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Preface

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Preface

The present volume 9 of "Biologische Ressourcen der Mongolei" continues the cooperation between the National University of Mongolia, Ulaan Baatar, and German academic institutions, mainly led by the University of Halle-Wittenberg. Thus, the volume stands in a tradition stretching now over 40 years (described in the respective chapter written by Stubbe et al.), but also raises new issues and topics. The chapters provided by Ts. Jamsran, W. Hilbig, E. Jäger, M. Stubbe und A. Stubbe demonstrate nicely that this cooperation is not only based on continued institutional but also on personal commitment, as these scientists had been working together long before political changes in the early 1990s and have carried out joint projects ever since. Contributions provided by young authors originate mainly from work recently done in the Mongolian-German Research Station in the Gobi Gurvan Saykhan region.

The recent studies demonstrate how research topics have changed in the last 40 years. Initial works aimed at providing comprehensive inventories of the biodiversity of species and ecosystems in Mongolia. Functional aspects have always played a role, and provided the base for detailed experimental works that were carried out in the last years. These experiments continue some of the studies started in the joint Mongolian-Russian research stations, most of which have unfortunately ceased working in the last decade. However, the experimental and the so-called descriptive approach to Mongolian biodiversity and ecology are not contradictory but complementary, and much work remains to be done in both respects. Not even the inventory of vascular plants is complete, and much less is known on lichens, and particularly, mosses. A new dimension in botanical research is however reached by investigations on C4 plants and CAM plants in these cold deserts of Central Asia (see contributions of Tsendekhuu & Black and Oyungerel & Black). In terms of zoological biodiversity, only very few vertebrate groups are known to at least some degree (see contributions of Ts. Monkhzul, B. Mandakh et al., R.P. Reading et al., A. Stubbe et al., M. Stubbe et al. and T. Stenzel et al.), whereas much of the invertebrate richness of the country remains to be documented. Research has been started and is currently performed on some taxonomical groups (see contributions of Ts. Bolortuya & B. Bayartogtokh), but the picture is far from comprehensive yet. It will be exciting to see how biogeographical findings as well as results of investigation in reproduction ecology by K. Ronnenberg will eventually contribute to a deeper understanding of the environmental history of Mongolia.

As much of the general history of the Mongolian-German research cooperation is described in a later chapter of Stubbe et al., we will concentrate on the organizational background of studies in the South Gobi here. Facilities for experimental studies are currently limited in the drier part of the country, and this is why the National University of Mongolia places much emphasis on improving conditions for modern studies on ecosystem functioning. One example is the framework provided by the bilateral project: "Animal and grazing ecological studies on the carrying capacity of dry mountain steppes in the south-east Gobi Altay" ("Tier- und weideökologische Untersuchungen zur Tragfähigkeit von Gebirgssteppen-Biozönosen im südöstlichen Gobi Altai im Transformationsprozess nomadischer Viehhaltung"), which was kindly funded by the German Research Foundation (DFG) and the German Government (BMZ). This enabled a team of Mongolian and German researchers to maintain a small research station in the Gobi Gurvan Saykhan region in southern Mongolian for a total of four years until now (since 2000). The research topics were initially formulated based on a reconnaissance in the area that was led by the late Chimedregzen and S. Miehe in 1996; that survey was funded by the gtz. S. Tluczkykont und A. Liegl, the German experts in the largely gtz-run "Buffer Zone Management and Development Project" in the Gobi Gurvan Saykhan Region, had detailed ideas for applied research on

ecosystem dynamics, and proposed to establish a research station in the area as a base for these studies. In 1997, the participation of R. Samjaa on the international conference "Environmental Changes in High Asia" in Marburg provided an opportunity to place our ideas in a memorandum. That memorandum served as a starting point for a research project, which proved to be interesting enough to receive financial support from the DFG, the BMZ and the administration of the National Park and the Buffer Zone project in the Gobi Gurvan Saykhan National Park. Thus we were able to provide financial and organizational support for young scientists who were willing to work in the Gobi.

This offer was taken by a total of 22 German and Mongolian scientists plus their academic supervisors, who worked at the research station in the last 4 years. K. Nadrowski, V. Retzer and Ts. Munkzuul, deserve special mentioning here, as they stayed continuously in the research station for some 16 months starting from May 2000, which might be the first full winter fieldwork of European biologists in the Gobi so far. The late R. Undrakh has also been with the project right from the beginning, and provided invaluable support in all aspects of the project up to summer 2004, when she was already very seriously ill.

Work in the National Park has (hopefully) helped to clarify some aspects of steppe ecology, but also provided some data directly important to nature conservation and management in the park. A vegetation map gives the necessary spatially explicit baseline data on land cover units (see the contribution by H. von Wehrden), and can serve as a fundamental part of the park's GIS system. A second aspect of direct importance to applied topics in the Gobi Gurvan Saykhan National Park is the question of land-use and possible degradation. The original idea was that increased numbers of livestock led to widespread pasture degradation since the 1990's, finally triggering increases in the populations of small mammals, which would then pose additional threats to rangeland health; a mechanism known in some detail for Brandt's Vole (*Microtus brandti*) from central Mongolia (see contribution of Zöphel & Dawaa). Fortunately, research described in the chapters by V. Retzer and K. Wesche, plus results of studies on small mammal population ecology performed by K. Nadrowski and Ts. Munkhzuul proved that things at least in the 'non-equilibrium systems' of the Gobi are more complicated, and dangers of pasture degradation possibly more limited than anticipated. The contribution of W. Hilbig & C. Opp however demonstrates that human impact in other parts of Mongolia can be severe.

The remote ranges of the Gobi Gurvan Saykhan offer also ideal opportunities to study fundamental questions on Island Biogeography and on the environmental history of these dry mountain steppes, which might be the most isolated in entire Central Asia: Studies on the biogeographical affinities of some widely isolated animal and plant species of the Gobi Gurvan Saykhan raise new questions on the paleoclimatic conditions in southern Mongolia during the Holocene (see contributions by Bolortuya & Bayartogtokh, Jäger, Opgenoorth et al., Jamsran et al.).

Most of the contributions in volume 9 of the "Biologische Ressourcen der Mongolei" originate from an international conference that was hosted by the National University of Mongolia from June, 23rd to 24th, 2004. That meeting under the title "Ecosystem research in the arid environments of Central Asia, results, challenges and perspectives" had the aim to synthesize recent work from the described research station in the Gobi Gurvan Saykhan and discuss them with an international audience. Yet, this is only one small part of the biological research in Mongolia, so we are glad that the present volume includes also contributions by colleagues (e.g. M. Stubbe, W. Hilbig, Ts. Tsendekhuu, J. Jamsran) who had worked in Mongolia over decades as well as recent studies by "freshers" who started working since 2000 (e.g. K. Ronnenberg). A second part of this volume bundles specific contributions which underline the magnitude of further ecological research under the auspices of the Ulaanbaatar-Halle partnership. We do hope that the present volume helps to document some of the amazing scientific progress going on in Mongolia and, perhaps more importantly, triggers new and original research by international teams.

Finally, we have to express our gratitude to our donors, who provided the necessary financial

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This volume is dedicated to Siggi Tluczykont who opened doors to the Gobi for Sabine and Georg Mieke in 1996, to L. Chimedregzen who was our partner during the first Gobi reconnaissance in 1996, and to R. Undrakh who was not able to finish her work on endemic plant species of the "Three Beauties of the Gobi", and to three colleagues who were among the first to initiate the Mongolian-German scientific cooperation: N. Khotolkhoo, N. Dawaa and R. Piechocki.

Georg Mieke, Ravčigijn Samjaa & Karsten Wesche