

Red deer (*Cervus elaphus*) is one of the few large herbivore mammal species, which occurs in almost whole Europe in both densely forested and open habitats, since prehistoric time till now. This fact is proved by large abundance of red deer remains in archaeological sites across the continent. Over the last few years many studies revealed data considering past habitat selectivity of red deer, determined by stable isotopes ratio in bone collagen. But there are still many questions and hypotheses that need to be verified. Until now, very few research considered the variability of the level of stable isotopes contained in bone collagen of modern deer. It could provide a basis for interpretation of the results of isotopic analyses performed on subfossil material. In addition, these research did not consider such factors as sex and age of individuals, and their conclusions are not clear. There is a lack of precise analysis performed on contemporary populations, indicating the sources of variation in level of stable isotopes in bone collagen. The aim of this project is to identify the factors that determine the variability of the content of stable isotopes of carbon ^{13}C ($\delta^{13}\text{C}$) and nitrogen ^{15}N ($\delta^{15}\text{N}$) in red deer bone collagen. The main tool of our research will be the analyse of the carbon and nitrogen stable isotopes ratio in bone collagen of contemporary living animals using mass spectrometry. Material for the research will be bones (finger and mandible bones) of individuals, culled during the official hunting. We will perform our study at three levels: intrapopulation level, interpopulation level and interindividual level. At the intrapopulation level we will compare the content of stable isotopes in bone collagen from populations inhabiting different environment, eg. dense forests vs. open land and lowlands vs. mountains. At the interpopulation level we will analyse differences in stable isotopes ratio between hinds and stags and between juveniles and adults. At the interindividual level we will compare the content of stable isotopes in bone collagen between different parts of individual's skeleton: finger bones and mandible bones. The knowledge of the pattern of variation of stable isotopes of carbon ^{13}C ($\delta^{13}\text{C}$) and nitrogen ^{15}N ($\delta^{15}\text{N}$) in bone collagen and the factors which have impact on it will be important for proper interpretation of the results of the isotopic analyses performed using bone collagen extracted from subfossil materials. The results of this project will allow to define "isotopic reference database". It will enable indication of habitat and climatic conditions in areas occupied in the past by red deer with greater precision.