the Rock-roses (*Tuberaria sp.*) and the Cistus (*Cistus psilosepalus*).

The trail crosses hygrophilous shredders (habitats 4020pt1) that are gradually replaced by peatbogs (habitat 7140pt2), where there is a dominance of Common-heaths (*Calluna vulgaris*); Cross-leaved Heaths (*Erica tetralix*); Dwarf Gorses (*Ulex minor*); and Wolf's Banes (*Arnica montana ssp. atlantica*). More rarely, the Common Sundew (*Drosera rotundifolia*) and the Common Cotton-grass (*Eriophorum angustifolium*) appear in flooded areas. These habitats provide shelter for amphibians, like the Perez's Frog (*Pelophylax perezi*) and the endemics Iberian frog (*Rana iberica*) and the Iberian Newt (*Lissotriton boscai*).

The next zone is characterized by a hardwood forest composed mainly by Oaks (*Quercus robur* and *Quercus pyrenaica*) (habitat 9230pt1). This is a very particular habitat – that was once very extensive in the north of the country – where the White Birch (*Betula pubescens*); the European holly (*Ilex aquifolium*); the Plymouth Pear (*Pyrus cordata*) and the Grey Willow (*Salix atrocinerea*) appear in high densities, too. The shrub stratum is characterized by the Plymouth Pear (*Pyrus cordata*); the Tree Heath (*Erica arborea*); the European blueberry (*Vaccinium myrtillus*) and other shrubs (*Cytisus sp.*). It constitutes a refuge for rare plant species such as the Angel's Tears (*Narcissus triandrus ssp. triandrus*); the Three-leaf Anemone (*Anemone trifolia ssp. albida*); and the Dogtooth Violet (*Erythronium dens-canis*). At the water line appear the Wood violets (*Viola riviniana*) and the endemic

Great-wood Rush (*Luzula sylvatica subs. henriquesii*). It offers shelter for a high diversity of animals such as amphibians (*Rana iberica*; *Pelophylax perezi* and *Lissotriton boscai*); lizards (*Lacerta schreiberi*; *Podarcis hispanica*; *Podarcis bocagei*); water snakes (*Natrix sp.*); birds (*Saxicola torquatus*; *Troglodytes troglodytes*; *Prunella modularis*; *Aegithalus caudatus*; *Parus sp.*; and *Garrulus glandarius*); and mammals (*Equus ferus ssp. caballus*). Also it is the fragment that contains most of the insects that are common in the study area, mainly beetles; ants; butterflies and dragonflies.

After this section of the Galician-Portuguese oak forest, the habitat types present alternates between dry shrubs – composed by Heaths (*Erica umbellata*; *Erica australis* and *Erica tetralix*); Carqueja (*Pterospartum tridentatum ssp. cantabricum*); and Dwarf Gorses (*Ulex minor*) (habitat 4030pt2) – and immature oak forests – where English oak (*Quercus robur*) and Pyrenean Oak (*Quercus pyrenaica*) predominates (habitat 9230pt1), with the Tree Heath (*Erica arborea*) and the Royal Fern (*Osmunda regalis*) appearing in the shrub stratum – until the end at the *Inverneira* of Podre. At the oak parcels it is probable to observe the Wild Boar (*Sus scrofa*), as well as bird species like the Rock Bunting (*Emberiza cia*); the Blue Tit (*Parus caeruleus*); and the Great Tit (*Parus major*). It is common to observe the Common Toad (*Bufo bufo*) in wetter areas.



### Topographic profile

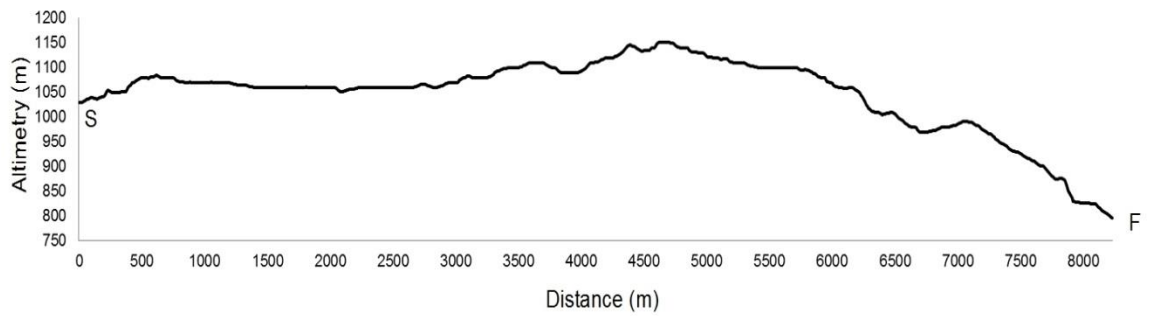


Fig. 8. Draw and topographic profile of the trail number two – Matança trail.

### Trail Three – Castrejo Trail

This is a particular short linear trail with only four kilometers and four hundred meters (4400m) with the highest point at about one thousand and thirteen meters (1013m) and the lowest at eight hundred and five meters (805m) (Figure 9). It crosses part of a marked small footpath route by Institute for the Conservation of Nature and Forestry (ICNF) and the Iberian Mountaineering and Guidance Club (CIMO). It takes approximately one hour and forty minutes to cross it; which, together with the short distance to cover, is considered easy (see Appendix VII for trail brochure).

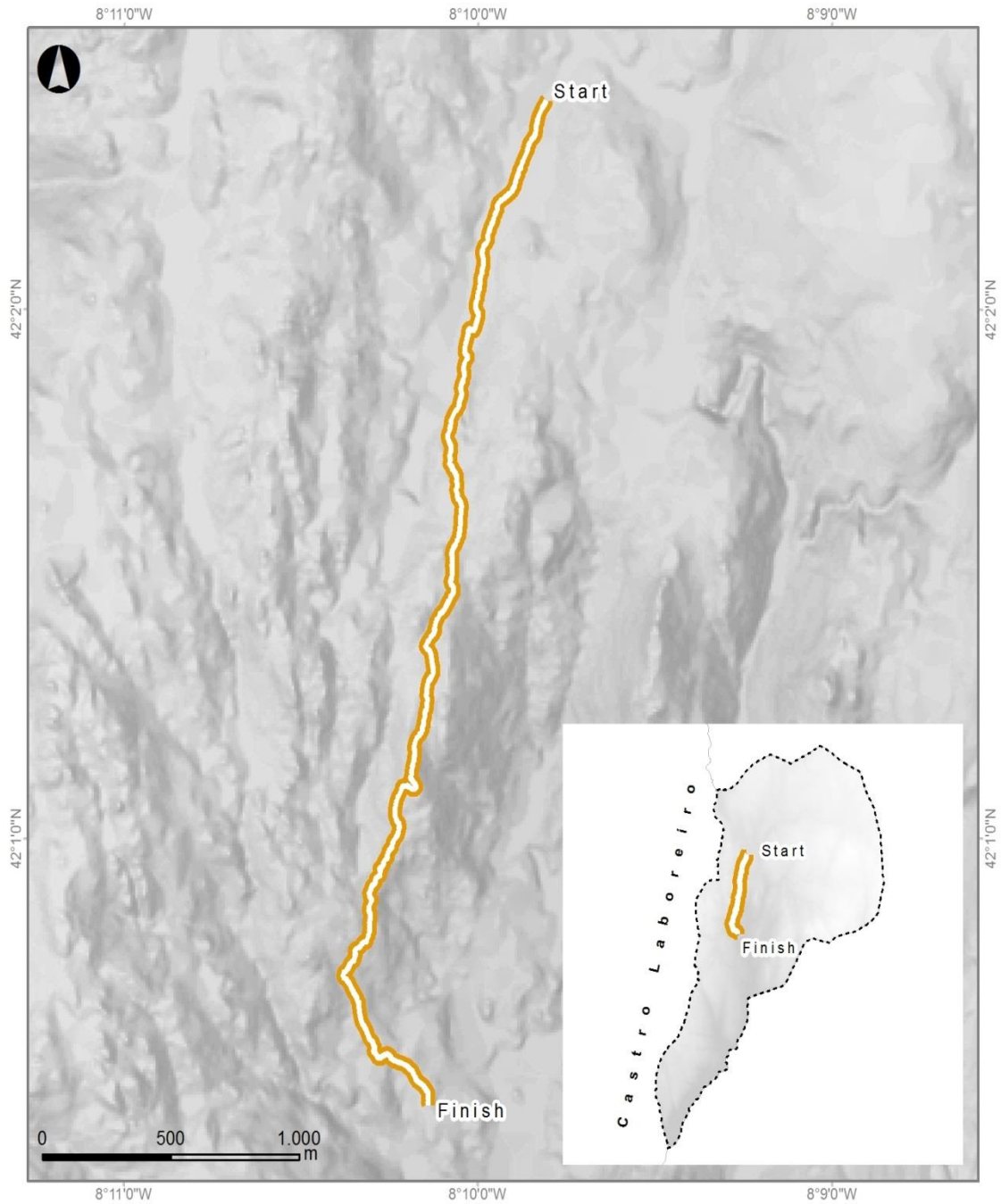
It begins in the village of Barreiro, once an important *Inverneira* in the transhumance process (Geraldes, 1996), and crosses an immature oak forest (habitat 9230pt1) at the very beginning, constituted mostly by *Quercus robur* and *Quercus pyrenaica*, with some Alder Buckthorns (*Frangula alnus*) promptly. At the village is easy to observe lizards (*Podarcis hispanica* and *Podarcis bocagei*) and birds (*Serinus serinus* and *Phoenicurus ochruros*). Sometimes, the dog breed from Castro Laboreiro it is also observed.

Where the oak forest ends, begins a small path with a swamp totally dominated by Grey Willows (*Salix atrocinerea*) (91E0pt2). Here it is possible to observe the Perez's Frog (*Pelophylax perezii*) and the endemic Iberian Emerald lizard (*Lacerta schreiberi*). The trail crosses the swamp through a rock-made bridge from the Modern Age, which once served to link the villages in the north to the ones in the south.

After pass throughout the swamp there is a very small Maritime Pine (*Pinus pinaster*) forest at the left side of the trail and from that on it is poor-forested until practically the end, being the scenery constituted mainly by rocks and grass; promptly by Carqueja (*Pterospartum tridentatum ssp. cantabricum*), Dwarf Gorse (*Ulex minor*) or Heather (*Erica umbellata*) (habitat 4030pt2). This habitat provides refuge for lizards like the Bocage's Wall Lizard (*Podarcis bocagei*) and the endemic Iberian Wall Lizard (*Podarcis hispanica*). It is also common to observe the Eurasian Stonechat (*Saxicola torquatus*).

Only at the final it has some European White Birches (*Betula pubescens*) with Tree Heaths (*Erica arborea*) in the shrub stratum and high concentrations of the Deer Fern (*Blechnum spicant*) at the margins (habitat 91E0pt2). There are some open fields in the left side of the path, with planted Portuguese Brooms (*Cytisus striatus*). The Brown Trout (*Salmo trutta*) can be observed throughout all the year.

Near the end of the trail, there is one more bridge from the Modern Age – the Veiga Bridge – with a construction similar to the one adopted in the medieval times (Cerveira, 2009).



**Topographic profile**

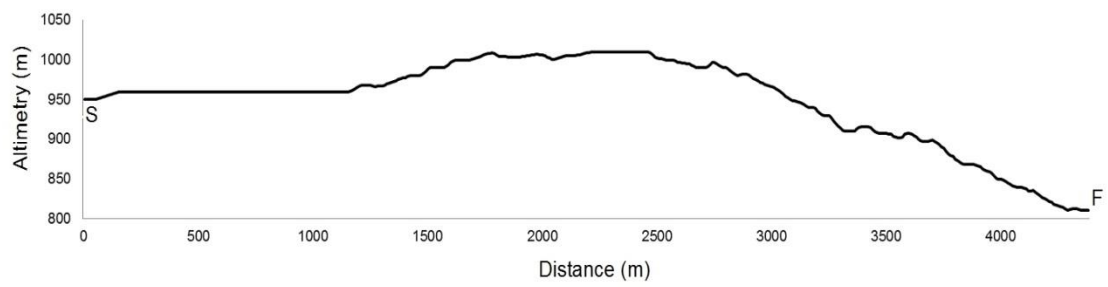


Fig. 9: Draw and topographic profile of the trail number three – Castejo trail.

It is a very poor trail in terms of biological diversity – it is scarce in both fauna and flora – and in cultural marks, too. Because of this, it is only oriented for landscape interpretation, with few points of interest that permits the observation of part the valley of *Inverneiras* at South; the Castle of Castro Laboreiro – a medieval building of an imprecise date of the early Portuguese civilization (IGESPAR, 2013d) classified as National Monument by the Decree-law number 33/587 of 27th March – and the plateau at the East.

#### Trail Four – Cross-border Trail

This is a semi-circular trail that crosses the frontier, being done half in Spain and half in Portuguese territory. It has an extension of seven thousand one hundred and thirty meters (7130m), ranging from five hundred and fifty-seven meters (557m) at the Laboreiro river and where is the boundary between the two countries to seven hundred and ninety-five meters (820m) in Spanish territory (Figure 10). It takes approximately three hours and twenty minutes to complete it. Despite it is classified as a small path route it has steep slopes on the order of thirty-seven meters and very rugged terrain, which makes the degree of difficulty hard (see Appendix IX for trail brochure).

There are a lot of granaries in the two main villages, used in the past to animal food or to dry the corn of inaccurate date of construction. Like the granaries in Soajo village, they were above the floor level to keep it away from mice and other undesirable animals (IGESPAR, 2013e) but most of them are now abandoned.

This trail is one of the best to observe avifauna, although it hasn't a high diversity of birds. This is possible because most of the trail has low vegetation and several crop fields that permit the easy observation of these animals. Also, it is the only one of the five in the study area where the influence of the Mediterranean Climate is felt, which protrudes through the presence of plant species typical from this climate – particularly the Strawberry Tree (*Arbutus unedo*) and many others Fruit Trees.

It begins in the *Inverneira* of Pousios, a village located in the right arm of the Laboreiro River where people plant fruit trees and the natural forest is often replaced by agricultural fields. There were recorded five mainly granaries in the path. At the end of the village there are parcels of landscape near the river composed by open fields with autochthone trees at the boundaries – mostly English Oak (*Quercus robur*) – which make this a mandatory stop place to observe birds. The most common are the African Stonechat (*Saxicola torquatus*); the European Robin (*Erithacus rubecula*); the European Serin (*Serinus serinus*); the Black Redstart (*Phoenicurus ochruros*); the Common Blackbird (*Turdus merula*); and in the summer season the Barn Swallow (*Hirundo rustica*). Excluding these fields, the landscape is marked by brushwood, mainly Carqueja (*Pterospartum tridentatum*



*ssp. cantabricum*), Gorse (*Ulex minor* and *Ulex europaeus*) (habitat 4030pt2) until near the river, where the vegetation is substituted by high trees like oaks (*Quercus robur*); European White Birches (*Betula pubescens*) and occasionally Grey Willows (*Salix atrocinerea*) and Sweet Chestnuts (*Castanea sativa*) (habitat 9230pt1).

At the riparian corridor, it can be found some particular plant species like the St. Patrick's Cabbage (*Saxifraga spathularis*) and *Myosotis sp.* Two endemic animals can also be seen here – the Iberian Frog (*Rana iberica*) and the Iberian Emerald Lizard (*Lacerta schreiberi*).

From this point until the next village, oaks (*Quercus robur*) dominates in the left side of the path (habitat 9230pt1); Heaths (*Erica arborea*; *E. umbellata*; *E. tetralix*) and carqueja (*Pterospartum tridentatum ssp. cantabricum*) in the right side (habitat 4030pt2); appearing, sometimes, some Alder Buckthorns (*Frangula alnus*) and fruit trees at both sides. The most probable animal species to observe are the Bocage's Wall Lizard (*Podarcis bocagei*) and the Iberian Wall Lizard (*Podarcis hispanica*).

The next village – called Ribeiro de Baixo – is a very poor hamlet, where people engage in cattle breeding as a livelihood near the Laboreiro River that makes the boundary between Portugal and Spain. Here is another good place to observe birds like the European Serin (*Serinus serinus*); the Common Blackbird (*Turdus merula*); the Black Redstart (*Phoenicurus ochruros*); the White Wagtail (*Motacilla alba*) and in Spring and Summer the Barn Swallow (*Hirundo rustica*). Also, it is often common the presence of the Ocellated Lizard (*Timon lepidus*) and the Iberian Wall Lizard (*Podarcis hispanica*).

At the other side of the margin, in Spain, ferns of the species *Pteridium aquilinum* dominate for almost five hundred meters – though in the winter season there is only grassy present. Strawberry Trees (*Arbutus unedo*) appear barely near the border of the river. Until almost the final of the trail, the landscape is dominated by Heaths (*Erica umbellata*; *E. tetralix*; and *E. australis*); Gorses (*Ulex minor* and *Ulex europaeus*); Carqueja (*Pterospartum tridentatum ssp. cantabricum*) (habitat 4030pt2). The most abundant bird species here are the Eurasian Stonechat (*Saxicola torquatus*); the Rock Bunting (*Emberiza cia*); the Dartford Warbler (*Sylvia undata*); and rarely, eagles. This habitat provides shelter for species like the Iberian Wall Lizard (*Podarcis bocagei*) and the Large Psammmodromus (*Psammmodromus algirus*) – which is only found in areas further south where the Mediterranean influence is felt.

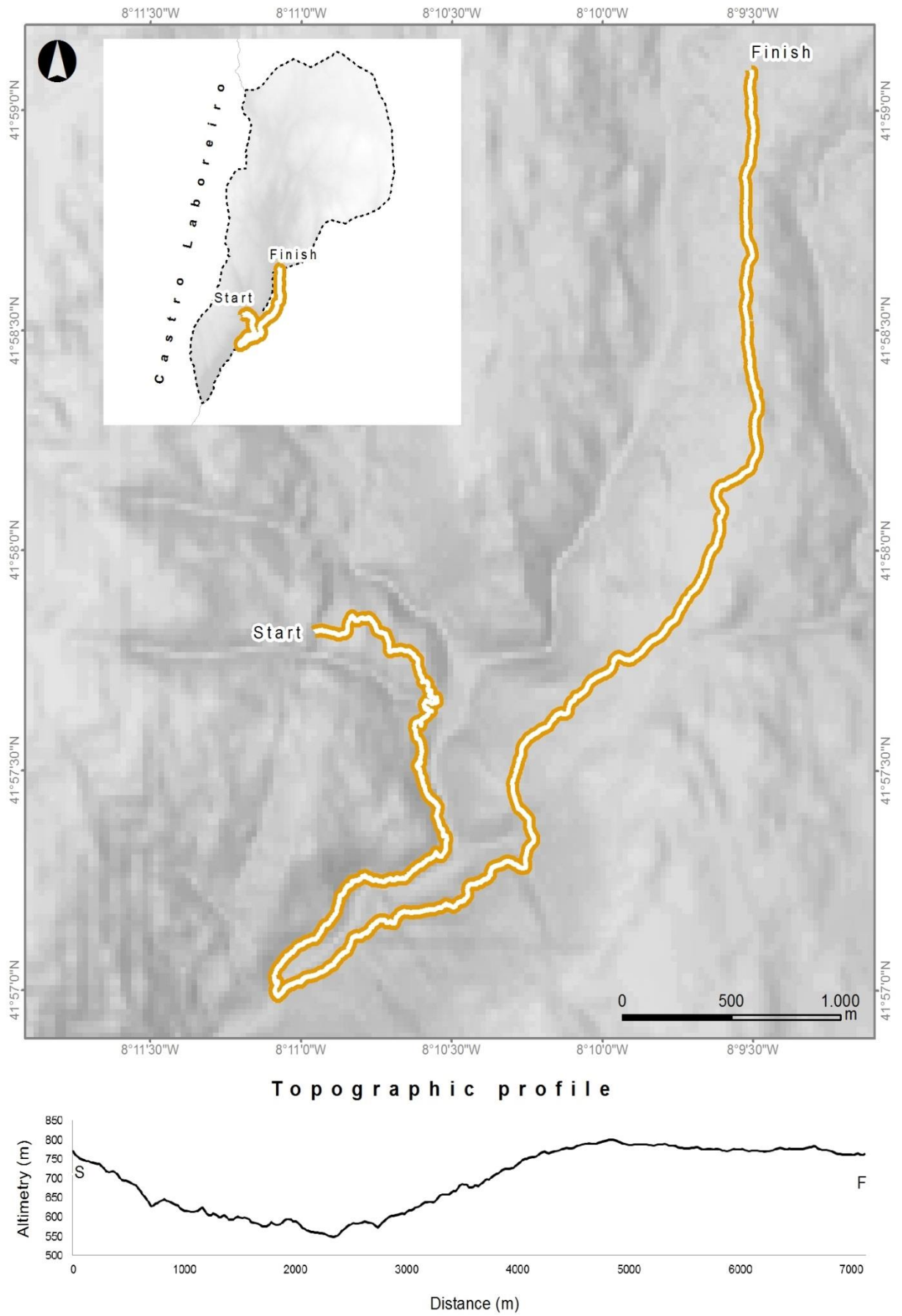


Fig. 10: Draw and topographic profile of the trail number four – Transfonteiriço trail.

There is only a small peat bog where it can be found the Common Heather (*Calluna vulgaris*) and the Cross-leaved Heath (*Erica tetralix*) (habitat 4010) that constitutes refuge for amphibians like the Perez's Frog (*Pelophylax perezii*) and the Natter-jack Toad (*Epidalea calamita*).

Near the end the trail crosses the boundary again into Portugal, where oaks (*Quercus robur* and *Quercus pyrenaica*) prevail, with brooms at the shrub layer. Near the road that marks the end of the path, birds like European Robins (*Erithacus rubecula*); Common Blackbirds (*Turdus merula*); Black Redstarts (*Phoenicurus ochruros*); and House Sparrows (*Passer domesticus*) can be seen. The Barn Swallow (*Hirundo rustica*) appears in the summer season.

### Trail number Five – Plateau trail

This is a semi-circular trail with fifteen thousand three hundred and eighty five meters of extension at the plateau of Castro Laboreiro, a great place for the Birdwatching. It is considered a long distance path with an extension of fifteen thousand three hundred and eighty five meters (15385m). The highest point is at thousand two hundred and eighty seven meters (1287m) and the lowest at thousand and eighty two meters (1082m) (Figure 11) and it needs approximately five hours to complete it. Although it is the longest trail in the study area, the type of the terrain and the fact that there are no slopes makes the degree of difficulty easy (see Appendix X for trail brochure).

There are two roman bridges, one located in Portos and another one in Rodeiro, but they are away from the trail and they are not described. Here it is located the largest megalithic core of the Iberian Peninsula – a mark of the ancestral occupation of man in this region – with near sixty monuments documented (IGESPAR, 2013f). It is classified as Site of Public Interest the Megalithic Core and the Rock Art of the Plateau of Castro Laboreiro by the Ordinance number 431-A/2001. Apart from that, there are only two anthropogenic marks – two cemented cruises, each one in the beginning of the trail. The plateau offers a high diversity in terms of fauna, which is confirmed by the high wilderness index described for this particular region (Gomes, 2007; ICNB, 2008b).

The trail begins in the Veranda of Portos, where there are some enclosures for cattle, structures that protect the domestic animals from wild predators and a cruise – The Cruise of Portos – a mark of the ancestral religious that is practised here by the rural people. There is a dominance of planted Portuguese Broom (*Cytisus striatus*) at the margins of the path.

The first natural habitat is constituted by peatbogs where dominates the Cross-leaved Heath (*Erica tetralix*); the Dwarf Gorse (*Ulex minor*); the Dorset Heath (*Erica ciliaris*); and appears the Common-heather (*Calluna vulgaris*); and rarely the Common Sundew (*Drosera*

*rotundifolia*) (habitat 4020pt1).

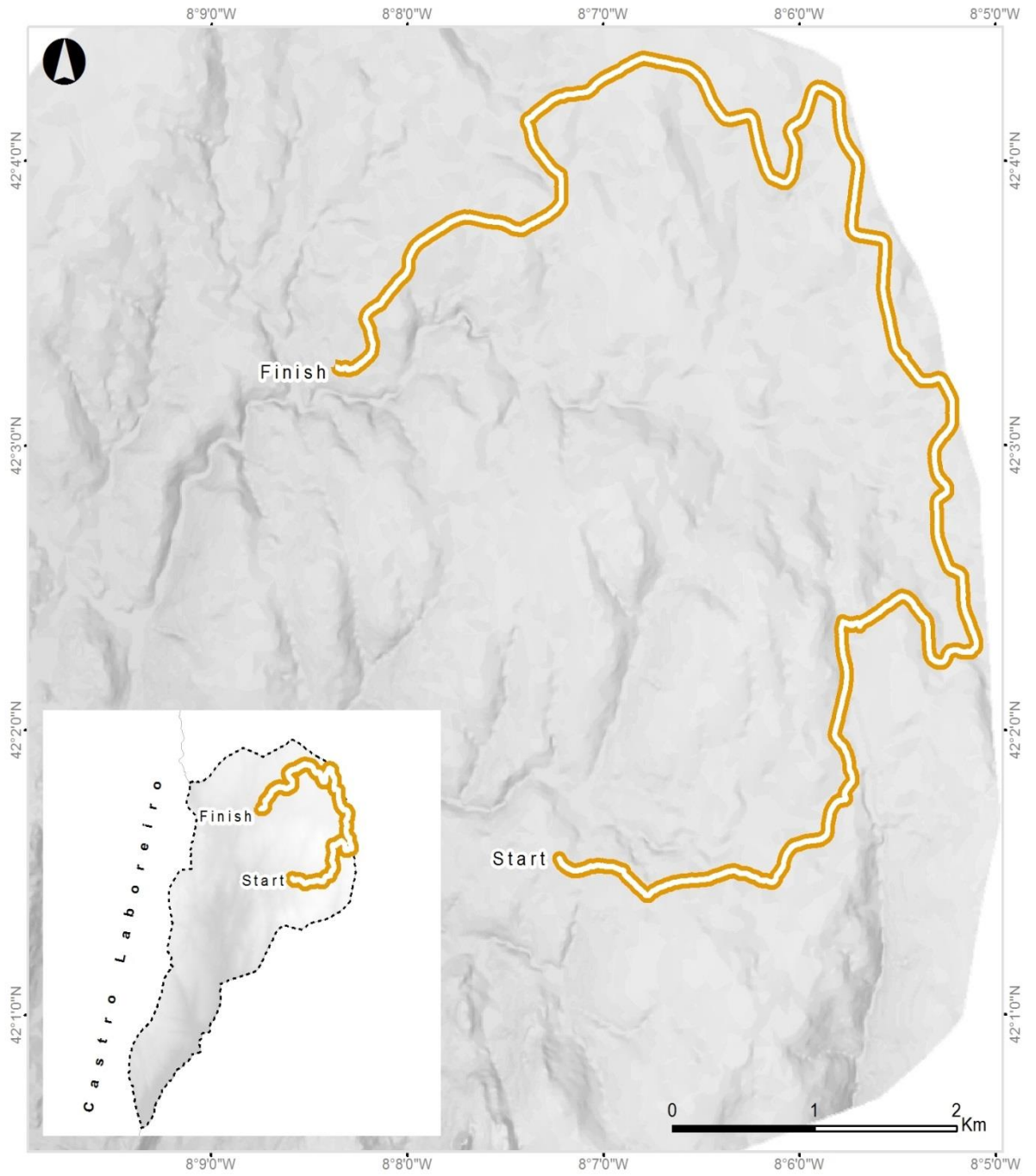
After this, it is present a particular habitat of transition mires and quaking bogs (habitat 7140pt2) where the sedges are dominant (mainly *Eriophorum angustifolium*), as well as mosses of the genus *Sphagnum*. These two type of habitats provide shelter for amphibians like the Perez's Frog (*Pelophylax perezii*); the Iberian Frog (*Rana iberica*); and the Iberian Newt (*Lissotriton boscai*) and for rare Lepidoptera like the Silver-studded Blue (*Plebejus argus*).

It follows dry scrubs of Heaths (*Erica umbellata* and *Erica australis*), carqueja (*Pterospartum tridentatum* ssp. *cantabricum*) and Dwarf Gorse (*Ulex minor*) (habitat 4030pt2), associated to elevated precipitation and controlled fire regimes. The trail continues near the highest point of Castro Laboreiro – Giestoso – at 1336m where it is easy to find tracks of the endemic endangered Iberian-wolf (*Canis lupus signatus*) and its preys (the Wild Boar – *Sus scrofa* – and the European Wild Deer – *Capreolus capreolus*). Also, reptiles like the vulnerable Lataste's Viper (*Vipera latastei*); the Iberian Wall Lizard (*Podarcis hispanica*); and the endemics Baskian Viper (*Vipera seoanei* ssp. *seoanei*) and Bocage's Wall Lizard (*Podarcis bocagei*) can be observed here. Special attention falls to the butterfly Green Hairstreak (*Callophrys rubi*), which can only be found in the highest altitudes of the Park like this plateau in the spring season (personal observation).

Altitude meadows begin to appear near the boundary to Spain, with very few taxa present (habitat 6230). Most of the biodiversity to observe is related to domestic animals like ox (*Bos taurus*) and horses (*Equus ferus* ssp. *caballus*) that graze freely without any herdsman or sheepdogs. It is very poor in vegetation, with only few individuals of plants of the genus *Erica* and *Genista* appearing sporadically and is rare to observe other animals rather the domestic ones.

After this, witnessed an alternation of the habitats described before, being mostly dominated by carqueja (*Pterospartum tridentatum* ssp. *cantabricum*); Dwarf Gorse (*Ulex minor*) and species of the genus *Erica* (habitat 4030) and where reptiles (vipers and lizards) are often seen.

The path crosses a lake near the end where dominates Soft rushes (*Juncus effusus* ssp. *effusus*) which provides refuge for a high diversity of Dragonflies – like *Anax imperator*, *Enallagma cyathigerum* and *Libellula quadrimaculata* – Butterflies – mainly the *Plebejus argus* – and for the Perez's Frog (*Pelophylax perezii*).



**Topographic profile**

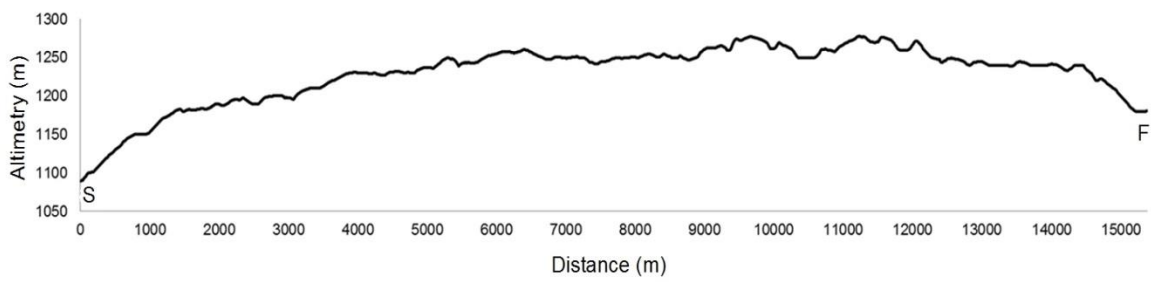


Figure 11. Draw and topographic profile of the trail number five – Plateau trail.

There isn't any special site likely for bird watching. Since the entire plateau is absence of large trees and there are only small areas of scrub near waterlines and meadows, birds appear throughout its length and it is very common to observe them. This region denotes a high regionalism in terms of bird species, with some of them appearing more here than in other trails or, rarely, only here. The most common species to observe are the Common Sky Lark (*Alauda arvensis*); the Wood Lark (*Lullula arborea*); the Tawny Pipit (*Anthus campestris*); the Griffon Vulture (*Gyps fulvus*); eagles (*Buteo buteo*; *Circaetus gallicus* and *Aquila chrysaetos*); the Montagu's Harrier (*Circus pygargus*); crows (*Corvus corax* and *Corvus corone*) and in the summer season the Red-backed Shrike (*Lanius collurio*) near waterlines.

### 3.2. Criteria analysis and evaluation of EPV

A total of 407 species were registered during the survey: 212 plants; 49 fungi; 47 birds; 11 reptiles; 6 amphibians; 3 fishes; 12 mammals; and 69 invertebrates (see Appendix XI for the complete list and Appendices XII to XVI for the list of each trail).

The results for the first criterion evaluated – Species Richness (S) – are present in Table 1. Ameijoeira Trail (Trail 1) showed the highest S values for all seasons, with the highest one of 179 species recorded in summer. The lowest values belong to Castrejo Trail (Trail 3), except for winter season, when Planalto Trail (Trail 5) registered only 96 species. In general, the summer season exhibited the highest values of S – this is true except for Trail 5, where we recorded four more species in spring (139) than in summer (135). It follows the spring with the second highest values; the autumn with the third ones; and the winter with the lowest ones – except for Trail 3 where autumn registered the lowest number of species, 102 (see Appendices XII to XVI for details about the species recorded in each season).

Table 1. Species richness by season and by trail.

<b>S</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	173	179	147	144
<b>Trail 2</b>	154	156	136	119
<b>Trail 3</b>	122	132	102	103
<b>Trail 4</b>	147	158	137	126
<b>Trail 5</b>	139	135	110	96

The second and the third criteria, the Number of Different Habitats (NH) and the Medium Value of Habitats (MVH), respectively, are combined and presented in table 2. Matança Trail (Trail 2) and Planalto Trail (Trail 5) showed more habitat diversity, presenting

six and five different types of habitats, respectively. Both comprises dry heaths (4030pt2); temperate Atlantic wet heaths (4020pt1); Northern Atlantic wet heaths (4010); transition mires and quaking bogs (7140pt2); differing only in Galician-Portuguese oak woods (9230pt1) and Birch riparian galleries (91E0pt2) that are only present in Trail 2 and in altitude meadows (6230) that are only present in Trail 5. Ameijoeira Trail (Trail 1) has recorded four different habitats, namely 4030pt2, 91E0pt1, 91E0pt2, and 9230pt1. Trails 3 and 4 were the poorest in different habitats with only three types present – 4030pt2, 91E0pt2 and 9230pt1 in Trail 3; and 4010, 4030pt2 and 9230pt1 in Trail 4.

The highest MVH was shown by Trail 5 with 3.0 points. Trail 2 follows it with 2.3 points; with Trail 3 and Trail 4 being the thirds with 2.0 points and Trail 3 with the lowest result of only 1.7 points (see Appendix I for more details about the value attributed to each habitat).

Table 2. Number of Different Habitats and the Medium Value of Habitats (MVH) for each trail.

	<b>Number of Different Habitats</b>	<b>Habitat types comprised</b>	<b>MVH</b>
<b>Trail 1</b>	4	4030pt2; 91E0pt1; 91E0pt2; 9230pt1	<b>2.0</b>
<b>Trail 2</b>	6	4010; 4020pt1; 4030pt2; 7140pt2; 91E0pt2; 9230pt1	<b>2.3</b>
<b>Trail 3</b>	3	4030pt2; 91E0pt2; 9230pt2	<b>1.7</b>
<b>Trail 4</b>	3	4010; 4030pt2; 9230pt1	<b>2.0</b>
<b>Trail 5</b>	5	4010; 4020pt1; 4030pt2; 6230; 7140pt2	<b>3.0</b>

The values concerning to the Number of Natural Marks (NM) are present in table 3. In general the summer season had the lowest values for all trails, where winter showed the highest values for all trails. This is true except for Trail 1, where the highest value recorded was in spring (24 natural marks). The other two seasons presented medium values. The highest value was recorded in spring for Trail 1 (24 natural marks) and the lowest in summer for Trail 4 (only 4 natural marks). Trail 3 presented less natural marks than other trails for almost all seasons except in the summer.

Table 3. Number of Natural Marks by season in each trail.

<b>NM</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	24	20	23	23
<b>Trail 2</b>	18	12	21	21
<b>Trail 3</b>	12	8	11	12
<b>Trail 4</b>	13	4	14	15
<b>Trail 5</b>	13	11	14	14

Number of Anthropogenic Marks (AM) by season in each trail, with concerning of its global value, is summarized in table 4. The results showed that Trail 5 holds the highest value in all seasons, between 48 points and 54 points, whereas Trail 2 was the one with the

lowest value in this criterion ranging from 3 to 5 points. Trail 1 presented the second highest values ranging from 27 to 31 points; followed by Trail 4 and Trail 3 with values between 15 and 17 points and between 8 and 10 points, respectively. Unlike the previous criterion, the summer season presented the highest values and the winter the lowest ones for almost all trails. This is true except for Trail 2, which lowest value calculated was precisely in summer and for Trail 1 and for Trail 4, with the lowest values being calculated for autumn (see Appendix II for more details about the weighing of each anthropogenic mark).

Table 4: Number of Anthropogenic Marks (AM) by season in each trail, with concerning of its global value.

<b>AM</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	31	31	27	29
<b>Trail 2</b>	5	3	5	5
<b>Trail 3</b>	10	10	10	8
<b>Trail 4</b>	15	17	15	17
<b>Trail 5</b>	52	54	52	48

Points of scenery appreciation; total length of the trails in kilometers (Km); the overall value and the relative value of Landscape Diversity (LD) are comprised in table 5. We defined a total of 23 points of scenery appreciation for Trail 1; 14 for Trail 2; 10 for Trail 3; 12 for Trail 4 and 18 for Trail 5.

Table 5: Landscape Diversity (LD) relative value, calculated by dividing the sum of Landscape Main Elements (LME) (or Overall value) present in all points of scenery appreciation by the total length of the trail.

<b>LD</b>	<b>Trail 1</b>	<b>Trail 2</b>	<b>Trail 3</b>	<b>Trail 4</b>	<b>Trail 5</b>
<b>Points of scenery appreciation</b>	23	14	10	12	18
<b>Total length of the trail in Kilometers (Km)</b>	5.52	8.28	4.40	8.52	15.39
<b>Overall value (∑number of LME present in all points)</b>	61	42	34	41	58
<b>Relative Value</b>	<b>11.05</b>	<b>5.07</b>	<b>7.73</b>	<b>4.81</b>	<b>3.77</b>

The count of total Landscape Main Elements (LME) present in each trail showed a hierarchy where the highest values belong to Trail 1 (61 LME) and Trail 5 (58 LME) and the lowest one to Trail 3 (34 LME). Although this, when the total length of the trails was considered, the results were different. The calculation of the relative value showed that the highest value is maintained by the Trail 1 with 11.05 points; but Trail 3 started to present the second highest value (7.73 points) – whereas it showed the lowest LD value when the length was not considered due to less LME counted – and Trail 5 becomes the less landscape diverse with only 3.77 points. Trail 2 and Trail 4 presented medium relative values, with 5.07 points and 4.81 points, respectively (see appendix III for more details about LME and the



formula used).

Vertebrate Conservation Status – Plant Range Distribution (VCS-PRD) provides information about the importance of the total species recorded in a given season and in a given trail (see Appendix IV for formula used to calculate the Relative Value of VCS-PRD and Appendices XII to XVI for the values attributed to each species). VCS-PRD showed that results did not vary considerable from one trail to another, with an average value of 2.27 points (Table 6).

Results showed that Trail 3 was the one with the highest value of VCS-PRD in almost all seasons, with values ranged from 2.28 points in summer to 2.42 points in winter. The only exception falls over the summer season in Trail 1 with 2.31 points that exceeds all other trails.

The winter presented the highest values of VCS-PRD for Trail 1; Trail 2; Trail 3 and Trail 5, with 2.36, 2.42, 2.42 and 2.28 points, respectively. Instead, Trail 4 registered the highest value in the spring season with 2.26 points.

Trail 1 presented the highest VCS-PRD value for winter and spring with 2.36 points, followed by the summer and autumn with the same value with 2.31. Trail 2 showed the highest value in winter with 2.42 points, followed by spring with 2.30 points, summer with 2.29 and autumn with 2.14. Trail 3 presented the following results: 2.42 points in winter; 2.41 points in spring; 2.40 points in autumn; and 2.28 points in summer. Trail 4 was the only one that registered the highest value of VCS-PRD in spring with 2.26, followed by summer, winter and autumn with 2.21, 2.19 and 2.12 points, respectively. Trail 5, like the three first, showed the highest value in winter with 2.28 points, and followed by the summer with 2.26 points, autumn with 2.76 and spring with 2.07.

Table 6. Relative values of Vertebrate Conservation Status – Plant Range Distribution (VCS-PRD) by season and by trail. The relative values were obtained by dividing the sum of all VCS-PRD of each species by Species Richness (S).

<b>Relative value of VCS-PRD</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	2.36	2.31	2.31	2.36
<b>Trail 2</b>	2.30	2.29	2.14	2.42
<b>Trail 3</b>	2.41	2.28	2.40	2.42
<b>Trail 4</b>	2.26	2.21	2.12	2.19
<b>Trail 5</b>	2.07	2.26	2.17	2.28

VCS-PRD when compared to Species Richness (S) (Table 1) demonstrated that more species recorded in a given season does not necessarily means that their importance for conservation is greater. While the highest values of S were recorded in spring for Trail 5 and in summer for the other four trails, higher values of VCS-PRD were recorded in spring

for Trail 4 and in winter for the other four trails (see Appendix IV for details about the weighs attributed to each kind of species).

The Number of Endemisms (NE) was higher for spring season in all trails (Table 7), with 16, 19, 11, 13 and 10 endemic species recorded in Trail 1, Trail 2, Trail 3, Trail 4 and Trail 5, respectively. Summer presented the second highest values of this criterion with 15, 17, 10 and 12 endemisms recorded in Trail 1, Trail 2, Trail 3 and Trail 4, respectively. Instead, Trail 5 showed the second highest value in autumn with 9 endemic species recorded.

In general, less endemic species were recorded in winter, except in Trail 1, with only 12 endemisms in autumn season.

Table 7. Number of Endemisms (NE) by season and by trail.

<b>NE</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	16	15	12	13
<b>Trail 2</b>	19	17	15	15
<b>Trail 3</b>	11	10	9	9
<b>Trail 4</b>	13	12	9	8
<b>Trail 5</b>	10	8	9	6

After the analysis of previous criteria, Ecotourism Potential Value (EPV) could be calculated, with concerning about the same importance of all criteria for the final formula (Table 8) or different weigh of each criterion for the calculation of formula (Table 9).

Table 8. EPV calculated with all the criteria contributing with the same weigh to the formula.

<b>EPV</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<b>Trail 1</b>	32.93	33.05	28.54	28.55
<b>Trail 2</b>	26.46	25.46	24.07	21.98
<b>Trail 3</b>	21.23	21.83	18.34	18.35
<b>Trail 4</b>	25.01	25.38	23.37	22.25
<b>Trail 5</b>	28.48	27.75	24.87	22.26

Results showed that EPV differences between seasons were not so different if we considered the criteria to have the same weight or different weights in the calculation of the final formula. The exception was for Trail 3 with the lowest value in autumn season (28.54) if we consider the first approach of all criteria weighing the same; and with the lowest EPV in winter (52.37) if we consider the second approach of weighing different the criteria.

Table 9. EPV calculated by weighing differently each criterion.

EPV	Spring	Summer	Autumn	Winter
Trail 1	106.00	106.72	91.47	92.13
Trail 2	70.10	68.09	64.00	57.80
Trail 3	60.74	63.41	52.99	52.37
Trail 4	71.94	75.04	68.35	65.77
Trail 5	91.68	91.05	81.12	73.44

However, the second approach seems to presents more different values from one season to another. By example, whereas EPV of autumn and winter in Trail 1 was 28.54 and 28.55, respectively, in the first approach, EPV of the same seasons was 91.47 and 92.13, respectively, in the second approach.

The highest EPV was achieved by Trail 1 in summer season (32.93 – first approach; 106.00 – second approach) and the lowest by Trail 3 in autumn (18.34) if we consider the first approach and in winter (52.37) if we consider the second approach.

In both cases, Trail 1 presented the highest ecotourism potential for all seasons, followed by Trail 5 with the second highest values. Trail 3 presented the lowest EPV in both approaches. The differences are in Trail 2 and Trail 4, when we consider one approach or the other. In the first case, Trail 2 had higher EPV than Trail 4 in almost all seasons except in winter. In the second case, when the weights were different, Trail 4 presented higher EPV than Trail 2 in all seasons (see Appendix V for more details about the two approaches used to calculate the EPV).

### 3.3. Local biodiversity update

Some species demonstrated a highly regionalism, appearing only in specific zones of the study area. This is particularly the example of the Large Psammodromus (*Psammodromus algirus*) and the Strawberry tree (*Arbutus unedo*) that only appeared in the south where the influence of the Mediterranean climate is beginning to felt and were absent in the northern area and the Wolf’s bane (*Arnica montana ssp. atlantica*) that only appeared in the more oceanic areas like the plateau.

In general, birds of preys were more common at the plateau, where the high extensions of open areas provide the ideal ecological conditions for their subsistence.

Apparently, the Griffon Vulture (*Gyps fulvus*) has been adopting PNPG as a regular feeding area. This species were recorded in three different trails – “Ameijoeira”; “Matança” and “Plateau” – and didn’t appear only in the winter (see appendices XII; XIII and XVI).

The butterfly *Lasiommata maera* is considered to be absent from Portugal mainland by FaunaEuropaea (2011) but was recorded in summer in Castrejo Trail (Trail 3) and in Transfonteiriço Trail (Trail 4).

*Plagioderia versicolora* is a beetle of the Chrysomelidae family that has no data for the Iberian Peninsula (FaunaEuropaea, 2004). It was recorded in three different trails – “Ameijoeira”; “Matança” and “Transfonteiriço”. It was registered only in spring and summer season.

## 4. Discussion of the results

### 4.1. Statistical Analysis

The greater number of species recorded in the warmer seasons can be explained by the number of animals that only begin to appear in spring and complete their life cycles in the area until late summer. This is particular true for reptiles that tend to hibernate in the colder months and for invertebrates that complete their life cycles in the warmer ones (see appendices XII to XVI to seek the species recorded by season). Yet, the migratory birds that adopt Castro Laboreiro as nesting area in the spring and summer contribute to the high value of S in these seasons. Similar, fungi contributed largely to the results obtained in the autumn season, when their fruit bodies appear in high numbers due to the ideal environmental conditions.

The high number of species recorded for Trail 1 was probably due to its natural conditions. This trail comprises areas with dry heaths, areas with oak forests, areas with riparian galleries, rural areas subject to human pressure, steep slopes and uneven terrains, etc. that offer conditions to a high diversity of species.

Not all the species that occur naturally in this territory could be recorded. In situations like the spring and summer seasons, when plants are full of leaves and/or flowers it is difficult to make a full biodiversity survey. So, some plant species may have been neglected. To partially avoid this, plants registered in a given season were considered present in the other three seasons. This is true except for those that can only be seen in specific seasons, for being, per example, bulbous. This is the case of *Narcissus triandrus ssp. triandrus* and *Hyacinthoides non-scripta* that were registered only in winter and spring and were not considered for summer and autumn season; *Merendera montana* that appear only in late summer and autumn or *Orobanche rapum-genistae* that was registered only in spring and summer. Likewise the elusive character of some animals difficult their direct observation and can compromise the results.

Other diversity indices could be used instead of species richness. However the time and the objectives of this study do not allow making account for abundances. It was only pretended to account how many different species were present by season and by trail and it didn't take into account the abundances of the species or their relative abundance distributions as a simple measure figures better for this type of work.

The results for the second and the third criteria demonstrated that some habitats represent greater value than others, if we consider the rarity of their presence in the study area. The highest MVH showed by Trail 2 and Trail 5 can be explained not only by the

superior number of different types present in the trails but also for being the only tracks that include rare habitats like Transition Mires and Quaking Bogs (7140pt2) in the first case and altitude meadows (6230) in the second trail. Although Trail 5 has no oak forest in its fifteen kilometers of length, it is the only one that registered two of the rarest habitats (namely habitat 7140pt2 and habitat 6230), increasing its MVH to levels higher than those of the remaining trails. Similar, the lowest MVH for Trail 3 can be explained by the types of habitats it comprises – dry heaths; oak forests and birch woods – since they are the more common in the area (ICNB, 2008a).

It could be used different types of evaluation for this criterion that tries to weigh the habitat types present by trail. For example, it could be registered how many times a specific type of habitat was present in a given trail. This should provide valuable information not only about the number of habitat types present but also about the ecological sensitivity of the trail.

The acquisition of habitats information and its weighing constitutes important measures when we are trying to achieve the ecotourism potential of an area. It gives sights on the ecological importance of the area where these habitats are and can contribute to raise tourist awareness about the urgency to conserve them (Walter, 2013).

Since most of the natural marks evaluated comprise water sources as principal rivers, cascades, brooks, etc. it is easily explicable how winter season recorded the highest values for almost all trails. In fact, this region is one of the rainiest in the country, especially in the months of December and January (Honrado, 2003), which allied to the artificial deviations of rivers for irrigation of fields explain the more water courses created. In the driest seasons, watercourses tend to evaporate and summer shows the lower values. Geological elements are immutable and did not varied; as well as riparian galleries that although not have this immutable character did not varied in the time this study was conducted. The highest values obtained for Trail 1 can be explicable by means of the human influence in this part of territory – such as the many fields that presents water deviations near them to irrigation – and by the many parts of rivers that it crosses.

Although there were not catalogued any animal burrows or pits and any natural caves, we consider these elements important to the evaluation of NM criterion, since they can constitute an important data to the potential of a trail for recreational activities. These two types of natural elements should be taken into account in similar works that can be carried in the future.

The highest number of AM registered for Trail 5 is due to the ancestral tumuli that it comprises, dated from the Neolithic period (IGESPAR, 2013f). The high number of these structures with a high weighs present in this trail makes it one of the most valuable for the appreciation of cultural heritage. It were not considered all the monuments catalogued in the territory, since not all they are easily seen from the pedestrian trail. It were only considered

the ones that are easily seen from the dirt road of plateau. Furthermore, the cement cruises and the autochthonous breeds contributed to this value. The second highest values showed by Trail 1 can be explained by the three villages it crosses; by the presence of four bridges of different periods; and by the presence of several modern buildings with high representativeness in the local culture. Because of this, the trail allows a deep knowledge of the cultural legacy of this particular region. Only Trail 2 registered very low values because it is an only natural oriented trail, which comprises no human structures in all its length. Moreover, this trail is the one where the human influence is less felt, with extensive oak woods; birch forests and pine forests of *Pinus sylvestris*.

The variation that was observed between the seasons is due to the registration of the indigenous breeds. If they were not considered the results should be the same for all seasons, but we think that these breeds of domestic animals, as being part of the local culture should be recorded as a different element from the other domestic animals. So domestic animals such as horses, ox and dogs were recorded for species richness and VCS-PRD calculation. Barrosão ox; Castro Laboreiro dog and Garrano breeds were recorded as an anthropogenic mark.

Another way to assess this criterion would be the representation that different elements have on local culture or the impact of each one in the ecotourist experience. But this requires the realization of surveys, both to locals and to tourists, so the option to weighing the anthropogenic elements according to their date of construction seems better for this type of study.

The LD was one of the criteria more difficult to assess due to the subjectivity associated with the evaluation of the aesthetic quality of the landscape. Landscape appearance influence tourists' expectations (Aranzabal *et al.*, 2009). Honrado & Alonso (2010) took into account three different attributes of aesthetical quality, namely the order of the landscape main elements; the spatial diversity and the scenic value to the observer. The perception and the evaluation of each of these three attributes vary depending on the observer and the type of methodology adopted: surveys to tourists or the evaluation by a landscape specialist.

We only adopted the evaluation of landscape diversity, evaluating the quantity of landscape main elements explicit in a given landscape unit as this should provide quality information to the calculation of the ecotourism potential of each trail and to landscape management in the study area. Other factors could be included in this evaluation such as landscape visual range; best viewing distance; orientation of the landscape; etc. (Li *et al.*, 2012). Other types of evaluation of landscape would consider the economic value or the diversity of services offered by the landscape (Plottu & Plottu, 2012).

The selection of our five LME to evaluate LD is thought to be the most adequate to

the type of this work and the study area. If we choose other types of landscape evaluation the results may differentiate largely from the ones we obtained or could be very similar.

The formula we adopted to calculate the final value of LD seems adequate for this study since we needed a valid value that permits to compare between trails. If we only took into account the number of LME present in each trail we would not get valid results to make a comparison.

Our definition of points of view comprised places where the landscape was at least different in one LME, although it can showed the same value (by example, we can have two points in a row with the same number of LME – 3 – but in the first one we perceive water, geology and vegetation and in the second we perceive geology, vegetation and human constructions). In these terms, Trail 1 was the one with more points of scenery appreciation due to the fact that along the path we faced different elements almost at every two hundred meters. Trail 5 was the second one with more of these points and has almost as many LME as Trail 1. The high number of these points of observation in Trail 5 was due to its long total length. However, the lowest final value showed by this trail is explained precisely by its length and the number of total of LME registered. Although it had almost as many LME as Trail 1, it had a total length three times the first trail, so when we divided the overall value of LME by the total length of the trails we obtained a reduced value. Similarly, despite Trail 3 was the shortest and had the less number of LME, when we calculated the relative value of LD it showed the second highest value in our list.

The similar results obtained for VCS-PRD in different seasons are explained mostly by the presence of almost the same species in all trails. Indeed, little species were registered only in one particular trail. So, when we sum the weighs attributed to each species the predicted results point to very similar VCS-PRD values. Moreover, the values calculated in spring and summer were influenced by the high number of invertebrates recorded (that weighted 0.5 points each) and autumn values are influenced by the high number of fungi that only appear in this season (each one contributing with 0.5 points to the final result, too). The winter higher values could be explained in part by the lower S recorded for this season. In fact we divided the sum of VCS-PRD of all species by S, so mathematically it is expected to obtain higher results when we have lower values of S. Nevertheless, the final result depends on the species registered during the survey. These results showed that this criterion is sensible to the number of species recorded and it helps to make a comparison between trails but it should not be used for nothing more. Also, species that only appear in winter like the Iberian endemic *Crocus carpetanus* could contribute largely for the final result of VCS-PRD.

As Trail 3 was the one with the lowest S for almost all seasons, species recorded in this trail do not necessarily present a higher conservation status or a more restricted range distribution in case of plants, but when the relative value of VCS-PRD was calculated it



obtained the highest value by season (except for summer).

Our choice by assigning weights to plants similar to vertebrates rests on the fact that most plants do not appear in red lists of threatened species. But there was a need to assign different weights to each plant species. Distribution ranges seems to be the best choice to address this problem. Weighing more the endemic species is similar to weighing more the animals that face a high risk of extinction, because both of them are priorities in conservation programs and there is a need to manage the areas where they naturally occur.

Plants on flowering season should have greater values since they are a powerful attraction of tourists, especially in spring season (Priskin, 2003). So we gave more 0.5 points to each plant species that was in the time of flowering or fructification in a given season.

Such as plants, invertebrates, domestic animals and fungi that have almost no conservation status but they need to be weighed to figure in this criterion. We attributed only 0.5 points to each one because they could not be overvalued. If they were, they were being compared to species that have conservation status assigned, albeit reduced (like the Least Concern vertebrates that were weighed with only 1 point). With this approach it is possible to include all the species recorded into this criterion, without neglecting any of them.

By dividing the sum of VCS-PRD values by the species richness we obtained a relative value that permits a valid comparison between seasons and between trails. If we only took into account the sum of VCS-PRD values, probably trails with more species would show superior results here, too.

The highest number of endemic species registered in spring and summer could be attributed mainly to species of reptiles that were absent from winter data since they hibernate and plants that only appear in these particular seasons. This is particularly true for the Bocage's Lizard (*Podarcis bocagei*); the Iberian Emerald Lizard (*Lacerta schreiberi*) and for the plant *Ornithogalum concinnum* which were only recorded in warmer seasons. But there were some other species that are endemic and were only recorded in autumn or winter, like *Crocus serotinus* and *Crocus carpetanus*. This shows that this is a very particular criterion and should be observed carefully. The values did not vary much from one season to another and some endemic species could be observed in one or two seasons and were absent from data in the others, whereas another different species could be present only in the seasons where the first one is absent.

Although the heterogeneous character of this criterion, it provides relevant information about the sensibility of the area where the recreational activities take place, helping to manage them and to raise awareness in tourists about the importance to maintain the surrounding environment (Slinger, 2000; Walter, 2013).

Finally, the EPV by season and by trail showed very particular results when it was considered the same weigh for all criteria or when it was choose to weigh them differently.

The second approach as it presented more different results from one season to another is easy to understand. We weighed more VCS-PRD and AM because they are thought to be the ones that attract more the tourists. In an analysis of this kind, they seem to be the most adequate to weigh more, since tourists are attracted mainly by the sensitive biodiversity (ecological dimension of VCS-PRD) and by the cultural heritage of a region (cultural dimension of AM) (Gössling, 1999; Álvares & Petrucci-Fonseca, 2002).

If the weighing was different, valuing more other criteria than those we did, the results could be very similar or quite different. Assigning weighs to each criteria influence the final result of EPV as well as the perception of what contribute more to the highest results. For instance, if we weighed more S, NM, MVH and NE, probably Trail 2 would show the highest potential for recreational activities.

Trail 1 showed the highest EPV for all seasons in both approaches probably because it recorded more species in all seasons; showed more natural marks; have a great number of anthropogenic marks; have the highest value of LD and presents a great value of VCS-PRD. The second highest EPV obtained by Trail 5 can be explained mostly by the great number of different habitats it comprises and the respective MVH and by the AM, being the only one with ancestral structures (that were weighed more than the others). The lowest EPV calculated for Trail 3 can be explained due to several reasons. First of all, it was the one with less species recorded by season. It has the lowest MVH, as well as NM and NE. Even what concerns to AM, was one of the less valued. It was only by LD and VCS-PRD criteria it achieved higher results.

We verified that when we assigned different weights to each criterion Trail 2 exhibit less EPV than Trail 4 in all seasons. This is mainly due to the fact that Trail 2 had almost no AM, although it showed medium values of VCS-PRD (the two highest weighed criteria). In fact, when we consider that all criteria contribute equally to the final result of EPV, these two trails showed very similar results, with one presenting more potential only in winter (Trail 4) and the other one in all other seasons (Trail 2). However, as we should take into account the cultural legacy when we are talking about ecotourism rather than nature-based tourism, the Trail 4 demonstrated greater EPV (due to its high AM value).

The highest EPV of the warm seasons cannot be explained by the values obtained for AM, as this criterion showed very similar results between seasons, neither by the VCS-PRD values, which showed the highest results in winter season. They are only explainable by the number of species and endemism recorded for these seasons, something superior to the others.

The option to divide the sum of values obtained for each criterion by the number of total criteria analysed in this study seems legit when we try to analyse in an easy way the potential of trails and seasons to the development of ecotourism activities. This provided

relevant information on what we set out initially, with the results being easily interpretable in the light of the criteria examined.

We made an exercise where we recorded not only biological – S, NE – ecological – NH, MVH, NM, LD – and cultural variables – AM – but also evaluated and related them to each other. The calculation of the EPV by season and by trail is not easy and comprises the evaluation of several criteria. It could have been inserted other parameters into the formula, like the geodiversity, land use and economic valuation of the forest areas – all valid variables to be considered as strategies for conservation and for nature appreciation (Honrado & Alonso, 2010). Or the criteria analysed could have been evaluated in a different way.

We considered that the eight different parameters we choose for this study were the most adequate for our objectives. In fact, as we approached biological, ecological and cultural dimensions, we could answer some urgently questions in the ecotourism area.

The assessment of spatiotemporal biological diversity allows inferences about when and where it is more likely to observe a large number of species, as well as their sensitivity in what regards to their conservation.

We could prove that other seasons rather than summer present a great potential for the visitation and for the development of recreational activities in the area. This is true particularly for the winter season that registered a higher value for VCS-PRD, showing that the least number of species that can be observed represents, nonetheless, a greater value to raise awareness and educate the tourists about the sensitivity of threatened and rare species. Also, spring showed that there is a huge number of species that can be observed, as well as endemisms that attract tourists that are willingness to pay to see those (Reinius & Fredman, 2007).

This work provided new insights that can be used to manage recreational activities, by scattering them by the four seasons. The negative effects that the PNPG suffers from the mass tourism in summer (Mendes & Proença, 2011) is possible to avoid with this information, since other seasons offer a great ecotourism potential but fail in their disclosure. This way, there is a need to promote the other three seasons, bringing more visitors to the region, allowing generating more benefits to the local economy and to conservation initiatives.

This kind of studies – that link biological, ecological and cultural information – allows the management of the areas where ecotourism projects are founded and to understand the sensibility of habitats and landscapes that need urgently conservation actions, so their integrity can be maintained. While some trails offer greater EPV than others, the sensitivity and rarity of their habitats, the biodiversity that lodges and the conservation status of the species that composes those habitats oblige to redoubled cares in conducting recreational activities (Gomes, 2007; Santo, s/d). In our study, this was observed particularly for Trail 2

that despite it wasn't show one of the highest EPV, it comprises relic species and habitats, as well as unique oak and birch woods and a pine forest of *Pinus sylvestris*.

## 4.2. Databases updated on new species

Studies like this one can contribute to update the information on local biodiversity. First of all, they allow to see that some species show a highly regionalism, being more probably to see in some areas than others. This helps to disclose where the species are more probable to see, attracting more tourists that are willingness to pay more for their observation. Then, surveys that cover the four seasons allow to record new species to the area or update the information when it is absent. This was the case of two invertebrates – the butterfly *Lasiommata maera* which was considered absent from Portugal (FaunaEuropaea, 2011) and the beetle *Plagiodera versicolora* which had no previous data recorded for the Iberian Peninsula (FaunaEuropaea, 2004) – and of one bird – the Gryphon Vulture (*Gyps fulvus*).

The Gryphon Vulture is particularly interesting because it was considered as an extinct breeding species in PNPG (Pimenta & Santarém, 1996). The authors refer very few observations of this species in the five years of the survey, but we recorded the species in three trails and in three different seasons. Two individuals in 26/11/2012 at Trail 1; four individual in 04/06/2013 and three in 08/07/2013 at Trail 2; and two individuals in 15/10/2012, six individuals in 03/06/2013, three individuals in 02/07/2013, four individuals in 10/07/2013 and twenty one individuals in 23/07/2013 at the plateau – Trail 5.

We think these three species should be the subject of further investigation to know the areas where the invertebrates occur in the Portugal mainland (and to update their distribution information) and to understand if the Gryphon Vulture is back to PNPG as a nesting bird or if it is only adopting PNPG as a feeding area.

Also, we point the necessity to define new areas of natural environment that cover areas with high biodiversity value. This is particularly the case of the plateau of Castro Laboreiro that presents high values of wilderness but still lacks a policy that protect more efficiently this area, as well as the habitats and the species it comprise since it continues to be under a rural area definition (Gomes, 2007).

## 5. Conclusions

This study provided relevant results about the great potential of protected areas for the implementation of ecotourism projects and for recreational activities. Comprising biological, ecological and anthropogenic information it was possible to know where and when those activities should take place, scattering tourists among the year, allowing relieving the pressure associated to summer season.

Although PNPG is a protected area, it is also inhabited by people with ancestral mores and it is part of the tourists routes, so recreational activities must be well managed to maintain at the same time the integrity of the ecosystems and the cultural heritage of the local communities. On the other hand, the revenues generated by ecotourism can be useful for conservation programs.

The spatiotemporal assessment of the ecotourism potential allows the identification of key issues in the ecotourism research. With this novel approach it was possible not only to determine the ecotourism potential of an area but also to achieve the environmental conservation. We could prove that other seasons rather than summer offer great potential to the visitation of the PNPG, not only by its ecological importance, but also by the value of its cultural heritage. However, higher ecotourism potential in specific seasons not necessarily means that recreational activities should take place in those seasons. They must be well managed to achieve the main goals of the ecotourism of environmental conservation and the generation of socio-economic benefits for people who live in natural areas.

Also, the combination of natural and cultural data and the assessment of spatiotemporal biodiversity differences provide an important tool for the management of ecotourism in sensitive protected areas, namely national parks. The differences we achieved proved to be useful in the ecotourism research and we think that further studies should comprise this type of information.

Yet, this type of studies allows updating the information on local biodiversity as we proved by the new data provided for two invertebrate species and the high number of individuals of the species Gryphon Vulture (*Gyps fulvus*) recorded. This is useful to further conservation measures and can constitute a first step for the conservation of rare and threatened species. We also point the necessity to define new areas of natural environment that cover areas with high biodiversity value and can enhance their conservation.

This study can be seen as a first step to access the impacts on the areas or species in which ecotourism projects are founded. By providing important information about the conservation status of the species that occur in specific habitats and about the endemisms the area comprise, future management studies can find here a basis.

Further studies in this particular area of tourism should consider the incorporation of the variables we took into account (and other environmental variables), lessening the negative impacts associated to mass tourism in summer and promoting sustainable ecotourism, by stimulating environmental awareness and educating the tourists about the sensitivity of the habitats and the species they house.

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## 6. Appendices

## Appendix I. Habitat types and names and the correspondent weighs

Habitat type	Habitat name	Weighing of habitats
4010	Northern Atlantic wet heaths	3
4020pt1	Temperate Atlantic wet heaths	2
4030pt2	Dry heaths	1
6230	Altitude meadows	5
7140pt2	Transition mires and quaking bogs	4
91E0pt1	Alder riparian galleries	3
91E0pt2	Birch riparian galleries	2
9230pt1	Galician-Portuguese oak woods	2

Formula for the calculation of MVH by trail:

$$MVH = \frac{\sum \text{Weighs of habitat types}}{\text{Number of different habitat types}}$$



## Appendix II. Weighing value of Anthropogenic Marks (AM) according to their date of construction

AM		Weighing Value
<b>Modern Buildings</b>	<b>Concrete or Stone Bridges; Granaries; Villages</b>	1
<b>Modern Buildings with High representativeness in local culture</b>	<b>Aqueducts; Churches; Cruisers; Community ovens; Mills; Shepherd Shelters; Autochthonous Animal Breeds</b>	2
<b>Medieval Buildings</b>	<b>Bridges and Castles of the Middle Age</b>	3
<b>Buildings of the Roman period</b>	<b>Roman Bridges or Roads</b>	4
<b>Ancestral anthropogenic marks</b>	<b>Tumuli; Menhir</b>	5

### Appendix III. Landscape Main Elements (LME) present in a landscape unit and Landscape Diversity (LD) evaluation

LME considered for LD evaluation
Topography
Geology
Vegetation
Water
Human constructions

LME	LD
One landscape main element present	1
Two landscape main elements present	2
Three landscape main elements present	3
Four landscape main elements present	4
Five landscape main elements present	5

Formula for the calculation of the Relative value of LD:

$$Relative\ value\ of\ LD = \frac{\sum LME\ by\ trail}{Total\ Length\ of\ trail}$$

## Appendix IV. Animals; Plants and Fungi weighing according to their conservation status or range distribution

VCS	PRD	Value
LC	Exotic	1
NT	High Spread in Portugal	2
VU	High Spread in PNPG or in Northern Portugal	3
EN	Iberian Endemism	4
CR	Portuguese Endemism	5
<b>Invertebrates; Domestic Animals and Fungi</b>		0.5

Note: Plants in Flowering or Fructification season added 0.5 points

Formula for the calculation of the Relative value of VCS-PRD:

$$Relative\ value = \frac{\sum VCS/PRD}{S}$$

## Appendix V. Calculation of EPV with two different approaches

1 <sup>st</sup> Approach						
CRITERIA	WEIGHING	TRAIL 1	TRAIL 2	TRAIL 3	TRAIL 4	TRAIL 5
<i>S</i>	1	X.X	X.X	X.X	X.X	X.X
<i>NH</i>	1	X.X	X.X	X.X	X.X	X.X
<i>NM</i>	1	X.X	X.X	X.X	X.X	X.X
<i>AM</i>	1	X.X	X.X	X.X	X.X	X.X
<i>LD</i>	1	X.X	X.X	X.X	X.X	X.X
<i>VCS-PRD</i>	1	X.X	X.X	X.X	X.X	X.X
<i>MVH</i>	1	X.X	X.X	X.X	X.X	X.X
<i>NE</i>	1	X.X	X.X	X.X	X.X	X.X
<i>EPV</i>		Y.Y	Y.Y	Y.Y	Y.Y	Y.Y

2 <sup>nd</sup> Approach						
CRITERIA	WEIGHING	TRAIL 1	TRAIL 2	TRAIL 3	TRAIL 4	TRAIL 5
<i>S</i>	3	X.X	X.X	X.X	X.X	X.X
<i>NH</i>	1	X.X	X.X	X.X	X.X	X.X
<i>NM</i>	2	X.X	X.X	X.X	X.X	X.X
<i>AM</i>	5	X.X	X.X	X.X	X.X	X.X
<i>LD</i>	4	X.X	X.X	X.X	X.X	X.X
<i>VCS-PRD</i>	5	X.X	X.X	X.X	X.X	X.X
<i>MVH</i>	1	X.X	X.X	X.X	X.X	X.X
<i>NE</i>	4	X.X	X.X	X.X	X.X	X.X
<i>EPV</i>		Y.Y	Y.Y	Y.Y	Y.Y	Y.Y

## Appendix VI. Ameijoeira Trail Brochure

### Trilho da Ameijoeira/ Ameijoeira Trail

**Localização Geográfica/ Geographic Localization:** Castro Laboreiro

**Forma/ Format:** Duplo anel/ Double Ring

**Classificação/ Classification:** Moderado/ Moderate

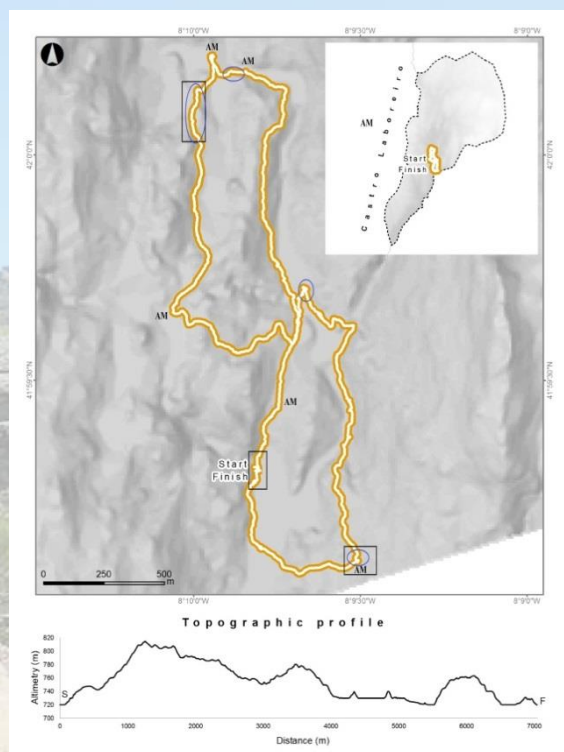
**Extensão/ Extension:** 6830m – 3h09

**Elevação/ Elevation:** 724 (min.) 814 (max.)

### Património Cultural/ Cultural Heritage

- **Forno Comunitário em Pontes/** Community oven in Pontes
- **Aqueduto do início do séc. XX/** Aqueduct of the early sec.XX
- **Ponte da Cava da Velha/** Bridge of Cava da Velha
- **Ponte romana da Dorna/** Roman bridge of Dorna
- **Conjunto Ponte e Moinho da Assureira e Capela de São Brás/** Set of bridge and mil of Assureira and Chapel of São Brás
- **Capela do Senhor da Boa Morte/** Chapel of Senhor da Boa Morte

- **Aldeias/ Villages:** Pontes; Assureira; Ameijoeira



- Legenda/ Legend:**
- Aldeias/ Villages
  - Local para observação de aves/ Birdwatching location
  - Galeria ripícola ou fonte de água/ Riparian gallery or water source
  - AM Estrutura antropogénica/ Anthropogenic Mark

### Fauna principal/ Principal Fauna

**Peixes/ Fishes:** Truta-do-rio/ Brown Trout (*Salmo trutta*)

**Répteis/ Reptiles:** Sardão/ Ocellated lizard (*Timon lepidus*); Lagartixa-ibérica/ Iberian Wall Lizard (*Podarcis hispanica*); Lagartixa-de-Bocage/ Bocage's Wall Lizard (*Podarcis bocagei*); Víboras/ Vipers (*Vipera sp.*)

**Aves/ Birds:** Chamariz/ European Serin (*Serinus serinus*); Rabirruivo/ Black Redstart (*Phoenicurus ochruros*); Cartaxo-comum/ African Stonechat (*Saxicola torquatus*); Melro/ Common Blackbird (*Turdus merula*); Chapins/ Tits (*Parus sp.*)

**Anfíbios/ Amphibians:** Rã-ibérica/ Iberian Frog (*Rana iberica*) e Sapo-comum/ Common toad (*Bufo bufo*)

## Flora principal/ Principal Flora

Florestas imaturas de Carvalho-alvarinho (*Quercus robur*) e Carvalho-negral (*Quercus pyrenaica*); no estrato arbustivo: Sanguinho (*Frangula alnus*); Torga-vermelha (*Erica australis*); Urze-branca (*Erica arborea*) e giestas (*Cytisus sp.*) Immature oak forest of English oak (*Quercus robur*) and Pyrenean oak (*Quercus pyrenaica*); with Alder Buckthorn (*Frangula alnus*); Southern Heather (*Erica australis*); Tree Heath (*Erica arborea*) and Brooms (*Cytisus sp.*) in the shrub stratum.

Corredores ripícolas/ Riparian galleries: Videiro/ Birch (*Betula pubescens*); Salgueiro/Grey Willow (*Salix atrocinerea*); Amieiro/ European Alder (*Alnus glutinosa*)

Matos secos/ Dry Heaths: Carqueja/ Carqueja (*Pterospartum tridentatum subs. cantabricum*); Queiró/Heath (*Erica umbellata*); Tojo-menor/ Dwarf Gorse (*Ulex minor*)

## Informação Geral/ General information

Trilho cultural e paisagístico, com elevado número de elementos antropogénicos que permitem um contacto mais próximo com as populações locais e o legado cultural da região.

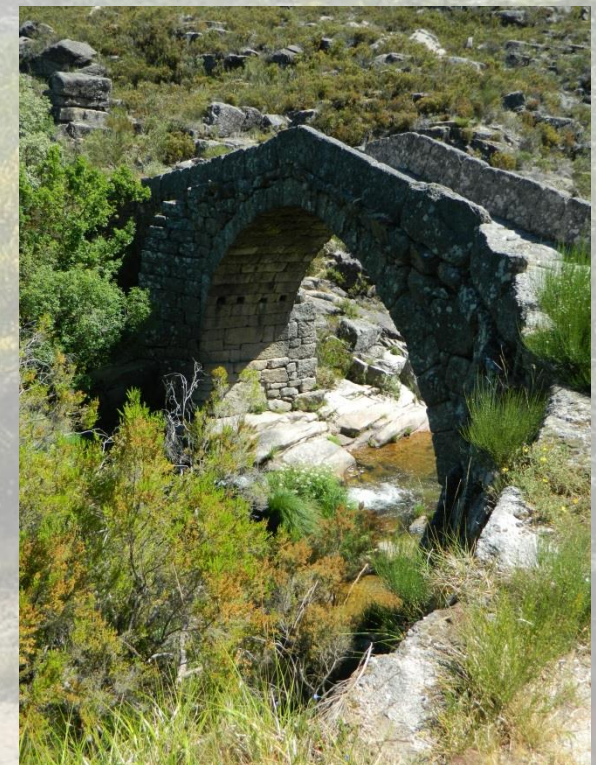
Predominam os matos secos (habitat 4030pt2) e os carvalhais, ainda que imaturos (habitat 9230pt1), embora seja possível observar espécies mais características de galerias ripícolas (habitat 91E0pt1 e 91E0pt2) nos cursos de água principais.

Cultural and landscapes oriented trail, with high number of anthropogenic elements that allow a closer contact with local populations and cultural heritage of the region.

It is dominated by dry scrubs (habitat 4030pt2) and by immature oak woods (habitat 9230pt1), although it is possible to observe species characteristic from the riparian galleries (habitat 91E0pt1 and 91E0pt2) in major water courses.

## Trilho da Ameijoeira

### Ameijoeira Trail



## Appendix VII. Matança Trail Brochure

### Trilho da Matança/ Matança Trail

Localização Geográfica/ Geographic Localization: **Castro Laboreiro**

Forma/ Format: **Linear/ Linear**

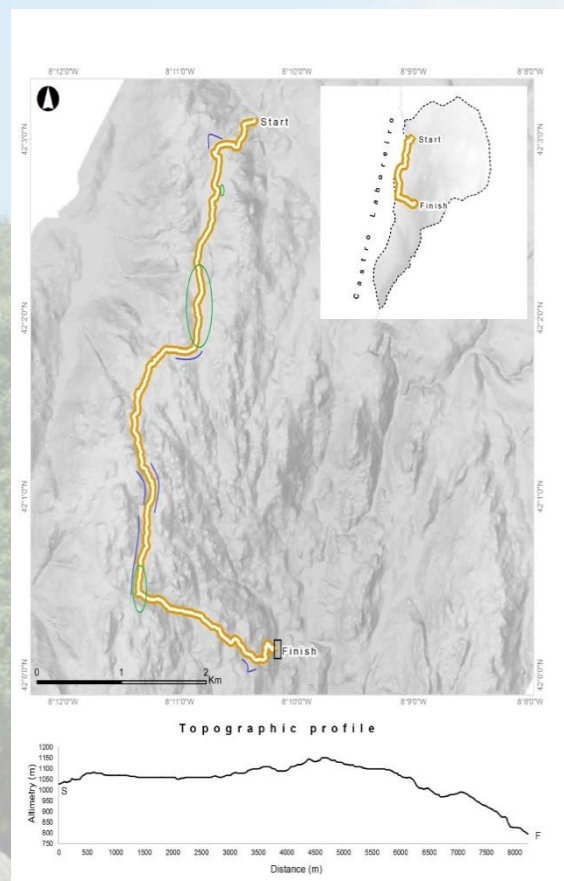
Classificação/ Classification: **Difícil/ Hard**

Extensão/ Extension: **8280m – 4h20**

Elevação/ Elevation: **794 (min.) 1155 (max.)**

### Património Cultural/ Cultural Heritage

- **Aldeias/ Villages: Podre**



- Legenda/ Legend:
- Aldeias/ Villages
  - Local para observação de aves/ Birdwatching location
  - Galeria ripícola ou fonte de água/ Riparian gallery or water source
  - AM** Estrutura antropogénica/ Anthropogenic Mark

### Fauna principal/ Principal Fauna

**Répteis/ Reptiles:** **Sardão/ Ocellated lizard (*Timon lepidus*); Lagarto-de-água/ Iberian Emerald Lizard (*Lacerta schreiberi*); Lagartixa-ibérica/ Iberian Wall Lizard (*Podarcis hispanica*); Lagartixa-de-Bocage/ Bocage's Wall Lizard (*Podarcis bocagei*)**

**Mamíferos/ Mammals:** **Corço/ Red Deer (*Capreolus capreolus*); Javali/ Wild Boar (*Sus scrofa*); Cavalo/ Horse (*Equus ferus ssp. caballus*); Lobo-ibérico/ Iberian-Wolf (*Canis lupus ssp. signatus*)**

**Aves/ Birds:** **Cia/ Rock Bunting (*Emberiza cia*); Cartaxocomum/ African Stonechat (*Saxicola torquatus*); Tentilhão-comum/ Chaffinch (*Fringilla coelebs*); Chapim-rabilongo/ Long-tailed Tit (*Aegithalos caudatus*); Gaió/ Euroasian Jay (*Garrulus glandarius*); Chapins/ Tits (*Parus sp.*)**

**Anfíbios/ Amphibians:** **Rã-ibérica/ Iberian Frog (*Rana iberica*); Rã-verde/ Perez's Frog (*Pelophylax perezii*); Tritão-de-ventre-laranja/ Bosca's Newt (*Lissotriton boscai*); Sapo-corredor/ Natter Jack Toad (*Epidalea calamita*) e Sapo-comum/ Common toad (*Bufo bufo*)**

## Flora principal/ Principal Flora

Florestas de Carvalho-alvarinho (*Quercus robur*) e Carvalho-negral (*Quercus pyrenaica*) com presença de Videeiro (*Betula pubescens*) e Salgueiros (*Salix atrocinerea*). No estrato arbustivo: Sanguinho (*Frangula alnus*); Pereira-brava (*Pyrus cordata*); Azevinho (*Ilex aquifolium*); Mirtilo (*Vaccinium myrtillus*); e Urze-branca (*Erica arborea*). Nestes carvalhais aparecem ainda plantas com elevado valor ecológico como a Anémone-dos-bosques (*Anemone trifolia ssp. albida*); o *Narcissus triandrus ssp. triandrus* e a *Luzula sylvatica ssp. henriquezii*/ Oak forest of English Oak (*Quercus robur*) and Pyrenean Oak (*Quercus pyrenaica*) with presence of Birch (*Betula pubescens*) and Grey Willow (*Salix atrocinerea*). In the shrub stratum: Alder Buckthorn (*Frangula alnus*); Plymouth Pear (*Pyrus cordata*); Christmas Holly (*Ilex aquifolium*); European Blueberry (*Vaccinium myrtillus*); and Tree Heath (*Erica arborea*). These oak woods provide shelter for plants with high ecological value like the Three-leaved Anemone (*Anemone trifolia ssp. albida*); the Angel's Tears (*Narcissus triandrus ssp. triandrus*) and the Great Wood-rush.

**Pinhais de Pinheiro-silvestre/ Pine woods of Scots Pine (*Pinus sylvestris*).**

**Vidoais dominados por *Betula pubescens*, onde aparecem por vezes urzes (*Erica sp.*) e fetos (*Blechnum spicant* e *Dryopteris sp.*)** Birch woods where *Betula pubescens* dominates, appearing sometimes species of *Erica sp.* and ferns (*Blechnum spicant* and *Dryopteris sp.*)

**Matos secos/ Dry Heaths: Carqueja/ Carqueja (*Pterospartum tridentatum subs. cantabricum*); Queiró/Heath (*Erica umbellata*); Tojo-menor/ Dwarf Gorse (*Ulex minor*); Sargaço/ Rockrose (*Halimium lasianthum ssp. alyssoides*).**

## Informação Geral/ General Information

Trilho de orientação natural, permite compreender o património ecológico e paisagístico que outrora dominou a região, nomeadamente pelas florestas de carvalho galaico-portuguesas (habitat 9230pt1), uma relíquia na atualidade. Compreende ainda uma floresta de pinheiro-silvestre, único pinheiro autóctone da região, bem como dois vidoais (habitat 91E0pt2) em excelente estado de conservação.

É possível contemplar ainda turfeiras em bom estado de conservação (habitats 4010, 4020pt1 e 7140pt2) e matos secos (habitat 4030pt2) com reduzida pressão antrópica.

Nature oriented trail that allows understanding the ecological and landscape heritage that once dominated this region, namely be the Galician-Portuguese oak wood forests (habitat 9230pt1), a relic in actual times. It comprises a Scot Pine forest, the single autochthonous pine of the region, as well as two birch woods (habitat 91E0pt2) in excellent conservation status.

It is possible to contemplate bogs well preserved (habitats 4010, 4020pt1 and 7140pt2) and dry heaths (habitat 4030pt2) with almost no anthropic pressure.

## Trilho da Matança

### Matança Trail





## Appendix VIII. Castrejo Trail Brochure

### Trilho Castrejo/ Castrejo Trail

**Localização Geográfica/ Geographic Localization:** Castro Laboreiro

**Forma/ Format:** Linear/ Linear

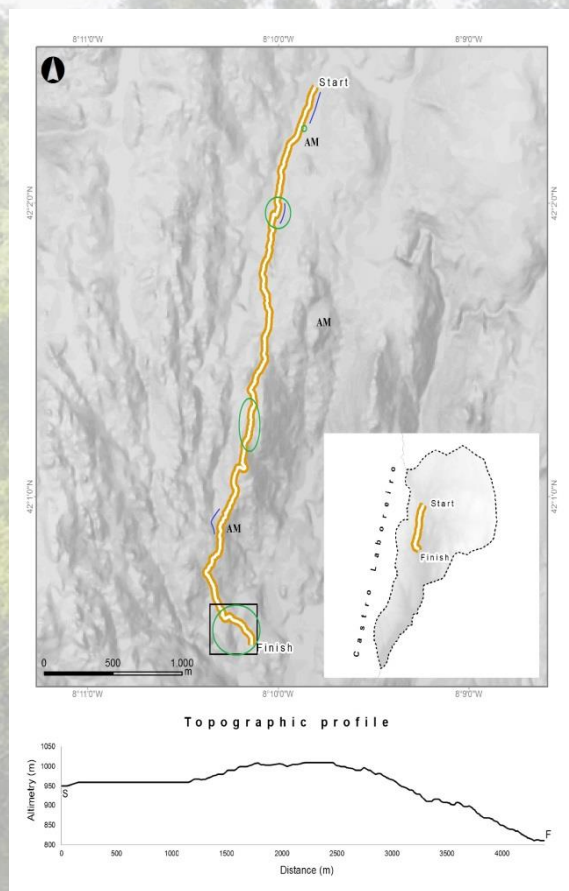
**Classificação/ Classification:** Fácil/ Easy

**Extensão/ Extension:** 4400m – 1h40

**Elevação/ Elevation:** 805 (min.) 1013 (max.)

### Património Cultural/ Cultural Heritage

- **Castelo de Castro Laboreiro/ Castro Laboreiro Castle**
- **Ponte de pedras sobre o pântano/ Rock bridge over the swamp**
- **Ponte da Veiga/ Veiga bridge**
- **Aldeias/ Villages: Barreiro**



- Legenda/ Legend:**
- Aldeias/ Villages
  - Local para observação de aves/ Birdwatching location
  - Galeria ripícola ou fonte de água/ Riparian gallery or water source
  - AM Estrutura antropogénica/ Anthropogenic Mark

### Fauna principal/ Principal Fauna

**Répteis/ Reptiles:** Lagarto-de-água/ Iberian Emerald Lizard (*Lacerta schreiberi*); Lagartixa-ibérica/ Iberian Wall Lizard (*Podarcis hispanica*); Lagartixa-de-Bocage/ Bocage's Wall Lizard (*Podarcis bocagei*)

**Mamíferos/ Mammals:** Cavalo/ Horse (*Equus ferus ssp. caballus*); Lobo-ibérico/ Iberian-Wolf (*Canis lupus ssp. signatus*)

**Aves/ Birds:** Chamariz/ European Serin (*Serinus serinus*); Rabirruivo/ Black Redstart (*Phoenicurus ochruros*); Cartaxo-comum/ African Stonechat (*Saxicola torquatus*)

**Anfíbios/ Amphibians:** Rã-ibérica/ Iberian Frog (*Rana iberica*); Rã-verde/ Perez's Frog (*Pelophylax perezi*)

## Trilho Castrejo

### Castrejo Trail

### Flora principal/ Principal Flora

Florestas imaturas de Carvalho-alvarinho (*Quercus robur*) e Carvalho-negral (*Quercus pyrenaica*). No estrato arbustivo aparecem principalmente o Sanguinho (*Frangula alnus*) e a Urze-branca (*Erica arborea*)/ Immature oak forest of English Oak (*Quercus robur*) and Pyrenean Oak (*Quercus pyrenaica*). In the shrub stratum appears principally the Alder Buckthorn (*Frangula alnus*); and the Tree Heath (*Erica arborea*).

Um pinhal de Pinheiro-bravo/ One pine forest of Maritime Pine (*Pinus pinaster*).

Um vidoal dominado por *Betula pubescens*, onde aparecem alguns fetos (*Blechnum spicant*) junto às margens dos ribeiros/ One birch forest dominated by *Betula pubescens*, where appears some ferns (*Blechnum spicant*) near the water margins.

Os matos secos dominam a paisagem com presença de/ The dry heaths dominate the landscapes with presence of: Carqueja/ Carqueja (*Pterospartum tridentatum ssp. cantabricum*); Queiró/Heath (*Erica umbellata*); Tojo-menor/ Dwarf Gorse (*Ulex minor*); Sargaço/ Rockrose (*Halimium lasianthum ssp. alyssoides*).

### Informação Geral/ General Information

Trilho orientado para interpretação paisagística, onde dominam os matos secos (habitat 4030pt2) e onde é possível observar o vale das inverneiras a sul e o castelo de Castro Laboreiro a este.

O parco carvalhal que existe no início do trilho (habitat 9230pt1) está ainda num estado imaturo, devido à forte pressão exercida pela pastorícia e pelos sucessivos incêndios florestais que atingem a zona.

Landscape oriented trail, where the dry heaths (habitat 4030pt2) dominate completely and where it is possible to observe the valley of *Inverneiras* at south and the Castle of Castro Laboreiro to east.

The parsimonious oak forest in the beginning of the trail (habitat 9230pt1) is still in an immature state due to the pressure from grazing and the successive wildfires.



## Appendix IX. Transfonteiriço Trail Brochure

### Trilho Transfonteiriço/ Transfonteiriço Trail

**Localização Geográfica/ Geographic Localization:** Castro Laboreiro – Espanha (Spain)

**Forma/ Format:** Semi-circular/ Semi-circular

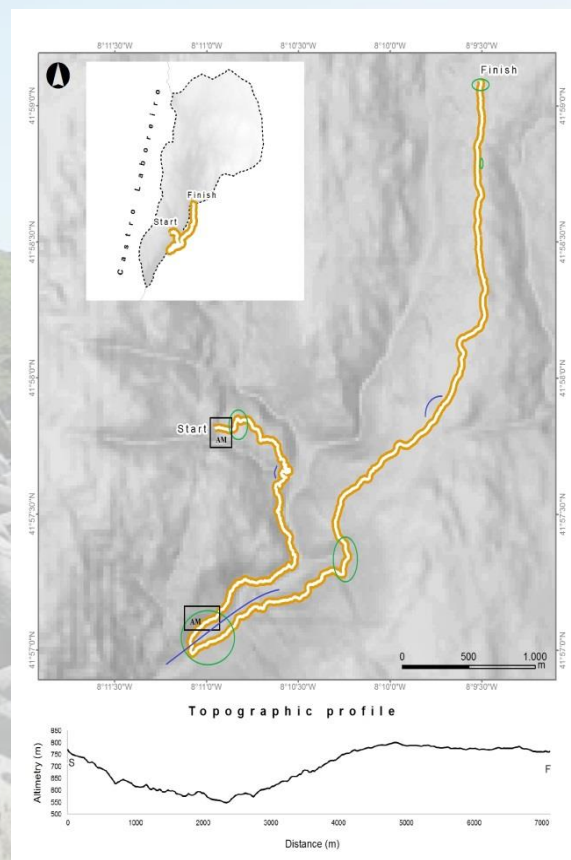
**Classificação/ Classification:** Difícil/ Hard

**Extensão/ Extension:** 7130m – 3h30

**Elevação/ Elevation:** 557 (min.) 820 (max.)

### Património Cultural/ Cultural Heritage

- Espigueiros nas vilas/ Granaries in the villages
- Aldeias/ Villages: Pousios; Ribeiro de Baixo



**Legenda/ Legend:**

□ Aldeias/ Villages

○ Local para observação de aves/  
Birdwatching location

— Galeria ripícola ou fonte de água/  
Riparian gallery or water source

AM Estrutura antropogénica/  
Anthropogenic Mark

### Fauna principal/ Principal Fauna

**Répteis/ Reptiles:** Lagartixa-ibérica/ Iberian Wall Lizard (*Podarcis hispanica*); Lagartixa-de-Bocage/ Bocage's Wall Lizard (*Podarcis bocagei*); Lagartixa-do-mato-comum/ Large Psammodromus (*Psammodromus algirus*); Lagarto-de-água/ Iberian Emerald Lizard (*Lacerta schreiberi*)

**Aves/ Birds:** Pisco-de-peito-ruivo/ European Robin (*Erithacus rubecula*); Melro/ Common Blackbird (*Turdus merula*); Chamariz/ European Serin (*Serinus serinus*); Rabirruivo/ Black Redstart (*Phoenicurus ochruros*); Cartaxo-comum/ African Stonechat (*Saxicola torquatus*); Cia/ Rock Bunting (*Emberiza cia*)

**Anfíbios/ Amphibians:** Rã-ibérica/ Iberian Frog (*Rana iberica*)

## Informação Geral/ General Information

### Flora principal/ Principal Flora

Florestas imaturas de Carvalho-alvarinho (*Quercus robur*) e Carvalho-negral (*Quercus pyrenaica*). No estrato arbustivo aparecem principalmente o Sanguinho (*Frangula alnus*); a Urze-branca (*Erica arborea*) e a Torga-Vermelha (*Erica australis*)/ Immature oak forest of English Oak (*Quercus robur*) and Pyrenean Oak (*Quercus pyrenaica*). In the shrub stratum appears principally the Alder Buckthorn (*Frangula alnus*); the Tree Heath (*Erica arborea*) and the Southern Heather (*Erica australis*).

Existem dezenas de árvores de frutos, essencialmente Castanheiros (*Castanea sativa*) e Macieiras-bravas (*Malus sylvestris*)/ There are plenty of Fruit Trees, namely Chestnuts (*Castanea sativa*) and European Crab Apples (*Malus sylvestris*).

Os matos secos dominam a paisagem com presença de/ The dry heaths dominate the landscapes with presence of: Carqueja/ Carqueja (*Pterospartum tridentatum ssp. cantabricum*); Queiró/Heath (*Erica umbellata*); Tojo-menor/ Dwarf Gorse (*Ulex minor*)

Trilho orientado para interpretação paisagística e cultural, com um elevado número de espigueiros a aparecer nas duas inverneiras que atravessa, permitindo um contacto mais próximo com a cultura da região.

É realizado metade em território português e metade em território espanhol. No primeiro dominam as florestas imaturas de carvalhos (habitat 9230pt1), enquanto no segundo dominam os matos secos (habitat 4030pt2).

A agricultura e a pastorícia são perceptíveis pelo elevado número de campos alternado com parcelas de floresta natural, bem como as plantações de espécies típicas da alimentação mediterrânica e os animais domésticos que pastam livremente do lado espanhol.

Landscape and cultural oriented trail, with a high number of granaries appearing in the two Inverneiras that crosses that allows a close contact to the culture of this region.

Made half in Portuguese territory and half in Spanish, the immature oak forests (habitat 9230pt1) dominate in the first one, whereas in the second one there is a dominance of dry heaths (habitat 4030pt2).

The agriculture and the cattle breeding are noticeable by the huge number of fields that alternates with natural forest plots. Also, there is a dominance of planted species typically from the Mediterranean diet as well as domestic animals that graze freely in the Spanish side.

## Trilho Transfonteiriço

### Transfonteiriço Trail



## Appendix X. Planalto Trail Brochure

### Trilho do Planalto/ Planalto Trail

**Localização Geográfica/ Geographic Localization:** Castro Laboreiro

**Forma/ Format:** Semi-circular/ Semi-circular

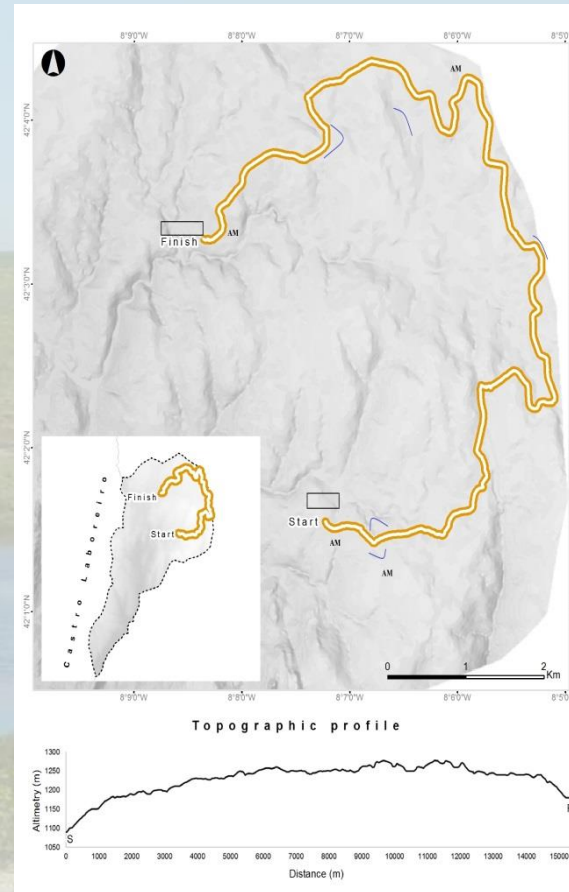
**Classificação/ Classification:** Fácil/ Easy

**Extensão/ Extension:** 15385m – 5h00

**Elevação/ Elevation:** 1082 (min.) 1287 (max.)

### Património Cultural/ Cultural Heritage

- **Cruzes em cimento junto às aldeias/ Cemented cruises near the villages**
- **Conjunto Megalítico e de Arte Rupestre/ Megalithic Set and Rock Art of the plateau**
- **Aldeias/ Villages: Portos; Rodeiro**



**Legenda/ Legend:** □ Aldeias/ Villages

- Local para observação de aves/ Birdwatching location
- Galeria ripícola ou fonte de água/ Riparian gallery or water source
- AM Estrutura antropogénica/ Anthropogenic Mark

### Fauna principal/ Principal Fauna

**Répteis/ Reptiles:** Lagartixa-ibérica/ Iberian Wall Lizard (*Podarcis hispanica*); Lagartixa-de-Bocage/ Bocage's Wall Lizard (*Podarcis bocagei*); Víbora-de-Seoane/ Baskian Viper (*Vipera seoanei ssp. seoanei*)

**Mamíferos/ Mammals:** Cavalo/Horse (*Equus ferus ssp. caballus*); Javali/ Wild Boar (*Sus scrofa*); Corço/ Red Deer (*Capreolus capreolus*); Raposa/ Fox (*Vulpes vulpes*); Lobo-ibérico (*Canis lupus ssp. signatus*)

**Aves/ Birds:** Cartaxo-comum/ African Stonechat (*Saxicola torquatus*); Laverca/ Common Sky Lark (*Alauda arvensis*); Cotovia-dos-bosques/ Wood Lark (*Lullula arborea*); Petinha-dos-campos/ Tawny Pipit (*Anthus campestris*); Grifo-comum/ Griffon Vulture (*Gyps fulvus*); Águia-real/ Golden Eagle (*Aquila chrysaetos*); Águia-caçadeira/ Montagu's Harrier (*Circus pygargus*); Peneireiro/ Common Kestrel (*Falco tinnunculus*); Gralha-preta/ Carrion Crow (*Corvus corone*)

**Anfíbios/ Amphibians:** Rã-ibérica/ Iberian Frog (*Rana iberica*);

Rã-verde/ Perez's Frog (*Pelophylax perezii*); Tritão-de-ventre-laranja/ Bosca's Newt (*Lissotriton boscai*)

## Flora principal/ Principal Flora

Os matos secos dominam a paisagem com presença de/ The dry heaths dominate the landscapes with presence of: Carqueja/ Carqueja (*Pterospartum tridentatum ssp. cantabricum*); Queiró/Heath (*Erica umbellata*); Tojo-menor/ Dwarf Gorse (*Ulex minor*); Sargaço/ Woolly Rock Rose (*Halimium lasianthum ssp. alyssoides*)

Existem algumas turfeiras em bom estado de conservação onde se denota a presença de:/ There are some well conserved bogs with presence of: Urze-peluda/ Cross-leaved Heath (*Erica tetralix*); Lameirinha/ Dorset Heath (*Erica ciliaris*); Junco-solto/ Soft Rush (*Juncus effusus ssp. effusus*); Arnica/ Wolf's Bane (*Arnica montana ssp. atlantica*)

As gramíneas dominam o resto da paisagem/ Grassy dominates the majority of the landscape

## Informação Geral/ General Information

Trilho orientado para interpretação ecológica, paisagística e cultural, com um elevado potencial para os amantes do Birdwatching. Aqui assenta o maior núcleo megalítico da Península Ibérica, com mais de 60 monumentos, uma marca da ocupação humana com cerca de 5 mil anos. A elevada extensão de terrenos abertos permite usufruir a paisagem de uma forma ampla.

Dominam os matos secos (habitat 4030pt2), as turfeiras (habitats 4010, 4020pt1 e 7140pt2). Denota-se, por vezes, a presença dos prados de altitude (habitat 6230), um habitat raro na atualidade e de elevado valor ecológico para a conservação.

Ecological, landscape and cultural oriented trail, with a high potential for the Birdwatching. Here is located the largest megalithic core of the Iberian Peninsula, with more than 60 monuments, a mark of the ancestral human occupation of the area with over 5 thousand years. The high extension of the open terrains allows the enjoyment of the landscape in a unique way.

The dry heaths (habitat 4030pt2) dominate the landscape, as well as the bogs (habitats 4010, 4020pt1 and 7140pt2). Sometimes, denotes the presence of altitude meadows (habitat 6230), a rare habitat of high ecological value for the conservation.

## Trilho do Planalto

### Planalto Trail



**Appendix XI. List of species recorded in the study area, with allusion to their national conservation status (LVVP); their global conservation status (IUCN) and endemisms. Pla – Plants; Fun – Fungi; Bir – Birds; Rep – Reptiles; Amp – Amphibians; Fis – Fishes; Mam – Mammals; Inv – Invertebrates. DD – Data Deficient; LC – Least Concern; NT – Near Threatened; VU – Vulnerable; EN – Endangered; CR – Critically Endangered. Exo – Exotic; EndI – Iberian endemism; EndP – Portuguese endemism.**

Species	Group	LVVP	IUCN	End.
<i>Acacia dealbata</i> Link	Pla			Exo
<i>Acer pseudoplatanus</i> L.	Pla			
<i>Achillea millefolium</i> L.	Pla			
<i>Adenocarpus lainzii</i> (Castrov.) Castrov.	Pla			EndI
<i>Agrostis capillaris</i> L.	Pla			
<i>Agrostis castellana</i> Boiss. & Reut.	Pla			
<i>Agrostis curtisii</i> Kerguélen	Pla			
<i>Ajuga pyramidalis</i> L. <b>ssp. meonantha</b> (Hoffmanns. & Link.) R.Fern.	Pla			
<i>Alnus glutinosa</i> (L.) Gaertn.	Pla			
<i>Anarrhinum bellidifolium</i> (L.) Wild.	Pla			
<i>Andryala integrifolia</i> L.	Pla			
<i>Anemone trifolia</i> L. <b>ssp. albida</b> (Mariz) Ulbr.	Pla			EndI
<i>Angelica major</i> Lag.	Pla			EndP
<i>Anthemis arvensis</i> L. <b>ssp. arvensis</b>	Pla			
<i>Aquilegia vulgaris</i> L. <b>ssp. dichroa</b> (Frey) T.E.Díaz	Pla			
<i>Arbutus unedo</i> L.	Pla			
<i>Arenaria montana</i> L. <b>ssp. montana</b>	Pla			
<i>Arnica montana</i> L. <b>ssp. atlantica</b> A.Bolòs	Pla			
<i>Asphodelus lusitanicus</i> Cout. <b>var. ovoideus</b> Z. Díaz & Valdéz	Pla			EndI
<i>Asphodelus macrocarpus</i> Parl. <b>ssp. macrocarpus</b>	Pla			
<i>Asplenium adiantum-nigrum</i> L. <b>var. adiantum-nigrum</b>	Pla			
<i>Asplenium billotii</i> F.W. Schultz	Pla			
<i>Asplenium onopteris</i> L.	Pla			
<i>Asplenium trichomanes</i> L. <b>ssp. quadrivalens</b> D.E.Mey.	Pla			
<i>Athyrium filix-femina</i> (L.) Roth	Pla			
<i>Avenula sulcata</i> (Boiss.) Dumort. <b>ssp. sulcata</b>	Pla			
<i>Bellis perennis</i> L.	Pla			
<i>Bellis sylvestris</i> Cirillo	Pla			
<i>Betula pubescens</i> Ehrh. <b>ssp. celtiberica</b> (Rothm. & Vasc.) Rivas Mart.	Pla			
<i>Blechnum spicant</i> (L.) Roth. <b>ssp. spicant</b>	Pla			EndI
<i>Brachypodium rupestre</i> (Host) Roem. & Schult.	Pla			
<i>Bromus driandrus</i> Roth	Pla			
<i>Buxus sempervirens</i> L.	Pla			
<i>Calluna vulgaris</i> (L.) Hull	Pla			
<i>Campanula lusitanica</i> L. <b>ssp. lusitanica</b>	Pla			
<i>Carex elata</i> All. <b>ssp. reuteriana</b> (Boiss.) Luceño & Aedo	Pla			EndI

<i>Castanea sativa</i> Mill.	Pla	Exo
<i>Cedrus sp.</i>	Pla	Exo
<i>Centaurea limbata</i> Hoffmanns. & Link <b>ssp. limbata</b>	Pla	
<i>Centaurea nigra</i> L. <b>ssp. rivularis</b> (Brot.) Cout.	Pla	Endl
<i>Cerastium fontanum</i> Baumg. <b>ssp. vulgare</b> (Hartm.) Greuter & Burdet	Pla	
<i>Ceratocarpus claviculata</i> (L.) Lidén <b>ssp. claviculata</b>	Pla	
<i>Chamaemelum nobile</i> (L.) All.	Pla	
<i>Chelidonium majus</i> L.	Pla	
<i>Cirsium filipendulum</i> Lange <b>ssp. filipendulum</b>	Pla	
<i>Cirsium palustre</i> (L.) Scop.	Pla	
<i>Cirsium vulgare</i> (Savi) Ten.	Pla	
<i>Cistus psilosepalus</i> Sweet	Pla	
<i>Clinopodium vulgare</i> L.	Pla	
<i>Coincya monensis</i> (L.) Greuter & Burdet <b>ssp. puberula</b> (Pau) Leadlay	Pla	Endl
<i>Conyza canadensis</i> (L.) Cronquist	Pla	Exo
<i>Conyza sumatrensis</i> (Retz.) E.Walker	Pla	Exo
<i>Cordyline australis</i> Hook.f.	Pla	Exo
<i>Crocus carpetanus</i> Boiss. & Reut.	Pla	Endl
<i>Crocus serotinus</i> Salisb. <b>ssp.</b>	Pla	
<i>Cydonia oblonga</i> Mill.	Pla	Exo
<i>Cytisus scoparius</i> (L.) Link <b>ssp. scoparius</b>	Pla	
<i>Cytisus striatus</i> (Hill) Rothm.	Pla	
<i>Daboecia cantabrica</i> (Huds.)K.Koch	Pla	
<i>Dactylis glomerata</i> L. <b>ssp. lusitanica</b> Stebbins & Zohary	Pla	
<i>Dactylorhiza maculata</i> (L.) Soó	Pla	
<i>Dianthus langeanus</i> Willk.	Pla	Endl
<i>Digitalis purpurea</i> L. <b>ssp. purpurea</b>	Pla	
<i>Drosera rotundifolia</i> L.	Pla	
<i>Dryopteris affinis</i> (Lowe) Fraser-Jenk.	Pla	
<i>Dryopteris filix-mas</i> (L.) Schott	Pla	
<i>Echium lusitanicum</i> L.	Pla	Endl
<i>Epilobium obscurum</i> Schreb.	Pla	
<i>Erica arborea</i> L.	Pla	
<i>Erica australis</i> L. <b>ssp. australis</b>	Pla	
<i>Erica ciliaris</i> Loefl. ex L.	Pla	
<i>Erica cinerea</i> L.	Pla	
<i>Erica tetralix</i> L.	Pla	
<i>Erica umbellata</i> Loefl. ex L.	Pla	
<i>Eriophorum angustifolium</i> Honck.	Pla	
<i>Erodium cicutarium</i> (L.) L'Hér <b>sp. cicutarium</b>	Pla	
<i>Erythronium dens-canis</i> L.	Pla	
<i>Eucalyptus globulus</i> Labill.	Pla	Exo
<i>Euphorbia amygdaloides</i> L. <b>ssp. amygdaloides</b>	Pla	
<i>Ficus carica</i> L.	Pla	Exo
<i>Fragaria vesca</i> L. <b>ssp. vesca</b>	Pla	
<i>Frangula alnus</i> Mill.	Pla	
<i>Galinsoga parviflora</i> Cav.	Pla	Exo



<i>Galium broterianum</i> Boiss. & Reut.	Pla	EndI
<i>Galium saxatile</i> L. var.	Pla	
<i>Genista florida</i> L.	Pla	
<i>Geranium lucidum</i> L.	Pla	
<i>Geranium molle</i> L.	Pla	
<i>Geranium purpureum</i> Vill.	Pla	
<i>Geranium pyrenaicum</i> Burm.f. <b>ssp. lusitanicum</b> (Samp.) S.Ortiz	Pla	EndI
<i>Halimium lasianthum</i> (Lam.) Spach <b>spp. alyssoides</b> (Lam.) Greuter	Pla	
<i>Hedera hibernica</i> (G.Kirchn.) Bean	Pla	
<i>Hieracium laevigatum</i> Wild.	Pla	
<i>Hieracium pilosella</i> L. <b>ssp. pilosella</b>	Pla	
<i>Holcus molis</i> L.	Pla	
<i>Hordeum murinum</i> L. <b>ssp. murinum</b>	Pla	
<i>Hyacinthoides non-scripta</i> (L.) Chouard	Pla	
<i>Hydrangea macrophylla</i> (Thunb.) Ser.	Pla	Exo
<i>Hypericum humifusum</i> L.	Pla	
<i>Hypericum sp.</i> L.	Pla	
<i>Hypochaeris radicata</i> L.	Pla	
<i>Ilex aquifolium</i> L.	Pla	
<i>Illecebrum verticillatum</i> L.	Pla	
<i>Iris sp.</i>	Pla	?
<i>Jasione montana</i> L. var.	Pla	
<i>Juncus effusus</i> L. <b>ssp. effusus</b>	Pla	
<i>Lamium maculatum</i> L.	Pla	
<i>Lamium purpureum</i> L.	Pla	
<i>Laurus nobilis</i> L.	Pla	
<i>Lavatera cretica</i> L.	Pla	
<i>Leontodon taraxacoides</i> (Vill.) Mérat <b>ssp. taraxacoides</b>	Pla	
<i>Linaria triornitophora</i> (L.) Wild.	Pla	EndI
<i>Lithodora prostrata</i> (Loisel.) Griseb. <b>ssp. prostrata</b>	Pla	
<i>Logfia minima</i> (Sm.) Dumort.	Pla	
<i>Lonicera periclymenum</i> L. <b>ssp. periclymenum</b>	Pla	
<i>Lotus corniculatus</i> L. <b>ssp. carpetanus</b> (Lacaita) Rivas Mart.	Pla	EndI
<i>Lotus hispidus</i> Desf. ex DC.	Pla	
<i>Malus sylvestris</i> (L.) Mill.	Pla	
<i>Malva neglecta</i> Wallr.	Pla	
<i>Malva tournefortiana</i> L.	Pla	
<i>Melampyrum pratense</i> L. <b>ssp. latifolium</b> Schübl. & G.Martens	Pla	
<i>Melittis mellissophyllum</i> L.	Pla	
<i>Mentha suaveolens</i> Ehrh.	Pla	
<i>Merendera montana</i> (L.) Lange	Pla	EndP
<i>Myosotis stolonifera</i> (DC.) Leresche & Levier	Pla	EndI
<i>Narcissus bulbocodium</i> L. <b>ssp. bulbocodium</b>	Pla	
<i>Narcissus triandrus</i> L. <b>ssp. triandrus</b>	Pla	EndI
<i>Narthecium ossifragum</i> (L.) Huds.	Pla	EndI
<i>Oenanthe crocata</i> L.	Pla	
<i>Olea europaea</i> L. var. <b>europaea</b>	Pla	Exo

<i>Omphalodes nitida</i> Hoffmans. & Link	Pla	
<i>Ornithogalum concinnum</i> (Salisb.) Cout.	Pla	EndI
<i>Orobanche rapum-genistae</i> Thuill	Pla	
<i>Osmunda regalis</i> L.	Pla	
<i>Pedicularis sylvatica</i> L. <b>ssp. lusitanica</b> (Hoffmans. & Link) Cout.	Pla	
<i>Petroselinum crispum</i> (Mill.) Fuss	Pla	
<i>Picris hieracioides</i> L. <b>ssp. longifolia</b> (Boiss. & Reut.) P.D.Sell	Pla	EndI
<i>Pinguicula lusitanica</i> L.	Pla	
<i>Pinus pinaster</i> Aiton	Pla	
<i>Pinus sylvestris</i> L.	Pla	
<i>Plantago coronopus</i> L.	Pla	
<i>Plantago lanceolata</i> L.	Pla	
<i>Platanus x acerifolia</i> (Aiton) Wild.	Pla	Exo
<i>Polygala serpyllifolia</i> Hosé	Pla	
<i>Polygala vulgaris</i> L.	Pla	
<i>Polygonatum odoratum</i> (Mill.) Druce	Pla	
<i>Polygonum hidropiper</i> L.	Pla	
<i>Polygonum persicaria</i> L.	Pla	
<i>Polypodium interjectum</i> Shivas	Pla	
<i>Polypodium vulgare</i> L.	Pla	
<i>Potentilla erecta</i> (L.) Raeusch.	Pla	
<i>Primula acaulis</i> (L.) L. <b>ssp. acaulis</b>	Pla	
<i>Prunella grandiflora</i> (L.) Scholler	Pla	
<i>Prunella vulgaris</i> L.	Pla	
<i>Pteridium aquilinum</i> (L.) Kuhn <b>ssp. aquilinum</b>	Pla	
<i>Pterospartum tridentatum</i> (L.) Willk. <b>ssp. cantabricum</b> (Spach) Talavera & P.E.Gibbs	Pla	
<i>Pyrus cordata</i> Desv.	Pla	
<i>Quercus pyrenaica</i> Willd.	Pla	
<i>Quercus robur</i> L.	Pla	
<i>Ranunculus bulbosus</i> L. <b>ssp. alae</b> (Willk.) Rouy & Foucaud	Pla	
<i>Ranunculus ficaria</i> L. <b>ssp. ficaria</b>	Pla	
<i>Ranunculus omiophyllus</i> Tenn.	Pla	
<i>Ranunculus repens</i> L.	Pla	
<i>Raphanus raphanistrum</i> L. <b>ssp. raphanistrum</b>	Pla	
<i>Reseda media</i> Lag.	Pla	
<i>Rumex acetosa</i> L. <b>ssp. acetosa</b>	Pla	
<i>Rumex acetosella</i> L. <b>ssp. angiocarpus</b> (Murb.) Murb.	Pla	
<i>Rumex bucephalophorus</i> L. <b>ssp. gallicus</b> (Steinh.) Rech. f.	Pla	
<i>Rumex obtusifolius</i> L.	Pla	
<i>Ruscus aculeatus</i> L.	Pla	
<i>Salix atrocinerea</i> Brot.	Pla	
<i>Sambucus nigra</i> L.	Pla	
<i>Saxifraga spathularis</i> Brot.	Pla	
<i>Scabiosa columbaria</i> L. <b>ssp. columbaria</b>	Pla	
<i>Scrophularia scorodonia</i> L. <b>var. scorodonia</b>	Pla	
<i>Sedum anglicum</i> Huds.	Pla	
<i>Sedum brevifolium</i> DC.	Pla	

<i>Sedum hirsutum</i> All. <b>ssp. hirsutum</b>	Pla	
<i>Senecio lividus</i> L.	Pla	
<i>Serratula tinctoria</i> L. <b>ssp. seoanei</b> (Willk.) M.Laínz	Pla	
<i>Silene vulgaris</i> (Moench) Garcke <b>ssp. vulgaris</b>	Pla	
<i>Simethis mattiazii</i> (Vand.) Sacc.	Pla	
<i>Solanum nigrum</i> L.	Pla	
<i>Solidago virgaurea</i> L. <b>ssp. virgaurea</b>	Pla	
<i>Spergularia purpurea</i> (Pers.) G.Don.	Pla	
<i>Stachys arvensis</i> (L.) L.	Pla	
<i>Stellaria graminea</i> L.	Pla	
<i>Stellaria holostea</i> L.	Pla	
<i>Stellaria media</i> (L.) Vill.	Pla	
<i>Sucissa pratensis</i> Moench	Pla	
<i>Tanacetum parthenium</i> (L.) Sch.Bip.	Pla	Exo
<i>Teesdalia nudicaulis</i> (L.) R.Br.	Pla	
<i>Teucrium scorodonia</i> L.	Pla	
<i>Thymus caespititius</i> Brot.	Pla	
<i>Trifolium pratense</i> L. <b>ssp. pratense</b>	Pla	
<i>Trifolium repens</i> L. <b>var. repens</b>	Pla	
<i>Tuberaria globulariifolia</i> (Lam.) Willk. <b>var. globulariifolia</b>	Pla	Endl
<i>Tuberaria guttata</i> (L.) Fourn.	Pla	
<i>Ulex europaeus</i> L. <b>ssp. latebracteatus</b> (Mariz) Rothm.	Pla	Endl
<i>Ulex minor</i> Roth	Pla	
<i>Umbilicus rupestris</i> (Salisb.) Dandy	Pla	
<i>Urtica dioica</i> L.	Pla	
<i>Urtica membranacea</i> Poir.	Pla	
<i>Vaccinium myrtillus</i> L.	Pla	
<i>Verbascum simplex</i> Hoffmanns. & Link	Pla	
<i>Veronica officinalis</i> L.	Pla	
<i>Vicia angustifolia</i> L.	Pla	
<i>Vinca major</i> L. <b>ssp. major</b>	Pla	
<i>Viola palustris</i> L. <b>ssp. palustris</b>	Pla	
<i>Viola riviniana</i> Rchb.	Pla	
<i>Woodwardia radicans</i> (L.) Sm.	Pla	
<i>Agaricus sp.</i> L.: Fr. emend Karst.	Fun	
<i>Amanita citrina</i> (Schaeff.) Pers.	Fun	
<i>Amanita fulva</i> (Schaeff.) Secr.	Fun	
<i>Amanita junquila</i> Quéf.	Fun	
<i>Amanita muscaria</i> L. Lam	Fun	
<i>Amanita rubescens</i> (Pers. ex Fr.) Gray	Fun	
<i>Armillaria mellea</i> (Vahl) P.Kumm.	Fun	
<i>Armillaria sp.</i> (Fr.) Staude	Fun	
<i>Boletus edulis</i> Bull	Fun	
<i>Boletus erythropus</i> Rostkovius.	Fun	
<i>Calocybe sp.</i> Kühner ex Donk.	Fun	
<i>Clavulina cristata</i> (Holmsk.) J. Schröt.	Fun	

<i>Clavulina sp.</i> J.Schröt.	Fun		
<i>Clitocybe sp.</i> (Fr.) Staude	Fun		
<i>Clitocybe odora</i> (Fr.) P.Kumm.	Fun		
<i>Collybia butyracea</i> (Bull.: Fr.) Lennox	Fun		
<i>Collybia sp.</i> (Fr.) Staude	Fun		
<i>Cortinarius sp.</i> (Pers.) Gray	Fun		
<i>Gymnopilus junonius</i> (Fr.) P.D.Orton	Fun		
<i>Gymnopilus sp.</i> P.Karst.	Fun		
<i>Inocybe sp.</i> (Fr.) Fr.	Fun		
<i>Laccaria amethystina</i> (Huds.) Cooke	Fun		
<i>Laccaria bicolor</i> (Maire) P.D.Orton	Fun		
<i>Laccaria laccata</i> (Scop.) Cooke	Fun		
<i>Laccaria sp.</i> Berk. & Broome	Fun		
<i>Lactarius deliciosus</i> (L. ex F.) S.F.Gray	Fun		
<i>Lactarius sp.</i> Pers.	Fun		
<i>Lactarius vellereus</i> (Fr.) Fr.	Fun		
<i>Lactarius volemus</i> (Fr.) Fr.	Fun		
<i>Leccinum sp.</i> Gray	Fun		
<i>Lepista sp.</i> (Fr.) W.G.Sm.	Fun		
<i>Macrolepiota procera</i> (Scop.) Singer	Fun		
<i>Mycena sp.</i> (Pers.) Roussel	Fun		
<i>Paxillus involutus (Batsch) Fr.</i>	Fun		
<i>Piptoporus betulinus</i> (Bull. ex Fr.) P.Karst.	Fun		
<i>Pisolithus tinctorius</i> (Scop.: Pers.) Rauschert	Fun		
<i>Polyporus sp.</i> P. Micheli ex Adans.	Fun		
<i>Protostropharia semiglobata</i> (Batsch) Redhead, Moncalvo & Vilgays	Fun		
<i>Pseudoclitocybe cyathiformis</i> (Bull.) Singer	Fun		
<i>Ramaria sp.</i> Fr. ex Bonord.	Fun		
<i>Russula sp.</i> Pers.	Fun		
<i>Scleroderma sp.</i> Pers.	Fun		
<i>Stereum sp.</i> Hill ex Pers.	Fun		
<i>Stropharia semiglobata</i> (Batsch) Quéf.	Fun		
<i>Stropharia sp.</i> (Fr.) Quéf.	Fun		
<i>Suillus sp.</i> Gray	Fun		
<i>Trametes sp.</i> Fr.	Fun		
<i>Tremella mesenterica</i> Retz.	Fun		
<i>Tricholomopsis rutilans</i> (Schaeff.: Fr.) Sing.	Fun		
<i>Accipiter nisus</i> Linn.	Bir		LC
<i>Aegypius monachus</i> Linn.	Bir	CR	NT
<i>Aegithalos caudatus</i> Linn.	Bir		LC
<i>Alauda arvensis</i> Linn.	Bir		LC
<i>Anas platyrhynchos</i> Linn.	Bir	LC	LC
<i>Anthus campestris</i> Linn.	Bir		LC
<i>Apus apus</i> Linn.	Bir		EN
<i>Aquila chrysaetos</i> Linn.	Bir	EN	LC
<i>Buteo buteo</i> L.	Bir		LC

<i>Carduelis cannabina</i> Linn.	Bir		LC	
<i>Certhia brachydactyla</i> Brehm	Bir		LC	
<i>Circaetus gallicus</i> Gmellin	Bir	NT	LC	
<i>Circus pygargus</i> Linn.	Bir	EN	LC	
<i>Columba livia</i> Gmelin	Bir	DD	LC	
<i>Corvus corax</i> Linn.	Bir	NT	LC	
<i>Corvus corone</i> Linn.	Bir		LC	
<i>Cuculus canorus</i> Linn.	Bir		LC	
<i>Emberiza cia</i> Linn.	Bir		LC	
<i>Erithacus rubecula</i> Linn.	Bir		LC	
<i>Falco tinnunculus</i> Linn.	Bir		LC	
<i>Fringila coelebs</i> Linn.	Bir		LC	
<i>Gallus gallus</i> L. <i>ssp. domesticus</i>	Bir			
<i>Garrulus glandarius</i> Linn.	Bir		LC	
<i>Gyps fulvus</i> Hablizl	Bir	NT	LC	
<i>Hirundo rustica</i> Linn.	Bir		LC	
<i>Lanius collurio</i> Linn.	Bir	NT	LC	
<i>Lullula arborea</i> Linn.	Bir		LC	
<i>Motacilla alba</i> Linn.	Bir		LC	
<i>Oenanthe oenanthe</i> Linn.	Bir		LC	
<i>Parus ater</i> Linn.	Bir		LC	
<i>Parus caeruleus</i> Linn.	Bir		LC	
<i>Parus major</i> Linn.	Bir		LC	
<i>Passer domesticus</i> Linn.	Bir		LC	
<i>Pernis apivorus</i> Linn.	Bir	VU	LC	
<i>Phoenicurus ochruros</i> S. G. Gmelin	Bir		LC	
<i>Pica pica</i> Linn	Bir		LC	
<i>Prunella modularis</i> Linn.	Bir		LC	
<i>Saxicola torquatus</i> Linn.	Bir		LC	
<i>Serinus serinus</i> Linn.	Bir		LC	
<i>Sitta europaea</i> Linn.	Bir		LC	
<i>Streptopelia decaocto</i> Frivaldszky	Bir		LC	
<i>Strix aluco</i> Linn.	Bir		LC	
<i>Sylvia communis</i> Latham	Bir		LC	
<i>Sylvia undata</i> Boddaert	Bir		NT	
<i>Troglodytes troglodytes</i> Linn.	Bir		LC	
<i>Turdus merula</i> Linn.	Bir		LC	
<i>Upupa epops</i> Linn.	Bir	LC	LC	
<i>Anguis fragilis</i> Linn.	Rep	NT		
<i>Coronella girondica</i> Daudin	Rep	NT	LC	
<i>Lacerta schreiberi</i> Bedriaga	Rep	NT	NT	EndI
<i>Natrix maura</i> Linn.	Rep	NT	LC	
<i>Natrix natrix</i> Linn.	Rep	NT	LC	
<i>Podarcis bocagei</i> Seoane	Rep	NT	LC	EndI
<i>Podarcis hispanica</i> Steindachner	Rep	NT	LC	
<i>Psammotromus algirus</i> Linn.	Rep	NT	LC	

<i>Timon lepidus</i> Daudin	Rep	NT	NT	
<i>Vipera latastei</i> Bosca <i>ssp. latastei</i>	Rep	VU	VU	
<i>Vipera seoanei</i> Lataste <i>ssp. seoanei</i>	Rep	EN	LC	EndI
<i>Bufo bufo</i> Linn.	Amp	NT	LC	
<i>Epidalea calamita</i> Laurenti	Amp	NT	LC	
<i>Lissotriton boscai</i> Lataste	Amp	NT	LC	EndI
<i>Pelophylax perezi</i> Seoane	Amp	NT	LC	
<i>Rana iberica</i> Boulenger	Amp	NT	NT	EndI
<i>Salamandra salamandra</i> Linn.	Amp	NT	LC	
<i>Cyprinus carpio</i> Linn. Haematopterus	Fis		VU	Exo
<i>Pseudochondrostoma duriense</i> M.M.Coelho	Fis	LC	VU	EndI
<i>Salmo trutta</i> Linn.	Fis	CR	LC	
<i>Bos taurus</i> L.	Mam			
<i>Canis lupus</i> Linn. <i>ssp. familiaris</i>	Mam			
<i>Canis lupus</i> Linn. <i>ssp. signatus</i> Cabrera	Mam	EN		EndI
<i>Capra aegagrus</i> Erxleben <i>ssp. hircus</i>	Mam			
<i>Capreolus capreolus</i> Linn.	Mam	LC	LC	
<i>Crocidura russula</i> Hermann	Mam	LC	LC	
<i>Equus ferus caballus</i> L.	Mam			
<i>Felis domesticus</i> Linn.	Mam			
<i>Lepus granatensis</i> Rosenhauer	Mam	LC	LC	EndI
<i>Ovis aries</i> Linn.	Mam			
<i>Sus scrofa</i> Linn.	Mam	LC	LC	
<i>Vulpes vulpes</i> Linn.	Mam	LC	LC	
<i>Aglais urticae</i> Linn.	Inv			
<i>Ampedus sp.</i>	Inv		a)	
<i>Anax imperator</i> Leach	Inv		LC	
<i>Anthaxia hungarica</i> Scopoli	Inv			
<i>Aporia crataegi</i> Linn.	Inv			
<i>Argynnis aglaja</i> Linn.	Inv			
<i>Argynnis paphia</i> Linn.	Inv			
<i>Arion ater</i> Linn.	Inv			
<i>Bolboceras armiger</i> Scopoli	Inv			
<i>Brintesia circe</i> Fabricius	Inv			
<i>Callophrys rubi</i> Linn.	Inv			
<i>Calopteryx virgo</i> Linn.	Inv			
<i>Carabus amplipennis</i> Vacher de Lapouge	Inv			EndI
<i>Chrysolina herbacea</i> Duftschmid	Inv			
<i>Cicindella campestris</i> Linn.	Inv			
<i>Coccinella septempunctata</i> Linn.	Inv			
<i>Coenonympha arcania</i> Linn.	Inv			
<i>Coenonympha glycerion</i>	Inv			
<i>Colias croceus</i> Geoffroy	Inv			

<i>Cordulegaster boltonii</i> Donovan	Inv	
<i>Coreus marginatus</i> Linn.	Inv	
<i>Diaea dorsata</i> Fabricius	Inv	
<i>Eristalis sp.</i> Latreille	Inv	
<i>Erythromma lindenii</i> Sellis	Inv	LC
<i>Euphydryas aurinia</i> Rottemburg	Inv	
<i>Eurrhantis plummistaria</i> Villers	Inv	
<i>Exosoma lusitanicum</i> Linn.	Inv	
<i>Gastrophysa janthina</i> Suffrian	Inv	EndI
<i>Gonioctena olivacea</i> Forster	Inv	
<i>Gryllus campestris</i> Linn.	Inv	
<i>Iberodorcadion seoanei</i> Graells	Inv	EndI
<i>Iphiclides feisthamelii</i> Duponchel	Inv	
<i>Lampides boeticus</i> Linn.	Inv	
<i>Lampyrus sp.</i> Geoffroy	Inv	
<i>Lasiommata maera</i> Linn.	Inv	
<i>Leptotes pirithous</i> Linn.	Inv	
<i>Libellula quadrimaculata</i> Linn.	Inv	LC
<i>Lycaena alciphron</i> Rottemburg	Inv	
<i>Lytta vesicatoria</i> Linn.	Inv	
<i>Melanargia lachesis</i> Hübner	Inv	LC
<i>Misumena vatia</i> Clerck	Inv	
<i>Nemobius sylvestris</i> Bosc d'Antic	Inv	
<i>Ocypus olens</i> O.F.Muller	Inv	
<i>Oedemera podagrariae</i> Linn.	Inv	
<i>Orthetrum sp.</i> Newman	Inv	a)
<i>Panorpa meridionalis</i> Rambur	Inv	
<i>Pararge aegeria</i> Linn.	Inv	
<i>Pentodon algerinus</i> Fuessly	Inv	
<i>Pieris napi</i> Linn.	Inv	
<i>Pieris rapae</i> Linn.	Inv	
<i>Pisaura mirabilis</i> Clerck	Inv	
<i>Plagiodera versicolora</i> Laicharting	Inv	
<i>Plebejus argus</i> Linn.	Inv	
<i>Pseudophantera macularia</i> Linn.	Inv	
<i>Pyrrhosoma nymphula</i> Sulzer	Inv	
<i>Rutpela maculata</i> Poda	Inv	
<i>Satyrium esculi</i> Hübner	Inv	
<i>Scathophoga sp.</i> Meigen	Inv	
<i>Sialis sp.</i> Latreille	Inv	
<i>Spilostethus pandurus</i> Scopoli	Inv	
<i>Spilostethus saxatilis</i> Scopoli	Inv	
<i>Synema globosum</i> Fabricius	Inv	
<i>Thomisus onustus</i> Walckenaer	Inv	
<i>Tipula sp.</i> Linn.	Inv	
<i>Trypocorpis pyrenaeus</i> Charpentier	Inv	
<i>Typhaeus typhoeus</i> Linn.	Inv	

***Vanessa atalanta*** Linn.

Inv

***Vanessa cardui*** Linn.

Inv

***Zygaena sp.*** Fabricius

Inv



## Appendix XII. Species recorded by season for Trail 1 (Ameijoeira Trail) with concerning of their VCS-PRD value.

Species	Spring	Summer	Autumn	Winter
<i>Acacia dealbata</i>	1,5	1,0	1,0	1,5
<i>Acer pseudoplatanus</i>	3,0	3,0	3,0	3,0
<i>Achillea millefolium</i>	2,5	2,5	2,5	2,5
<i>Aegithalos caudatus</i>				1,0
<i>Agrostis capillaris</i>	2,0	2,5	2,5	2,0
<i>Agrostis castellana</i>	2,0	2,5	2,5	2,0
<i>Ajuga pyramidalis ssp. meonantha</i>	3,5	3,5	3,0	3,0
<i>Alnus glutinosa</i>	2,0	2,0	2,0	2,5
<i>Amanita citrina</i>			0,5	
<i>Amanita fulva</i>			0,5	
<i>Amanita rubescens</i>	0,5	0,5		
<i>Anemone trifolia ssp. albida</i>	4,0	4,0	4,0	4,0
<i>Angelica major</i>	4,0	4,5	4,0	4,0
<i>Anguis fragilis</i>	2,0			
<i>Anthaxia hungarica</i>	0,5			
<i>Anthemis arvensis ssp. arvensis</i>	2,5	2,5	2,0	2,0
<i>Apus apus</i>	4,0	4,0		
<i>Aquilegia vulgaris ssp. dichroa</i>	3,5	3,5	3,0	3,0
<i>Arenaria montana ssp. montana</i>	2,5	2,5	2,0	2,0
<i>Armillaria mellea</i>			0,5	
<i>Argynnis paphia</i>		0,5		
<i>Arion ater</i>	0,5	0,5		
<i>Asphodelus lusitanicus var. ovoideus</i>	4,5	4,5		4,0
<i>Asplenium adiantum-nigrum var. adiantum-nigrum</i>	3,0	3,0	3,0	3,0
<i>Asplenium onopteris</i>	2,0	2,0	2,0	2,0
<i>Asplenium trichomanes ssp. quadrivalens</i>	2,0	2,0	2,0	2,0
<i>Bellis sylvestris</i>	2,5	2,5	2,0	2,5
<i>Betula pubescens ssp. celtiberica</i>	3,0	3,0	3,0	3,5
<i>Blechnum spicant ssp. spicant</i>	2,0	2,0	2,0	2,0
<i>Bos taurus</i>	0,5	0,5		0,5
<i>Bromus driandrus</i>	2,5	2,5	2,5	2,0
<i>Bufo bufo</i>		2,0		
<i>Buxus sempervirens</i>	3,0	3,0	3,0	3,0
<i>Calopteryx virgo</i>		0,5		
<i>Campanula lusitanica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Canis lupus familiaris</i>		0,5		0,5
<i>Carex elata ssp. reuteriana</i>	4,5	4,0	4,0	4,0
<i>Castanea sativa</i>	1,0	1,5	1,5	1,0
<i>Cedrus sp.</i>	1,0	1,0	1,0	1,0
<i>Centaurea nigra ssp. rivularis</i>	4,0	4,5	4,5	4,0
<i>Ceratocapnos claviculata ssp. claviculata</i>	3,5	3,5	3,5	3,0
<i>Certhia brachydactyla</i>	1,0			1,0

<i>Chelidonium majus</i>	2,5	2,5	2,5	2,0
<i>Chrysolina herbacea</i>		0,5		
<i>Circaetus gallicus</i>		2,0		
<i>Cirsium sp.</i>	2,0	2,5	2,0	2,0
<i>Cistus psilosepalus</i>	2,0	2,5	2,0	2,0
<i>Clinopodium vulgare</i>	2,5	2,5	2,5	2,0
<i>Clitocybe odora</i>			0,5	
<i>Clitocybe sp.</i>			0,5	
<i>Coincya monensis ssp. puberula</i>	4,0	4,5	4,5	4,0
<i>Collybia butyracea</i>			0,5	
<i>Conyza canadensis</i>	1,0	1,0	1,0	1,0
<i>Conyza sumatrensis</i>	1,0	1,5	1,5	1,0
<i>Coreus marginatus</i>	0,5			
<i>Crocidura russula</i>		1,0		
<i>Crocus serotinus ssp.</i>			4,0	
<i>Cydonia oblonga</i>	1,5	1,0	1,5	1,5
<i>Cytisus striatus</i>	2,5	2,5	2,0	2,0
<i>Dactylis glomerata ssp. lusitanica</i>	3,5	3,5	3,5	3,0
<i>Digitalis purpurea ssp. purpurea</i>	2,0	2,5	2,0	2,0
<i>Echium lusitanicum</i>	4,0	4,5	4,0	4,0
<i>Epilobium obscurum</i>	3,0	3,5	3,5	3,0
<i>Equus ferus caballus</i>	0,5	0,5		0,5
<i>Erica arborea</i>	2,5	2,5	2,0	2,0
<i>Erica australis ssp. australis</i>	2,5	2,0	2,0	2,5
<i>Erica umbellata</i>	2,5	2,5	2,0	2,0
<i>Erithacus rubecula</i>		1,0		
<i>Erodium cicutarium ssp. cicutarium</i>	3,5	3,5	3,0	3,5
<i>Eucalyptus globulus</i>	1,0	1,0	1,5	1,0
<i>Euphorbia amygdaloides ssp. amygdaloides</i>	2,5	2,5	2,0	2,0
<i>Euphydryas aurinia</i>	0,5			
<i>Exosoma lusitanicum</i>		0,5		
<i>Falco tinnunculus</i>		1,0		
<i>Ficus carica</i>	2,0	2,5	2,5	2,0
<i>Fragaria vesca ssp. vesca</i>	2,0	2,0	2,0	2,0
<i>Frangula alnus</i>	2,0	2,5	2,0	2,0
<i>Gallus gallus domesticus</i>				0,5
<i>Garrulus glandarius</i>	1,0	1,0		
<i>Gastrophysa janthina</i>		0,5		
<i>Geranium molle</i>	2,5	2,5	2,0	2,0
<i>Geranium pyrenaicum ssp. lusitanicum</i>	4,5	4,5	4,0	4,0
<i>Gyps fulvus</i>			2,0	
<i>Halimium lasianthum spp. alyssoides</i>	3,5	3,5	3,0	3,0
<i>Hedera hibernica</i>	2,0	2,0	2,5	2,5
<i>Hieracium laevigatum</i>	3,0	3,5	3,5	3,0
<i>Hirundo rustica</i>	1,0	1,0		
<i>Hyacinthoides non-scripta</i>	3,5			3,0
<i>Hydrangea macrophylla</i>	1,5	1,5	1,0	1,0

<i>Hypericum sp.</i>	2,0	2,5	2,5	2,0
<i>Hypochaeris radicata</i>	2,5	2,5	2,5	2,0
<i>Ilex aquifolium</i>	2,0	2,0	2,0	2,0
<i>Jasione montana var.</i>	2,5	2,5		
<i>Juncus effusus ssp. effusus</i>	2,0	2,5	2,5	2,0
<i>Laccaria bicolor</i>			0,5	
<i>Laccaria sp.</i>		0,5		
<i>Lacerta schreiberi</i>	2,0	2,0		
<i>Lamium maculatum</i>	3,5	3,5	3,5	3,5
<i>Lamium purpureum</i>	2,5	2,5	2,0	2,5
<i>Laurus nobilis</i>	2,0	2,0	2,0	2,0
<i>Lavatera cretica</i>	2,5	2,5	2,0	2,0
<i>Leontodon taraxacoides ssp. taraxacoides</i>	2,5	2,5	2,5	2,0
<i>Lepista sp.</i>			0,5	
<i>Linaria triornitophora</i>	4,0	4,5	4,5	4,0
<i>Lithodora prostrata ssp. prostrata</i>	2,5	2,5	2,5	2,5
<i>Logfia minima</i>	2,0	2,0	2,0	2,0
<i>Lonicera periclymenum ssp. periclymenum</i>	3,0	3,5	3,0	3,0
<i>Lytta vesicatoria</i>	0,5			
<i>Malus sylvestris</i>	3,5	3,5	3,0	3,5
<i>Malva tournefortiana</i>	3,0	3,0	3,0	3,0
<i>Melampyrum pratense ssp. latifolium</i>	3,5	3,5	3,0	3,0
<i>Melanargia lachesis</i>		0,5		
<i>Melittis mellissophyllum</i>	3,5	3,5	3,0	3,0
<i>Mentha suaveolens</i>	2,0	2,5	2,0	2,0
<i>Misumena vatia</i>		0,5		
<i>Motacilla alba</i>		1,0		
<i>Mycena sp.</i>			0,5	
<i>Myosotis stolonifera</i>	4,5	4,5	4,0	4,0
<i>Narcissus triandrus ssp. triandrus</i>	4,5			4,5
<i>Oedemera podagrariae</i>		0,5		
<i>Olea europaea var. europaea</i>	1,0	1,0	1,0	1,0
<i>Omphalodes nitida</i>	3,5	3,5	3,5	3,0
<i>Ornithogalum concinnum</i>	4,0	4,5		
<i>Orobanche rapum-genistae</i>	3,5	3,5		
<i>Osmunda regalis</i>	2,0	2,0	2,0	2,0
<i>Ovis aries</i>	0,5			
<i>Panorpa meridionalis</i>	0,5			
<i>Pararge aegeria</i>	0,5	0,5		
<i>Parus ater</i>		1,0		
<i>Parus caeruleus</i>				1,0
<i>Parus major</i>				1,0
<i>Passer domesticus</i>	1,0	1,0		
<i>Paxillus involutus</i>			0,5	
<i>Pedicularis sylvatica ssp. lusitanica</i>	2,5	2,0	2,0	2,0
<i>Phoenicurus ochruros</i>	1,0			
<i>Pieris napi</i>	0,5			

<i>Pica pica</i>		1,0		
<i>Pinus pinaster</i>	2,5	2,5	2,5	2,5
<i>Pisaura mirabilis</i>	0,5			
<i>Plagiodera versicolora</i>	0,5	0,5		
<i>Plantago lanceolata</i>	2,5	2,5	2,5	2,0
<i>Platanus x acerifolia</i>	1,5	1,0	1,5	1,5
<i>Podarcis bocagei</i>	2,0	2,0		
<i>Podarcis hispanica</i>	2,0	2,0		2,0
<i>Polygala serpyllifolia</i>	3,5	3,5	3,0	3,0
<i>Polygonum hidropiper</i>	3,0	3,5	3,5	3,0
<i>Polypodium interjectum</i>	3,0	3,0	3,0	3,0
<i>Polypodium vulgare</i>	3,0	3,0	3,0	3,0
<i>Potentilla erecta</i>	2,5	2,5	2,0	2,0
<i>Primula acaulis ssp. acaulis</i>	2,5	2,0	2,0	2,5
<i>Prunella grandiflora</i>	3,0	3,5	3,0	3,0
<i>Prunella vulgaris</i>	2,0	2,5	2,0	2,0
<i>Psammodromus algerus</i>	2,0	2,0		
<i>Pseudoclitocybe cyathiformis</i>			0,5	
<i>Pseudophantera macularia</i>	0,5			
<i>Pteridium aquilinum ssp. aquilinum</i>	2,0	2,0	2,0	2,0
<i>Pterospartum tridentatum ssp. cantabricum</i>	3,5	3,0	3,0	3,0
<i>Pyrhosoma nymphula</i>	0,5	0,5		
<i>Pyrus cordata</i>	3,0	3,0	3,0	3,0
<i>Quercus pyrenaica</i>	2,0	2,5	2,0	2,0
<i>Quercus robur</i>	2,5	2,0	2,0	2,0
<i>Rana iberica</i>	2,0	2,0	2,0	2,0
<i>Ranunculus ficaria ssp. ficaria</i>	2,5	2,0	2,0	2,5
<i>Ranunculus omiophyllus</i>	2,5	2,0	2,0	2,5
<i>Raphanus raphanistrum ssp. raphanistrum</i>	2,5	2,5	2,5	2,5
<i>Reseda media</i>	2,5	2,0	2,5	2,0
<i>Rumex acetosa ssp. acetosa</i>	2,5	2,5	2,0	2,0
<i>Rumex acetosella ssp. angiocarpus</i>	2,5	2,5	2,0	2,0
<i>Rumex obtusifolius</i>	2,0	2,5	2,0	2,0
<i>Russula sp.</i>		0,5		
<i>Salix atrocinerea</i>	2,5	2,0	2,0	2,5
<i>Salmo trutta</i>	5,0	5,0	5,0	
<i>Sambucus nigra</i>	2,5	2,0	2,0	2,0
<i>Satyrium sp.</i>		0,5		
<i>Saxicola torquatus</i>	1,0			
<i>Saxifraga spathularis</i>	3,5	3,5	3,0	3,0
<i>Scabiosa columbaria ssp. columbaria</i>	3,0	3,0	3,0	3,0
<i>Scrophularia scorodonia var. scorodonia</i>	2,0	2,5	2,5	2,0
<i>Sedum brevifolium</i>	2,0	2,5	2,0	2,0
<i>Sedum hirsutum ssp. hirsutum</i>	2,0	2,5	2,0	2,0
<i>Senecio lividus</i>	2,5	2,0	2,0	2,5
<i>Serinus serinus</i>	1,0	1,0		
<i>Silene vulgaris ssp. vulgaris</i>	2,5	2,5	2,0	2,0

<i>Simethis mattiazii</i>	2,5	2,5		
<i>Sitta europaea</i>	1,0			1,0
<i>Solanum nigrum</i>		2,5		
<i>Solidago virgaurea ssp. virgaurea</i>	2,0	2,5	2,5	2,0
<i>Stachys arvensis</i>	2,5	2,0	2,0	2,5
<i>Stellaria graminea</i>	3,5	3,5	3,0	3,0
<i>Stellaria holostea</i>	3,5	3,5	3,0	3,0
<i>Stellaria media</i>	2,5	2,5	2,0	2,5
<i>Stereum sp.</i>			0,5	
<i>Streptopelia decaocto</i>		1,0		
<i>Teucrium scorodonia</i>	2,0	2,5	2,5	2,0
<i>Thomisus onustus</i>		0,5		
<i>Thymus caespititius</i>	3,0	3,5	3,0	3,0
<i>Timon lepidus</i>	2,0	2,0		
<i>Tipula sp.</i>	0,5	0,5		
<i>Trametes sp.</i>			0,5	
<i>Tremella mesenterica</i>			0,5	0,5
<i>Tricholomopsis rutilans</i>			0,5	
<i>Trifolium pratense ssp. pratense</i>	2,5	2,5	2,0	2,0
<i>Trifolium repens var. repens</i>	2,5	2,5	2,0	2,0
<i>Tuberaria globulariifolia var. globulariifolia</i>	4,5	4,5	4,0	4,0
<i>Tuberaria guttata</i>	2,0	2,5	2,0	2,0
<i>Turdus merula</i>	1,0	1,0		
<i>Ulex europaeus ssp. latebracteus</i>	4,5	4,0	4,0	4,5
<i>Ulex minor</i>	2,0	2,5	2,5	2,5
<i>Umbilicus rupestris</i>	2,5	2,5	2,0	2,0
<i>Urtica membranacea</i>	2,5	2,5	2,0	2,5
<i>Vaccinium myrtillus</i>	3,0	3,0	3,0	3,0
<i>Vanessa atalanta</i>	0,5			
<i>Veronica officinalis</i>	3,0	3,5	3,0	3,0
<i>Viola riviniana</i>	2,5	2,0	2,0	2,0
<i>Vipera latastei ssp. latastei</i>	3,0	3,0		3,0
<i>Vipera seoanei ssp. seoanei</i>	4,0			
<i>Vulpes vulpes</i>		1,0		
<i>Woodwardia radicans</i>	2,0	2,0	2,0	2,0

### Appendix XIII. Species recorded by season for Trail 2 (Matança Trail) with concerning of their VCS-PRD value.

<b>Species</b>	<b>Spring</b>	<b>Summer</b>	<b>Autumn</b>	<b>Winter</b>
<i>Achillea millefolium</i>	2,5	2,5	2,5	2,0
<i>Aegithalos caudatus</i>	1,0	1,0		
<i>Agrostis castellana</i>	2,0	2,5	2,5	2,0
<i>Ajuga pyramidalis ssp. meonantha</i>	3,5	3,0	3,0	3,0
<i>Amanita citrina</i>			0,5	
<i>Amanita fulva</i>			0,5	
<i>Amanita junquila</i>			0,5	
<i>Amanita muscaria</i>			0,5	
<i>Amanita rubescens</i>	0,5			
<i>Ampedus sp.</i>		0,5		
<i>Anarrhinum bellidifolium</i>	2,5	2,5	2,0	2,0
<i>Andryala integrifolia</i>	2,5	2,5	2,5	2,0
<i>Anemone trifolia ssp. albida</i>	4,0	4,0	4,0	4,5
<i>Aporia crataegi</i>		0,5		
<i>Aquila chrysaetos</i>	4,0			
<i>Aquilegia vulgaris ssp. dichroa</i>	3,5	3,5	3,0	3,0
<i>Arenaria montana ssp. montana</i>	2,5	2,5	2,0	2,0
<i>Argynnis aglaja</i>		0,5		
<i>Arion ater</i>	0,5			
<i>Armillaria sp.</i>			0,5	
<i>Arnica montana ssp. lusitanica</i>	3,0	3,5	3,0	3,0
<i>Asphodelus lusitanicus var. ovoideus</i>	4,0	4,5		4,0
<i>Asphodelus macrocarpus ssp. macrocarpus</i>	3,0	3,5		3,0
<i>Asplenium adiantum-nigrum var. adiantum-nigrum</i>	3,0	3,0	3,0	3,0
<i>Asplenium trichomanes ssp. quadrivalens</i>	2,0	2,0	2,0	2,0
<i>Avenula sulcata ssp. sulcata</i>	2,5	2,5	2,0	2,0
<i>Bellis perennis</i>	2,5	2,5	2,0	2,5
<i>Betula pubescens</i>	3,5	3,0	3,0	3,0
<i>Blechnum spicant ssp. spicant</i>	2,0	2,0	2,0	2,0
<i>Boletus edulis</i>		0,5		
<i>Boletus erythrophus</i>	0,5			
<i>Bos taurus</i>	0,5	0,5	0,5	0,5
<i>Bufo bufo</i>	2,0	2,0		
<i>Buteo buteo</i>		1,0		
<i>Calluna vulgaris</i>	2,0	2,5	2,0	2,0
<i>Calopteryx virgo</i>	0,5	0,5		
<i>Campanula lusitanica ssp. lusitanica</i>		2,0		
<i>Canis lupus familiaris</i>				0,5
<i>Canis lupus signatus</i>	4,0	4,0	4,0	4,0
<i>Capra aegagrus ssp. hircus</i>	0,5	0,5	0,5	0,5
<i>Capreolus capreolus</i>	1,0	1,0	1,0	1,0
<i>Carduelis cannabina</i>	1,0			
<i>Castanea sativa</i>	1,0	1,5	1,5	1,0

<i>Cedrus sp.</i>	1,0	1,0	1,0	1,0
<i>Centaurea limbata ssp. limbata</i>	2,0	2,5	2,0	2,0
<i>Centaurea nigra ssp. rivularis</i>	4,0	4,5	4,5	4,0
<i>Circaetus gallicus</i>		2,0		
<i>Cirsium palustre</i>	2,0	2,5	2,0	2,0
<i>Cirsium vulgare</i>	2,0	2,5	2,0	2,0
<i>Cistus psilosepalus</i>	2,5	2,5	2,0	2,0
<i>Clavulina cristata</i>			0,5	
<i>Clavulina sp.</i>			0,5	
<i>Clinopodium vulgare</i>	2,0	2,5	2,0	2,0
<i>Coccinella septempunctata</i>		0,5		
<i>Coenonympha arcania</i>		0,5		
<i>Collybia butyracea</i>			0,5	
<i>Collybia sp.</i>			0,5	
<i>Cordulegaster boltonii</i>	0,5	0,5		
<i>Coronella girondica</i>	2,0			
<i>Cortinarius sp.</i>			0,5	
<i>Corvus corone</i>	1,0		1,0	
<i>Crocus carpetanus</i>				4,5
<i>Crocus serotinus ssp.</i>			4,5	
<i>Cuculus canorus</i>	1,0			
<i>Cytisus scoparius ssp. scoparius</i>	2,5	2,5	2,0	2,0
<i>Cytisus striatus</i>	2,5	2,5	2,0	2,0
<i>Daboecia cantabrica</i>	3,5	3,5	3,0	3,0
<i>Dactylorhiza maculata</i>	3,5	3,5	3,0	3,0
<i>Diaea dorsata</i>	0,5			
<i>Digitalis purpurea ssp. purpurea</i>	2,0	2,5	2,0	2,0
<i>Drosera rotundifolia</i>		3,0		
<i>Dryopteris filix-mas</i>	3,0	3,0	3,0	3,0
<i>Echium lusitanicum</i>	4,5	4,5	4,0	4,0
<i>Emberiza cia</i>	1,0	1,0		
<i>Epidalea calamita</i>	2,0	2,0		
<i>Equus ferus ssp. caballus</i>	0,5	0,5	0,5	0,5
<i>Erica arborea</i>	2,5	2,0	2,0	2,5
<i>Erica australis ssp. australis</i>	2,5	2,0	2,0	2,5
<i>Erica ciliaris</i>	2,0	2,5	2,5	2,0
<i>Erica cinerea</i>	2,0	2,5	2,5	2,0
<i>Erica tetralix</i>	3,5	3,5	3,5	3,0
<i>Erica umbellata</i>	2,5	2,5	2,0	2,0
<i>Eriophorum angustifolium</i>	3,0	3,5	3,0	3,0
<i>Erithacus rubecula</i>	1,0			1,0
<i>Erythronium dens-canis</i>	3,0			3,5
<i>Euphorbia amygdaloides ssp. amygdaloides</i>	2,5	2,5	2,0	2,0
<i>Euphydryas aurinia</i>	0,5	0,5		
<i>Falco tinnunculus</i>		1,0		
<i>Frangula alnus</i>	2,0	2,0	2,0	2,0
<i>Fringilla coelebs</i>	1,0	1,0		

<i>Galium broterianum</i>	4,5	4,5	4,0	4,0
<i>Garrulus glandarius</i>		1,0		
<i>Gastrophysa janthina</i>	0,5			
<i>Gymnopilus sp.</i>			0,5	
<i>Gyps fulvus</i>	2,0	2,0		
<i>Halimium lasianthum ssp. alyssoides</i>	3,5	3,5	3,0	3,0
<i>Hedera hibernica</i>	2,5	2,0	2,5	2,5
<i>Holcus molis</i>	3,0	3,5	3,0	3,0
<i>Hyacinthoides non-scripta</i>	3,5			3,0
<i>Hypericum humifusum</i>	2,5	2,5	2,0	2,0
<i>Ilex aquifolium</i>	2,0	2,0	2,0	2,5
<i>Illecebrum verticillatum</i>	2,5	2,5	2,0	2,0
<i>Inocybe sp.</i>	0,5		0,5	
<i>Jasione montana var.</i>				
<i>Laccaria amethystina</i>			0,5	
<i>Lacerta schreiberi</i>	2,0			
<i>Lactarius deliciosus</i>			0,5	
<i>Lactarius vellereus</i>			0,5	
<i>Lactarius volemus</i>		0,5		
<i>Lamium maculatum</i>	3,5	3,5	3,0	3,5
<i>Lampides boeticus</i>		0,5		
<i>Leontodon taraxacoides ssp. taraxacoides</i>	2,5	2,5	2,5	2,0
<i>Leptotes pirithous</i>		0,5		
<i>Lepus granatensis</i>	1,0			
<i>Linaria triornitophora</i>	4,5	4,5	4,0	4,0
<i>Lissotriton boscai</i>		2,0	2,0	
<i>Lithodora prostrata ssp. prostrata</i>	2,5	2,5	2,5	2,5
<i>Lonicera periclymenum ssp. periclymenum</i>	3,0	3,5	3,0	3,0
<i>Melampyrum pratense ssp. latifolium</i>	3,5	3,5	3,0	3,0
<i>Melanargia lachesis</i>		0,5		
<i>Melittis mellissophyllum</i>	3,5	3,5	3,0	3,0
<i>Mentha suaveolens</i>	2,0	2,5	2,0	2,0
<i>Merendera montana</i>		4,5	4,5	
<i>Mycena sp.</i>			0,5	
<i>Myosotis stonolyfera</i>	4,5	4,5	4,0	4,0
<i>Narcissus triandrus ssp. triandrus</i>	4,5			4,5
<i>Narthecium ossifragum</i>	4,0	4,5	4,0	4,0
<i>Natrix natrix</i>	2,0			
<i>Oenanthe crocata</i>	2,5	2,5	2,0	2,0
<i>Omphalodes nitida</i>	3,5	3,5	3,0	3,0
<i>Ornithogalum concinnum</i>	4,5	4,0		
<i>Orobanche rapum-genistae</i>	3,5	3,5		
<i>Orthetrum sp.</i>		0,5		
<i>Osmunda regalis</i>	2,0	2,0	2,0	2,0
<i>Ovis aries</i>				0,5
<i>Panorpa meridionalis</i>	0,5			
<i>Pararge aegeria</i>	0,5	0,5		



<i>Parus ater</i>	1,0			
<i>Parus caeruleus</i>	1,0	1,0		
<i>Pedicularis sylvatica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Pelophylax perezii</i>	2,0	2,0		
<i>Pentodon algerinus</i>	0,5			
<i>Picris hieracioides ssp. longifolia</i>	4,0	4,5	4,5	4,0
<i>Pinus pinaster</i>	2,0	2,0	2,0	2,0
<i>Pinus sylvestris</i>	3,5	3,5	3,5	3,5
<i>Piptoporus betulinus</i>	0,5	0,5	0,5	0,5
<i>Plagioderma versicolora</i>		0,5		
<i>Plantago lanceolata</i>	2,5	2,5	2,5	2,0
<i>Plebejus argus</i>		0,5		
<i>Podarcis bocagei</i>	2,0	2,0		
<i>Podarcis hispanica</i>	2,0	2,0	2,0	
<i>Polygala serpyllifolia</i>	3,5	3,5	3,5	3,0
<i>Polygala vulgaris</i>	2,5	2,5	2,5	2,0
<i>Polypodium sp.</i>	3,0	3,0	3,0	3,0
<i>Potentilla erecta</i>	2,5	2,5	2,0	2,0
<i>Primula acaulis ssp. acaulis</i>	2,0	2,0	2,0	2,5
<i>Prunella grandiflora</i>	3,0	3,5	3,0	3,0
<i>Prunella vulgaris</i>	2,0	2,5	2,0	2,0
<i>Pteridium aquilinum ssp. aquilinum</i>	2,0	2,0	2,0	2,0
<i>Pterospartum tridentatum ssp. cantabricum</i>	3,5	3,0	3,0	3,0
<i>Pyrrosoma nymphula</i>	0,5	0,5		
<i>Pyrus cordata</i>	3,0	3,0	3,0	3,0
<i>Quercus pyrenaica</i>	2,5	2,0	2,0	2,0
<i>Quercus robur</i>	2,5	2,0	2,0	2,0
<i>Rana iberica</i>	2,0	2,0	2,0	2,0
<i>Ranunculus ficaria ssp. ficaria</i>	2,5	2,5	2,0	2,0
<i>Romaria sp.</i>			0,5	
<i>Rumex acetosella ssp. angiocarpus</i>	2,0	2,5	2,0	2,0
<i>Rumex bucephalophorus ssp. gallicus</i>	2,0	2,5	2,0	2,0
<i>Russula sp.</i>		0,5	0,5	
<i>Rutpela maculata</i>		0,5		
<i>Salamandra salamandra</i>		2,0	2,0	
<i>Salix atrocinerea</i>	2,5	2,0	2,0	2,5
<i>Satyrium esculi</i>		0,5		
<i>Saxicola torquatus</i>	1,0	1,0		
<i>Saxifraga spathularis</i>	3,5	3,0	3,0	3,0
<i>Sedum brevifolium</i>	2,0	2,5	2,0	2,0
<i>Sedum hirsutum ssp. hirsutum</i>	2,5	2,5	2,0	2,0
<i>Silene vulgaris ssp. vulgaris</i>	2,5	2,5	2,0	2,5
<i>Simethis mattiazii</i>	2,5	2,5		
<i>Solidago virgaurea ssp. virgaurea</i>	2,0	2,0	2,5	2,0
<i>Spergularia purpurea</i>	2,0	2,5	2,0	2,0
<i>Stereum sp.</i>			0,5	
<i>Stropharia semiglobata</i>	0,5			

<i>Stropharia sp.</i>			0,5	
<i>Sucissa pratensis</i>	2,0	2,5	2,0	2,0
<i>Sus scrofa</i>		1,0		1,0
<i>Suillus sp.</i>			0,5	
<i>Sympetrum sp.</i>	0,5			
<i>Teucrium scorodonia</i>	2,0	2,5	2,0	2,0
<i>Thymus caespititius</i>	3,0	3,5	3,0	3,0
<i>Timon lepidus</i>	2,0			
<i>Trametes sp.</i>			0,5	
<i>Tremella mesenterica</i>	0,5		0,5	0,5
<i>Trifolium repens var. repens</i>	2,0	2,5	2,0	2,0
<i>Tuberaria globulariifolia var. globulariifolia</i>	4,5	4,5	4,0	4,0
<i>Tuberaria guttata</i>	2,0	2,5	2,0	2,0
<i>Turdus merula</i>	1,0	1,0		
<i>Ulex europaeus ssp. latebracteatus</i>	4,0	4,0	4,0	4,5
<i>Ulex minor</i>	2,5	2,5	2,5	2,0
<i>Umbilicus rupestris</i>	2,5	2,5	2,0	2,0
<i>Vaccinium myrtillus</i>	3,5	3,0	3,0	3,0
<i>Veronica officinalis</i>	3,5	3,5	3,0	3,0
<i>Viola riviniana</i>	2,5	2,5	2,5	2,0
<i>Vulpes vulpes</i>		1,0		1,0
<i>Woodwardia radicans</i>	2,0	2,0	2,0	2,0

### Appendix XIV. Species recorded by season for Trail 3 (Castrejo Trail) with concerning of their VCS-PRD value.

Species	Spring	Summer	Autumn	Winter
<i>Achillea millefolium</i>	2,5	2,5	2,0	2,0
<i>Adenocarpus lainzii</i>	4,0	4,5	4,0	4,0
<i>Agrostis castellana</i>	2,5	2,5	2,0	2,0
<i>Amanita muscaria</i>			0,5	
<i>Ajuga pyramidalis ssp. meonantha</i>	3,5	3,0	3,0	3,0
<i>Anemone trifolia ssp. albida</i>	4,0	4,0	4,0	4,0
<i>Anguis fragilis</i>		2,0		
<i>Anthus campestris</i>		1,0		
<i>Aquilegia vulgaris ssp. dichroa</i>	3,5	3,0	3,0	3,0
<i>Arenaria montana ssp. montana</i>	2,5	2,5	2,0	2,0
<i>Arion ater</i>	0,5			
<i>Asphodelus lusitanicus var. ovoideus</i>	4,5	4,5		4,0
<i>Asplenium adiantum-nigrum ssp. adiantum-nigrum</i>	3,0	3,0	3,0	3,0
<i>Asplenium trichomanes ssp. quadrivalens</i>	2,0	2,0	2,0	2,0
<i>Bellis sp.</i>	2,5	2,5	2,0	2,0
<i>Betula pubescens</i>	3,0	3,5	3,0	3,0
<i>Blechnum spicant ssp. spicant</i>	2,0	2,0	2,0	2,0
<i>Bos taurus</i>				0,5
<i>Brachypodium rupestre</i>	3,0	3,5	3,0	3,0
<i>Bufo bufo</i>		2,0		2,0
<i>Calluna vulgaris</i>	2,0	2,5	2,5	2,0
<i>Calocybe sp.</i>			0,5	
<i>Campanula lusitanica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Canis lupus ssp. familiaris</i>	0,5	0,5	0,5	
<i>Canis lupus ssp. signatus</i>	4,0	4,0	4,0	4,0
<i>Capra aegagrus ssp. hircus</i>	0,5	0,5	0,5	0,5
<i>Calopteryx virgo</i>		0,5		
<i>Castanea sativa</i>	1,0	1,0	1,0	1,0
<i>Chamaemelum nobile</i>	2,0	2,5	2,5	2,0
<i>Cicindela campestris</i>	0,5			
<i>Cirsium palustre</i>	2,0	2,5	2,5	2,0
<i>Cistus psilosepalus</i>	2,5	2,5	2,0	2,0
<i>Clinopodium vulgare</i>	2,5	2,5	2,0	2,0
<i>Coenonympha arcania</i>		0,5		
<i>Colias croceus</i>		0,5		
<i>Conyza canadensis</i>	1,0	1,0	1,0	1,0
<i>Crocus carpetanus</i>				4,5
<i>Crocus serotinus ssp.</i>			4,5	
<i>Cuculus canorus</i>		1,0		
<i>Cytisus striatus</i>	2,5	2,5	2,5	2,0
<i>Daboecia cantabrica</i>	3,0	3,5	3,5	3,0
<i>Dactylorhiza maculata</i>	3,5	3,5	3,0	3,0
<i>Digitalis purpurea ssp. purpurea</i>	2,0	2,5	2,0	2,0

<i>Echium lusitanicum</i>	4,5	4,5	4,0	4,0
<i>Emberiza cia</i>	1,0	1,0		
<i>Equus ferus ssp. caballus</i>	0,5	0,5	0,5	0,5
<i>Erica arborea</i>	2,5	2,0	2,0	2,5
<i>Erica ciliaris</i>	2,0	2,5	2,5	2,0
<i>Erica cinerea</i>	2,0	2,5	2,5	2,0
<i>Erica tetralix</i>	3,0	3,5	3,0	3,0
<i>Erica umbellata</i>	2,5	2,5	2,0	2,0
<i>Erodium cicutarium ssp. cicutarium</i>	3,0	3,5	3,0	3,0
<i>Erythronium dens-canis</i>	3,0			3,0
<i>Frangula alnus</i>	2,0	2,5	2,0	2,0
<i>Fringilla coelebs</i>		1,0		
<i>Gallus gallus ssp. domesticus</i>	0,5	0,5		
<i>Garrulus glandarius</i>		1,0		
<i>Geranium lucidum</i>	2,5	2,5	2,0	2,0
<i>Geranium molle</i>	2,5	2,5	2,0	2,0
<i>Gymnopilus junonius</i>				0,5
<i>Halimium lasianthum ssp. alyssoides</i>	3,0	3,5	3,0	3,0
<i>Hedera hibernica</i>	2,5	2,0	2,0	2,5
<i>Hirundo rustica</i>	1,0			
<i>Hyacinthoides non-scripta</i>	3,5			3,0
<i>Hypericum humifusum</i>	2,5	2,5	2,0	2,0
<i>Ilex aquifolium</i>	2,0	2,0	2,0	2,0
<i>Iphicliodes feisthamelii</i>	0,5			
<i>Jasione montana var.</i>	2,5	2,5		
<i>Juncus effusus ssp. effusus</i>	2,0	2,5	2,0	2,0
<i>Laccaria laccata</i>		0,5		
<i>Lacerta schreiberi</i>	2,0	2,0		
<i>Lamium maculatum</i>	3,5	3,5	3,5	3,5
<i>Lasiommata maera</i>		0,5		
<i>Leccinum sp.</i>			0,5	
<i>Leontodon taraxacoides ssp. taraxacoides</i>	2,5	2,5	2,5	2,0
<i>Lithodora prostrata ssp. prostrata</i>	2,5	2,5	2,5	2,5
<i>Lonicera periclymenum ssp. periclymenum</i>	3,0	3,0	3,0	3,0
<i>Melampyrum pratense ssp. latifolium</i>	3,0	3,5	3,0	3,0
<i>Merendera montana</i>			4,5	
<i>Narcissus triandrus ssp. triandrus</i>	4,5			4,5
<i>Oenanthe crocata</i>	2,0	2,5	2,0	2,0
<i>Ornithogalum concinnum</i>	4,5			
<i>Orobanche rapum-genistae</i>	3,5	3,5		
<i>Osmunda regalis</i>	2,0	2,0	2,0	2,0
<i>Ovis aries</i>	0,5			
<i>Pararge aegeria</i>	0,5	0,5		
<i>Parus caeruleus</i>	1,0			
<i>Pedicularis sylvatica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Pelophylax perezii</i>	2,0	2,0		
<i>Phoenicurus ochruros</i>		1,0		

<i>Pentodon algerinus</i>	0,5			
<i>Pieris napi</i>		0,5		
<i>Pieris rapae</i>	0,5			
<i>Pinus pinaster</i>	2,5	2,5	2,5	2,5
<i>Pinus sylvestris</i>	3,5	3,5	3,5	3,5
<i>Piptoporus betulinus</i>	0,5			
<i>Plantago lanceolata</i>	2,5	2,5	2,0	2,0
<i>Plebejus argus</i>		0,5		
<i>Podarcis bocagei</i>	2,0	2,0		
<i>Podarcis hispanica</i>	2,0	2,0		
<i>Polygala serpyllifolia</i>	3,5	3,5	3,5	3,0
<i>Polygonatum odoratum</i>	2,0	2,0	2,0	2,0
<i>Polypodium vulgare</i>	3,0	3,0	3,0	3,0
<i>Potentilla erecta</i>	2,5	2,5	2,0	2,0
<i>Primula acaulis ssp. acaulis</i>	2,0	2,0	2,0	2,0
<i>Protostropharia semiglobata</i>		0,5		
<i>Prunella modularis</i>	1,0			
<i>Prunella vulgaris</i>	2,5	2,5	2,0	2,0
<i>Pteridium aquilinum ssp. aquilinum</i>	2,0	2,0	2,0	2,0
<i>Pterospartum tridentatum ssp. cantabricum</i>	3,5	3,0	3,0	3,0
<i>Pyrrosoma nymphula</i>		0,5		
<i>Pyrus cordata</i>	3,0	3,0	3,0	3,0
<i>Quercus pyrenaica</i>	2,5	2,0	2,0	2,0
<i>Quercus robur</i>	2,5	2,0	2,0	2,0
<i>Rana iberica</i>		2,0	2,0	
<i>Ranunculus bulbosus ssp. alae</i>	3,5	3,5	3,0	3,0
<i>Ranunculus omiophyllus</i>	2,5	2,0	2,0	2,5
<i>Ranunculus repens</i>	3,0	3,5	3,0	3,0
<i>Rumex sp.</i>	2,5	2,5	2,0	2,0
<i>Russula sp.</i>		0,5		
<i>Salix atrocinerea</i>	2,5	2,0	2,0	2,5
<i>Salmo trutta</i>	5,0	5,0	5,0	5,0
<i>Sambucus nigra</i>	2,5	2,5	2,0	2,0
<i>Saxicola torquatus</i>	1,0	1,0		
<i>Scrophularia scorodonia var. scorodonia</i>	2,0	2,0	2,0	2,0
<i>Sedum brevifolium</i>	2,5	2,5	2,0	2,0
<i>Sedum hirsutum ssp. hirsutum</i>	2,5	2,5	2,0	2,0
<i>Serinus serinus</i>		1,0		
<i>Serratula tinctoria ssp. seoanei</i>	3,0	3,5	3,0	3,0
<i>Sialis sp.</i>		0,5		
<i>Silene vulgaris ssp. vulgaris</i>	2,5	2,5	2,0	2,0
<i>Simethis mattiazii</i>	2,5	2,5		
<i>Solanum nigrum</i>			2,0	
<i>Spergularia purpurea</i>	2,0	2,5	2,0	2,0
<i>Stellaria graminea</i>	3,5	3,0	3,0	3,0
<i>Stellaria holostea</i>	3,5	3,5	3,0	3,0
<i>Sylvia sp.</i>		1,0		

<i>Teesdalia nudicaulis</i>	2,5	2,5	2,0	2,0
<i>Teucrium scorodonia</i>	2,0	2,5	2,5	2,0
<i>Timon lepidus</i>		2,0		
<i>Trifolium sp.</i>	2,0	2,5	2,0	2,0
<i>Tuberaria globulariifolia var. globulariifolia</i>	4,5	4,5	4,0	4,0
<i>Tuberaria guttata</i>	2,0	2,5	2,0	2,0
<i>Turdus merula</i>		1,0		
<i>Typhaeus typhoeus</i>				0,5
<i>Ulex europaeus ssp. latebracteatus</i>	4,5	4,0	4,0	4,5
<i>Ulex minor</i>	2,5	2,5	2,5	2,0
<i>Umbilicus rupestris</i>	2,5	2,5	2,0	2,0
<i>Urtica dioica</i>	2,0	2,5	2,0	2,0
<i>Vanessa atalanta</i>	0,5			
<i>Vanessa cardui</i>		0,5		
<i>Veronica officinalis</i>	3,5	3,5	3,5	3,0
<i>Vicia angustifolia</i>	2,5	2,5	2,0	2,0
<i>Vinca major ssp. major</i>	2,5	2,5	2,0	2,0
<i>Viola riviniana</i>	2,5	2,5	2,0	2,0
<i>Woodwardia radicans</i>	2,0	2,0	2,0	2,0
<i>Zygaena sp.</i>		0,5		

## Appendix XV. Species recorded by season for Trail 4 (Transfonteiriço Trail) with concerning of their VCS-PRD value.

Species	Spring	Summer	Autumn	Winter
<i>Achillea millefolium</i>	2,5	2,5	2,0	2,0
<i>Accipiter nisus</i>			1,0	
<i>Aegithalos caudatus</i>	1,0			
<i>Agrostis castellana</i>	2,0	2,5	2,5	2,0
<i>Agrostis curtisii</i>	2,0	2,5	2,5	2,0
<i>Ajuga pyramidalis ssp. meonantha</i>	3,5	3,0	3,0	3,0
<i>Amanita rubescens</i>			0,5	
<i>Anarrhinum bellidifolium</i>	2,5	2,5	2,0	2,0
<i>Andryala integrifolia</i>	2,0	2,5	2,0	2,0
<i>Arbutus unedo</i>	2,0	2,5	2,5	2,0
<i>Arenaria montana ssp. montana</i>	2,5	2,5	2,0	2,0
<i>Armillaria mellea</i>			0,5	
<i>Armillaria sp.</i>			0,5	
<i>Arion ater</i>	0,5		0,5	
<i>Asphodelus lusitanicus var. ovoideus</i>	4,5	4,5		4,0
<i>Asplenium adiantum-nigrum ssp. adiantum-nigrum</i>	3,0	3,0	3,0	3,0
<i>Asplenium billotii</i>	2,0	2,0	2,0	2,0
<i>Asplenium trichomanes ssp. quadrivalens</i>	2,0	2,0	2,0	2,0
<i>Athyrium filix-femina</i>	2,0	2,0	2,0	2,0
<i>Bellis sp.</i>	2,5	2,5	2,0	2,0
<i>Betula pubescens</i>	3,0	3,0	3,0	3,0
<i>Blechnum spicant ssp. spicant</i>	2,0	2,0	2,0	2,0
<i>Bos taurus</i>	0,5	0,5	0,5	0,5
<i>Brintesia circe</i>		0,5		
<i>Bufo bufo</i>		2,0		
<i>Buteo buteo</i>		1,0		
<i>Calluna vulgaris</i>	2,0	2,5	2,0	2,0
<i>Calopteryx virgo</i>		0,5		
<i>Campanula lusitanica ssp. lusitanica</i>	2,5	2,5		
<i>Canis lupus ssp. familiaris</i>		0,5	0,5	0,5
<i>Canis lupus ssp. signatus</i>	4,0	4,0		
<i>Capra aegagrus ssp. hircus</i>	0,5	0,5	0,5	0,5
<i>Carduelis cannabina</i>		1,0		
<i>Castanea sativa</i>	1,0	1,5	1,5	1,5
<i>Cedrus sp.</i>	1,0	1,0	1,0	1,0
<i>Centaurea nigra ssp. rivularis</i>	4,0	4,5	4,0	4,0
<i>Chamaemelum nobile</i>	2,0	2,5	2,5	2,0
<i>Cirsium palustre</i>	2,5	2,5	2,0	2,0
<i>Cistus psilosepalus</i>	2,5	2,5	2,5	2,0
<i>Clinopodium vulgare</i>	2,0	2,5	2,5	2,0
<i>Coccinella septempunctata</i>		0,5		
<i>Conyza canadensis</i>	1,0	1,0	1,0	1,0
<i>Conyza sumatrensis</i>	1,0	1,5	1,0	1,0

<i>Cordulegaster boltonii</i>		0,5		
<i>Cordyline australis</i>	1,0	1,0	1,0	1,0
<i>Cortinarius sp.</i>			0,5	
<i>Crocus serotinus ssp.</i>			4,5	
<i>Cuculus canorus</i>	1,0			
<i>Cyprinus carpio ssp. haematopterus</i>	1,0	1,0	1,0	1,0
<i>Cytisus striatus</i>	2,5	2,5	2,0	2,0
<i>Daboecia cantabrica</i>	3,0	3,5	3,0	3,0
<i>Dactylis glomerata ssp. lusitanica</i>	3,0	3,5	3,5	3,0
<i>Dactylorhiza maculata</i>	3,0	3,0	3,5	3,5
<i>Digitalis purpurea ssp. purpurea</i>	2,0	2,5	2,0	2,0
<i>Echium lusitanicum</i>	4,5	4,5	4,0	4,0
<i>Emberiza cia</i>	1,0	1,0		
<i>Epidalea calamita</i>		2,0	2,0	2,0
<i>Epilobium obscurum</i>	3,0	3,5	3,5	3,0
<i>Equus ferus ssp. caballus</i>	0,5	0,5	0,5	0,5
<i>Erica arborea</i>	2,5	2,0	2,0	2,5
<i>Erica australis ssp. australis</i>	2,5	2,0	2,0	2,5
<i>Erica ciliaris</i>	2,0	2,5	2,5	2,0
<i>Erica cinerea</i>	2,0	2,5	2,5	2,0
<i>Erica tetralix</i>	3,0	3,5	3,0	3,0
<i>Erica umbellata</i>	2,5	2,5	2,0	2,0
<i>Erithacus rubecula</i>			1,0	1,0
<i>Eucalyptus globulus</i>	1,0	1,0	1,0	1,5
<i>Euphorbia amygdaloides ssp. amygdaloides</i>	2,5	2,5	2,0	2,0
<i>Felis domesticus</i>	0,5	0,5		0,5
<i>Ficus carica</i>	2,0	2,5	2,5	2,5
<i>Frangula alnus</i>	2,0	2,5	2,0	2,0
<i>Galinsoga parviflora</i>	1,0	1,5	1,5	1,0
<i>Gallus gallus ssp. domesticus</i>		0,5	0,5	
<i>Geranium molle</i>	2,5	2,5	2,0	2,0
<i>Geranium purpureum</i>	2,5	2,5	2,0	2,0
<i>Halimium lasianthum ssp. alyssoides</i>	3,5	3,5	3,0	3,0
<i>Hedera hibernica</i>	2,0	2,0	2,0	2,5
<i>Hirundo rustica</i>	1,0	1,0		
<i>Hyacinthoides non-scripta</i>	3,5			3,0
<i>Hypericum humifusum</i>	2,5	2,5	2,0	2,0
<i>Ilex aquifolium</i>	2,0	2,0	2,0	2,0
<i>Illecebrum verticillatum</i>	2,5	2,5	2,0	2,0
<i>Jasione montana ssp.</i>	2,5	2,5		
<i>Juncus effusus ssp. effusus</i>	2,0	2,5	2,5	2,0
<i>Laccaria amethystina</i>			0,5	
<i>Lamium maculatum</i>	3,5	3,5	3,5	3,0
<i>Lampides boeticus</i>		0,5		
<i>Lampyrus sp.</i>	0,5			
<i>Lasiommata maera</i>		0,5		
<i>Leontodon taraxacoides ssp. taraxacoides</i>	2,5	2,5	2,5	2,0



<i>Lithodora prostrata ssp. prostrata</i>	2,5	2,5	2,5	2,5
<i>Lonicera periclymenum ssp. periclymenum</i>	3,0	3,0	3,0	3,0
<i>Lotus corniculatus ssp. carpetanus</i>	4,5	4,5	4,0	4,0
<i>Lullula arborea</i>	1,0			
<i>Lycaena alciphron</i>		0,5		
<i>Macrolepiota procera</i>			0,5	
<i>Melittis mellissophyllum</i>	3,0	3,0	3,0	3,0
<i>Mentha suaveolens</i>	2,0	2,5	2,0	2,0
<i>Motacilla alba</i>	1,0	1,0	1,0	
<i>Myosotis stolonifera</i>	4,5	4,5	4,0	4,0
<i>Narthecium ossifragum</i>	4,0	4,5	4,0	4,0
<i>Natrix maura</i>		2,0		
<i>Nemobius sylvestris</i>			0,5	
<i>Olea europaea var. europaea</i>	1,0	1,5	1,0	1,0
<i>Omphalodes nitida</i>	3,5	3,5	3,0	3,0
<i>Ornithogalum concinnum</i>	4,5	4,0		
<i>Ovis aries</i>	0,5	0,5	0,5	0,5
<i>Panorpa meridionalis</i>	0,5			
<i>Pararge aegeria</i>		0,5		
<i>Parus ater</i>				1,0
<i>Parus major</i>	1,0			
<i>Passer domesticus</i>		1,0	1,0	1,0
<i>Pedicularis sylvatica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Petroselinum crispum</i>	1,0	1,5	1,0	1,0
<i>Phoenicurus ochruros</i>	1,0	1,0		1,0
<i>Pinguicula lusitanica</i>	2,0	2,5	2,0	2,0
<i>Pinus pinaster</i>	2,5	2,5	2,5	2,5
<i>Pisaura mirabilis</i>		0,5		
<i>Plagiodera versicolora</i>	0,5			
<i>Plantago lanceolata</i>	2,5	2,5	2,5	2,0
<i>Plebejus argus</i>		0,5		
<i>Podarcis bocagei</i>	2,0			
<i>Podarcis hispanica</i>	2,0	2,0		
<i>Polygala serpyfolia</i>	3,5	3,5	3,5	3,0
<i>Polygala vulgaris</i>	2,5	2,5	2,5	2,0
<i>Polypodium interjectum</i>	3,0	3,0	3,0	3,0
<i>Polypodium vulgare</i>	3,0	3,0	3,0	3,0
<i>Potentilla erecta</i>	2,5	2,5	2,0	2,0
<i>Primula acaulis ssp. acaulis</i>	2,5	2,0	2,0	2,5
<i>Prunella grandiflora</i>	3,0	3,5	3,0	3,0
<i>Psammodromus algerus</i>	2,0	2,0		
<i>Pseudochondrostoma duriense</i>	3,0	3,0		
<i>Pseudophantera macularia</i>		0,5		
<i>Pteridium aquilinum ssp. aquilinum</i>	2,0	2,0	2,0	2,0
<i>Pterospartum tridentatum ssp. cantabricum</i>	3,5	3,0	3,0	3,0
<i>Pyrus cordata</i>	3,5	3,0	3,0	3,5
<i>Quercus pyrenaica</i>	2,5	2,0	2,0	2,0

<i>Quercus robur</i>	2,5	2,0	2,0	2,0
<i>Rana iberica</i>	2,0	2,0	2,0	
<i>Ranunculus bulbosus ssp. alae</i>	3,5	3,5	3,0	3,0
<i>Ranunculus omiophyllus</i>	2,5	2,0	2,0	2,5
<i>Rumex acetosella ssp. angiocarpus</i>	2,0	2,5	2,0	2,0
<i>Rumex sp.</i>	2,5	2,0	2,0	2,0
<i>Ruscus aculeatus</i>	2,0	2,0	2,0	2,0
<i>Russula sp.</i>			0,5	
<i>Salix atrocinerea</i>	2,0	2,0	2,0	2,5
<i>Salmo trutta</i>	5,0	5,0	5,0	
<i>Sambucus nigra</i>	2,5	2,5	2,0	2,0
<i>Saxicola torquatus</i>	1,0	1,0		
<i>Scrophularia scorodonia var. scorodonia</i>	2,0	2,0	2,0	2,0
<i>Saxifraga spathularis</i>	3,5	3,5	3,0	3,0
<i>Sedum anglicum</i>	3,0	3,5	3,0	3,0
<i>Sedum brevifolium</i>	2,0	2,5	2,0	2,0
<i>Sedum hirsutum ssp. hirsutum</i>	2,0	2,5	2,0	2,0
<i>Serinus serinus</i>	1,0		1,0	
<i>Silene vulgaris ssp. vulgaris</i>	2,5	2,5	2,0	2,0
<i>Simethis mattiazii</i>	2,5	2,5	2,0	2,0
<i>Spergularia purpurea</i>	2,0	2,5	2,0	2,0
<i>Spilostethus pandurus</i>		0,5		
<i>Streptopelia decaocto</i>		1,0		
<i>Strix aluco</i>	1,0			
<i>Sylvia undata</i>	1,0	1,0		
<i>Tanacetum parthenium</i>	1,0	1,5	1,5	1,0
<i>Teucrium scorodonia ssp. scorodonia</i>	2,0	2,0	2,0	2,0
<i>Thomisus onustus</i>		0,5		
<i>Thymus caespititius</i>	3,5	3,5	3,0	3,0
<i>Timon lepidus</i>		2,0		
<i>Trifolium pratense ssp. pratense</i>	2,5	2,5	2,0	2,0
<i>Trifolium repens</i>	2,0	2,5	2,0	2,0
<i>Tuberaria globulariifolia ssp. globulariifolia</i>	4,5	4,5	4,0	4,0
<i>Tuberaria guttata</i>	2,0	2,5	2,0	2,0
<i>Turdus merula</i>	1,0	1,0		
<i>Ulex europaeus var ovoideus</i>	4,5	4,0	4,0	4,5
<i>Ulex minor</i>	2,0	2,5	2,5	2,0
<i>Umbilicus rupestris</i>	2,5	2,5	2,0	2,0
<i>Urtica dioica</i>	2,0	2,5	2,0	2,0
<i>Vanessa cardui</i>		0,5		
<i>Veronica officinalis</i>	3,5	3,5	3,0	3,0
<i>Vicia angustifolia</i>	2,0	2,0	2,0	2,0
<i>Vinca major ssp. major</i>	2,5	2,0	2,0	2,5
<i>Viola riviniana</i>	2,5	2,0	2,0	2,0
<i>Vulpes vulpes</i>	1,0		1,0	1,0
<i>Woodwardia radicans</i>	2,0	2,0	2,0	2,0

## Appendix XVI. Species recorded by season for Trail 5 (Plateau Trail) with concerning of their VCS-PRD value.

Species	Spring	Summer	Autumn	Winter
<i>Achillea millefolium</i>	2,5	2,5	2,0	2,0
<i>Aegyptius monachus</i>		5,0		
<i>Agaricus sp.</i>			0,5	
<i>Aglais urticae</i>	0,5			
<i>Agrostis capillaris</i>	2,0	2,5	2,5	2,0
<i>Agrostis castellana</i>	2,0	2,5	2,0	2,0
<i>Ajuga pyramidalis ssp. meonantha</i>	3,5	3,0	3,0	3,0
<i>Alauda arvensis</i>	1,0	1,0		
<i>Amanita muscaria</i>			0,5	
<i>Anas platyrhynchos</i>		1,0		
<i>Anax imperator</i>		0,5		
<i>Andryala integrifolia</i>	2,0	2,5	2,0	2,0
<i>Anthus campestris</i>	1,0	1,0	1,0	
<i>Aquila chrysaetos</i>	4,0	4,0		
<i>Arenaria montana ssp. montana</i>	2,5	2,5	2,0	2,0
<i>Arnica montana ssp. atlantica</i>	3,0	3,5	3,0	3,0
<i>Asplenium trichomanes ssp. quadrivalens</i>	2,0	2,0	2,0	2,0
<i>Betula pubescens</i>	3,0	3,0	3,0	3,0
<i>Blechnum spicant ssp. spicant</i>	2,0	2,0	2,0	2,0
<i>Bolboceras armiger</i>		0,5		
<i>Bos taurus</i>	0,5	0,5	0,5	0,5
<i>Boletus edulis</i>			0,5	
<i>Callophrys rubi</i>	0,5			
<i>Calluna vulgaris</i>	2,0	2,5	2,0	2,0
<i>Campanula lusitanica ssp. lusitanica</i>	2,5	2,5	2,0	2,0
<i>Canis lupus ssp. familiaris</i>	0,5	0,5		0,5
<i>Canis lupus ssp. signatus</i>	4,0	4,0	4,0	4,0
<i>Capra aegagrus ssp. hircus</i>	0,5		0,5	0,5
<i>Capreolus capreolus</i>		1,0		
<i>Carabus amplipennis</i>			0,5	
<i>Castanea sativa</i>	1,0	1,0	1,5	1,0
<i>Cedrus sp.</i>	1,0	1,0	1,0	1,0
<i>Centaurea nigra ssp. rivularis</i>	4,0	4,5	4,0	4,0
<i>Cerastium fontanum ssp. vulgare</i>	2,5	2,5	2,0	2,5
<i>Chamaemelum nobile</i>	2,0	2,5	2,0	2,0
<i>Cicindella campestris</i>	0,5	0,5		
<i>Circaetus gallicus</i>	2,0	2,0		
<i>Circus pygargus</i>	4,0	4,0		
<i>Cirsium filipendulum ssp. filipendulum</i>	2,5	2,5	2,0	2,0
<i>Cirsium palustre</i>	2,5	2,5	2,0	2,0
<i>Cistus psilosepalus</i>	2,0	2,5	2,0	2,0
<i>Coccinella septempunctata</i>	0,5			
<i>Colias croceus</i>	0,5			

<i>Coenonympha glycerion</i>		0,5		
<i>Columba livia</i>	1,0			
<i>Coronella girondica</i>		2,0		
<i>Corvus corax</i>		2,0		
<i>Corvus corone</i>		1,0	1,0	1,0
<i>Crocidura russula</i>	1,0			
<i>Crocus serotinus ssp.</i>			4,0	
<i>Cuculus canorus</i>	1,0			
<i>Cytisus scoparius ssp. scoparius</i>	2,5	2,0	2,0	2,0
<i>Cytisus striatus</i>	2,5	2,5	2,5	2,0
<i>Dactylorhiza maculata</i>	3,0	3,5	3,0	3,0
<i>Dianthus langedanus</i>	4,0	4,5	4,0	4,0
<i>Digitalis purpurea ssp. purpurea</i>	2,0	2,5	2,0	2,0
<i>Drosera rotundifolia</i>	3,0	3,0	3,0	3,0
<i>Dryopteris affinis ssp.</i>	3,0	3,0	3,0	3,0
<i>Echium lusitanicum</i>	4,0	4,5	4,0	4,0
<i>Emberiza cia</i>		1,0		
<i>Enallagma cyathigerum</i>	0,5	0,5		
<i>Epidalea calamita</i>	2,0			
<i>Equus ferus ssp. caballus</i>				
<i>Erica arborea</i>	2,5	2,5	2,0	2,0
<i>Erica australis ssp. australis</i>	2,0	2,0	2,0	2,5
<i>Erica ciliaris</i>	2,0	2,5	2,0	2,0
<i>Erica tetralix</i>	3,0	3,5	3,0	3,0
<i>Erica umbellata</i>	2,5	2,5	2,0	2,0
<i>Eriophorum angustifolium</i>	3,0	3,5	3,0	3,0
<i>Eristalis sp</i>			0,5	
<i>Erodium cicutarium ssp. cicutarium</i>	3,0	3,5	3,0	3,0
<i>Erythromma lindenii</i>		0,5		
<i>Eurhantia plummistaria</i>	0,5			
<i>Falco tinnunculus</i>		1,0		
<i>Galinsoga parviflora</i>	1,0	1,5	1,0	1,5
<i>Galium saxatile var.</i>	3,0	3,5	3,0	3,0
<i>Gallus gallus ssp. domesticus</i>		0,5		
<i>Garrulus glandarius</i>		1,0		
<i>Genista florida</i>	3,0	3,5	3,0	3,0
<i>Geranium molle</i>	2,5	2,0	2,0	2,0
<i>Geranium pyrenaicum ssp. lusitanicum</i>	4,0	4,5	4,0	4,0
<i>Gonioctena olivacea</i>	0,5			
<i>Gryllus campestris</i>	0,5			
<i>Gyps fulvus</i>	2,0	2,0	2,0	
<i>Halimium lasianthum ssp. alyssoides</i>	3,5	3,5	3,0	3,0
<i>Hieracium pilosella ssp. pilosella</i>	3,0	3,5	3,0	3,0
<i>Hirundo rustica</i>	1,0			
<i>Holcus molis ssp. molis</i>	3,0	3,5	3,0	3,0
<i>Hordeum murinum ssp. murinum</i>	2,0	2,5	2,5	2,0
<i>Hyacinthoides non-scripta</i>	3,5			3,0

<i>Hypericum sp.</i>	2,0	2,5	2,0	2,0
<i>Hypochaeris radicata</i>	2,0	2,5	2,5	2,0
<i>Iberodorcadion seoanei</i>	0,5			
<i>Ilex aquifolium</i>	2,0	2,0	2,0	2,0
<i>Jasione montana var.</i>	2,5	2,5		
<i>Juncus effusus ssp. effusus</i>	2,0	2,5	2,5	2,0
<i>Laccaria sp.</i>			0,5	
<i>Lacerta schreiberi</i>	2,0			
<i>Lamium maculatum</i>	3,5	3,5	3,0	3,0
<i>Lampides boeticus</i>		0,5	0,5	
<i>Lanius collurio</i>	2,0			
<i>Leontodon taraxacoides ssp. taraxacoides</i>	2,5	2,5	2,5	2,0
<i>Libellula quadrimaculata</i>	0,5	0,5		
<i>Lissotriton boscai</i>	2,0			
<i>Lithodora prostrata ssp. prostrata</i>	2,5	2,5	2,5	2,5
<i>Lotus hispidus</i>	2,5	2,5	2,5	2,0
<i>Lullula arborea</i>	1,0	1,0		
<i>Macrolepiota procera</i>			0,5	
<i>Malva neglecta</i>	2,5	2,5	2,0	2,0
<i>Malva tournefortiana</i>	3,0	3,5	3,0	3,0
<i>Motacilla alba</i>		1,0		
<i>Narcissus bulbocodium ssp. bulbocodium</i>	2,0			
<i>Ocypus olens</i>	0,5		0,5	
<i>Oenanthe oenanthe</i>	1,0	1,0		
<i>Ornithogalum concinnum</i>	4,5	4,5		
<i>Ovis aries</i>	0,5		0,5	0,5
<i>Passer domesticus</i>	1,0	1,0		
<i>Pelophylax perezi</i>	2,0	2,0	2,0	
<i>Pentodon algerinus</i>	0,5	0,5	0,5	
<i>Pernis apivorus</i>		3,0		
<i>Pinus pinaster</i>	2,5	2,5	2,5	2,5
<i>Pinus sylvestris</i>	3,5	3,5	3,5	3,5
<i>Pisolithus tinctorius</i>			0,5	
<i>Plantago coronopus</i>	2,5	2,5	2,0	2,0
<i>Plantago lanceolata</i>	2,5	2,5	2,0	2,0
<i>Plebejus argus</i>		0,5		
<i>Podarcis bocagei</i>	2,0	2,0		
<i>Podarcis hispanica</i>			2,0	
<i>Polyporus sp.</i>	0,5			
<i>Polygala serpyllifolia</i>	3,5	3,5	3,0	3,0
<i>Polygonum persicaria</i>	2,0	2,5	2,5	2,0
<i>Potentilla erecta</i>	2,5	2,5	2,0	2,0
<i>Prunella modularis</i>	1,0	1,0		
<i>Prunella vulgaris</i>	2,0	2,5	2,0	2,0
<i>Pteridium aquilinum ssp. aquilinum</i>	2,0	2,0	2,0	2,0
<i>Pterospartum tridentatum ssp. tridentatum</i>	3,5	3,5	3,0	3,0
<i>Pyrrhosoma nymphula</i>	0,5	0,5		

<i>Ranunculus bulbosus ssp. alae</i>	3,0	3,5	3,0	3,0
<i>Rumex acetosella ssp. angiocarpus</i>	2,5	2,5	2,0	2,0
<i>Rumex obtusifolius</i>	2,0	2,5	2,0	2,0
<i>Salix atrocinerea</i>	2,0	2,0	2,0	2,0
<i>Sambucus nigra</i>	2,5	2,5	2,5	2,0
<i>Saxicola torquatus</i>	1,0	1,0	1,0	1,0
<i>Scathophoga sp.</i>	0,5			
<i>Scleroderma sp.</i>			0,5	
<i>Scrophularia scorodonia var. scorodonia</i>	2,0	2,5	2,0	2,0
<i>Sedum anglicum</i>	3,0	3,5	3,0	3,0
<i>Sedum brevifolium</i>	2,0	2,5	2,0	2,0
<i>Sedum hirsutum ssp. hirsutum</i>	2,5	2,5	2,0	2,0
<i>Serinus serinus</i>	1,0	1,0		
<i>Simethis mattiazii</i>	2,0	2,5	2,0	2,0
<i>Spergularia purpurea</i>	2,0	2,5	2,0	2,0
<i>Spilostethus saxatilis</i>	0,5			
<i>Stellaria holostea</i>	3,5	3,5	3,0	3,0
<i>Sus scrofa</i>	1,0	1,0		
<i>Sylvia communis</i>	1,0	1,0		
<i>Sylvia undata</i>		1,0		
<i>Synema globosum</i>		0,5		
<i>Teesdalia nudicaulis</i>	2,5	2,0	2,0	2,5
<i>Tremella mesenterica</i>				0,5
<i>Trifolium repens</i>	2,0	2,5	2,0	2,0
<i>Trypocorpis pyrenaicus</i>	0,5			
<i>Tuberaria globulariifolia ssp. globulariifolia</i>	4,0	4,5	4,0	4,0
<i>Tuberaria guttata</i>	2,0	2,5	2,0	2,0
<i>Turdus merula</i>	1,0	1,0		
<i>Ulex minor</i>	2,0	2,5	2,5	2,0
<i>Umbilicus rupestris</i>	2,5	2,0	2,0	2,0
<i>Upupa epops</i>		1,0		
<i>Verbascum simplex</i>	2,5	2,5	2,0	2,0
<i>Veronica officinalis</i>	3,0	3,5	3,0	3,0
<i>Vinca major ssp. major</i>	2,5	2,0	2,0	2,0
<i>Viola palustris ssp. palustris</i>	3,5	3,5	3,0	3,0
<i>Vulpes vulpes</i>	1,0	1,0		1,0
<i>Vipera seoanei ssp. seoanei</i>			4,0	