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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 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	<i>Carex muliensis</i> , <i>Scirpus triqueter</i>	83.83±11.41a	<i>Deschampsia caespitosa</i> , <i>Caltha</i> <i>scaposa</i> , <i>potentilla anserine</i> , <i>Sanguisorba officinalis</i> , <i>Tibetan golden</i> <i>lotus flower</i> , <i>Cremanthodium</i> <i>brunneo-pilosum</i> , <i>Saussurea stella</i> <i>Maxim</i> , <i>leontopodium leontopodioides</i> , <i>Gentiana leucomelaena</i> , <i>Epilobium</i> <i>tibetanum Hausskn</i> , <i>Commelina</i> <i>diffusa</i> , <i>Limosella aquatica</i> , <i>Sibbaldia</i>	27.00±7.29a

<i>procumbens</i>					
<i>Limosella aquatica</i> 、 <i>Sibbaldia</i>					
<i>procumbens</i> 、 <i>Deschampsia caespitosa</i> 、					
<i>Scirpus triqueter</i> 、 <i>Heleocharis</i>					
swamp meadow	73.33±11.69b	<i>Carex meyeriana</i> 、	62.83±13.86b	<i>kamtschatica</i> 、 <i>Sanguisorba officinalis</i> 、	16.00±8.83b
		<i>Commelina diffusa</i>		<i>Caltha scaposa</i> 、 <i>Gentiana</i>	
				<i>leucomelaena</i> 、 <i>Cremanthodium</i>	
				<i>brunneo-pilosum</i> 、 <i>potentilla anserine</i> 、	
				<i>Delphinium grandiflorum</i>	
peat swamp	51.67±7.5c	<i>Commelina diffusa</i> 、	47.33±8.52c	<i>Heleocharis kamtschatica</i> 、 <i>Deschampsia</i>	6.33±3.27c
		<i>Halerpestes tricuspis</i>		<i>caespitosa</i> 、 <i>Epilobium tibetanum</i>	
				<i>Hauskn</i> 、 <i>Draba nemorosa</i>	

In the process of peatland degradation, vegetation evenness, richness and diversity index all changed

Peatland type	Pielou evenness index	Shannon-Wiener's diversity index	Species richness index
alpine meadow	0.336	1.63	10
alpine meadow	0.319	1.542	9
alpine meadow	0.306	1.52	8
alpine meadow	0.291	1.493	6
alpine meadow	0.289	1.349	6
alpine meadow	0.242	1.252	6
swamp meadow	0.339	1.476	8
swamp meadow	0.315	1.39	7
swamp meadow	0.302	1.357	5
swamp meadow	0.294	1.316	5
swamp meadow	0.269	1.185	5
swamp meadow	0.22	0.86	5
peat swamp	0.277	1.237	5
peat swamp	0.256	1.13	5
peat swamp	0.255	1.054	5
peat swamp	0.246	0.973	4
peat swamp	0.198	0.885	4
peat swamp	0.16	0.666	2

Table 2 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

Changes of water soluble phenol and total phenol content

Peatland type	soil depth	water-soluble phenols (µg/g)	The total phenols
alpine meadow	0-10cm	39.59598	679.2
alpine meadow	0-10cm	104.40261	
alpine meadow	0-10cm	92.75118	587.2
alpine meadow	0-10cm	67.321341	
alpine meadow	0-10cm	93.24124	623.2
alpine meadow	0-10cm	62.42614	
alpine meadow	10-20cm	146.30979	689.2
alpine meadow	10-20cm	190.68489	
alpine meadow	10-20cm	151.509033	674.2
alpine meadow	10-20cm	149.4124	
alpine meadow	10-20cm	172.4274	591.2
alpine meadow	10-20cm	160.42468	
alpine meadow	20-30cm	93.53427	709.2
alpine meadow	20-30cm	181.16916	
alpine meadow	20-30cm	100	779.2
alpine meadow	20-30cm	94.241249	
alpine meadow	20-30cm	120.34932	736.2
alpine meadow	20-30cm	110.3432	

swamp meadow	0-10cm	16.81518	733.2
swamp meadow	0-10cm	27.46995	
swamp meadow	0-10cm	17.00502	768.2
swamp meadow	0-10cm	19.87635	
swamp meadow	0-10cm	20.42214	745.2
swamp meadow	0-10cm	16.9101	
swamp meadow	10-20cm	17.17113	710.2
swamp meadow	10-20cm	25.00203	
swamp meadow	10-20cm	24.66981	772.2
swamp meadow	10-20cm	23.36466	
swamp meadow	10-20cm	23.05617	779.2
swamp meadow	10-20cm	24.66981	
swamp meadow	20-30cm	38.45694	682.2
swamp meadow	20-30cm	18.59493	
swamp meadow	20-30cm	20.77809	692.2
swamp meadow	20-30cm	17.93049	
swamp meadow	20-30cm	28.01574	715.2
swamp meadow	20-30cm	17.12367	

Table 3 Water-soluble phenol concentrations at different soil depths and peatland degradation stages (different letters indicate significant differences, $P < 0.05$)

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

Table 4 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**