

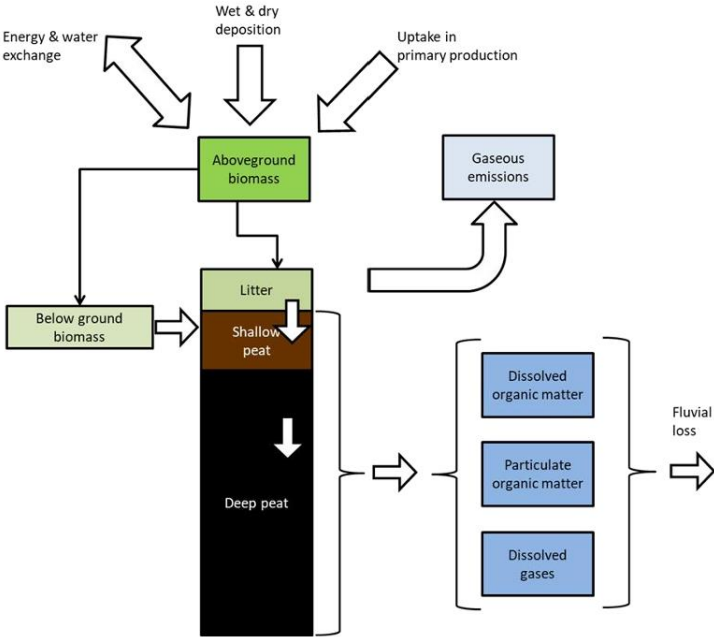


Figure 1. A schematic diagram of organic matter fluxes and reservoirs, with each arrow representing a carbon flux and boxes being the organic matter reservoirs.

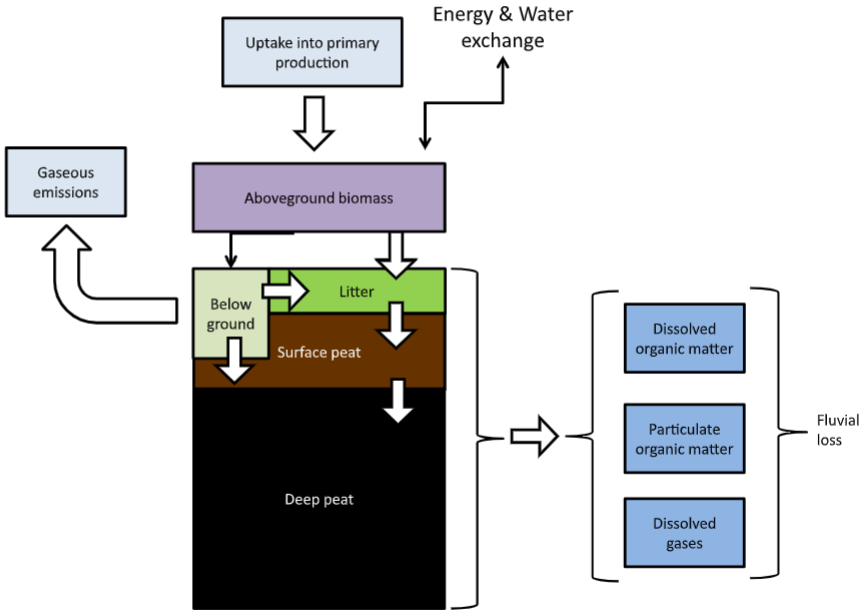
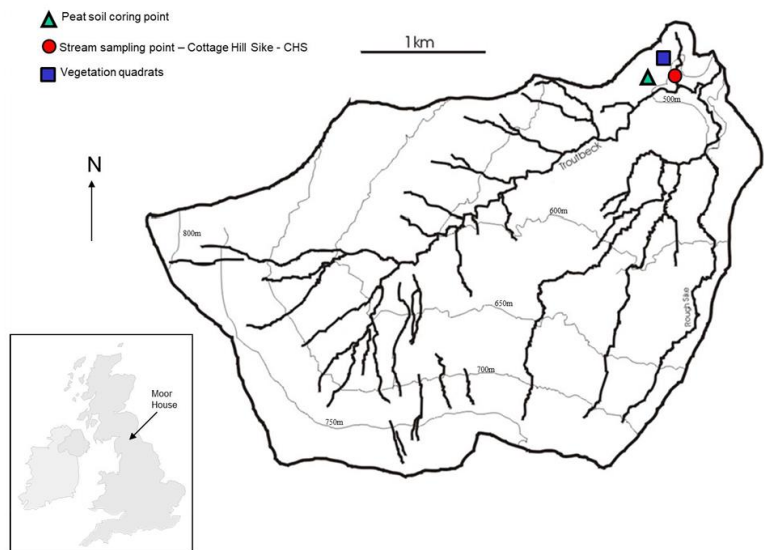


Figure 1. Conceptual model of organic matter reservoirs and fluxes considered and sampled within this study. Boxes represent reservoirs or fluxes where the composition was known or was sampled and analyzed.



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702 Figure 2. Map of the study catchment. CHS is Cottage Hill Sike, the stream water sampling

703 location. Numbers refer to altitude in metres above sea level.

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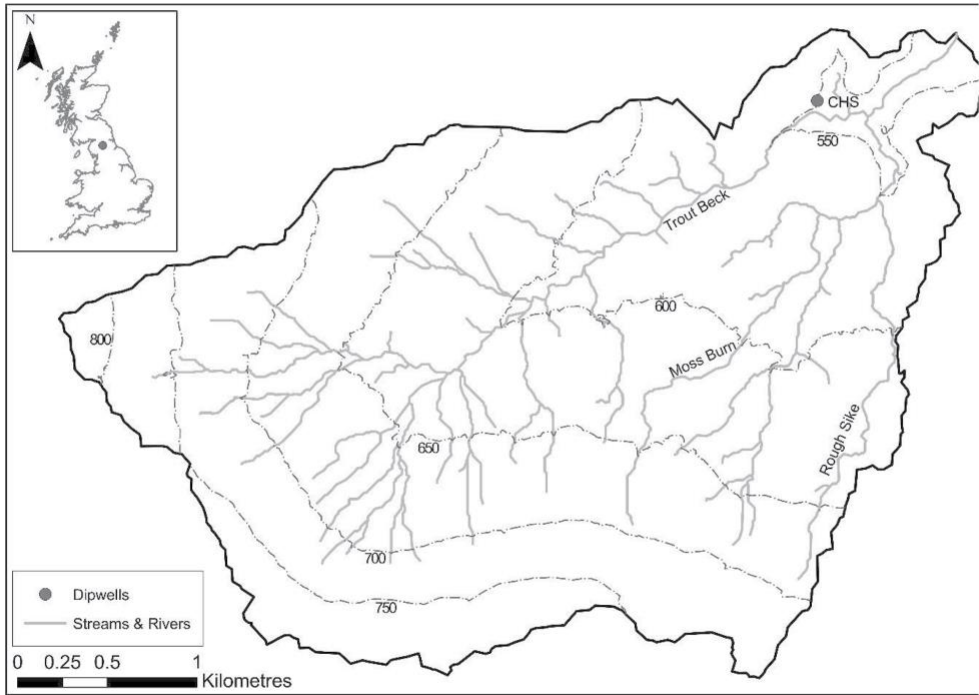


Figure 2. Map of Moor House study catchment. CHS shows Cottage Hill Sike stream water sampling location. Numbers refer to altitude in meters.

Table 1. Median composition of the carbon pools examined in the study, with variation indicated by the 95th percentile range. Median stoichiometry is expressed relative to nitrogen content, except for cellulose, which is expressed relative to carbon.

Carbon reservoir (or flux)	Elemental composition (mol/100g)			
	C	H	N	O
DOM first order stream	3.8±0.1	4.6±0.2	0.12±0.01	2.9±0.1
DOM shallow peat porewater	4.17±0.18	5.24±0.19	0.14±0.009	2.06±0.03
DOM deep peat porewater	4.05±0.16	5.80±0.65	0.13±0.005	1.97±0.08
POM	4.05±0.02	6.40±0.09	0.18±0.01	2.50±002
Aboveground biomass	4.15±0.12	6.30±0.09	0.07±0.015	2.55±0.06
Below ground biomass	4.23±0.1	6.30±0.09	0.09±0.01	2.48±0.06
Grass or sedge	4.04±0.1	6.30±0.09	0.12±0.01	2.59±0.06
Mosses	4.03±0.1	6.30±0.09	0.07±0.01	2.65±0.06
Calluna	4.29±0.1	6.58±0.09	0.05±0.01	2.53±0.06
Litter	4.17±0.08	5.90±0.1	0.167±0.007	2.48±0.08
Peat soil (0-5 cm)	4.18±0.01	6.00±0.6	0.10±0.01	2.53±0.11
Peat soil (45-50 cm)	4.44±0.4	5.3±1.4	0.08±0.02	2.40±0.24
Peat soil (90-100 cm)	4.47±0.21	5.27±0.76	0.08±0.02	2.37±0.13
Lignin	5.14±0.01	6.03±0.1	0.06±0.005	1.81±0.01
Cellulose	3.60±0.005	6.25±0.24	0.00	3.21±0.01
Humic acid	2.99±0.01	3.68±0.09	0.06±0.005	2.02±0.02
Protein	4.72±0.06	5.42±0.17	1.24±0.04	1.28±0.05

Carbon reservoir (or flux)	Median stoichiometry	Median C _{ox}
DOM first order stream	C ₃₁ H ₃₈ NO ₂₄	0.4±0.08
DOM shallow peat porewater	C ₂₉ H ₄₁ NO ₁₅	-0.31±0.05
DOM deep peat porewater	C ₃₀ H ₃₉ NO ₁₅	-0.22±0.16
POM	C ₂₂ H ₃₅ NO ₁₄	-0.21±0.03
Aboveground biomass	C ₅₇ H ₈₆ NO ₃₅	-0.26±0.04
Below ground biomass	C ₄₉ H ₇₃ NO ₂₉	-0.25±0.04
Grass or sedge	C ₃₃ H ₅₂ NO ₂₁	-0.19±0.04
Mosses	C ₉₅ H ₁₄₅ NO ₅₆	-0.19±0.04
Calluna	C ₅₅ H ₈₆ NO ₄₆	-0.32±0.04
Litter	C ₂₅ H ₃₅ NO ₁₅	-0.05±0.05
Peat soil (0-5 cm)	C ₃₉ H ₅₆ NO ₂₆	-0.10±0.15
Peat soil (45-50 cm)	C ₅₇ H ₆₈ NO ₃₁	-0.02±0.33
Peat soil (90-100 cm)	C ₇₅ H ₁₀₇ NO ₄₅	-0.07±0.18
Lignin	C ₈₇ H ₁₀₃ NO ₃₁	-0.43±0.02
Cellulose	C ₆ H ₁₀ O ₅	0.05±0.06
Humic acid	C ₄₉ H ₆₀ NO ₃₃	0.19±0.04
Protein	C ₅ H ₅ NO	0.18±0.05



Table 1
The Average Composition of the Carbon Pools Considered by the Study

Carbon pool	Elemental analysis (mol/100g)				Median stoichiometry	C _{ox}
	C	H	N	O		
DOM first-order stream	3.8 ± 0.1	4.6 ± 0.2	0.12 ± 0.01	2.9 ± 0.1	C ₃₁ H ₃₈ NO ₂₄	0.4 ± 0.08
DOM shallow peat porewater	4.17 ± 0.18	5.24 ± 0.19	0.14 ± 0.009	2.06 ± 0.03	C ₂₉ H ₄₁ NO ₁₅	−0.31 ± 0.05
DOM deep peat porewater	4.05 ± 0.16	5.80 ± 0.65	0.13 ± 0.005	1.97 ± 0.08	C ₃₀ H ₃₉ NO ₁₅	−0.22 ± 0.16
POM	4.05 ± 0.02	6.40 ± 0.09	0.18 ± 0.01	2.50 ± 002	C ₂₂ H ₃₅ NO ₁₄	−0.21 ± 0.03
Above-ground biomass	4.15 ± 0.12	6.30 ± 0.09	0.07 ± 0.015	2.55 ± 0.06	C ₅₇ H ₈₆ NO ₃₅	−0.26 ± 0.04
Below-ground biomass	4.23 ± 0.1	6.30 ± 0.09	0.09 ± 0.01	2.48 ± 0.06	C ₄₉ H ₇₃ NO ₂₉	−0.25 ± 0.04
Grass and sedge	4.04 ± 0.1	6.30 ± 0.09	0.12 ± 0.01	2.59 ± 0.06	C ₃₃ H ₅₂ NO ₂₁	−0.19 ± 0.04
Mosses	4.03 ± 0.1	6.30 ± 0.09	0.07 ± 0.01	2.65 ± 0.06	C ₉₅ H ₁₄₅ NO ₅₆	−0.19 ± 0.04
Calluna	4.29 ± 0.1	6.58 ± 0.09	0.05 ± 0.01	2.53 ± 0.06	C ₅₅ H ₈₆ NO ₄₆	−0.32 ± 0.04
Litter	4.17 ± 0.08	5.90 ± 0.1	0.167 ± 0.007	2.48 ± 0.08	C ₂₅ H ₃₅ NO ₁₅	−0.05 ± 0.05
Peat soil (0–5 cm)	4.18 ± 0.01	6.00 ± 0.6	0.10 ± 0.01	2.53 ± 0.11	C ₃₉ H ₅₆ NO ₂₆	−0.10 ± 0.15
Peat soil (45–50 cm)	4.44 ± 0.4	5.3 ± 1.4	0.08 ± 0.02	2.40 ± 0.24	C ₅₇ H ₆₈ NO ₃₁	−0.02 ± 0.33
Peat soil (90–100 cm)	4.47 ± 0.21	5.27 ± 0.76	0.08 ± 0.02	2.37 ± 0.13	C ₇₅ H ₁₀₇ NO ₄₅	−0.07 ± 0.18
Lignin	5.14 ± 0.01	6.03 ± 0.1	0.06 ± 0.005	1.81 ± 0.01	C ₈₇ H ₁₀₃ NO ₃₁	−0.43 ± 0.02
Cellulose	3.60 ± 0.005	6.25 ± 0.24	0.00	3.21 ± 0.01	C ₆ H ₁₀ O ₅	0.05 ± 0.06
Humic acid	2.99 ± 0.01	3.68 ± 0.09	0.06 ± 0.005	2.02 ± 0.02	C ₄₉ H ₆₀ NO ₃₃	0.19 ± 0.04
Protein	4.72 ± 0.06	5.42 ± 0.17	1.24 ± 0.04	1.28 ± 0.05	C ₅ H ₅ NO	0.18 ± 0.05

Note. Variation is given as the 95th percentile range. Median stoichiometry is expressed relative to nitrogen content except for cellulose which expressed relative to carbon. For comparison values for lignin, cellulose, protein (gluen) and humic acid have been added from Worrall, Clay, et al. (2016).