

Provisional Book of Abstract

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Preliminary study of the Caprera goat: an ancient feral population?

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A preliminary characterisation of the Caprera goat population was conducted through phenotypic assessment and genomic analyses in collaboration with *Associazione Allevatori della Regione Sardegna* and *Parco Nazionale Arcipelago di La Maddalena*. The Caprera goats, a feral, free-roaming, and unmanaged population, have inhabited the island of Caprera -part of the Maddalena Archipelago near Sardinia- since ancient times: according to early written records, they were introduced to the island in the latter half of the 1600s by Corsican shepherds from Bonifacio.

Nine adult individuals (3 females, 6 males) were examined for morphological traits and genotyped using the Illumina IGGC 65K SNP chip. The resulting genomic data were compared to a public dataset from the Italian Goat Consortium, which includes over 1,000 individuals spanning more than 30 Italian goat breeds. After quality control, population structure, genomic background, and inter-population relationships were assessed.

Phenotypically, Caprera goats are large animals, with most individuals exhibiting long hair and predominantly red or red-and-white coat colouration. All individuals were horned, with males displaying greater homogeneity in their appearance compared to females.

Genomic analyses, including multidimensional scaling analysis, genomic distance-based phylogenetic trees, and admixture analysis, revealed a clear genetic originality of the Caprera goats. The population forms a well-separated cluster, distinct from all known Italian breeds. The closest genomic affinities were observed with Sardinian breeds, as expected, and the Montecristo goat, another insular wild goat population. The investigation of runs of homozygosity also uncovered extremely high levels of inbreeding.

These preliminary findings underscore the originality and uniqueness of the Caprera goat population. However, further studies involving a larger sample size and comparisons with other Mediterranean breeds that may have historically influenced these goats are needed. In addition, in-depth investigations into the Caprera goats' wild behaviour and population dynamics are essential. Such efforts will support the development of effective conservation strategies aimed at preserving this ancient and unique genetic resource, ensuring its long-term survival and valorization.

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