Mongolian Red List of Reptiles and Amphibians

Compiled by Terbish, Kh., Munkhbayar, Kh., Clark, E.L., Munkhbat, J. and Monks, E.M.

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The Mongolian Biodiversity Databank holds further details on all the species listed in this book. It is available to the public and can be accessed through:

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As only a limited number of hard copies will be produced, electronic versions of this report will be available through the ZSL library (http://library.zsl.org) and www.regionalredlist.com.

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FOREWORD

The uniqueness of Mongolian flora and fauna and their composition are determined by the harsh climatic conditions and ecosystem peculiarities of our country.

In recent years, we have witnessed some adverse shifts in ecosystem states in Mongolia due to global climate change and various other anthropogenic effects. These changes have resulted in an increase in desertification, the intensity of soil erosion, a loss of freshwater resources and biological diversity, and an increase in the frequency of natural disturbances.

Rationally, the situation demands us to be able to relate the findings of modern science with our traditional values of natural conservation in protecting and conserving our natural heritage, including the environment, as well as plants and animals.

With this in mind, we prepared two editions of The Red Data Book of Mongolia in 1987 and 1997, which listed endangered and threatened plant and animal species that occur in the country.

This time, we are presenting you with the Mongolian Red List of Reptiles and Amphibians, which is really the first in the series produced by the Mongolian Biodiversity Databank Project. The project is generously supported by the World Bank and the Kingdom of the Netherlands and will eventually cover all other vertebrates occurring in Mongolia. The Red List compiled by the joint efforts of national and international scholars is clearly a work of international standard that discusses the geographical distribution of reptiles and amphibians in our country, their rarity categories, factors influencing their abundance and required conservation measures.

This volume provides a guideline for reptile and amphibian conservation, prepared by scientific institution. I do hope that this work will be satisfactory to policy-makers, professionals, researchers, students and other environmentally-conscious parties.

I. Erdenebaatar
Minister for Nature and Environment
Ulaanbaatar, Mongolia

FOREWORD

Mongolia's amphibians and reptiles first received scientific attention in 1814, marked by the publication of 'Zoographia Rosso-Asiatica' by the Russian scientist P.S. Pallas. Since this time, the Russian Geographic Society has led many research expeditions to Central Asia. These studies form the basis upon which many Mongolian herpetological studies were founded, including this book.

In the 1950s, several important studies were undertaken on Mongolian herpetology (Bannikov, 1958; Eregdendagva, 1958; Shagdarsuren, 1958), however, it was not until the 1960s that the new generation of herpetological studies began. The Biology Department of the Mongolian State University of Education led a number of expeditions to Central and Eastern Mongolia, where they collected several specimens. As a result of the expedition, they created a herpetological laboratory and collection in the State University of Education.

During the last 50 years, the study of herpetology in Mongolia has expanded to include studies on the taxonomy and distribution of a broad range of species. Several new species have been documented, including the stepperunner (*Eremias arguta*) (Shagdarsuren and Munkhbayar, 1968), Gobi naked-toed gecko (*Cyrtopodion elongatus*) (Munkhbayar, 1976a), Asiatic grass frog (*Rana chensinensis*) (Munkbayar, 1976b), sand lizard (*Lacerta agilis*) (Terbish and Munkhbayar, 1988), and a number of new unique subspecies, including *Eramias przewalskii tuvensis, E. multiocellata bannikowi* (Szczerbakh, 1970, 1973), and *Laudakia stoliczkana altaica* (Munkhbayar, 1971).

The results of many of the early studies were included in the book 'Mongolian Amphibians and Reptiles' (Munkhbayar, 1976b), which was the first major herpetological publication written in Mongolian, making it accessible to the Mongolian scientific community.

Starting in the 1980s, more detailed studies on reptiles and amphibians were undertaken by region, and published in 'Amphibians and Reptiles in Western and Southern Mongolia and their Natural Importance' (Terbish, 1989) and 'Reptiles and Amphibians in Eastern Mongolia' (Munkhbaatar, 2003). During the same period, a number of genetic studies were conducted. It was found that a toad in the Bulgan river basin had tetraploid chromosomes, therefore leading to taxonomic changes (Borkin *et al.,* 1986). An attempt was also made to identify the number, form, and evolution of chromosomes in *Phrynocephalus versicolor, Eremias multiocellata* and *Eremial przewalskii*.

A large-scale Mongolian-Russian joint expedition began in the 1970s, the results of which were published in 'Amphibians and Reptiles of the People's Republic of Mongolia: Amphibians of Mongolia' (Kuzymin *et al.,* 1988), 'Amphibians and Reptiles of Mongolia: Reptiles of Mongolia' (Ananjeva *et al.,* 1998), and 'Rare Animals of Mongolia: Vertebrates' (Sokolov *et al.,* 1996). Results of the expedition were also published in 'Herpetological Study of Mongolia' (Borobyeva, 1986), 'Mongolian Red Book' (Shagdarsuren *et al.,* 1987; Shiirevdamba *et al.,* 1997), 'Semi-desert and Northern Desert of the People's Republic of Mongolia' (Munkhbayar, 1980), 'Mongolian National Atlas' (1990), 'The Stepperunner' (Szczerbak *et al.,* 1993), 'Mongolian Biodiversity Resource'

(Batjargal *et al.,* 1998), and 'A Guide to Amphibians and Reptiles of Mongolia' (Terbish *et al.,* 2006).

In 1987 the first National 'Mongolian Red Book' (Munkhbayar, 1987) formed a major milestone for conservation of biodiversity within Mongolia, highlighting species of conservation concern and raising awareness amongst policy-makers, conservationists and the people who encounter these unique species as part of their daily lives. This first version, however, included only two amphibian species (Siberian salamander and Asiatic grass frog) and four reptile species (Gobi naked-toed gecko, stepperunner, tatar sand boa and slender racer). A second version of the 'Mongolian Red Book' was produced in 1997 (Munkhbayar and Terbish, 1997) in association with the Ministry of Nature and Environment, in which two new species (Pewzow's toad and Japanese tree frog) of amphibian and one reptile (Sunwatcher toadhead agama) were added. A herpetological study was undertaken in Mongolia's protected areas, including the Great Gobi Strictly Protected Areas, thereby strengthening knowledge of Mongolia's reptiles and amphibians (Terbish and Munkhbayar, 1998).

At the Second International Mongolian Biodiversity Databank Workshop (11-15 November, 2006), participants assessed the status of 24 Mongolian reptile and amphibian species using the IUCN Red List Categories and Criteria. They also defined Action Plans for the conservation of the threatened species. The results of this workshop provided the basis for the Mongolian Red List of Reptiles and Amphibians and the Summary Conservation Action Plans. The Action Plans include more detailed information on the dominant threats and conservation actions needed to address these threats. These two publications go beyond species descriptions. They include information critical to the conservation of each species and thus, are key to the future of Mongolian herpetofauna.

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PREFACE

Ancient rock drawings from all over Mongolia illustrate the great curiosity and affection Mongolian people hold for amphibians and reptiles. As early as the thirteenth century, snakes are detailed in the historical document 'Secret History of the Mongols', which in section 102 states that "even a glutted snake could not creep in and although they were on his heels they were unable to catch him". Later, Dr. Jambaldorj describes frogs as having the special feature of 'two different bodies during its lifetime' in his medical book from the seventeenth century. This demonstrates an early understanding of the notion that ontogeny recapitulates phylogeny. Today, Mongolian people are still fascinated by these classes, and they are frequently the subject of childrens' riddles, stories, and rhymes. An example of a classic childrens' riddle is 'hero without tail, hero without pelvis, hero without leg, and hero without sweat', the answers are frogs, fishes, snakes, and lizards respectively.

Amphibians and reptiles play a critical role in Mongolia's ecosystem and are key components of its biodiversity. However, as relic species, they are often more vulnerable to environmental changes than most other vertebrates. Furthermore, as a result of their relatively limited agricultural importance, they are often poorly understood.

Conservation of these taxonomic groups is becoming more important over time. Since they are biotic species, they are vulnerable to the increasing impacts of a variety of threats, such as human disturbance, pollution of rivers and lakes, and habitat loss through infrastructure development and resource extraction. Populations of species in many taxonomic groups are declining as a result of these activities. The Zoological Society of London (ZSL) has compiled the Mongolian Red List of Reptiles and Amphibians, which will play an important role in the future conservation and management of these species.

I would like to extend my thanks to the Mongolian and international experts that have contributed to this Red List.

PhD. Kh. Munkhbayar
Director of Ecological Centre,
Mongolian State University of Education

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The production of this book would not have been possible without the support and commitment of a large community of experts on Mongolian reptiles and amphibians.

The compilation and production of the Mongolian Red List of Reptiles and Amphibians is the result of the dedication and knowledge of all of the experts who participated in the Second International Mongolian Biodiversity Databank Workshop. We would like to thank all participants for their contributions (in alphabetical order): B. Altantuya, J.E.M. Baillie, G. Batbayar, N. Batsaikhan, A. Bayambasuren, V.V. Bobrov, S. Bolortsetseg, L. Borkin, E.L. Clark, V.K. Ermchencko, A. Fine, E. Hurelbaatar, J. Jargal, N. Javzmaa, S.R.B. King, M. Munkhbaatar, J. Munkhbat, Kh. Munkhbayar, B. Munkhchuluun, D. Murun, B. Nyambayar, Ts. Odbayar, O. Onon, B. Oyuntuya, D.V. Semenov, B. Taivanjargal, Kh. Terbish, N. Tseveenmyadag, J. Uransaihan, Sh. Usukhbayar, O. Uuganbadrakh, and M. Zorigt.

The three day Second International Mongolian Biodiversity Databank Workshop was run by J.E.M. Baillie, N. Batsaikhan, E.L. Clark, J. Jargal, S.R.B. King and J. Munkhbat. The Taxon Steering Committee, chaired by Prof. R. Samiya and consisting of representatives from non-government organisations, academic institutions, and the Mongolian government, provided support and guidance throughout the development and implementation of the workshop. We would like to thank all members of the Taxon Steering Committee for these contributions: R. Samiya, Kh. Munkhbayar, Kh. Terbish, M. Munkhbaatar, B. Tsetseg, Sh. Boldbaatar, N. Batsaikhan and J. Jargal.

Thanks are also extended to the staff of Hustai National Park for hosting the Second International Mongolian Biodiversity Databank Workshop.

We would also like to thank all who reviewed documents and contributed to the Mongolian Red List of Reptiles and Amphibians and associated documents: R. Samiya, J.E.M. Baillie, Kh. Terbish, Kh. Munkhbayar, J. Munkhbat, E.L. Clark, J. Jargal, N. Batsaikhan, M. Munkhbaatar, D.V. Semenov, E.M. Monks and J. Tallant. We also extend special thanks to Kh. Terbish, Kh. Munkhbayar, L. Borkin, and D.V. Semenov for their thorough reviews and expert advice on taxonomy and species information.

We would also like to thank those who kindly contributed the use of images for this document: Kh. Terbish and Kh. Munkhbayar.

This book is one of the outputs of the Mongolian Biodiversity Databank Project, which was initiated and funded by the World Bank and implemented by the Zoological Society of London (ZSL) (regionally represented by the Steppe Forward Programme) and the National University of Mongolia, in collaboration with the Mongolian Academy of Sciences, the Ministry of Nature and Environment, the World Conservation Union (IUCN), and many other regional and international organisations. We would like to specifically highlight the following organisations which played an important role in the Mongolian Biodiversity Databank Project:

The World Bank (with funding from the Royal Netherlands Embassy, Beijing) initiated the Mongolian Biodiversity Databank Project, and provided generous financial support, without which production of the Mongolian Red List of Reptiles and Amphibians would not have been possible. Special thanks are extended to Tony Whitten, who has guided this project at every stage of its development.

The World Conservation Union (IUCN) played a fundamental role in the production of this book and associated documents. We thank IUCN for use of the IUCN Red List Categories and Criteria, technical advice, data, and for staff participation.

The Zoological Society of London (ZSL) led the implementation of the Mongolian Biodiversity Databank Project. Jonathan Baillie (project leader) and Emma Clark (project co-ordinator) are both based at ZSL. Special thanks are extended to Glyn Davies, Director of Conservation Programmes, for leadership and guidance throughout the project.

Steppe Forward Programme (SFP) started as a Darwin initiative (UK DEFRA) and has been running in Mongolia since 2003. This project is administered by ZSL and works in collaboration with the National University of Mongolia. We would like to thank all the staff at this programme, particularly Munkhbat Javzansuren for his research skills and dedication, Sarah King for advice and guidance, and Jargal Jamsranjav for her advice, excellent translation work and important role as a workshop group leader.

The National University of Mongolia (NUM) provided the venue for the workshop, and is also home to the Steppe Forward Programme and the Mongolian Biodiversity Databank. The University was actively involved in supporting the project throughout its development and implementation. Special thanks go to Samiya Ravchig for guidance, support and contributions, to Terbish Khayankhyarvaa for his expert advice, and to Batsaikhan Nyamsuren for his contribution to the workshop.

The Mongolian Academy of Sciences (MAS) are thanked for their sharing of knowledge and for contributing to the effectiveness of the workshop. We would like to thank all the dedicated biologists who contributed their time and knowledge to this project, many of whom also participated in the workshop. Special thanks are extended to Tsetseg Baljinova.

The Ministry of Nature and Environment (MNE) supported the project and its aims throughout its development and implementation.

The Mongolian State University of Education (MSUE) actively participated in and supported this project. Special thanks go to Munkhbayar Khorloo and Munkhbaatar Munkhbayar from the Ecological Centre of the State University of Education for sharing their vast knowledge and for their dedication throughout the process.

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INTRODUCTION

Mongolia proudly retains large stretches of pristine wilderness, thanks to its small population size, limited industrialisation, and traditional culture of sustainable living. As species decline in other areas of their range, Mongolia serves as a refuge with its untouched habitats and small population. WWF have formulated a collection of the Earth's most diverse and representative habitats, called the Global 200 Ecoregions, and Mongolia is included for its Daurian steppe and Altai Sayan region (WWF, 2007). These areas are described as undisturbed habitats that can support large herds and are home to a number of endemic species. However, overgrazing by increasing numbers of livestock, resource extraction in the form of mining and oil exploitation, and expanding infrastructure development associated with a shift from a centrally planned economy to a free market economy, pose a threat to species in many parts of the country, and co-incides with the decline of numerous species. Fortunately, the Mongolian cultural and nomadic traditions instill a strong sense of reverence for nature and sustainable use, and the establishment of the Ministry of Nature and Environment in 1992 has formed the cornerstone of focussed conservation efforts to retain this rich biodiversity through changing times. The Ministry of Nature and Environment has formed collaborative projects with international groups such as UNDP-UNEP and the Global Environment Facility, who are currently running both the Eastern Steppe Biodiversity Project and the Conservation of the Great Gobi Ecosystem and Its Umbrella Species Project. There are also many non-governmental organisations working to conserve Mongolia's species and habitats, such as the Snow Leopard Trust, the Wildlife Conservation Society, and WWF. Mongolia is a signatory member of the Convention on Biological Diversity, and the Ministry of Nature and Environment implement requirements through documents such as the Environmental Action Plan and the Biodiversity Conservation Action Plan (UNDP-UNEP, 2000).

The Mongolian Biodiversity Databank project is part of the conservation of biodiversity in Mongolia. This project has been producing the regional red list series including Mongolian Red List of Reptiles and Amphibians, and Summery of Conservation Action Plans for Mongolian Reptiles and Amphibians.

This Red List contains all known native Mongolian reptiles and amphibians and highlights their status within Mongolia, accompanied by other information such as their global and regional distribution, legal status, and dominant threats.

It also provides an excellent field guide of all reptiles and amphibians found in Mongolia. However, only those species listed as Vulnerable, Endangered, or Critically Endangered are considered to be threatened with extinction, and are designated as official Red List species.

Summary conservation action plans were also composed, providing detailed information on all threatened reptiles and amphibians and actions necessary to ensure their future survival. These summary conservation action plans are published in a separate document, and electronic versions will be available through the Zoological Society of London library (http://library.zsl.org) and www.regionalredlist.com.

The production of the Mongolian Red List of reptiles and amphibians is a milestone for conservation in Mongolia, as it sets the first baseline from which it will be possible to assess whether conditions are improving. It also provides policy makers with the most up-to-date information on threatened reptiles and amphibians, allowing informed decisions to be made, and gives conservationists essential information required to develop detailed conservation action plans and set priorities.

The Red List demonstrates that a large number of species have recently become threatened with extinction. This highlights the importance of conducting regular monitoring and conservation assessments, to ensure that species do not move toward extinction unnoticed.

APPLICATION OF THE IUCN RED LIST CATEGORIES AND CRITERIA AT A REGIONAL LEVEL

Red Lists, or lists that highlight threatened species, have been in existence for nearly 60 years (Baillie and Groombridge, 1996). They have become an important tool in assessing extinction risk for widely different taxa, and are often considered the first step in setting priorities for conservation actions and focussing attention on threatened species (Lamoreux *et al.,* 2003). The initial, relatively subjective method of defining species' conservation status was replaced in 1994 by a set of more objective, quantitative criteria, which has helped to standardise the way in which species are classified according to their global extinction risk (Mace, 1994). These new criteria were applied for the first time in the '1996 IUCN Red List of Threatened Species' (Baillie and Groombridge, 1996). The 'IUCN Red List Categories and Criteria' (IUCN, 2001) are now recognised as an international standard, and are used by many countries and organisations throughout the world.

The Red List of Mongolian Reptiles and Amphibians, compiled at the Second International Mongolian Biodiversity Databank Workshop, follows the 'Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0' (IUCN, 2003). These guidelines assess the risk of regional extinction, and therefore address a number of issues not encountered when conducting assessments on a global scale. For example, a regional assessment has to take into account species that migrate between countries, or populations that are restricted to one country but dependent on immigration from another country. To ensure a reliable assessment of the risk of regional extinction, the guidelines have two important features. Firstly, they include two new categories: Regionally Extinct (RE) and Not Applicable (NA) (Table 1). RE describes species that remain globally extant, but are no longer found within the specific region; NA describes species that are deemed ineligible for assessment. At the Second International Mongolian Biodiversity Databank Workshop, NA species were defined as taxa that are known to have less than 1% of their global population in Mongolia, and have regional distributions that cover less than 1% of the area of Mongolia. Secondly, the guidelines prescribe a two-step process. The 'IUCN Red List Categories and Criteria' (IUCN, 2001) are firstly applied to regional population data as though they represent the global population (see Annex I for summarised details). This assessment is then adjusted based on the influence of populations outside the region. For example, if a taxon is threatened regionally, but immigration taking place from outside the region constitutes a 'rescue' effect, this decreases the risk of regional extinction and the assessment can be downgraded accordingly. An assessment can be upgraded to a higher category of threat if the regional population is declining or is a 'sink' population, with no possibility of 'rescue' from outside. If there is no information on the effects of populations surrounding the region, no alteration is made (for further details see IUCN, 2003). This provides the taxon with a Red List assessment that better reflects the risk of extinction within the defined region.

At the Second International Mongolian Biodiversity Databank Workshop, none of the reptile or amphibian regional assessments were up or downgraded, because there was little evidence for significant immigration, and it was not known whether a 'rescue' effect from external populations was likely.

Table 1. Definition of the categories used in the Red List (see IUCN, 2001 and 2003).

Extinct (EX)	A taxon is Extinct when there is no reasonable doubt that the last individual has died. A taxon is presumed Extinct when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
Extinct in the Wild (EW)	A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed Extinct in the Wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual. Surveys should be over a time frame appropriate to the taxon's life cycle and life form.
Regionally Extinct (RE)	A taxon is Regionally Extinct when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or disappeared from the region: in the case of a former visiting taxon, individuals no longer visit the region. It is not possible to set general rules for a time period before a species is classified as RE. This will depend on how much effort has been devoted to searches for the species.
Critically Endangered (CR)	A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered and it is therefore considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable and it is therefore considered to be facing a high risk of extinction in the wild.
Near Threatened (NT)	A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
Least Concern (LC)	A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.
Data Deficient (DD)	A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and a threatened status. If the range of a taxon is suspected to be relatively circumscribed, and a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.
Not Applicable (NA)	Taxon deemed ineligible for assessment at a regional level.

TECHNICAL NOTES

Nomenclature and taxonomy

The species list used in this document is the result of a series of meetings involving local and international Mongolian herpetology experts. A draft list was developed at the first of these meetings in Ulaanbaatar, based on earlier lists compiled by Borkin *et al.* (1988), Ananyeva *et al.* (1997), IUCN (2006), and Terbish *et al.* (2006). The draft species list and taxonomic issues surrounding it were discussed at the beginning of the Second International Mongolian Biodiversity Databank Workshop, during a meeting in which all participants were involved. This meeting resulted in changes to the species list, including the addition or removal of species. The meeting was chaired by J.E.M. Baillie and was attended by thirty participants. Following the workshop, a final meeting of experts was held to confirm the final species list, which is used for this Red List and contains six amphibian species and 21 reptile species.

The 'IUCN Red List Categories and Criteria' (IUCN, 2001) were only applied to wild populations in their native range, as no amphibian or reptile species have been introduced in Mongolia.

The Mongolian Red List of Reptiles and Amphibians and its associated documents contain species that are on the agreed list for the Second International Mongolian Biodiversity Databank Workshop, i.e. those that were known to occur in Mongolia in 2006 (List 1, Annex II). A total of seven additional species may occur within Mongolia but have not yet been confirmed. They are included in a possible species list until further evidence is obtained (List 2, Annex II).

Regional distribution

Each species account includes a description of its regional distribution within Mongolia. This follows a standard regional geographic subdivision of Mongolia (Figure 1), based on a geo-botanical map of the plants of Mongolia (Tsegmid, 1969) with further details from Grubov (1982), Rachkovskaya (1993) and Bannikov (1954), and a recent review by Batsaikhan (unpubl. data). This geo-botanical map enables the regional distribution of reptiles and amphibians to be shown clearly, as it is divided into 16 regions.

Figure 1. Standard geographic subdivision of Mongolia used to describe the regional distribution of Mongolian reptiles and amphibians (Based on Tsegmid (1969) and Grubov (1982)). 1 = Hövsgöl Mountain Range, 2 = Hentii Mountain Range, 3 = Hangai Mountain Range, 4 = Mongol Daguur Steppe, 5 = Ikh Hyangan Mountain Range, 6 = Mongol Altai Mountain Range, 7 = Middle Halh Steppe, 8 = Eastern Mongolia, 9 = Great Lakes Depression, 10 = Valley of the Lakes, 11 = Northern Govi, 12 = Eastern Govi, 13 = Govi Altai Mountain Range, 14 = Dzungarian Govi Desert, 15 = Trans Altai Govi Desert, 16 = Alashan' Govi Desert.

Species distribution maps

Digitised maps of the current distributions of Mongolian reptiles and amphibians were prepared prior to the workshop, using ArcGIS 9 (ArcMap version 9.1) software and based on Terbish *et al.* (2006). These maps were reviewed and modified during the Second International Mongolian Biodiversity Databank Workshop. Justification for all changes was documented and is available with the Mongolian Biodiversity Databank. The distribution maps resulting from the workshop were overlaid using ArcGIS 9 (ArcMap version 9.1) software to explore patterns of species richness, threatened species richness, and areas with high concentrations of poorly known species. For each species, range size was estimated using this software, and range maps were overlaid with a protected area map of Mongolia in order to estimate the percentage of its range occurring within protected areas. The map of protected areas was created using the UNEP-WCMC World Database on Protected Areas (http://sea.unep-wcmc.org/wdpa/), which is in accordance with the six protected area management categories defined by IUCN. For further details please refer to the 'Guidelines for Protected Areas Management Categories' (IUCN, 1994).

Illustrations

Illustrations of each species are included in the Mongolian Red List of Reptiles and Amphibians, drawn from specimens at the Natural History Museum of Mongolia and Terbish *et al.* (2006). Illustrations have been drawn to the best quality possible, however, identification in the field may be difficult due to the size of the pictures and the similarity amongst species. For more detailed identification guides, please refer to Borkin *et al.* (1988), Ananyeva *et al.* (1997), Munkhbayar *et al.* (2001), and Terbish *et al.* (2006).

FORMAT OF SPECIES ACCOUNTS

Higher-level taxonomy follows that defined by the North Eurasian Reptile Specialist Group of the IUCN Species Survival Commission, and the Red List of Mongolian Reptiles and Amphibians follows the format outlined below:

Species name and taxonomic authority
Common names (English and Mongolian)
Subspecies in Mongolia (if applicable)
Synonyms (if applicable)

Global status (global risk of extinction)

IUCN global population assessment for each species given in the '2007 IUCN Red List of Threatened Species' (IUCN, 2007). Alteration of an existing global assessment during the Second International Mongolian Biodiversity Databank Workshop is denoted by a single black circle symbol (•). If this was the first assessment for the species using the 'IUCN Red List Categories and Criteria' (IUCN, 2001) and it is pending evaluation by IUCN Red List Authorities, this is denoted with two black circle symbols (••).

Regional status (risk of extinction within Mongolia)

Regional assessments conducted for the first time for Mongolian reptiles and amphibians using the 'IUCN Red List Categories and Criteria: Version 3.1' (IUCN, 2001) (see Table 1 for categories and their definitions) and the 'Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0' (IUCN, 2003). Conservation assessments are identical to global status if endemic to Mongolia.

Rationale for assessment

Rationale for the application of 'IUCN Red List Categories and Criteria' (IUCN, 2001) to each species assessed at the Second International Mongolian Biodiversity Databank Workshop. This section should be read in conjunction with the 'Guidelines for Application of IUCN Red List Criteria at Regional Levels: Version 3.0' (IUCN, 2003) and the Mongolian Biodiversity Databank.

Legal status

Existing protective legislature for Mongolian reptiles and amphibians, including both Mongolian laws (e.g. Hunting Laws and the Law on Fauna) and international laws (e.g. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): see UNEP-WCMC (2007)). For each species, the percentage of the Mongolian range occurring within protected areas has been estimated. Within protected areas, species are conserved under Mongolian Laws of Protected Areas.

Global distribution

Listed from west to east and based largely on IUCN (2007) and the EMBL Database (Uetz *et al.,* 2006); additional references given in relevant species accounts. Current distributions that include introductions into countries outside the native global range, or re-introductions following regional extinction, are indicated by [int] or [re-int] respectively.

Regional distribution

Each species' location in Mongolia is stated. This is accompanied by a distribution map for Mongolia. These maps were updated during the Second International Mongolian Biodiversity Databank Workshop, based on new information from the scientific literature, museum records, government and conservation organisation documents, and expert observations. Although these are as accurate and up-to-date as possible, it should be noted that many species are lacking in distribution data. As further research is conducted, changes to these maps are likely to occur. Distributions outside Mongolia were not updated.

Dominant threats

Brief outline of dominant threats and their causes, identified as being of immediate and primary concern by participants during the Second International Mongolian Biodiversity Databank Workshop. Threat processes can be complex and reflect multiple factors; for more detailed information please refer to the Mongolian Biodiversity Databank.

STATUS OF MONGOLIAN REPTILES AND AMPHIBIANS

Of the 24 native Mongolian reptile and amphibian species that were assessed, 25% are categorised as regionally threatened, all of which are categorised as Vulnerable (VU) (Figure 2). A further 21% are categorised as Near Threatened (NT). Just 4% are categorised as Data Deficient (DD). Fifty percent of the reptiles and amphibians of Mongolia were categorised as Least Concern (LC). A further three species were categorised as Not Applicable, as they did not meet the requirements for regional assessment (see notes on application of the guidelines).

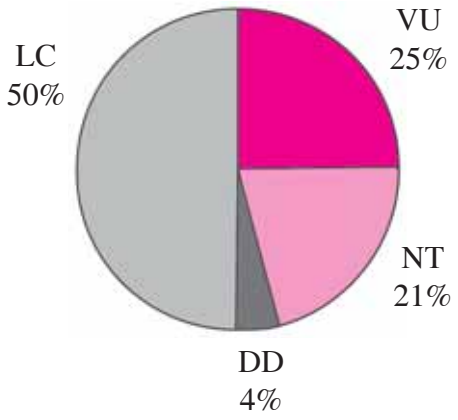


Figure 2. Regional conservation status of the 24 native Mongolian reptiles and amphibians according to the IUCN Red List Categories and Criteria. VU = Vulnerable, NT = Near Threatened, DD = Data Deficient, LC = Least Concern.

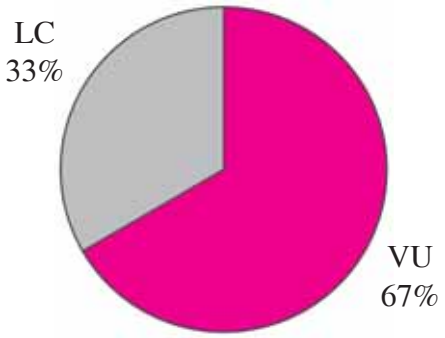
Figure 3 illustrates that there are different trends highlighted when the species are divided into reptiles and amphibians. It has long been known that reptile and amphibian species display many differences between the two orders, and are influenced by entirely different factors.

Amphibians

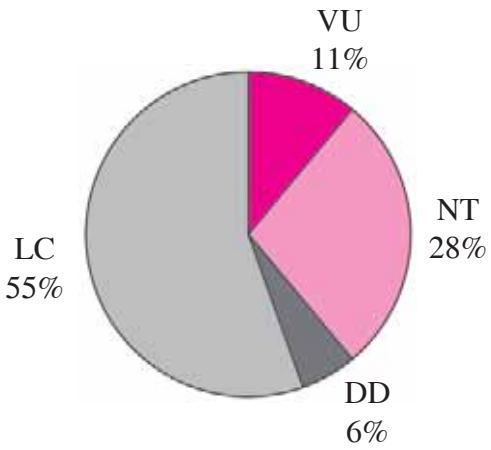
The majority (67%) of Mongolia's amphibian species (orders Anura and Caudata) are categorised as VU. This includes Pewzow's toad (*Bufo pewzowi*) and the Siberian salamander (*Salamandrella keyserlingii*). The remaining 33% are categorised as LC.

Reptiles

Categorisation of the reptile species (order Squamata) was more varied, with 11% classified as VU, 28% as NT, and 6% being DD. The remaining 55% were classified as LC.



(a)



(b)

Figure 3. Comparison of the conservation status of Mongolian amphibian (a) and reptile (b) groups. VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient.

DISTRIBUTION OF MONGOLIAN REPTILES AND AMPHIBIANS

When the distributions of the threatened species were overlaid, a clear trend of increasing richness of threatened species moving southwards became evident. Areas with largest numbers of threatened species are the Trans Altai Govi Desert, the Govi Altai Mountain Range, Alashan' Govi Desert and the Eastern Govi. Although many reptiles would be expected to be distributed in desert and semi-desert habitats in southern Mongolia, there are a greater number of threatened amphibian species than reptiles, yet the representation of the threatened species in northern habitats (forested areas with rivers and streams or large lakes), is considerably lower. This is largely driven by the fact that the threatened amphibians, on average, have much smaller ranges and there is therefore less overlap of their distributions.

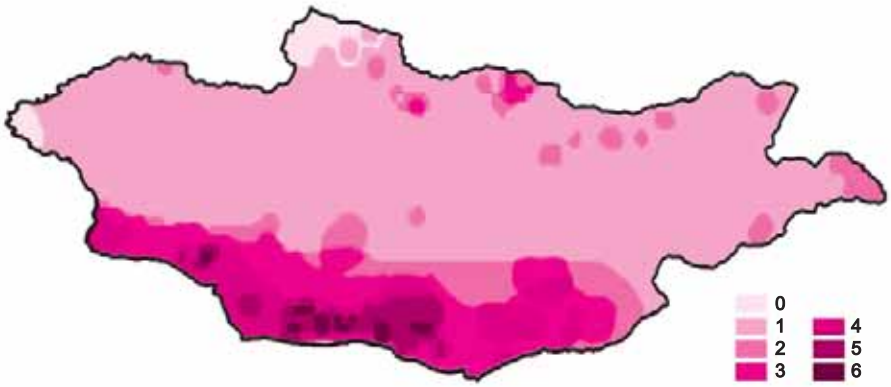


Figure 4. Distribution map of threatened amphibian and reptile species. Darker colours represent areas with higher numbers of species.

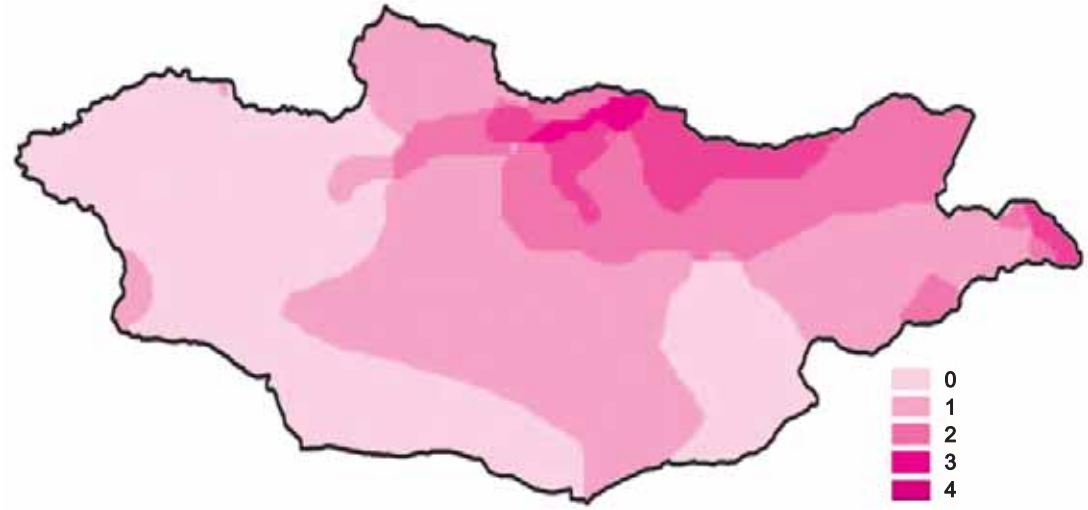
Amphibians

A distinct pattern is revealed when comparing the species richness and the distribution of threatened amphibian species (Figures 5.a and b respectively). The majority of the species present in Mongolia are found in the north and north-eastern regions such as the Hangai Mountain Range, the Hövsgöl Mountain Range, Mongol Daguur Steppe, Middle Halh Steppe, Eastern Mongolia, Ikh Hyangan Mountain Range, and at greatest concentrations in the Hentii Mountain Range. This pattern is reflected in the distribution map of threatened amphibian species. Greatest concentrations of threatened amphibians occur in the Hentii Mountain Range, where their overall richness is highest. Other areas with a similar high distribution contain high numbers of threatened species, such as the Ikh Hyangan Mountain Range, the Hövsgöl Mountain Range, and Mongol Daguur Steppe.

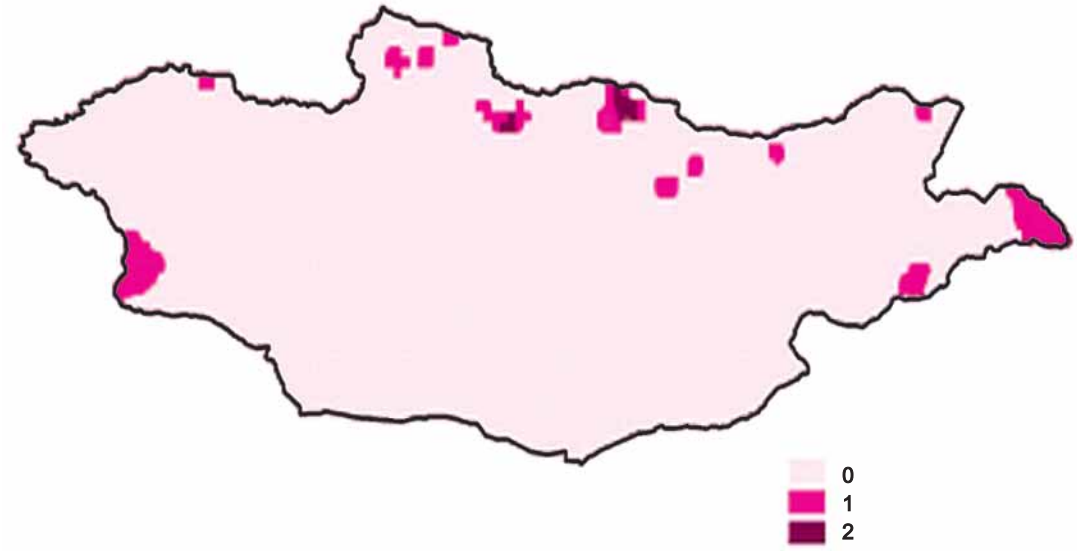
Reptiles

The distribution of reptiles in Mongolia is more varied, perhaps because there are a greater number of reptiles than amphibians, and more suitable habitat for this group of species. The resulting distribution map of reptile species richness reflects these differences, although a large majority of the species occur either in the south-west or south of the country (Figure 5.c). Relatively large numbers of species can also be found in the west of the country, particularly at Great Lakes Depression and the western Hangai Mountain Range. Areas containing the greatest species richness include the Trans Altai Govi Desert, the Govi Altai Mountain Range, Alashan' Govi Desert, and the Eastern Govi. All of these areas also contained the largest number of threatened species. (Figure 5.d)

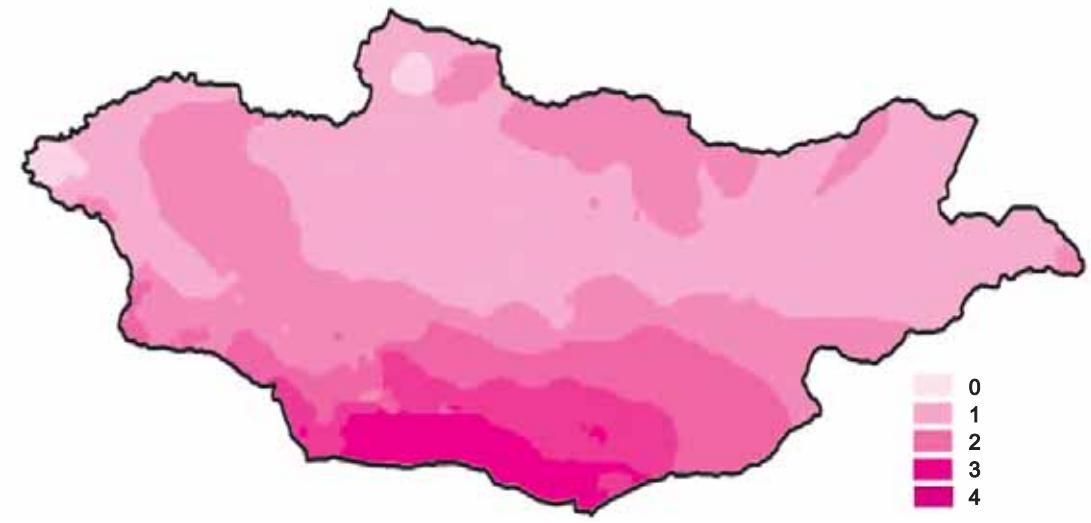
Figure 5. Amphibian and reptile species richness maps and distribution maps for threatened and NT species. Darker colours represent areas with higher numbers of species.



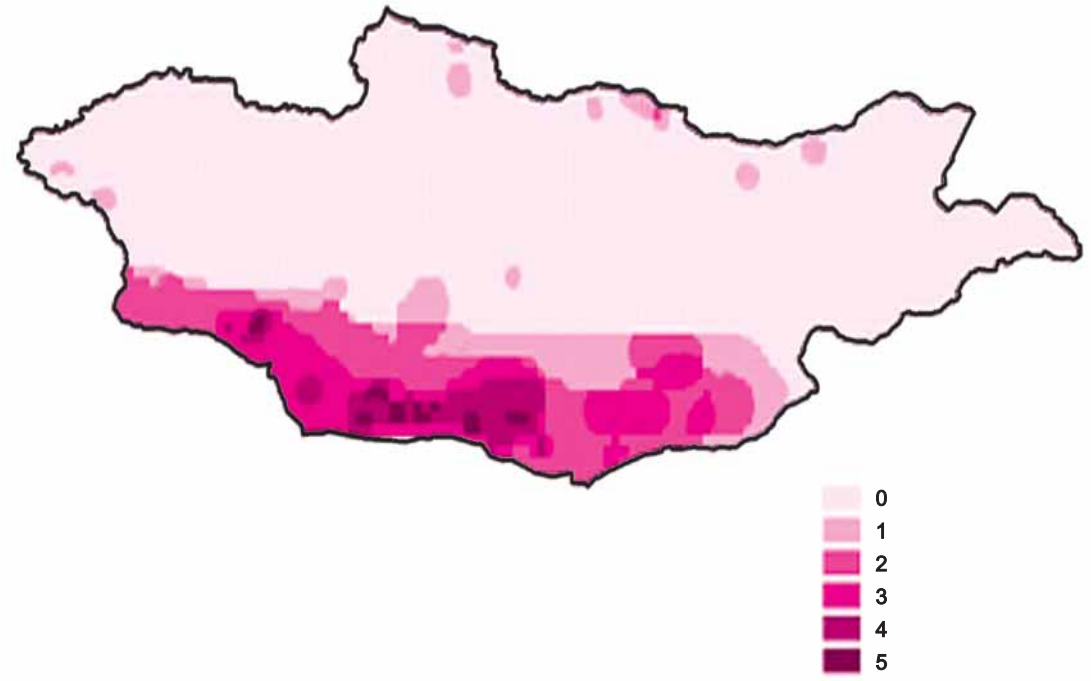
a) Amphibian species richness



b) Threatened amphibian species richness



c) Reptile species richness



d) Threatened and Near Threatened reptile species richness

THREATS TO MONGOLIAN REPTILES AND AMPHIBIANS

The assessment process identified the main activities or processes driving the decline of species (e.g. resource extraction or hunting), and the direct threats causing these declines (e.g. loss of habitat or intentional mortality). Where applicable, the primary, secondary and tertiary direct threats were ranked for each species.

For threatened reptiles and amphibians, habitat loss and pollution feature as important dominant threats. All but one species is threatened either primarily or secondarily by habitat destruction of some form, be it degradation, fragmentation, or loss, and this is the same case for pollution. In the majority of cases, pollution and habitat loss are linked through resource extraction, particularly mining which has a large impact on amphibious species, removing available habitat and polluting surrounding areas through the extraction process. Water pollution is also created from a number of other sources, such as domestic waste and agricultural waste. Habitat loss can also result from new human settlements forming near to water sources. This situation can be exacerbated by the accompanying increase in the number of livestock using the water sources. Another noted form of habitat loss threatening these species is marsh drainage. The main cause of habitat degradation is through pollution, although fires and increasing numbers of livestock grazing are also notable causes.

There are a number of cases where climate change is recorded as a tertiary threat. Many reptile species occur in southern Mongolia, where droughts and dry conditions commonly occur. However, it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity.

Table 3. Summary of direct threats facing threatened Mongolian reptiles and amphibians, as identified by participants at the Second International Mongolian Biodiversity Databank Workshop. Primary threat represented in black, secondary threat in mid-grey, and tertiary threat in light-grey.

Category of threat	Species	Habitat degradation	Habitat fragmentation	Habitat loss	Pollution	Disease	Parasites	Predation	Hybridisation	Competitors	Intentional mortality	Accidental mortality	Climate change	Other	Not known
VU	Siberian salamander *Salamandrella keyserlingii*			■	▒										
VU	Pewzow's toad *Bufo pewzowi*			▒	■										
VU	Japanese tree frog *Hyla japonica*			▒	■										
VU	Asiatic grass frog *Rana chensinensis*	■			▒										
VU	Yangihissar gecko *Cyrtopodion elongatus*													■	
VU	Northern viper *Vipera berus*	▒													

SPECIES ACCOUNTS - AMPHIBIANS

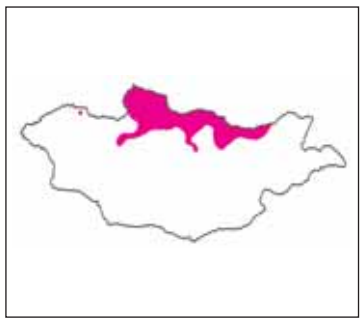
Order Caudata

Family Hynobiidae

1. *Salamandrella keyserlingii* Dybowski, 1870

Common names: Siberian salamander, Siberian newt or Dybowski's salamander (English) (Frank and Ramus, 1996); Shiver gulmer (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised (Kuzmin, 1999; Frost, 2007)
Synonyms: *Hynobius keyserlingii* Boulenger, 1910 (specific to Mongolia); *Hynobius michnoi* Nikolskii, 1925 (specific to Russia and northern Mongolia) (Gumilevskii, 1932); *Isodactylium schrenckii* Strauch, 1870
Taxonomic notes: Recently, sibling species were described from Far Eastern Russia. Despite a lack of morphological differences, molecular evidence indicates they are distinct species (L. Borkin, pers. comm.). *Salamandrella* and *Hynobius* genuses are from one line of the phylogenetic tree and are therefore closely related. This species has a wide distribution, however it is difficult to determine how many subspecies are present in Mongolia, due to a lack of geographical evolution studies. The first discovery of this species was very close to the Russian-Mongolian border, so it may be represented by a nominative subspecies in Mongolia (Borkin *et al.,* 1988).

Global status: Least Concern
Regional status: Vulnerable, A3c
Rationale for assessment: During visits to its habitat over many years, sightings have become less frequent (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Its habitat is declining in extent and quality, primarily due to pollution, mining, wildfires, and drainage of swampy areas for other uses (e.g. agriculture). These changes in habitat availability are estimated to lead to a 30% decline in the population size over the next ten years. The assessment remains unchanged following application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Included as Rare in the 1987 and 1997 'Mongolian Red Book' (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Approximately 16% of the species' range in Mongolia occurs within protected areas.



Global distribution: Russian Federation; Kazakhstan; China; Mongolia; Democratic People's Republic of Korea; Japan (IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007). Possesses the widest geographical range of any recent amphibian species, spanning approximately 12 million km^2 globally (IUCN, Conservation International, and NatureServe, 2006).

Regional distribution: Coniferous forest and steppe habitats associated with freshwater sources in northern Mongolia. Distribution includes Hövsgöl Lake, the Hentii Mountain Range along Bogd and Tuul rivers, northern Bayanzurkh, Huder, Shaamar and Zuunburen along Orkhon and Selenge rivers, Hongor Tolgoi along the Eg River, Darkhad Depression along Shishhed River, and in Tes and Onon rivers (Munkhbayar and Terbish, 1997; Terbish, *et al.,* 2006). This species is distributed in Selenge, Orkhon, Tuul, and along associated rivers including Shishkhed, Ukhert, Arsai, Khug, Guna, and Tengis in Khoridol Saridag, Ulaan taiga mountain and the Arctic drainage basin (Munkhbayar, 1976b; Kuzimin *et al.,* 1986; Ulykpan and Munkhbayar, 1982; Litvinov and Skuratov, 1986; Terbish *et al.,* 2006). The species is also distributed in the Onon river basin in the Hentii Mountain Range (Munkhbaatar and Ariunbold, 2001), the upper part of Herlen River (Hotolkhuu, 1969), and Tes river which runs from the Hangai Mountain Range to Uvs Lake of the Great Lake Depression (Davaa *et al.,* 1990; Terbish *et al.,* 2006). It occurs at elevations of 600-2,250 metres above sea level in Mongolia (Borkin and Kuzmin, 1988), and has been recorded at elevations of 2,200 metres in alpine habitats on the southern slopes of Munkhsaridag Mountain along the Arig River (Litvinov, 1981; Litvinov and Skuratov, 1986). This species has an estimated extent of occurrence of around 202,083 km^2.

Dominant threats: Habitat degradation and loss, primarily caused by marsh drainage and water pollution (Munkhbayar and Terbish, 1997). Water pollution is a particular problem around Ulaanbaatar and Shaamar in Mongol Daguur Steppe, and is evident along the Tuul river and Uu bulan, caused by sewage release, domestic, industrial and agricultural waste. Other causes of habitat degradation, fragmentation and loss include resource extraction (gold mining and logging), establishment of human settlements, and wildfires (particularly in coniferous forest habitats). Intrinsic factors such as limited dispersal, low densities and restricted range make this species vulnerable to stochastic events. Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Parasites are also a problem; the lungs of a one-year-old Siberian salamander found in Shaamar were infected with a species of nematode (*Rhabdias spp.*) (Munkhbayar and Terbish, 1997).

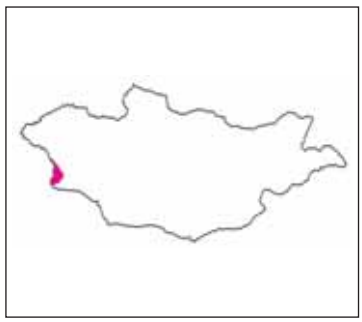
Order Anura

Family Bufonidae

2. *Bufo pewzowi* Bedriaga, 1898

Common names: Pewzow's toad or Central Asian green toad (English); nogoon bakh or tovaziin bakh (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised, further research is required (Kh. Terbish, pers. comm.).
Synonyms: *Bufo viridis* Laurenti, 1768;
Bufo danatensis Pisanetz, 1978
Taxonomic notes: Research has shown that *Bufo viridis* is widely distributed in the Palearctic region, from western Africa to southern Siberia and Central Asia. During the 1970s, genetic studies determined that this species has tetraploid populations in Mongolia and other regions in Central Asia, differing from other populations globally (Masik *et al.,* 1976; Pisanets, 1978; Bassalayeva *et al.,* 1998; Borkin *et al.,* 2001). Researchers were first concerned with *Bufo viridis* in Mongolia (Peters, 1971; Munkhbayar, 1976b), although confusion with *Bufo oblongus* and *Bufo danatensis* still occurred (Stöeck *et al.,* 2001). The results of genetic studies indicated that this species has tetraploid chromosomes (4n=44, NF=88) so renamed it *Bufo danatensis* (Borkin *et al.,* 1986). It was later renamed *Bufo pewzowi. Bufo pewzowi* was recognised as a distinct species three or four years ago, and was re-named the Central Asian green toad or Pewzow's toad (L. Borkin, pers. comm.). It is partly in sympatry with *Bufo viridis turanensis*, which is sometimes confused with this species (IUCN, 2007). The species is of particular scientific interest due to its polyploid speciation, a rare phenomenon amongst animals in general (Borkin *et al.,* 1986). Polyploid species occur in fewer than 5% of the world's amphibian species (Kh. Terbish, pers. comm.).

Global status: Least Concern
Regional status: Vulnerable, B1ab(iii)
Rationale for assessment: This species has an estimated extent of occurrence of around 16,200 km^2 and is found in fewer than 10 locations (Bulgan River, springs and rivers in mountainous areas, and a group of four separated oases in Dzungarian Govi Desert). This species therefore qualifies as Vulnerable under Criterion B. The species is experiencing habitat degradation due to pollution from resource extraction (mining) and habitat loss through livestock trampling springs and the establishment of human settlements near oases. It should be noted that this species requires further research in order to clarify the status we have assigned. The assessment remains unchanged following application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Included as Rare in the 1997 'Mongolian Red Book' (Munkhbayar and Terbish, 1997). Less than one percent of the species' range in Mongolia occurs within protected areas.



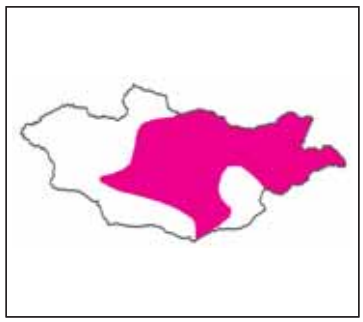
Global distribution: Kazakhstan; Uzbekistan; China; Mongolia; Kyrgyzstan; possibly Afghanistan and Tajikistan (IUCN, 2007).
Regional distribution: Meadows, marshes, pond banks, streams and rivers in mountain-steppe, oases, and desert habitats (Munkhbayar and Terbish, 1997). Hovd in the Mongol Altai Mountain Range in western Mongolia (Borkin *et al.,* 1986; Borkin *et al.,* 2001), southern Mongol Altai Mountain Range and eastern Dzungarian Govi Desert (Borkin and Kuzmin, 1988; Semenov and Munkhbayar, 1996; Terbish *et al.,* 2006). It is also found in the watersheds of the Bulgan, Uliastai, and Uyench rivers, and in oases in Western Gobi. Its distribution in Mongolia is sporadic and confined to water bodies, therefore it often exists in isolated populations. Details on occurrence in each water body are available in Borkin and Kuzmin (1988). The species occurs at elevations of 1,150-2,000 metres above sea level in Mongolia (Borkin *et al.,* 1986; L. Borkin, pers. comm.). This species has an estimated extent of occurrence in Mongolia of around 16,200 km^2.

Dominant threats: Water pollution through releases of domestic sewage and agricultural, industrial, and commercial waste (Kh. Terbish, pers. comm.). Resource extraction (mining) is a cause of habitat loss and pollution. Human settlements and livestock grazing near to oases are a likely source of habitat loss, as springs can be destroyed through trampling. Drying of water sources and droughts also threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Intrinsic factors such as limited dispersal, low densities, and a restricted range also affect this species' future survival.

3. *Bufo raddei* Strauch, 1876

Common names: Mongolian toad, Radde's toad, Siberian sand toad, piebald toad or Tengger desert toad (English) (Frank and Ramus, 1996); Mongol bakh (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised. Further investigation may reveal the existence of subspecies, particularly amongst populations in the Gobi Desert.
Synonyms: *Bufo kozlovi* Zarevskij (described near the southern Mongolian border along Edsin-gol River), 1924
Taxonomic notes: Previously considered a member of the *Bufo viridis* group; a group of green toads comprising two subgroups (AmphibiaWeb, 2006). However, the validity of *Bufo raddei*, and its distant position from the *Bufo viridis* group was confirmed by biochemical studies (Maxson, 1981). It is considered to be more closely related to species in the *Bufo bufo* complex and *Bufo melanostictus*. However, a study on the variation of this widely distributed polymorphic species did not provide conclusive results. Further genetic studies were carried out in populations in northern Mongolia and Trans Altai Govi. The results of this study showed the species to be a diploid (2n=22, NF=44) taxa (Borkin et al., 1986).

Global status: Least Concern
Regional status: Least Concern
Rationale for assessment: This species has a large population size and a wide distribution. No decline in population size has been detected. The population is estimated to total more than 10,000 individuals (L. Borkin and Kh. Terbish, pers. comm.).
Legal status: Approximately 8% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



Global distribution: Russian Federation (Baikal area and the Far East); China; Mongolia; Democratic People's Republic of Korea; possibly Republic of Korea (IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007). This species is one of the most widespread amphibians in Central Asia (Kuzmin and Ischenko, 1997).
Regional distribution: This is the most widespread toad in Mongolia (Terbish *et al.,* 2006). Inhabits flooded plains, brackish seasonal plains and oases in steppe, forest-steppe, and semi-desert habitats in central and eastern Mongolia. This species is widely distributed from Biger Lake in western Valley of the Lakes to eastern Ikh Hyangan Mountain Range, and as far south as the Trans Altai Govi Desert, with some isolated populations in the country (Terbish *et al.,* 2006). The species is absent in Great Lakes Depression, western Hangai, Hövsgöl Mountain Range and Dzungarian Govi Desert (Terbish, 1989; Borkin and Kuzmin, 1988). In arid conditions, such as those found in Valley of the Lakes, the Mongolian toad forms discrete populations in oases, separated by dry areas, but in moist steppe habitats they can be found several hundred metres away from a water source (Kuzmin and Ischenko, 1997). The species occurs at elevations of 500-3,800 metres above sea level in Mongolia (Bannikov, 1958; Borkin *et al.,* 1986; Borkin and Kuzmin, 1988). Its estimated extent of occurrence in Mongolia is 842,920 km^2.

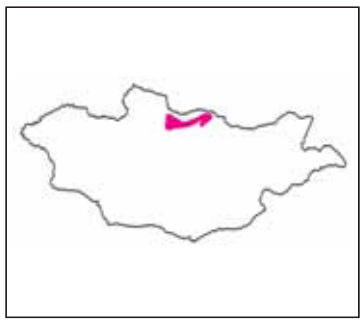
Dominant threats: As this is a widely distributed species, it is likely to experience a number of varied threats. However, habitat degradation, water pollution caused by resource extraction (mining), and drying of water bodies at a local level are dominant threats, particularly in desert habitats (Kh. Terbish and L. Borkin, pers. comm.). These threats are believed to be having a minimal impact in Mongolia at present (Kh. Terbish and L. Borkin, pers. comm.).

Family Hylidae

4. *Hyla japonica* Güenther, 1859

Common names: Far Eastern tree frog or Japanese tree frog (English) (Frank and Ramus, 1996); modny melkhii (Mongolian)
Subspecies in Mongolia: *H. j. stepheni* Boulenger, 1887
Synonyms: *Hyla stepheni* Boulenger, 1887; *Hyla arborea ussuriensis* Nikolsky, 1918
Taxonomic notes: Previously considered to be a subspecies of the *Hyla arborea* complex, however, biochemical and morphological studies have now shown this to be incorrect (Daito, 1968; Kawamura and Nishioka, 1977; Kuramoto, 1984; Nishioka *et al.,* 1990; Kuzmin, 1999; Frost, 2007; IUCN, Conservation International, and NatureServe, 2006). Fei (1999) considered *H. ussuriensis* from northern China, Korea, eastern Russia and Mongolia to be a separate species from *H. japonica* in Japan (IUCN, 2007). Here we consider *H. ussuriensis* to be a synonym of *H. japonica* pending further taxonomic work on this complex, although further research on the position of *H. japonica* in Central Asia and Mongolia is recommended.

Global status: Least Concern
Regional status: Vulnerable, D2
Rationale for assessment: This species has an estimated extent of occurrence of 19,980 km^2 and is found in fewer than five locations, however at present there is no solid evidence of a decline in habitat extent or quality, therefore this species does not qualify as Endangered B1ab(iii), but is categorised as Vulnerable under Criterion D2 as mining may be a threat in the future. Further research into the effects of threats on this species may result in re-categorisation. The assessment remains unchanged following application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Included as Rare in the 1997 'Mongolian Red Book' (Munkhbayar and Terbish, 1997). None of the species' range is included within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: Russian Federation; China; Mongolia; Democratic People's Republic of Korea; Republic of Korea; Japan (IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007).
Regional distribution: Meadows and swampy areas in steppe and forest steppe habitats associated with freshwater sources (Borkin and Kuzmin, 1988; Munkhbayar and Terbish, 1997). Distribution includes lower Selenge and Orhon rivers, Ikh and Baga Buureg Tolgoi hills in Shaamar, and Eroo and Haraa rivers in Mongol Daguur Steppe. It also occurs on Tulgat Hill in Bulgan Province in north-eastern Hangaii Mountain Range (Borkin and Kuzmin, 1988; Semenov and Munkhbayar, 1996; Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). The species occurs at elevations of 600 metres above sea level in the lowlands of Mongolia (L. Borkin, pers. comm.). Its estimated extent of occurrence in Mongolia is 19,980 km^2.

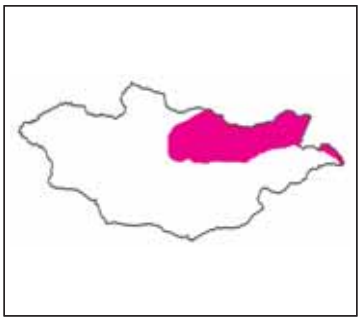
Dominant threats: Water pollution through releases of domestic waste and sewage and small scale agricultural waste. This species may experience population fluctuations related to weather conditions. As populations decline during dry conditions, this constitutes a threat. Resource extraction (gold mining) also contributes to pollution and results in habitat loss.

Family Ranidae

5. *Rana amurensis* Boulenger, 1886

Common names: Siberian wood frog or Khabarovsk frog (English) (Frank and Ramus, 1996); Sibiriin melkhii (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised.
Synonyms: *Rana temporaria* Linnaeus, 1758 (Nikolsky, 1905; Shagdarsuren, 1958); *Rana asiatica* Bedriaga, 1898 (Nikolsky, 1914; Tsarevskii, 1930; Gumilevskii, 1932); *Rana chensinensis* David, 1875 (Bannikov, 1958; Munkhbayar, 1962, 1968, 1970; Obst, 1962); *Rana cruenta* Pallas, 1814 (Munkhbayar, 1976b). Previously considered to be a member of the *Rana japonica* group.

Global status: Least Concern
Regional status: Least Concern
Rationale for assessment: This species has a large population size and a wide distribution in Mongolia (Terbish *et al.,* 2006). No decline in population size has been detected, therefore an assessment of Least Concern has been made.
Legal status: Approximately 11% of the species' range in Mongolia occurs within protected areas (Kh. Terbish, pers. comm; protected area data provided by UNEP-WCMC, 2006).



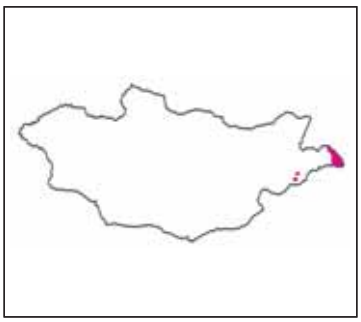
Global distribution: Russian Federation; China; Mongolia; Democratic People's Republic of Korea; Republic of Korea; possibly Kazakhstan (IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007).
Regional distribution: This species has a wide range in Mongolia, utilising steppe and forest steppe habitats associated with freshwater sources (Borkin and Kuzymin, 1988). Its range and preferred habitat type are similar to *Bufo raddei*. It is distributed in the eastern Hangai Mountain Range, the Hentii Mountain Range, Mongol Daguur Steppe, and Ikh Hyangan Mountain Range. It occurs in Haraa, Tuul, Selenge and Orhon rivers in the Arctic Drainage Basin and along Herlen, Onon and Halh rivers in the Atlantic Ocean Basin. It also occurs in Buir Lake and the lowlands of Ikh Hyangan Mountain Range (Borkin and Kuzmin, 1988; Terbish *et al.,* 2006). The species occurs at elevations of 580-1,200 metres above sea level in Mongolia (Borkin and Kuzmin, 1988). Its estimated extent of occurrence in Mongolia is 293,059 km^2.

Dominant threats: There are no major threats impacting upon this species at present.

6. *Rana chensinensis* David, 1875

Common names: Asiatic grass frog, Chinese brown frog or inkiapo frog (English) (Frank and Ramus, 1996); dornodiin melkhii (Mongolian)
Subspecies in Mongolia: Further research into the designation of subspecies within Mongolia is required.
Synonyms: *Rana nigromaculata* Hallowell, 1860 (Munkhbayar and Eregdendagva, 1970)
Taxonomic notes: In the past (and sometimes at present), this species has been considered synonymous with *Rana temporaria* Linnaeus, 1758. Later studies revealed *R. chensinensis* to be part of a species complex, although it is now commonly accepted to consider this species (along with *R. ornativentris*, *R. dybowskii*, and *R. pirica*) as distinct, as it has 24 chromosomes (Borkin, 1975). However, the status of other species in this complex remains unresolved (AmphibiaWeb, 2006; IUCN, 2007). The taxonomic position of this species in Mongolia should be investigated, as there are two isolated populations in Dariganga and Ikh Hyangan Mountain Range, which may represent genetically different forms, subspecies or even species (L. Borkin, pers. comm.).

Global status: Least Concern
Regional status: Vulnerable, B1ab(iii)
Rationale for assessment: This species has an estimated extent of occurrence of 19,995 km^2 and is found in nine locations: Dagsh river, Khusiin gol river, Khalhiin gol river, Azargyn gol river, Khukh nuur lake, Numrug river, Degee gol river, Khongoriin gol river and Matad sum in Eastern Mongolia (Munkhbaatar, 2004; Borkin and Kuzmin, 1988). As this species is experiencing a decline in the extent and quality of available habitat, primarily due to pollution, the establishment of human settlements, and increased grazing by livestock, this species qualifies as Vulnerable under Criterion B1ab(iii). There is evidence of a population decline in Mongolia, and it is known to occur in two isolated populations. When more conclusive evidence becomes available this species may be re-categorised under Criterion A. The assessment remains unchanged following the application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Included as Rare in the 1987 and 1997 'Mongolian Red Books' (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Approximately 15% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: China; Mongolia; possibly Democratic People's Republic of Korea and Russian Federation (IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007).
Regional distribution: Steppe and forest steppe habitats associated with freshwater sources such as marshes, springs, oases and lakes (Munkhbaatar, 2004). Isolated populations are located in Galt Mountain in Sukhbaatar Aimag, and around Buir Lake and Halkh River in Ikh Hyangan Mountain Range and Eastern Mongolia

(Borkin and Kuzmin, 1988; Semenov and Munkhbayar, 1996; Munkhbaatar, 2004; IUCN, Conservation International, and NatureServe, 2006; IUCN, 2007). Its distribution is restricted to Eastern Mongolia and includes Ganga Lake in Sukhbaatar Province, Dagsh River, Duut Lake, and Hukh Lake. It also occurs in Hongor, Ar Nomrog, Hus, Bichigt, Azarga, Degee, and Halkh rivers and tributaries (Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). The species occurs at elevations of 583-1,500 metres above sea level in Mongolia (Borkin and Kuzmin, 1988). Its estimated extent of occurrence in Mongolia is 19,995 km^2.

Dominant threats: As this species has a restricted range and exists in isolated populations it is vulnerable to stochastic events such as extreme weather conditions. Habitat degradation constitutes a threat through wildfires (particularly in Ikh Hyangan Mountain Range), establishment of human settlements near water sources, grazing by increasing numbers of livestock, and infrastructure development (to a certain extent). In some areas, particularly Dariganga, pollution through releases of domestic waste is a threat (Munkhbayar and Terbish, 1997).

SPECIES ACCOUNTS - REPTILES

Order Squamata

Family Gekkonidae

7. *Alsophylax pipiens* (Pallas, 1814)

Common names: Kaspischer even-fingered gecko or squeaky pygmy gecko (English) (Frank and Ramus, 1996; Szczerbak and Golubev, 1986); tumur gurvel (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised.
Synonyms: *Lacerta pipiens* Pallas, 1827; *Alsophylax macrotis* Boulenger, 1885

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This species has a widespread distribution with a high density, and is believed to be relatively common in Mongolia (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 24% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).

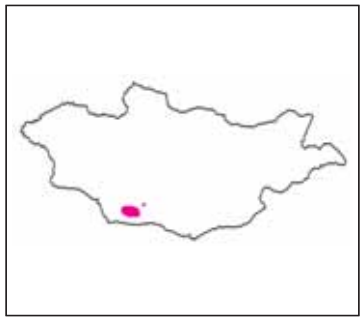
Global distribution: Russian Federation (between Wolga and Ural); north-eastern Islamic Republic of Iran; Kazakhstan (Caspian Sea to Lake Zaysan); northern Turkmenistan; Uzbekistan; northern Afghanistan; north-western China; southern Mongolia (Gobi Desert) (Bannikov *et al.,* 1977; Szczerbak and Golubev, 1986; Ananjeva and Orlov, 1995; Uetz *et al.,* 2006). Mongolia represents the eastern limit of its global distribution (Szczerbak and Golubev, 1986).
Regional distribution: Rocky steppe and semi-desert habitats in the Gobi Desert, at elevations of 600-1,550 metres above sea level (Borkin *et al.,* 1990; Szczerbak and Golubev, 1986). It is distributed in the Trans Altai Govi Desert, southern Mongol Altai Mountain Range, Govi Altai Mountain Range, Dzungarian Govi Desert, Northern Govi, Alashan' Govi Desert and Eastern Govi (Ananjeva *et al.,* 1997; Terbish *et al.,* 2006). This is one of the four most common lizard species (*P. versicolor; A. pipiens; E. przewalskii* and *E. multiocellata*) found in the Gobi Desert (Rogovin *et al.,* 2001). This species has an estimated extent of occurrence in Mongolia of around 416,793 km^2.

Dominant threats: Habitat loss and degradation caused by resource extraction (mining) are low level threats which may become more dominant as such extraction activities increase.

8. *Cyrtopodion elongatus* (Blanford, 1875)

Common names: Gobi naked-toed gecko or yangihissar gecko (English); Gobi Goviin makhir or Goviin nusgen huruut (Mongolian)
Subspecies in Mongolia: Further research into the designation of subspecies within Mongolia is required.
Synonyms: *Gymnodactylus elongatus* Boulenger, 1885 (Uetz *et al.,* 2006)
Taxonomic notes: There is ongoing discussion as to which genus and subgenus this species belongs. Further taxonomic research is required to resolve this issue (Ananjeva *et al.,* 1997).

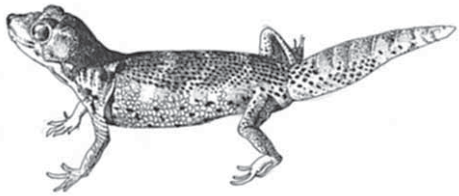
Global status: Not Evaluated
Regional status: Vulnerable, D2
Rationale for assessment: This is a rare species with a limited range and is found in just three locations (Terbish *et al.,* 2006). It has very specific habitat requirements which limit expansion of this range (D. Semenov, pers. comm.). It is assessed as Vulnerable D2 as it is found in fewer than five locations and mining is a potential future threat. The assessment remains unchanged following the application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Included as Rare in the 'Mongolian Red Book' of 1987 and 1997 (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Approximately 55% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: Turkmenistan; China; Mongolia (Uetz *et al.,* 2006).
Regional distribution: Inhabits gravel desert habitats and rocky foothills, ravines and dry river beds in mountainous regions (Semenov and Munkhbayar, 1996; Munkhbayar and Terbish, 1997). It is distributed in Shar Huls Oasis, Nogoon Tsav, Ingen Hoovoriin Hooloi, and Tsuglabar Mountain Range in Trans Altai Govi Desert. This species also occurs around Tsuvaraa Har, Hermiin Tsav, Naran Bulag and Haich Mountains in Trans Altai Govi desert (Munkhbayar, 1976; 1977; Munkhbayar, 1981; Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006), and in Zulganain oasis, Bugiin tsav in Trans Altai Govi Desert (Terbish and Batsaikhan, pers. comm.). It occurs at elevations of 700-1,300 metres above sea level in Mongolia (Borkin *et al.,* 1990). This species inhabits extreme environments, limited by food availability (Borkin *et al.,* 1990; Anenjeva *et al.,* 1997). It has an estimated extent of occurrence of around 28,549 km^2.

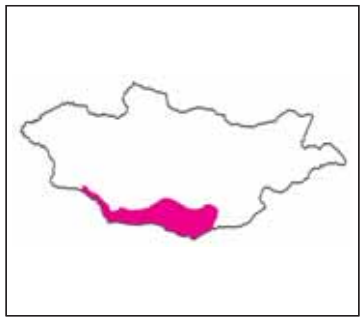
Dominant threats: Prey is scarce for this nocturnal species, as many of the insects which comprise the majority of its diet are not active during its foraging time. Changes in native species dynamics (a decline in its prey base) therefore pose a threat to this species. As the population is not contiguous, any change in the environment or natural disasters (particularly mining or temperature extremes) could have severe stochastic impacts.

9. *Teratoscincus przewalskii* Strauch, 1887



Common names: Przewalski's wonder gecko (Frank and Ramus, 1996) or plate-tailed gecko (Ananjeva *et al.,* 1997) (English), nokhoi gurvel (Mongolian)
Subspecies in Mongolia: *T. p. przewalskii* Strauch, 1887
Synonyms: Unknown

Global status: Not Evaluated
Regional status: Near Threatened
Rationale for assessment: International trade for traditional medicines and the pet industry is a threat to this species, which could result in future population decline. Population trends and size are not known at present, although it is abundant in China, so there is a good chance of a rescue effect from adjacent populations (Eremchenko, pers. comm.). At present this species is categorised as Near Threatened, but data on populations in Mongolia, establishment of trade, or population declines in China, could result in re-categorisation of this species to threatened under Criterion A (population reduction). Further research on population size and trends in Mongolia is recommended.
Legal status: Approximately 37% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: China (Xinjiang, Gansu, Inner Mongolia); southern Mongolia (Uetz *et al.,* 2006).
Regional distribution: This species was first discovered in Mongolia during the 1960s, and is one of the least studied representatives of the herpetofauna of Central Asia (Munkhbayar, 1976a; Munkhbayar, 1981; Semenov and Borkin, 1992). Global distribution is limited by the Govi Altai Mountain Range, and the eastern border of its distribution passess through western parts of East-Gobi aimags in Eastern Govi (Szczerbak and Golubev, 1986). It is distributed in sandy areas of cold desert habitats with sparse vegetation cover in the Trans Altai Govi Desert, Alashan' Govi Desert, Govi Altai Mountain Range, and Northern Govi (Semenov and Borkin, 1992; Ananjeva *et al.,* 1997; Terbish *et al.,* 2006), southern Mongol Altai Mountain Range, and Eastern Govi (Eregdendavga, 1961; Munkhbayar, 1962; 1976a). It occurs at elevations of 600-1,370 metres above sea level in Mongolia (Borkin *et al.,* 1990; Ananyeva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 169,290 km^2.

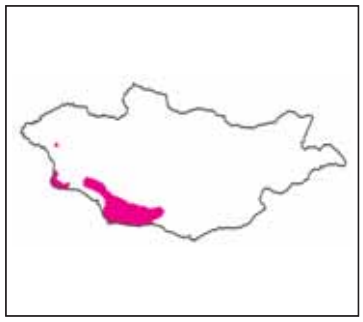
Dominant threats: Collection for traditional medicines and the pet industry, for international trade; current levels of trade are unknown. Resource extraction (mining) is believed to be leading to habitat degradation and pollution. Natural disasters such as floods also present a threat.

Family Agamidae

10. *Laudakia stoliczkana* (Blanford, 1875)

Common names: Mongolian agama or Mongolian rock agama (English); zamba gurvel (Mongolian)
Subspecies in Mongolia: *L. s. altaica* (Munkhbayar, 1971)
Synonyms: *Stellio stoliczkanus* Blanford, 1875; *Agama stoliczkana* Blanford, 1875; *Agama tarimensis* Zugmayer, 1909; *Stellio stoliczkana* Blanford, 1875 (detailed in Ananjeva *et al.,* 1997; Macey *et al.,* 2000)

Global status: Not Evaluated
Regional status: Near Threatened
Rationale for assessment: The current population size is unknown but is believed to be fragmented. This species is traded with China for traditional medicines and as an addition to alcoholic drinks, although the levels of trade remain unknown. Such trade may result in a population decline warranting the re-categorisation of this species as threatened under Criterion A. At present, as very little firm data exists, it is categorised as Near Threatened, and further research on population size and trends, and the impact of threats is recommended.
Legal status: Approximately 51% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: China (Xinjiang, Gansu), western Mongolia (Uetz *et al.,* 2006).
Regional distribution: Rocky and cold desert habitats in south-western and western Mongolia. Distributed in hilly regions in the Trans-Altai Govi Desert, Mongol Altai and Govi Altai mountain ranges (Terbish *et al.,* 2006). This species is widely distributed within its range, particularly around rivers and other water sources (Eregdendavga, 1958; Munkhbayar, 1976a; Munkhbayar and Terbish, 1991; Ananjeva *et al.,* 1997; Terbish *et al.,* 2006). Recorded during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). It occurs at elevations of 1,200-2,400 metres above sea level in Mongolia (Borkin *et al.,* 1990). This species has an estimated extent of occurrence of around 98,255 km^2, however the population is fragmented and occurs in isolated populations (D. Semenov, pers. comm.). Mongolian and German joint expeditions released 86 individuals of this species in Bayan Uul Mountain in Hovd river basin in the Great Lake Depression (Stubbe *et al.,* 1981).

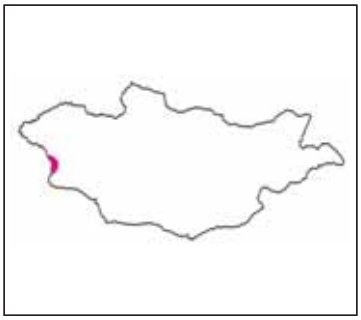
Dominant threats: Population declines are believed to be minimal at present, however, international trade with China for traditional medicines and as an additive to alcoholic drinks (with a current market value of approximately $5 USD per individual) is a potential threat. Current levels of trade remain unknown (Ts. Odbayar, pers. comm.). The population may

decline due to natural resource extraction (mining). Parasites discovered on this species include *Thelandros mongolicus sharpilo* (Sharpilo *et al.,* 1987) and *Thelandros gobiensis sharpilo*, (Sharpilo *et al.,* 1987). Studies to investigate the impacts of parasites on species dynamics are recommended.

11. *Phrynocephalus helioscopus* (Pallas, 1771)

Common names: Sunwatcher toad-head agama (English) (Frank and Ramus, 1996); toirmiin honin gurvel (Mongolian)
Subspecies in Mongolia: *P. h. saposhnikovi* Kaschenko, 1909
Synonyms: *Phrynocephalus uralensis* (Gmelin, 1789); *Phrynocephalus varius* Eichwald, 1831

Global status: Not Evaluated
Regional status: Not Applicable
Rationale for assessment: This species has an estimated extent of occurrence of around 150 km^2. As less than 1% of the global population of this species occurs in Mongolia, and its regional distribution covers less than 1% of the area of Mongolia, it is not applicable for assessment.
Legal status: Included as Rare in the 'Mongolian Red Book' of 1997 (Munkhbayar and Terbish, 1997). Less than 1% of its range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



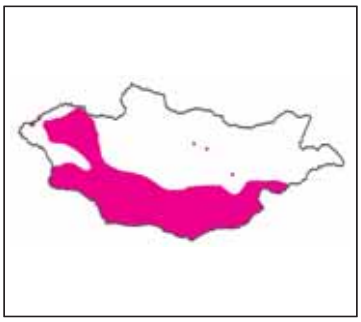
Global distribution: Northern Islamic Republic of Iran; Kazakhstan; Turkmenistan; Uzbekistan; north-western China; northern and south-western Mongolia (Bannikov *et al.,* 1977; Borkin *et al.,* 1990; Ananjeva *et al.,* 1997).
Regional distribution: Brown soil steppe habitats, desert-steppe habitats with clay soils, and desert habitats are utilised (Munkhbayar and Terbish, 1997). Distributed in Yarant, Salhitiin Hotol, Ikh and Baga Ongog and the Bulgan River in Dzungarian Govi Desert (Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). Mongolia represents the eastern limit of this species' global distribution (Munkhbayar and Terbish, 1997). It occurs at elevations of 1,200-1,400 metres above sea level in Mongolia (Borkin *et al.,* 1990; Terbish and Munkhbayar, 1993). This species has an estimated extent of occurrence in Mongolia of around 6,719 km^2.

Dominant threats: Populations at the edge of its Mongolian range are vulnerable to the effects of drying of water sources and droughts, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Low levels of species collection for medicinal purposes may constitute a threat (Munkhbayar and Terbish, 1997).

12. *Phrynocephalus versicolor* Strauch, 1876

Common names: Tuva toad-head agama (English) (Frank and Ramus, 1996); khonin gurvel (Mongolian)
Subspecies in Mongolia: Ananjeva *et al.* (1997) describe two subspecies in Mongolia, *P. v. versicolor* Strauch, 1876 and *P. v. kulagini* (Bedriaga, 1909). Golubev (1993) defined the populations in northwestern Mongolia as *P. v. kulagini.*
Synonyms: *Phrynocephalus rostralis* Zarevsky, 1930; *Phrynocephalus frontalis* Strauch, 1867; *Phrynocephalus blanfordi* Bedriaga, 1907; *Phrynocephalus carinilabris* Bedriaga, 1909; *Phrynocephalus guentheri* Bedriaga, 1906; *Phrynocephalus pewzowi* Bedriaga, 1907 (Ananjeva *et al.,* 1997; Peters, 1984)
Taxonomic notes: The *P. versicolor* species complex refers to populations of *P. frontalis, P. przewalskii*, and *P. versicolor*, however, DNA studies found that populations of *P. versicolor* from the Altai Mountains in northern Mongolia are actually more likely to be *P. guttatus* (Wang and Fu, 2004). Most researchers accept that this species is separated from the *guttatus* group (Sokolovskii, 1975; Semenov, 1987; Likhnova and Milishnikov, 1988; Golubev, 1989; Ananieva *et al.,* 1997). Bedryaga (1909) divided this group into four subspecies including *P. v. hispida* (south western Mongolia), *P. v. hulagini* (northern Mongolia), *P. v. versicolor* (southern Mongolia) and *P. v. bogdanowi* (eastern Mongolia). Most researchers recognise just two species; *P. v. hulagini* and *P. v. versicolor* (Milishnikov and Likhnova, 1986; Likhnova, 1992; Semenov, 1987; Semenov and Shenbrot, 1989; Ananjeva *et al.,* 1997). Often *P. v. versicolor* is considered synonymous with *P. rostralis, P. frontalis* and *P. v. bogdanowi* (Ànanjeva *et al.,* 1997), however, the International Commission on Zoological Nomenclature (ICZN) recommend the species remain named as *P. versicolor* in north-western populations on the basis of conservation of prevailing usage (Wang and Fu, 2004).

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a common species with a widespread distribution and a high density in Mongolia (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 18% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: South-eastern Russia (Tuva); eastern Kazakhstan (Siberia); western China (Xinjiang, Gansu, Ningxia, Inner Mongolia); Mongolia (Shenbrot and Semenov, 1987; Wang and Fu, 2004; Uetz *et al.,* 2006).
Regional distribution: Toad-head agamas of the genus *Phrynocephalus* (family Agamidae) are the dominant reptiles in Central Asian deserts (Ananjeva *et al.*, 1997; Wang and Fu, 2004). This species is a sand dweller, occurring in steppe, semi-desert and desert habitats,

particularly the Gobi Desert (Ananjeva *et al.*, 1997; Terbish 2004; Wang and Fu, 2004). This is the most widespread and abundant of four lizard species inhabiting Mongolian deserts (*P. versicolor; A. pipiens; E. przewalskii* and *E. multiocellata*) (Rogovin *et al.,* 2001; Terbish, 2004). Dariganga is the northern boundary of its global range (Terbish *et al.,* 2006). Its distribution includes the Eastern Govi, Northern Govi, Alashan' Govi Desert, southern Mongol Altai Mountain Range, Govi Altai Mountain Range, Valley of the Lakes, Great Lakes Depression, Trans Altai Govi Desert, Dzungarian Govi Desert, south-western parts of Eastern Mongolia, and southern Hangai Mountain Range (Munkhbayar, 1976; Borkin *et al.,* 1990; Terbish *et al.,* 2006). The species was recorded during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). It occurs in Ekhiyn-Gol Oasis on the sub-zone of the arid desert habitats in Trans Altai Govi Desert (Semenov and Borkin, 1992). In general, the subspecies *P. v. kulagini* occurs around Great Lakes Depression, whereas *P. v. versicolor* is distributed throughout southern and western Mongolia (Ananjeva *et al.,* 1997). Elevations range from 600-2,000 metres above sea level (Borkin *et al.,* 1990; Ananjeva *et al.,* 1997). This species has an estimated extent of occurrence in Mongolia of around 647,991 km^2.

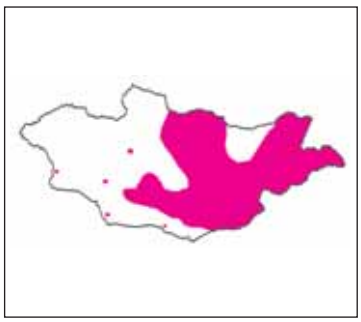
Dominant threats: Natural resource extraction (mining) and possible habitat degradation through increasing numbers of livestock trampling microhabitats. Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity.

Family Lacertidae

13. *Eremias argus* Peters, 1869

Common names: Mongolian racerunner (English) (Frank and Ramus, 1996); Mongol gurvel (Mongolian)
Subspecies in Mongolia: Ananjeva *et al.* (1997) describe two subspecies in Mongolia, *E. a. barbouri* Schmidt, 1925 and *E. a. argus* Peters, 1869
Synonyms: *Podarces argus* Strauch, 1876; *Eremias barbouri* Schmidt, 1925
Taxonomic notes: Isolated western populations require genetic research to identify if they should be considered as separate species.

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: Widely distributed and abundant with a high density in localised areas (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 8% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



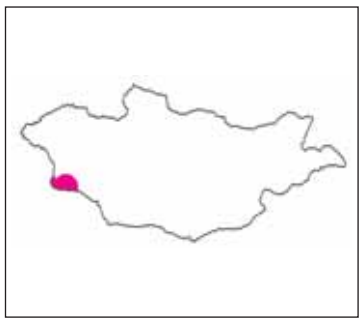
Global distribution: Russian Federation (southern bank of Lake Baikal, south-western Chitinskaya Oblast, southern Buryatia); China (Inner Mongolia; Liaoning south to Jiangsu and westward to Qinghai); eastern and central Mongolia; Democratic People's Republic of Korea (Uetz *et al.,* 2006).
Regional distribution: This species inhabits steppe, mountain-steppe, forest-steppe and semi-desert habitats with grassy river basins, shrubs and rocky areas (Ananjeva *et al.,* 1997). It is distributed in the Hangai and Hentii mountain ranges, eastern Mongolia, and northern Govi (Terbish *et al.,* 2006). It also occurs along the Bulgan River in the Mongol Altai Mountain Range, Trans Altai Govi Desert, Valley of the Lakes, Govi Altai Mountain Range, and Eastern Govi (Ananjeva *et al.,* 1997). This species was recorded on Baruun Saihan Mountain of the Mongol Altai Mountain Range (Munkhbayar, 1981) and during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). It occurs at elevations of 600-2,050 metres above sea level in Mongolia (Borkin *et al.,* 1990). Its estimated extent of occurrence in Mongolia is 767,569 km^2, although this includes several small isolated populations. As this species is abundant and widespread it is often considered to be a good indicator species for the general health of steppe habitats. Its nominative subspecies is distributed in the east and *E. a. barbouri* is distributed in the west of its range (Borkin *et al.,* 1990).

Dominant threats: There is currently no data available on threats, however, it is possible that this species may undergo a decline as a result of mining activities; this is a biotopical species (occurs in very specific habitat types).

14. *Eremias arguta* (Pallas, 1773)

Common names: Stepperunner or arguta (English); tolbot gurvel (Mongolian)
Subspecies in Mongolia: *E. a. potanini* Bedriaga, 1912
Synonyms: *Lacerta arguta* Pallas, 1773; *Podarcis variabilis* Wagler, 1830

Global status: Not Evaluated
Regional status: Data Deficient
Rationale for assessment: There is inadequate information on distribution, population size and trends, or the impact of threats to make an assessment on this species. There is a possible chance of a rescue effect from adjacent populations in China, but little is known about population sizes and whether mountains and rivers are a potential barrier to movement. Further research is recommended. It is believed to be a rare species with limited distribution in Mongolia (Terbish *et al.,* 2006).
Legal status: Included as Rare in the 'Mongolian Red Books' of 1987 and 1997 (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Approximately 18% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: North-eastern Romania; southern Ukraine; Turkey (Sherbakh, 1974); south-western Russian Federation (in the south to the northern Caucasus, east up to Ural River); eastern Georgia; southern Moldova; Armenia (Sevan River Basin); northern Islamic Republic of Iran; northern Azerbaijan; western and eastern Kazakhstan; Uzbekistan; Tajikistan; Kyrgyzstan; north-western China (Xinjiang and Inner Mongolia); south-western Mongolia (Uetz *et al.,* 2006).
Regional distribution: Occurs in gravel desert or low sandy hills along river banks in Bulgan and Uyench soums and Hovd aimag in Dzungarian Govi Desert (Munkhbayar, 1987; Semenov and Munkhbayar, 1996; Munkhbayar and Terbish, 1997). The range of this species in Mongolia constitutes the north-eastern boundary of its global range (Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). It occurs at elevations of 1,200-2,000 metres above sea level in Mongolia (Orlova and Terbish, 1986; Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 20,811 km^2.

Dominant threats: Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Temperature extremes are also a threat as this species inhabits dry areas.

15. *Eremias multiocellata* Günther, 1872

Common names: Multi-oscillated racerunner (English) (Frank and Ramus, 1996); mogoi gurvel (Mongolian)
Subspecies in Mongolia: Sherbakh (1974) details four subspecies including *E. m. bannikowi* Schtscherbak, 1973; *E. m. multiocellata* Günther, 1872; *E. m. kozlowi* Bedriaga, 1907 and *E. m. yarkandensis* Blanford, 1875, within its range. Two subspecies occur in Mongolia, *E. m. bannikowi* Szcerbak, 1973 and *E. m. multiocellata* Guenther, 1872 (Borkin *et al.,* 1990). Further research to clarify this is recommended.
Synonyms: *Podarces multiocellata* Strauch, 1876; *Podarces planiceps* Strauch, 1876; *Eremias yarkandensis* Blanford, 1875

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a relatively common and widely distributed species (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 18% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).

Global distribution: South-eastern Russian Federation (Tuva); eastern and south-eastern Kazakhstan; Uzbekistan; north-western China (Xinjiang and Qinghai eastward through Inner Mongolia to western Liaoning); southern Mongolia; Kyrgyzstan (Uetz *et al.,* 2006).

Regional distribution: This is one of just four lizard species (*P. versicolor; A. pipiens; E. przewalskii* and *E. multiocellata*) found in the Gobi Desert (Rogovin *et al.,* 2001; Terbish, 2004). It is distributed in the Trans Altai Govi, Great Lakes Depression, Mongol Altai Mountain Range, Govi Altai Mountain Range, Valley of the Lakes, Dzungarian Govi, Northern Govi, Eastern Govi and Alashani Govi (Munkhbayar, 1976; Ananjeva *et al.,* 1997; Terbish *et al.,* 2006). Recorded during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). It occurs at elevations of 600-2,700 metres above sea level in Mongolia (Ananjeva *et al.,* 1997). *E. m. bannikowi* is distributed in the northern part of its range and *E. m. multiocellata* occurs in southern parts of its range (Borkin *et al.,* 1990). Its estimated extent of occurrence in Mongolia is 657,900 km^2.

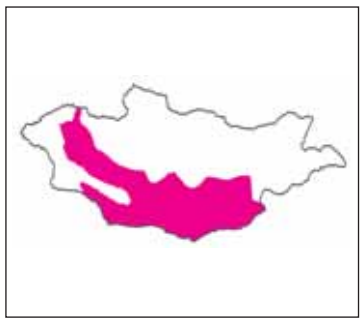
Dominant threats: Habitat loss through resource extraction (mining) constitutes a threat. Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Changes in native species dynamics (an increase in predators) may also constitute a threat to this species. As a generalist it is capable of surviving changes to its environment, to a certain extent. The effects of these impacts are believed to be low at present.

16. *Eremias przewalskii* (Strauch, 1878)

Common names: Gobi racerunner (English) (Frank and Ramus, 1996); Goviin gurvel (Mongolian)
Subspecies in Mongolia: *E. p. przewalskii* (Strauch, 1876); *E. p. tuvensis* (Szczerbak, 1970) (detailed in Szczerbak, 1974; Orlova, 1992)
Synonyms: *Podarces (Eremias) przewalskii* Strauch, 1876; *Podarces (Eremias) kessleri* Strauch, 1876; *Podarces (Eremias) brachydactyla* Strauch, 1876

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a common species with a wide distribution range and a relatively high density (Terbish *et al.,* 2006). No decline in population size has been detected. Re-categorisation may be required if international trade in animal parts increases.
Legal status: Approximately 18% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).

Global distribution: Russian Federation (southern Tuva Autonomous Republic); Northern China; Mongolia (Schmidt, 1927; Pope, 1935; Flint, 1960; Sherbakh, 1974; Orlova, 1992).



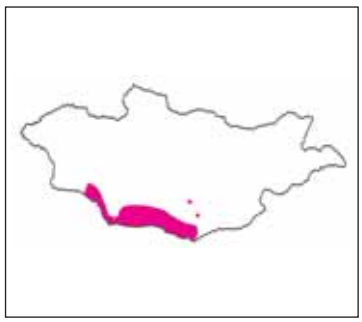
Regional distribution: Sandy soils in cold desert habitats in western and southern Mongolia (Sherbakh, 1974; Munkhbayar, 1976; Terbish, 1989). Once thought to only occur along the boundaries of south-eastern Mongolia (Bannikov, 1958; Sherbakh, 1974), it is now known to be the most common lizard species in western and southern Mongolia, as well as being widely distributed in the south (Orlova, 1992). This is one of just four lizard species (*P. versicolor; A. pipiens; E. przewalskii* and *E. multiocellata*) found in the Gobi Desert (Rogovin *et al.,* 2001; Terbish, 2004). Its distribution includes Great Lakes Depression, the Mongol Altai Mountain Range, the Govi Altai Mountain Range, Trans Altai Govi Desert, Valley of the Lakes, Northern Govi, Eastern Govi and Alashan' Govi (Terbish *et al.,* 2006). It was recorded during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). *E. p. przewalskii* is found in southern Mongolia and *E. p. tuvensis* is distributed in western Mongolia (Orlova, 1992). It occurs at elevations of 760-1,800 metres above sea level in Mongolia (Sherbakh, 1974; Ananjeva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 585,814 km^2.

Dominant threats: Traded internationally at low levels for traditional medicines and the pet industry. Habitat loss through resource extraction (mining) is a threat. Drying of water sources and droughts also threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Changes in native species dynamics (an increase in competitors and predators) may also constitute a threat to this species. As a generalist, it is capable of surviving changes to its environment, to a certain extent. The effects of these impacts are believed to be low at present (comments from assessors at the workshop).

17. *Eremias vermiculata* Blanford, 1875

Common names: Variegated racerunner (English) (Frank and Ramus, 1996); zagalt gurvel (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised.
Synonyms: *Podarces (Eremias) pylzowi* Strauch, 1876

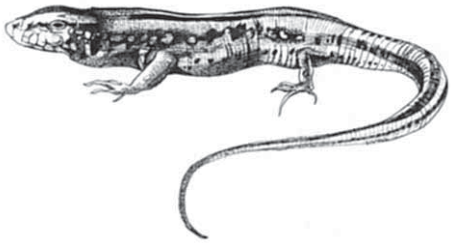
Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a widespread species with a high density (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 38% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: Eastern Kazakhstan; north-western China (Xinjiang east to Inner Mongolia); central and southern Mongolia (Kubykin, 1984; Uetz *et al.,* 2006).
Regional distribution: Cold desert habitats associated with *Tamarix* spp. and oases in the Trans Altai Govi Desert and Alashan' Govi Desert. Two locations have been documented in the Northern Govi (Semenov and Borkin, 1992; Ananjeva *et al.,* 1997; Terbish *et al.,* 2006). The species was recorded in Ekhiyn-Gol Oasis on the sub-zone of the arid desert habitats in the Trans Altai Govi Desert (Semenov and Borkin, 1992). It occurs at elevations of 750-1,450 metres above sea level in Mongolia (Borkin, 1986a, 1986b; Semenov and Borkin, 1986; Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 104,530 km^2.

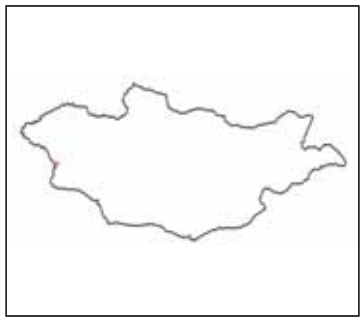
Dominant threats: Habitat loss through resource extraction (mining) is a threat, as is habitat degradation through grazing by increasing numbers of livestock (further evidence is required). Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Changes in native species dynamics (an increase in competitors and predators) may also constitute a threat to this species. As a generalist it is capable of surviving changes to its environment, to a certain extent. The effects of these impacts are believed to be low at present (comments from assessors at the workshop).

18. *Lacerta agilis* Linnaeus, 1758



Common names: Sand lizard (English) (Frank and Ramus, 1996); gavshgai gurvel (Mongolian)
Subspecies in Mongolia: No subspecies are currently recognised.
Synonyms: Unknown

Global status: Not Evaluated
Regional status: Not Applicable
Rationale for assessment: Less than 1% of the global population of this species occurs in Mongolia, and its regional distribution covers less than 1% of the area of Mongolia, therefore an assessment has not been made.
Legal status: None of the species' range is included within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: France; southern England; Belgium; Netherlands; Germany; south-eastern Norway; Switzerland; Luxemburg; north-eastern Italy; Denmark; Austria; Czech Republic; Croatia; eastern Poland; Sweden; Bosnia and Herzegovina; Hungary; Serbia and Montenegro; Albania; Greece; Romania; Latvia; Lithuania; the former Yugoslav Republic of Macedonia; Estonia; Bulgaria; Ukraine (east of the Dnjepr River and

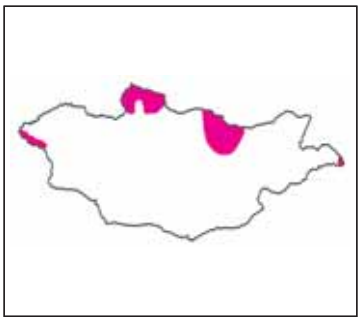
western Ukraine); Belarus; north-eastern Turkey; Russian Federation; Republic of Moldova; Georgia; Armenia; Azerbaijan; Kazakhstan; north-western China (western Xinjiang); north-western Mongolia; Kyrgyzstan (Uetz *et al.,* 2006).
Regional distribution: Rocky hills and mountain habitats associated with juniper plants and freshwater sources along Songinot and Bayan rivers in Mongol Altai Mountain Range (Semenov and Munkhbayar, 1996; Terbish *et al.,* 2006). The species occurs at elevations of 1,700 metres above sea level in Mongolia (Terbish and Munkhbayar, 1988). Its estimated extent of occurrence in Mongolia is 2,485 km^2.

Dominant threats: Unknown.

19. *Zootoca vivipara* Jacquin, 1787

Common names: Viviparous lizard or common lizard (English) (Frank and Ramus, 1996); zulzagalagch gurvel (Mongolian)
Subspecies in Mongolia: *Z. v. vivipara* Jacquin, 1787
Synonyms: *Lacerta vivipara* Jacquin, 1787

Global status: Least Concern
Regional status: Least Concern
Rationale for assessment: This species has a large population size and a wide distribution. No decline in population size has been detected. The species is widespread globally, with Mongolia representing less than 1% of its total distribution, however, as its range in Mongolia occupies more than 1% of the country, it is still valid for conservation assessment. There is a good chance of a rescue effect from adjacent populations in China and Russia.
Legal status: Approximately 25% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



Global distribution: This species has one of the largest distributions of all reptile species occurring throughout Eurasia from Ireland and the Pyrenees Mountains to Sakhalin (Ananjeva *et al.,* 1997).
Regional distribution: Deciduous forest habitats in north-western Mongol Altai, Hentii, Hövsgöl and Ikh Hyangan mountain ranges (Munkhbayar and Tseveenmyadag, 2001; Terbish *et al.,* 2006). It occurs at elevations of 1,300-2,900 metres above sea level in Mongolia (Ananjeva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 115,619 km^2.

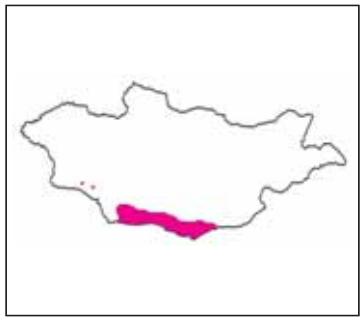
Dominant threats: Habitat degradation through human-caused and natural wildfires constitutes a threat, as does habitat loss through increasing resource extraction (logging). Disturbance due to mining activity may result in population declines. Drying of water sources and droughts also threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity.

Family Boidae

20. *Eryx tataricus* (Lichtenstein, 1823)

Common names: Tatary sand boa (English) (Frank and Ramus, 1996); temeen suul mogoi (Mongolian)
Subspecies in Mongolia: *E. t. tataricus* (Lichtenstein, 1823)
Synonyms: *Boa tatarica* Lichtenstein, 1823

Global status: Not Evaluated
Regional status: Near Threatened
Rationale for assessment: This species has a limited distribution and occurs in low numbers (Terbish *et al.,* 2006). In addition, the distribution described is based on relatively old point locality data and may have since changed. Some of the sites are in protected areas, but the threat of mining and environmental change are an increasing risk. The generation length is five years. Although this species does not qualify as threatened at present, further research may reveal a population decline, qualifying this species as threatened under Criterion A.
Legal status: Included as Rare in the 1987 and 1997 'Mongolian Red Books' (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Included in Appendix II of CITES (UNEP-WCMC, 2006). Approximately 33% of the species' range in Mongolia occurs within protected areas (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: Northern Islamic Republic of Iran; eastern Kazakhstan; Turkmenistan; Uzbekistan; Afghanistan; western Pakistan; Tajikistan; western China (Xinjiang through Gansu to western Inner Mongolia and Ningxia); southern Mongolia; Kyrgyzstan (Uetz *et al.,* 2006).
Regional distribution: Cold desert habitats with low sandy hills, dry river beds associated with saxual plants, and oases with tamarisk plants (*Tamarix spp.*) and reeds (*Phragmites spp.*) (Munkhbayar and Terbish, 1997). Distribution includes the Borzongiin Govi in Alashan' Govi Desert, Zeemegiin Govi, Nogoon Tsav, Toli Bulag and along the Ekh River in the Trans Altai Govi Desert and Western Takhiin Shar Range and Nogoon Dovongiin Us in western Trans Altai Govi Desert (Munkhbayar, 1976; Semenov and Munkhbayar, 1996; Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). It occurs at elevations of 700-1,800 metres above sea level in Mongolia (Ananjeva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 84,551 km^2.

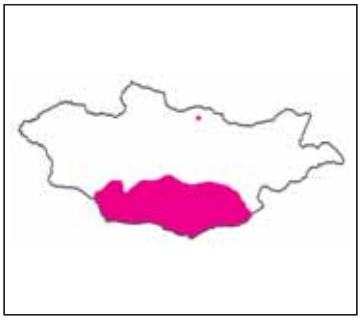
Dominant threats: Habitat loss through increasing resource extraction (mining). Drying of water sources and droughts also threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity.

Family Colubridae

21. *Coluber spinalis* (Peters, 1866)

Common names: Slender racer (English) (Frank and Ramus, 1996); nariikhan mogoi or nariin mogoi (Mongolian)
Subspecies in Mongolia: *C. s. spinalis*
Synonyms: *Masticophis spinalis* Peters, 1866; *Zamenis spinalis* Peters; *Hierophis spinalis* Schétti, 1988

Global status: Not Evaluated
Regional status: Near Threatened
Rationale for assessment: This is a poorly studied species which is very habitat specific within its distribution and occurs at low abundance throughout its range. If resource extraction (mining) continues to increase, its population is predicted to decline. This may result in its re-categorisation as threatened under Criterion A.
Legal status: Included as Rare in the 1987 and 1997 'Mongolian Red Books' (Munkhbayar, 1987; Munkhbayar and Terbish, 1997). Approximately 24% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



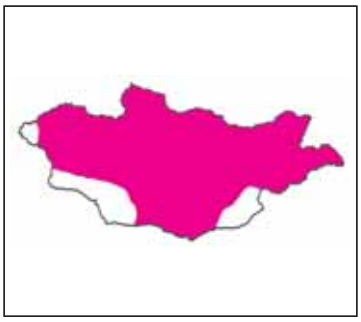
Global distribution: Russian Federation; eastern Kazakhstan; northern China (Xinjiang in the west to Heiongjiang in the east, northward to Jiangsu; Shantung, Honan, Gansu, Suiyuan, Shansi, Hopei, Jehol); Mongolia; Democratic People's Republic of Korea; Republic of Korea (Uetz *et al.,* 2006).
Regional distribution: Occurs in sandy soils with shrubs on the lower slopes of rocky mountains in desert, desert-steppe, and arid steppe habitats (Munkhbayar and Terbish, 1997). Its distribution includes Zakhui, Zarman and Aj Bogd Tost, Noyon in the Trans Altai Govi Desert, Ikh Bogd Mountain in the Govi Altai mountain range, Orog and Holboolj Lakes in Valley of the Lakes, and Buur Mountain Range. It is also present in Hooloin Gashuun and Han Bogd in Alashan' Govi Desert, south-eastern Hangai Mountain Range, Taliin Hudag, Bayandov and Delgerhangai in the Northern Govi, Sulinheer, and Dariganga in the Eastern Govi (Munkhbayar, 1971; 1982; Semenov and Shenbrot, 1986; Ananieva *et al.,* 1997). The species is also documented from Tsagaan tolgoi in the Orkhon River Basin in north-eastern Hangai Mountain Range (Terbish *et al.,* 2006). It occurs at elevations of 1,200 metres above sea level around Orog Lake in Valley of the Lakes, to 1,900 metres above sea level around Noyon Mountain Range in the Mongol Altai Mountain Range (Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 388,313 km^2.

Dominant threats: Drying of water sources and droughts threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. If resource extraction activities (mining) continue to increase, habitat loss may constitute a threat to this species.

22. *Elaphe dione* (Pallas, 1773)

Common names: Steppes rat snake, dione snake or Pallas' coluber (English) (Frank and Ramus, 1996); rashaanii mogoi (Mongolian)
Subspecies in Mongolia: *E. d. dione* Pallas, 1773
Synonyms: *Coluber dione* Pallas, 1773

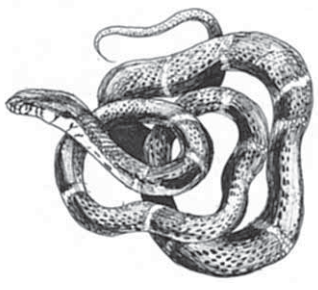
Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a common species with a wide distribution and a relatively high density (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 10% of the species' range in Mongolia occurs within protected areas. It is found in almost all of the protected areas in Mongolia as it has such a wide distribution (Terbish *et al.,* 2006; protected area data provided by UNEP-WCMC, 2006).



Global distribution: Eastern Ukraine; Russian Federation; Georgia; Armenia; Islamic Republic of Iran; Republic of Korea; Azerbaijan; Kazakhstan; Turkmenistan; Uzbekistan; Afghanistan; Tajikistan; northern China (southward to Sichuan in the west and Jiangsu in the east; Kiangsu, Shantung, Shansi, Shensi, Gansu; north to Chang Jiang river); northern Mongolia; Kyrgyzstan; Democratic People's Republic of Korea (Uetz *et al.,* 2006).
Regional distribution: Occurs in various habitat types including desert in the Dzungarian Govi Desert, to forest in northern parts of the country (Munkhbayar, 1976b; Ananieva *et al.,* 1997; Terbish and Munkhbayar, 2004). It was recorded during ground surveys of oases, hills, saxual forests, bushy desert and sandy dune habitats in Govi Gurvan Saikhan National Park during 1995 and 1996 (Reading *et al.,* 1999). It occurs at elevations of 600-3,000 metres above sea level in Mongolia (Ananjeva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 1,356,223 km^2.

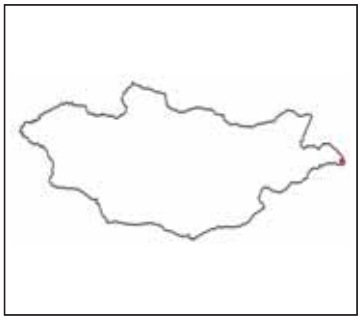
Dominant threats: As this species has a wide distribution covering many habitat types, it is subject to a wide range of threats, the most dominant of which are habitat degradation, water pollution and habitat loss. Although threats may have localised impacts, they are not believed to be widespread or to have a large impact at present.

23. *Elaphe schrenckii* (Strauch, 1873)



Common names: Amur rat snake, great black, Manchurian black, Siberian rat snake or Russian rat snake (English) (Frank and Ramus, 1996); har mornii tsarig mogoi (Mongolian)
Subspecies in Mongolia: *E. s. schrenkii* Pope, 1935
Synonyms: *Coluber schrenkii* Strauch, 1873

Global status: Not Evaluated
Regional status: Not Applicable
Rationale for assessment: Less than 1% of the global population of this species occurs in Mongolia, and its regional distribution covers less than 1% of the area of Mongolia. The species was only seen once and at a distance in 1983 (Orlova, 1984) and no specimens were collected (Ananieva *et al.,* 1997). An expedition is needed in the Far East along Nömrög River in the Ikh Hyangan Mountain Range to confirm its existence in Mongolia.
Legal status: Approximately 81% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



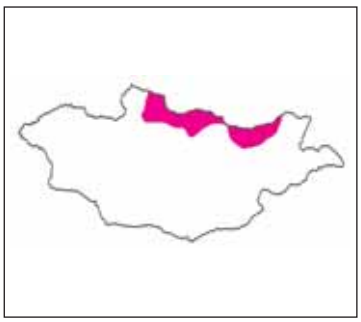
Global distribution: Russian Federation (Amur River Basin of Siberia, Primorskiy Territory), northern and central China (Jehol, Hopei, Shansi), eastern Mongolia; Democratic People's Republic of Korea (Uetz *et al.,* 2006).
Regional distribution: Only sighted in forest habitats (Munkhbayar and Terbish, 1997), along the Nömrög River in western Ikh Hyangan Mountain Range (Terbish *et al.,* 2006). It occurs at elevations of 500 metres above sea level in Mongolia (Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 823 km^2.

Dominant threats: Unknown, although construction of a bridge over the Nömrög River may constitute a threat to this species.

24. *Natrix natrix* (Linnaeus, 1758)

Common names: European grass snake; or grass snake (English) (Frank and Ramus, 1996); usnii mogoi (Mongolian)
Subspecies in Mongolia: *N. n. scutata* (Pallas, 1771)
Synonyms: *Tropidonotus natrix* Linnaeus, 1758; *Coluber natrix* Linnaeus, 1758

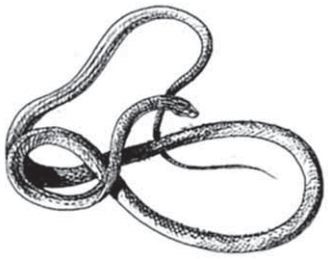
Global status: Least Concern
Regional status: Near Threatened
Rationale for assessment: This species is rare with a limited distribution, it occurs only in low numbers, and is not well studied (Terbish *et al.,* 2006). It may be threatened by a decline in population and extent and quality of habitat, particularly due to habitat loss and pollution through resource extraction (mining). It is believed that further research may reveal this species is experiencing a population decline, which may lead to it being re-categorised as threatened under Criterion A, if conservation measures are not applied.
Legal status: Approximately 11% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



Global distribution: Morocco; Algeria; Portugal; Spain; France (Corsica); England; Belgium; Netherlands; Germany; Norway; Switzerland; Luxemburg; Italy; Tunisia; Denmark; Austria; Czech Republic; Slovenia; Croatia; Sweden; Poland; Bosnia and Herzegovina; Hungary; Albania; Finland; Greece; Cyprus; Romania; the former Yugoslav Republic of Macedonia; Latvia; Lithuania; Estonia; Ukraine; Bulgaria; Belarus; Turkey; Russian Federation; Republic of Moldova; Syrian Arab Republic; Georgia; Armenia; northern Islamic Republic of Iran; Azerbaijan; Kazakhstan; Turkmenistan; north-western China (Xinjiang); north-western Mongolia (Uetz *et al.,* 2006).
Regional distribution: Mongolia is the eastern limit of its global distribution, inhabiting freshwater sources in meadows, and coniferous and mixed forest habitats in northern parts of the country (Munkhbayar, 1976b; Ananjeva *et al.,* 1997). Its distribution includes river basins along the Selenge and Orkhon rivers and the western Mongol Altai Mountain Range (Terbish *et al.,* 2006). It also occurs along the Onon and Ulz rivers in Mongol Daguur Steppe, and in the Hövsgöl Mountain Range (Semenov and Munkhbayar, 1996; Ananjeva *et al.,* 1997). It occurs at elevations of 500-600 metres above sea level in Mongolia, but has been recorded at 2,000-2500 metres above sea level outside of this region (Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 130,692 km^2.

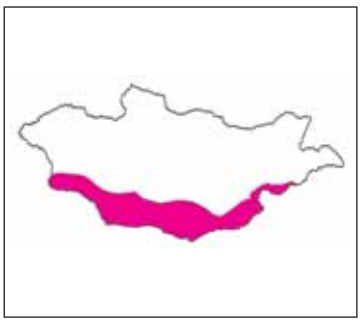
Dominant threats: Habitat loss and water pollution through increasing resource extraction (gold mining). Mining causes water pollution, which is resulting in a decline in prey species. Drying of water sources and droughts also threaten this species, although it remains unclear if these represent natural environmental changes or are driven by anthropogenic activity. Creation of small dams also constitutes a minor threat, as does collection for the pet trade with Russia and China.

25. *Psammophis lineolatus* (Brandt, 1838)



Common names: Steppe ribbon racer (English) (Frank and Ramus, 1996); sum mogoi (Mongolian)
Subspecies in Mongolia: *P. l. lineolatus* Brandt, 1898
Synonyms: *Coluber (Taphrometopon) lineolatus* Brandt, 1836; *Coluber caspius* Lichtenstein, 1823; *Chorisodon sibericum* Dumeril and Bibron, 1854; *Taphrometopon lineolatum* Boulenger, 1896; *Psammophis triticeus* Wall, 1912
Taxonomic notes: Originally described as a member of the newly established subgenus *Taphrometopon* within the genus *Coluber* (Brandstaetter and Redl, 1997).

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This species has a large population size and a wide distribution, but occurs at low abundance within its range. No decline in population size has been detected.
Legal status: Approximately 29% of the species' range in Mongolia occurs within protected areas (protected area data provided by UNEP-WCMC, 2006).



Global distribution: Islamic Republic of Iran; Azerbaijan; south-eastern Kazakhstan; Turkmenistan; Uzbekistan; Afghanistan; Pakistan; Tajikistan; Kyrgyzstan; north-western China (Gansu, Ningxia, Xinjiang); Mongolia (Uetz *et al.,* 2006).
Regional distribution: Desert and semi-desert habitats in the Trans Altai Govi Desert, Govi Altai Mountain Range, Dzungarian Govi Desert, Northern Govi and Eastern Govi (Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). It was recorded in the Ekhiyn-Gol Oasis on the sub-zone of the arid desert habitats in the Trans Altai Govi Desert (Semenov and Borkin, 1992). It occurs at elevations of 700-2,000 metres above sea level in Mongolia (Borkin *et al.,* 1990; Ananieva *et al.,* 1997). Its estimated extent of occurrence in Mongolia is 345,932 km^2.

Dominant threats: Habitat loss through increasing resource extraction (mining).

Family Viperidae

26. *Gloydius halys* (Pallas, 1776)

Common names: Halys pit viper or Asian viper (English); bambai honshoort (Mongolian)
Subspecies in Mongolia: *G. h. halys* (Pallas, 1776); *G. h. carganus* (Eichwald, 1831) (Ananjeva *et al.,* 1997)
Synonyms: *Ancistrodon halys* Nikolskii, 1916; *Agkistrodon halys* (Pallas, 1776)

Global status: Not Evaluated
Regional status: Least Concern
Rationale for assessment: This is a common species occurring in relatively large numbers over a wide area (Terbish *et al.,* 2006). No decline in population size has been detected.
Legal status: Approximately 12% of the species' range in Mongolia occurs within protected areas, including the majority of Mongolia's protected areas (protected area data provided by UNEP-WCMC, 2006).

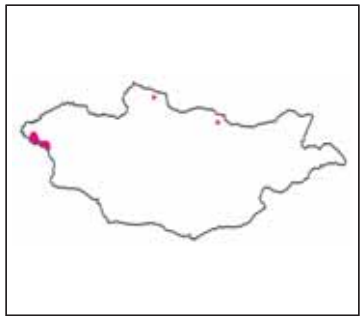
Global distribution: Southern and south-eastern Russian Federation; northern Islamic Republic of Iran; Kazakhstan (between Volga and Ural River); Uzbekistan; eastern Afghanistan; Tajikistan; Kyrgyzstan; China; Mongolia; Turkmenistan (Uetz *et al.,* 2006).
Regional distribution: Found in varied habitats in Mongolia, from desert to mountain steppe (Munkhbayar and Terbish, 1997; Terbish *et al.,* 2006). It is distributed throughout the country with the exception of the Hövsgöl Mountain Range and north-western Mongol Altai Mountain Range (Munkhbayar and Terbish, 1997). It occurs at elevations of 600-3,100 metres above sea level in Mongolia (Borkin *et al.,* 1990). Its estimated extent of occurrence in Mongolia is 1,520,465 km^2.

Dominant threats: Habitat loss and degradation through resource extraction (hay making). A future threat is collection for traditional medicines, for international trade.

27. *Vipera berus* (Linnaeus, 1758)

Common names: Adder or common northern viper (English) (Frank and Ramus, 1996); egel zagalmait mogoi (Mongolian)
Subspecies in Mongolia: *V. b. berus* (Linnaeus, 1758) (Uetz *et al.,* 2006)
Synonyms: *Coluber berus* Linnaeus, 1758 (Uetz *et al.,* 2006)

Global status: Not Evaluated
Regional status: Vulnerable, D2
Rationale for assessment: This species is poorly studied but believed to be rare with a limited distribution (Terbish *et al.,* 2006). It has an estimated area of occupancy of 6,000 km^2 in Mongolia, is found in fewer than five locations, and is experiencing a decline in habitat quality and extent. However, as the range size is larger than the requirements of Criterion B, this species is categorised as Vulnerable under Criterion D2 (occurring in fewer than five locations). The assessment remains unchanged following application of regional criteria as there is no significant immigration from adjacent countries.
Legal status: Approximately 9% of the species' range in Mongolia occurs within protected areas, mostly in Altai Tavan Bogd National Park (Terbish *et al.,* 2006).



Global distribution: France; England; Belgium; Netherlands; Germany; Norway; Switzerland; northern Italy; Denmark; Austria; Slovenia; Czech Republic (formerly Czechoslovakia); Croatia; Sweden; Poland; Bosnia and Herzegovina; Serbia and Montenegro; Hungary; Finland; Albania; Romania; Bulgaria; the former Yugoslav Republic of Macedonia; Latvia; Lithuania; Estonia; Russian Federation; north-western China (northern Xinjiang, Jilin); Mongolia; Democratic People's Republic of Korea (Uetz *et al.,* 2006).
Regional distribution: Coniferous forest habitats in rocky mountain areas in the Hentii, Hövsgöl and Mongol Altai mountain ranges (Terbish *et al.,* 2006). However, all point locality data for northern Mongolia dates from 100 years ago, so is likely to have changed significantly during this time. This should be considered if using the distribution data, and further research is strongly recommended as this species is threatened. It occurs at elevations of 1,000-2,750 metres above sea level in Mongolia, with 1,800 metres being optimal (Ananieva *et al.,* 1997).

Dominant threats: Little is known about threats to this species, although in western Hentii Mountain Range, resource extraction (mining) is a threat, causing habitat loss and degradation. As this activity increases this may become a threat in other parts of its range too.

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ANNEXES

Annex I. Summary of criteria A-E used to evaluate threat status for Critically Endangered, Endangered or Vulnerable species (summarised from IUCN, 2001).

Use any of the criteria A-B	**Critically Endangered**	**Endangered**	**Vulnerable**
A. Population reduction Declines measured over the longer of 10 years or 3 generations			
A1	≥ 90%	≥ 70%	≥ 50%
A2, A3 & A4	≥ 80%	≥ 50%	≥ 30%
Al. Population reduction observed, estimated, inferred, or suspected in the past where the causes of the reduction are clearly reversible AND understood AND ceased based on and specifying any of the following:			
	(a) direct observation		
	(b) an index of abundance appropriate to the taxon		
	(c) a decline in AOO, EOO and/or habitat quality		
	(d) actual or potential levels of exploitation		
	(e) effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.		
A2. Population reduction observed, estimated, inferred, or suspected in the past where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on (a) to (e) under Al			
A3. Population reduction projected or suspected to be met in the future (up to a maximum of 100 years) based on (b) to (e) under Al.			
A4. An observed, estimated, inferred, projected or suspected population reduction (up to a maximum of 100 years) where the time period must include both the past and the future, and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on (a) to (e) under Al.			
B. Geographic range in the form of either B1 (extent or occurrence) OR B2 (area or occupancy)			
B1. Extent of occurrence	< 100 km²	< 5,000 km²	< 20,000 km²
B2. Area of occupancy	< 10 km²	< 500 km²	< 2,000 km²
and 2 of the following 3:			
(a) Severely fragmented or # locations	= 1	≤ 5	≤ 10
(b) Continuing decline in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			
C. Small population size and decline			
Number of mature individuals	< 250	< 2,500	< 10,000
and either **C1** or **C2**:			
C1. An estimated continuing decline of at least:	25% in 3 years or 1 generation	20% in 5 years or 2 generations	10% in 10 years or 3 generations
up to a maximum of 100 years			
C2. A continuing decline and (a) and/or (b):			
a (i) # mature individuals in all sub-populations:	< 50	< 250	< 1,000
a (ii) or % individuals in one sub-population at least	90%	95%	100%
(b) extreme fluctuations in the number of mature individuals			
D. Very small or restricted population			
Either:			
(1) number of mature individuals	< 50	< 250	< 1,000
OR			
(2) restricted area of occupancy	na	na	AOO < 20 km² or # locations ≤ 5
E. Quantitative Analysis			
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations (100 years max)	≥ 20% in 20 years or 5 generations (100 years max)	≥ 10% in 100 years

Annex II. List 1: Species identified as occurring within Mongolia and assessed at the Second International Mongolian Biodiversity Databank Workshop.

N.B. The Red List of Mongolian Reptiles and Amphibians and its associated documents contain taxa that were on the agreed list for the Second International Mongolian Biodiversity Databank Workshop i.e. those that were known to occur in Mongolia in 2006. Subsequent to the workshop, several additional species have been suggested to occur in Mongolia, based on recent range expansions or their occurrence close to the Mongolian border. Those which are likely to occur in Mongolia have been added to List 1, but are marked with a plus sign (+) to indicate that they were not assessed during the workshop.

a) Amphibia

Scientific name	*Common name*	*Regional assessment*	*Global assessment*
Order Caudata			
Family Hynobiidae			
Salamandrella keyserlingii Dybowski, 1870	Siberian salamander	Vulnerable, A3c	Least Concern
Order Anura			
Family Bufonidae			
Bufo pewzowi Bedriaga, 1898	Pewzow's toad	Vulnerable, B1ab(iii)	Least Concern
Bufo raddei Strauch, 1876	Mongolian toad	Least Concern	Least Concern
Family Hylidae			
Hyla japonica Güenther, 1859	Japanese tree frog	Vulnerable, D2	Least Concern
Family Ranidae			
Rana amurensis Boulenger, 1886	Siberian wood frog	Least Concern	Least Concern
Rana chensinensis David, 1875	Asiatic grass frog	Vulnerable, B1ab(iii)	Least Concern

b) Reptilia

Scientific name	*Common name*	*Regional assessment*	*Global assessment*
Order Squamata			
Family Gekkonidae			
Alsophylax pipiens (Pallas, 1814)	Kaspischer even-fingered gecko	Least Concern	Not Evaluated
Cyrtopodion elongatus (Blanford,1875)	Gobi naked-toed gecko	Vulnerable, D2	Not Evaluated
Teratoscincus przewalskii Strauch, 1887	Przewalski's wonder gecko	Near Threatened	Not Evaluated

Scientific name	*Common name*	*Regional assessment*	*Global assessment*
Family Agamidae			
Laudakia stoliczkana (Blanford, 1875)	Mongolian agama	Near Threatened	Not Evaluated
Phrynocephalus helioscopus (Pallas, 1771)	Sunwatcher toadhead agama	Not Applicable	Not Evaluated
Phrynocephalus versicolor Strauch, 1876	Toad-headed agama	Least Concern	Not Evaluated
Family Lacertidae			
Eremias argus Peters, 1869	Mongolian racerunner	Least Concern	Not Evaluated
Eremias arguta (Pallas, 1773)	Stepperunner	Data Deficient	Not Evaluated
Eremias multiocellata Günther, 1872	Multi-ocellated racerunner	Least Concern	Not Evaluated
Eremias przewalskii (Strauch, 1876)	Gobi racerunner	Least Concern	Not Evaluated
Eremias vermiculata Blanford, 1875	Variegated racerunner	Least Concern	Not Evaluated
Lacerta agilis Linnaeus, 1758	Sand lizard	Not Applicable	Not Evaluated
Zootoca vivipara Jacquin, 1787	Viviparous lizard	Least Concern	Least Concern
Family Boidae			
Eryx tataricus (Lichtenstein, 1823)	Tatar sand boa	Near Threatened	Not Evaluated
Family Colubridae			
Coluber spinalis (Peters, 1866)	Slender racer	Near Threatened	Not Evaluated
Elaphe dione (Pallas, 1773)	Steppes ratsnake	Least Concern	Not Evaluated
Elaphe schrenckii (Strauch, 1813)	Amur ratsnake	Not Applicable	Not Evaluated
Natrix natrix (Linnaeus, 1758)	European grass snake	Near Threatened	Least Concern
Psammophis lineolatus (Brandt, 1838)	Steppe ribbon racer	Least Concern	Not Evaluated
Family Viperidae			
Gloydius halys (Pallas, 1776)	Halys pit viper	Least Concern	Not Evaluated
Vipera berus (Linnaeus, 1758)	Northern viper	Vulnerable, D2	Not Evaluated

List 2: Possible species occurring within Mongolia.

N.B. Species included in the Red List relate to species known to occur in the country in 2006. Additional species whose presence is suspected or likely based on occurrence close to the borders/expanding ranges but have not yet been confirmed are included in the possible species list.

Scientific name	*Common name*	*Regional assessment*	*Global assessment*
Class Amphibia			
Order Anura			
Family Bufonidae			
Bufo bufo Linnaeus, 1758	Common toad	Not Evaluated	Least Concern
Bufo gargarizans Cantor, 1842	Asiatic toad	Not Evaluated	Least Concern
Family Ranidae			
Rana arvalis Nilsson, 1842	Moor frog	Not Evaluated	Least Concern
Rana nigromaculata Hallowell, 1860	Dark-spotted frog	Not Evaluated	Near Threatened
Class Reptilia			
Order Squamata			
Family Agamidae			
Phrynocephalus axillaris Blanford 1875		Not Evaluated	Not Evaluated
Family Colubridae			
Coluber ravergieri Ménétriés, 1832	Spotted wipe snake	Not Evaluated	Not Evaluated
Family Viperidae			
Vipera ursinii (Bonaparte, 1833)	Meadow viper	Not Evaluated	Endangered, A1c+2c