

VEGETATION CHANGES IN ABALARIO (PARQUE NATURAL DEL ENTORNO DE DOÑANA)

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Abstract

Abalarío has been suffering anthropogenic disturbances for the last 50 years, making this area a very different region compared to the neighbouring "Parque Nacional de Doñana". The native vegetal cover has been taken down and replaced by *Eucalyptus* and *Pinus* grows until 1994, when a new reforestation policy was applied. In this study the main changes of the vegetal cover and their effect are described.

Introduction

The studied area is located in the coast line of Huelva province (SW Spain) within the "Parque Natural del Entorno de Doñana" (fig 1). The soils are Plioquaternary sands named "aeolic cover". Climate is Mediterranean as inferred from Bodegonés, Almonte and Mediana weather stations; nevertheless it is noticeable a clear oceanic influence due to higher than expectable mean annual rain fall and warm temperatures.

From a chorological point of view the area is included in the "Onubense Litoral" sector of the "Gaditano-Onubo-Algarviense" province (RIVAS MARTÍNEZ, 1988). A few endemic plant species and the existence of some taxa of atlantic main distribution give floristic singularity to the area (table1).

| SW IBERIAN PENINSULA SPECIES | ATLANTIC SPECIES |
|--|--|
| <i>Arenaria algarviensis</i> Welw. ex Willk. | <i>Carum verticillatum</i> (L.) Koch |
| <i>Armeria gaditana</i> Boiss. | <i>Centaurea uliginosa</i> Brot. |
| <i>Armeria velutina</i> Welw. ex Boiss. & Reuter | <i>Cistus psilosepalus</i> Sweet |
| <i>Brassica oxirrhina</i> Coss. | <i>Corema album</i> (L.) D. Don |
| <i>Centaurea exarata</i> Boiss. ex Cosser | <i>Erica ciliaris</i> Loe ex L. |
| <i>Cistus libanotis</i> L. | <i>Frangula alnus</i> Miller |
| <i>Daucus arcanus</i> García Martín & Silvestre | <i>Osmunda regalis</i> L. |
| <i>Dianthus hinoxianus</i> Gallego | <i>Pinguicula lusitanica</i> L. |
| <i>Gaudinia Hispanica</i> Stace & Tutin | <i>Potamogeton polygonifolius</i> Pourret |
| <i>Linaria tursica</i> Valdés & Cabezudo | <i>Potentilla erecta</i> (L.) Rauschel |
| <i>Loeflingia baetica</i> Lag. | <i>Simethis planifolia</i> (L.) Greuter |
| <i>Micropropyropsis tuberosa</i> Romero Zarco & Cabezudo | <i>Sphagnum inundatum</i> Russ. |
| <i>Thymus albicans</i> Hoffmanns. & Link | <i>Thelypteris palustris</i> Schott |
| <i>Ulex australis</i> Clemente | <i>Thorella verticillata</i> (Thore) Briq. |
| <i>Vulpia fontquerana</i> Melderis & Stace | <i>Ulex minor</i> Roth |

Table 1. Singular taxa of Abalarío.

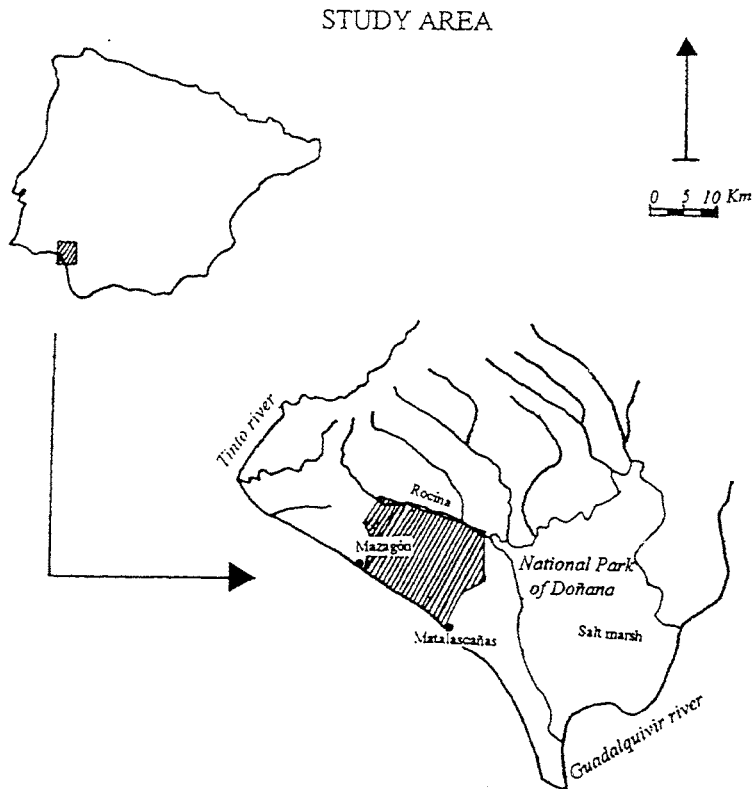


Fig. 1. Study area.

The human activities over the last 50 years have led the Abalarío to a very different landscape compared to the original area; actually, natural cork oak forest are absent or replaced by substituent stages.

Abalarío has probably conserved its natural vegetation cover until the first half of the 20th Century. The poor nature of its soils, the frequent water bodies, and the difficult to access the area, had precluded manging by man except occasional hunting, smuggling, etc.

In the 50's, after the Spanish Civil War and international isolation, the Spanish Government bought the area with he main aim of getting raw materials. Fast growing tree species were then planted (*Pinus*, *Grevillea*, *Eucalyptus*, *Acacia*, etc.) resulting in a profitable business (about 16500 Ha of Eucalyptus were further cultivated). Nurseries, arboreta, colonies and different industries arose quickly.

Nevertheless, all these flourishing cultures turn into improductive by 70's and the area was then abandoned. Sharply and irreversibly damages were already caused such as the extinction of the original forest community, drainage of the water bodies, decrease of freatic level, naturalization of foreing species and loss of biodiversity in summary. An amazing change of the landscape occurred in a decade.

In this study, based on the cartography of the former and the actual communities, we show these changes in the landscape of Abalario.

Material and methods

The study was based on: field studies during three years (1992, 1993 and 1994), aerial photographs (flight 11/02/1946, 07-12/1956, 08-09/1987), satellite images LANSAT TM (18/01/1986, 15/02/1990 & 07/07/1990), satellite images SPOT (01/01/1989), historical cartography (s. XVII, XVIII & XIX) and interviewing of villagers.

According to what has been stated, the study of the former and the actual vegetation was made.

Results and discussion

With the information obtained from these sources the vegetation maps on display were drawn. The first one shows the vegetation cover in 1993 (fig. 2). The second one illustrates the cultured trees in 1993 (fig 3). The third one points out the vegetation cover of the region before the trees were planted and might be valid for the last 200 years (fig 4).

From the analysis and comparison of these maps (fig 2 and fig 4) several facts can be proved:

- 1, The northern zone of the region was occupied by a cork oak and *Olea* forest (*Olea sylvestris-Quercetum suberis*), close to extinction today, before the trees were cultivated.
- 2, The southern zone was occupied by Juniperus forest.
- 3, The original extent of the dense Phoenician juniper forest (*Osyrio quadripartitae-Juniperetum turbinatae*) has been reduced to relict plots and the Prickly juniper forest (*Rhamno oleoidis-Juniperetum macrocarpae*) is completely extinct in the area today.
- 4, The area occupied by mires (*Erico ciliaris-Ulicetum lusitanici*) was broader than at present.
- 5, In the studied zone, it there existed a higher number of temporarily and permanent water lagoons which have been dried up today.
- 6, The "cañadas" (temporary streams) bore a similar vegetation to that which can only be seen at present in the Rocina stream ("Parque Nacional de Doñana"): *Ranunculo ficariae-Fraxinetum angustifoliae, Viti viniferae-Salicetum atrocienerae* and *Lonicero hispanicae-Rubetum ulmifoliae*, which has also disappeared today.

Therefore, far from the patterns of anthropogenic changes in the neighbouring Parque Nacional de Doñana where they are based on fire (GRANADOS CORONA & al., 1986, 1988), it can be seen that the great changes during the 50 years of intensive management in the Abalario, have led to a dramatic simplification of the vegetal cover. It is due to the extinction of the mature original cover and /or the reduction of the extent of the most singular communities.

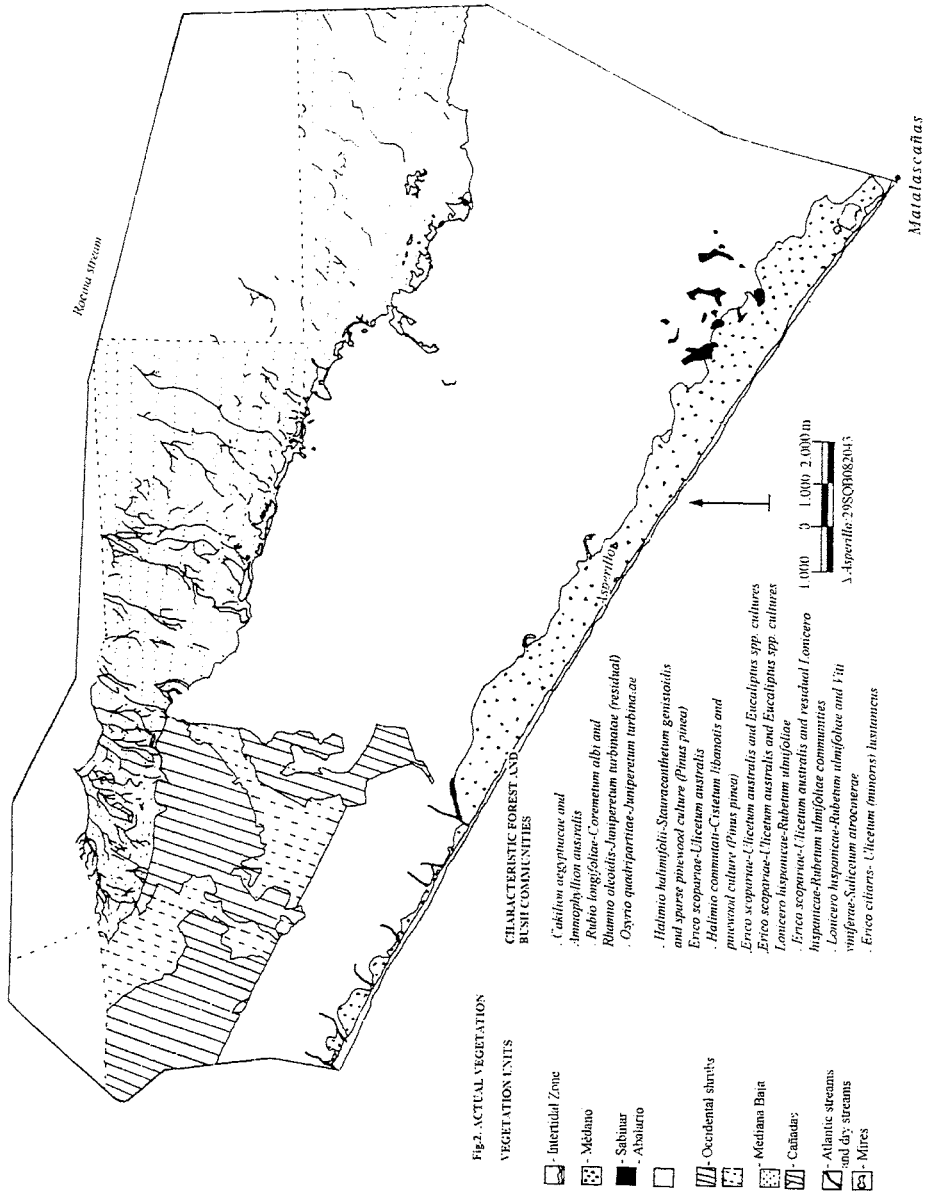


Fig. 2. Actual vegetation.

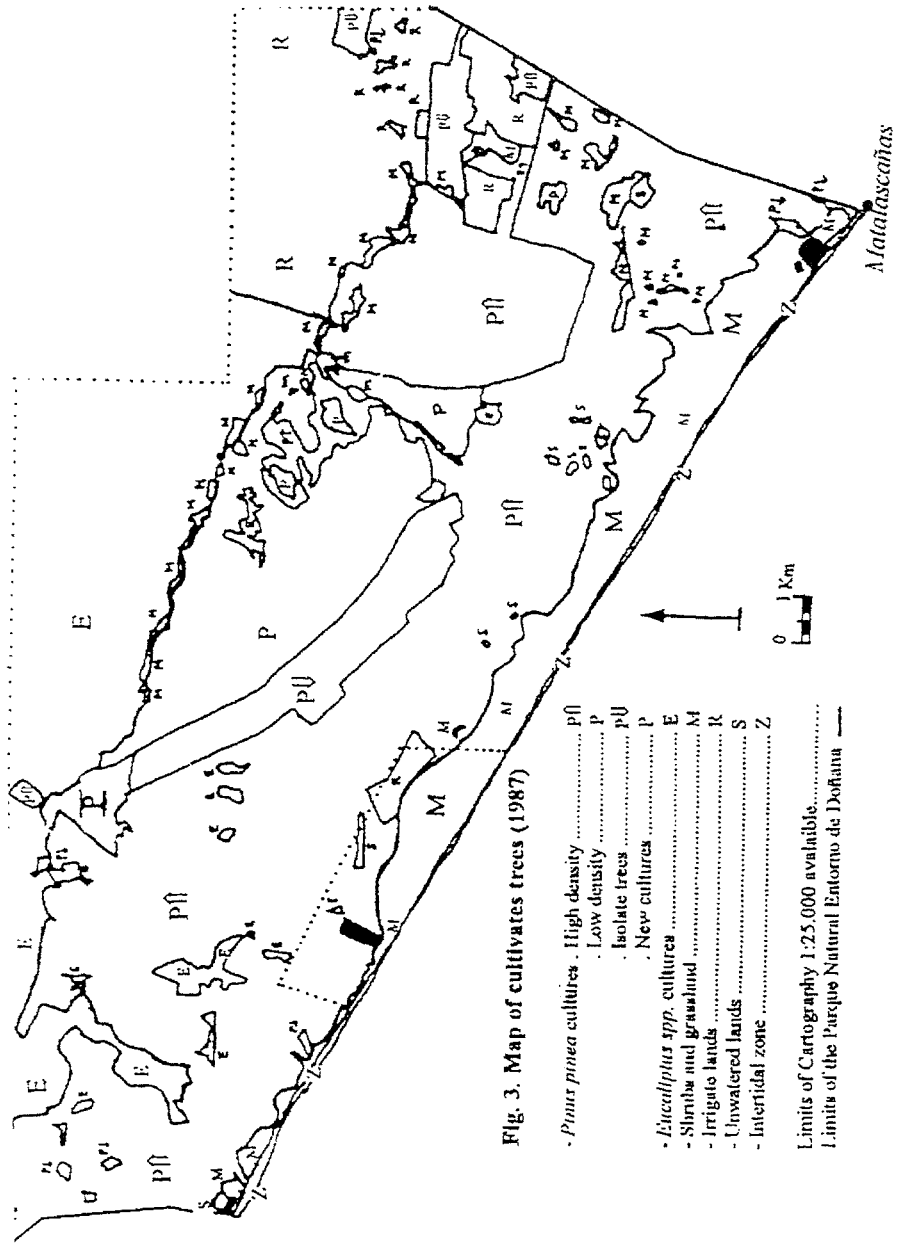


Fig. 3. Map of cultivates trees (1987).

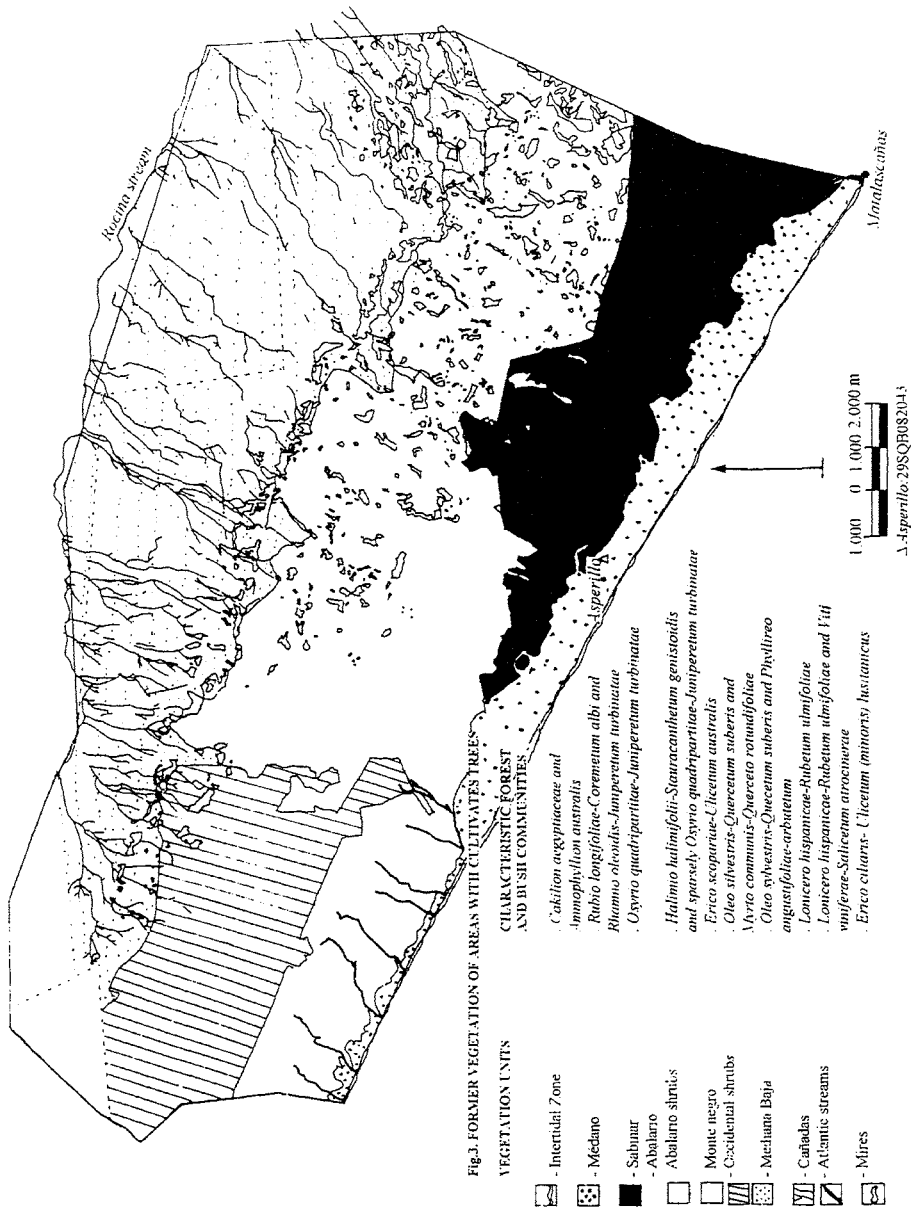


Fig. 4. Former vegetation of areas with cultivates trees.

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