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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±3.42a	*Carex muliensis*、*Scirpus triqueter*	83.83±4.68a	*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*	27.00±2.81a

				procumbens	
swamp meadow	73.33±3.42b	*Carex meyeriana*、*Commelina diffusa*	62.83±4.68b	*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±2.81b
peat swamp	51.67±3.42c	*Commelina diffusa*、*Halerpestes tricuspis*	47.33±4.68c	*Carex meyeriana*、*Polygonum aviculare*、*Heleocharis kamtschatica*、*Deschampsia caespitosa*、*Epilobium tibetanum Hausskn*、*Draba nemorosa*	6.33±2.81c

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	0.289	1.493	8
alpine meadow	0.306	1.542	10
alpine meadow	0.291	1.349	6
alpine meadow	0.242	1.252	6
alpine meadow	0.336	1.63	9
alpine meadow	0.319	1.52	6
swamp meadow	0.22	0.86	5
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
peat swamp	0.277	1.237	5
peat swamp	0.16	0.666	2
peat swamp	0.255	1.13	4
peat swamp	0.246	1.054	5
peat swamp	0.198	0.885	5
peat swamp	0.256	0.973	4

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±0.016a	1.465±0.077a	7.5±0.588a
swamp meadow	0.29±0.016a	1.264±0.077a	5.833±0.588ab
peat swamp	0.232±0.016b	0.991±0.077b	4.167±0.588b

Changes of water soluble phenol and total phenol content

Peatland type	soil depth	water-soluble phenols (μg/g)	The total phenols (μg/g)
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)

Soil depth		Peatland degradation stages	
		alpine meadow	swamp meadow
water-soluble phenols (μg/g)	0-10cm	76.623 ±10.512c	19.750±2.298a
	10-20cm	161.795±10.512a	22.989±2.298a
	20-30cm	116.606±10.512b	23.483±2.298a
The total phenols （μg/g）	0-10cm	629.867±37.064b	748.867±21.318a
	10-20cm	651.533±37.064ab	753.866±21.318a
	20-30cm	741.539±37.064a	696.533±21.318b

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	0.235	1			
Shannon diversity index	0.525	0.874**	1		
Richness	0.603*	0.551	0.712**	1	
Total vegetation coverage	0.688*	0.000	0.294	0.511	1

**p<0.01；*p<0.05