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Supporting Information for

Peatland degradation increased biodiversity and polyphenols accumulation

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Introduction

The support information provides the same charts and tables as in this article, as well as the data to generate the charts.

Table 1 Soil properties (at depths of 0–30cm) of different degradation peatlands. Values are the annual means±standard error. Different letters between forests types indicate significant differences (LSD test, lowercase P<0.05).

	swamp meadow	swamp meadows	alpine meadow
Degradation Stage	intact fen with high water table	lightly degraded fen with a fluctuating water table	heavily degraded fen with a lower water table
Dissolved Organic Carbon (mg/kg)	195.08c±22.18	348.63ab±22.80	445.04a±81.30
Total Carbon (%)	9.14b±1.28	26.84a±0.70	25.17a±2.78
CH_4 emission ($mg \cdot C \cdot m^{-2} \cdot h^{-1}$)	12.64±6.29	4.39±1.96	0.11±0.14

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Table 2 Vegetation survey results for sampling of different types of peatlands representative of different stages of degradation (Different letters indicate significant differences between different types of peatlands, P<0.05)

Peatland type	Total vegetation coverage	Dominant species	Coverage of dominant species	Accompanying species	Coverage of accompanying species
alpine meadow	97.50±4.18a	*Carex muliensis*、*Scirpus triqueter*	83.83±11.41a	*Deschampsia caespitosa*、*Caltha scaposa*、*potentilla anserine*、*Sanguisorba officinalis*、*Tibetan golden lotus flower*、*Cremanthodium brunneo-pilosum* 、*Saussurea stella Maxim*、*leontopodium leontopodioides*、*Gentiana leucomelaena*、*Epilobium tibetanum Hausskn*、*Commelina diffusa*、*Limosella aquatica*、*Sibbaldia procumbens*	27.00±7.29a
swamp meadow	73.33±11.69b	*Carex meyeriana*、*Commelina diffusa*	62.83±13.86b	*Limosella aquatica*、*Sibbaldia procumbens*、*Deschampsia caespitosa*、*Scirpus triqueter*、*Heleocharis kamtschatica*、*Sanguisorba officinalis*、*Caltha scaposa*、*Gentiana leucomelaena*、*Cremanthodium brunneo-pilosum*、*potentilla anserine*、*Delphinium grandiflorum*	16.00±8.83b
peat swamp	51.67±7.5c	*Commelina diffusa*、*Halerpestes tricuspis*	47.33±8.52c	*Carex meyeriana*、*Polygonum aviculare*、*Heleocharis kamtschatica*、*Deschampsia caespitosa*、*Epilobium tibetanum Hausskn*、*Draba nemorosa*	6.33±3.27c

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Table 3 Changes in evenness, diversity and richness of different stages of peatland degradation (different letters indicate significant differences, P<0.05)

	Pielou evenness index	Shannon-Wiener's diversity index	Species richness index
alpine meadow	0.297±0.032a	1.465±0.138a	7.5±1.760a
swamp meadow	0.29±0.041a	1.264±0.219a	5.833±1.329ab
peat swamp	0.232±0.043b	0.991±0.200b	4.167±1.169b

Table 4 Water-soluble phenol concentrations at different soil depths and peatland degradation stages (different letters indicate significant differences, P < 0.05)

Soil depth		Peatland degradation stages	
		alpine meadow	swamp meadow
Water-soluble phenols (μg/g)	0–10cm	76.623 ±24.360c	19.750±4.106a
	10–20cm	161.795±17.020a	22.989±2.956a
	20–30cm	116.606±33.256b	23.483±8.333a
The total phenols (μg/g)	0–10cm	629.867±46.361b	748.867±17.786a
	10–20cm	651.533±52.786ab	753.866±37.978a
	20–30cm	741.539±35.303a	696.533±16.921b

Table 5 Correlation analysis between water-soluble phenol concentrations and total vegetation coverage, etc

	Water-soluble phenols	Pielou evenness index	Shannon diversity index	Richness index	Total vegetation coverage
Water-soluble phenols	1				
Pielou evenness index	0.428	1			
Shannon diversity index	0.696*	0.881**	1		
Richness index	0.778**	0.702*	0.749**	1	
Total vegetation coverage	0.837**	0.552	0.825**	0.702*	1

****p<0.01； *p<0.05**