

# Phylogeography and origin of *Cervus elaphus corsicanus*



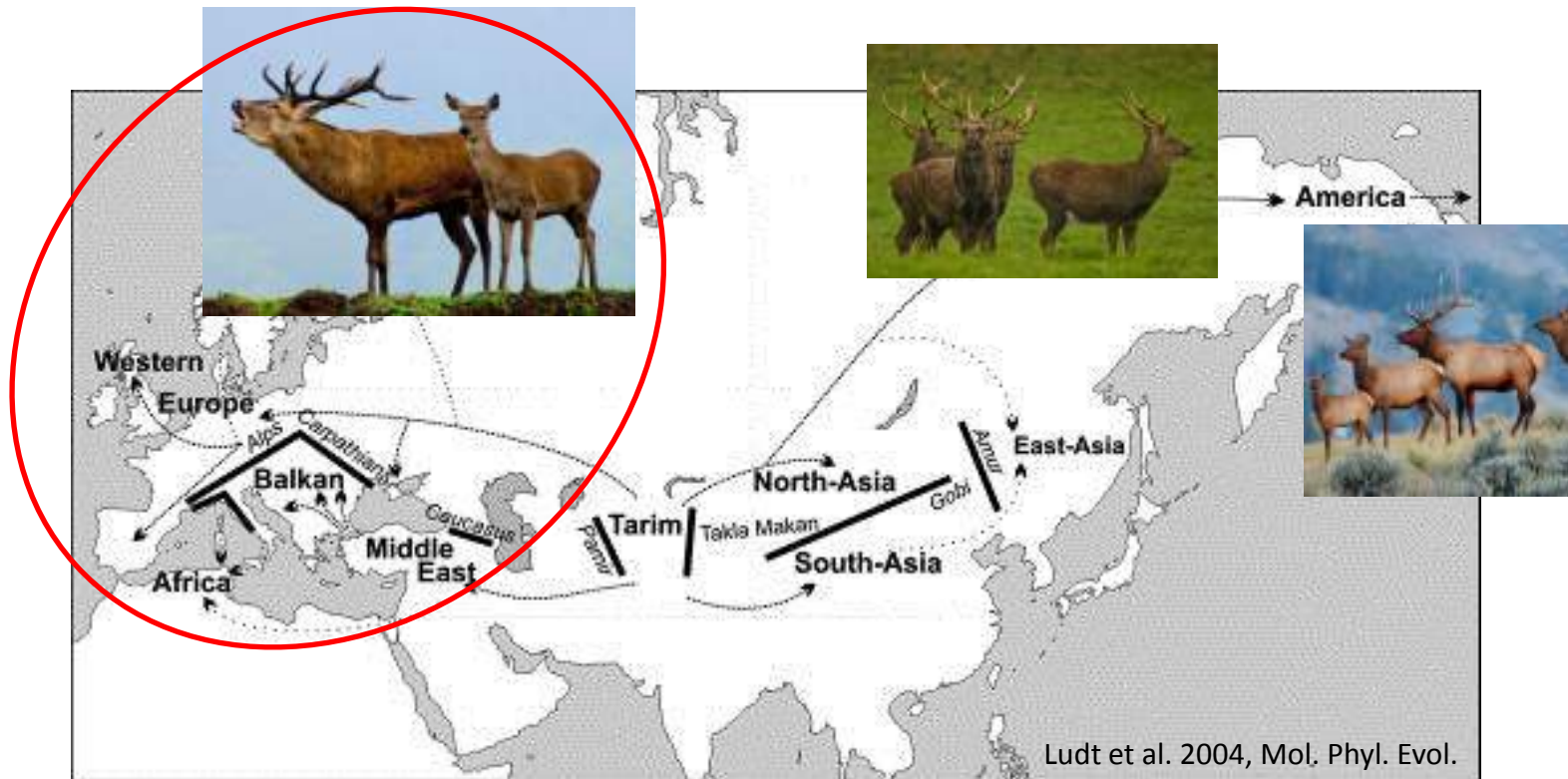
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Natural History Museum Vienna, Austria

LIFE+ „Onedeertwoislands“, Cagliari, 01 March 2018



# Red deer, sika and wapiti („elk“)



*Cervus nippon* + *Cervus elaphus* s.l.

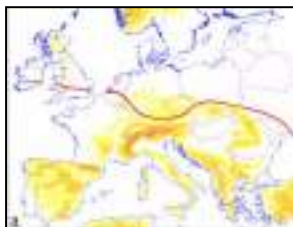
*Cervus nippon* + *Cervus elaphus* + *Cervus canadensis*

*Cervus nippon* + *Cervus elaphus* + *Cervus hanglu/wallichii* + *Cervus canadensis*

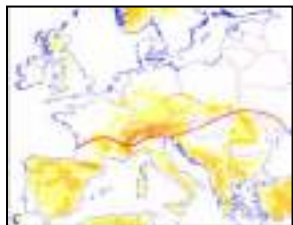


# Distribution during the LGM and recolonisation

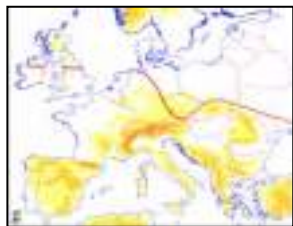
60.000 - 25.000 BP ▶▶▶▶



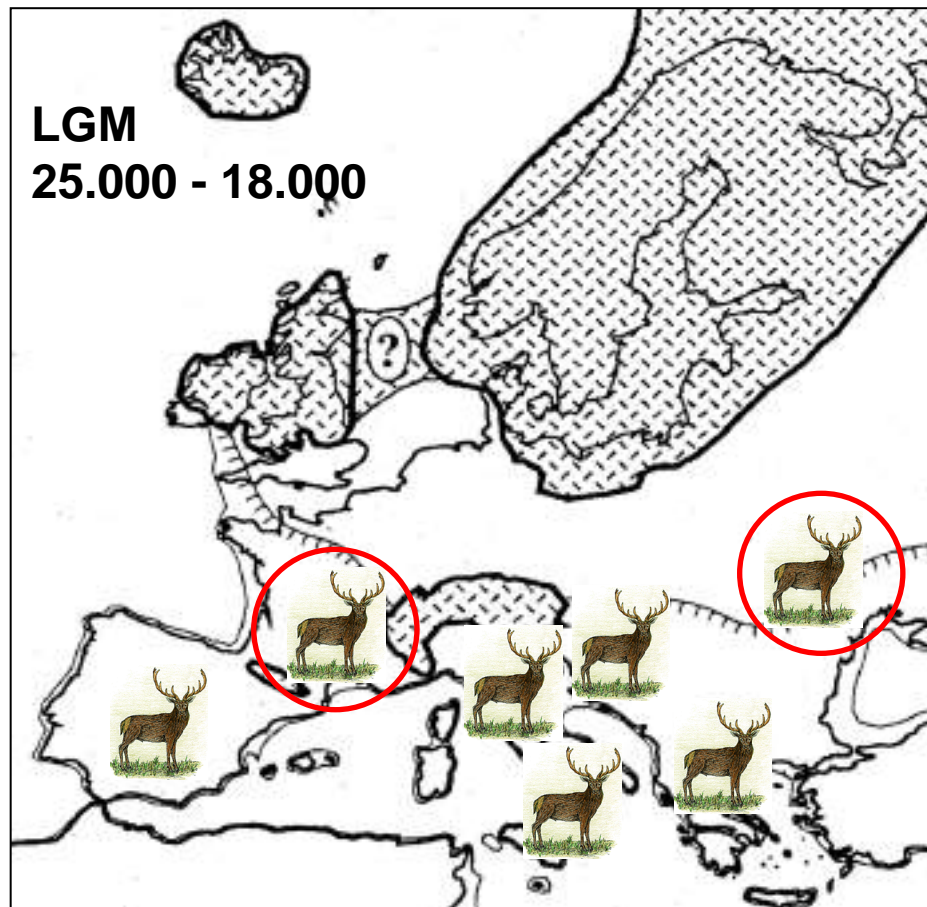
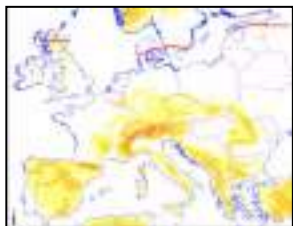
25.000 - 14.700 BP ▶▶▶▶  
(incl. **LGM**)



14.700 - 12.650 BP ▶▶▶▶

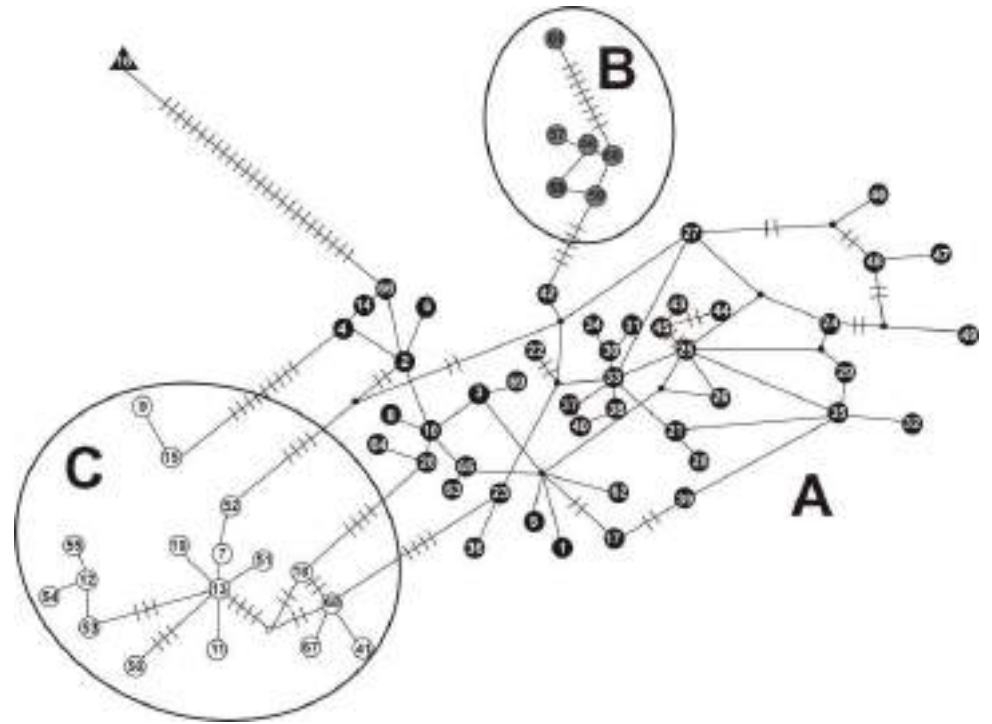
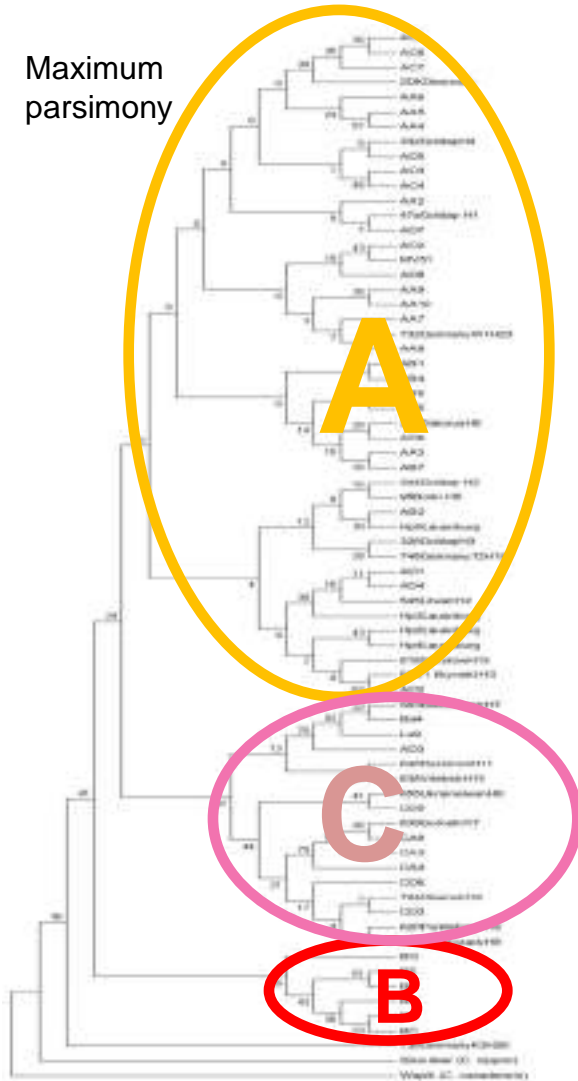


11.600 - 9.000 BP ▶▶▶▶



# mtDNA phylogeography of the red deer

Maximum parsimony



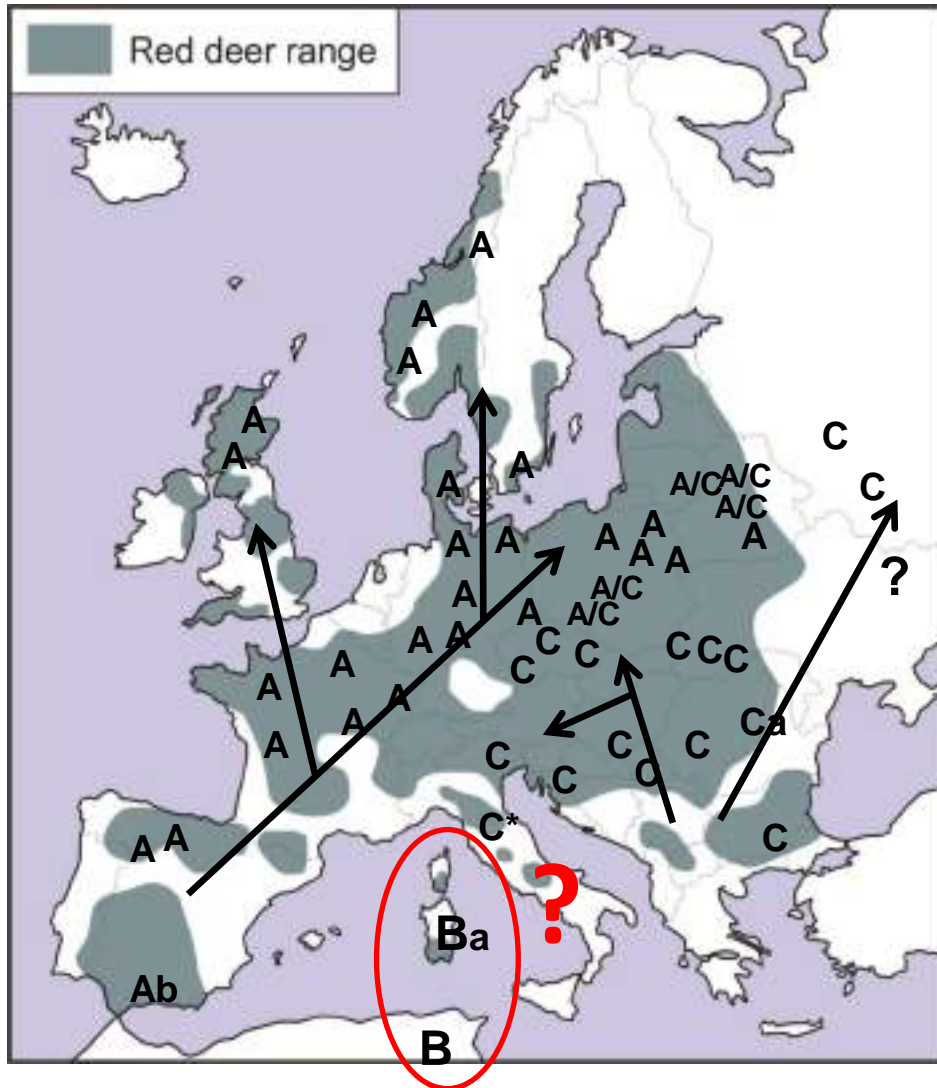
**3 mtDNA haplogroups (n > 1000):**

**Western (A)**

**Eastern (C)**

**Sardinia/N-Africa (B)**

# Phylogeography and recolonisation after the LGM



Tyrrhenian Red deer

*C. e. corsicanus*



Barbary red deer

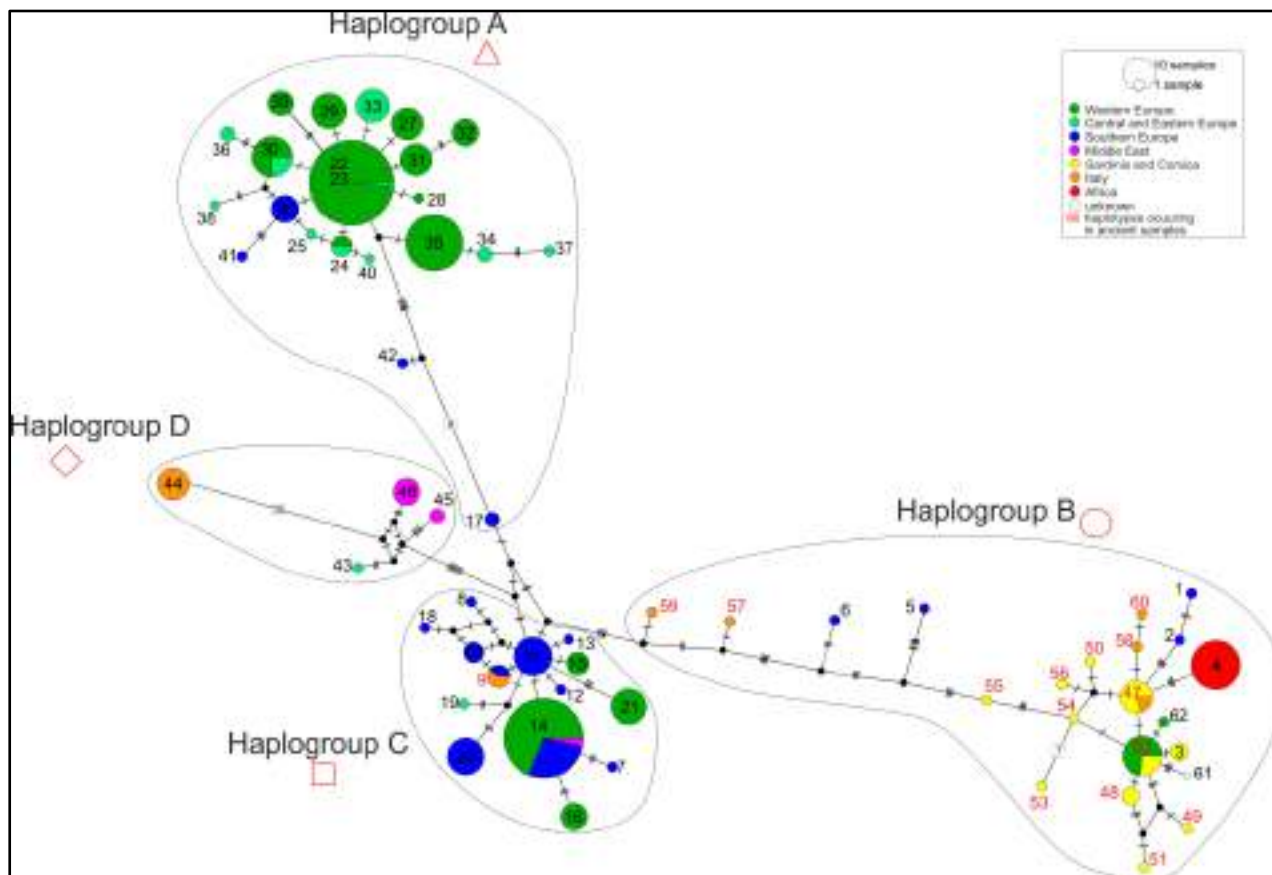
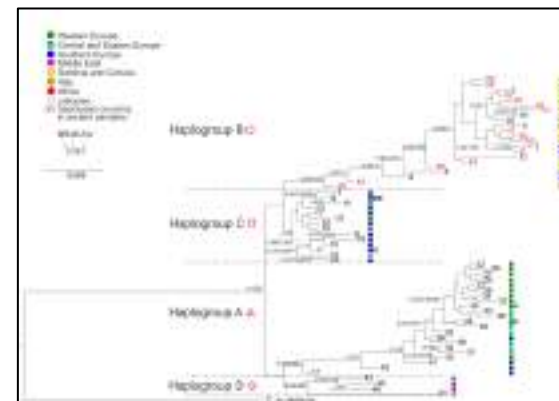
*C. e. barbarus*

# Ancient DNA (*cytochrome b*)

Italian mainland (15,600 – 6300 cal BP)

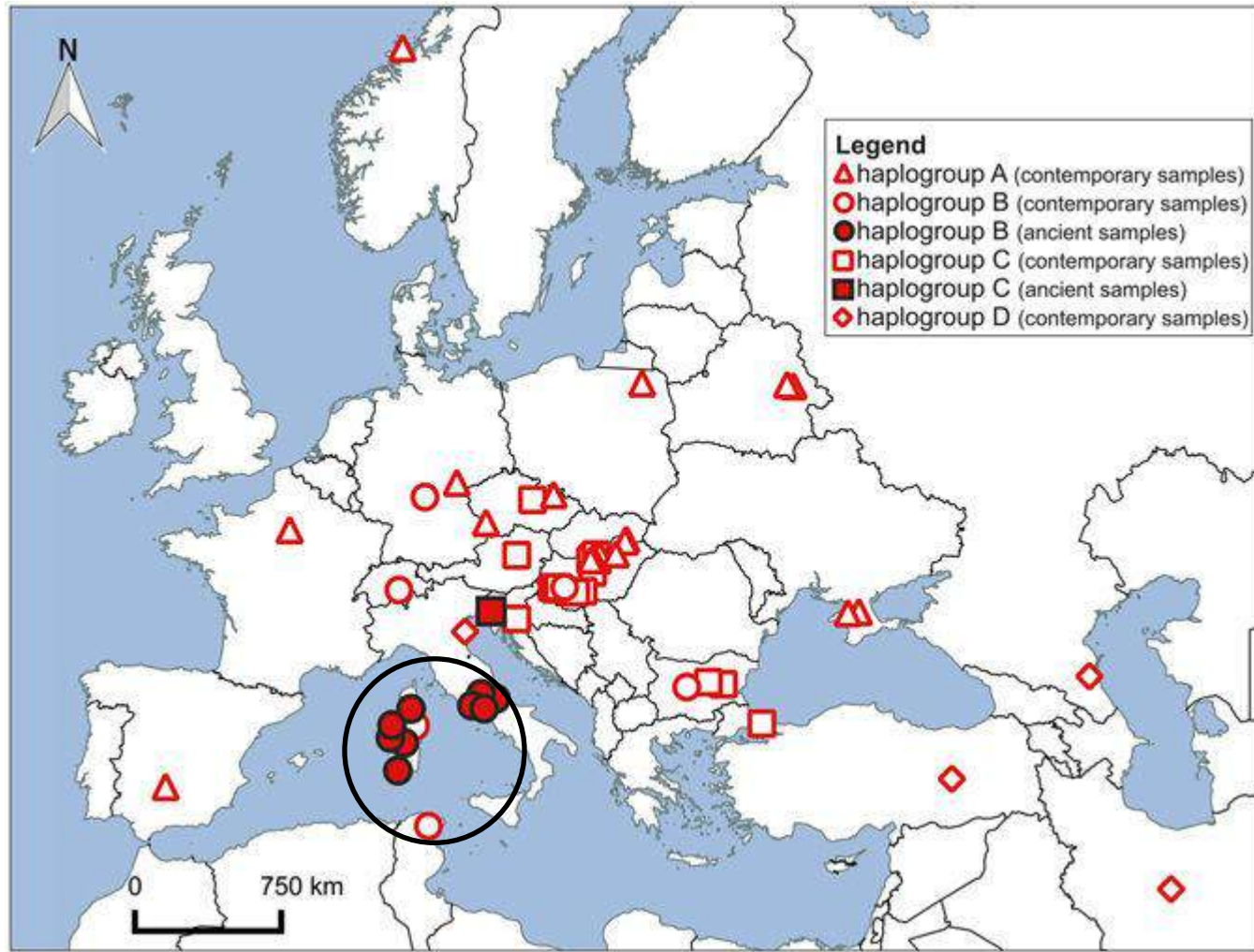
Sardinia (2700 – 550 cal BP)

Corsica (900 – 350 cal BP) (first „real“ Corsican genetic data)



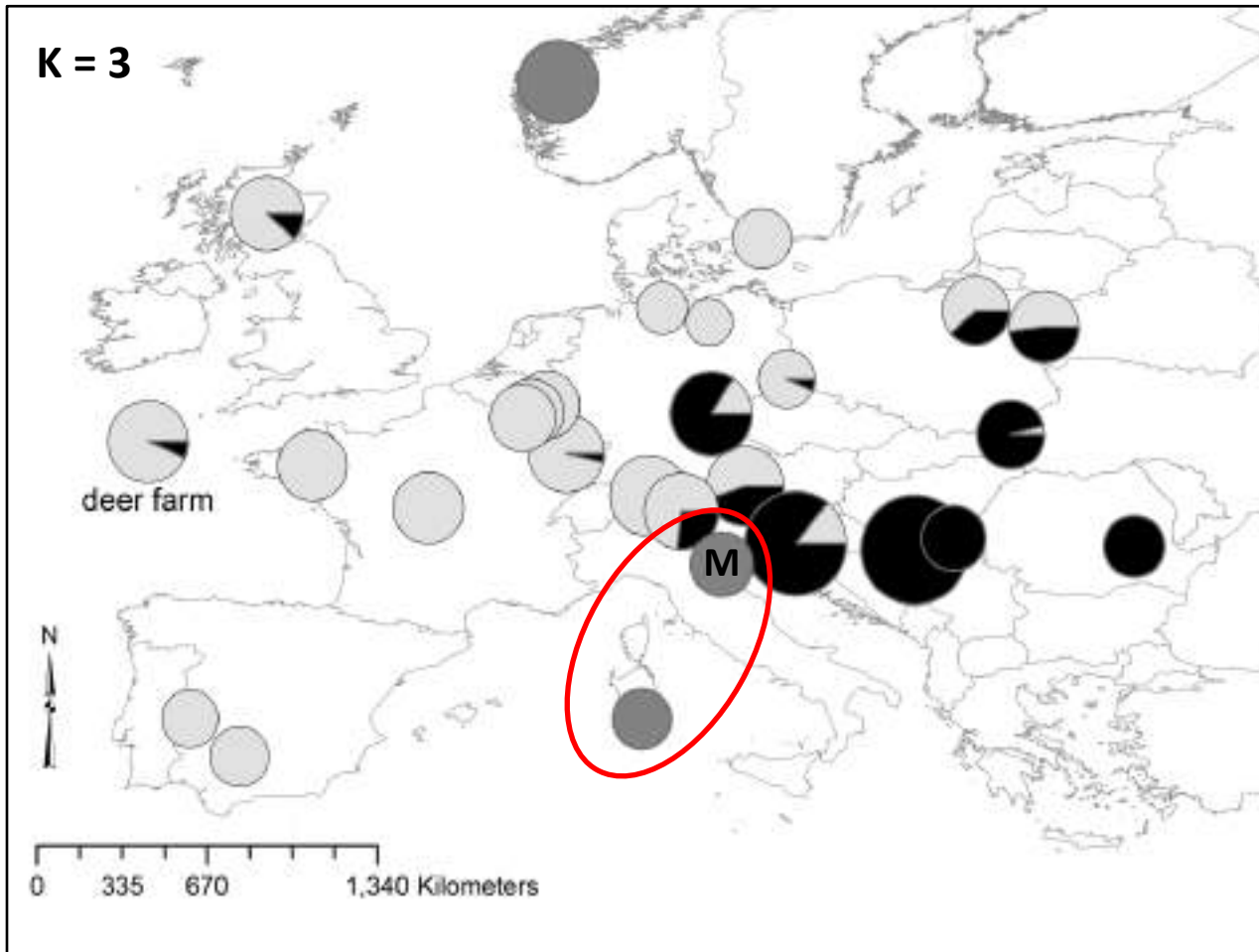


**Lineage B identified as the Italian mainland refugial lineage in red deer;  
Tyrrhenian and N-African red deer of mainland Italian origin!**



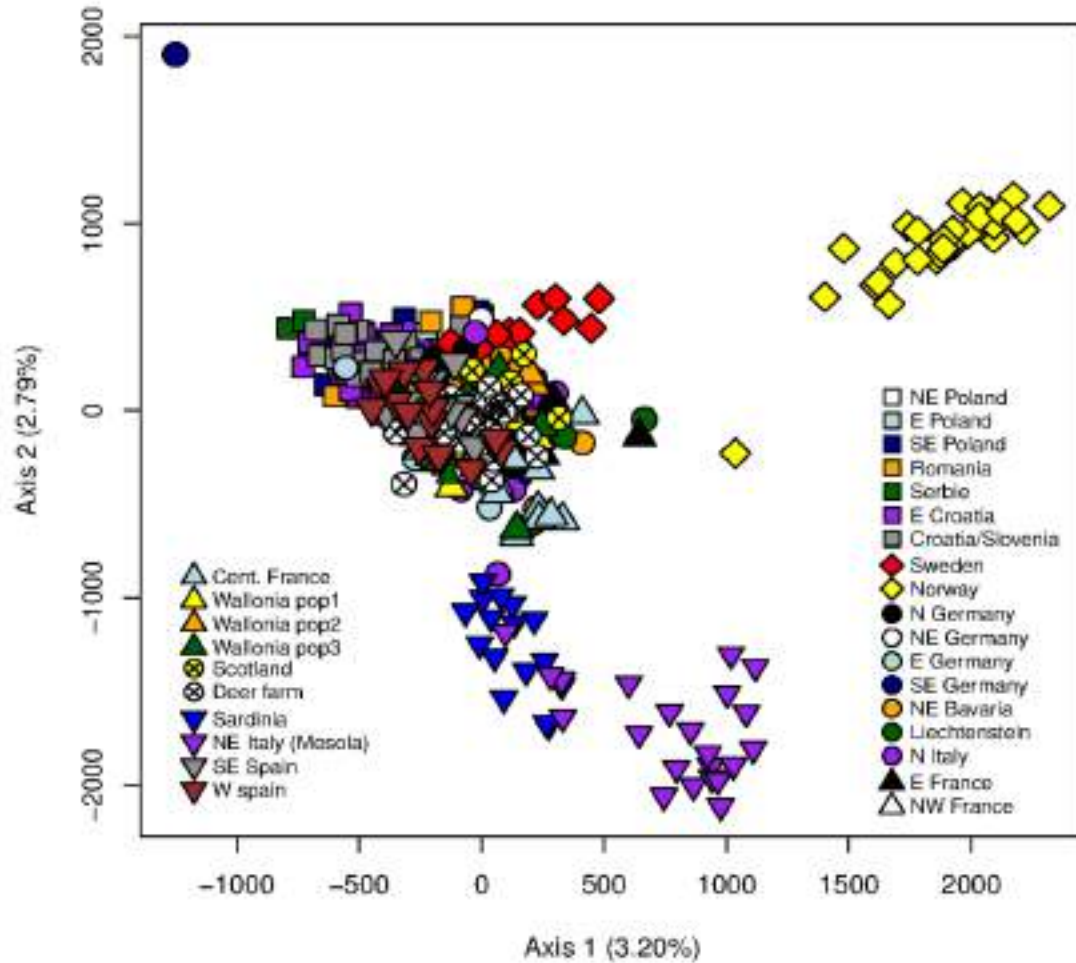
# What about nuclear DNA?

(n = 668, 13  $\mu$ satellites)





# Factorial Correspondence Analysis



**Sardinia and Mesola!**  
[in line with previous results based on other  $\mu$ sat datasets]



*Italian Journal of Zoology*, 2014, 1–8  
<http://dx.doi.org/10.1080/11250003.2014.895060>

REVIEW ARTICLE

**The unique Mesola red deer of Italy: taxonomic recognition (*Cervus elaphus italicus* nova ssp., Cervidae) would endorse conservation<sup>†</sup>**

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# Conclusions

1. Three different phylogeographic lineages/groups: A (western), C (eastern), B (Sardinia/Corsica, N-Africa). B lineage identified as Italian LGM refugial lineage by means of ancient DNA.
2. *C. elaphus corsicanus* and *C. e. barbarus* translocated from Italy.
3. Concordant phylogeographic large-scale patterns (Europe) of mtDNA and nuclear microsatellites.
4. Mitonuclear discrepancy with regard to relationships between *C. e. corsicanus* and *C. e. italicus*. More nuclear data (SNPs/sequences) needed.

Ongoing: geometric morphometrics study (PhD candidate K. Stefke)



**Desperately needed: female skulls of *C. e. corsicanus*...!!!**



# Mille grazie!

Magda Niedziałkowska, Białowieża  
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