

The Desert de les Palmes Nature Reserve is located on the southwestern zone of the province of Castelló, covering part of five municipal areas: Benicassim, Cabanes, La Pobla Tornesa, Borriol and Castelló de la Plana. It is part of the coastal mountain range of the Plana Alta county, parallel to the coast, with many crests and rocky outcrops, and is surrounded by a coastal plain and by valleys on the inland side.

The protected surface area takes up a total amount of 3200 Ha. The relief is abrupt and reaches its maximum level at Bartolo peak, with 729 m.

From the geological standpoint the massif of the Desert de les Palmes and the Serra de les Santes form part of a large anticlinal fold in which Palaeozoic rock constitutes the core of the structure. This is seen to be covered by a basically detritic Triassic series (red sandstone). The Jurassic and Cretaceous strata, basically carbonated, appear over the Triassic. The whole structure is seriously affected by a NNE fault system.

The climate of this area is characterised by its clearly Mediterranean features, but its situation close to the sea nevertheless means that there are special weather conditions due to the eastern winds, which come loaded with humidity and cause the usual presence of mist and allow the existence of damper microclimates.

The annual average temperature at the peak of the Bartolo is 13.4 °C. The maximum levels reach 30 °C in July and August, dropping to the minimums of -5 °C during the winter, when there may be some slight snowfall.

The average annual rainfall is around 600 mm, with maximums in spring (May) and at the end of summer-autumn (September). This rain is sometimes torrential, which can lead to erosion problems in areas with little plant cover.



Imperial owl (*Bubo bubo*)

## Fauna

The wide range of environments found in the Desert de les Palmes Nature Reserve allows the existence of diverse fauna communities all over it and includes some interesting species as regards their biogeographical distribution in the Valencian Community.

Amphibians are represented by the natterjack (*Bufo calamita*), common toad (*Bufo bufo*), midwife toad (*Alytes obstetricans*) and the common frog (*Rana perezi*). The reptiles include the ocellated lizard (*Lacerta lepida*), lacertid lizard (*Psammotromus algirus*), Iberian wall lizard (*Podarcis hispanica*) and Bedriagai's skink (*Chalcides bedriagai*) and as regards ophidians we could mention the horseshoe whip snake (*Coluber hippocrepis*), the ladder snake (*Elaphe scalaris*), Montpellier snake (*Malpolon monspessulanus*) and the smooth snake (*Coronella meridionalis*).

In the Desert de les Palmes Nature Reserve over 120 species of birds have been seen, this being the most numerous group of vertebrates.

In the rocky crags one can find Bonelli's eagle (*Hieraaetus fasciatus*), peregrine falcon (*Falco peregrinus*), common kestrel (*Falco tinnunculus*), imperial owl (*Bubo bubo*), wheatear (*Oenanthe leucura*), blue rock thrush (*Monticola solitarius*), rock thrush (*Monticola saxatilis*) or crow (*Corvus corax*). In the woody areas there are sparrowhawks (*Accipiter nisus*), wood pigeons (*Columba palumbus*), long eared owls (*Asio otus*), green woodpeckers (*Picus viridis*), wrynecks (*Jynx torquilla*), wrens (*Troglodytes troglodytes*), firecrests (*Regulus ignicapillus*), common crossbills (*Loxia curvirostra*). In the bushy zones it is common to find the common partridge (*Alectoris rufa*), Sardinian warbler (*Sylvia melanocephala*), Dartford warbler (*Sylvia undata*), stonechat (*Saxicola torquata*) and black-eared wheatear (*Oenanthe hispanica*). Birds associated with crops are the Scops owls (*Otus scops*), little owl (*Athene noctua*), turtle dove (*Streptopelia turtur*), greenfinch (*Carduelis chloris*) and goldfinch (*Carduelis carduelis*).

Amongst the mammals worthy of mention are the boar (*Sus scrofa*), rabbit (*Oryctolagus cuniculus*), squirrel (*Sciurus vulgaris*), hedgehog (*Erinaceus europaeus*), several species of bats and carnivores such as the genet (*Genetta genetta*), the stonemarten (*Martes foina*), the least weasel (*Mustela nivalis*), the badger (*Meles meles*) and the fox (*Vulpes vulpes*).



Fan palm (*Chamaerops humilis*)



Butcher's broom (*Ruscus aculeatus*)

## Flora

The original vegetation of the Reserve consisted of the coastal evergreen oak groves and the cork oak groves (in siliceous and damp zones of the spot), with deciduous trees in the best shady zones. Due to the farming transformation of the soil, charcoal use, grazing and fires, there are only small clumps or isolated clumps of evergreen or holm oaks and cork oaks, as occurs with the northeastern side of the Agujas de Santa Águeda, in the shady area of La Pobla Tornesa and in Les Santes.

Fires have led to the deforesting of particular zones of the Reserve, which is why what we see today here is a plant community in the regeneration stage where diverse degrees of development can be found.

Nevertheless, we can indeed find a large number of bushes typical of these primitive woods, such as the strawberry tree (*Arbutus unedo*), spring snowflake (*Viburnum tinus*), heather (*Erica arborea*), spurge flax (*Daphne gnidium*), Italian buckthorn (*Rhamnus alaternus*), butcher's broom (*Ruscus aculeatus*), juniper (*Juniperus oxycedrus*), mastic (*Pistacia lentiscus*) and the fan palm (*Chamaerops humilis*), or climbing plants such as the wild madder (*Rubia peregrina*), ivy (*Hedera helix*) or sarsaparilla (*Smilax aspera*).

Through the present forestry repopulation being carried out in the Reserve, the primitive woods will once more be able to flourish here.

At present, most of the territory is made up of different kinds of bush (kermes oak, rockrose, gorse, rosemary, heather etc.), and to a lesser extent, by formations of



Miravet castle, north side

pine trees with such species as the maritime pine (*Pinus pinaster*), which only grows in the siliceous ground of red sandstone, and the Aleppo pine (*Pinus halepensis*) which lives in any kind of soil. Due to their facility for disseminating their seeds, pine trees have gradually colonised abandoned farming zones.

There is a vast botanical complexity in the bush areas populating the "Desert", but amongst others some of the more significant species are rosemary (*Rosmarinus officinalis*), thyme (*Thymus vulgaris*), small-flowered gorse (*Ulex parviflorus*), heather (*Erica multiflora*), kidney-vetch (*Anthyllis cytisoides*), white rockroses (*Cistus albidus*) and black rockroses (*Cistus monspeliensis*). There are also some species of endemic, rare or endangered plants whose conservation is extremely important, such as the case of *Leucosium valentinum*, *Cytisus villosus*, *Crassula campestris*, *Biscutella calduchii*, *Minuartia valentina*, etc., some of which are found in the flora microreserve of Agujas de Santa Agueda.

## History

It might call one's attention that these mountains should be called a desert when these are doubtlessly the areas with the lushest vegetation in the whole surroundings.

The term's origins are actually historical and nothing to do with the landscape, as in 1697 a community of Carmelite monks settled in this area, and their order uses the term deserts for places dedicated to spiritual retreat far from worldly hubbub. And since in this zone there are in particular plenty of fan palms (*Chamaerops humilis*) the whole area began to be called Desert de les Palmes.

The presence of the Carmelites has left two of the most interesting buildings in the area: the former Monastery and the new Monastery where the monks live today.

The area also has a number of ruins and buildings of particular interest such as the castles of Miravet and Montornés, the Santes chapel and above all the Castell Vell and the Magdalena chapel, the former location of the town of Castelló before it was moved down to the plain.

The prevalent farming in the area contrasts with what is found in the nearby lowlands, where only orange trees are cultivated. Here there is a predominance of almond, carob and olive trees, with fruit trees around Cabanes. These are mainly non-irrigated land crops able to get through the hard drought periods.

Cattle farming is based mainly on flocks of sheep and goats. At present extensive stockbreeding has practically disappeared, with only the sporadic rearing of fighting bulls being left.



### Pico del Bartolo route (yellow route)

Walk up the highest peak in the Desert de les Palmes. Duration there and back 2.5 hours - ascent: 330 m.

This route will give you a chance to get a general view of the mountains in the Desert de les Palmes, with a walk up the highest peak in this area, the Pico del Bartolo, 729 m. in height.

This route starts off from the Information Centre along a path which climbs up little by little amongst a dense and highly-varied bush vegetation in which you can see different species of rockrose (*Cistus monspeliensis*, *C. albidus*, *C. salvifolius*), strawberry trees (*Arbutus unedo*), lentisks (*Pistacea lentiscus*), junipers (*Juniperus oxycedrus*), rosemary (*Rosmarinus officinalis*), etc.

The path comes out onto an earthen track. At this point, where you should turn right, you can see in

front of you the striking Mola del Morico (694 m.). You go on walking and roughly 300 m. away you will find the Font de la Mola spring to let you sate your thirst. A little further on you should take the track which turns to the right and which will take you through some vegetation in a state of natural regeneration, amongst which you will find mainly stone pines (*Pinus pinaster*) and some specimens of cork oak (*Quercus suber*).

#### stop 1

from this point you will see the Plain, the Serra d'Espadà mountain range and the port of Castelló. Observe the different colours seen in the rocks, differentiating the grey limestones from the red of the sandstone.

Continuing along the track you will go by the Mas de Huguet, a typical traditional rural dwelling.

#### stop 2

About 50 m. further on, you will come to a tarmac road which will take you up to the top. You can also head back down from this point if you turn right and follow the signs.

If you opt for continuing up to the top, you should take the tarmac road up for 1500 m and leave the Cruz del Bartolo behind on the left, going on as far as the vantage point (stop 3).

#### stop 3

From here you can see the two slopes of the mountain, not only the Plain and the beaches, but also the mountains of the Maestrat area, the Pla de l'Arc plain and the whole inland Castellón zone. The villages of Cabanes, La Pobla Tornesa, Vall d'Alba, etc., Les Agulles de Santa Àgueda in the east, the Prat de Cabanes-Torrelblanca Nature Reserve in the northeast, the Espadán range Nature Reserve to the southeast, the peak of Penyagolosa in the northwest. On clearer days you may make out on the horizon the lovely silhouette of the Columbretes Islands, a Nature Reserve and further south, the Cape of Sant Antoni, in El Montgó Nature Reserve.



Path towards the 'Bartolo' up the mountain side

If you go on roughly three hundred metres along the track, you will come to the highest point on the route and in the whole Nature Reserve, 729 m. in height. On the peak you will find the Ermita de San Miguel chapel.

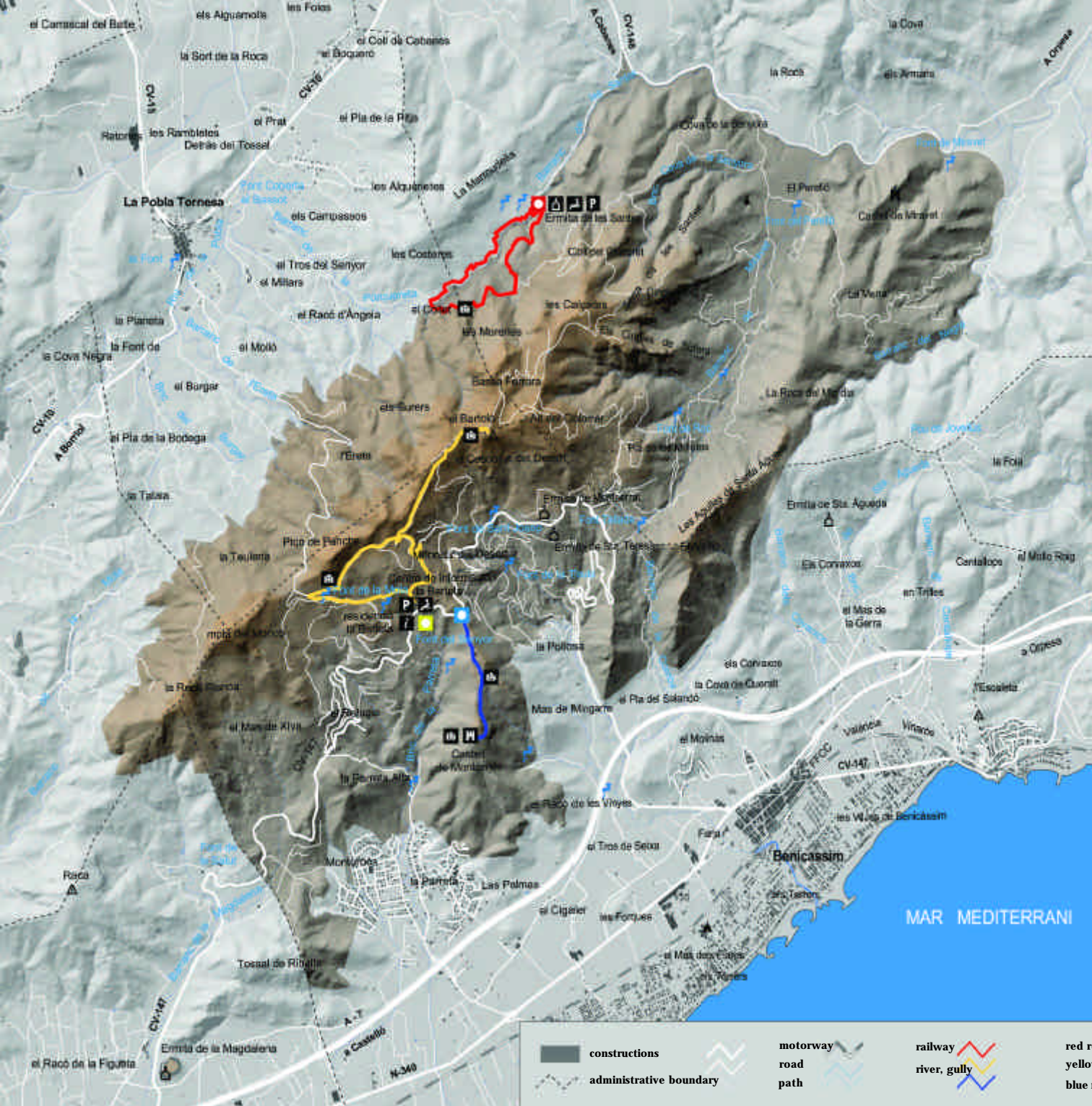
On this walk you may well catch a glimpse of such birds as Eurasian kestrels, crows, hoopoe birds and swallows, as well as a large variety of butterflies and other insects, depending on the time of year. With luck you may observe in the heights the watchful guardian of these lands, the important Bonelli's eagle (*Hieraetus fasciatus*), considered as being "vulnerable" in the Catalogue of Protected species.

The way back down is by the road. You will cross a zone of limestone rock with a prevalence of Aleppo pine (*Pinus halepensis*), until reaching a sign which will send you off to the right. On this track you will find a row of stone pines (*Pinus pinaster*), with much

larger leaves and pinecones than those of the Aleppo pine, which indicates that the characteristics of the soil have changed, that you are back in the red sandstone area.

Continue along your route until reaching the ruins of a wall which has for years been guarding the lands of the Carmelite monks. From this point you will see, down below, the Porteria Vella, the gateway for access to the Monastery and where still today there is the Ermita del Carmen chapel and the remains of an Antro (place of prayer.) This is a good point to admire the new Carmelite Monastery, of the religious order which gave this spot its name of Desert de les Palmes. This new monastery was built after heavy rain destroyed the old building, founded in 1697.

From here you should go on back to the Information Centre, the end of this route.



- constructions
- administrative boundary
- motorway
- road
- railway
- river, gully
- path
- red r
- yellow
- blue



### Montornés castle route (blue route)

This route leads you to one of the most ancient historical sites in the zone - Montornés Castle.

Approximate duration: 2 hours - ascent: 40 m.

The route starts beside Nuestra Señora del Carmen station, located at around 500 m. from the Information centre car park, leading to the Monastery and at an altitude of 459 m.. The path starts by crossing the slope of the mountain which drops down to Parreta Ravine.

Over the whole route you can enjoy a wonderful panorama: ravines, the Plain, the Espadán mountain range, Castellón port. You can observe the curious colouring of the rock, differentiating the grey ones of the limestone, from the red shades of sandstone.

The path winds through dense shrubland in which there are species such as the black rockrose (*Cistus monspeliensis*), white rockrose (*Cistus albidus*), mastic (*Pistacea lentiscus*), juniper (*Juniperus oxycedrus*), rosemary (*Rosmarinus officinalis*) etc. Small outcrops of trees, such as the Mediterranean pine (*Pinus pinaster*), give you an idea of what the woods that formerly covered these areas must have been like. You will also find some specimens of holm or evergreen oaks (*Quercus ilex*).

As you go on and the countryside opens up towards the north, one of the watchtowers on your right will be seen standing on the limestone rock of the Risco de Gorrís and further on, on the coast, the Bellver Tower (Oropesa), both situated in strategic points from which they could dominate both land and sea.

#### Stop 1

This is a good point to get your breath back while observing the castle and watchtower. From here you can make out the Plain and the beaches of Benicasim and Castellón, the Serra d'Espadà Nature Reserve in the South-west and further to the south, San Antoni point in El Montgó Nature Reserve. The Mediterranean pines providing the shade at this vantage point have large pinecones and leaves, something which differentiate this variety from other pines.

From this point on the path drops a few metres to then regain altitude close to the Castle. At the lowest point there is a radical change in the type of ground on which you are treading: reddish sandstone, a Triassic material dating back roughly 200 million years, gives way to limestone, in grey shades and with geological characteristics totally different to the previous rock. These materials were deposited on the red sandstones over 150 million years ago.





B. Albaladeh

Coming up to the watchtower

Along with the change in the type of soil, the type of vegetation will also change, there being close to the castle wall many specimens of tree mallow (*Lavatera maritima*). The pine trees that you find will no longer be Mediterranean but Aleppo pine.

Continuing with your itinerary, on the right there is a path which you would take to go up to the tower. You head towards the wall, following the indications carefully as there are a lot of forks. One point of reference is a lovely holm oak whose shade you will go through.

In the wall you can see two gaps, and the path you are following takes you farther up to the right and the larger one, through which you go into the castle ruins. This is a really photogenic point. Among bladder-senna (*Colutia arborescens*), anthyllis shrub (*Anthyllis cytisoides*), fan palms (*Chamaerops humilis*) and some specimens of trees that were formerly cultivated such as the olive tree, you gradually skirt the mountain until you reach



B. Albaladeh

Close-up of the Moslem cistern with the watchtower on the right

the final point of the itinerary, in the east of the castle.

## Stop 2

Just at this point there is one of the two well-conserved cisterns that were built in the castle, a Moslem invention which was used to ensure a water supply for the inhabitants. Built in the tenth century, when the Moslems dominated the territory absolutely, it has seen 1000 years of history go by before it. It has been a silent witness of important events such as the possible encounter between King Peter I of Aragon and the unbeaten knight Rodrigo Diaz de Vivar, "el Cid Campeador", around 1094. It then fell back into Saracen hands until it was finally conquered by Jaume I in 1242, to then go into the hands of Christian nobles.

Go back following the same signs as you used to get to this point.



Les Santes chap

### Les santes route (red route)

This route covers one of the coolest zones in the whole surroundings. Approx. length: 2 hours - ascent: 150 m.

The walk starts at the Ermita de les Santes, a chapel which is located in the ravine with the same name, in the municipal boundaries of Cabañes. It was built as a place of worship and pilgrimage consecrated to saints Lúcia and Àgueda. At present, the chapel has a leisure zone and a spring from which cool water, very highly-appreciated by the locals, gushes.

You start from the rear of the chapel along the track heading southwest. A long part of this track acts as the frontier of the Nature Reserve. The land that you will see on your left is part of the protected area. The paths starts leading gently upwards among pine trees and bushes. Heather, mastic, strawberry trees and fan palms turn this pine wood into a sort of impenetrable

jungle in many points. You will soon see how on your right the vegetation is replaced by terraces where mainly almonds and carob trees are grown. On the left the ravine becomes deeper and among the thick Mediterranean pine (*Pinus pinaster*) woods great bushes of fern (*Pteridium aquilinum*) appear, with numerous climbing plants such as honeysuckles (*Lonicera implexa*) and the sarsaparrilla (*Smilax aspera*), etc. The track continues sprinkled with a large number of elms, silent witnesses to what these pine woods once were.

You soon come to one of the most geologically interesting zones in the whole area. The track leads over an outcrop of slate, the oldest rock that can be observed forming the base for the Valencia area, where it is not easy to find this type of formation. These are slates from the Palaeozoic era, dating back over 230 million years. On our right you can see huge limestone crags, the Marmudella, where good binoculars will let you see some cliff birds (crag martins, lesser kestrels...).



One of the oaks (*Quercus faginea*) that grow in front of the chapel

You will come to one of the highest points in the route, 400 metres over sea level. This is a good time to admire the peaks of the Bartolo, the green shady areas of La Pobla and the eye-catching rocky formations where the sandstone colours the landscape red.

Turn left along a path and among rockrose bushes gradually head into the thick pine wood. On the right you can see the Porquereta ravine and in the background the village of La Pobla Tomesa.

The route continues along the red ground, leaving on the right a steep but beautiful path which will take you to the Bartolo. The vegetation gradually thickens and you can feel the coolness of the atmosphere. The presence of honeysuckles, ivy and sarsaparillas vouches for the humidity of these ravines. On the slope on the right you can see the many strawberry trees and admire their leaves glistening in the sun.

### Stop 1

At this point you can observe the different mountains. To the west, in the distance there is the Penyagolosa (1,813 m.) and in front of you, Les Santes Ravine gives you the view of a wood in a good state of preservation.

There are numerous animals living in these parts, as you will see through the marks you will find all over the route: droppings of genets (*Genetta genetta*), stone marten (*Martes foina*) and foxes (*Vulpes vulpes*), woodpigeon (*Columba palumbus*) feathers, tracks, etc. One very obvious example of animals' presence are the mudbaths, where the boar (*Sus scrofa*) enjoys a wallow to remove its parasites, then rubbing itself against the trunks and covering them with mud.

This section is an outstanding place through the presence of many different types of rockrose, special mention being deserved by the big rock rose (*Cistus populifolius*).

After following the path along a flat section and then dropping down to the track which comes from the Bartolo, you turn to the left. The track leads through a pine wood which gradually gets thicker, with a greater variety of species and size. In the shadier ravines there are specimens of mastics and strawberry trees of over 5 metres in height.

Following the track, you will come to the deepest part of the ravine, from which you return to Les Santes Chapel, the point where your route started. Don't forget to look at the two enormous oaks (*Quercus faginea*) in front of the chapel on the other side of the ravine.



## Places of interest

In the surroundings of the Reserve you will find the following points of interest:

- Castellón Planetarium (Grau)
- Roman arch in Cabanes
- Contemporary Art Museum of Vilafamés
- Benicàssim Municipal Theatre
- Castellón Espai d'Art Contemporani (art centre)
- Prat de Cabanes-Torreblanca Nature Reserve
- Sierra d'Irta Nature Reserve
- Sierra d'Espadán Nature Reserve

## Accommodation

Unrestricted camping is not allowed in the Nature Reserve but there are plenty of hotel and tourist establishments in the nearby towns and villages.

## Cuisine

In the Reserve itself you will find several restaurants, one of these near the New Monastery and the other close to the Information Centre. In the villages near the Reserve you can enjoy the typical dishes of each place: stew (thistles, pork, chickpeas...), rice dishes, meat done on embers and traditional desserts such as the sweet potato and pumpkin cakes and figes albardaes (figs).

Views to the north, in the foreground you can see La Sufera, and in the background the Serra d'Irta Nature reserve and Prat de Cabanes-Torreblanca further to the right



View of Benicàssim from Montornés castle

### Accesses

Access to the Nature Reserve is by the **N-340** trunk road, heading towards Barcelona. Before reaching Benicàssim take the turnoff to local road **CS-V-8001** which links the Ermita de la Magdalena Chapel with Benicàssim and goes through the Desert de les Palmes.

From Benicàssim, you can get there by the same local road **CS-V-8001**, as you leave the town.

From the **A-7** motorway, the Castellón Norte-Benicàssim exit will bring you close to the Reserve.

You can also get to the Nature Reserve from Borriol, La Pobla Tornesa or Cabanes by the **CS-238** road.