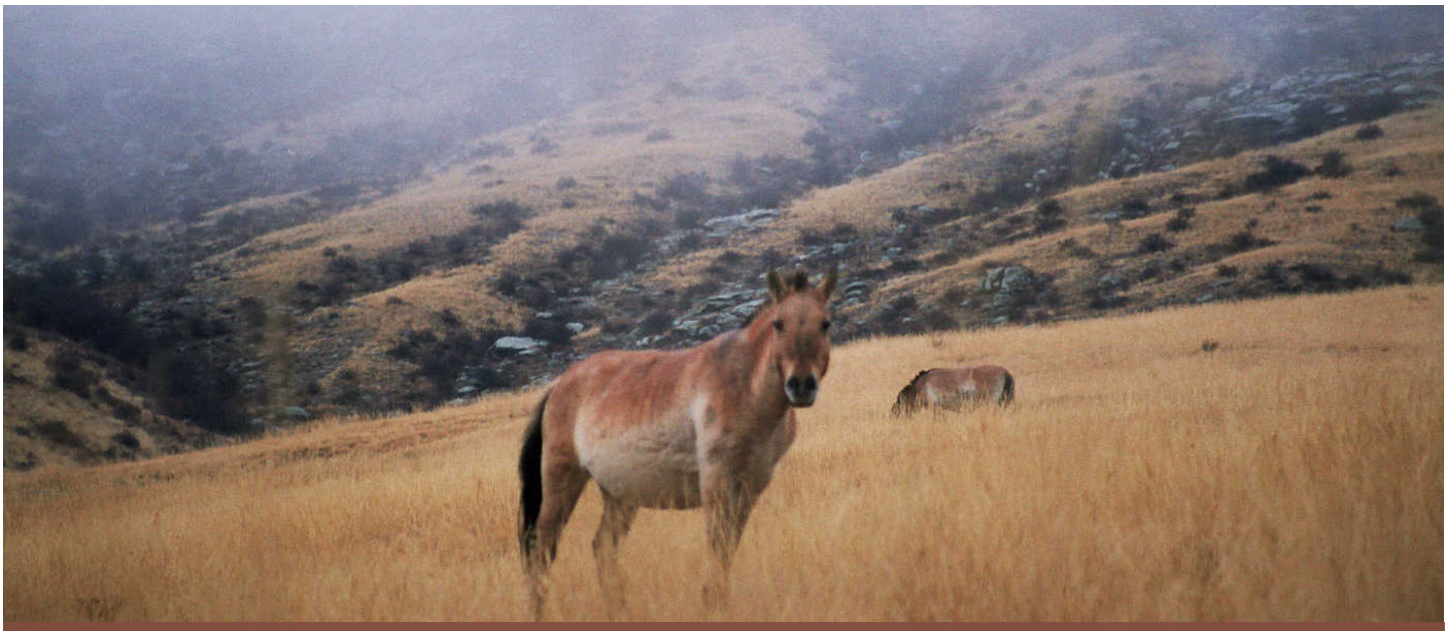
UN environment programme
CMS
Fact Sheet
Convention on the Conservation of Migratory Species of Wild Animals



THE EURASIAN STEPPE & CLIMATE CHANGE

The Eurasian Steppe and its many species are facing serious threats due to climate change – Photo: Przewalski´s Horse © Bouette

ABOUT THE EURASIAN STEPPE

The Eurasian Steppe is characterized by its dry, grassy plains, which are found in climates with distinct seasonal changes including cold dry winters and warm summers. The eco-region is bordered by the Tibetan Plateau to the south and the forests of Siberia to the north, containing parts of China, Kazakhstan, Mongolia and the Russian Federation. The region is semi-arid meaning that it receives limited rainfall in the short summer season, restricting the growth of trees and other woody species. These grasslands are dominated by five types of grass including *Stipa krylovii* and *Stipa grandis*. Grass species are amongst other shrubs and forbs that support grazing migratory species listed under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) such as the Przewalski´s Horse (*Equus ferus przewalskii*), the Saiga Antelope (*Saiga tatarica*) and the Mongolian Gazelle (*Procapra gutturosa*). Also supported by this eco-region are other CMS-listed species such as the Steppe Eagle (*Aquila nipalensis*), the Eastern Imperial Eagle (*Aquila heliaca*) and the Lesser Kestrel (*Falco naumanni*).

One of the largest terrestrial eco-regions on Earth, the Eurasian Steppe has a strong cultural and historical importance. The traditional use of steppe land was nomadic pastoralism, where families migrated in search of fresh rangeland for their livestock. The presence of large wetlands and flood plains has also been a key element to life for humans and wildlife in these areas. Although these areas are still utilized for nomadic pastoralism, their conversion into croplands has been occurring for several decades and is an enduring issue in this region.

Threats due to climate change

The grasslands of the Eurasian Steppe experience highly variable long-term and seasonal climatic conditions. This variability increases the vulnerability of these ecosystems to the effects of climate change. The area is predicted to experience increased temperatures, increased levels of atmospheric CO_2 and decreased levels of precipitation. Experiments and models that have simulated the effect that these conditions will have on grasslands in the Eurasian Steppe indicate that the net primary productivity of vegetation will decrease by around 22 per cent. This can lead to lower pasture availability for wild and domestic foragers such as the Saiga Antelope and the cattle of nomadic human populations. The competition for resources between cattlemen and wild species is expected to intensify, reducing the habitats of many species, the survival of which is already being threatened by other pressures.

Rising temperatures and reduced precipitation levels have also been affecting these grassland and floodplain habitats through the increased frequency and intensity of wildfires. These fires could lead to a reduction in tall herbaceous and floodplain vegetation, ultimately exposing any understorey moisture to the sun and rapid evaporation. This also contributes to the severe desiccation of aquatic habitats, especially during dry periods. Fires occurring in the northern regions of the Eurasian Steppe also alter and damage pine forest habitats. The boundary of these forests will eventually be pushed further north, reducing the amount of habitat for those species occupying them.

Northern regions of the Eurasian Steppe contain soils that are frozen at a certain depth for the entire year, commonly known as permafrost. These soils typically contain high amounts of soil organic matter. The southernmost boundaries of these regions that contain permafrost have been migrating northward in recent years. While temperatures have been rising in the Eurasian Steppe, so soils have been warming as well, resulting in the degradation of permafrost and the soil organic matter that it holds. This process drastically alters the productivity of the soil and ecosystem. In addition, the degradation of this soil organic matter results in the release of CO_2 to the atmosphere, further contributing to climate change.

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Threats due to climate change

The aquatic habitats and water resources in the Eurasian Steppe are also negatively affected by climate change. Humidification cycles of up to 30 years that involve wet and dry periods have shaped aquatic habitats for as far as records go back. The dry periods of these cycles commonly result in the complete desiccation of streams, rivers, springs and, in some cases, entire lakes. Furthermore, these cycles can result in habitat alteration and in some cases complete disappearance. The dramatic effects of climate change have resulted in the dry periods of these cycles being more intense and longer lasting in recent years. The ecological consequences of this phenomenon include the loss of aquatic habitat for many species and the salinization of those waterbodies that reappear after the dry period. High numbers of aquatic species have completely disappeared from entire regions due to both phenomena, including the Golden Carp which now exists in only one lake in the region. Potential decreases of drinking water sources for terrestrial mammals is an additional concern.

The size and number of waterbodies are crucial resources for migratory waterbirds. Numerous bird species pass through regions of the Eurasian steppe and without these habitats the success of their long journey is threatened. Because of climate change, the reduction in fish stocks and other necessary factors needed for nesting has already led to the disappearance of bird species from their traditional sites. Species such as the Grey Heron (*Ardea cinerea*), the Herring Gull (*Larus argentatus*) and the Caspian Tern (*Hydroprogne caspia*) are among many birds that have lost their habitats due to the reduced amount of wetland habitats. The shifting of migration routes also threatens the viability of alternative habitats as they are not adapted to host such large populations of migratory birds.

Photos: Climate change leads to complete desiccation of rivers and streams © distantimages; Pochards and Wigeon © Sergey Yeliseev

About CMS

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, works for the conservation of a wide array of endangered migratory animals worldwide through negotiation and implementation of agreements and species action plans. It has 130 Parties (as of 1 February 2020).

CMS engages all relevant stakeholders in addressing threats to migratory species in concert with all other aspects of wildlife conservation and management.

CMS Instruments

Animals receive protection under CMS through listing on its two Appendices, through global or regional agreements and through action plans.

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