

## Methods and Routes of two German-Mongolian Zoological Expeditions through the Steppe, Semi-Desert and Desert Zones of Mongolia in 1995 and 2002

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### Abstract

Routes, methods and key results of two mammalian expeditions undertaken by German and Mongolian zoologists in 1995 and 2002 are described. The 1995 expedition trapped a sample of Mongolian gerbils (*Meriones unguiculatus*) (n = 167) with high genetic diversity for further breeding of a new wild gerbil strain in Germany. The 2002 expedition collected 265 mammals from 23 species during an extended west-eastern survey from 96° to 113°E along the transient zone of the semi-desert to the Gobi desert near 44° to 45°N. Methods applied included dissections, behavioural experiments, vocalization recording, determination of dominant plants and livestock. New techniques were introduced to record surface activity of small mammals. Most mammals trapped in the steppe were Mongolian gerbils with an estimated density of 2400 - 6600 individuals per km<sup>2</sup>. The highest diversity was found in the desert and semi-desert region and included *Hemiechinus auritus*, *Meriones unguiculatus*, *Salpingotus crassicauda*, *Pygeretmus pumilio* and *Cardiocranus paradoxus*, which were restricted to southern Mongolia. The need for further complex expeditions through the arid zones of Mongolia are discussed.

### Introduction

The natural climate and landscape of Central Asia forms a broad band of arid vegetation, which extends west-easterly through Mongolia. Wild mammals in the steppe, semi-desert and desert zones live and reproduce relatively undisturbed by man, and have attracted zoologists from Mongolia, Russia, Germany and elsewhere for centuries (David 1867, Formozow 1931, Allen 1940, Stubbe and Chotolchu 1968, Sokolov and Orlov 1980). Recent checklists of Mongolian mammals were compiled by Mallon (1985), Reading *et al.* (1994) and Tinnin *et al.* (2002). Approximately 136 species of mammals are recorded in Mongolia (Tinnin *et al.*, 2002). Mongolia provides the natural habitat

for wild ancestors of several domesticated mammals, e.g. the Wild Ass (*Equus hemionus*), the Bactrian Camel (*Camelus bactrianus*) and the Mongolian gerbil (*Meriones unguiculatus*), but also give room to millions of sheep, cattle, goats and other livestock (Barthel 1990).

The rise of democracy and the transformations towards a market economy in Mongolia after 1990 affected both the basic conditions of biological research and the natural restrictions of wildlife and pastoral land use. The socio-economic transition has led to a rapid increase in livestock numbers, from 24 million in 1989 to 33 million in 1998 (Schickoff and Zemmrich 2000). Fundamental changes in nomadic pastoralism have taken place, and an increasing proportion of Mongolia is