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# THE CONTRIBUTION OF PALAEODATA TO CONSERVATION : INSIGHTS FROM SPANISH AND MOROCCAN HOLOCENE LAND SNAILS

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 Quentin Wackenheim  
 Non-marine malacoreview

## Introduction

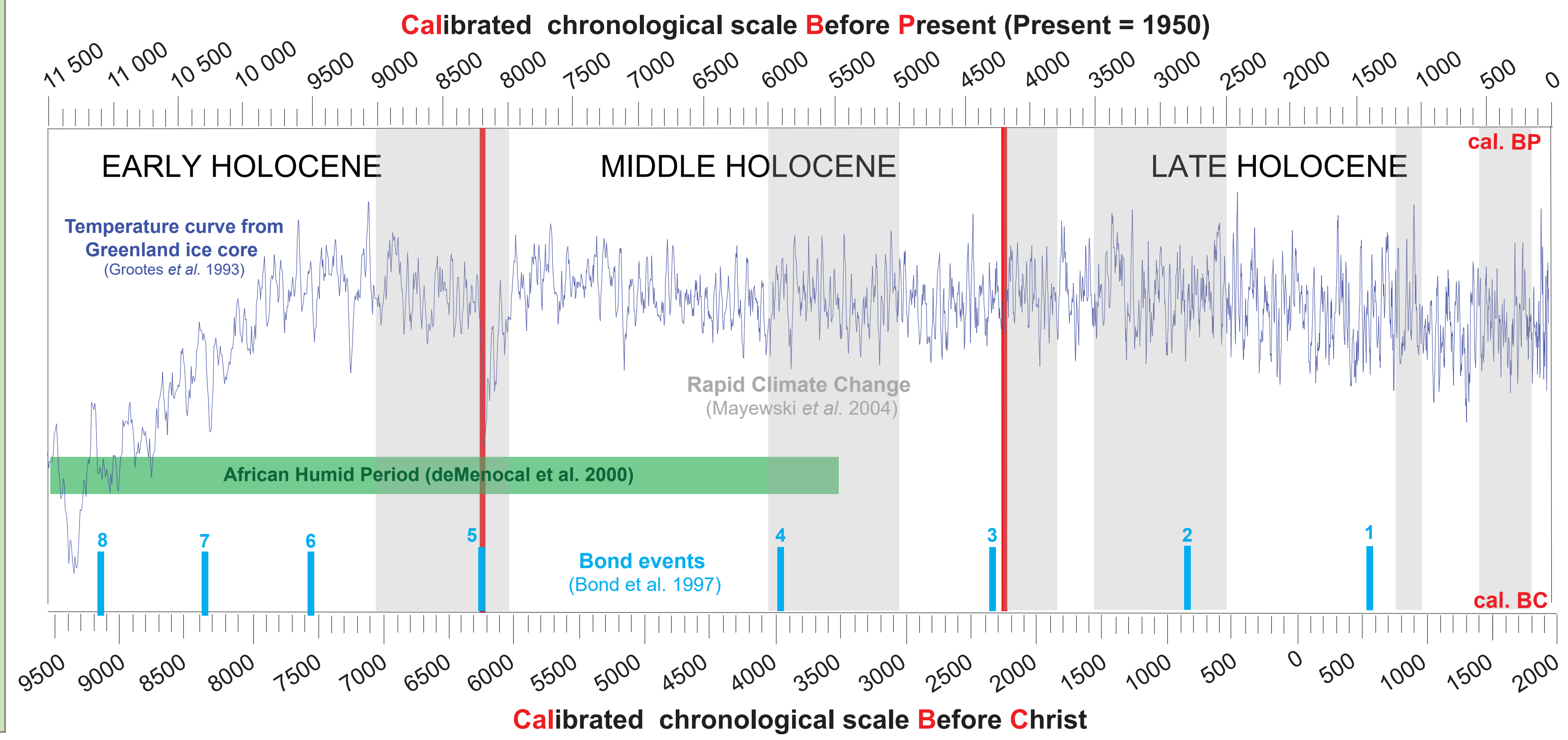
In the context of climate change and the increased erosion of biodiversity, the conservation of continental molluscs represents a major challenge. The vulnerability and status of a significant proportion of species remain underestimated. While conservation efforts are being pursued with the aim of strengthening protection measures, it is essential to undertake a critical examination of a species' distribution, the evolution of its populations and the degree of vulnerability of its habitats in order to assess its status. Today, these data are often insufficient for a large number of species due to a lack of specialists and research in malacology. For instance, in Europe, data regarding population trends for slightly more than half of the terrestrial species evaluated in the Red List in 2019 were unavailable.

In the United States, a relatively new field of study, known as "conservation paleobiology," has emerged over the past decade. The objective of this approach is to utilise palaeoenvironmental, palaeontological, palaeoclimatological and palaeoecological data in order to conserve and protect species and their habitats. The diachronic scope of fossil data provides elements for three key purposes:

- i) determining the baseline state and variability of natural ecosystems
- ii) characterising the response of organisms to environmental and climatic changes
- iii) identifying the most vulnerable species

This poster presents a selection of examples pertaining to a number of terrestrial molluscan species, based on fossil data from the Holocene period, retrieved from Morocco and Spain.

## Chronological framework of the Holocene



## Fossil occurrences

## Long term biogeographical history

Compensate for data deficiencies

Guide and develop modern survey in little-known areas

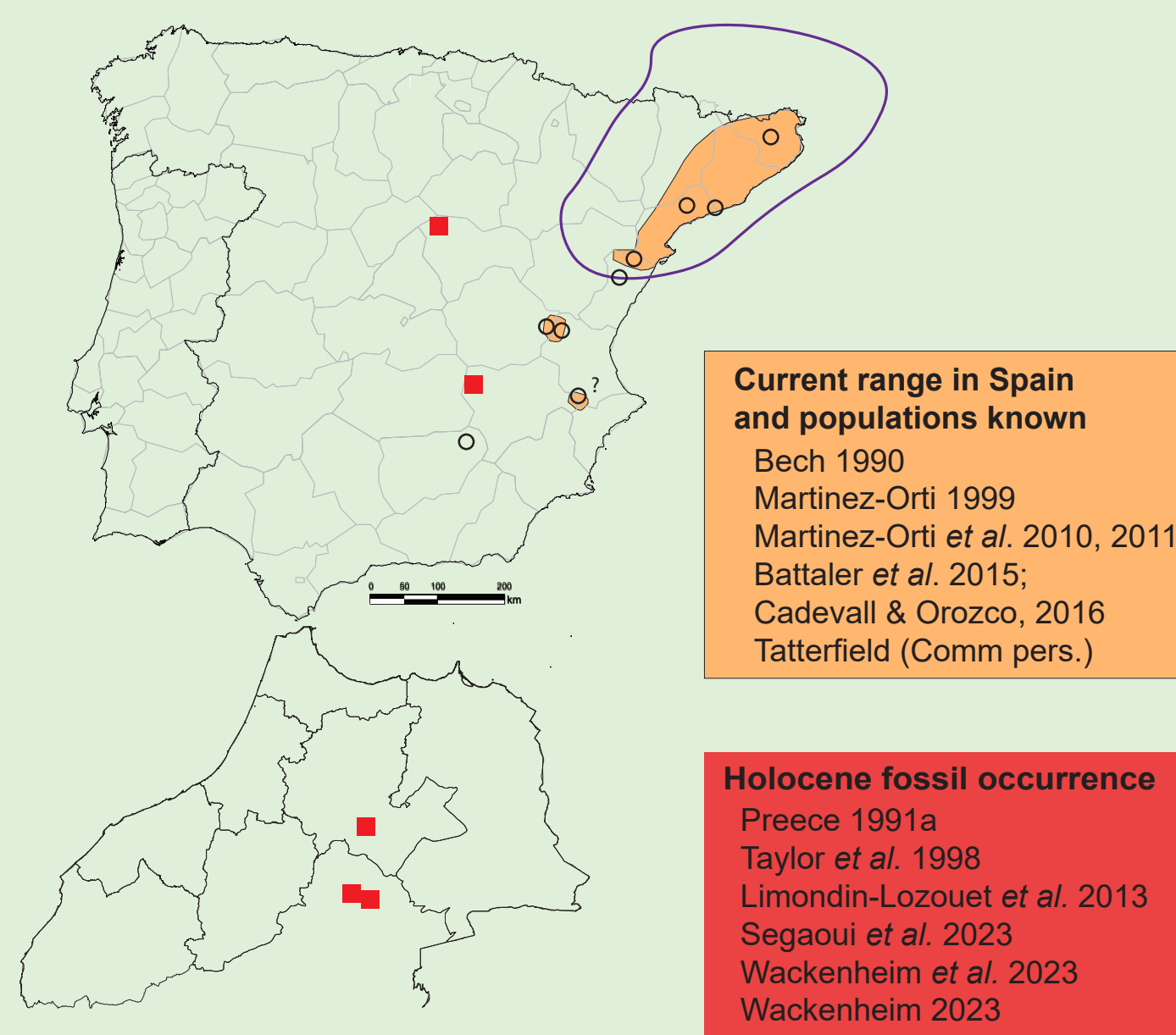
Discuss variation of species distribution

Examine species responses to environmental and climatic changes

## Mapping the past vs the modern distribution

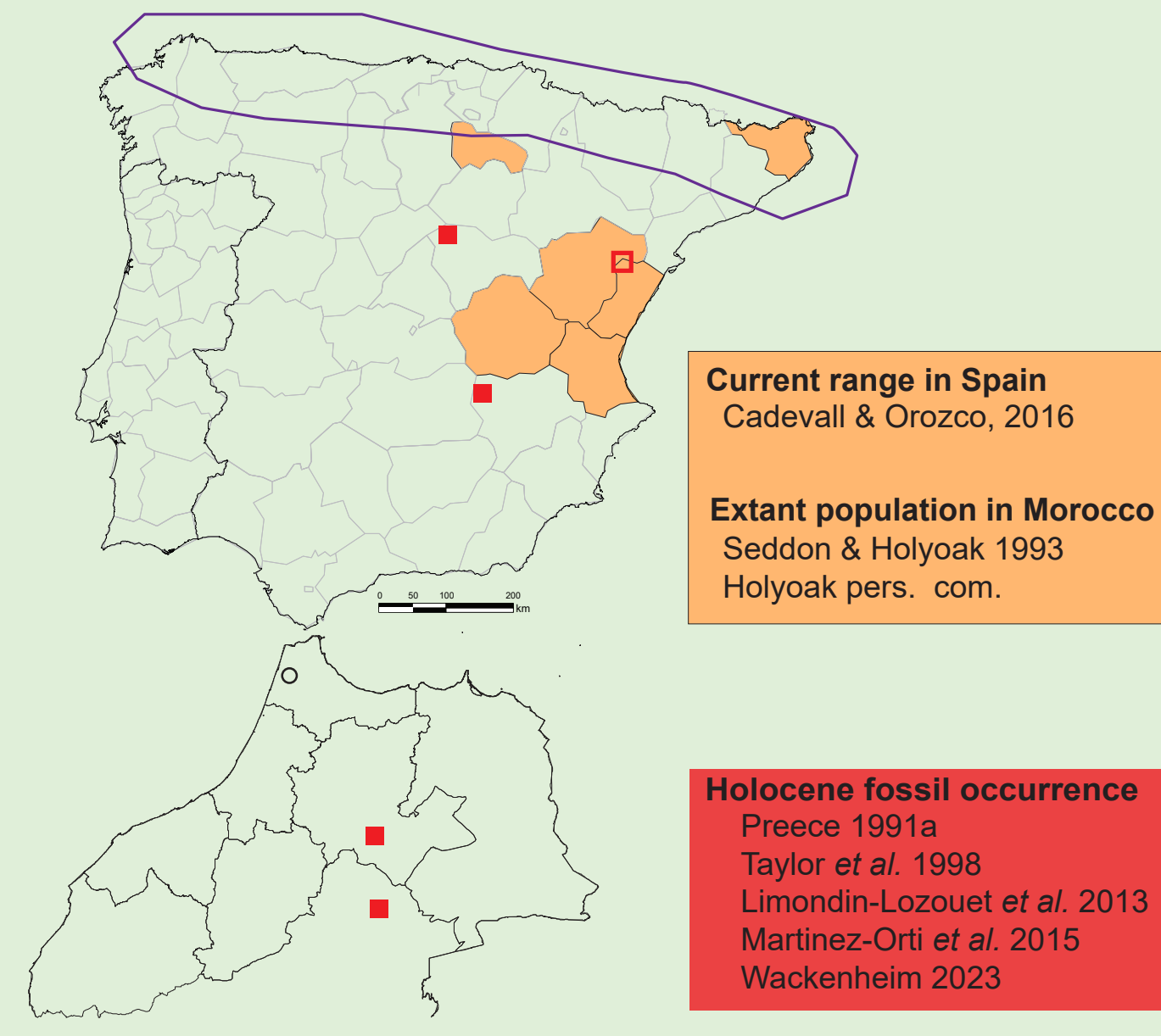
### *Vertigo angustior*

VU



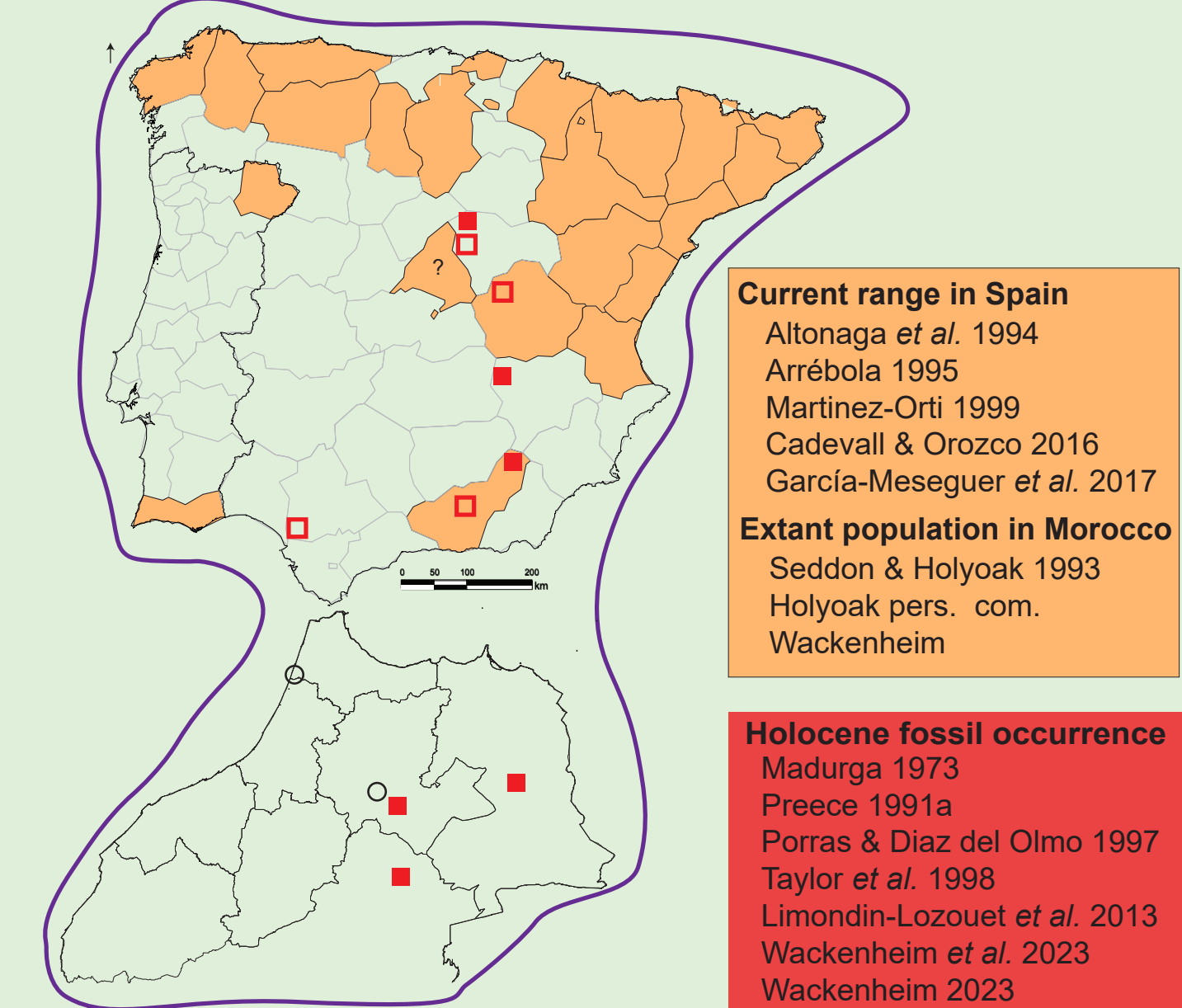
### *Vertigo moulinsiana*

VU



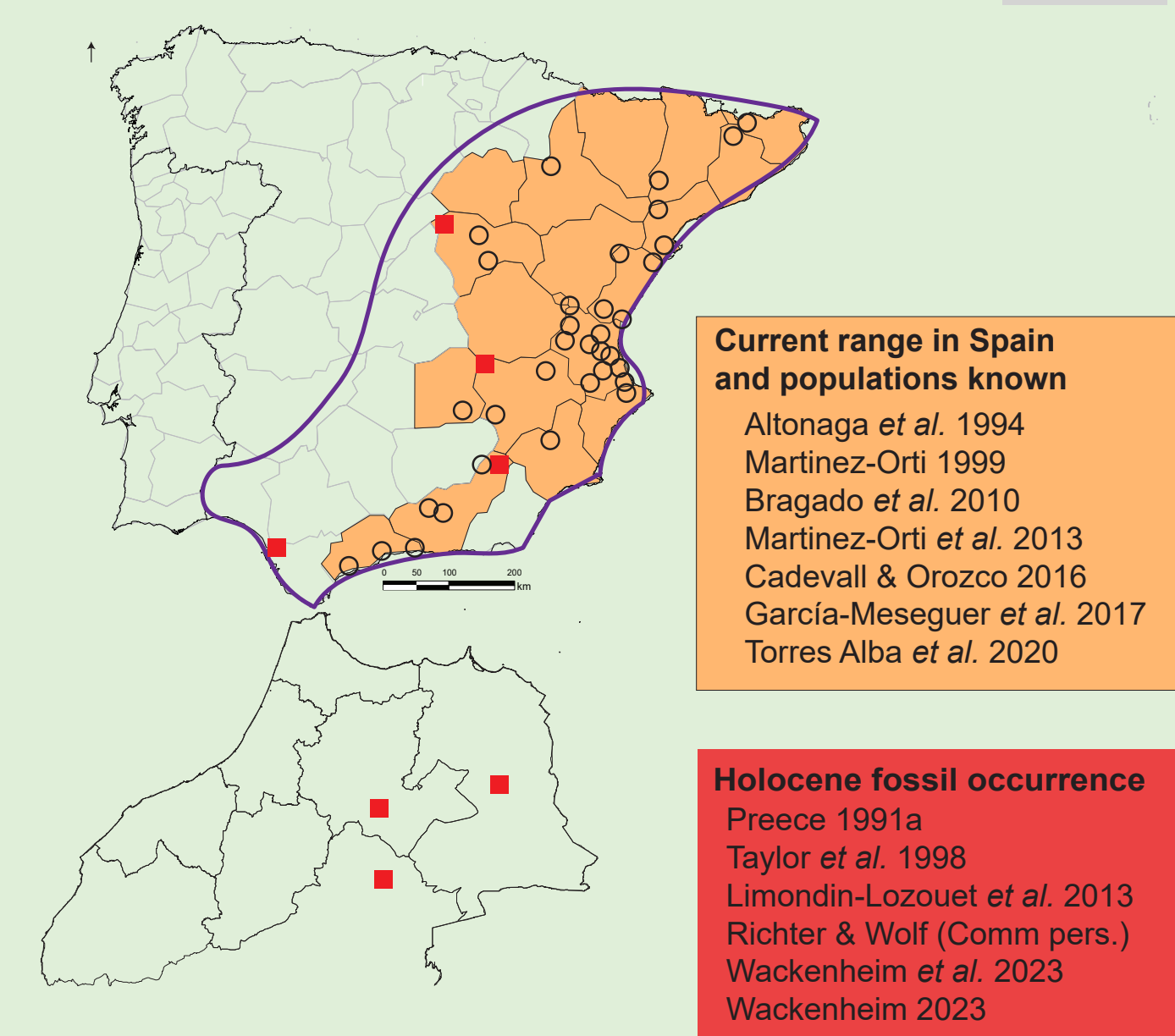
### *Vertigo antivertigo*

LC



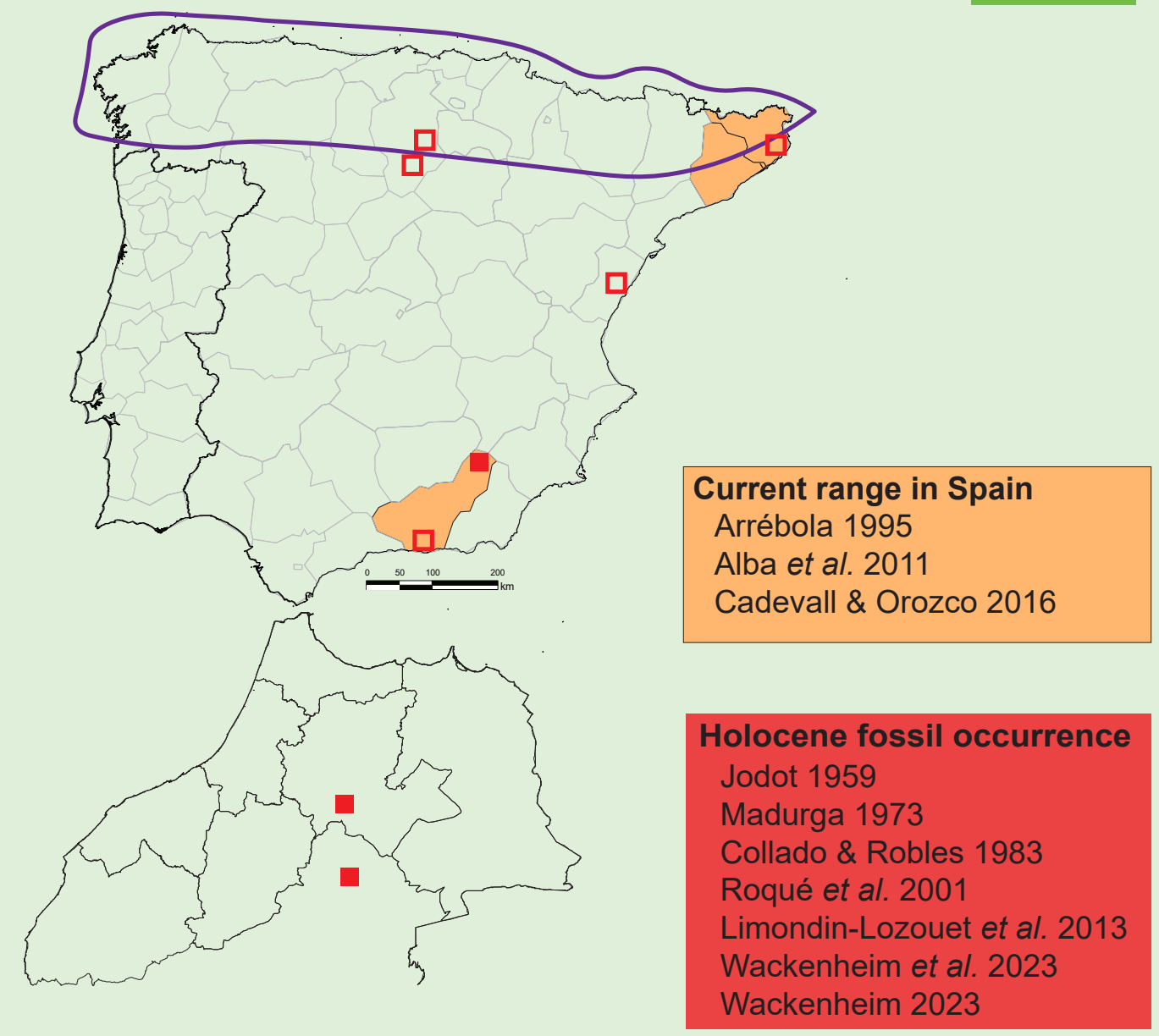
### *Vallonia enniensis*

DD



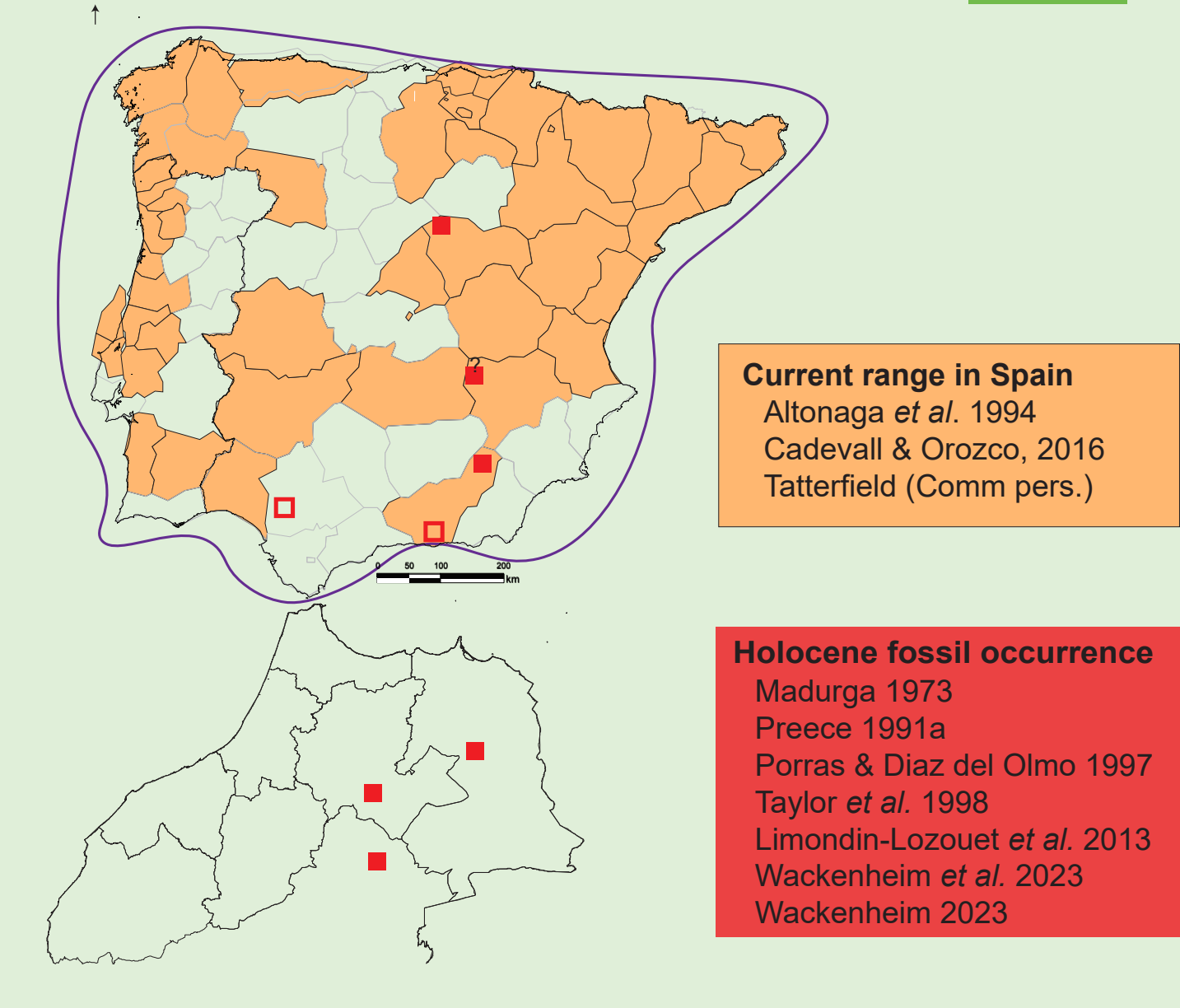
### *Succinella oblonga*

LC



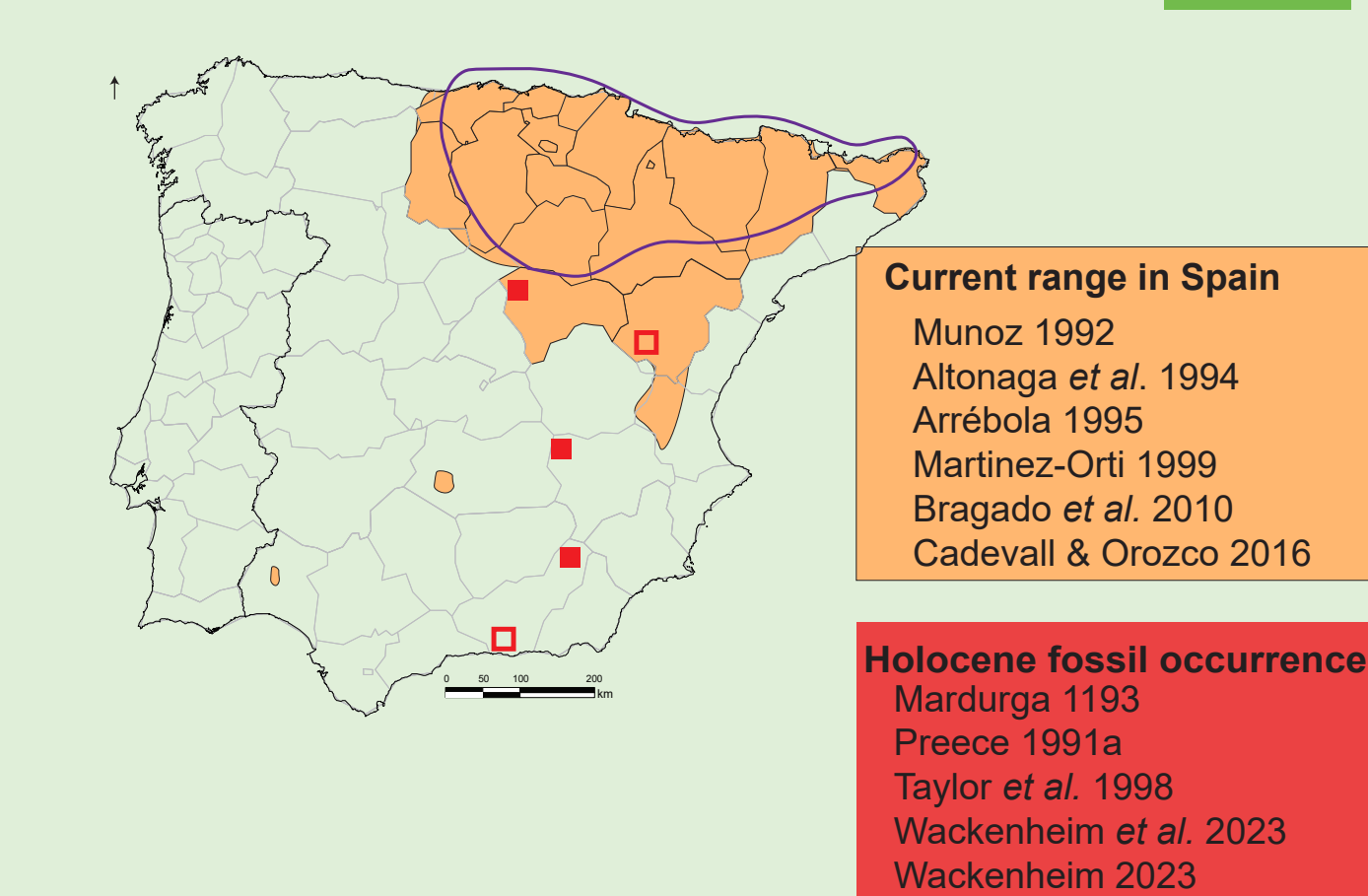
### *Euconulus fulvus*

LC



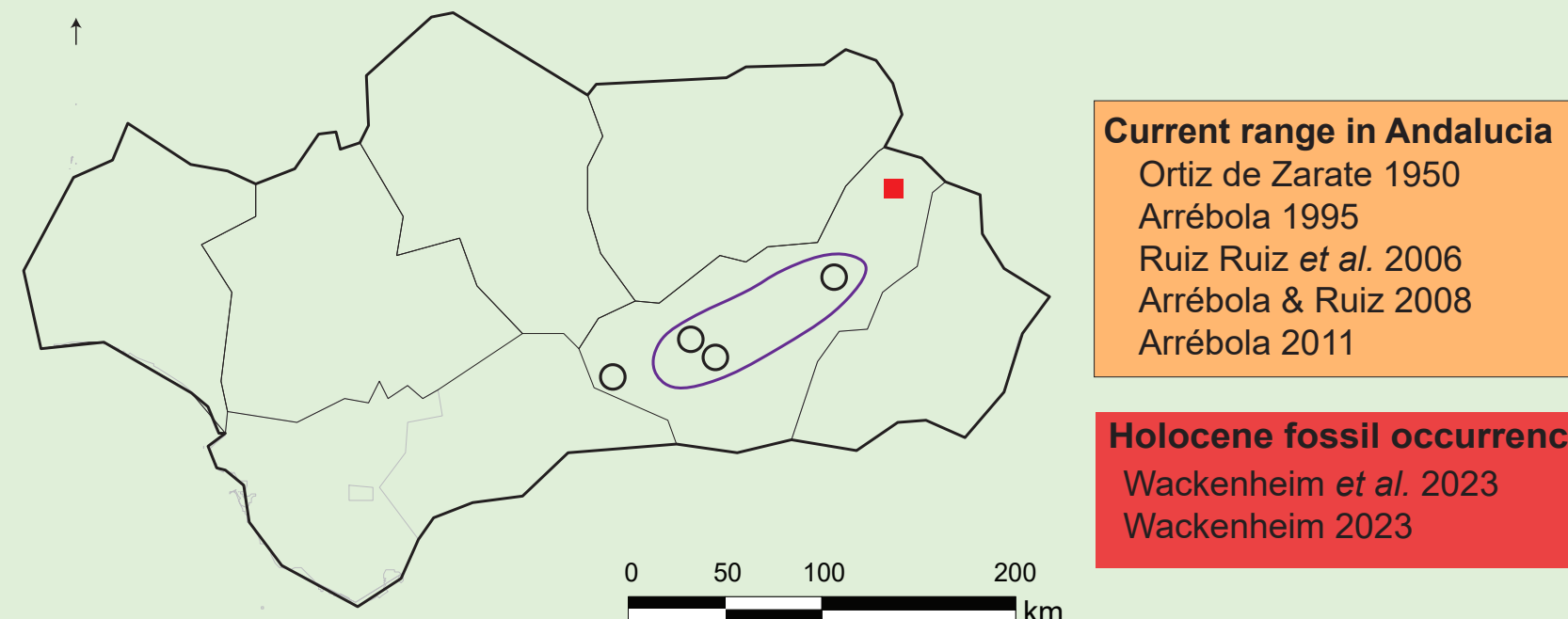
### *Trochulus hispidus*

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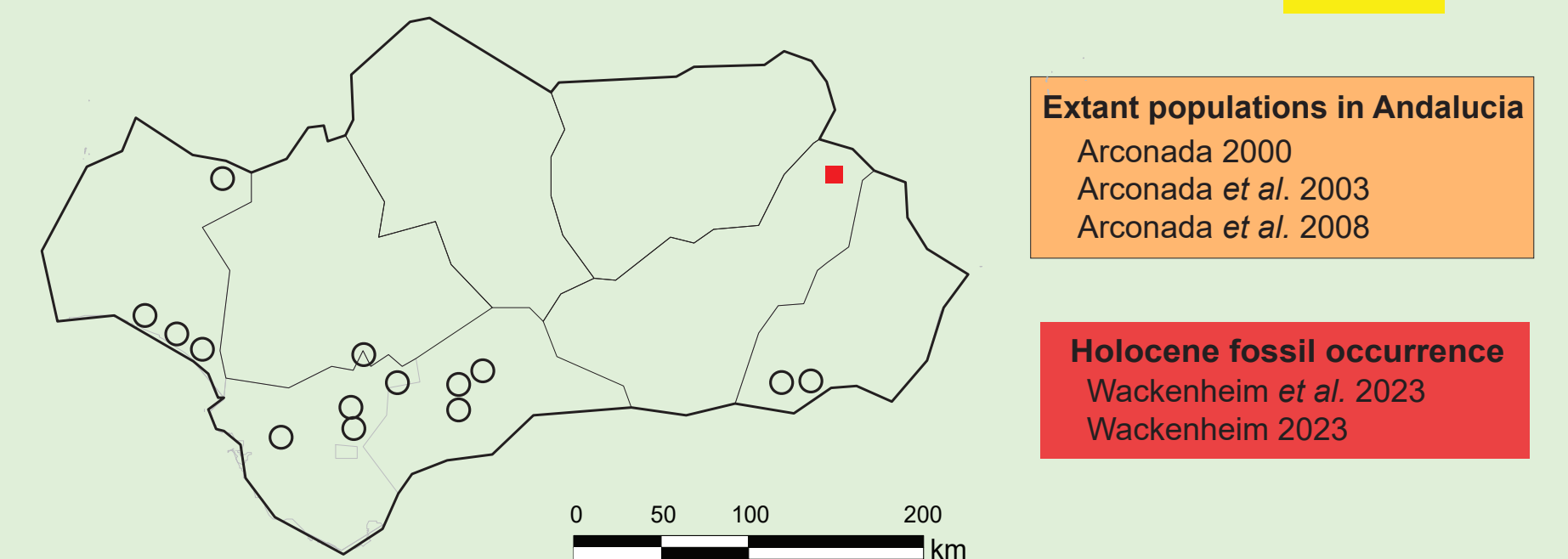
### *Xerotricha zujarensis*

DD



### *Iberhoratia morenoi*

VU



○ Welter-Schultes (2012) Range

○ Extant populations

Range in Spain

Fossil occurrences

■ Middle Holocene

□ Undifferentiated Holocene

For further informations and reference cited see :

WACKENHEIM Q., 2023 - Relations paléoenvironnements , climats et sociétés au cours des derniers 10 000 ans sur la façade méditerranéenne occidentale : l'approche malacologique. Thesis, Université Paris 1 Panthéon-Sorbonne, 414 p.  
WACKENHEIM Q., et al. 2023 - Holocene molluscan successions from southeastern Spain (Galera, Andalusia): a palaeoenvironmental framework and a palaeobiogeographic resource of the Granada UNESCO Geopark. Journal of Molluscan Studies, 89 (1), 1-34.