THE GLOBAL DISTRIBUTION OF PEAT

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Summary

Due to the variable extent to which peatland has been investigated, variation in the amount of interest in and use of peat, and lack of standardization in statistics, the peatland areas reported by different countries or experts do not always agree. The global distribution of peatland demonstrates fairly clear zonality, but because of the shape and distribution of the Earth's land masses, their topography and geological conditions, etc, this pattern becomes fragmented and irregular.

Reviewing the area of peatland and the peat reserves in different continents, it is clear that the global distribution of peat is very uneven. The peatland area in North America is the largest accounting for 43.54% of the total global peatland area, followed by Asia (28.08%) and Europe (24.02%). The total global peatland area is estimated to be about 4 x 10^6 km^2. The peat reserve in Asia is the highest; next is Europe, then North America, and Oceania is the lowest. The total global peat reserve amounts to about 250 Gt dry weight.

1. Introduction

Due to the different degrees to which peatland has been studied, the different uses which have been made of peat resources, and the lack of standardization in statistics, there is little general agreement over national or global figures for peatland areas (see Table 1). In 1921, Bulow estimated the total global area to be 1.1×10^6 km^2. Nikonow, in 1964, estimated it to be 1.12×10^6 km^2 (excluding bogs with a peat layer of less than 0.5 m). At the Third International Peat Congress (IPC) in 1969, Tibbets' estimation was 1.5×10^6 km^2. In 1974 Moore and Bellamy estimated it to be at least 2.3 $\times10^6$ km^2. Kivinen, at the Sixth IPC in 1980, estimated it to be at least to be 4.2×10^6 km^2, including the previously neglected tropical peatland. In 1984 Bord Na Mona (the Irish Peat Exploitation Bureau) agreed with the figure of 4.2×10^6 km^2 in their report *Peat Fuel in Developing Countries*. From 1982 to 1989, other experts estimated the global peatland area to be 5.0 to 5.57 $\times10^6$ km^2, but this includes mires without peat. In 1996, Lappalainen, in collaboration with 68 peat scientists in different countries, produced a report entitled *Global Peat Resources.* Their figure for the total area of the global peatland resource, which is believed to be more accurate than any before, was 3.985 $\times10^6$ km^2. Inevitably, a large part of the reason for the differences between the figures from the various studies is attributable to definition, i.e. what qualifies as peatland and what doesn't. In most cases the discrepancies arise as a consequence of differences in the minimum thickness of the peat layer—the normal criterion for determining whether an area should be regarded as peatland.

Author	Year	Area (million ha)
Bulow	1929	110
Nikonow and Sluka	1964	112
Tibbets	1969	150
Moore and Bellamy	1974	230
Kivinen and Pakarinen	1980	420
BORD NA MONA	1984	420
Heikurainen	1982	500
Nasa	1987	530 (wetlands)
Mathews and Fung	1987	526 (wetlands)
Maltby	1988	500 (wetlands)
Aselman and Crutzen	1989	557 (wetlands)
Lappalainen	1994	398.5

Source: E. Lappalainen 1996, Bord Na Mona 1988, and M.N. Nikonov et al. 1964.

Table 1. Different authors' estimation of global peatland areas

Clearly, from the area of peatland in different continents, global peatland is distributed very unevenly, with North America (which accounts for 43.5% of the total peatland area) taking the first place, followed by Asia (28%) and Europe (24%) (see Table 2). The area of peatland in the northern hemisphere accounts for 95.63% of the total, while the southern hemisphere accounts for less than 5%.

Continent	**Country**	**Peatland area, km^2**	
		1	**2**
North America	Canada	611,000	596,400
	U.S.A	1,114,000	1,500,000
	Mexico	10,000	
	total	1,735,000	2,096,400
Asia	Russia (Asian part)	760,000	
	Indonesia	270,000	170,000
	Malaysia	25,364	25,000
	Iraq	17,900	
	China	10,441	42,000
	Burma	9,650	
	Others	25,645	
	total	1,119,000	248,865
Europe	Russia (European part)	600,000	1,500,000 (former Soviet Union)
	Sweden	103,790	70,000
	Finland	89,200	104,000
	Belarus	29,390	
	Norway	23,700	30,000
	Great Britain	17,549	15,800
	Germany	14,205	15,990
	Poland	12,050	13,000
	Ireland	11,757	10,000
	Estonia	10,091	
	Ukraine	10,080	
	Iceland	10,000	11,800
	Others	25,188	
	total	957,000	1,779,439
Central and South America	Brazil	35,000	15,000
	Caribbean	2,700	
	Falkand/Malvinas Is.	11,510	
	Chile	10,470	10,470
	Venezuela	10,000	10,000
	Others	8,020	51,500
	total	102,000	86,970
Africa	Uganda	14,200	14,200
	Zambia	11,060	11,060
	South Africa	9,500	
	Nigeria	7,000	
	Others	16,240	23,305
	total	58,000	48,565
Australia and Oceania		14,000	1,650
Global		3,985,000	4261889

1. Source E.Lappalainen 1996

2. Source Bord na Mona 1984

Table 2. The distribution of peatland in the world

2. Distribution Pattern of Global Peatland

The distribution of global peatland demonstrates clear zonality, but the distribution of the Earth's land masses, their topography and geological conditions, etc. creates a degree of disturbance to the regularity. Each continent therefore has its own characteristic distribution of peatland. A simplified distribution of global peatland is shown in Figure 1, which is based on the work of M.N. Nikonov in 1964. This shows accumulation intensity of global peatland, divided into four principal zones, from the high latitudes to the low latitudes, in different climatic zones:

- Extensively distributed and weakly accumulated peat in the polar zone,
- Strongly accumulated peat in the temperate zone,
- Weakly accumulated peat in the tropical and subtropical zones, and
- Weakly accumulated peat in the tropical rainforest zone.

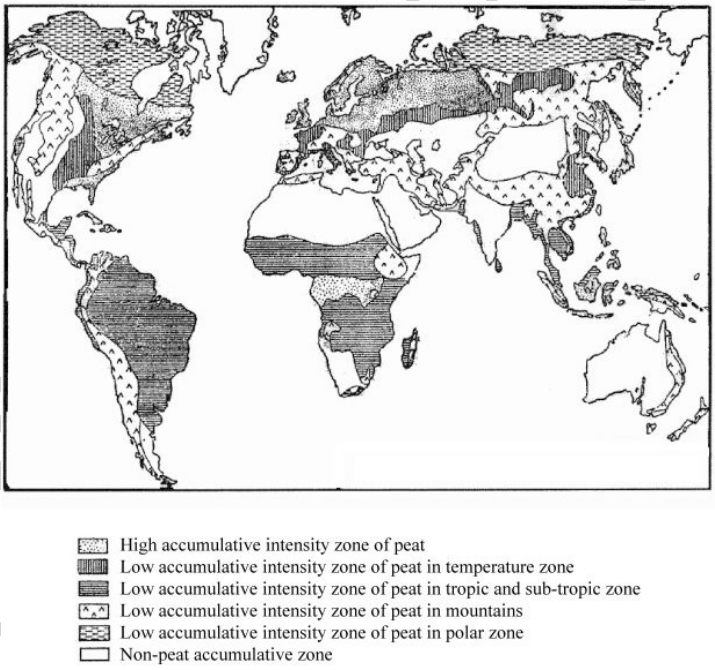

Figure 1. Distribution of global peatlands, according to accumulation intensity

The northern hemisphere has a very large land area in the temperate climatic region in the middle and high latitudes. Here the climatic conditions are generally cold and humid or mild and humid—very suitable for strong accumulation of peat. The zonality of peat distribution in the northern hemisphere is clearer than that in the southern hemisphere. Mountain ranges have an important influence on peat distribution, and they play a more dominant role in the southern hemisphere. In Antarctica the low temperature and the limit of permanent snow and ice impose severe limitations on peat formation and development.

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Biographical Sketches

Liu Zigang was born in 1971. She obtained a bachelor's degree in geography at Northeast Normal University in 1992, and a master's degree in environmental science from the same university in 1997. She now undertakes teaching and research work there, in the field of environmental geography. She has published several papers on utilization of peat, in Chinese journals.

Prof. Liu Xintu was born in 1936. In 1959, he obtained a bachelor's degree in geography at Northeast Normal University, Changchun City, China. From 1962 to 1972, he taught at the same university. Since 1972 he has been working at Changchun Institute of Geography, Chinese Academy of Science, and was appointed as the President of Changchun Institute of Geography. He is a member of the Oceanic and Limnologic Society of China, and Vice-President of the Peat Society in Jilin Province. His research is mainly on the mire eco-environment and rational utilization methods. He has undertaken investigation of mire and peat resources in the Sanjiang Plain, research on comprehensive exploitation models on peatland, and adjustment and controlling measures on water and soil in peatland. He has co-edited several books in Chinese, such as *Mires in the Sanjiang Plain* and *Research on Mires in China*. He has also published about 50 papers in Chinese and international journals.