

LETTERS

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Asian Medicine:
Exploitation of Wildlife

TRADITIONAL ASIAN MEDICINE'S EFFECTS ON WILDLIFE CONSERVATION cannot be ignored. The endangered musk deer (*Moschus* spp.) provides a typical example.

The adult male musk deer secretes musk, which is one of the world's most expensive natural medical resources (1 gram is worth US\$250). Musk is used broadly in traditional Asian medicine. There are at least 884 traditional Chinese medicine prescriptions and 347 products that use musk in China (1). Nearly 1000 kg of musk are consumed per year in traditional Chinese medicine alone (2).

Because the musk deer has been deemed endangered by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (3), musk extraction from wild musk deer has been forbidden since the 1980s in China. In response, musk deer farming was initiated in the 1950s in China, as well as India, Nepal, and Russia (4). Today, more than 95% of the world's population of captive musk deer (about 6000 deer) is kept in about 30 musk deer farms in China (5). Sustainable musk extraction has been achieved in these farms, but only 20 kg of musk can be produced from musk deer farming per year (6), falling far short of the



demand in China, not to mention the even greater demand in global traditional Asian medicine.

Given that even sustainable musk deer farms cannot produce enough musk to meet global demand, we should scientifically assess whether the musk used in traditional Asian medicine is effective. If not, musk deer farming should be phased out, and the captive musk deer should be reintegrated into natural habitats according to a scientifically supported plan. If the musk is shown to be medically effective, we should develop a synthetic alternative to natural musk that can both replace natural musk in traditional Asian medicine and protect natural populations of musk deer.

XIUXIANG MENG,^{1*} DEGUANG LIU,² JINCHAO FENG,¹ ZHIBIN MENG³

¹College of Life and Environmental Sciences, Minzu University of China, Beijing, 100081, China. ²College of Plant Protection, Northwest A & F University, Yangling, Shaanxi, 712100, China. ³Institute of Zoology, Chinese Academy of Sciences, Beijing, 100101, China.

*To whom correspondence should be addressed. E-mail: mengxiuxiang@muc.edu.cn

References

1. Z. Jiang, in *Advances in Biodiversity Conservation and Research in China VI*, Biodiversity Committee of the Chinese Academy of Sciences, Ed. (China Meteorological Press, Beijing, 2005), pp. 329–348 [in Chinese].
2. R. Parry-Jones, J. Wu, *Musk Deer Farming as a Conservation Tool in China* (TRAFFIC East Asia, Hong Kong, 2001).
3. Y. Zhou *et al.*, *Folia Zool.* **53**, 129 (2004).
4. V. Homes, *On the Scent: Conserving Musk Deer—The Uses of Musk and Europe's Role in Its Trade* (TRAFFIC Europe, Brussels, 1999).
5. X. Meng *et al.*, *Asian-Aust. J. Anim. Sci.* **24**, 1474 (2011).
6. X. Meng *et al.*, *Anim. Sci.* **82**, 5 (2006).

Asian Medicine:
Exploitation of Plants

AS THE MARKET DEMAND FOR WILD CHINESE herbs has grown, the production scale of the Chinese herb industry has expanded dramatically. However, concealed by the prosperity of the Chinese medicinal herb industry is a huge ecological problem. In recent years, intensive and unrestrained exploitation of wild Chinese herbs has damaged natural resources. An estimated 2000 wild Chinese herbs are at risk of extinction (1).

Severe ecological deterioration and soil erosion seriously threaten the habitats of many wild Chinese herbs, especially in fragile ecological environments such as high-altitude areas or arid regions. For example, a

recent media report (2) suggested that intensive and unrestrained gathering of the edible cyanobacterium *Nostoc commune* var. *flagelliforme* has led to the degradation of almost 150,000 km² of grassland in Inner Mongolia (about 18% of the total grassland in the region) (1, 3).

If China continues its current pattern of natural resource exploitation, the biodiversity losses and environmental deterioration will severely jeopardize China's road to sustainability. Moreover, many wild Chinese herbs and other species that share their habitat are likely to be lost, as has happened to the Southern Chinese Tiger (*Panthera tigris amoyensis*) (3). Many of these species have not yet been adequately studied, so their true benefits to mankind and the environment are not yet known.

To improve governance and the ability to meet both socioeconomic and environmental goals, governments at all levels must understand the problem created by the competition between socioeconomic and environmental goals. Solving this requires stronger coordination between national policies and local needs, which will lead to production and conservation efforts based on approaches that encourage sustainability by balancing economic growth with environmental needs.

SHIXIONG CAO^{1*} AND QI FENG²

¹College of Economics and Management, Beijing Forestry University, No. 35, Qinhua Road, Haidian District, Beijing, 100083, China. ²Cold and Arid Regions Environmental Engineering Research Institute, Chinese Academy of Sciences, Lanzhou, Gansu 730000, China.

*To whom correspondence should be addressed. E-mail: shixiongcao@126.com