

Differentiation of Meat Samples from Domestic Horses (*Equus caballus*) and Asiatic Wild Asses (*Equus hemionus*) Using a Species-Specific Restriction Site in the Mitochondrial Cytochrome *b* Region

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Abstract

Recent studies suggest that Asiatic wild asses (*Equus hemionus*) are being increasingly poached in a commercial fashion. Part of the meat is believed to reach the meat markets in the capital Ulaanbaatar. To test this hypothesis, we collected 500 meat samples between February and May 2006. To differentiate between domestic horse (*Equus caballus*) and wild ass meat, we developed a restriction fragment length polymorphism (RFLP) assay based on the polymerase chain reaction (PCR). We amplified and sequenced a cytochrome *b* fragment (335 bp) and carried out a multialignment of the generated sequences for the domestic horse, the Asiatic wild ass, the domestic donkey (*Equus asinus*) and the Przewalski's horse (*Equus ferus przewalskii*). We detected a species-specific restriction site (AatII) for the Asiatic wild ass, resulting in a specific restriction fragment length polymorphism (RFLP) band pattern. This RFLP assay represents a rapid and cost-effective method to detect wild ass meat. All of the 500 meat samples we collected and analysed within this pilot project proved to be domestic horsemeat as declared by the sales people. Thus, either the assumption that wild ass meat is sold as "cheap horse meat" is wrong, or we picked the wrong markets, products or season.

Key words: Asiatic wild ass, domestic horse, illegal meat market, Mongolia, restriction fragment length polymorphism (RFLP)

Introduction

Numbers and distribution range of the Asiatic wild ass (*Equus hemionus*) have undergone a dramatic decline over the last 100 years. With an estimated population of 20,000 animals (Lhagvasuren, 2007), Mongolia remains the last and most important stronghold of the wild ass. Most probably no more than 5,000 individuals remain outside of Mongolia and northern China (Blank, 2007; Jowkar pers. comm., 2007; Lukarevski & Gorelov, 2007; Shah & Quershi, 2007; Yang, 2007).

In the IUCN Equid Action Plan the status of *E. hemionus* is qualified as "insufficiently known" and the species is listed as vulnerable (Feh et al., 2002). It is also listed in appendix I of the Convention on International Trade of Endangered Species (CITES) and in 2002 was included in

appendix II of the Convention of Migratory Species (CMS or Bonn Convention). In Mongolia, it has received full protection since 1953 (Clark et al. 2006). However, due to human population growth in conjunction with severe winters in the past years, the occurrences of herder - khulan conflicts appear on the increase (Kaczensky et al., 2006).

Competition for pastures and water and poaching for meat seem to be increasingly becoming a problem in Mongolia (Kaczensky et al., 2006; Stubbe et al., 2005; Stubbe et al., 2007). For some local people, wild ass meat seems to provide a substitute or even a cheap alternative to meat from domestic animals (Kaczensky, 2007; P. Kaczensky, unpubl. data). In 2005, a national survey based on questionnaires, suggested that up to 4,500 wild asses might be poached each year throughout their distribution range in Mongolia