

The longhorn beetle (*Cerambyx cerdo* L.), vulnerable or pest?

Austrich, Anna
Grau Biologia Ambiental



Approach

INTRODUCTION

- Is a saproxylic species associated with dead wood and old trees with bad physiological state^[2]
- Is a vulnerable species by Berne Convention, Council Directive 97/62/EC and IUCN Red List of Threatened Species
- Is considered secondary pest^[4]
- Distribution: (Figure 1. and 2)

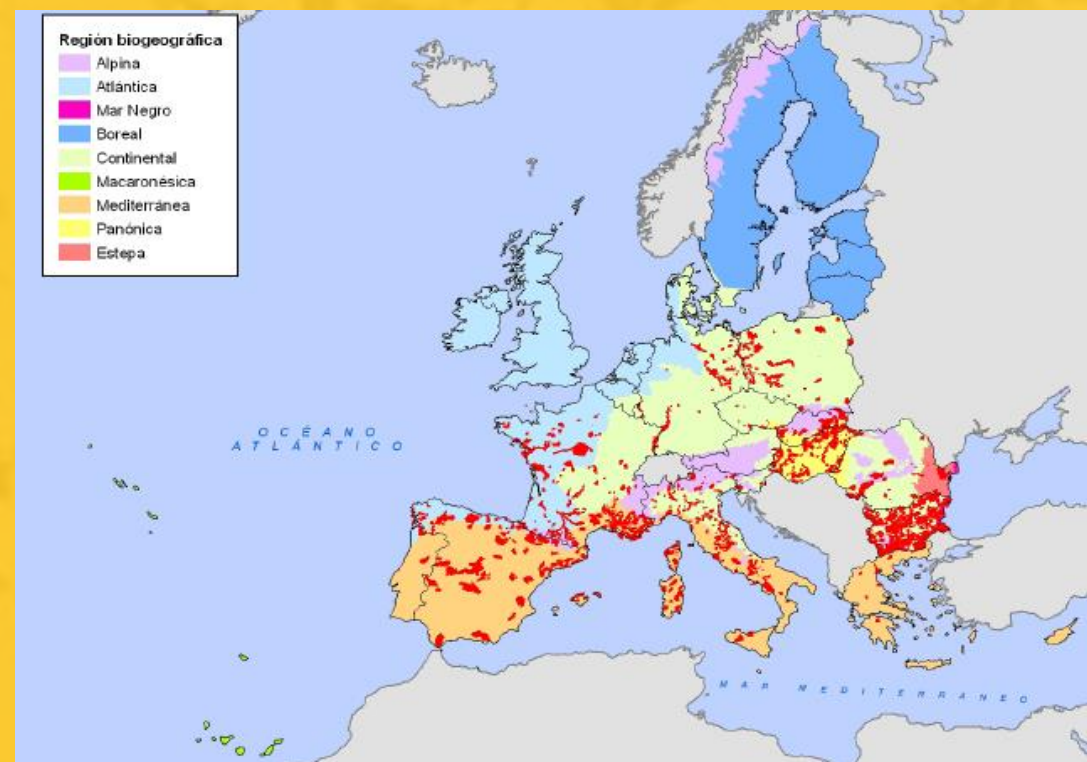


Figure 1. Distribution of *Cerambyx cerdo* in Europe. (Source: H EU Wildlife Sustainable Farming project, 2009)



Figure 2. Distribution of *Cerambyx cerdo* in Spain. (Source: EU Wildlife Sustainable Farming project, 2009)

BIOLOGICAL CYCLE

In 15 days the adults have to mate



The eggs hatch out in 10 days



3-5 years to complete the cycle



Adults stay in the tree until there are favorable condition



Larvae feed on the xylem

Figure 3. Pupa. Source: <http://www.naturefoto2000.com>

OBJECTIVE

Analyze the situation of *Cerambyx cerdo* in different countries of Europe because on determinate areas this species are decreasing (North Europe); while in other areas, like the Mediterranean Region, are in high population density. Here we studied this situation and try to give a control method in those areas of Southern Europe. In addition, a forestry technical card is created to distribute to sector experts.

Symptomatology and damage

RESISTANCE MECHANISMS BY THE TREE

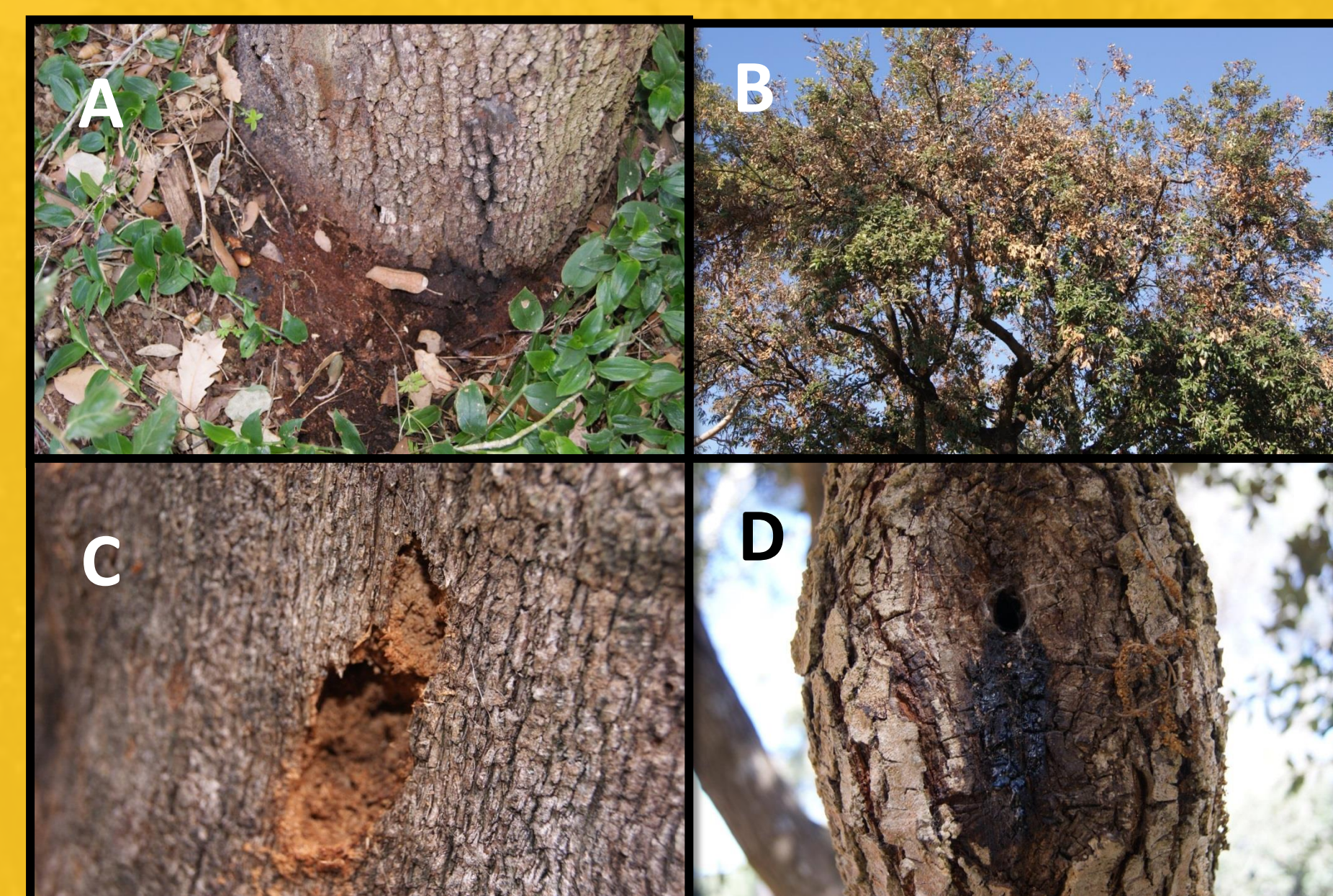
Primary disease/pest

• ↓ turgidity → wilting → ↓ defensive capacity → ↑ susceptibility to *C. cerdo*^[4]

Secondary disease/pest

- Compartmentalization of host tissues
 - Lignification of cell walls
 - Internal impervious tissue
- Necrophylactic periderm
- Callus formation in the cambial zone if the injury is quite deep^[4]

DAMAGE



- A. Sawdust accumulation in trunk base
- B. Dry branches and fallen leaves
- C. Reddish
- D. Elliptic exit holes (20mm)

Controversy

LIKE A PEST?

South Europe

Control Strategies

- Preventive strategies → Silviculture^[5]
- Active strategies
 - Physical measure
 - Chemical measure^[1]
 - Repellent and inhibitor insecticide of natural origin (Botanical and Bacterial)
 - Inorganic insecticide (minerals)
 - Chemical synthesis formulation
 - Biological control
 - Biorational measure → attractive and massive capture^[5]

LIKE VULNERABLE?

North Europe

Conservation Strategies

- Keep or restore it like "favorable conservation state"
- Designed areas under Nature 2000
- Maximize microhabitat diversity by forestry strategies
- Keep natural or seminatural forest, increase dry wood and flock^[3]

Conclusion

- Change the protected state for *Cerambyx cerdo* → serious problem in Mallorca
- Determinate the specific volatile organic compounds that attract the insect

- In South Europe → Pest → Silviculture
- In North Europe → Vulnerable → measures to promote the development of the species
- Alteration of biotic and abiotic factor will affect *C. cerdo*

BIBLIOGRAPHY: ^[1]Albert J, Platek M, Cizek L. 2012. Vertical stratification and microhabitat selection by the Great Capricorn Beetle (*Cerambyx cerdo*) (Coleoptera: Cerambycidae) in open grown, veteran oaks. Eur.J.Entomol 109: 553-559; ^[2]Buse J, Schröder B, Assmann T. 2007. Modelling habitat and spatial distribution of an endangered longhorn beetle – A case study for saproxylic insect conservation. Biological conservation 137: 372-381; ^[3]Davies Z, Tyler C, Stewart G, Pullin A. 2008. Are current management recommendations for saproxylic invertebrates effective? A systematic review. Biodivers conserve 17: 209-234; ^[4]Sallé A, Nageleisen L-M, Lieutier F. 2014. Bark and wood boring insects involved in oak declines in Europe: Current knowledge and future prospects in a context of climate change. Forest Ecology and management 328: 79-93. ^[5]Sánchez I. 2010. Orientación olfativa de "Cerambyx welensii" Küster y "Prinobius germani" Dejean, principales cerambycoides xilófagos de encina ("Quercus ilex L. Subsp ballota") y alcornoque ("Quercus súber L.") para la localización de hospedantes. Departamento de ciencias Agroforestales, Universidad de Huelva.