

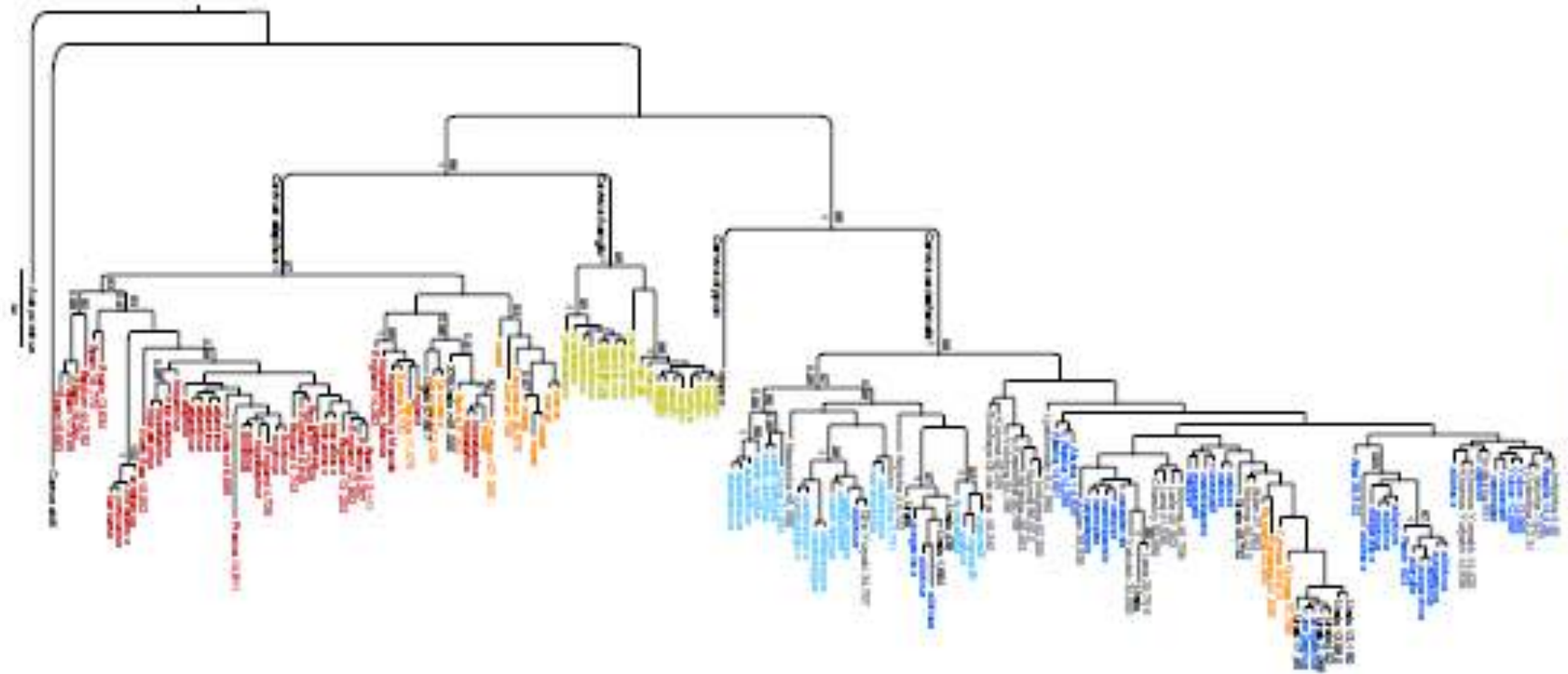
# Evolutionary History of Red Deer with Special Reference to Islands



**Adrian Lister, Natural History Museum, London**

# Mitochondrial DNA phylogeny of red/sika deer

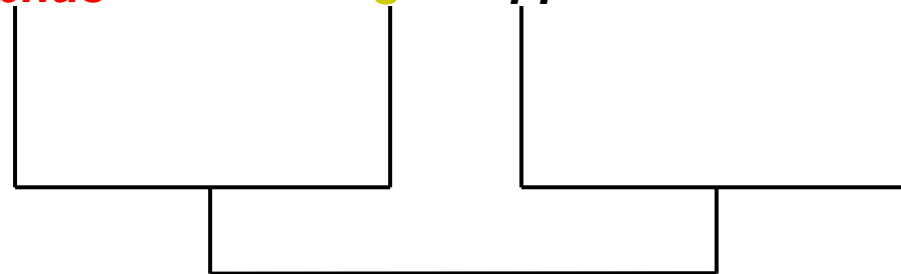
Meiri et al 2017



*elaphus*

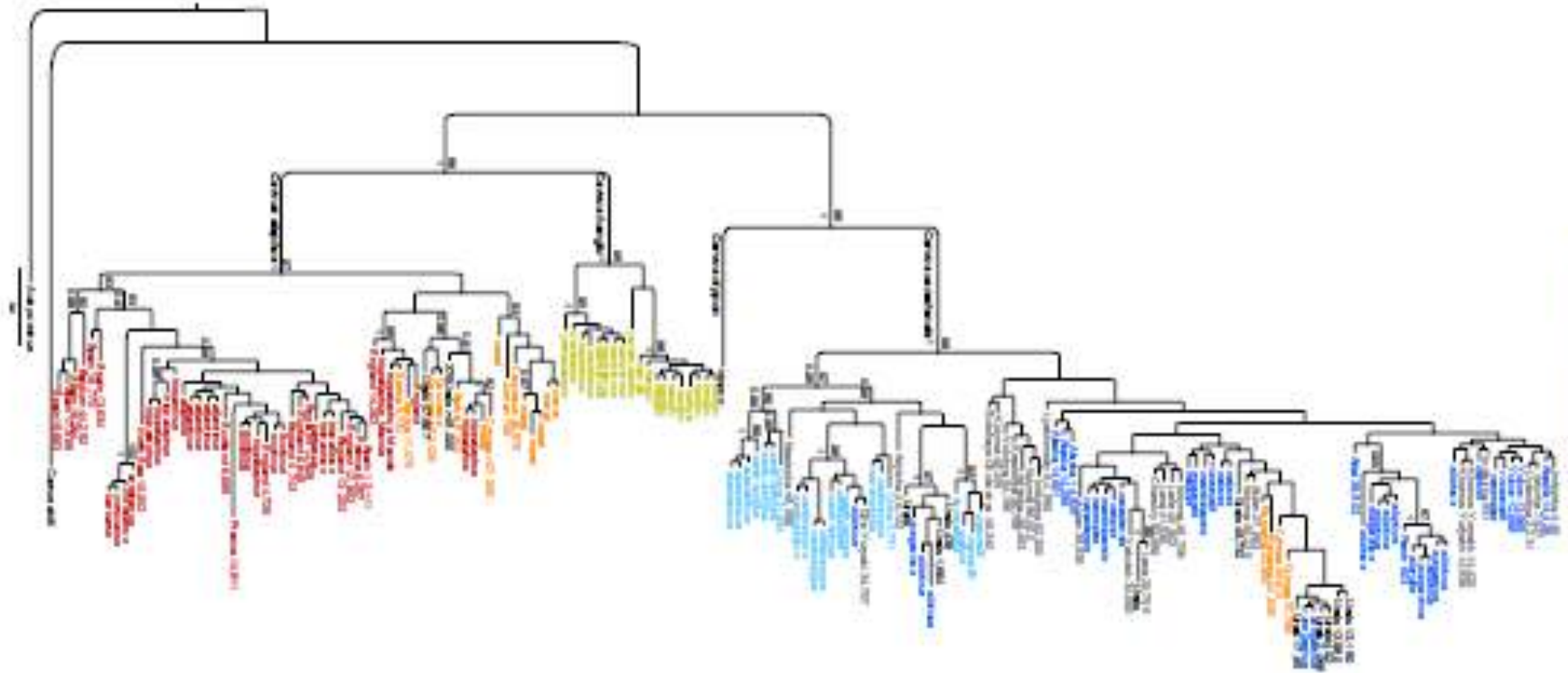
*hanglu nippon*

*canadensis*

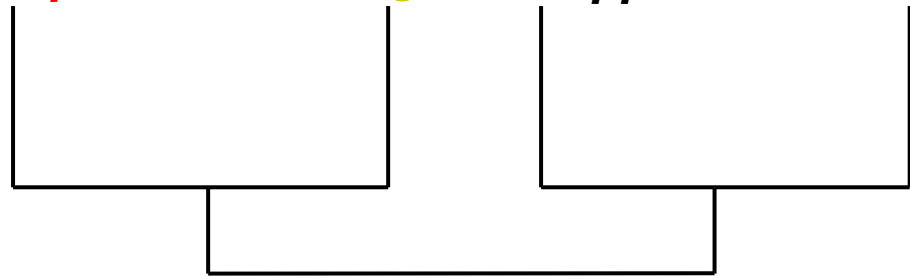


# Currently suggested taxonomy

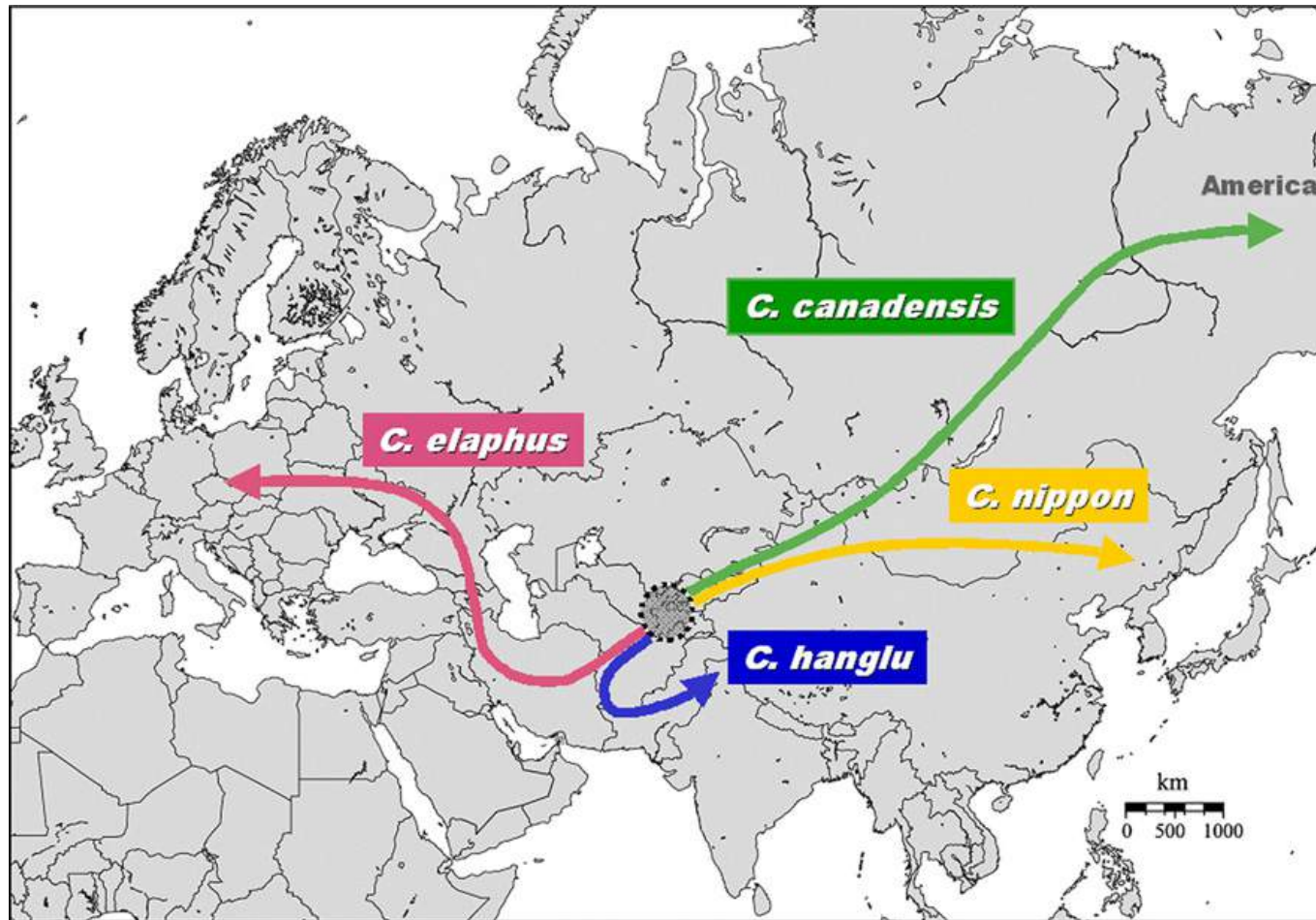
Lorenzini & Garofalo 2015, Meiri et al 2017, IUCN 2017



*C. elaphus*    *C. hanglu*    *C. nippon*    *C. canadensis*



## Suggested region of origin and dispersal



## Earliest red deer fossils



European early Middle Pleistocene  
(0.9 Ma) '*Cervus acoronatus*'



Kashmir stag *C. hanglu*

Later...

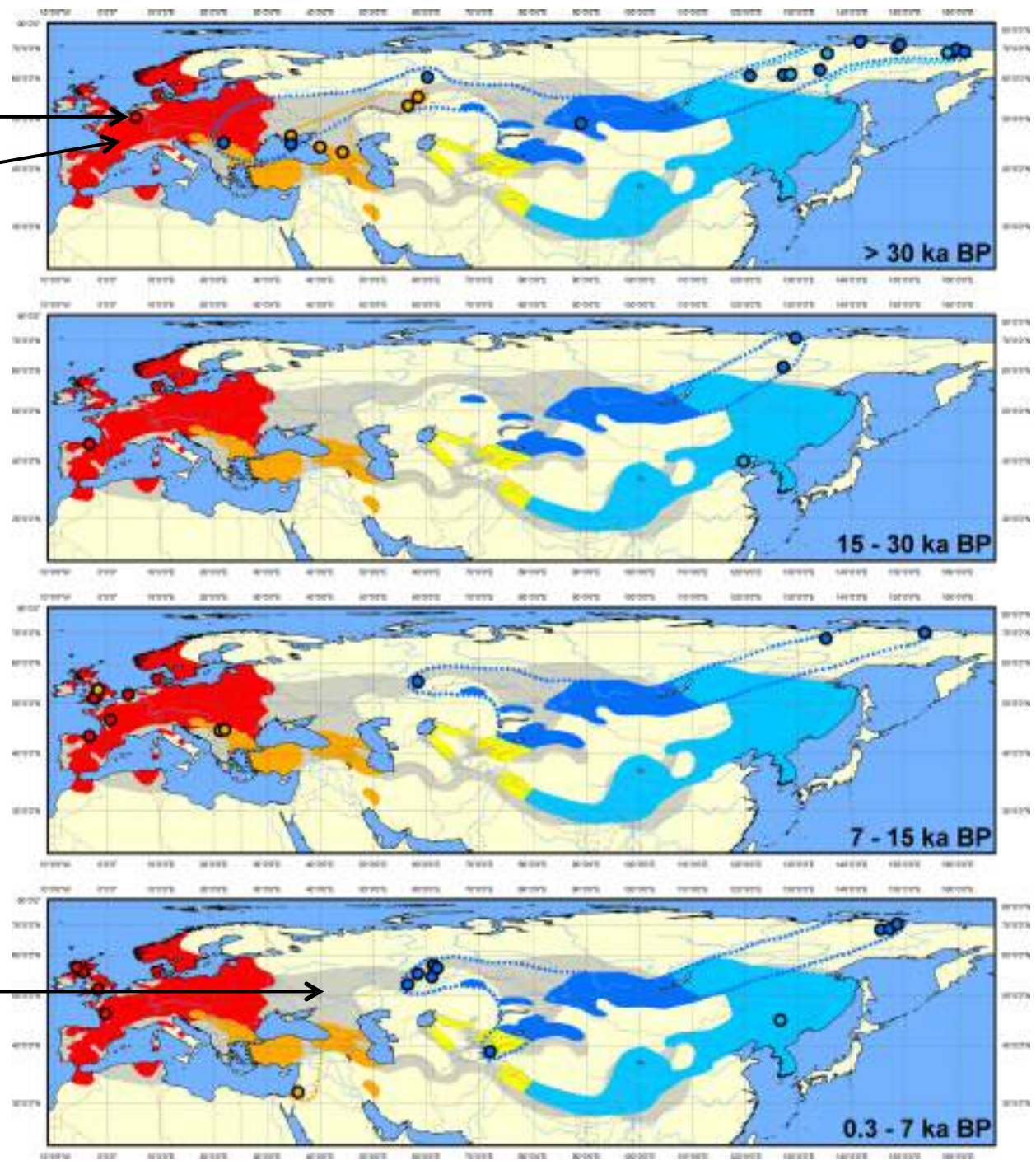


European coronate red deer (*C. elaphus*) from 400 ka



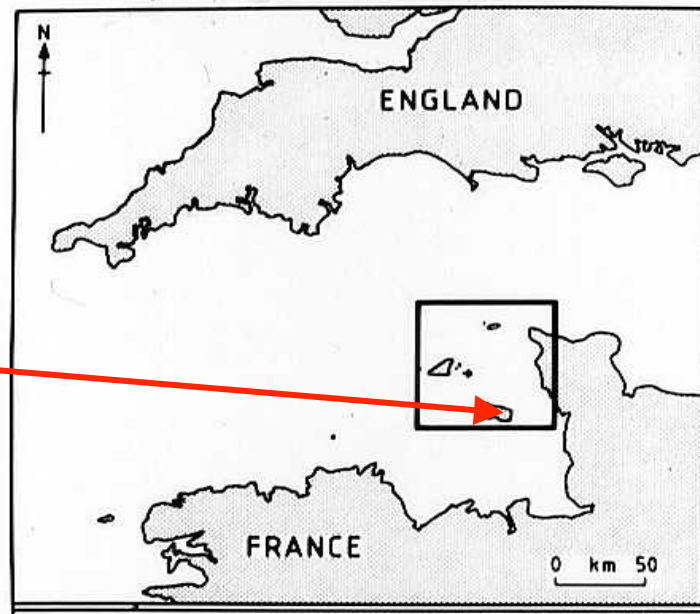
E. Asian wapiti type (*C. canadensis*)

fossils  
modern  
distribution

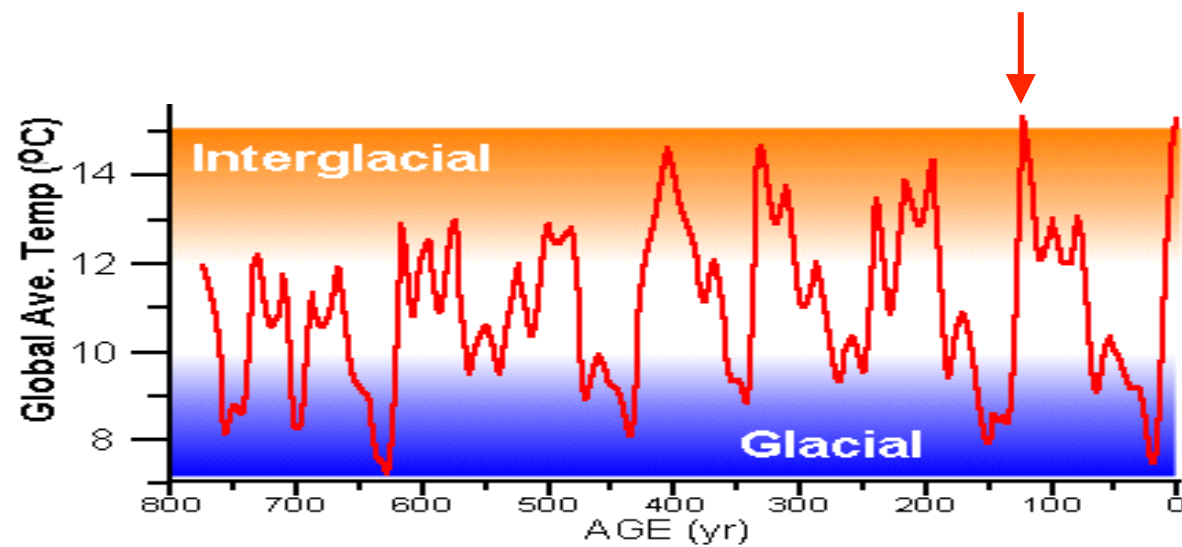


## The dwarf deer of Jersey

Belle Hougue Cave



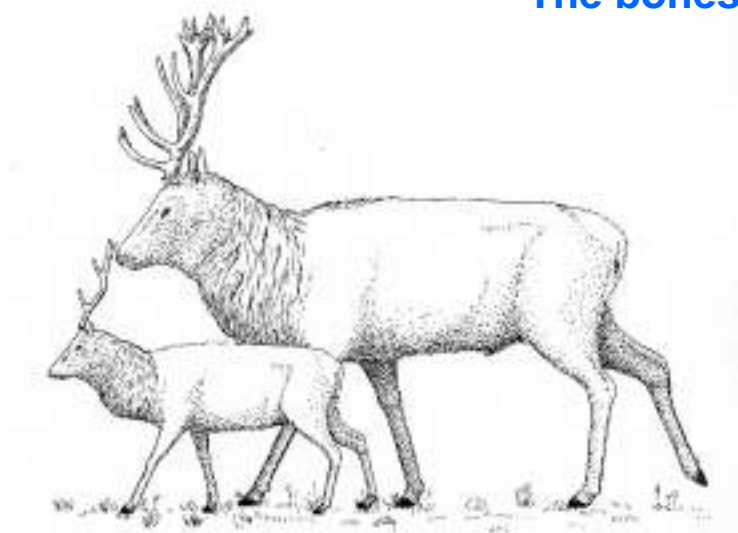
Age 120 ka (Last Interglacial)







The bones are a small form of red deer,  
*Cervus elaphus*



	Shoulder ht	Body mass
Mainland	1.25-1.30 m	200-250 kg
Jersey	0.7 m	36 kg

## Three ways to get onto an island:

1. You are already there. Sea level rises and cuts off the island
2. You swim or raft across open sea
3. You are taken there by people



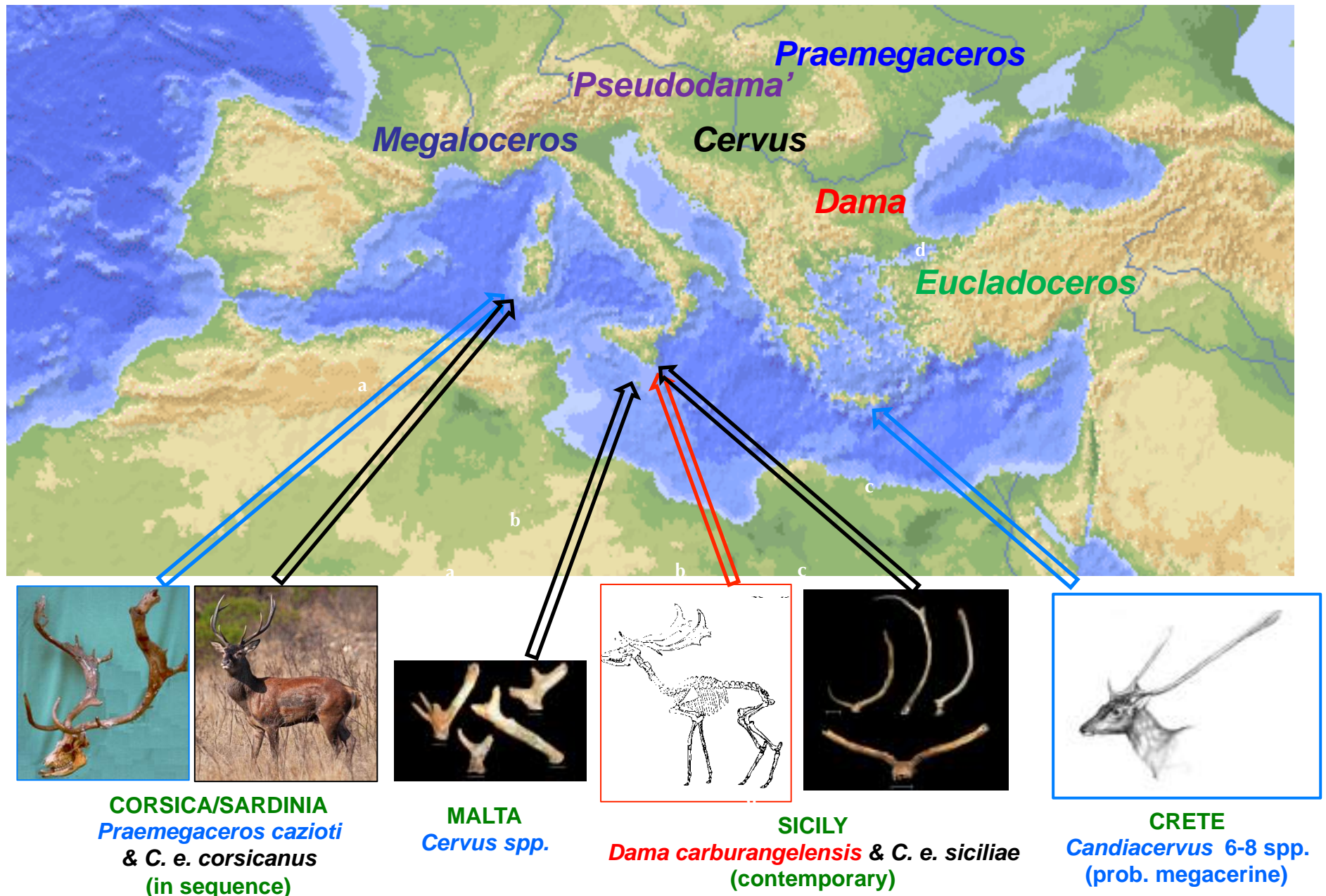
**150ka: 100m contour**

**125ka: 10m contour**

**6,000 years of isolation in the Last Interglacial.**

**Dwarf form lost when Jersey reconnected in last glaciation.**

Mediterranean islands: degree of endemism, and subspecies/species status, depends on time of isolation



## Sardinia/Corsica: *Praemegaceros cazioti*



- Arrived ca. 800 ka as larger *P. sardus* (derived from mainland *P. solilhacus*?) [Croitor, Melis, Palombo, van der Made]
- Morphology suggests it inhabited “savannah-like grasslands to open scrublands, with scattered shrubs and isolated trees, in lowland and rocky environments” [Palombo et al 2017]
- Mixed feeder (grasses, woody plants, fruits) [Melis et al]
- Latest record ca. 7,500 BP (arrival of Neolithic people) [Benzi et al 2007]



Fig. 1 - Distribution of the rests of *Praemegaceros cazioti* (Fanelli, 2008)

## *Cervus elaphus corsicanus* – ecological replacement for *P. cazioti*?

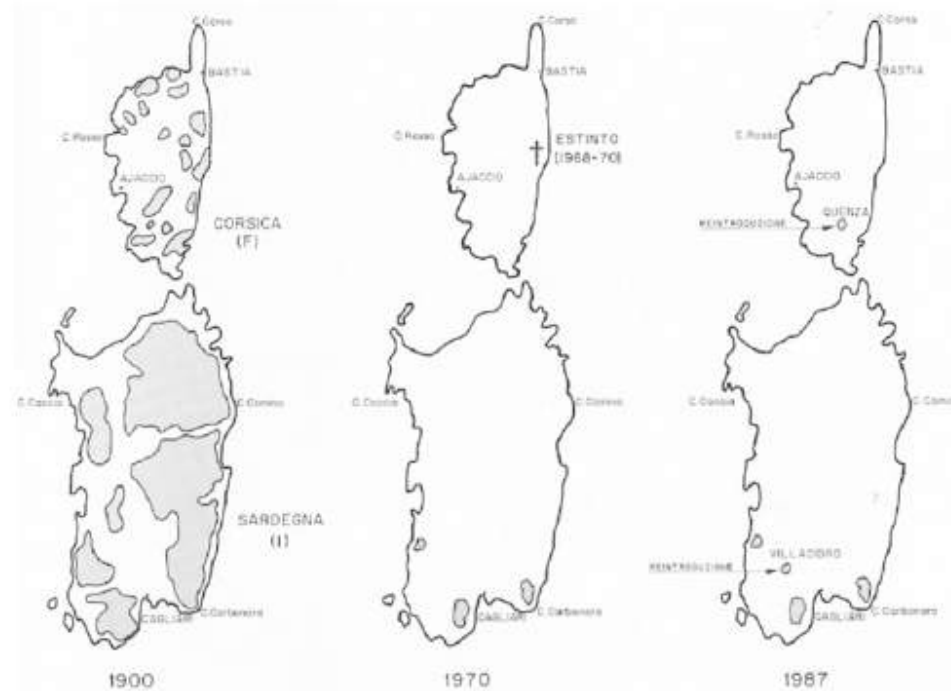


Fig. 2 - Distribution of *Cervus elaphus corsicanus* in the XX century (Beccu, 1989)

The aspect of the current distribution of cervids in Sardinia shows the presence of the endemic deer *Cervus elaphus corsicanus*: it is a subspecies of the continental species *Cervus elaphus*, its habitat consists of dense forest lands of the so-called "Mediterranean Thicket", it was historically common in many places of Sardinia, but today it can be found in the three areas of Sulcis, Sarrabus and Arbus-Montevicchio. The rests of *Cervus elaphus corsicanus* (discovered in different nuragic places of Sardinia) testify its real presence for 3.500 years; this suggests the human introduction of deer in Sardinia, so *Cervus elaphus corsicanus* descends from some exemplars of the continental species *Cervus elaphus* that probably was brought in Sardinia by humans.