Site 23 Loch of Park

The organic sediments preserved within the large ice-scoured rock basin at Loch of Park, north-east of Banchory (Map 10), provide evidence of typical climate and vegetation changes that have occurred within the district since deglaciation. Pollen data and radiocarbon dates from the site indicate that a 'tripartite' Late-glacial sequence is preserved that passes upwards into Holocene deposits.

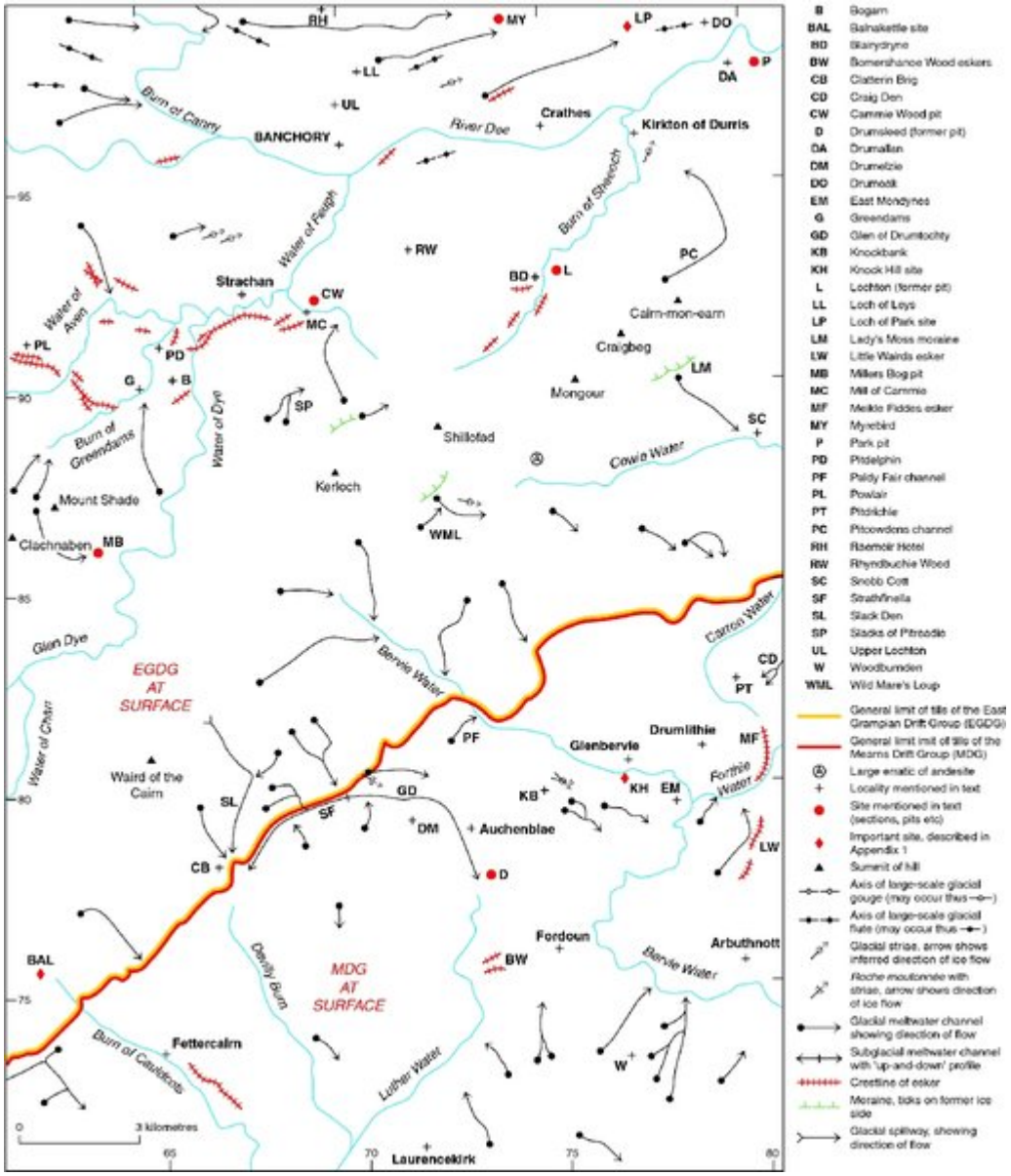
The Loch of Park (Figure A1.28)a is the site of a freshwater lake that was drained during the 19th century and is now a local nature reserve. It occurs at the south-eastern end of the basin, which extends for about 4 km along the northern margin of Sheet 66E Banchory and across the southern margin of Sheet 76E Inverurie. The basin was formed by ice that flowed eastwards from the Grampian Highlands, scouring the underlying decomposed Crathes Granodiorite. The ice deposited a thin spread of till on the basin floor. It also laid down morainic mounds at the eastern margin of the basin during its westward retreat. These moraines blocked the subsequent drainage of the lake eastwards and an interbedded sequence of organic muds, peats and fine-grained lacustrine sediments were laid down on top of the basal till. Mounds and narrow terraced spreads of sand and gravel were also laid down around the southern margin of the lake.

The organic sediments in the basin were first described by Vasari and Vasari (1968), who analysed the pollen content from a narrow diameter piston-cored borehole. The borehole, at about 70 m above OD, near the eastern end of the former lake ((Figure A1.28)a), penetrated interbedded peats, clays and organic muds to a depth of 5.6 m. The lowermost 1.70 m of the core was recorded as bluish clay, almost entirely devoid of pollen. Above this unit occurred 0.5 m of organic mud, 0.35 m of nutrient-rich silty peat (gyttja) and 0.53 m of clay. The upper clay was overlain by peat, which became increasingly sandy upwards. The three units above the basal blue clay (and their pollen assemblages) were interpreted as being of Late-glacial age and the upper peat as being Holocene.

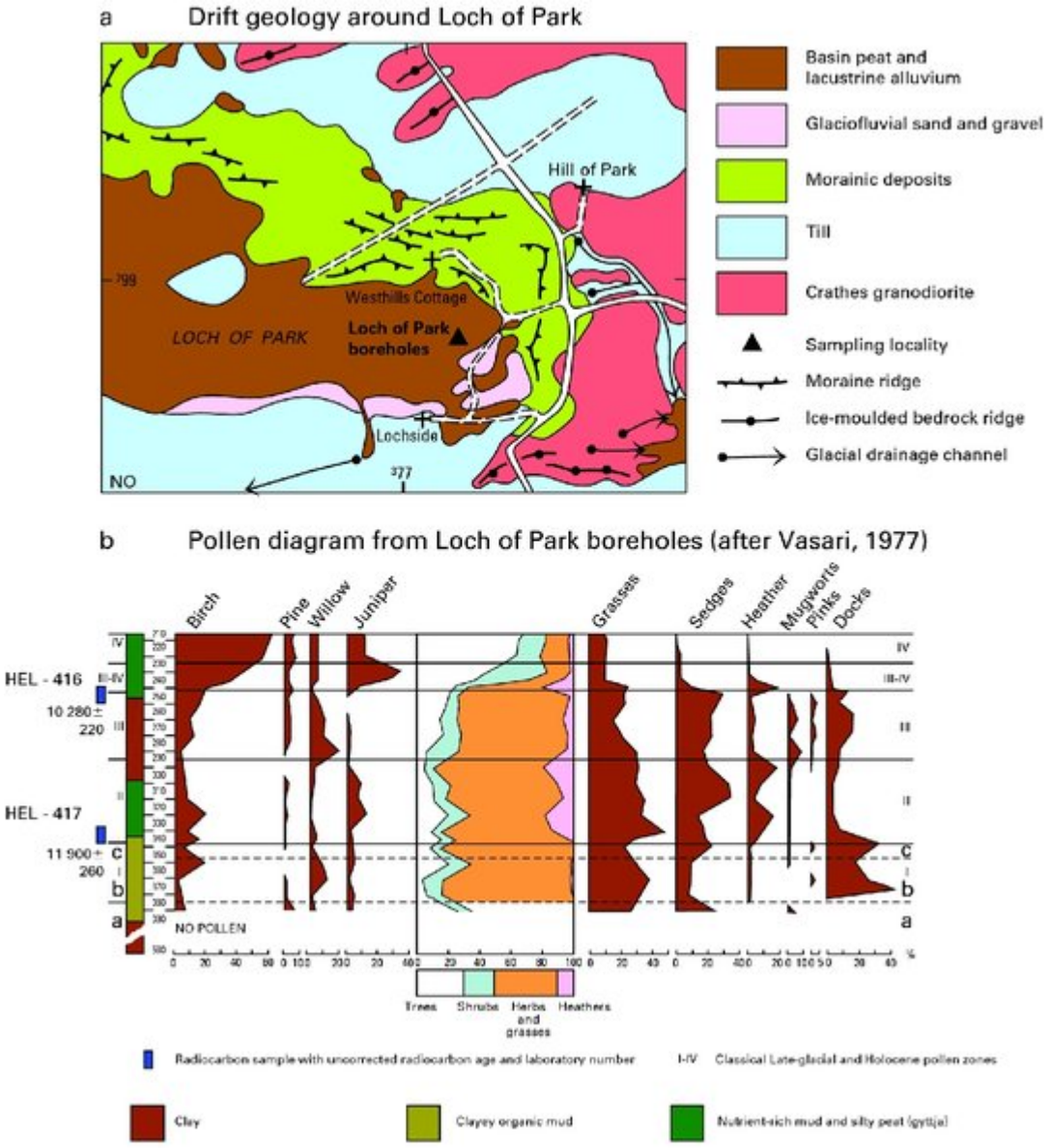
The pollen spectrum ((Figure A1.28)b), between 2.10 and 3.85 m depth was assigned to the classical Late-glacial pollen zones I (cold), II (warm), III (cold), a combined zone III–IV, coinciding with the transition from cold to warm conditions, and the Postglacial (Holocene) IV (warm). The Late-glacial sediments, which were subdivided in to three subzones, Ia–Ic, are characterised by a dominance of non-arboreal pollen and the Holocene sediments by a marked increase in the proportion of *Betula* (birch), *Pinus* (pine) and *Juniperus* (juniper) pollen. A corresponding decrease was recorded in the proportions of grass and herb pollen in the Holocene deposits. Subzone Ia (mainly almost barren blue clay) and subzone Ib, (the organic mud) were thought to reflect progressive climatic amelioration. This was followed by a colder episode (subzone Ic).

The sequence was subsequently reinvestigated in 1972 (Vasari, 1977), when samples of organic sediment were taken for radiocarbon dating from a second boring. The borehole was sited immediately adjacent to the first and a similar stratigraphical sequence was proved. The lower sample, HEL–417, taken at the boundary between the top of subzone Ic and the base of zone II (*Empetrum* {crowberry} rise/*Rumex* {docks} fall), yielded a radiocarbon age of 11 900 ± 260 BP (Table 8). This was said by Vasari (1977) to correspond closely with the accepted radiocarbon age for the I/II boundary for much of north-western Europe. The upper sample, HEL–416 (at the combined zone III–IV boundary; between the *Rumex* and *Empetrum* maxima), yielded a radiocarbon age of 10 280 ± 220 BP. This was seen by Varasri (1977) as compatible with the generally accepted radiocarbon age of the Late-glacial/Holocene boundary in Britain (about 10 250 BP).

References



(Map 10) Glacial and glaciofluvial features and the distribution of glacigenic deposits on Sheet 66E Banchory.



(Figure A1.28) Loch of Park locality, near Banchory.

Site	Grid reference	Laboratory number	Age (years BP)	Dated material and setting	Reference
Rothes cutting	NJ 277 498	Beta-86552	11 110 ± 70	peat under remobilised till	Appendix 1
Garral Hill, Keith	NJ 444 551	Q-104	10 808 ± 230	peat under remobilised till	Godwin and Willis (1959)
Garral Hill, Keith	NJ 444 551	Q-103	11 098 ± 235	peat under remobilised till	Godwin and Willis (1959)
Garral Hill, Keith	NJ 444 551	Q-102	11 308 ± 245	peat under remobilised till	Godwin and Willis (1959)
Garral Hill, Keith	NJ 444 551	Q-101	11 888 ± 225	peat under remobilised till	Godwin and Willis (1959)
Garral Hill, Keith	NJ 444 551	Q-100	11 358 ± 300	peat under remobilised till	Godwin and Willis (1959)
Woodhead, Fyvie	NJ 788 384	SRR-1723	10 780 ± 50	peat under remobilised till	Connell and Hall (1987)
Howe of Byth	NJ 822 571	SRR-4830	11320	peat beneath gravel	Hall et al. (1995)
Moss side, Tarves	NJ 833 318	I 6969	12 200 ± 170	peat under remobilised till	Clapperton and Sugden (1977)
Loch of Park	NO 772 988	HEL-416	10 280 ± 220	kettlehole infill	Vasari and Vasari (1968)
Loch of Park		HEL-417	11 900 ± 260	kettlehole infill	Vasari and Vasari (1968)
Mill of Dyce	NJ 8713 1496	SRR 762	11 550 ± 80	kettlehole infill	Harkness and Wilson (1979)
Mill of Dyce	NJ 8713 1496	SRR-763	11 640 ± 70	kettlehole infill	Harkness and Wilson (1979)
Glenbervie	NO 767 801	CX-14723	12 460 ± 130	peat under remobilised till	Appendix 1
Glenbervie	NO 767 801	SRR-3687a (humic)	12 305 ± 50	peat under remobilised till	Appendix 1
Glenbervie	NO 767 801	SRR-3687b (humin)	12 340 ± 50	peat under remobilised till	Appendix 1
Brimzieshill Farm	NO 7936 7918	SRR-387	12 390 ± 100	peat under remobilised till	Auton et al. (2000)
Rothens	NJ 688 171	SRR-3803	10 680 ± 100	kettlehole infill	Appendix 1
Rothens	NJ 688 171	SRR-3804	11 640 ± 160	kettlehole infill	Appendix 1
Rothens	NJ 688 171	SRR-3805	11 760 ± 140	kettlehole infill	Appendix 1

(Table 8) Radiocarbon dates from Late-glacial sites in the district.