



Ecological differences in three autochthonous equid species in Mongolian Gobi inferred from stable isotopes in tail hair

Martina Burnik Šturm (1), Christian C. Voigt (2), Ganbaatar Oyunsaikhan (3), and Petra Kaczensky (1)

(1) Research Institute of Wildlife Ecology, University of Veterinary Medicine, Vienna, Austria, (2) Leibniz Institute for Zoo and Wildlife Research, Berlin, Germany, (3) Great Gobi B Strictly Protected Area Administration, Takhin Tal, Mongolia

In the Dzungarian Gobi of Mongolia three equid species, Asiatic wild ass (*Equus hemionus*), domestic horse (*Equus caballus*), and re-introduced Przewalski's horse (*Equus ferus przewalskii*) share the same habitat and thus provide a unique opportunity for comparative ecological studies. In our project we use the stable isotope analysis of tail hair as a tool to study feeding ecology, water use and movement pattern of the three extant sympatric equid species to reveal species specific differences and thus strengthen our understanding of the ecological adaptations of the three species to the harsh environment of the Gobi desert.

Since tail hair grow continuously and is isotopically inert after formation, when sampled and analysed longitudinally, provides temporary explicit information on dietary regime and movement pattern. We use the carbon isotopes in the tail hair to determine the quantitative dependence of each animal on isotopically distinct C₃ (grasses) and C₄ (multitude of annuals and perennials) diet. Nitrogen isotopes reflect the isotopic composition of the diet and hydrogen isotopes reflect the isotopic composition of the water that animals utilize, while both elements have been reported to also give information on the physical status of the animal. Combined isotope data will be used to describe the movement patterns and habitat use of the three equid species.

We will present the methodology and first preliminary results of carbon and nitrogen isotope analysis of potential forage plants of the study area and of the tail hair analysis. Among the analysed plants, collected in the pilot sampling campaign in 2012 (n = 192), we identified 14 C₃ and two C₄ species and found no general trend that could explain the effect of altitude on carbon isotopic composition in C₃ plants and no correlation between carbon isotopic composition and longitude or latitude. We performed additional, more detailed plant sampling in 2013. The first results obtained from the tail hair analysis indicate differences in feeding preferences between extant wild asses (n = 6) and Przewalski's (n = 6) and domestic horses (n = 6). While wild asses switch regularly between periods with predominantly feeding on C₃ diet with low incorporation of C₄ diet (wet season) and periods with high incorporation of C₄ (dry season) diet, Przewalski's and domestic horses predominantly feed on C₃ plant diet but seem to also include C₄ plants in their diet during extreme conditions (i.e. extremely harsh winters).