

Mongolian Red List of Fishes

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Front cover: Taimen (*Hucho taimen*) courtesy of B. Allen

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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Because 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 Mongolian Red List of Fishes is one of a number of publications resulting from activities under the World Bank's Netherlands-Mongolia Trust Fund for Environmental Reform. Like its sister volume, entitled the 'Red List of Mongolian Mammals', it represents a major advance in the understanding of an important wildlife group, and will be complemented in due course by our separate report entitled, 'Fishes of Mongolia: A check-list of the fishes known to occur in Mongolia with comments on systematics and nomenclature', by Maurice Kottelat.

We are very pleased to have been able to support the production of this book and we congratulate all those involved from the National University of Mongolia, the Mongolian Academy of Sciences, the Ministry of Nature and Environment, and the Zoological Society of London/Steppe Forward Programme for this remarkable effort. The workshop held at Hustai National Park appears to have been a seminal event by achieving more than anyone had expected, gathering knowledge from a wide range of sources. Of course, by attempting a detailed review of every species it is inevitable that gaps and data weaknesses emerge, but we trust that these will act as stimuli for those involved to conduct further fieldwork.

Freshwater biodiversity is generally a poor cousin to terrestrial biodiversity and we hope that this work will raise the profile of the fishes, highlighting the threats they face, promoting the actions needed for rational management and conservation, and providing a solid reference for those conducting environmental assessments for the growing number of projects affecting surface water such as dams, mines and water-transfers in Mongolia.

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PREFACE

Mongolia occupies a unique zoogeographical position on the Central Asian plateau, as it contains each of the three major Central Asian drainage systems: the Arctic drainage, the Pacific Ocean or Amur River drainage, and the Central Asian Internal drainage. Despite its perception as an arid country, Mongolia contains a number of large rivers and lakes. However, the fishes of Mongolia remain poorly understood.

The earliest collection of Mongolian fishes was made by the German naturalist Peter Simon Pallas in the late 1700s, who described the taimen (*Hucho taimen*) and the lenok (*Brachymystax lenok*). Continued exploration in the 1800s led to the description of further fish species, notably by B. Dybowski, S. Basilewsky and K. Kessler, and the early 1900s saw the first of numerous studies on the fishes of Mongolia and Russia by Leo Berg. A number of joint Soviet-Mongolian, Czechoslovakian-Mongolian and German-Mongolian expeditions were carried out in the latter half of the twentieth century, but while providing new collections of fish for analysis, they tended to be broad multi-disciplinary studies. However, several specific fish studies were carried out during the tenure of Prof. A. Dashdorj, the first Mongolian to hold the Chair of Zoology at the Mongolian State University in 1947, as he had a particular interest in ichthyology. The publication of 'The Fishes of Mongolia' by G. Baasanjav and Y. Tsendayush in 2001 (published in Mongolian) provided an important taxonomic review of Mongolian fishes. It also consolidated much of the existing regional biological and fisheries data. Prior to this, Leo Berg's 'Freshwater Fishes of the U.S.S.R. and Adjacent Countries' (published in Russian, 1949 and English, 1962) was the standard reference to the fishes of Mongolia.

To Western scientists, however, Mongolia's fishes have remained in relative obscurity, and the ichthyological survey work conducted by Robert Travers in the mid 1980s was the first Western research solely devoted to the subject. More recently, several American universities have partnered with the Mongolian-based Taimen Conservation Fund to conduct long-term studies into sustainable protection of the taimen.

The expert working group session on Mongolian fishes during the Mongolian Biodiversity Databank Workshop provided an appropriate forum for existing information on fishes to be reconciled with international standards such as the International Code of Zoological Nomenclature. The working group session also gave Mongolian ichthyologists the opportunity to work with an IUCN Red List specialist. This was the first time these internationally accepted categories and criteria have been applied to Mongolian fishes.

Much of the study and information on Mongolian fishes has focused on species of economic importance. However, since the collapse of the centrally-planned economy in 1990, few good records of fisheries data are now kept. Demand for Mongolian fishes is increasing, both from within Mongolia and from other countries, but although protective legislation is in place, the prevention of illegal fishing remains difficult. Mongolia's fishes are further threatened by mining and climate change.

The assessments of the expert working group contained in this book provide an overview of the status of Mongolia's fishes. This includes the most accurate available information on geographic range and significant threat processes for 64 native species. It also identifies what we still do not know about these fishes, and which areas of research should be a priority for future study. We hope that not only does the state of knowledge of Mongolia's fishes change as a result of this book, but that efforts are made to increase conservation measures for all species.

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The production of this book would not have been possible without the help of the small group of people dedicated to the study of ichthyology in Mongolia. Special thanks are extended to Prof. A. Dulmaa for her review of the Mongolian Red List of Fishes. Further thanks also go to others who have reviewed the Red List and associated documents, given feedback and provided further information: Zeb Hogan, Jake Vander Zanden and David Gilroy (Mongolia Taimen Project), Andrew Parkinson (Fish Mongolia), and Samuel Turvey (Zoological Society of London). We would also like to thank the Taimen Conservation Fund for the advice and time they generously provided. Thanks are also extended to the staff of Hustai National Park for hosting the Mongolian Biodiversity Databank Workshop.

Thanks are extended to O. Chimedtseren for her translation work during the workshop.

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 Fishes 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 time. Specifically we would like to thank the IUCN freshwater biodiversity assessment specialist, Kevin Smith, who played a leading role in conducting all fish assessments.

The Zoological Society of London (ZSL) led the implementation of the Mongolian Biodiversity Databank Project. Jonathan Baillie (project leader), Emma Clark (project co-ordinator), Joanne Ocock (project co-ordinator) and Ben Collen (technical advisor) are all 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) is a Darwin initiative (UK DEFRA) funded project running in Mongolia since 2003. This project is administered by ZSL and works in collaboration with the National University of Mongolia. Thanks go to all the staff at this programme, particularly Sarah King for advice and guidance, Oyunchimeg Sharav for her dedication in compiling information, sourcing reviewers, logistical

skills, and enthusiasm, and Jargal Jamsranjav and Lucy Simpson for their essential role as workshop group leaders.

The National University of Mongolia (NUM) provided the venue for the workshop, and is also home to the Steppe Forward Programme and now 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.

The Mongolian Academy of Sciences (MAS) are thanked for their sharing of knowledge and contributing to the effectiveness of the workshop. Thanks go to all dedicated biologists who contributed their time and knowledge to this project, many of whom also participated in the workshop.

The Ministry of Nature and Environment (MNE) supported the project and its aims throughout its development and implementation, and we would like to thank those who were involved in Steering Committee meetings, and who represented MNE during the first and last days of the workshop.

INTRODUCTION

It has long been evident that a number of Mongolian fish species are threatened with extinction, but never before has a comprehensive conservation assessment of all Mongolian fishes been conducted. The Mongolian Red List of Fishes contains all known Mongolian fish species and highlights their status within Mongolia, as well as other information such as their distribution, legal status, and dominant threats. Where possible, the global conservation status of species is also given. Species have been assessed using the ‘IUCN Red List Categories and Criteria’ (IUCN, 2001), which use quantitative thresholds to categorise species in terms of their risk of extinction (Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild, and Extinct).

Both threatened and non-threatened Mongolian fish species are presented in this document, in order to clearly identify all species that have been assessed and to provide an indication of the overall status of the country’s fishes. 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.

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

The specialists involved with the production of the Mongolian Red List of Fishes also helped to develop the Mongolian Biodiversity Databank for fishes, available from the Department of Zoology, National University of Mongolia, which contains detailed information on species distributions, ecology, habitat preferences, threats, and conservation measures. Summary conservation action plans were also developed, providing detailed information on all threatened fishes 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 ZSL library (<https://library.zsl.org>) and www.regionalredlist.com.

The Mongolian Red List of Fishes is only the first step. It has helped to synthesise what is known about Mongolian fishes, but has also identified major gaps in our knowledge. It has demonstrated that threats to Mongolian fishes – such as illegal fishing, increased industrial activities, and climate change – are becoming more severe, and therefore highlights the importance of general monitoring, as well as discovering more about poorly known and un-described species to ensure that they do not disappear unnoticed. It is hoped that this document will act as a catalyst for research and conservation of Mongolian fishes.

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 Fishes, compiled at the 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. First, 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 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.

Second, the guidelines prescribe a two-step process. 'IUCN Red List Categories and Criteria' (IUCN, 2001) are first 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 Mongolian Biodiversity Databank Workshop, none of the fish 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

An initial list of fish species present in Mongolia was compiled by M. Kottelat, and was reviewed and updated prior to the working group session. This list was further edited and updated during the working group session by all participants. Subsequent work has been carried out on the taxonomy of the species list, and research continues to update the number of species found in Mongolia (Annex II).

The Mongolian Red List of Fishes contains 64 native fish species that were assessed by the working group. 'IUCN Red List Categories and Criteria' (IUCN, 2001) are only applied to wild populations in their native range, and so four species that are found in Mongolia but were deliberately introduced are excluded from the Mongolian Red List of Fishes:

Hypophthalmichthys molitrix (Valenciennes, 1844)
Coregonus peled (Gmelin, 1789)
Coregonus sardinella Valenciennes, 1848
Ctenopharyngodon idella (Valenciennes, 1844)

Four other species that were assessed at the workshop are now considered to lack sufficient evidence to confirm their occurrence in Mongolia, and have been removed from the Mongolian Red List of Fishes:

Lethenteron japonicum (Martens, 1866),
Triplophysa stoliczka (Steindachner, 1866)
Triplophysa strauchii Kessler, 1874
Silurus soldatovi Nikolskii and Soin, 1948

Three further species previously believed to occur in Mongolia have now been re-identified as the following species:

Coregonus migratorius (Georgi, 1775) (misidentified as *C. autumnalis*).
Misgurnus mohoity (Dybowski, 1869) (misidentified as *M. anguillicaudatus*)
Sarcocheilichthys soldatovi (Berg, 1914) (misidentified as *S. nigripinnis*)

One further species, *Rutilus lacustris* (Pallas, 1814) is now interpreted as a junior synonym of *Rutilus rutilus* (Linnaeus, 1758).

These misidentifications and reinterpretations have been corrected in the Mongolian Red List of Fishes, and do not affect the species assessments.

Subsequent to the workshop, three additional fish species have also been identified as occurring in Mongolia (see also Kottelat, in prep.):

Hemiculter varpachovskii Nikolskii, 1903: endemic to Buir Lake and upper Amur River (Chen, 1998)
Microphysiogobio anudarini Holcík and Pivnicka, 1969: endemic to Buir Lake region
Phoxinus ujmonensis Kashenko, 1899: Bulgan River

These were not assessed at the workshop and are not included in the Mongolian Red List of Fishes.

Regional Distribution: hydrology of Mongolia

The regional distribution for each species indicates the drainage basin(s) in which it occurs. The rivers and lakes of Mongolia are divided into three large drainage basins according to their flow direction (Figure 1). The rivers in the northern-central region of Mongolia drain into Siberia, and are part of the Arctic Ocean drainage basin. This system includes Selenge, Orkhon, Tuul and Shishked rivers, and Hövsgöl, Ugii and Terkhiin tsagaan lakes. The waters that flow east out of Mongolia are the headwaters of the Amur River system, which eventually flows into the Sea of Okhotsk and the Pacific Ocean. This system is known as the Amur River or Pacific drainage basin, and includes Onon and Kherlen rivers and Buir Lake. The largest hydrological region in Mongolia constitutes part of the Central Asian Internal drainage basin, a huge endorheic (enclosed) basin which also includes much of western and central Asia. The Great Lakes Depression and associated rivers in western Mongolia, and the Gobi Valley of the Lakes in the south of the country, form part of this basin. However, the Bulgan river basin in western Mongolia is considered part of the Arctic drainage, even though it is situated in the endorheic drainage basin, because it shows strong faunal similarities to the Arctic drainage water-ways, and is believed to have been a part of this basin which became isolated by the formation of the Altai Mountains.

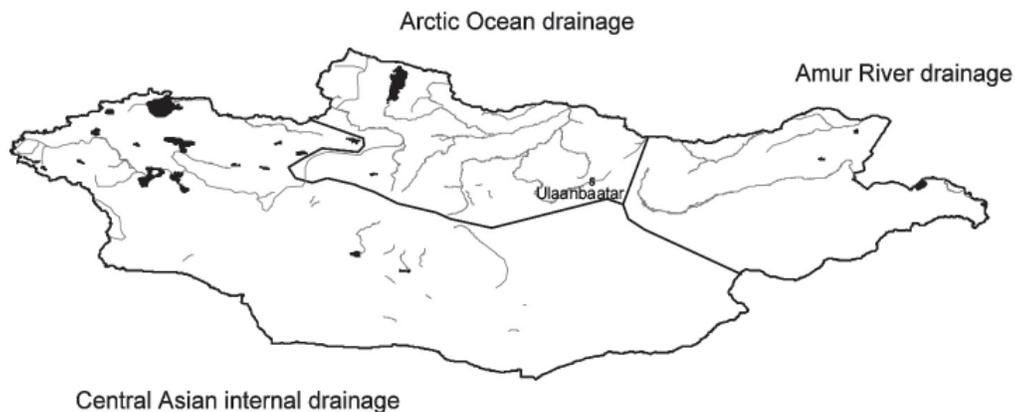


Figure 1. Hydrology of Mongolia, showing the three drainage basins and their major rivers and lakes.

Species maps

Digitised maps showing the distribution of fishes in Mongolia were created for the first time using ArcView 3.0. They are based on maps drawn at the workshop for the distribution of each species, and incorporate the country's river basins and lake catchment areas, some of which extend outside Mongolia's borders. The distribution maps developed at the workshop were overlaid using ArcView 3.0 to explore patterns of species richness, threatened species richness, and areas with high occurrence of poorly known taxa. These maps show the current known distributions of each species, but although much important work on Mongolia's fishes has already been conducted, large areas of the country remain to be thoroughly surveyed, and so it is likely that they do not represent complete distributions.

FORMAT OF SPECIES ACCOUNTS

Higher-level taxonomy follows the standard ichthyological systematic order (Lundberg, 2006), and the Red List of Mongolian Fishes follows the format outlined below:

Species name and taxonomic authority

Common names (English and Mongolian)

Synonyms/previous combinations/misidentifications (if applicable)

Global status (global risk of extinction, if applicable)

IUCN global population assessment for several species given in the ‘2004 IUCN Red List of Threatened Species’ (IUCN, 2004). Alteration of an existing global assessment during the 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 a double black circle symbol (●●).

Regional status (risk of extinction within Mongolia)

Regional assessments conducted for the first time for Mongolian fishes 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 the ‘IUCN Red List Categories and Criteria’ (IUCN, 2001) to each species assessed at the 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 (if applicable)

Existing protective legislature for Mongolian fishes, including both Mongolian laws (e.g. Law on Hunting, Law on Fauna) and international laws (e.g. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): see UNEP-WCMC (2006)). All Mongolian fishes have a legislated fishing season (e.g. species in Buir Lake cannot be fished between May 15th and June 1st, and all other species/populations cannot be fished between April 1st and June 16th). Several species either legislated under the Law on Hunting, or listed as ‘Very Rare’ or ‘Rare’ under the Law on Fauna, have restricted fishing seasons which ban fishing for extended periods (Wingard and Odgerel, 2001).

Global distribution

Based on Kottelat (in prep.), Reshetnikov *et al.* (1997) and Reshetnikov (2001).

Regional distribution

Accompanied by a distribution map for Mongolia. Natural distribution of each species (indicating rivers/lakes and their drainage basin), excluding regions where the species has been deliberately introduced or has become invasive due to deliberate introduction in another country. 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.

Dominant threats

Brief outline of dominant threats and their causes, identified as being of immediate and primary concern by participants during the 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 FISHES

Forty-eight of the 64 native Mongolian fish species are classified into conservation status categories according to the guidelines for application of the 'IUCN Red List Categories and Criteria' (IUCN, 2001) at a regional level. The other 16 species are listed as NA. While a quarter of Mongolian fish species are considered to be Least Concern, nearly another quarter (23%) are facing a high risk of extinction in Mongolia and are considered threatened (categories Critically Endangered, Endangered and Vulnerable). A further 6% are close to qualifying in the future for a threatened category, and are listed as Near Threatened (NT) (Figure 2).

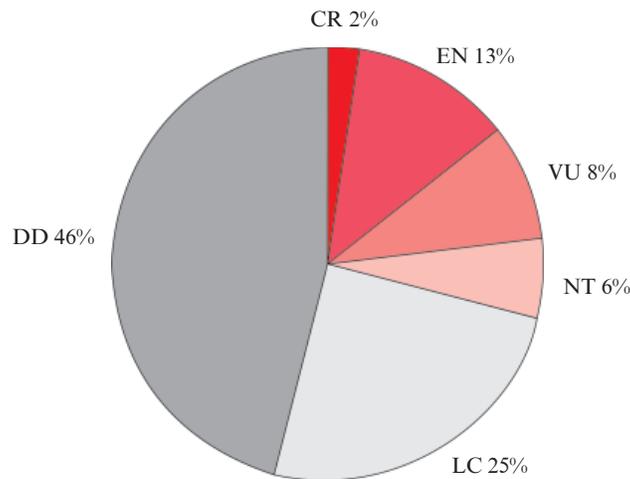


Figure 2. Conservation status of the 48 native Mongolian fishes for which assessments were made according to the IUCN Regional Red List Categories and Criteria. CR = Critically Endangered, EN = Endangered, VU = Vulnerable, NT = Near Threatened, LC = Least Concern, DD = Data Deficient.

For well-known species, such as commercial and sport-fishing species, population trends can be inferred from declining catches. For less well-known species, declines can be inferred where threat processes are clearly documented and understood. However, insufficient data are currently available on population size and trends, basic biology and the effect of threats for nearly half of the assessed species (46%), and they are listed as Data Deficient (DD) (Figure 2). The majority of these species are small, have little economic importance, and are not favoured by sport-fishers. Only one species, the Siberian sturgeon (*Acipenser baerii*), is listed as Critically Endangered (CR) in Mongolia (Table 2). The other Mongolian sturgeon species, the Amur sturgeon (*A. schrenkii*), is listed as DD due to uncertainty about whether the species still occurs in Mongolia, although it is likely that if it is still present, it will also be listed as CR. Six species were assigned Endangered (EN) status. Four of these, the Amur grayling (*Thymallus grubei*), Hövsgöl grayling (*T. nigrescens*), taimen (*Hucho taimen*), and pidschian (*Coregonus pidschian*), are targeted by commercial and recreational fishing. The remaining two species, the Dzungarian dace (*Leuciscus dzungaricus*) and Gobi loach (*Barbatula dgebuadzei*), are recently described species which only occur in one location that is at risk from mining and other activities. Four species are listed as Vulnerable.

Table 2. Fish species categorised as regionally threatened (Critically Endangered, Endangered and Vulnerable) and Near Threatened in Mongolia.

Critically Endangered	Endangered	Vulnerable	Near Threatened
Siberian sturgeon <i>Acipenser baerii</i>	Gobi loach <i>Barbatula dgebuadzei</i>	Lake osman <i>Oreoleuciscus angusticephalus</i>	Amur spiny bitterling <i>Acheilognathus asmussi</i>
	Dzungarian dace <i>Leuciscus dzungaricus</i>	Small osman <i>Oreoleuciscus humilis</i>	Ide <i>Leuciscus idus</i>
	Pidschian <i>Coregonus pidschian</i>	Mongolian grayling <i>Thymallus brevirostris</i>	Arctic grayling <i>Thymallus arcticus</i>
	Amur grayling <i>Thymallus grubei</i>	Lenok <i>Brachymystax lenok</i>	
	Hövsgöl grayling <i>Thymallus nigrescens</i>		
	Taimen <i>Hucho taimen</i>		

DISTRIBUTION OF MONGOLIAN FISHES

Fish species richness in Mongolia appears to be roughly demarcated into four regions (Figure 3). The north-eastern region, representing the Amur River drainage, has the highest levels of species richness, particularly around the Onon river basin and Buir Lake, where up to 31 species are present. The north-central region, representing the Arctic Ocean drainage, has the next highest levels of species richness. The north-western region and the area known as the Gobi Valley of the Lakes, both part of the Central Asian Internal drainage basin, have the lowest richness of fishes. However, this area includes a number of Mongolia's most threatened species, such as Mongolian grayling (*Thymallus brevirostris*), lake osman (*Oreoleuciscus angusticephalus*), Dzungarian dace (*Leuciscus dzungaricus*), and Gobi loach (*Barbatula dgebuadzei*). However, there does not appear to be any clear geographical trend in the distribution of threatened fish species, which are spread throughout the northern half of Mongolia (Figure 4).

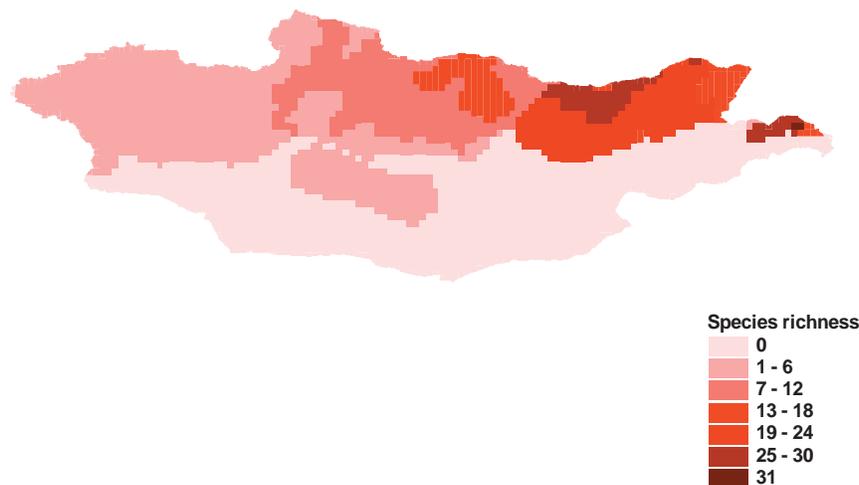


Figure 3. Mongolian fish species richness. Darker colours represent areas with higher numbers of threatened species.

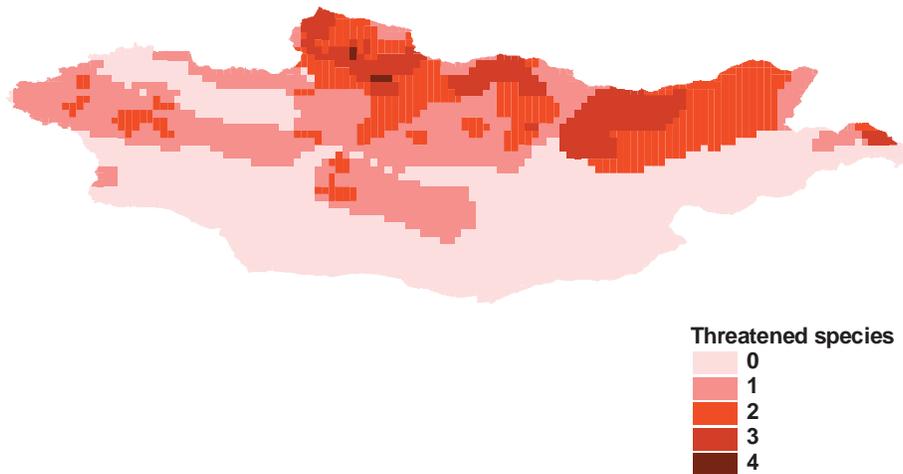


Figure 4. Mongolian threatened fish species richness. Darker colours represent areas with higher numbers of threatened species.

Areas of high fish species richness in Mongolia are closely associated with areas of high numbers of DD species. As the area around the Onon River has high levels of species richness, it is not surprising that this region also has the highest concentration of DD species (Figure 5).

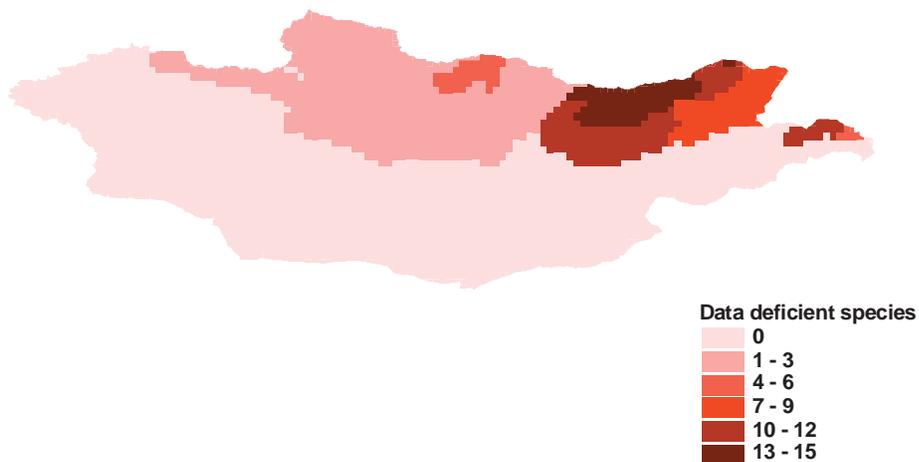


Figure 5. Mongolian Data Deficient (DD) fish species richness. Darker colours represent areas with higher numbers of DD species.

THREATS TO MONGOLIAN FISHES

The assessment process identified the dominant activities or processes that are driving species declines. These activities were then ranked as the primary, secondary or tertiary threats to the species.

The activity identified most frequently as the primary threat to Mongolian fishes was intentional mortality from fishing. It is the primary threat to six of the eleven threatened species (Table 3). Fishing is a dominant threat to fishes because high levels of unregulated, illegal fishing are being carried out in Mongolia. Such fishing is believed to be commercial, being driven by growing levels of international trade. It was noted that fishing regulations are being ignored and there are insufficient resources to enforce them, and that this illegal fishing was not species-specific. The review of threats indicated that local demand plays only a small part in the commercial nature of the threat, with most of the fishes sold to foreign markets, predominantly China but also Russia.

Habitat degradation is the primary threat to two threatened species, and is the secondary threat for over half of the threatened species. In most cases, habitat degradation is due to economically attractive resource extraction, principally mining for gold. The extractive processes used in mining increase the sediment load in rivers, which can disrupt feeding, compromise eggs, and cause habitat loss. Hardrock mining also uses mercury or cyanide to extract gold, generating the threat of inorganic pollution. Mining is viewed as a threat process on the increase. Pollution associated with this resource extraction, or caused by untreated sewage, was further considered to be the third most dominant threat to threatened fish species.

Habitat loss and degradation caused by declining water levels has been identified as a threat at Buir Lake, Hövsgöl Lake and the Gobi Valley of the Lakes waterways. The decreasing water level at Buir Lake is believed to have been caused by people removing vegetation from near the lake while fishing during winter (G. Baasanjav, pers. comm.).

Climate change is the primary threat to two threatened species, and represents a significant future threat for species in freshwater systems in Mongolia. Habitat loss caused by reductions in water levels due to future changes in climate would have dramatic consequences for species in all regions of Mongolia, but particularly in the Gobi desert. Although there are currently no species known from much of this region, a continuing decline in habitat quality caused by climate change may mean that many species are lost before they are even documented.

The pidschian (*Coregonus pidschian*) is the only species for which intentional mortality and habitat degradation are not the dominant threats. This species instead faces threats of hybridisation and competition with an introduced coregonid (*C. peled*).

The threats to Mongolian fishes are mounting and the nature of them is becoming more severe. Illegal fishing represents the most immediate and severe threat to a large

number of species. The impacts of resource extraction may be less direct, but are no less severe. When combined with the threat of climate change, they pose significant challenges for the survival of Mongolian fishes.

Table 3. Summary of the threats facing threatened Mongolian fishes, as identified by participants at the Mongolian Biodiversity Databank Workshop. The primary threat is represented by a black square, the secondary threat is mid grey and the tertiary threat is light grey.

Category of threat	Species	Habitat degradation	Habitat loss	Pollution	Hybridisation	Competitors	Intentional mortality	Climate change
CR	<i>Acipenser baerii</i>	Mid grey		Light grey			Black	
EN	<i>Barbatula dgebuadzei</i>	Black	Mid grey					
	<i>Leuciscus dzungaricus</i>						Black	
	<i>Coregonus pidschian</i>				Black	Mid grey		
	<i>Thymallus grubei</i>	Mid grey					Black	
	<i>Thymallus nigrescens</i>						Mid grey	Black
	<i>Hucho taimen</i>	Mid grey		Light grey			Black	
VU	<i>Oreoleuciscus angusticephalus</i>	Mid grey		Light grey			Black	
	<i>Oreoleuciscus humilis</i>	Mid grey		Light grey				Black
	<i>Thymallus brevirostris</i>	Black		Light grey			Mid grey	
	<i>Brachymystax lenok</i>	Mid grey					Black	

SPECIES ACCOUNTS

Order Petromyzontiformes

Family Petromyzontidae

1. *Lethenteron reissneri* (Dybowski, 1869)

Common names: Eastern brook lamprey (English), Khorkhoi zagas or Mogor (Mongolian)

Synonyms: *Lampetra reissneri*, *Petromyzon reissneri*

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.

Global distribution: Siberian coastline, rivers of the Bering Sea and Sea of Okhotsk (Russia), Amur River Basin (China, Mongolia) down to Korea and Japan.

Regional distribution: Onon River Basin (Amur drainage). No map was created due to uncertainty regarding the location of the species within this area.

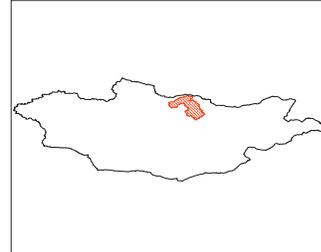
Dominant threats: Unknown.

Order Acipenseriformes

Family Acipenseridae

2. *Acipenser baerii* Brandt, 1869

Common names: Siberian sturgeon (English), Shiwer hilem (Mongolian)



Global status: Vulnerable, A2d (Sturgeon Specialist Group, 1996).

The following subspecies have been assessed (Sturgeon Specialist Group, 1996):

Acipenser baerii baerii Endangered, A2d

Acipenser baerii baikalensis Endangered, A1ace

Acipenser baerii stenorrhynchus Vulnerable, A2d

However, subspecific taxonomy may require revision (M. Kottelat, pers. comm.).

Regional status: Critically Endangered, B2ab(iii,v)

Rationale for assessment: The area of occupancy is less than 10 km². Although there are three spawning sites (two in Selenge River and one in Orkhon River), these represent only one location due to the threat of illegal fishing throughout its entire range (Criterion B). There is a continuing decline in quality of habitat due to sedimentation and pollution from gold mining, and in the number of mature individuals due to poaching. Status does not change after applying regional criteria, as immigration from Russia is expected to decrease and the regional population is not a sink.

Legal status: Listed as Very Rare under the Mongolian Law on Fauna. The Law on Hunting prohibits the harvesting of Very Rare species for personal or commercial purposes. Listed in CITES (Appendix II) and the Convention on Migratory Species (Appendix II).

Global distribution: Ob to Kolyma river basins, including Yenisey River and Lake Baikal and Zaisan, Russia. The southern range includes Selenge River, Mongolia, and Irtysh River, Kazakhstan.

Regional distribution: Selenge and Orkhon rivers, and the lower reach of Kharaa River (Arctic drainage).

Dominant threats: Illegal fishing for commercial use; habitat degradation due to high inorganic pollution from gold mining and urban pollution; habitat degradation and loss due to siltation and alteration of river morphology caused by gold mining.

3. *Acipenser schrenkii* Brandt, 1869

Common names: Amur sturgeon (English), Amar mörnii khilem (Mongolian)

Global status: Endangered, A1acd and A2d

Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats. This species has not been recorded in Mongolia since 1976 (M. Erdenebat, pers. comm.). However, more recent exhaustive surveys have not been carried out and so it cannot be assessed as Regionally Extinct.

Legal status: Listed as Very Rare under the Mongolian Law on Fauna. The Law on Hunting prohibits the harvesting of Very Rare species for personal or commercial purposes. Listed in CITES (Appendix II) and the Convention on Migratory Species (Appendix II).

Global distribution: Amur River Basin (China, Russia and Mongolia).

Regional distribution: Unknown. No map was created due to uncertainty regarding the location of the species.

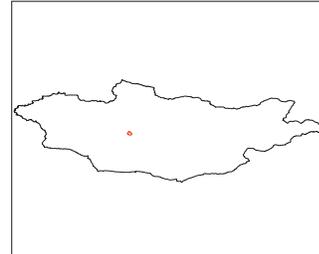
Dominant threats: Unknown.

Order Cypriniformes

Family Balitoridae

4. *Barbatula dgebuadzei* (Prokofiev, 2003)

Common names: Gobi loach (English), Gobiin ereelj (Mongolian)



Global status: Endangered, B2ab(iii) ●●

Regional status: Endangered, B2ab(iii)

Rationale for assessment: This species has only been definitely identified once, in Zag stream (thought to be a drainage to Boon Tsagaan Lake), although another possible specimen has been reported from Orog Lake. The area of occupancy is estimated to be c. 400 km² (the stream is 200 km long × 5 m wide, average) (Criterion B). This single known location is experiencing a continuing decline in habitat quality from gold mining.

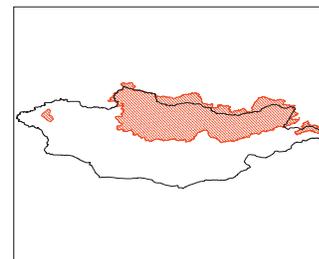
Global distribution: Mongolia.

Regional distribution: Zag stream and the basin of Baidrgag River, near Zag town (Central Asian Inland drainage basin).

Dominant threats: Habitat degradation from gold mining.

5. *Barbatula toni* (Dybowski, 1869)

Common names: Siberian stone loach (English) Sakhalt ereelj (Mongolian)



Regional status: Least Concern

Rationale for assessment: There is a large population with a wide distribution. There appear to be no population declines.

Global distribution: Across Russia east of the Urals, Kazakhstan, Mongolia, north China, Korea and Japan.

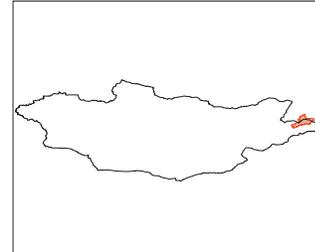
Regional distribution: Onon, Kherlen, Khalkhin rivers and Buir Lake (Amur drainage), and Selenge River Basin, including Shiskhed River (Arctic drainage). Records of this species in the Gobi have been re-identified as *Barbatula dgebuadzei*.

Records of this species from Khovd River are suspected to be misidentifications (Kottelat, in prep.).

Dominant threats: Habitat degradation due to sedimentation from gold mining and sewage from nearby cities, which is deoxygenating the rivers.

6. *Lefua costata* Kessler, 1876

Common names: Lefua (English), Naimas ereelj (Mongolian)



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.

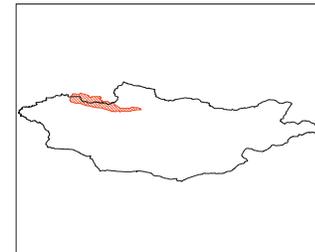
Global distribution: Amur drainage (China, Russia, Mongolia).

Regional distribution: Azargyin stream, Tamsagiin spring and other rivers in Buir Lake Basin (Amur drainage).

Dominant threats: Unknown.

7. *Triplophysa gundriseri* Prokofiev, 2002

Common names: Tes Gol loach (English), Tesiin ereelj (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends or the impact of threats.

Global distribution: Mongolia.

Regional distribution: Tes River and Sagiin Dalai Lake (Central Asian Inland basin).

Dominant threats: Unknown.

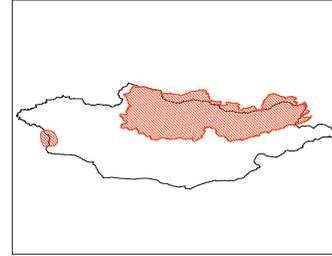
Comments: Some of the Mongolian fishes earlier identified as *Triplophysa strauchii* have been re-identified as *Triplophysa gundriseri* (Prokofiev, 2002).

Family Cobitidae

8. *Cobitis melanoleuca* Nichols, 1925

Common names: Siberian spiny loach (English),
Shiwer chimhuur zagas (Mongolian)

Synonyms: *Cobitis taenia granoei*, *Cobitis taenia sibirica*



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

Global distribution: Volga River Basin, Russia, to the Amur River and Huang He River Basin (China, Russia, Mongolia, and Kazakhstan).

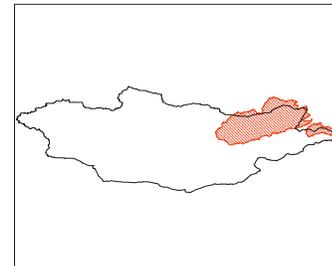
Regional distribution: Onon and Kherlen river basins (Amur drainage), Selenge River Basin (Arctic drainage), and Bulgan River Basin.

Dominant threats: Habitat degradation due to sedimentation and heavy metals used in gold mining.

9. *Misgurnus mohoity* (Dybowski, 1869)

Common names: Amur weather loach (English),
Amaryn mogolzoi (Mongolian)

Misidentifications: *Misgurnus anguillicaudatus*



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

Global distribution: Amur drainage (China, Russia, Mongolia) and north-eastern China.

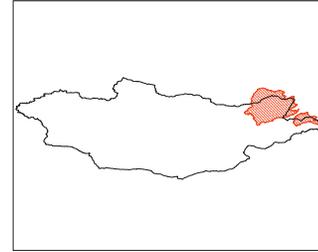
Regional distribution: Onon, Kherlen, Ulz and Khalkhin rivers and Buir Lake (Amur drainage).

Dominant threats: Habitat degradation due to heavy metals used in gold mining.

Family Cyprinidae

10. *Acheilognathus asmussi* (Dybowski, 1872)

Common names: Amur spiny bitterling (English),
Khatguurt khalbagan zagas (Mongolian)



Regional status: Near Threatened

Rationale for assessment: Nearly meets Criterion B2, because the area of occupancy is less than 2,000 km². However, it does not meet the other criteria for Criterion B. It is thought that this species may be threatened in the future because of increasing threats to its commensal mussel species and increasing demand from China. Status does not change after applying the regional criteria, as there is no significant immigration from China and the regional population is not a sink.

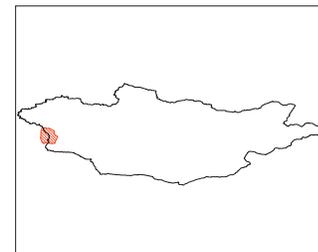
Global distribution: Amur River Basin (China, Russia, Mongolia, and Korea).

Regional distribution: Onon and Kherlen rivers and Buir Lake (Amur drainage).

Dominant threats: This species has an obligate larval stage in a species of freshwater mussel and is threatened by loss of the mussel through habitat degradation and deep-water fisheries trawling in Buir Lake; illegal fishing if commercial demand from China increases.

11. *Carassius carassius* (Linnaeus, 1758)

Common names: Crucian carp (English), Altlag khelteg
(Mongolian)



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.

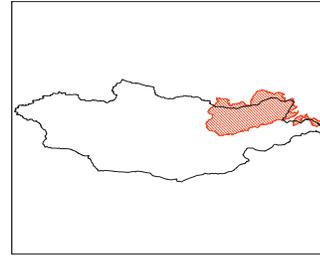
Global distribution: Europe, as far west as the Rhine River Basin, Germany, and eastwards to the Lena River, Russia; North, Baltic, Barents, Black and Caspian sea basins. Introduced into Italy, England, France, South America, Africa, South East Asia and the Indian subcontinent.

Regional distribution: Bulgan River Basin.

Dominant threats: Habitat degradation due to water extraction.

12. *Carassius gibelio* (Bloch, 1782)

Common names: Prussian carp (English), Мөнгөлөг khelteg (Mongolian)



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

Global distribution: Eastern Europe, Russia and Asia. Introduced and dispersed throughout most other countries in Western Europe.

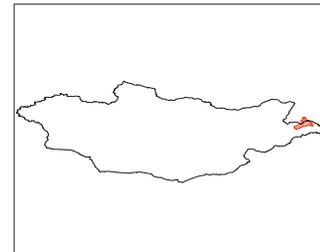
Regional distribution: Onon and Kherlen rivers and Buir Lake (Amur drainage). Introduced into Lake Baikal in Russia, and spread into north Mongolia through the Selenge River. Invasive to the east of Hövsgöl Lake, but not found in this lake (this population is not eligible for assessment).

Dominant threats: Illegal fishing (commercial).

13. *Chanodichthys erythropterus* (Basilewsky, 1855)

Common names: Red-fin culter (English), Tsagaan dogtor (Mongolian)

Previous combinations: *Culter erythropterus*



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.

Global distribution: Red River Basin (Viet Nam and Taiwan) to Amur River Basin (China, Russia, Mongolia, Korea, Japan).

Regional distribution: Buir Lake (Amur drainage).

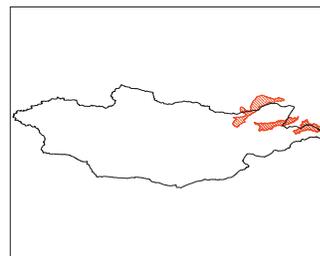
Dominant threats: Illegal fishing (commercial).

14. *Chanodichthys mongolicus* (Basilewsky, 1855)

Common names: Mongolian culter or Mongolian red-fin (English), Mongoliin ulaan dalbaat (Mongolian)

Previous combinations: *Culter mongolicus*

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.

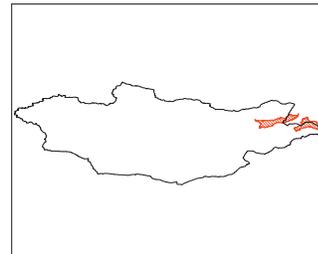
Global distribution: Red River Basin (Viet Nam and Taiwan) to Amur River Basin (China, Russia, Mongolia, Korea, Japan).

Regional distribution: Kherlen, Khalkhin and lower Onon rivers and Buir Lake (Amur drainage).

Dominant threats: Illegal fishing (commercial).

15. *Culter alburnus* Basilewsky, 1855

Common names: White culter or bleak culter (English), Elger tsagaan zagas (Mongolian)



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.

Global distribution: Amur River Basin (China, Russia, Mongolia) to Red River Basin (Viet Nam and Taiwan).

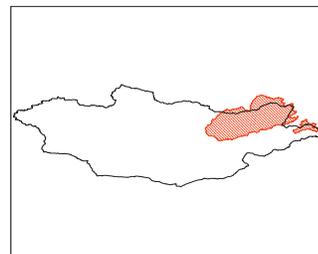
Regional distribution: Lower Kherlen and Khalkhin rivers and Buir Lake (Amur drainage).

Dominant threats: Illegal fishing (commercial).

16. *Cyprinus rubrofasciatus* Lacépède, 1803

Common names: Asian common carp (English), Buluu tsagaan (Mongolian)

Synonyms: *Cyprinus haematopterus*



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.

Global distribution: Amur River Basin (China, Russia, Mongolia) south to Laos and Viet Nam. Introduced into Russia.

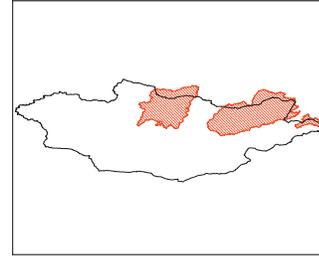
Regional distribution: Onon and Kherlen rivers and Buir Lake (Amur drainage). Invasive in the Selenge River Basin in Russia (this population is not eligible for assessment).

Dominant threats: Illegal fishing (commercial); and risk of hybridisation with introduced *Carassius carpio*.

17. *Eupallasella percunurus* (Pallas, 1814)

Common names: Lake minnow (English), Nuuriin warlan (Mongolian)

Different combinations: *Phoxinus percunurus*



Global status: Data Deficient

Regional status: Data Deficient

Rationale for assessment: Although the distribution of this species is reasonably well known, there is inadequate information on the effects of mining or on population size and trends.

Global distribution: Arctic Basin from the Dvina River in western Russia to the Kolyma River in eastern Russia; Pacific Basin from Amur River Basin to Korea and Japan. Endangered species in Poland and the Ukraine. Introduced into Italy.

Regional distribution: Orkhon and Selenge river basins (Arctic drainage), and Kherlen and Onon rivers and Buir Lake (Amur drainage).

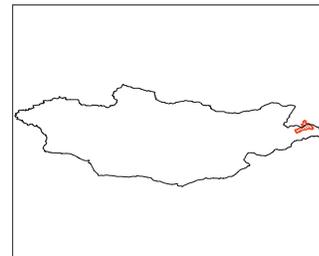
Dominant threats: Habitat degradation due to gold mining.

Comments: Several geographically distinct populations are currently assigned to *E. percunurus*. However, the European populations are geographically isolated and may represent a separate species (M. Kottelat, pers. comm.).

18. *Gnathopogon strigatus* (Regan, 1908)

Common names: Manchurian gudgeon (English), Sugasan gurts (Mongolian)

Previous combinations: *Paraleucogobio strigatus*



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.

Global distribution: Amur River Basin (China, Russia, Mongolia) to Liao River Basin (northern China, Korea).

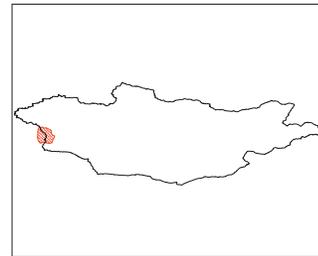
Regional distribution: Buir Lake (Amur drainage).

Dominant threats: Unknown.

19. *Gobio acutipinnatus* Menschikov, 1939

Common names: Irtysh gudgeon (English), Erdiin gurts (Mongolian)

Original combinations: *Gobio gobio acutipinnatus*



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.

Global distribution: Altai region of China, Mongolia, Russia, and Kazakhstan, including Irtysh River Basin.

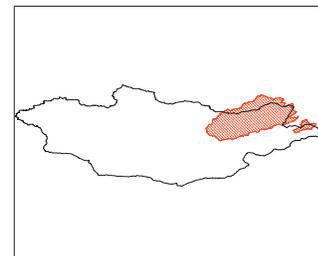
Regional distribution: Bulgan River Basin.

Dominant threats: Habitat degradation due to water extraction.

20. *Gobio cynocephalus* Dybowski, 1869

Common names: Dog-faced gudgeon (English), Morin gurts (Mongolian)

Misidentifications: *Gobio gobio*



Regional status: Data Deficient

Rationale for assessment: Although the distribution of this species is known, and threats are presumed to be localised, there is inadequate information on the impacts of these threats.

Global distribution: Amur drainage (China, Russia and Mongolia).

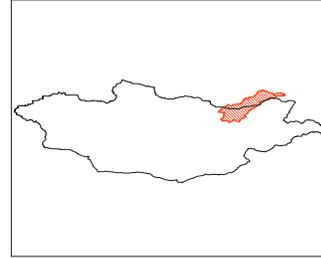
Regional distribution: Onon and Kherlen rivers and Buir Lake (Amur drainage).

Dominant threats: Habitat degradation from organic pollutants due to urban waste water and heavy metals used in gold mining; habitat loss due to decreasing water levels in Buir Lake.

21. *Gobio soldatovi* Berg, 1914

Common names: Amur gudgeon (English), Amar tungussiln mörnii gurts (Mongolian)

Misidentifications: *Gobio tungussicus*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

Global distribution: Lena River drainage (Russia) and Amur River drainage (China, Russia, Mongolia).

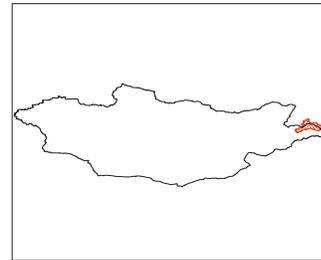
Regional distribution: Onon River Basin.

Dominant threats: Unknown.

22. *Gobio tenuicarpus* Mori, 1934

Common names: Eastern whitefin gudgeon (English), Tsagaan seluurt gurts or Sakhalt gurts (Mongolian)

Previous combinations: *Gobio albipinnatus*



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.

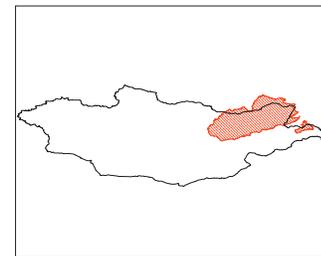
Global distribution: Amur River Basin (China, Russia, Mongolia), and the north-eastern region of China.

Regional distribution: Buir Lake and its tributaries (Amur drainage).

Dominant threats: Unknown.

23. *Hemibarbus labeo* (Pallas, 1776)

Common names: Horse gudgeon (English), Morin zagas (Mongolian)



Regional status: Data Deficient

Rationale for assessment: The population in Buir Lake is thought to be declining due to illegal fishing. However, there is inadequate information to identify a definite decline.

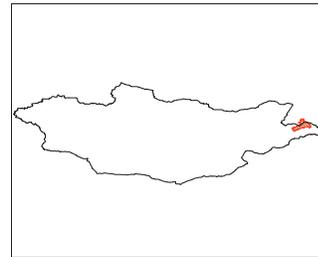
Global distribution: From Amur to Mingjiang River Basin (Russia, Mongolia, China, Korea) and Taiwan.

Regional distribution: Onon and Kherlen rivers and Buir Lake (Amur drainage).

Dominant threats: Illegal fishing (commercial); habitat loss due to decreasing water levels in Buir Lake.

24. *Hemibarbus maculatus* Bleeker, 1871

Common names: Spotted horse gudgeon (English), Tolbot morin zagas (Mongolian)



Regional status: Data Deficient

Rationale for assessment: This species has not been recorded in Mongolia since 1956. Further surveys are required to confirm its presence and distribution in Mongolia.

Global distribution: Yangtze River Basin (China) to Amur River Basin (China, Russia, Mongolia).

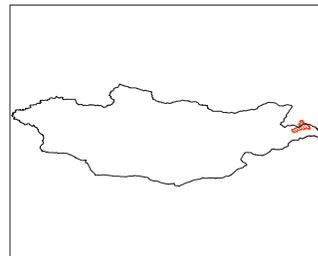
Regional distribution: Buir Lake (Amur drainage).

Dominant threats: Habitat loss due to decreasing water levels in Buir Lake.

Comments: This species was last recorded in Buir Lake in 1956 (Sokolov, 1983). However, more recent exhaustive surveys have not been carried out and so it cannot be assessed as Regionally Extinct.

25. *Hemiculter leucisculus* (Basilewsky, 1855)

Common names: Hemiculter (English), Erdiin khavchigas (Mongolian)



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.

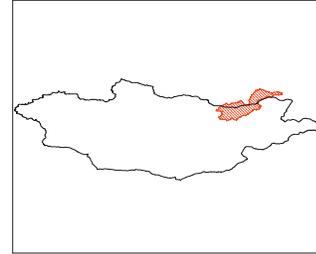
Global distribution: Amur drainage (China, Mongolia) to Annam (Viet Nam).

Regional distribution: Buir Lake (Amur drainage).

Dominant threats: Unknown.

26. *Ladislavia taczanowskii* Dybowski, 1869

Common names: Sharp-jawed minnow (English),
Tachanowiin gurts (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

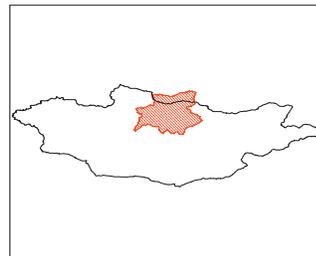
Global distribution: Amur River Basin (China, Russia and Mongolia) to Yalu River Basin (Korea).

Regional distribution: Onon, Balzh, and Khurkh rivers and their basins (Amur drainage).

Dominant threats: Unknown.

27. *Leuciscus baicalensis* (Dybowski, 1874)

Common names: Siberian dace (English), Shiwer sugas
(Mongolian)



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

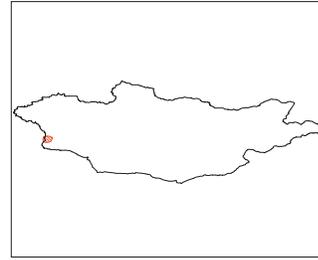
Global distribution: Ob River to Kolyma and Yenisey river basins, Russia.

Regional distribution: Selenge River Basin, including Ugii and Terkhiyn Tsagaan lakes (Arctic drainage).

Dominant threats: Illegal fishing (commercial); and localised habitat degradation from gold mining.

28. *Leuciscus dzungaricus* Koch and Paepke, 1998

Common names: Dzungarian dace (English),
Zuungariin sugas (Mongolian)



Regional status: Endangered, B1ab(v) and B2ab(v)

Rationale for assessment: The total distribution of this species is less than 5,000 km², with an area of occupancy of less than 500 km² (Criterion B), and it is found in only one location in Mongolia. This is potentially threatened by illegal fishing, and there is a potential for continuing decline of mature individuals in the future. Status does not change after applying the regional criteria; although immigration occurs from China, this is expected to decline due to illegal fishing, and the local population is not a sink population.

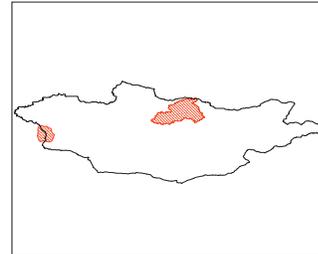
Global distribution: Mongolia and China. It is not known whether the species also occurs in Kazakhstan.

Regional distribution: Lower part of Bulgan River.

Dominant threats: Illegal fishing (commercial).

29. *Leuciscus idus* (Linnaeus, 1758)

Common names: Ide (English), Bukh sugas
(Mongolian)



Regional status: Near Threatened

Rationale for assessment: It is suspected that the population in Ugii Lake has declined, although declines across Mongolia are thought to have been less than 30% (Criterion A). The species occurs in more than ten locations, but its area of occupancy (including lakes) is close to the Criterion B threshold of 2,000 km². There is also a continuing decline in habitat quality due to gold mining, and in the number of mature individuals in Ugii Lake because of over fishing, so the species is close to qualifying for Vulnerable using Criterion B2. There is no change after applying regional criteria, because although there is significant immigration from Russia on the Selenge River, this is expected to decline due to pollution and over fishing in Russia.

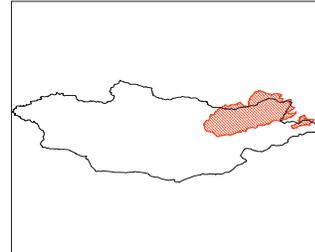
Global distribution: Rhine River Basin, Germany, across all of Europe eastwards to the Lena drainage, eastern Russia, although not found in rivers draining to the Mediterranean or in northern Scandinavia. Introduced into the United Kingdom, North America and New Zealand.

Regional distribution: Selenge, Orkhon and Tuul rivers and Ugii lake (Arctic drainage); and the Bulgan River Basin.

Dominant threats: Illegal fishing (commercial) in Ugii Lake; habitat degradation from gold mining operations near Tuul River.

30. *Leuciscus waleckii* (Dybowski, 1869)

Common names: Amur ide (English), Amaryn sugas (Mongolian)



Regional status: Data Deficient

Rationale for assessment: This species has a wide distribution, but there is inadequate information on population size and trends, or the impact of threats.

Global distribution: Amur to Yangtze river basins (China, Russia, Mongolia), and Korea.

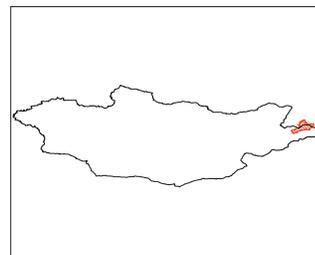
Regional distribution: Kherlen, Onon and Khalkhin rivers, and Buir Lake (Amur drainage).

Dominant threats: Illegal fishing if commercial demand from China increases; habitat loss due to decreasing water levels in Buir Lake.

31. *Microphysogobio tungtingensis* (Nichols, 1926)

Common names: Buir gudgeon (English), Buiriin gurts (Mongolian)

Synonyms: *Pseudogobio tungtingensis*, *Microphysogobio amurensis*



Regional status: Data Deficient

Rationale for assessment: This species is known only from Buir Lake and a tributary delta. There is inadequate information on population size and trends, or the impact of threats.

Global distribution: Amur River Basin to Yangtze River Basin (China, Russia, Mongolia).

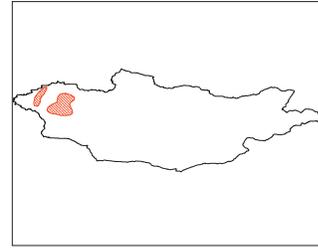
Regional distribution: Buir Lake and the Khalkhin River delta (Amur drainage).

Dominant threats: Habitat loss due to decreasing water levels in Buir Lake.

32. *Oreoleuciscus angusticephalus* Bogutskaya, 2001

Common names: Lake osman or bigmouth osman (English), Nohoi sugas (Mongolian)

Previous names: *Oreoleuciscus pewzowi*



Global status: Vulnerable, B1ab(v) ●●

Regional status: Vulnerable, B1ab(v)

Rationale for assessment: Local people report that the species is declining, but it is not known if the population has decreased by at least 30% (Criterion A). The extent of occurrence is estimated at between 5,000 and 10,000 km² and it is found in nine locations, and there is a continuing decline in the number of mature individuals in the lakes that are being heavily fished (Criterion B).

Legal status: Fishing ban from April 15th to August 1st, Mongolian Law on Hunting.

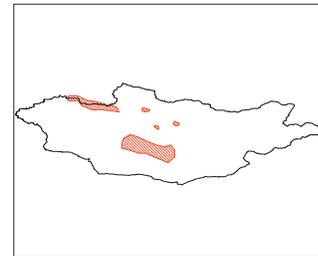
Global distribution: Mongolia.

Regional distribution: Khar Us, Khar, Nogoos, Khyargas, Achit, Tolbo and Uureg lakes (Central Asian Inland basin).

Dominant threats: Illegal fishing (commercial).

33. *Oreoleuciscus humilis* Warpachowski, 1889

Common names: Small osman or dwarf osman (English), Dabjaa sugas (Mongolian)



Regional status: Vulnerable, B2ab(ii,iii,iv,v)

Rationale for assessment: The area of occupancy is less than 2,000 km² (Criterion B). The species has a severely fragmented distribution across seven separate locations, only occurring in a 200 km stretch of water (Tes River) and several very small lakes. It is estimated that around 50% of this population occurs in isolated subpopulations which are small enough to face an increased risk of extinction (Criterion B). There is a continuing decline in habitat quality due to pollution from gold mining.

Legal status: Fishing ban from April 15th to August 1st, Mongolian Law on Hunting.

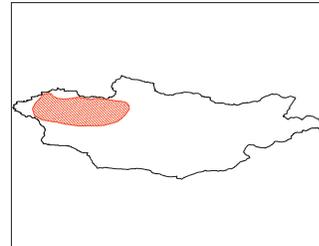
Global distribution: Lake Terekhol (Republic of Tuva, Russia), upper tributaries of Ob River (Russia), Mongolia.

Regional distribution: Taatsiin Tsagaan, Buun Tsagaan, Orog and Sangiin Dalai lakes, Baidrag, Ongi, Tes, Khungyin, Tuin, Tarna and Khuiten rivers, Gobi Valley of the Lakes and Narinii Gol the tributary of Uvs Lake (Central Asian Inland basin) and tributaries of Selenge and Orkhon rivers (Arctic drainage).

Dominant threats: Habitat loss due to the lakes in the Gobi valley drying up; habitat degradation from the heavy metals used in gold mining.

34. *Oreoleuciscus potanini* (Kessler, 1879)

Common names: Potanin's osman (English), Altain sugas (Mongolian)



Regional status: Least Concern

Rationale for assessment: This species has a large distribution, with extent of occurrence and area of occupancy above the threshold of being threatened under Criterion B. Occurs in protected areas across some of its range; thought to be locally illegally fished elsewhere, but not enough to cause population declines.

Legal status: Fishing ban from April 15th to August 1st, Mongolian Law on Hunting.

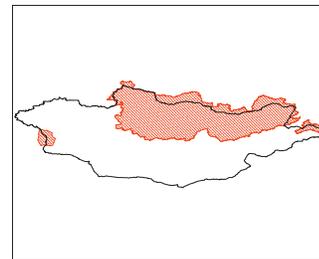
Global distribution: Upper reaches of the Chuya and Chulyshman, two tributaries of the Ob River (Russia), and Mongolia.

Regional distribution: Khar, Khar Us, Nogoön, Durgon, Airag, Khyargas, Boon Tsagaan, Orog, Taatsin Tsagaan, Khangai, Khuh, Sangiin Dalai, Telmen, Khoton, Khorgon, Khoromdog and Dayan lakes, and Khovd, Zavhan, Tes, Khungui and Baidrag rivers (Central Asian Inland basin).

Dominant threats: Illegal fishing (commercial).

35. *Phoxinus phoxinus* (Linnaeus, 1758)

Common names: Common minnow (English), Warlan or Nutsген jaraa (Mongolian)



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

Global distribution: Europe (excluding Portugal, Malta, Ireland, Iceland and Albania) eastwards to eastern Russia, Mongolia, Japan and Korea.

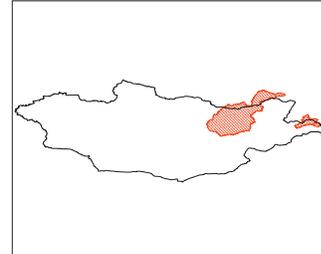
Regional distribution: Delger Moron, Ider, Chuluut, Khanui, Orkhon, Eroo, Kharaa, Tsoh, Khuder, Tuul and Shiskhed rivers, Hövsgöl, Terkhii Tsagaan and Ugii lakes, and lakes of Darkhad Depression (Arctic drainage), and the Bulgan river basin, Onon, Kherlen, Khalkhin, Orshuun rivers, and Buir Lake (Amur drainage).

Dominant threats: Unknown.

Comments: The population in Mongolia appears to represent two distinct morphological groups, a Selenge group and an Amur drainage group (Kottelat, in prep.). The Bulgan population is recognised as a distinct subspecies (*P. phoxinus ujmonensis* Kashenko, 1899) by Chinese authors, and as a distinct species (*P. ujmonensis*) by Kottelat (in prep.).

36. *Pseudaspius leptcephalus* (Pallas, 1776)

Common names: False asp (English), Ulaan jivert (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends, or the impact of threats.

Global distribution: Amur River Basin (China, Russia and Mongolia).

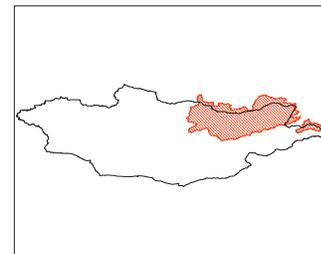
Regional distribution: Onon River, Buir Lake, and the lower Khalkhin River (Amur drainage).

Dominant threats: Illegal fishing (commercial).

37. *Pseudorasbora parva* (Temminck and Schlegel, 1846)

Common names: Pseudorasbora (English), Amaryn h l nkhei (Mongolian)

Synonyms: *Leuciscus parvus*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends, or the impact of threats.

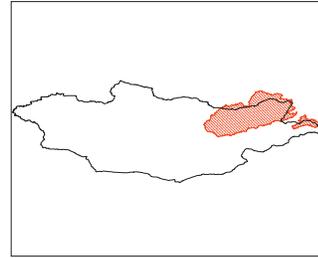
Global distribution: Amur River Basin (China, Mongolia) to northern Viet Nam, Korea, Japan and Taiwan. Introduced into Europe, including Austria, France, Germany, Italy, Poland, Russia and the United Kingdom.

Regional distribution: Onon, Kherlen, Ulz, Khalkhin and Orshuun rivers and Buir Lake (Amur drainage).

Dominant threats: Unknown.

38. *Rhodeus sericeus* (Pallas, 1776)

Common names: Amur bitterling (English), Amar mörnii halbagan jaraa zugas (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends, or the impact of threats, and inadequate information on the distribution and trends of its host mussel.

Global distribution: Amur River Basin (China, Russia, Mongolia), Korea and northern China.

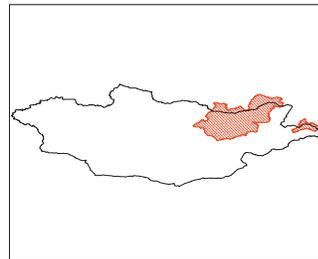
Regional distribution: Lowland regions of Amur River Basin (Amur drainage).

Dominant threats: Unknown.

39. *Rhynchocypris czekanowskii* (Dybowski, 1869)

Common names: Siberian minnow (English), Czekaniwiin warlan (Mongolian)

Previous combinations: *Phoxinus czekanowskii*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends, or the impact of threats.

Global distribution: Irtysh, Lena and Sakalin river basins (Russia, China, Mongolia, Kazakhstan).

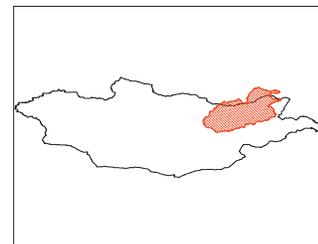
Regional distribution: Onon, Kherlen, Balj, Khalkhin, and Ulz rivers, and Buir Lake (Amur drainage).

Dominant threats: Unknown.

40. *Rhynchocypris lagowskii* (Dybowski, 1869)

Common names: Eastern Siberian minnow (English) Lagowiin warlan (Mongolian)

Synonyms: *Rhynchocypris costatus*, *Leuciscus costatus*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on species distribution, population size and trends, or the impact of threats.

Global distribution: Russia and Mongolia to the Yangtze River Basin (China). It is possible that populations in Korea and Japan represent different species (M. Kottelat, pers. comm.).

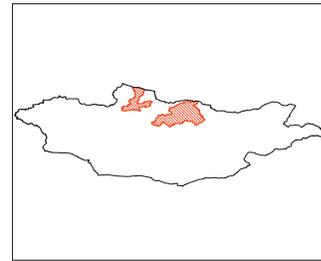
Regional distribution: Onon, Ulz, and Khalkhin rivers, and Buir Lake (Amur drainage).

Dominant threats: Unknown.

41. *Rutilus rutilus* (Linnaeus, 1758)

Common names: Roach (English), Ulaan nuden (Mongolian)

Previous Mongolian names: *Rutilus lacustris*



Regional status: Least Concern

Rationale for assessment: The area of occupancy may be near to the threshold of 2,000 km² for Criterion B, but the population is stable.

Global distribution: Drainage basins north of the Pyrenees and Alps eastwards to the Lena river drainage (Russia), including the Aral Sea Basin (Kazakhstan and Uzbekistan). Introduced into Australia, Ireland, Spain and Morocco.

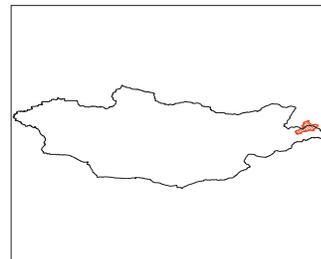
Regional distribution: Hövsgöl and Ugii lakes, and the lower reaches of Selenge, Delger Moron, Orkhon, Tuul and Kharaa rivers (Arctic drainage).

Dominant threats: Habitat loss due to gold mining; illegal fishing (commercial).

42. *Sarcocheilichthys soldatovi* (Berg, 1914)

Common names: Amur marble gudgeon (English), Soldatoviin gurts (Mongolian)

Misidentifications: *Sarcocheilichthys nigripinnis*



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.

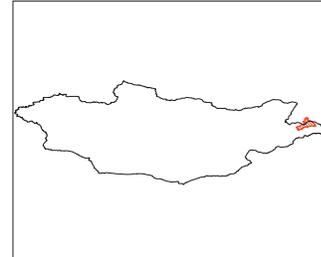
Global distribution: Amur River Basin, (China, Russia, Mongolia) to Liaoning drainages; absent from central or southern Korea.

Regional distribution: Buir Lake (Amur drainage).

Dominant threats: Unknown.

43. *Saurogobio dabryi* Bleeker, 1871

Common names: Lizard gudgeon (English), Monkhor gurts (Mongolian)



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.

Global distribution: Amur River Basin (China, Russia, Mongolia) south to Yangtze River Basin (China).

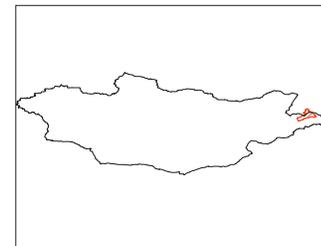
Regional distribution: Confluence of Buir Lake and Khalkhin River (Amur drainage).

Dominant threats: Unknown.

44. *Squalidus chankaensis* (Dybowski, 1872)

Common names: Khanka gudgeon (English), Khankhiin gurts (Mongolian)

Previous combinations: *Gnathapogon chankaensis*



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.

Global distribution: Amur drainage (China, Russia, Mongolia). It is not known how far south the species extends in China.

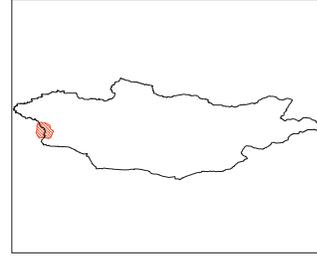
Regional distribution: Buir Lake (Amur drainage).

Dominant threats: Unknown.

45. *Tinca tinca* (Linnaeus, 1758)

Common names: Tench (English), Shargal ùkherdei (Mongolian)

Synonyms: *Cyprinus tinca*



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.

Legal status: Listed as Very Rare under the Mongolian Law on Fauna.

Global distribution: United Kingdom and France across Europe to Russia and China. Introduced into North America, Chile, India, Indonesia, Japan, Australia, New Zealand, South Africa and Zimbabwe.

Regional distribution: Bulgan River Basin.

Dominant threats: Unknown.

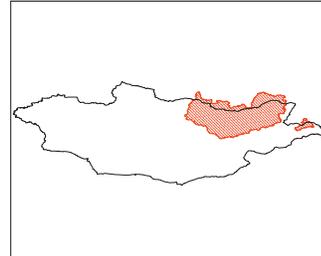
Order Siluriformes

Family Siluridae

46. *Silurus asotus* Linnaeus, 1758

Common names: East Asian catfish (English), Tsulbuurt zagas (Mongolian)

Synonyms: *Parasilurus asotus*



Regional status: Least Concern

Rationale for assessment: This species has a large population size and a wide distribution. There appear to be no population declines.

Global distribution: Amur River Basin (China, Russia, Mongolia) to Japan, North Korea and Viet Nam.

Regional distribution: Kherlen and Onon rivers and Buir Lake (Amur drainage). Introduced into Russia and spread to Selenge, Orkhon, Kharaa, Tuul, and Eroo rivers and Ugii Lake (these populations are not eligible for assessment).

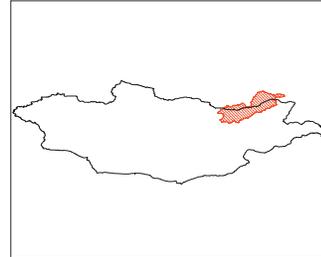
Dominant threats: Illegal fishing (commercial); disease caused by heavy metals used in gold mining.

Order Salmoniformes

Family Coregonidae

47. *Coregonus chadary* Dybowski, 1869

Common names: Chadary (English), Tsagaan khadar (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats, and confusion over taxonomy.

Global distribution: South-eastern Russia and Mongolia.

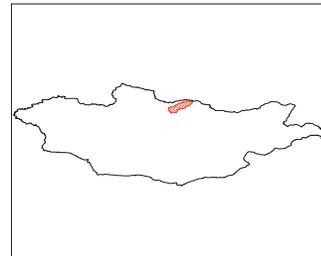
Regional distribution: Onon River Basin (Amur drainage).

Dominant threats: Illegal fishing (commercial); habitat degradation due to the use of heavy metals in gold mining; habitat loss due to gold mining.

48. *Coregonus migratorius* (Georgi, 1775)

Common names: Omul or Baikal omul (English), Baigaliin omul (Mongolian)

Misidentifications: *Coregonus autumnalis*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats, and confusion over taxonomy.

Legal status: Fishing ban from December 1st to August 14th, Mongolian Law on Hunting.

Global distribution: Lake Baikal Basin (Russia, Mongolia).

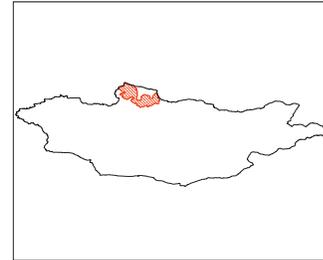
Regional distribution: Selenge and Orkhon rivers (Arctic drainage).

Dominant threats: Illegal fishing (commercial); habitat loss and degradation from gold mining.

49. *Coregonus pidschian* (Gmelin, 1788)

Common names: Pidschian or Arctic whitefish (English), Tsagaan zagas (Mongolian)

Previous combinations: *Coregonus lavaretus pidschian*



Global status: Data Deficient

Regional status: Endangered, B2ab(iii,v)

Rationale for assessment: Area of occupancy is less than 500 km² (Criterion B). There is a continuing decline in the number of individuals due to predation, competition and hybridisation from the introduced species *Coregonus peled*. Status does not change after applying regional criteria, because while there may be some migration from Russia, this is expected to decrease, and the Mongolian population is not a sink population.

Legal status: Appendix III of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). Fishing ban from August 1st to October 20th, Mongolian Law on Hunting.

Global distribution: Finland across to Eastern Russia, Mongolia, river basins bordering the Bering Sea in Alaska (U.S.A.), and across to the Mackenzie River Basin, Canada.

Regional distribution: Darkhad Depression and Uur and Eg rivers (Arctic drainage).

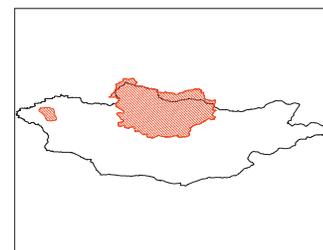
Dominant threats: Competition and hybridisation with *Coregonus peled*; illegal fishing (commercial).

Comments: The two forms of this species that occur in the Darkhad Depression are possibly genetically distinct (Kottelat, in prep.; B. Mensaikhan, pers. comm.).

Family Thymallidae

50. *Thymallus arcticus* (Pallas, 1776)

Common names: Arctic grayling (English), Shiwer khadran (Mongolian)



Regional status: Near Threatened

Rationale for assessment: This species is close to qualifying for Criterion A3, as is suspected to decline by 20% in the near future as a result of habitat degradation caused by gold mining, and illegal fishing as demand for commercial fishing and sport-angling increases. Status does not change after applying regional criteria, as the

low level of immigration from Russia is expected to decrease due to pollution and illegal fishing, and the Mongolian population is not a sink population.

Global distribution: Ob River Basin to the Chukot and Kamchatka peninsulas (Russia), tributaries of the Pechora, Korotaikha and Kara rivers (Russia), and the Arctic Ocean Basin in Alaska and Canada.

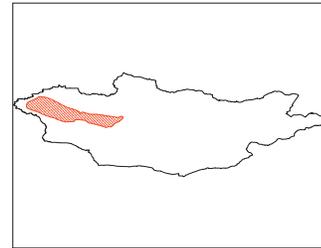
Regional distribution: Selenge River Basin, Darkhad Depression, upper Tuul and Orkhon rivers (Arctic drainage) and Khovd River (Central Asian Inland basin).

Dominant threats: Illegal fishing (commercial); habitat degradation due to pollution from gold mining, and habitat loss caused by gold mining and falling river levels.

Comments: There is confusion over the taxonomy of this species (Kottelat, in prep.).

51. *Thymallus brevirostris* Kessler, 1879

Common names: Mongolian grayling (English), Mongol khadran (Mongolian)



Global status: Vulnerable, B2ab(iii,v) ●●

Regional status: Vulnerable, B2ab(iii,v)

Rationale for assessment: Area of occupancy of spawning sites is less than 2,000 km² (Criterion B). This is divided into three locations – Khar Us Lake and Khovd River, Zavkhan River, Khar Lake and Teel River – based on sedimentation as the main threat (Criterion B). There is a decline in the quality of habitat due to sedimentation, and a decline in the number of individuals due to illegal fishing.

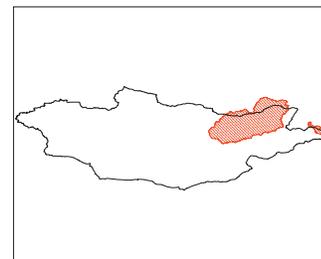
Global distribution: Mongolia.

Regional distribution: Khovd, Zavkhan and Bogd rivers, and Khar, Khar Us, Achit, Tolbo, Airag, Tal, Khoton, Horgon, Dayan and Huh lakes (Central Asian inland basin).

Dominant threats: Illegal fishing (commercial); habitat degradation (sedimentation and pollution) caused by climate change, overgrazing, road building, mining, and the construction of a power station on Chono haraih River between Khar Us and Khar lakes.

52. *Thymallus grubei* Dybowski, 1869

Common names: Amur grayling (English), Amaryn khadran (Mongolian)



Regional status: Endangered, B2ab(iii,v)

Rationale for assessment: Area of occupancy of spawning sites is less than 500 km² and there are fewer than five locations (Criterion B). There is a continuing decline in the number of individuals due to illegal fishing, and in habitat quality due to mining (Criterion B). Status does not change after applying regional criteria, as immigration from Russia is expected to decline, and the Mongolian population is not a sink population.

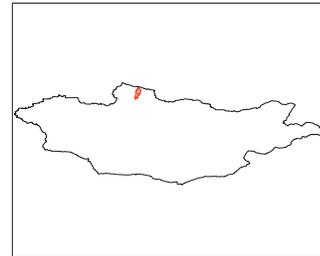
Global distribution: Amur River Basin (China, Russia, Mongolia).

Regional distribution: Kherlen, Onon and Khalkhin rivers; absent from Buir Lake (Amur drainage).

Dominant threats: Illegal fishing (commercial); habitat degradation caused by gold mining.

53. *Thymallus nigrescens* Dorogostaisky, 1923

Common names: Hövsgöl grayling (English), Hövsgöl khadran (Mongolian)



Global status: Endangered, B2ab(i,ii,iii,iv,v) ●●

Regional status: Endangered, B2ab(i,ii,iii,iv,v)

Rationale for assessment: Area of occupancy of spawning sites is less than 500 km², based on the 20 rivers that are still flowing at the time of spawning (Criterion B). There is a continuing decline in the extent of occurrence, the area of occurrence and number of locations due to the drying of spawning sites, and the species now occurs at fewer than five locations. There is also a decline in the number of individuals due to illegal fishing, which occurs at high levels during spawning.

Global distribution: Mongolia.

Regional distribution: Lake Hövsgöl and its associated rivers.

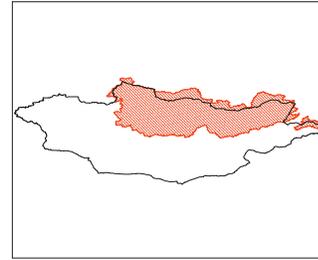
Dominant threats: Illegal fishing (commercial); habitat loss due to the drying of rivers.

Comments: The two forms of this species that occur in Hövsgöl Lake may be genetically distinct (Dulmaa, 1983; B. Mendsaikhan, pers. comm.).

Family Salmonidae

54. *Brachymystax lenok* (Pallas, 1773)

Common names: Lenok (English), Zeveg (Mongolian)



Regional status: Vulnerable, A3d

Rationale for assessment: This species has a wide distribution, and although it is locally threatened from illegal fishing and gold mining, there are no known widespread major threats. However, the prices paid for lenok are increasing as demand rises from Ulaanbaatar and China, and threats are expected to increase in the future. There is evidence that the population has started to decline, and it is suspected that it will decrease by at least 30% (Criterion A3) over the next 15 years (3 generations). Status does not change after applying regional criteria, because although the small amount of immigration currently occurring is expected to decrease, the Mongolian population is not a sink population.

Global distribution: Rivers draining to Arctic and Pacific oceans, from the Ob and Irtysh rivers to the Amur River Basin (China, Russia, Kazakhstan, Mongolia, Korea).

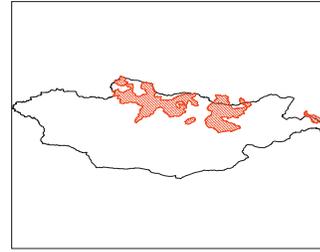
Regional distribution: Selenge, Orkhon, Eroot, Tuul, Delger Moron, Eg, Chuluut, Suman and Ider rivers, and Hövsgöl, Terkhiin Tsagaan, Ugii lakes and lakes of Darkhad Depression (Arctic drainage); Kherlen, Onon and Khalkhin rivers and Buir Lake (Amur drainage).

Dominant threats: Illegal fishing (commercial) and habitat degradation due to the use of heavy metals in gold mining; habitat loss due to gold mining.

Comments: Russian authors record two forms, pointed-snout and blunt-snout lenok, in the Amur drainage, and morphological and genetic data indicate that these are distinct species (Bogutskaya and Naseka, 2004). The pointed-snout lenok represents *B. lenok*, but the nomenclature of the blunt-snout lenok is not yet satisfactorily resolved; the name *B. tumensis* is presently used for this taxon, but this will probably be changed in the near future (Kottelat, in prep.).

55. *Hucho taimen* (Pallas, 1773)

Common names: Taimen (English), Tul (Mongolian)



Regional status: Endangered, A2de and A3de and B2ab(iii,v)

Rationale for assessment: Taimen distribution has decreased by about 60% since 1985 (21 years or three generations), suggesting a population decrease of 50%. There are continuing declines in the quality of habitat due to mining, and in the number of mature individuals. It is suspected that the population will decrease by over 60% in the next 20 years as demand increases from China and Russia and from non-catch and release angling (Criterion A). The species has an area of occupancy of less than 500 km² based on spawning grounds, and occurs at fewer than five locations based on the threat of illegal fishing (Criterion B). Status does not change after applying regional criteria, because although there may be some immigration, this is expected to decrease because of pollution and illegal fishing in Russia, and the Mongolian population is not a sink population.

Legal status: Listed as Rare under the Mongolian Law on Fauna, although it remains possible to obtain fishing licenses for the species (Wingard and Odgerel, 2001).

Global distribution: Ob to Lena river basins (Russia), Okhotsk Sea Basin to Amur River Basin (China, Russia, Mongolia), western upper tributaries of Pechora River (Russia), Kama River (Russia and Kazakhstan).

Regional distribution: Shikhed, Eg, Uur, Delger Moron, Ider, Chuluud, Eroo, Selenge, Orkhon, and Tuul rivers, and Darkhad Depression (Arctic drainage), and Onon, upper Kherlen and Khalkhin rivers (Amur drainage).

Dominant threats: Illegal fishing (commercial); habitat degradation due to overgrazing, the use of heavy metals in gold mining, and organic pollution from sewage; habitat loss due to gold mining.

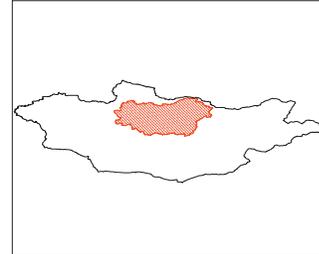
Order Esociformes

Family Esocidae

56. *Esox lucius* Linnaeus, 1758

Common names: Pike (English), Erdiin tsurkhai (Mongolian)

Synonyms: *Lucius lucius*



Regional status: Least Concern

Rationale for assessment: This species has a large population and distribution, and although it is locally threatened by gold mining it has no widespread threats.

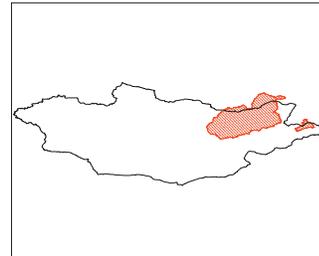
Global distribution: United Kingdom and France across Europe to Russia, China and North America. Introduced into Ireland and Africa.

Regional distribution: Selenge River Basin, including Terkhiin Tsagaan and Ugii lakes (Arctic drainage).

Dominant threats: Habitat loss due to water regulation and gold mining.

57. *Esox reichertii* Dybowski, 1869

Common names: Amur pike (English), Amaryn tsurkhai (Mongolian)



Regional status: Least Concern

Rationale for assessment: There are no known widespread major threats to this species. It is probably being locally over fished in Buir Lake, but this commercial fishery is unlikely to move into the rivers.

Global distribution: Amur River drainage (China, Russia, Mongolia).

Regional distribution: Onon, Kherlen and Khalkhin rivers and Buir Lake (Amur drainage).

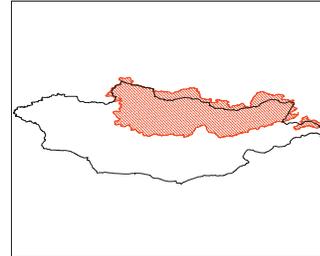
Dominant threats: Illegal fishing (commercial); habitat loss due to decreasing water levels in Buir Lake.

Order Gadiformes

Family Lotidae

58. *Lota lota* (Linnaeus, 1758)

Common names: Burbot (English), Gutaar (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

Global distribution: Western Europe (France, Germany) to the Lena river drainage (Russia) and North America.

Regional distribution: Buir Lake and Khalkhin river (Amur drainage), and the Selenge and Orkhon river basins, Shiskhed river, and Hövsgöl, Ugii and Terhiyn Tsagaan lakes (Arctic drainage).

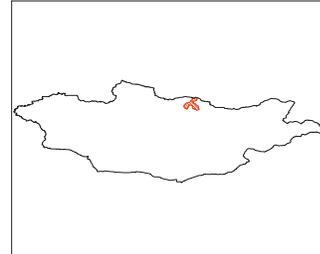
Dominant threats: Illegal fishing (commercial).

Order Scorpaeniformes

Family Cottidae

59. *Cottus sibiricus* Kessler, 1889

Common names: Siberian sculpin (English), Shiwer ereen jiwert (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on the distribution of this species in Mongolia.

Global distribution: Ob to Yana river basins (Russia, Mongolia).

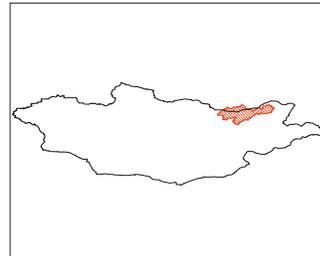
Regional distribution: Lower reaches of Orkhon River and possibly Selenge River (Arctic drainage).

Dominant threats: Unknown.

60. *Cottus szanaga* Dybowski, 1869

Common names: Amur sculpin (English), Amariin ereen jiwert (Mongolian)

Previous Mongolian names: *Cottus poecilopus*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

Global distribution: Amur River Basin (China, Russia, Mongolia), Siberia.

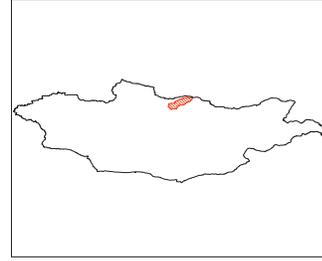
Regional distribution: Onon River Basin (Amur drainage).

Dominant threats: Possibly locally threatened by gold mining.

61. *Leocottus kesslerii* (Dybowski, 1874)

Common names: Kessler's sculpin (English), Elsnii eren jiwert (Mongolian)

Synonyms: *Paracottus kesslerii*



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

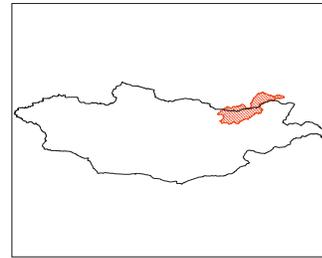
Global distribution: Russia, Mongolia.

Regional distribution: Found once in lower Selenge River. Nearby populations occur in upper Selenge River and Lake Baikal (Russia).

Dominant threats: Unknown.

62. *Mesocottus haitej* (Dybowski, 1869)

Common names: Haitej sculpin (English), Zantgar zagas (Mongolian)



Regional status: Data Deficient

Rationale for assessment: Inadequate information on distribution, population size and trends, or the impact of threats.

Legal status: Listed as Very Rare under the Mongolian Law on Fauna.

Global distribution: Amur River Basin (Russia, Mongolia, China), Sakhalin Island (Russia).

Regional distribution: Onon River Basin (Amur drainage).

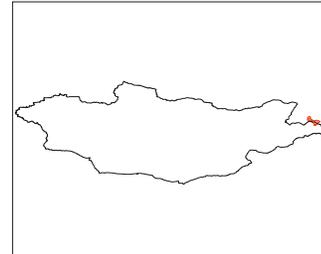
Dominant threats: Habitat degradation due to the use of heavy metals in gold mining; habitat loss due to gold mining.

Order Perciformes

Family Odontobutidae

63. *Percottus glenii* Dybowski, 1877

Common names: Amur sleeper (English), Togtmoliin tsookhloi (Mongolian)



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.

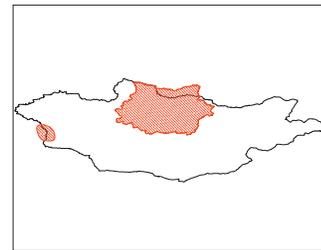
Global distribution: Amur River Basin (China, Russia, Mongolia, Korea).

Regional distribution: Khalkhin River (Amur drainage).

Dominant threats: None.

64. *Perca fluviatilis* Linnaeus, 1758

Common names: Perch (English), Algana (Mongolian)



Regional status: Least Concern

Rationale for assessment: This species has a wide distribution and a stable population despite current fishing pressure, there is no suspicion that it will decline in the future.

Global distribution: Western Europe to the Kolyma River Basin (Russia). Introduced into Australia, New Zealand and South Africa.

Regional distribution: Selenge River Basin and Ugi, Terhiyn Tstagann and Hövsgöl lakes (Arctic drainage), and Bulgan River Basin.

Dominant threats: Increase in illegal fishing (commercial).

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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%
A1. 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 A1			
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 A1.			
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 A1.			
B. Geographic range in the form of either B1 (extent or occurrence) OR B2 (area or occupancy)			
B1. Extent of occurrence	< 100 km ²	< 5,000 km ²	< 20,000 km ²
B2. Area of occupancy	< 10 km ²	< 500 km ²	< 2,000 km ²
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 km ² 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 Mongolian Biodiversity Databank Workshop.

<i>Scientific name</i>	<i>Common name</i>	<i>Regional assessment</i>	<i>Global assessment</i>
PETROMYZONTIFORMES			
Petromyzontidae			
<i>Lethenteron reissneri</i> (Dybowski, 1869)	Eastern brook lamprey	Not Applicable	Not Evaluated
ACIPENSERIFORMES			
Acipenseridae			
<i>Acipenser baerii</i> Brandt, 1869	Siberian sturgeon	Critically Endangered, B2ab(iii,v)	Vulnerable A2d
<i>Acipenser schrenkii</i> Brandt, 1869	Amur sturgeon	Data Deficient	Endangered, A1acd and A2d
CYPRINIFORMES			
Balitoridae			
<i>Barbatula dgebuadzei</i> (Prokofiev, 2003)	Gobi loach	Endangered, B2ab(iii)	Endangered, B2ab(iii) ●●
<i>Barbatula toni</i> (Dybowski, 1869)	Siberian stone loach	Least Concern	Not Evaluated
<i>Lefua costata</i> Kessler, 1876	Lefua	Not Applicable	Not Evaluated
<i>Triplophysa gundriseri</i> Prokofiev, 2002	Tes Gol loach	Data Deficient	Not Evaluated
Cobitidae			
<i>Cobitis melanoleuca</i> Nichols, 1925	Siberian spiny loach	Least Concern	Not Evaluated
<i>Misgurnus mohoity</i> (Dybowski, 1869)	Amur weather loach	Least Concern	Not Evaluated

<i>Scientific name</i>	<i>Common name</i>	<i>Regional assessment</i>	<i>Global assessment</i>
Cyprinidae			
<i>Acheilognathus asmussi</i> (Dybowski, 1872)	Amur spiny bitterling	Near Threatened	Not Evaluated
<i>Carassius carassius</i> (Linnaeus, 1758)	Crucian carp	Not Applicable	Not Evaluated
<i>Carassius gibelio</i> (Bloch, 1782)	Prussian carp	Least Concern	Not Evaluated
<i>Chanodichthys erythropterus</i> (Basilewsky, 1855)	Red-fin culter	Not Applicable	Not Evaluated
<i>Chanodichthys mongolicus</i> (Basilewsky, 1855)	Mongolian culter	Not Applicable	Not Evaluated
<i>Culter alburnus</i> Basilewsky, 1855	White culter	Not Applicable	Not Evaluated
<i>Cyprinus rubrofasciatus</i> Lacépède, 1803	Asian common carp	Not Applicable	Not Evaluated
<i>Eupallasella percnurus</i> Pallas, 1814	Lake minnow	Data Deficient	Data Deficient
<i>Gnathopogon strigatus</i> (Regan, 1908)	Manchurian gudgeon	Not Applicable	Not Evaluated
<i>Gobio acutipinnatus</i> Menschikov, 1939	Irtys gudgeon	Not Applicable	Not Evaluated
<i>Gobio cynocephalus</i> Dybowski, 1869	Dog-faced gudgeon	Data Deficient	Not Evaluated
<i>Gobio soldatovi</i> Berg, 1914	Amur gudgeon	Data Deficient	Not Evaluated
<i>Gobio tenuicorpus</i> Mori, 1934	Eastern whitefin gudgeon	Not Applicable	Not Evaluated
<i>Hemibarbus labeo</i> (Pallas, 1776)	Horse gudgeon	Data Deficient	Not Evaluated
<i>Hemibarbus maculatus</i> Bleeker, 1871	Spotted horse gudgeon	Data Deficient	Not Evaluated
<i>Hemiculter leucisculus</i> (Basilewsky, 1855)	Hemiculter	Not Applicable	Not Evaluated
<i>Ladislavia taczanowskii</i> Dybowski, 1869	Sharp-jawed minnow	Data Deficient	Not Evaluated
<i>Leuciscus baicalensis</i> (Dybowski, 1874)	Siberian dace	Least Concern	Not Evaluated

<i>Scientific name</i>	<i>Common name</i>	<i>Regional assessment</i>	<i>Global assessment</i>
<i>Leuciscus dzungaricus</i> Koch and Paepke, 1998	Dzungarian dace	Endangered, B1ab(v) and B2ab(v)	Not Evaluated
<i>Leuciscus idus</i> (Linnaeus, 1758)	Ide	Near Threatened	Not Evaluated
<i>Leuciscus waleckii</i> (Dybowski, 1869)	Amur ide	Data Deficient	Not Evaluated
<i>Microphysogobio tungtingensis</i> (Nichols, 1926)	Buir gudgeon	Data Deficient	Not Evaluated
<i>Oreoleuciscus angusticephalus</i> Bogutskaya, 2001	Lake osman	Vulnerable, B1ab(v)	Vulnerable, B1ab(v) ●●
<i>Oreoleuciscus humilis</i> Warpachowski, 1889	Small osman	Vulnerable, B2ab(ii,iii,iv,v)	Not Evaluated
<i>Oreoleuciscus potanini</i> (Kessler, 1879)	Potanin's osman	Least Concern	Not Evaluated
<i>Phoxinus phoxinus</i> (Linnaeus, 1758)	Common minnow	Least Concern	Not Evaluated
<i>Pseudaspius leptcephalus</i> (Pallas, 1776)	False asp	Data Deficient	Not Evaluated
<i>Pseudorasbora parva</i> (Temminck and Schlegel, 1846)	Pseudorasbora	Data Deficient	Not Evaluated
<i>Rhodeus sericeus</i> (Pallas, 1776)	Amur bitterling	Data Deficient	Not Evaluated
<i>Rhynchocypris czekanowskii</i> (Dybowski, 1869)	Siberian minnow	Data Deficient	Not Evaluated
<i>Rhynchocypris lagowskii</i> (Dybowski, 1869)	Eastern Siberian minnow	Data Deficient	Not Evaluated
<i>Rutilus rutilus</i> (Linnaeus, 1758)	Roach	Least Concern	Not Evaluated
<i>Sarcocheilichthys soldatovi</i> (Berg, 1914)	Amur marble gudgeon	Not Applicable	Not Evaluated
<i>Saurogobio dabryi</i> Bleeker, 1871	Lizard gudgeon	Not Applicable	Not Evaluated
<i>Squalidus chankaensis</i> (Dybowski, 1872)	Khanka gudgeon	Not Applicable	Not Evaluated
<i>Tinca tinca</i> (Linnaeus, 1758)	Tench	Not Applicable	Not Evaluated

<i>Scientific name</i>	<i>Common name</i>	<i>Regional assessment</i>	<i>Global assessment</i>
SILURIFORMES			
Siluridae			
<i>Silurus asotus</i> Linnaeus, 1758	East Asian catfish	Least Concern	Not Evaluated
SALMONIFORMES			
Coregonidae			
<i>Coregonus chadary</i> Dybowski, 1869	Chadary	Data Deficient	Not Evaluated
<i>Coregonus migratorius</i> (Georgi, 1775)	Omul	Data Deficient	Not Evaluated
<i>Coregonus pidschian</i> (Gmelin, 1788)	Pidschian	Endangered, B2ab(iii,v)	Data Deficient
Thymallidae			
<i>Thymallus arcticus</i> (Pallas, 1776)	Arctic grayling	Near Threatened	Not Evaluated
<i>Thymallus brevirostris</i> Kessler, 1879	Mongolian grayling	Vulnerable, B2ab(iii,v)	Vulnerable, B2ab(iii,v) ●●
<i>Thymallus grubei</i> Dybowski, 1869	Amur grayling	Endangered, B2ab(iii,v)	Not Evaluated
<i>Thymallus nigrescens</i> Dorogostaisky, 1923	Hövsgöl grayling	Endangered, B2ab(i,ii,iii,iv,v)	Endangered, B2ab(i,ii,iii,iv,v) ●●
Salmonidae			
<i>Brachymystax lenok</i> (Pallas, 1773)	Lenok	Vulnerable, A3d	Not Evaluated
<i>Hucho taimen</i> (Pallas, 1773)	Taimen	Endangered, A2de and A3de and B2ab(iii,v)	Not Evaluated

<i>Scientific name</i>	<i>Common name</i>	<i>Regional assessment</i>	<i>Global assessment</i>
ESOCIFORMES			
Esocidae			
<i>Esox reichertii</i> Dybowski, 1869	Amur pike	Least Concern	Not Evaluated
GADIFORMES			
Lotidae			
<i>Lota lota</i> (Linnaeus, 1758)	Burbot	Data Deficient	Not Evaluated
SCORPAENIFORMES			
Cottidae			
<i>Cottus sibiricus</i> Kessler, 1889	Siberian sculpin	Data Deficient	Not Evaluated
<i>Cottus szanaga</i> Dybowski, 1869	Amur sculpin	Data Deficient	Not Evaluated
<i>Leocottus kesslerii</i> (Dybowski, 1874)	Kessler's sculpin	Data Deficient	Not Evaluated
<i>Mesocottus haitej</i> (Dybowski, 1869)	Haitej sculpin	Data Deficient	Not Evaluated
PERCIFORMES			
Odontobutidae			
<i>Perccottus glenii</i> Dybowski, 1877	Amur sleeper	Not Applicable	Not Evaluated
<i>Perca fluviatilis</i> Linnaeus, 1758	Perch	Least Concern	Not Evaluated

List 2: Possible or newly identified species occurring within Mongolia.

<i>Scientific name</i>	<i>Common name</i>
CYPRINIFORMES	
Cyprinidae	
<i>Hemiculter varpachovskii</i> Nikolskii, 1903	Buir hemiculter
<i>Micophysiogobio anudarini</i> Holcík and Pivnicka, 1969	
<i>Phoxinus ujmonensis</i> Kashenko, 1899	
