



# FLORA

FROM THE SERRA D'ARGA  
TO THE FOZ DO ÂNCORA

#### ELABORADO POR



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## Introduction

The Site of Community Importance 'Serra de Arga' is a special conservation area that includes the municipalities of Caminha, Viana do Castelo and Ponte de Lima.

This small brochure is part of a set of materials promoting this region's heritage. The aim is to highlight some of the region's natural and cultural assets while raising awareness about the importance of preserving them.

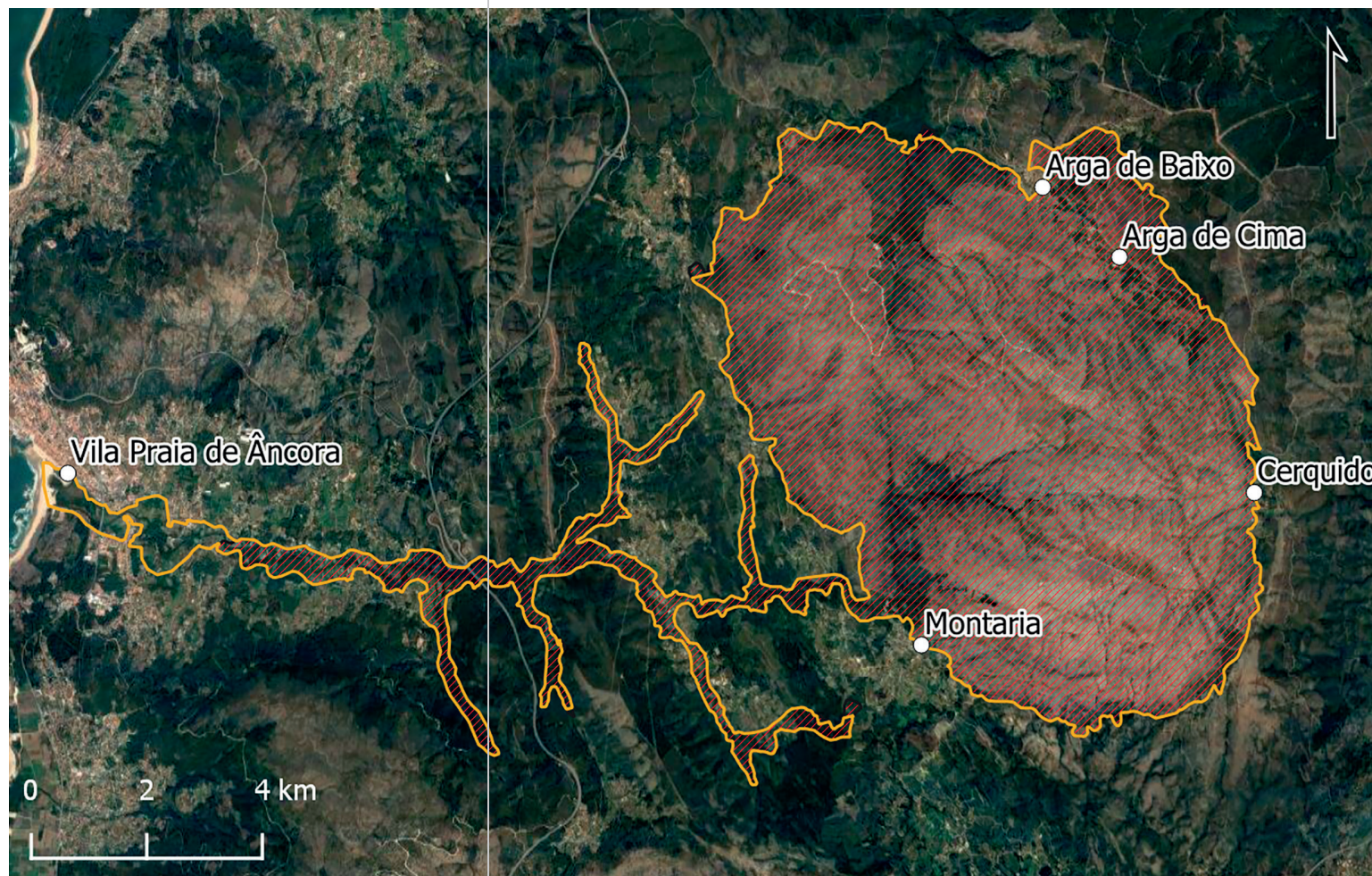
The study of the Serra d'Arga that was conducted in 2017, including the entire River Âncora all the way to its mouth, revealed that this area is extremely rich in flora, with 546 species of vascular plants, the great majority of which are native species.

This brochure highlights this great diversity and emphasises the presence of protected and RELAPE species (Rare, Endemic, Localised and Threatened or Extinct). It also points out spots where you can see some of these emblematic species, along with locations that are worth a visit because of the presence of impressive specimens of other, more common species.



# Description of the area

The area studied in this brochure is the Site of Community Importance (SCI) 'Serra de Arga' (PTCON0039), classified by the Commission Decision of 7 December 2004, which has an area of 4,493 hectares comprising the municipalities of Caminha, Viana do Castelo and Ponte de Lima. However, in the end a broader study area was chosen, including the valley of the River Âncora all the way to the sea. This was in recognition of the importance of the river as an ecological corridor for the existing green infrastructure.



Limits of the study area and the 'Serra de Arga' SCI

- Study Area
- 'Serra de Arga' SCI

Location and limits of the study area and the 'Serra de Arga' Site of Community Importance





From a geological point of view, the Serra d'Arga is a prominent mountainous granite massif with a relatively flat top, mainly surrounded by Silurian schist rocks. Along the River Âncora, from the foothills of the Serra d'Arga to the river mouth, Silurian metasediments give way to a wide range of lithologies, from other schist types to the granite from Vila Praia de Âncora (synthetic two-mica granites) and river and beach deposits.

Different formations are evident in the granite massif in the background and the schist wall in the foreground



At a biogeographic level, the study area is in the Eurosiberian Region, Atlantic-Central European Subregion, European Atlantic Province, Cantabrian-Atlantic subprovince, Galician-Portuguese Sector, Galician-South Portuguese Subsector and Duriminian District. The Duriminian District is mostly dominated by acidic rocks (granites and schists), with an orography that progressively increases inland, standing out on the coast the Serra d'Arga at an altitude of 825 metres. In bioclimatic terms it is a temperate, hyper-oceanic or oceanic area, located in the Mesomediterranean zone, which is thermally protected in coastal regions and valleys of Minho and Lima and meso-temperate in the highest zones. The climatic vegetation consists of meso-temperate and thermophilic common oak trees (*Quercus robur*) with butcher's broom (*Ruscus aculeatus*), not often found in the area, and patches of hairy-fruited broom (*Cytisus striatus*) with common gorse (*Ulex europaeus* subsp. *latebracteatus*) and alder buckthorn bushes (*Frangula alnus*) with wild pear (*Pyrus cordata*). In scrub areas there is the endemic common gorse in granites and gorse (*Ulex micranthus*) with heather (*Erica umbellata*) in schists. In more humid soils there are hygrophilous heaths with Dorset heath (*Erica ciliaris*). Annual grasslands are often found in a mosaic of mesophilic heathlands dominated by sandy stonecrop (*Sedum arenarium*). The alder woodlands are the most common riparian forests.

Plateau area of the Serra d'Arga, with mesophilic and hygrophilous heathlands intersected with grasslands (above)

Middle section of the River Âncora, with woodlands in which the undergrowth is dominated by the royal fern (*Osmunda regalis*) (below)





# Floristic heritage



## Floristic diversity

The Serra d'Arga, including the River Âncora, is an area with a wide variety of flora in which 546 species have been identified. In the nearby Peneda-Gerês National Park, which is about 15 times larger, the total number of plant species is not much higher (about 700).

The floristic richness of this area varies considerably, with greater biodiversity along the middle and final sections of the River Âncora and its main tributaries than on the higher ground. In the lower areas of the Âncora valley, such as in the north-east (encompassing the settlements of Arga de Cima and Arga de Baixo), there is a great diversity of biotopes – with urban environments, farmlands and/or meadows, including riparian galleries and sometimes even heaths, which provide a wide variety of habitats for different plant species with different ecological characteristics. The landscape of the high part of the Serra d'Arga features only heaths, rocky outcrops and some small water-courses, and in geological terms consists only of granite, making it more uniform than the lower areas.

Contrast between the lowland area with a wide variety of vegetation and the high area of the Serra d'Arga with sparse and more homogeneous vegetation



In the Serra d'Arga there are 476 native species and 70 naturalised or sub-spontaneous exotic species (plants that are propagated without human intervention shortly after their initial introduction). Most (87%) of the plant species found in the area are native flora.

These include 18 seedless vascular plants (*Lycopodiella inundata* and 17 ferns), five conifers (four species of pine trees and one cypress) and 523 flowering plants (Angiosperms).



*Lycopodiella inundata*  
(left)

Oak fern (*Davallia canariensis*)  
(next page)







Scots pine  
(*Pinus sylvestris*)



Angel's tears  
(*Narcissus triandrus*)



Of these, 32 are considered RELAPE (Rare, Endemic, Localised and Threatened or in Danger of Extinction), and it should be noted that some are protected species.

- Figwort (*Scrophularia bourgaeana*), endemic to the Iberian Peninsula, previously seen only once in Portugal – over 40 years ago in the Ramiscal valley in the Serra do Soajo mountains – until recently discovered in the Serra d'Arga. Although the population identified has more than a dozen individual plants, they are located in a small area, which makes this one of the rarest plants of Portuguese flora.

- *Carex durieui*, endemic to the Iberian Peninsula, can only be found in small populations in four places in Portugal, the largest probably being in the Serra d'Arga on three locations.

- Fragrant thrift (*Armeria humilis* subsp. *odorata*), endemic to the Iberian Peninsula and very scarce, existing only in the Serra d'Arga and in some higher mountains in the Minho region and southern Galicia.

- *Laserpitium prutenicum* subsp. *durianum* is only found in Portugal in the Serra d'Arga and its surrounding area.

Fragrant thrift  
(*Armeria humilis* subsp. *odorata*)







Figwort  
(*Scrophularia bourgaeana*)



*Carex durieui*





*Genista berberidea*

- *Genista berberidea*, endemic to the north-west of the Iberian Peninsula. In Portugal occurs in the northwest quadrant near the coastline, the population in the Serra d'Arga being the largest in the country.

- *Succisa pinnatifida*, mainly found in Portugal, where they are particularly abundant in the north. In Spain it can only be found in the south of Galicia.

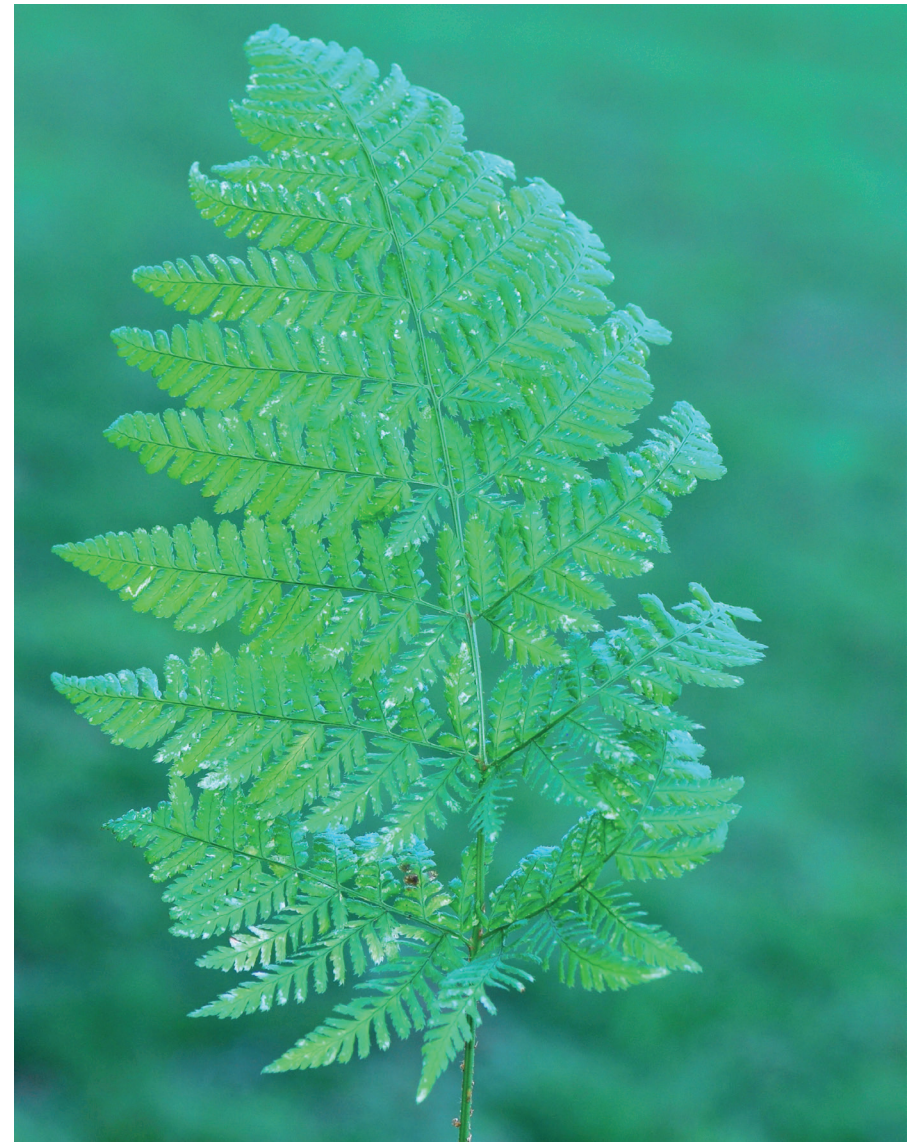
- *Dryopteris guanchica*, a fern found in Macronesia and in the west of the Iberian Peninsula. In Portugal it is known to be found in only three places: Valongo, the Serra do Gerês and the Serra d'Arga (along the River Âncora between Trás-Âncora and Espantar).

- *Dryopteris carthusiana*, a fern that is more common in northern Europe, but in Portugal it is known to be found only in Valença and the Serra d'Arga (on the Tourim bridge in Amonde).

*Dryopteris guanchica*



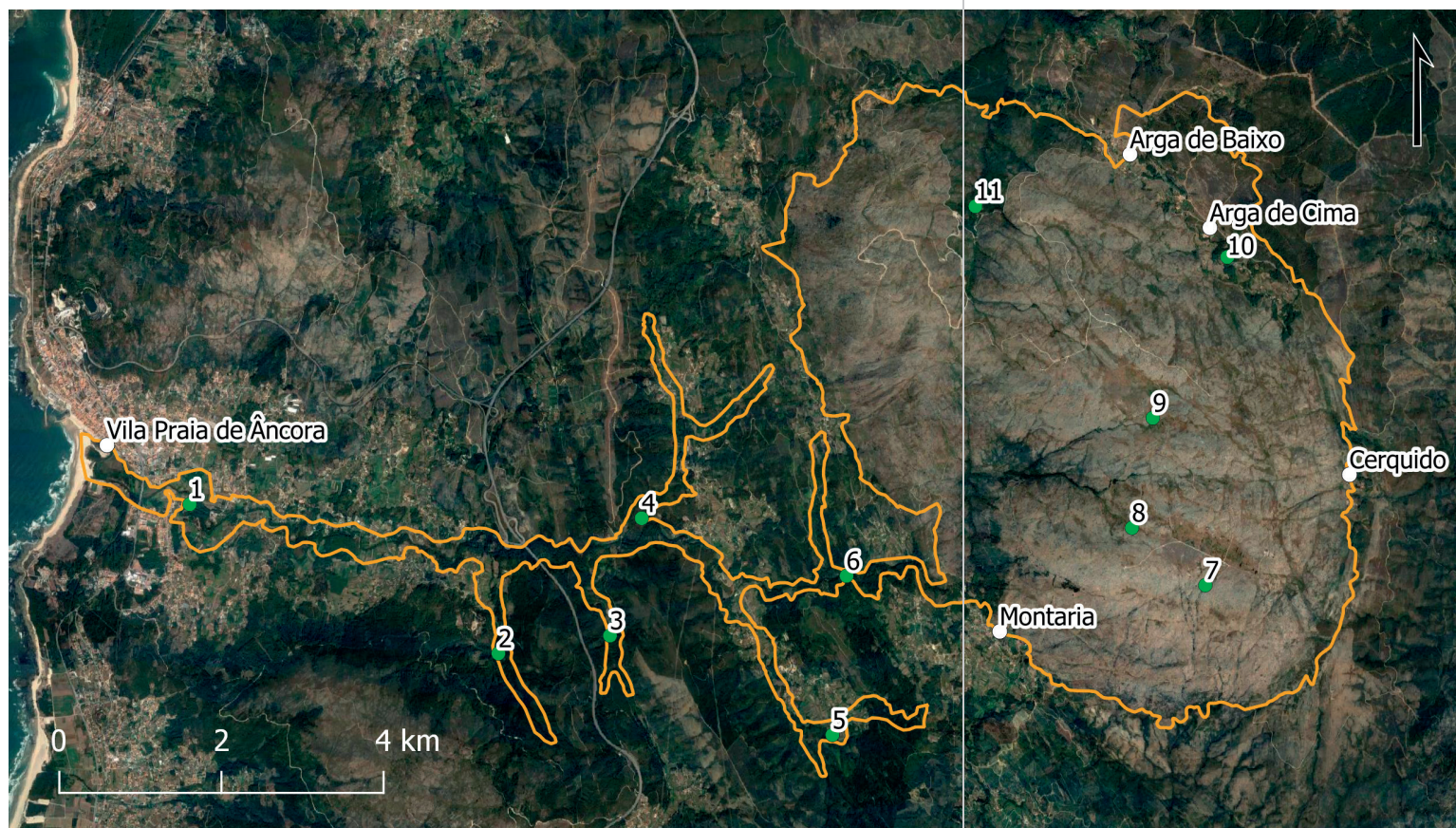




*Dryopteris carthusiana*  
(above)

*Succisa pinnatifida*  
(left)





- Places of interest
- Study area

#### Places of interest

There are many places of interest in the Serra d'Arga where you can find a wide range of flora and several RELAPE species. There are also places where you can see large trees or shrubs, or habitats that are rare or possess unusual characteristics. Some of these locations are described next.





Oak woodland



Carry me seed (*Aquilegia vulgaris* subsp. *dichroa*)

#### Location 1

##### Oak woodland with wet meadows and riparian alder woodland

Near the end of the River Âncora there is a small group of common oaks (*Quercus robur*) with butcher's broom (*Ruscus aculeatus*) and *Luzula sylvatica*. This spot is in the midst of farmlands and wet meadows, in an area where there has been significant human impact. Oak woodlands are rare in these lowland areas, especially in locations with high agricultural potential. Of particular interest are the wet meadows surrounding the oak woodland and the tall grasses with the beautiful columbine (*Aquilegia vulgaris* subsp. *dichroa*) that appear in the fringes between the forest and the meadows.



## Location 2

### Hazel woodlands with large hazel trees

In an area below the Senhora da Cabeça Chapel you can see large hazel trees, over 10 metres high. These hazel formations are part of habitat 9160 – mesotrophic deciduous forests, subtype pt2 – hazel woodlands, which used to be very rare in Portugal but have recently been expanding due to the decrease in the area used for farming.



Hazel woodlands with large hazel trees (above)

Interior of the hazel woodlands (left)



### Location 3

Meadows with bastard balm (*Melittis melissophyllum*), and surrounding areas with *Lepidophorum repandum* and *Laserpitium prutenicum*

In the spring, at the edge of a meadow between the EN 302 and A28 roads, you can see bastard balm (*Melittis melissophyllum*) and a beautiful nucleus of Solomon's seal (*Polygonatum odoratum*).

Bastard balm is used for medicinal purposes and was grown in abundance in the past but its preference for oak woodlands makes it currently rare in Portugal. In the pine forest between the road and the meadow you can see two more species that are rare in Portugal: *Lepidophorum repandum* and *Laserpitium prutenicum*.

Bastard's balm  
(*Melittis melissophyllum*)  
(next page)

Solomon's seal  
(*Polygonatum odoratum*)  
(below)





#### Location 4

##### Pine forests with *Scorzonera humilis* and *Succisa pinnatifida*

In pine forests on schist soil near Orbacém, you can see *Scorzonera humilis* and *Succisa pinnatifida*, two rare species in Portugal.



*Succisa pinnatifida*  
(above)

*Scorzonera humilis*  
(right)



#### Location 5

##### Laurel forest with holly

Near to Amonde there is a laurel forest that is part of priority habitat 5230 - Arboreal scrublands of *Laurus nobilis*, subtype 1 - laurel forests. In these laurel forests you can see holly (*Ilex aquifolium*), which is relatively scarce and a protected species. Like laurel it is a lauroid tree, but it has adapted to cooler climates whereas laurel needs warmer temperatures.

Laurel and holly







Pincho waterfalls  
(above)

Hoop petticoat daffodils  
(*Narcissus bulbocodium*)  
seen at the end of winter  
and beginning of spring



*Ranunculus bupleuroides*



*Saxifraga lespimigena*

## Location 6

### Pincho waterfalls with a wide variety of RELAPE species.

On embankments and rocky walls near the waterfalls you can see the endemic *Saxifraga lespimigena*, and in a damp area a bit further up, *Linkagrostitis juressi*, *Pinguicula lusitanica*, hoop petticoat daffodils (*Narcissus bulbocodium*), as well as *Succussa pinnatus* and *Ranunculus bupleuroides* in rocky outcrops. These last two species are almost Portuguese endemisms because they occur mainly in Portugal

with only small populations in Spain. The rare grass *Linkagrostitis juressi* is named after Heinrich Friedrich Link, who at the end of the 18th century discovered a new plant in the Serra do Gerês that he called *Agrostis juressi*. Afterwards it was not found again in that area until very recently, although the largest Portuguese population is found in the Serra do Formigoso near Ponte de Lima.



## Location 7

### Wet heaths with *Carex durieui* and two species of insectivorous plants.

In the Serra d'Arga, relatively close to the Senhora do Minho sanctuary, you can see wet heaths with peat moss normally found in very damp areas where acidification of the substrate makes these environments unfavourable for most plants due to low levels of nitrogen and phosphate. Insectivorous plants have developed the ability to capture and digest insects in order to compensate for the deficiency in phosphate and potassium in these types of habitats. Insectivorous plants like *Pinguicula lusitanica* and sundew (*Drosera rotundifolia*) are often associated with pioneer peat bogs. The first has sticky leaves at the top where the insects are trapped, and sundew has leaves that produce an adhesive substance in extensions of tentacle-like leaf edges. This endemic plant (*Carex durieui*) is critically endangered by the disappearance of its habitat. Subpopulations found in lowland areas with high human occupation have continuously disappeared and the population in the Serra d'Arga is the largest in Portugal. Nearby you can also see the fragrant thrift (*Armeria humilis* subsp. *odorata*), which is endemic to the area and very scarce.

Peat substrate (habitat 7150)  
with a lot of sphagnum (above)

Two species of insectivorous  
plants: *Pinguicula lusitanica* and  
*Drosera rotundifolia* (below)







Peat bog (above)

Sundew (*Drosera rotundifolia*)  
with insects (previous page)

## Location 8

### Peat bog with *Carex durieui* and two species of sundew

Although peat bogs might have been common in the past, this is now the only one remaining in the Serra d'Arga. Peat bogs develop due to the growth of sphagnum (*Sphagnum* sp. pl.), a moss that plays the role of 'ecosystem engineer' because it changes its surrounding environment. In fact, without sphagnum there would be no acidification of the substrate and consequently no bogs. This bog is composed of sphagnum moss, where small shrubs of *Erica tetralix* grow, and more open areas covered by a sphagnum moss carpet with hundreds of sundews (*Drosera rotundifolia* and *Drosera intermedia*) and *Carex durieui*.





Wet heaths dominated by  
*Genista berberidea*

#### Location 9

##### Chã with wet heaths, *Carex durieui* and *Arnica montana*

The flat areas at the top of the Serra d'Arga have a very interesting toponymic name, being referred to as chãs by the locals. They are probably old peat bogs that were drained to provide grazing areas for livestock. Here you can find the best examples of various types of habitat, from water-courses poor in nutrients with amphibian vegetation, wet heaths with *Genista berberidea* and mountain meadows called cervunais. In these grasslands you can see plants such as arnica (*Arnica montana* subsp. *atlantica*), with its beautiful yellow flowers, which has a medicinal use as it is

often used to treat bruises. You can also find the endemic *Carex durieui*, a species highly endangered due to the disappearance of its habitat.



Arnica (*Arnica montana*  
subsp. *atlantica*)





#### Location 10

##### **Figwort (*Scrophularia bourgaeana*) beside an oak woodland**

In Arga de Cima you can see an endemic species of figwort (*Scrophularia bourgaeana*), which is one of the rarest species in Portugal and endemic to the Iberian Peninsula. Apart from here it has only been seen in one other location — in the Ramiscal valley in the Serra do Soajo in 1978. Two specimens were found here in cracks in a wall, and more than a dozen on the stony banks of the stream that runs through the village. On a hill between the two locations of this species, the village wall and the banks of the stream, there is a lush oak woodland consisting mainly of common oak (*Quercus robur*).

Oak woodland





## Location 11

### Centenary cork oaks

Beside the São João d'Arga Monastery there are five centenarian cork oaks, including one whose trunk is an impressive 1.35 metres in diameter at chest height and could be considered a monumental tree. This cork oak has two species of ferns growing on its branches, *Polypodium interjectum* and *Davallia canariensis*. It is unusual to see two different species growing on the same tree, especially the hare's foot fern (*Davallia canariensis*) which is a rare species.





### Threats

Although the Serra d'Arga has great biodiversity, it faces two major threats in the form of frequent fires and invasive alien species. The fires have caused the upper reaches of the Serra d'Arga to become treeless apart from the small pine forests planted by forestry services, with the overall vegetation quite uniform and poor. In the lowlands and intermediate regions, fires contribute to the propagation of invasive alien species such as acacia (*Acacia* sp. pl.) and *Hakea decurrens* subsp. *physocarpa*. The latter occupies large parts of the schist areas of the Serra d'Arga and is a pyrophyte, meaning that it is associated with fires. Its fruits are very hard and fire-resistant, releasing their seeds immediately after the fires when competing species have perished.

Silky hakea (*Hakea decurrens* subsp. *physocarpa*)



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Duarte Silva and Paulo Alves, except:

João Almeida: photograph of centenary cork oaks  
(pages 44 and 45)

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