Innes and Blackford Table S1. Full stratigraphic descriptions and interpretations of the four sediment profiles discussed in this paper: Sniggery Wood, Little Hawes Water ESE3, North Gill 7 and Bonfield Gill.

Fig. 2	Sniggery Wood
Stratum 6	0 – 10 cm Medium-fine yellow sand
Stratum 5	10 – 86 cm Well humified compact brown peat with some *Eriophorum* (cotton-grass) remains. *Betula* (birch) wood at 40 and 64 cm.
Stratum 4	86 –150 cm Well humified, compact black woody detrital peat with fragments of *Alnus* (alder) wood common and occasional *Phragmites* (reed) rhizomes and seeds of *Menyanthes* (bogbean)
Stratum 3	150–175 cm Brown humified *Phragmites* peat.
Stratum 2	175–205 cm Coarse grey sand, organic at the top of the stratum.
Stratum 1	205–220 cm Pink clay
	Stratum 1 comprises the local glacial clay (till), which was not penetrated further. Stratum 2 is fluvioglacial outwash sand and stratum 3 represents organic accumulation in a reedswamp environment, which developed into fen-carr in stratum 4. Stratum 5 reflects the progression to a more acidic mire with reduced water depths. The change to sand in stratum 6 occurred when the profile was covered by blown sand, as part of the development of dune environments on this coastal plain. The section sampled at fine resolution (150-160 cm) was well humified peat without wood remains.
Fig. 3	Little Hawes Water ESE3
Stratum 5	0 – 50 cm Partly oxidised humified brown peat with some wood fragments
Stratum 4	50 – 67 cm Well humified amorphous black peat with occasional *Phragmites* remains
Stratum 3	67 – 68 cm Black amorphous peat with some fine charcoal particles
Stratum 2	68 – 77 cm Dark brown well humified peat with occasional wood remains
Stratum 1	77 –150 cm Sandy stiff grey clay
	Stratum 1 is probably a solifluction deposit which is present throughout the lake basin. It was not penetrated further. The well numified peat of Stratum 2 was probably formed as limnic conditions changed into reedswamp environments as the basin began to accumulate organic sediments., continuing into stratum 3 during which small amounts of charcoal were included. The profile progressed into fen-reedswamp peat in stratum 4. This continues to the surface in stratum 5 although it has become somewhat oxidized because of drainage. The sequence is a lake-edge hydroseral succession through reedswamp and fen-carr environments.
Fig. 4	North Gill 7
Stratum 5	0 – 60 cm Brown humified *Eriophorum* peat
Stratum 4	60 – 79 cm

Well humified amorphous black peat

Stratum 3 79 – 83 cm

Well humified amorphous black peat with some fine charcoal particles

Stratum 2 83 – 94 cm

Light brown amorphous peat with a high mineral content which decreases towards the top of the stratum

Stratum 1 94 –100 cm

Coarse yellow sand

The yellow sand of Stratum 1 is a fossil mineral soil, with Stratum 2 being the transitional horizon during which peat formed over the sandy soil. The very well humified amorphous peat of Stratum 3 records slow organic accumulation during which some charcoal became incorporated in the peat. Slowly accumulating amorphous peat continued to form in Stratum 4, transitioning to a more acidic bog peat in Stratum 5.

Fig. 5 Bonfield Gill Head

Stratum 11 0 – 20 cm

Well humified *Sphagnum* peat

Stratum 10 20 – 40 cm

Eriophorum peat

Stratum 9 40 – 52 cm

Humified *Eriophorum* peat with Ericaceae twigs. Base of *Betula* stump at 40-41 cm.

Stratum 8 52 – 54 cm

Amorphous monocot peat with many wood fragments

Stratum 7 54 – 58 cm

Black amorphous peat with many small charcoal fragments

Stratum 6 58 – 70 cm

Brown humified peat with *Eriophorum* remains.

Stratum 5 70 – 77 cm

Black amorphous peat with small wood fragments

Stratum 4 77 – 81 cm

Black amorphous peat with many small charcoal fragments

Stratum 3 81 – 90 cm

Amorphous and detrital peat with *Betula* wood pieces.

Stratum 2 90 – 97 cm

Brown amorphous peat with a high mineral content which decreases towards the top of the stratum

Stratum 1 97 –105 cm

Coarse yellow sand with small wood pieces

The yellow sand of Stratum 1 is a fossil mineral soil, with Stratum 2 being the transitional horizon during which peat formed over the sandy soil. Stratum 3 records the establishment of fen environments with birch growing on site, with slow organic accumulation in Stratum 4 during which fire occurred nearby as charcoal is introduced to the mire. Stratum 5 is similar but with no charcoal input and the renewed growth of birch at the site. A more acidic bog peat occurs in Stratum 6, and the presence of charcoal in Stratum 7 indicates renewed fire nearby. Strat 8, 9 and 10 record the growth of acidic bog peat with nearby birch growth in Stratum 8. Strat 9, 10 and 11 record increasingly acidic and wetter bog environments with *Sphagnum* replacing *Eriophorum* at the top of the profile.