

Mongolia (Republic of)

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Location and area

Mongolia is a nation in Central Asia, bordered on the north by Russia and on the east, south, and west by China. The country has a total area of 1,566,500 km². (Microsoft Encarta Encyclopedia 2002).

Topography

The topography of Mongolia consists mainly of a plateau between 900 and 1,500 m in elevation broken by mountain ranges in the north and west. The Altai Mountains in the southwest rise to heights above 4,200 m. The Gobi desert covers a wide tract in the central and southeastern areas.

The most important rivers in Mongolia are the Selenga and its tributary, the Orhon, in the north. Large lakes include the Har Us, Hyargas, Uvs, and Hövsgöl. (Microsoft Encarta Encyclopedia 2002).

Climate

Mongolia's climate is harsh, with temperatures ranging between -15° and -30° C in winter and 10° and 27° C in summer. Winters are dry, and summer rainfall seldom exceeds 380 mm in the mountains and 125 mm in the desert. (Microsoft Encarta Encyclopedia 2002).

Land use

Rich steppe land in the northeast and northwest supports large numbers of cattle, sheep, and goats (Microsoft Encarta Encyclopedia 2002).

Peatlands

Katz (1971) reports on a peatland area of 20 to 30 km², with a peat thickness of usually 30-35 (70) cm.

Hilbig (1990, 1995) describes a *Betula fuscae-Laricetum* vegetation on peat soils in valleys that are provided with water from the valley slopes. Extensive peat formation is caused by permafrost in the Han-Höhiy area, in the Uvs-nuur depression, and at the Tesiyn-gol. Vast *Betula fusca* shrubland occurs on peat soils in wide valleys in the lower mountain belt in northern Mongolia. These are probably degraded forms of the *Betula fuscae-Laricetum*. This vegetation degrades further, by grazing and word cutting, into hummocky wet meadows ("bugri") (Succow & Kloss 1978).

Other peat deposits may be present in reeds in lakes, oxbow lakes, backwaters and springs. *Phragmites* reeds are abundant in the Great Lakes Basin (especially Har-us-nuur, Har-nuur, and Uvs-nuur) and in the Gobi Lakes Valley. Extensive reeds of *Typha angustata* are present in the Bayan-nuur area, west of Ulan Baator. From the Höch-nuur (Southeast Henteiy) floating mats of *Glyceria triflora* and of *Carex globularis-C. vesicata* are reported, the latter intermixed with *Lysimachia thyrsoiflora*, *Menyanthes trifoliata*, *Cicuta virosa* and *Carex*

diandra. Direct adjacently, stands of *Carex diandra* can be found. In the Hovd-gol floodplain near Hovd, sedge reeds have developed in depressions and cut-off river meanders. The more level sections of the Bogd-uul near the upper timberline have favoured the development of extensive *Carex canescens* mires can be found on peaty golets soils. The frozen soil only thaws superficially and causes water stagnation and peat formation. A similar situation was noted on the subalpine and alpine plateaus in the Hangay (Haase et al. 1964)

Carex-Eriophorum mires have developed where water runs through peaty valleys with permafrost soils (cryic histosols), e.g. in the southern Hentey (Hilbig 1990, 1995). *Sphagnum* bogs with *Oxycoccus microcarpus*, *Drosera anglica*, *D. rotundifolia*, and *Scheuchzeria palustris* have only been observed in the northwestern Hentey.

According to the interpreted World Soil Map (Van Engelen & Huting 2002) no histosols exist in Mongolia and 7,183 km² of gley soils.

Minaeva et al. (2003) report on descriptions of Mongolian peatlands in the literature, like in the overview of Central Asian mountain sedge mires by E. Lavrenko (1956) or in vegetation studies of Mongolia presented by A. Yunatov (1950). There are also some modern publications on floristic findings of mire species mainly of vascular plants. A few paleoecological studies were done based on peat material. No special concern was given to Mongolian peatlands in connection to their functions, threats to them, perspectives of their conservation and wise use.

To cover these gaps Global Peatland Initiative in frame of its DGIS programme had granted the project submitted by Botanical Institute of Mongolian Academy of Sciences (BI MAS) and aimed on the inventory of Mongolian peatlands with the following main objectives: to estimate peatland's distribution on the scale of the country; to make detailed field mapping of peatlands of key regions; to define main threats for peatlands on the national regional and local levels. Prof. Dugardjav Chultemin director of BI MAS and head of the Mongolian part of RMBE leads the project.

In a field survey (July-August 2003) an amazing diversity and amount of peatlands were found in different regions of Mongolia: sedge fens with brown mosses in river valleys and intermontane depressions; sedge-cotton grass fens on permafrost; the blanket bogs of the steep river valleys with shrubs; blanket bogs on mountain heights (2500-3200 m) with sphagnum and/or brown mosses and arctic sedges, pillows and dwarf shrubs. In the taiga zone of the Khentay Mountains oligotrophic raised bogs with peat layer up to 4-5 meters were found and paludified coniferous forests with shallow peat on long gentle slopes, paludified birch mesotrophic forests, with sedges, dwarf shrubs, with brown mosses (in flat river valleys) and sphagnum (higher in the mountains). In the forest-steppe zone of the Khentey Mountains fens with birch and dwarf willows, tall sedges, brown mosses, as well as spring mires with very high floristic diversity could be found.

Mire and peatland losses

Grazing has caused the retreat of many reed marshes in the West-Mongolian floodplains to give way to Nymphoidetum communities and to rushes and spine rushes (Hilbig 1995).

The role of peatlands in hydrology on a continental scale (Yenisej River, Lake Baikal), in maintenance of water resources and productivity of pastures is underestimated in Mongolia. At the same time the peatlands are considerably affected by day to day land use activities. The main direct threats for Mongolian peatlands are grazing, gold mining, and in piedmont regions of the northern Khentay Mountains – plugging.

Peatlands are one of the most productive pastures in Mongolia. No sedge fens in river valleys are left without use now. Too much extent the economic development of Mongolia during the last 10 years was based on stimulating of private cattle husbandry: a herd of 1000 contingent sheep is tax-free. A number of publications demonstrate the losses of productivity in Mongolian pastures, which are mainly wetlands and peatlands. Currently attempts to introduce the wise use principles to wetland/peatland pastures are undertaken within WWF Altay-Sayan project activity in the Har Us Nuur National Park, Hovd province (Western Mongolia), which is designated as Ramsar site (1999).

The other significant threat is gold mining in the northern parts of Mongolia, especially in the Khentay Mountains. The majority of small rivers of Khentey under gold mining have their origin in the raised bogs (2000 m a.s.l. and higher) passing through paludified valleys covered by coniferous forests with willows, tall sedges, grasses and sphagnum mosses. These communities with very high natural biodiversity and landscape attractiveness are mostly destroyed now.

Recent climate change plays a significant negative role in Mongolian peatlands development. The last 10 dry years, and especially in 2000-2002, combined with overgrazing and man induced fires lead to the losses of vast peatland areas. Strongly affected by droughts they change to meadows and steppe ecotypes. Degraded peatlands as a consequence of last year's situation include the thousands of hectares of former fens in Orchon River valley, Ider valley and Darchat intermontane basin. The typical hummock hollow relief is still there with up to 50-60 cm sedge fen peat layer in hollows. At the same time hummocks are covered with steppe vegetation or denude. Large flat areas here present denude dry peat without vegetation except champignons. During storm rainfalls peat material is moved from such places downhill stimulating quick disappearance of peatland ecotopes from a landscape. Old maps, native population and existing literature data described these areas as covered with vast mires, very wet and impassable. **Lavrenko** (1956) described very wet rich fens with peat and tall sedges covering the Orchon River valley, but only remains of those landscapes are left (Minaeva et al. 2003).

Still to be checked:

Michael Succow

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