

The complex evolutionary history of the cave bear in Poland compared to Europe is poorly understood. So far, the obtained research results proved that the only chronosubspecies present in this territory was *Ursus spelaeus ingressus*. However, many years of research in museums and private collections led to the discovery of a significant number of materials that were thought to have been lost or destroyed. Two areas in particular, the Sudeten Mts and the Krakow-Częstochowa Upland, are important in the European context and in Poland as an east-west migration corridor. The finds in the Sudetes turned out to be especially interesting, where, after detailed morphometric studies, not one but about five chronosubspecies were found, including 3 new to the Sudeten area. The presence of the dwarf cave bear *Ursus savini rossicus*, an old, distinct lineage, is especially noteworthy since it is the first record in Central Europe. It was identified based on over 8000 bones from the collection from the caves of Mount Połom, and preliminary genetic tests confirmed such an identification.

Multiproxy analyses and comprehensive research using various modern morphometric methods (3D scans, Landmark measurement method), isotopic and genetic analyses will be correlated, and it will be possible to estimate the age of these specimens based radiocarbon and uranium-thorium dating. The analyses will be performed by a team with extensive experience. The specimens will be subjected to a set of tests to answer fundamental questions regarding the possible co-occurrence of various cave bear chronosubspecies, the scale and nature of competition between them, occupied niches and food preferences, migration routes, and the origin of individual phylogenetic lineages, correlation of morphometric and genetic data (species or chronosubspecies) and finding possible hybridization of cave bear chronosubspecies with the brown bear.

The study of the cave bear, an iconic Late Pleistocene species, can contribute to the protection of modern large carnivorans. Understanding the mechanisms of the process that led to the disappearance of cave bears may be translated into the development of methods that would allow to stop this trend today. This is very important, for example, in the context of the possible recolonization of the Sudetes by the brown bear that once inhabited these areas. An attempt to reconstruct the bear-human-environment relationship, should also be emphasised here. Perhaps it will be possible to find an answer to the question about the possible cult of the cave bear in this area, which in the case of the brown bear has been confirmed. Getting to know the whole complex process of evolution and the relationship of the cave bear is the first stage of a multidimensional study of the paleoenvironment of the Sudetes, aimed at showing its uniqueness by comparing the results obtained with other upland and mountainous regions of Europe, such as the Krakow-Częstochowa Upland (Poland), the Swabian Upland (Germany), Moravian Karst (Czech Republic), and the region of the Ukrainian Carpathians.