

Phylogeography and origin of *Cervus elaphus corsicanus*



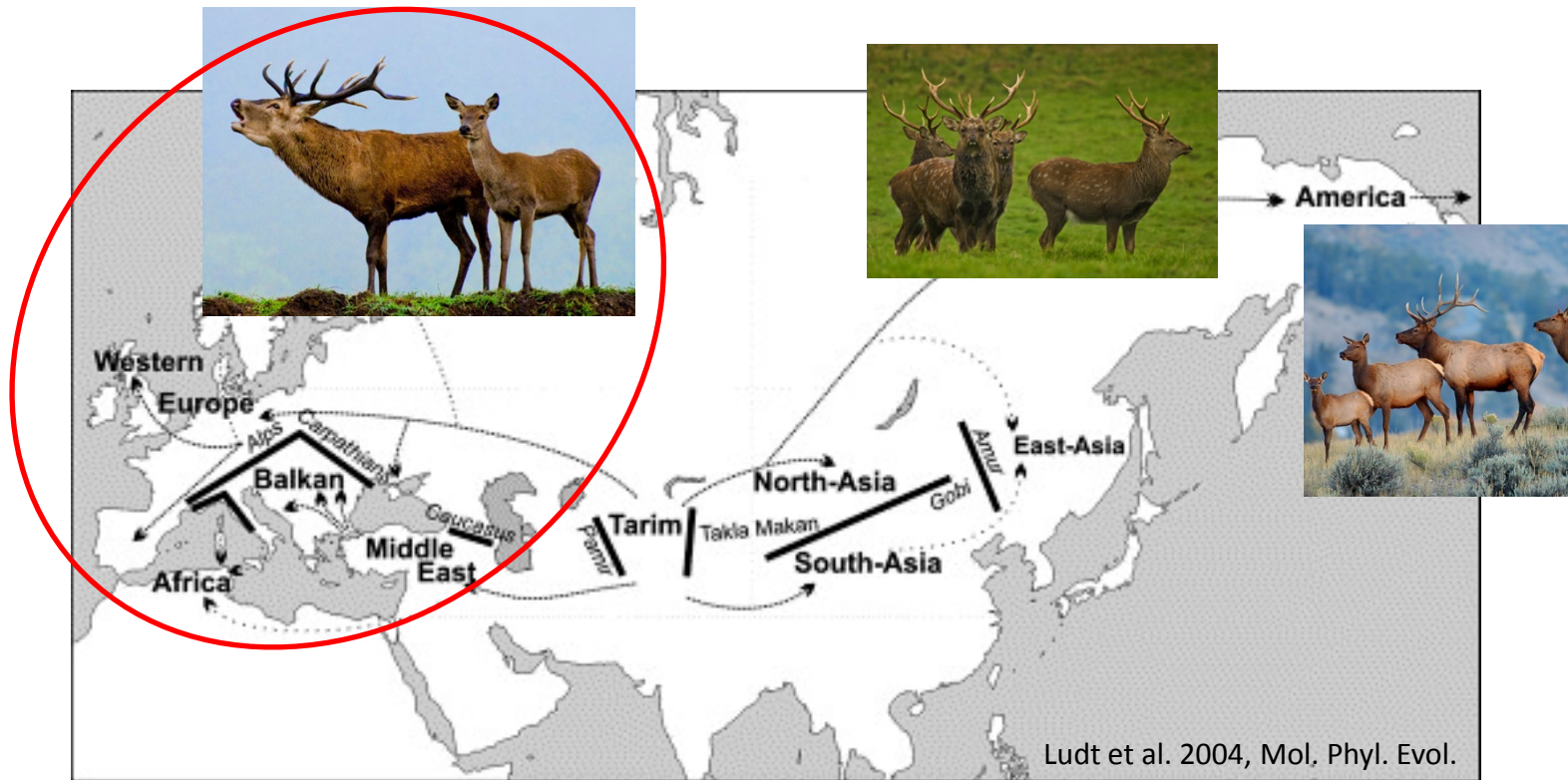
Frank E. Zachos

Natural History Museum Vienna, Austria

LIFE+ „Onedeertwoislands“, Cagliari, 01 March 2018



Red deer, sika and wapiti („elk“)



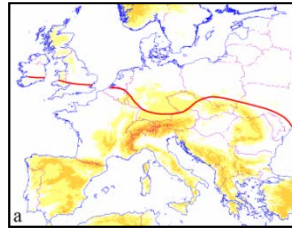
Cervus nippon + *Cervus elaphus* s.l.

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

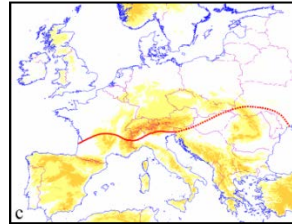
Cervus nippon + *Cervus elaphus* + *Cervus hanglu/wallichii* + *Cervus canadensis*

Distribution during the LGM and recolonisation

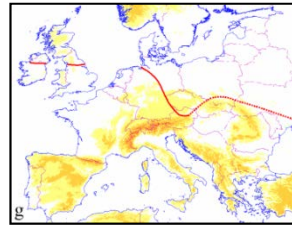
60.000 - 25.000 BP ▶▶▶▶



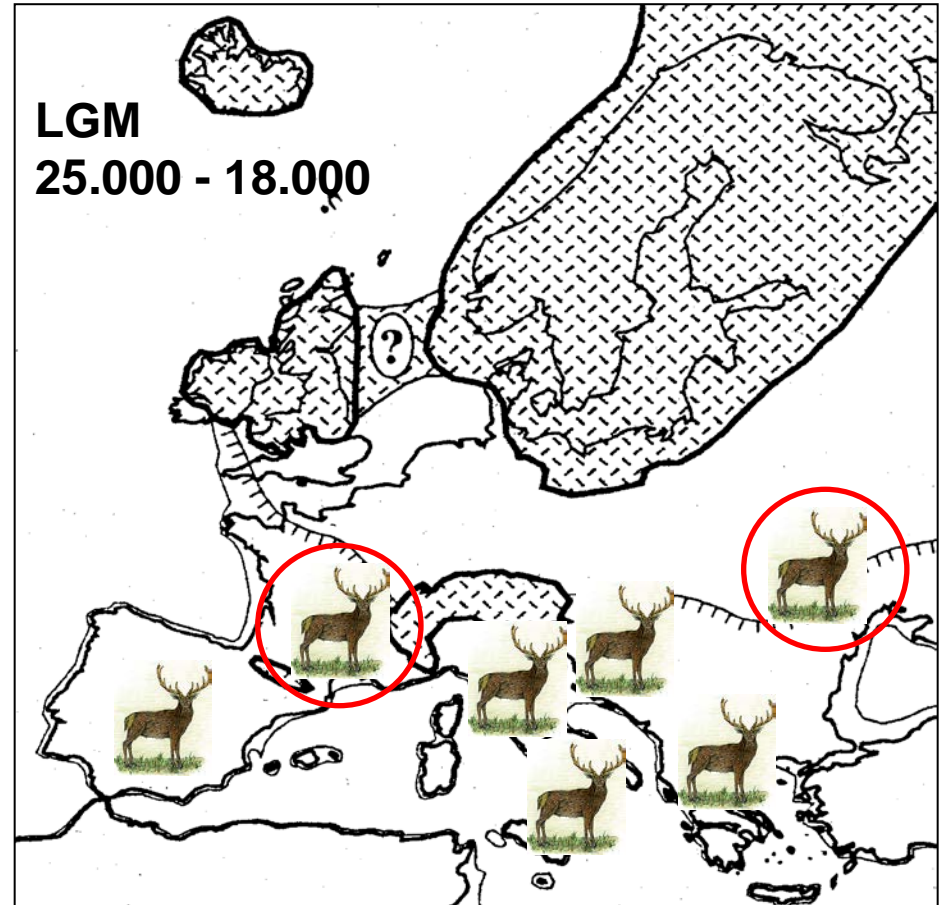
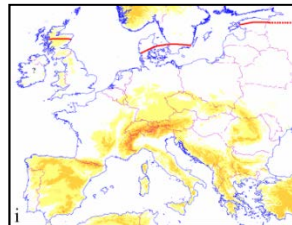
25.000 - 14.700 BP ▶▶▶▶
(incl. **LGM**)



14.700 - 12.650 BP ▶▶▶▶

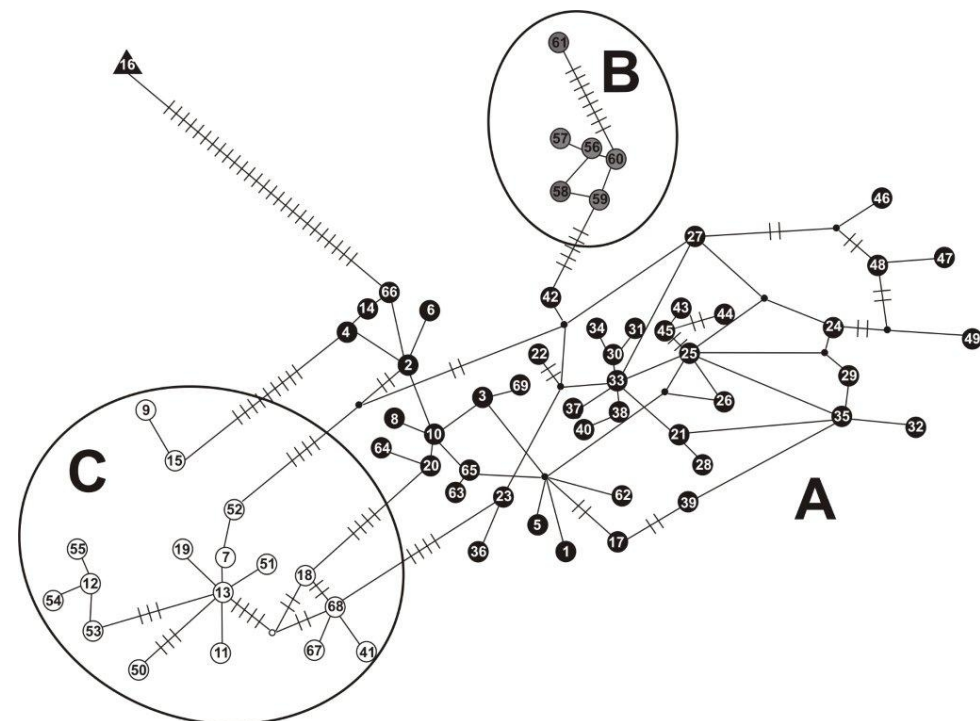
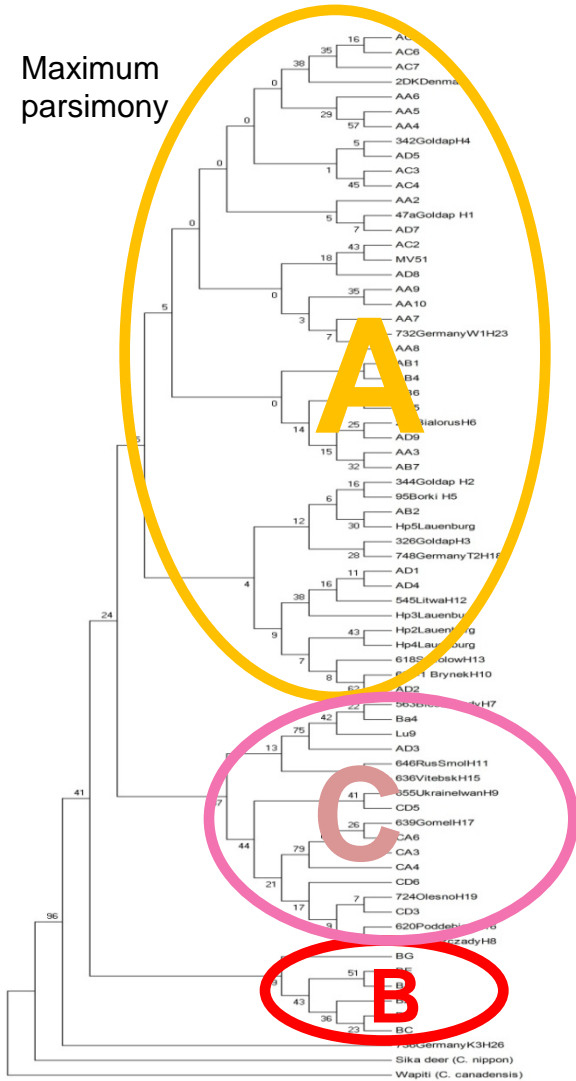


11.600 - 9.000 BP ▶▶▶▶



mtDNA phylogeography of the red deer

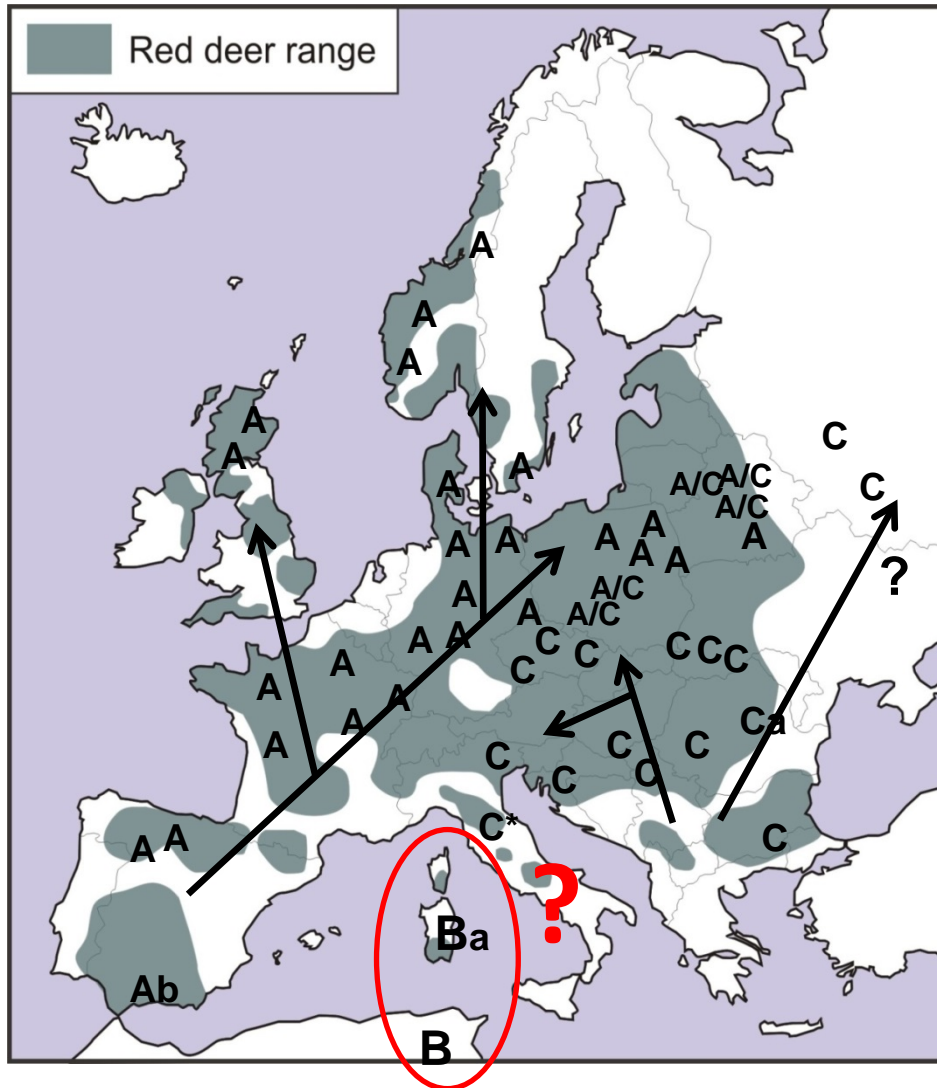
Maximum parsimony



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

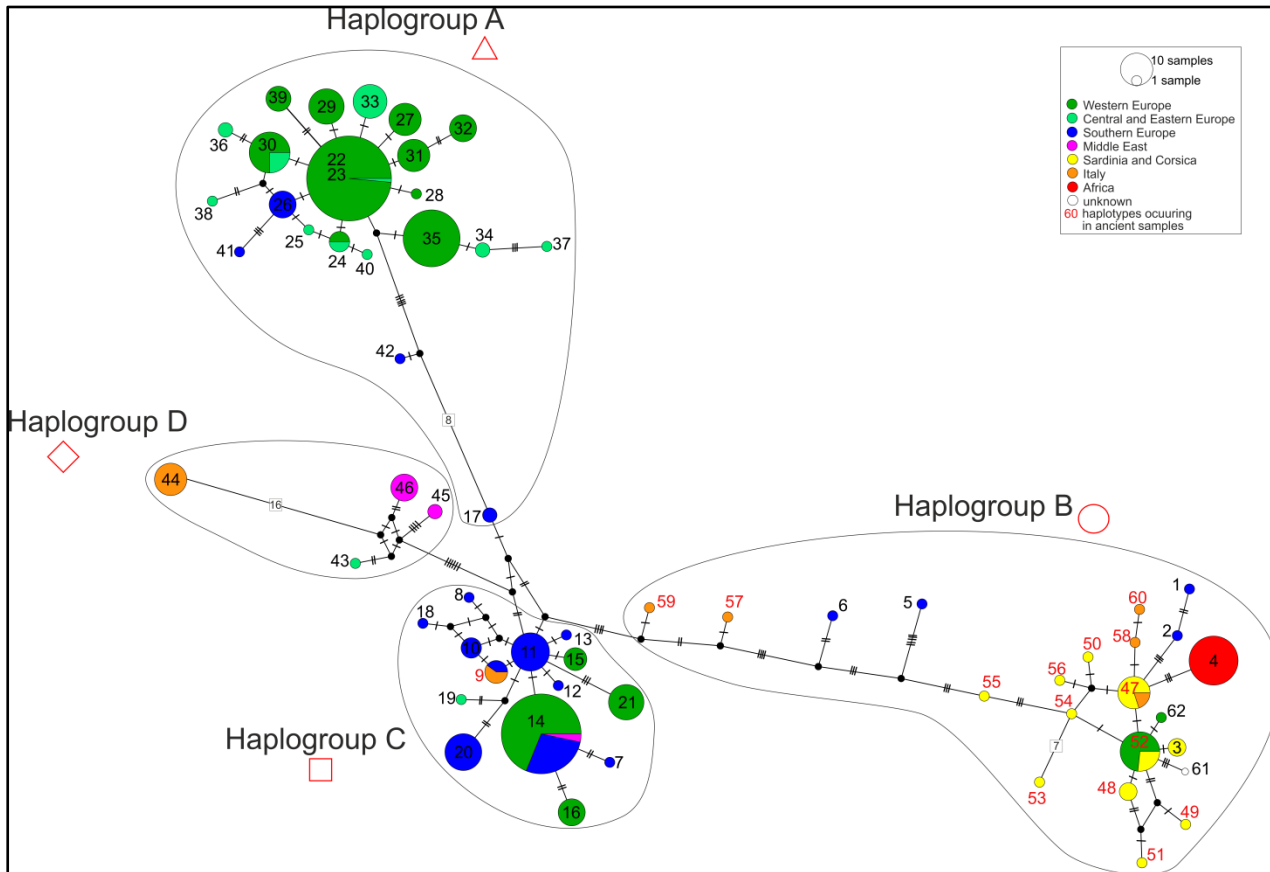
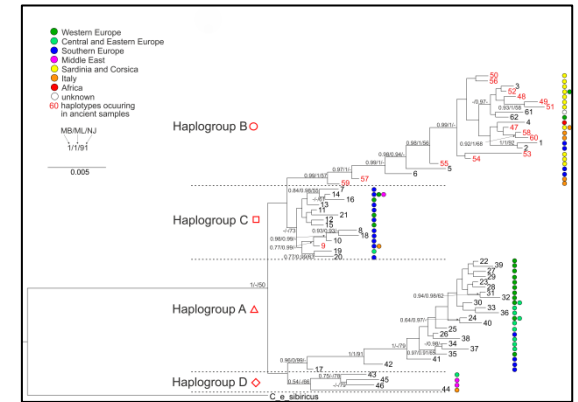
C. e. barbarus

Ancient DNA (*cytochrome b*)

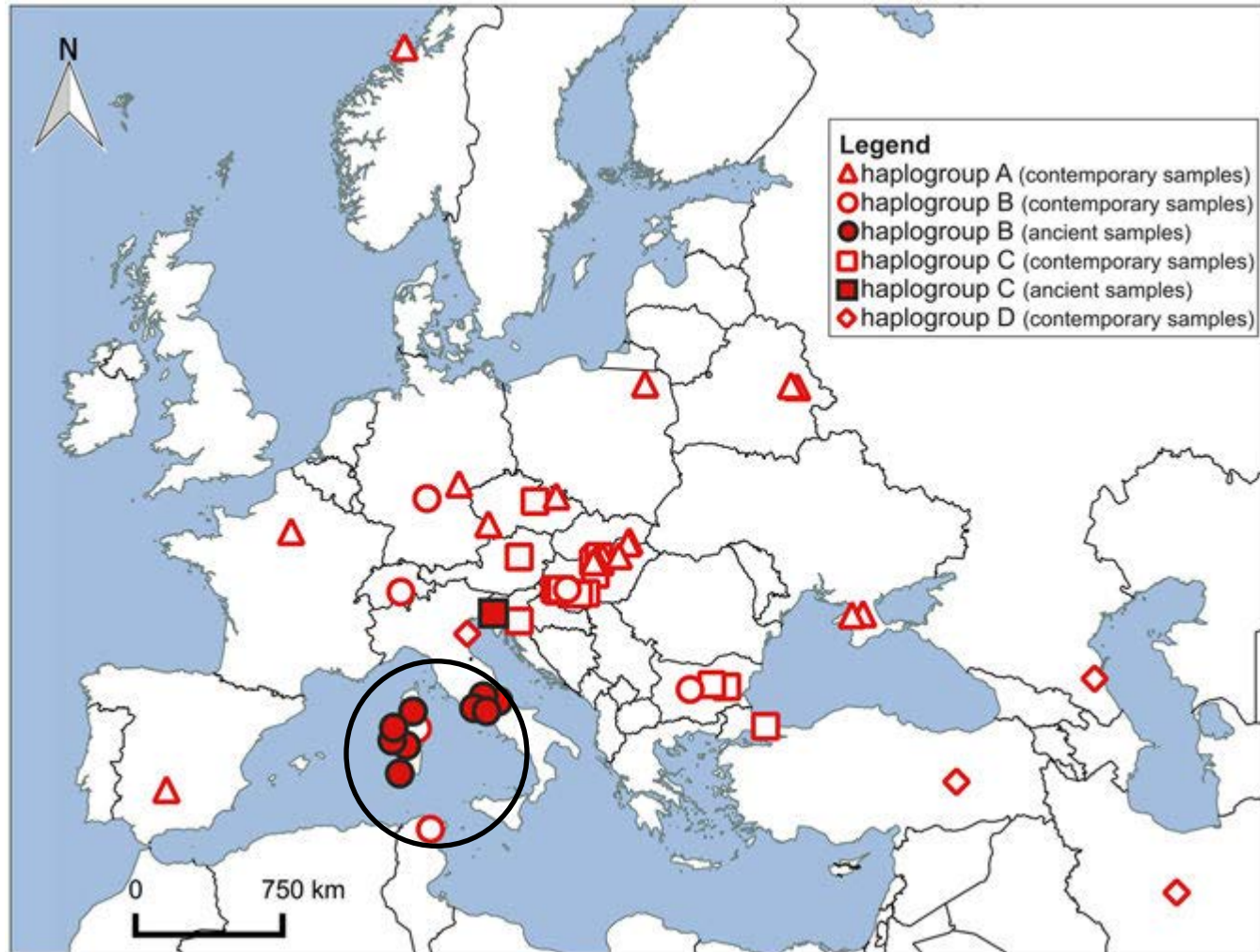
Italian mainland (15,600 – 6300 cal BP)

Sardinia (2700 – 550 cal BP)

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

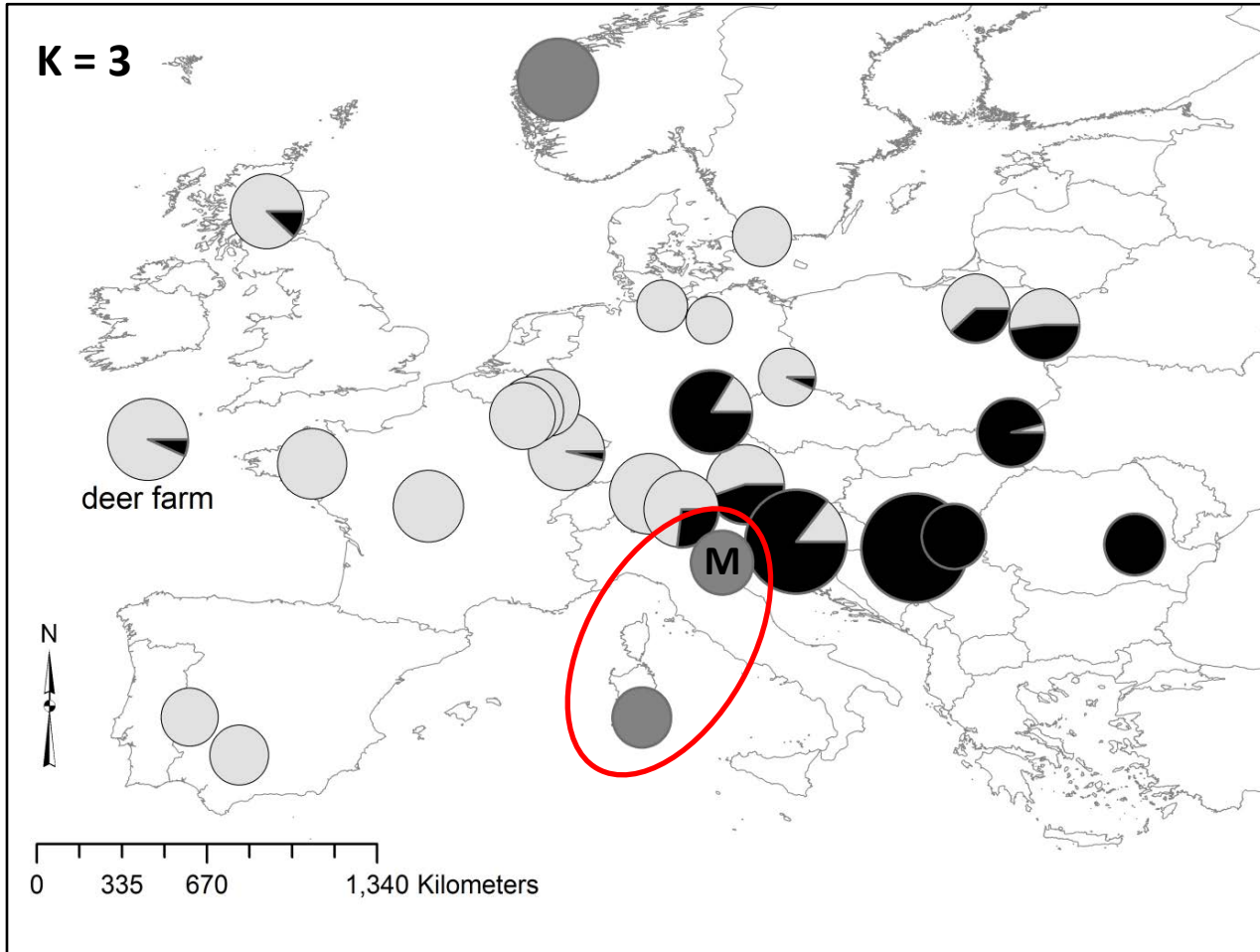


**Lineage B identified as the Italian mainland refugial lineage in red deer;
Tyrrhenian and N-African red deer of mainland Italian origin!**

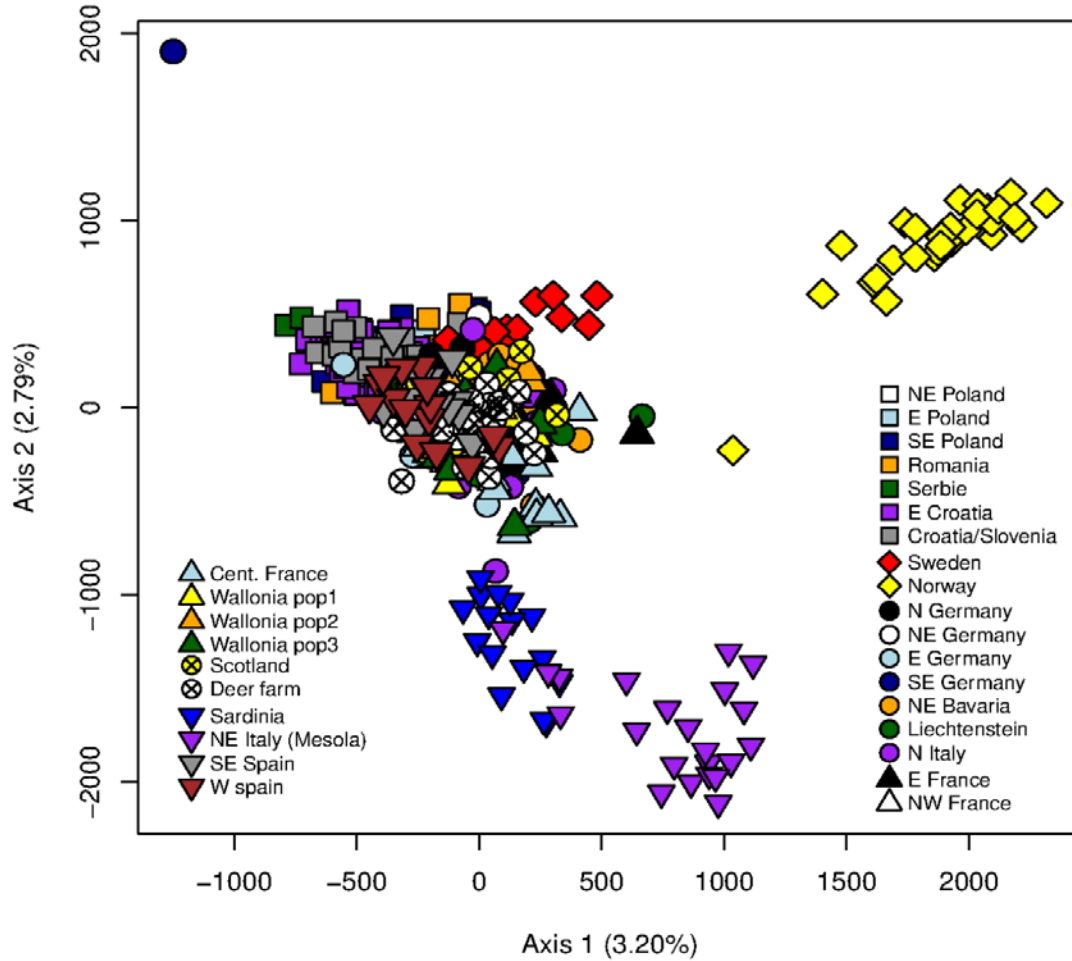


What about nuclear DNA?

(n = 668, 13 μ satellites)



Factorial Correspondence Analysis



Sardinia and Mesola!
[in line with previous results based on other μsat datasets]



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REVIEW ARTICLE

The unique Mesola red deer of Italy: taxonomic recognition (*Cervus elaphus italicus* nova ssp., Cervidae) would endorse conservation[#]

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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
Karolina Doan, Warsaw
Barbara Wilkens, Sassari
Jean-Denis Vigne, Paris
Alain Frantz, Luxembourg
Marie-Christine Flamand, Leuven

