HYBRIDIZATION AND POPULATION GENETIC STRUCTURE OF EUROPEAN WILDCATS FROM THE DINARIC ALPS AND PANNONIAN BASIN

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Fragmentation and habitat loss have contributed significantly to the demographic decline of European wildcat *(Felis silvestris silvestris)* populations, and hybridization with domestic cats *(F. catus)* poses a threat to the loss of genetic purity of the species. Here, we explore the genetic structure, demographic history, and population differentiation based on whole genome data of the endangered European wildcat in the intersection of the Dinaric Alps and the Pannonian Basin in Slovenia, Croatia, and Serbia, with the particular focus on historical and recent introgression between wild (sub)species and domestic cats.

We whole-genome sequenced 32 wildcats. Twenty-two of the individuals included in the study were identified as pure wildcats (69%) and ten as hybrids (31%) between wildcats and domestic cats by microsatellite markers (Urzi et al. 2021*). We have included 17 samples downloaded from GenBank in the analysis. These samples belong to the following taxa: *F. catus*, *F. s. silvestris* and *F. s. lybica*.

Using microsatellite markers, we found that wildcat populations were divided into two genetic clusters, largely consistent with a geographic division into a genetically diverse northern group and a genetically eroded south-eastern group. The WGS data also revealed a statistically significant? divergence of populations in two clusters, but the introgression pattern differs from the microsatellite analysis. In Serbia, we found that half of the Serbian "hybrids" (as indicated by microsatellite markers) resulted from introgression from *Felis silvestris lybica*. This may reflect a historical introgression that persists in the area and may result from a historical contact zone between *F. s. lybica* and *F. s. silvestris* in the region.

We found population differentiation of European wildcats, including recent persecution-driven population divergence. The low level of domestic introgression

found in this study indicates a substantial level of “resistance” of this elusive species towards major anthropogenic impacts, such as the omnipresence of domestic cats as well as substantial habitat fragmentation. In Serbia, we likely found introgression that is a consequence of historic contact zone, but a more detailed study of selective pressures is needed.