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Stable isotopes suggest differences in diet between historic and reintroduced Przewalski′s horses in the Gobi desert

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In historic times, two wild equid species, the Przewalskis horse (PH; Equus ferus przewalskii) and the Asiatic wild ass (khulan, KH; Equus hemionus), roamed the Eurasian steppes. By the end of the 1960s, PHs had been driven to extinction in the wild and the range of KHs became severely restricted to the least productive habitats. However, PHs survived in captivity and reintroductions since the 1990s have brought the species back to parts of its native range in Mongolia and northern China where they again overlap with KHs. Ecological research on PHs and KHs has increased in recent years, but very little information is available on the ecology of the original PHs prior to extinction in the wild. We applied stable isotope analysis (13C, 15N, and 2H) of segmentally cut tail hair of PHs and KHs, collected during expeditions in NW China and SW Mongolia in 1889-1899, to draw inferences about the species feeding ecology. We compared tail hair isotope patterns of historic individuals to those of their extant counterparts from the Mongolian Gobi. A previous study of isotopic tail hair signatures of extant PHs (N=6) and KHs (N=6) suggested species specific differences in diet, with PHs being year-round grazers, but KHs switching between being grazers in summer and mixed feeders in winter (Burnik Šturm et al., in prep.). The comparison of isotope patterns of extant with historic samples confirms diet seasonality in historic KHs (N=3), but detects the same seasonality in five out of six PHs, suggesting that historic PHs had a different isotopic dietary niche than extant PHs. While we are still unable to fully understand the underlying reasons for this change in PHs, our results clearly suggest that the isotopic dietary niche of PHs was wider in the past, suggesting a higher diet flexibility, and overlapped with that of KHs, suggesting a high competition potential over Gobi pastures between the two equid species in historic times.

Reference:
Burnik Šturm, M., Ganbaatar, O., Voigt, C.C., Kaczensky, P. Stable isotopes reveal differences in the feeding ecology of three sympatric equid species in Dzungarian Gobi, Mongolia (in prep.)