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AN DITHEAN, ISLAY

J HARDER & M BROWN

Palaeobotanical report: STEPHANIE GRESHON

PALEOBOTANICAL REPORT - AN SITHEAN, ISLAY

S Greshon

The aim of this study was to analyse samples taken from features within the recorded sections in terms of their pollen assemblage to provide evidence of associated flora, and possibly environment, during the archaeological periods involved. Also, it was intended to compare similar features within different sections as to their floral composition. A secondary aim was to use the information gained by paleobotanical analysis to resolve, clarify and confirm the descriptions and role assigned to the features from archaeological evidence. Samples were collected in May.

Certain samples were selected from the original total for pollen analysis, and were prepared by boiling in 10% KOH for twenty minutes and straining through 100 mu.m sieves. This was followed by hydrofluoric acid treatment (to remove siliceous materials), using the boiling method, as opposed to standing in cold HF for 24 hours. Certain samples required prolonged boiling for up to 1 hour, due to the considerable silica content. However, in some cases, the sample still remained 'gritty' and although prolonged boiling for an hour or more does not appear to damage the pollen grains (Moore & Webb 1978), further boiling was not attempted in order to avoid any possible adverse effects to the pollen. Thus, certain samples could not be analysed because the grains proved to be badly obscured by the silliceous material. In these instances, the sample is marked on the pollen diagram as being 'indeterminable'.

After HF treatment, the samples were treated using Erdtman's acetolysis method, stained in safranin and mounted in molten glycerol jelly. The slides were sealed with clear nail varnish.

The pollen and spore types were identified using the pollen and spore key given by Moore and Webb (1978). The total number of grains counted per slide ranged from 193 to 359 with a median of 245. Indeterminable pollen was not included and only determinable pollen was counted. The pollen sum used to construct the diagram is that of terrestrial pollen (Sigma P) and the frequencies of the determinable terrestrial pollen taxa are expressed as percentages relative to that sum. Spores of Pteridophytes and Sphagnum are excluded from the sum and calculated separately as percentages of total determinable land pollen plus spores (Sigma P + S). Unknown types are calculated in a similar way.

Much of the pollen encountered was badly corroded and reliable determination of tri-porate grains was often impossible. Thus, where this occurred, they were counted as Corylus/Myrica. Reliable identification of Urtica type pollen also proved difficult. In some cases this was due to extreme corrosion of the exine, similar to the corrosion of Corylus grains, thus, it is possible that where rather high percentages of Urtica pollen occurred this has been over-estimated or confused with badly corroded Corylus. However, the number of grains where this confusion arose was not sufficient to affect the interpretation of the pollen assemblage as a whole.

POLLEN PROFILE DESCRIPTIONS

SECTION 3

SAMPLE 8

This sample proved sparse in pollen, and much siliceous material was still present, tending to obscure the pollen. Generally,however, there was a high percentage of Cyperaceae pollen, and a low percentage of Ericaceae pollen. Compositae (sub family liguliflorae) were present in relatively high proportions (10%) and Urtica was present (2.5%), implying a rather damp, grassy vegetation (1 Sphagnum spore occurred) with a low count of pteridiophyte$_5$ (5%). In general, the pollen was poorly preserved and it was impossible to differentiate between Corylus and Myrica pollen, which occurred at 7% but in the light of the rest of the pollen assemblage it is highly likely to be Corylus pollen. This layer is possibly the unaltered material of a podzolic profile, ie mostly quartz.

SAMPLE 4a

This is the humus-enriched zone of the section (bottom) and was very rich in pollen, with no siliceous material present and a great variety of pollen types reasonably well preserved. Gramineae pollen proved the most abundant taxon in this sample at 39.6%, with low proportions of Ericaceae (8.3%). Calluna vulgaris was the most common type of Ericaceae. Corylus pollen occurred at 8.6%, and some Myrica and Cyperaceae, thus implying a heath-type vegetation. Further evidence for this was the occurrence of acidophilous taxa such as Potentilla and Succisa (2 and 1 grains respectively). However, evidence of local cultivation was found, in the form of 4% cereal pollen and 12.9% Plantago pollen along with 'weed' type pollen in relatively high proportions, characteristic of cultivated fields and open meadows. The occasional Pteridophyte spore was found, but spores in general were rare. Arboreal pollen was more prominent in this sample than in the previous one, Corylus being most prolific with 1 grain of Alnus and 1 grain of Betula. This pollen assemblage possibly represents the vegetation before the process of podzolisation began.

SAMPLE 4b

This sample represents the top of the humus-enriched zone, and differed greatly from 4a in that the pollen concentration was far lower with less variety. This may represent leaching within the horizon. (Maybe of differential pollen types Moore & Webb 1978). Corylus pollen was most prolific (51.7), and other arboreal types were Quercus and Alnus (2% and 1% respectively). Evidence for a heath-type flora occurred with 10% Ericaceae, and 3% Cyperaceae and 1 grain of Potentilla; 1 grain of Cerealia was found and Gramineae pollen was relatively common (21.7%). Along with Plantago pollen (6%) and occasional 'weed' pollen, evidence for local cultivation exists, but far less prominently than in 4a.

SAMPLE 1.3a

This sample represents a peaty layer at the bottom of B horizon and is characterised by a typical peat-forming pollen assemblage, with 53.5% Ericaceae pollen, mainly C Vulgaris, 5.9% Myrica and low proportions of Cyperaceae and Potentilla. Other herbaceous pollen were absent, apart from 1% of Plantago, 6% arboreal pollen occurred, mostly Corylus but with an increase in Alnus and Betula pollen. 1 grain of Salix occurred. In general, the pollen in this sample was well preserved and well concentrated.

SAMPLE 1.3b

This sample was taken from the top of the B horizon and was very similar in its pollen assemblage to 1.3a.

SAMPLE 18

This represents a leached layer, and the pollen in this sample was poorly preserved and corroded. The pollen assemblage is characterised by low arboreal pollen apart from Corylus (11.5%), and co-dominance of Ericaceae and Gramineae, 1 Potentilla occurred. This was accompanied by reasonable proportions of 'weed' pollen. Thus evidence for disturbance is still present.

SAMPLE 17

This sample is very similar to 18, which implies no differentiation between the two layers. The increase in Ericaceae pollen in these two samples may represent deteriorating soil conditions and climate - initiation of podzolisation.

SAMPLE 7

This zone is characterised by a slight decrease in Ericaceae pollen and a slight

increase in arboreal types. 1 Pinus grain occurred, possibly, representing a long distance transport component. 'Weed' pollen taxa increased, as did the occasional occurrence of spore types, ie 1 Sphagnum spore and 2 spores of Osmunda, implying impeded drainage. In general this zone was far more sparse in pollen, but the pollen was better preserved.

SECTION 6

SAMPLE 2.0

This zone represents the top soil of a well developed podzol ie where podzolisation is at its climax. It is associated with a thin iron pan soil, the typical vegetation of which is heathland. Thus, Ericaceae pollen represent 68.8% of the total pollen sum along with 11.6% arboreal pollen, mostly Corylus, but with relatively high proportions of Betula and Alnus (2% and 2.7% respectively). Plantago is still present at 4% (in fact its presence is almost continuous throughout all sections) plus 1.8% Papillonaceae pollen, typical of cultivated and grass-meadow type ground.

SAMPLE 2.1

This zone represents the A2 of the podzol profile. In this sample, siliceous material was present in excess and so obscured the pollen grains, making a reliable count impossible. The information gained on the pollen assemblage of this sample is therefore derived from qualitative scanning of the slide. Polypodium spores appear to be dominant and it is thus distinctly different from sample 2.0 (the Ao of the podzol profile). Other Pteridophyte pollen is present along with Corylus. In minor occurrence are Urtica, Plantago, Ericaceae, and Ranunculaceae grains.

SAMPLE 2.2

This zone represents the B horizon of a podzol profile, occurring below the iron pan. Due to the iron pan impeding movement through the soil profile, pollen was not present in sufficient quantities to allow a count.

SAMPLE 10a

This zone is characterised by an increase in arboreal pollen (14.7%) again mostly Corylus, but with a distinct increase in Alnus pollen (4%). One Ulmus pollen grain was found. The pollen assemblage is typical of a heath type flora, with 59% Ericaceae pollen and some Gramineae (11%). A low proportion of Pteridophytes were present, and occasional grains of Ranunculaceae and

Compositae (sub family Liguliflorae) were found. Urtica pollen occurred at 3% of total pollen.

SAMPLE 10b

This material represents a higher zone of the bank material, and has 8% Pteridium aquilinum spores. Ericaceae is still dominant in 44.5%, accompanied by some Gramineae and Cyperaceae, but Urtica and Plantago pollen were also found with occasional grains of 'weed' taxa. A high percentage of Alnus (10%) pollen also characterises this sample. No evidence of cultivation was found in distinct contrast to the majority of bank material samples from the other sections. Distinctly more Corylus pollen is present in this sample than in 10a (18% as opposed to 8%), and also a distinct rise in Alnus - 3% in 10a to 10% in 10b. Relatively high percentages of Urtica pollen occurring in both samples.

SAMPLE 10.2

This sample represents the top of the black greasy silty loam, and is thought to be composed of redeposited turves. It is characterised by an increase in Ericaceae pollen - 70%, and low percentages of other arboreal and herbaceous types (however, one must bear in mind the 'real' as opposed to the 'statistical' rise in the pollen type, which is based on proportional expression). One cereal grain was found in this sample, but was not accompanied by many 'weed' pollen grains. One Acer grain occurred, plus 2 grains of Ulmus pollen but the arboreal pollen content was distinctly lower than in 10a and 10b.

SAMPLE 10.4a

The pollen in this sample was poorly preserved and corroded, and much siliceous matter was present. There is a distinct decrease in Ericaceae pollen (23.9%) and an increase in arboreal pollen (50.7%),

composed mainly of Corylus, Alnus and Betula. This increase in arboreal pollen, accompanied by absence of herbaceous pollen apart from low percentages of Plantago, Gramineae and Cyperaceae, implies a more wooded vegetation accompanied by an increased water regime. Evidence for this also lies in the increase in spore forming vegetation.

SAMPLE 10.4b

This sample represents the bottom of the 10.4 zone. The pollen assemblage is very similar to 10.4a.

SAMPLE 10.5

The pollen in this sample is sparse and quite corroded. It differs from 10.4 in that the Betula component is much reduced, while the Alnus component is only slightly lower. In other respects, its pollen assemblage is similar to that of the 10.4 samples although the 10.5 does have a significant Ranunculaceae content (5%).

SAMPLE 1.2

This is the lower peat horizon and again has a characteristic peat forming pollen flora:- 43% Ericaceae 10 Gramineae, and 8% Potentilla. The Alnus component is reduced, as is the arboreal component in general, but Corylus is still significantly represented (7%). Two Sphagnum spores were also found. In general, excluding Corylus, section 6 has far more arboreal pollen, particularly Betula and Alnus, than section 3.

SECTION 7

SAMPLE 10

This sample was included within the leached gleyed area, and the pollen is badly corroded with some siliceous material present. Its pollen assemblage is

typical of a damp habitat with a significant increase in Pteridophyte spores, particularly Polypodium (19.7%). Ericaceae and Gramineae are present in 11.3% and 8.9% respectively, and the Corylus and Urtica pollen is relatively high (41.8% and 29.5% respectively - bearing in mind the difficulties of distinguishing between the two types in poorly preserved condition). Two grains of Crataegus type were also found.

SAMPLE 11

This sample was taken from the bulk of the hut's bank. The pollen in it is well preserved and consists of a varied assemblage (reminiscent of sample 4a from Section 3). Urtica pollen is noticeably absent, and the arboreal content is low, thus it is distinctly different from 10. Far greater proportions of herbaceous species (other than Gramineae and Cyperaceae) occur, and Labiatae represent 75% of the total pollen sum. Cerealia pollen were present, but only three grains were observed, and the Plantago component was somewhat reduced. This sample appears to have a good representation of acidophilous pollen, but also influence of more basophilous herbs, from local agricultural areas. Pteridophytes were still present at 8% of total pollen, and Alnus pollen represented 3% of the pollen sum.

SAMPLE 12

The Ericaceae and Gramineae components of this sample are similar in their proportions of that of 11, but it differs from the latter in that less Pteridophyte spores occur, and there are fewer herbaceous pollen types. Also cereal pollen was absent. Pollen in general was well preserved.

SECTION 4

SAMPLE 2.2

This sample was taken from the C horizon of the podzol profile; the 'natural', but there was not a sufficient concentration of pollen to allow a count.

SAMPLE 2.1

This level represents the A2 horizon of the podzol; a leached layer. The pollen is badly corroded. Gramineae and Plantago pollen are most abundant (31% and 26.7% respectively), and Ericaceae are present at 18.5%. The arboreal component is quite reduced (7%). One cereal pollen grain was found, and occasional grains of other herbaceous types, such as Cruciferae, Leguminosae and Caryophyllaceae, typical of more open environments. Urtica was absent.

SAMPLE 2.0

This sample is taken from buried soil, and the pollen is well-preserved. Gramineae and Ericaceae pollen types are co-dominant, and the arboreal component is high at 22%, consisting of Corylus, Betula and Alnus in similar proportions. Quercus and Acer pollen also occurred. One cereal grain was found, along with occasional grains of other herbaceous types. This may represent an environment after podzolisation was well-advanced, but where agriculture was practised locally.

SAMPLE 10.1

The pollen was sparse but well-preserved. The evidence for cultivation is more prominent in this soil with 3% Cerealeş, increased Plantago and occasional low herb pollen grains, accompanied by decreased Ericaceae and Gramineae components. The arboreal component is still well represented (as in 2.0) with Acer pollen also occurring (evidence for local tree planting or introduction?).

SAMPLE 10

This sample represents bank material, very similar in its pollen assemblage to 10.1, except for its lowered Betula component, and lower general arboreal pollen (15%). The pollen is well preserved and well concentrated.

SAMPLE 1.1

This sample is thought to represent a peat layer, but on pollen analysis this proved suspect due to low percentages of typical peat-forming flora. For instance, Ericaceae occurred at only 12%; Cyperaceae, only 3% and Alnus and Betula were lower than in the non-peat sample. However, Gramineae was dominant with 44% of total pollen, suggesting an open meadow-type habitat which is also verified by the occurrence of several grains of basophilous low herbs. One cereal pollen grain was also found (cf 10.1 and 10).

SECTION 1

SAMPLE 10

This sample was taken from the bank, and the pollen in general is quite degraded. It is comparable to the bank material from other sections, in that its pollen assemblage has 5% cereal pollen and grains of various herbaceous species typifying open meadow-type habitat, or even cultivated land (Chenopodiaceae). The arboreal pollen sum is low (7%) and acidophilous taxa, though present, are in lesser proportions. Hedgerow species are also present ie Crataegus and Fumariaceae, and Gramineae are dominant (ie open, field-like

habitat, with hedgerow boundaries).

SAMPLE 14/15a

Some siliceous matter is present. Although it has increased proportions of Ericaceae and Potentilla it is very similar in other respects to 10, ie 5% cereals, with Plantago and hedgerow species also occurring.

SAMPLE 14/15b

The siliceous material in this sample tended to obscure some of the pollen, and the pollen itself was quite badly corroded. Thus, the high proportion of Ericaceae type pollen (78%) may have been overestimated due to its being easily recognised. In general, other pollen types were infrequent in their occurrence but Polypodium spores represented 6.8% of the pollen and spore assemblage.

SAMPLE 2.0

A feasible count could not be attempted because siliceous material obscured the grains. From general observation, Ericaceae and Pteridophytes appear to be prominent.

SECTION 16

SAMPLE 2.0

Siliceous material present on the slide made the sample indeterminable (cf 2.0 of section 1).

SAMPLE 2.1a

This sample represents the A2 horizon of the podzol; a leached and compacted layer. Siliceous material was evident and the pollen was somewhat corroded. Pteridophytes and Urtica pollen appeared to be the most dominant taxa (cf 10 of section 7). This may suggest a nutrient enrichment of the layer (possibly from manuring prior to cultivation). This is emphasised by the occurrence of Succisa pollen, a species typical of nutrient enriched acidic conditions ie bushes in bogs. Other pollen taxa are present in lower proportions ie 14% arboreal pollen.

SAMPLE 2.1b

This sample is essentially similar to 2.1a and therefore requires no further elucidation.

SAMPLE 10a

This sample consists of the bank material and compares relatively well with 10 from Sections 1 and 2; Gramineae also being the dominant taxon. However, no hedgerow species were found in this sample, in contrast to 10 in Section 1, and more cereal pollen was present in the latter. This suggests that 10a from Section 16 has been less influenced by local cultivation than has sample 10 from Section 1.

SAMPLE 10b

This sample was also taken from the bank feature, but further E along the section. Cereal pollen was absent (although only 1 grain was found in 10a) and a greater proportion of Corylus pollen occurred (21% as compared to 5% in 10a). Gramineae proved the most abundant taxon, rather than Ericaceae, as in 10a. In other respects, ie herbaceous taxa, it was similar to 10a.

SAMPLE 14/15

In contrast to 14/15 of Section 1, this sample has less Ericaceae pollen (5% as opposed to 27% in 14/15 Section 1) and also less cereals, but more Plantago. Also, it has no evidence of hedgerow species, as does 14/15, Section 1, but more Pteridophytes, and more Urtica. Thus, it suggests that this layer has undergone nutrient enrichment (Succisa pollen is also evident).

SAMPLE 10

This sample is from bank material, and compares well to many other 10s from other sections, ie cereals present, Gramineae dominant with low percentages of other herbaceous species. Influence from heath type vegetation is still prominent as Ericaceae, Myrica and Potentilla form a substantial part of the assemblage.

SAMPLE 1.3

This sample was taken from the basal peat, and has a typical peat forming vegetation ie 50% Ericaceae pollen, 10% Myrica and a low percentage of Potentilla and Pteridophytes. However, 2 cereal pollen grains were found in this sample, but very few of the anticipated associated pollen type occurred. This implies contamination from an adjacent horizon, probably the bank material.

SECTION 5

SAMPLE 10a

Bank material taken low in the horizon, close to the iron pan. The pollen in this

sample is well concentrated but poorly preserved. It compares well with feature 10 from other sections, with cereal pollen (1%) and a variety of herbaceous pollen types. Gramineae represent 60% of the pollen sum, and arboreal pollen is low (5%), as are Pteridophyte spores.

SAMPLE 10b

This sample represents a combination of samples taken from the bank, but higher up. In contrast to 10a it is devoid of Compositae pollen and has more Ericaceae pollen and less Gramineae. Also Potentilla type occurred at 2% in 10b but were absent from 10a. This suggests more influence from a heath type vegetation.

SAMPLE 14a

This sample was taken from the top of feature 14 on the SE side of the section. It is sparser in pollen than 14b and c, possibly due to downward movement of pollen due to leaching. Gramineae is dominant (30%) and arboreal pollen is high (26%) with a significant Alnus and Corylus component. Heath type flora is dominant in this sample.

SAMPLE 14b

This sample was taken below 14a. The pollen is denser than in 14a, possibly due to leaching of pollen downwards, and is very similar in its pollen assemblage to 14a.

SAMPLE 14c

This sample was taken just above the iron pan on the NW side of the section, and is significantly different, though contemporary with, samples 14a and b. The arboreal pollen component is much reduced (6%) and is the Ericaceae and other acidophilous taxa. Cereals are present (3%) which were absent from 14a and 14b, and Plantago type is evident at 11%. There is also an increase in basphilous taxa. Gramineae is the dominant taxon at 57%, this suggests that the NW side of the field fence is the side where cultivation was practised during the relevant archaeological periods.

SAMPLE 8

Siliceous material is present in the sample. The arboreal component is high (39%), characteristic of the SE side of the field bank (cf 14a and 14b), and Gramineae is dominant at 33.7% of the pollen sum. Other herbaceous types are reduced.

SAMPLE 4

The pollen in this sample was not sufficiently concentrated to allow a count.

SECTION 2

SAMPLE 2.0

This sample is thought to be taken from an old ground surface, under the primary bank. It is now a gleyed layer. The pollen is very sparse but well preserved, and the assemblage is dominated by Gramineae pollen (36%) and also a high proportion of Plantago was found (26.0%) and one cereal grain. A combination of low percentages of basophilous herbs and heath type herbs (ie Saxifraga and Succisa) are present, along with low percentage of Urtica. The arboreal component is relatively low, consisting of 4% Corylus pollen. This is contrasted by layer 2.0 from Section 4.

SAMPLE 10

Some siliceous material is present in this bank layer, and its pollen assemblage was similar to 10 from the other sections, ie low proportion of cereals, high Ericaceae and Gramineae pollen (29% and 42% respectively), and occasional grains of 'meadow' type herbs, although the latter tended to be less common in this sample. Plantago is quite common (15%), and the arboreal component is relatively low (3%).

SAMPLE 1.2

This sample is taken from a basal peat layer, and is comparable to samples taken from other 1.2 layers. The pollen was well preserved and well concentrated, consisting mainly of Ericaceae pollen(75%), with associated Potentilla type (6.6%) and Myrica gale (5%). Other taxa were sparse, and the arboreal component is insignificant (cf 1.2 from Section 6). This heath type vegetation could represent the post-bank environment.

SAMPLE 4

This sample is thought to represent a plough soil, and the pollen assemblage tends to confirm this description. Cereal pollen is evident (2.2%), along with high proportions of Gramineae pollen (32.5%). Plantago represents 3% of the total pollen sum, and in general other herbaceous taxa are less common than in similar samples (cf 4b Section 3).

The Ericaceae component is significant (29%) and the arboreal component is relatively high (17.5%), being mostly Corylus, but Alnus and Betula are present,

plus one grain of Acer. Thus, heath type vegetation is evident, with influence from local cultivation.

SECTION 10

SAMPLE 3

This sample is thought to represent the old ground surface which may be true, as the pollen is well concentrated with a variety of types, although the pollen itself is rather degraded. Ericaceae and Gramineae pollen are co-dominant (31.5% and 37.8% respectively), and the arboreal component is relatively low at 10% (mostly Corylus). Plantago pollen represents 8% of the pollen sum, and one cereal grain occurred. Other herbaceous types were scarce. Pteridophyte spores were present (7% of the pollen plus spore sum). It is possible that the cereal grain represents contamination from 10, the bank material.

SAMPLE 14/15

The bank material was in part over this layer. The pollen is sparse and rather degraded, but again Ericaceae and Gramineae are co-dominant (33% and 27% respectively). The Pteridophyte component is less significant than in 3, but Compositae pollen is present in greater quantities (4%). Cereals and Plantago pollen are relatively high (3% and 15% respectively) and the arboreal component is low (5%). This sample is possibly similar in origin to 4b in Section 2.

SAMPLE 14

The pollen is well concentrated and in a reasonable state of preservation. The Plantago and Cerealia component are more significant in this sample, than in 14/15 (15% and 3% respectively), thus having greater influence from local cultivated land. The Ericaceae component is comparable to that in 14/15 and Myrica is more significant in 14 (2%). Other herbaceous types are present in low percentages, ie Compositae Tubiflorae (4%), Medicago sativa type(6%). The Pteridophyte component is reduced.

SAMPLE 15

Ericaceae are more prevalent (at 58%) in this sample than in 14 and 14/15, and Gramineae is reduced (9%) - although this may be a product of proportionate expression. Cereals are still present along with low percentages of Plantago and other herbaceous taxa. The arboreal component is low (6%). In general, this section contains a low arboreal component, and has evidence for local cultivation at each layer.

SECTION 11

SAMPLE 3 (Possible buried humus)

The pollen in this sample is in reasonable condition and a variety of taxa are represented. It is comparable in its pollen assemblage to the bank material in other sections ie Gramineae being the dominant taxon (43.6%) and Plantago being well represented (11.8%). Also, the arboreal component is low at 5% of the total sum, but two Salix grains were found, possibly originating from a regional source. Ericaceae and Myrica are present (19% and 1% respectively), and a wide variety of other herbaceous taxa are represented by occasional grains, although Ranunculaceae were well represented (4%) as was Gallium, four grains being found. Pteridophyte spores represented approximately 10% of the total pollen plus spore sum. Thus, the influence of local cultivation, in that a rather 'open' type of vegetation cover is implied, is quite prominent in this sample.

SAMPLE 10 (Bank material)

This sample is very similar to sample 3 above, and there is probably not enough difference for the two layers to be differentiated in the section.

SECTION 14

SAMPLE 2.0

This is thought to represent an old ground surface, and is markedly different from 2.0 in Section 2 in that Ericaceae is the dominant taxon in the former (55.5%) whereas Gramineae is dominant in the latter. However, Gramineae is still well-represented (20%). The arboreal component is relatively low (9%), but Urtica (2%) and other herbaceous taxa are present, and represented by occasional grains. No cereals were found in this layer, although Plantago represented 5% of the total pollen sum.

SAMPLE 9

The pollen in this sample is well concentrated but somewhat corroded. Gramineae and Plantago are co-dominant (35% and 30% respectively). thus an 'open' type vegetation is represented of a more basophilous nature, ie a low Ericaceae component is present (12%) and the arboreal component represents only 4% of the total pollen sum. One Pinus pollen grain occurred possibly represented a long distance transport or at least extra-local influence. One cereal pollen grain occurred, but even without this the assemblage clearly represents the environment of the first phase bank.

SAMPLE 10

The pollen in this sample is well concentrated but some pollen is rather degraded. The arboreal component is more significant than in sample 9, ie 8%, as is the Ericaceae taxon (22%). Plantago is less prominent than in sample 9, although 2 pollen grains occurred. The herbaceous component in sample 10 is also less than in sample 9. On the basis of this it is probable that samples 9 and 10 represent distinct facies within one bank.

SAMPLE 1.2

The pollen in this sample is well concentrated and nicely preserved. The Ericaceae component is dominant (58%) and thus a heath type vegetation cover is indicated, as opposed to the grassy meadow type vegetation represented by samples 9 and 10. This is also indicated by the reduction in Gramineae and Plantago and other herbaceous taxa. This pollen assemblage indicating heath vegetation, possibly indicates the deteriorating soil conditions under the phase 2 bank period.

NOTES TO THE SECTION DRAWINGS

Published sections have usually been shaded to indicate the colour or texture of the various layers they contain. However hand-texturing of the layers in the sections at An Sithean show them to consist of uniformly silty loams and silty clays in the upper horizons, merging into sandy loams in the lower horizons. The repetitious shading of the sections to convey this information would therefore seem rather fruitless. In peatlands the soil horizons are usually strikingly coloured, especially where, as at An Sithean, the soils have previously been podzolised. However, the bands of colour do not necessarily respect archaeological features and to render them by shading or otherwise, in the section drawings would be misleading. As a compromise the layers have been coded by decimal numbers to convey pedological information, and shaded, where relevant, to show the sequence of discrete man-made structures in each separately, ie the 'primary bank' shown in almost every section is not of the same phase throughout. Iron podzols were the predominant type of profile and in several cases appeared to be gleyed. Generalised descriptions of the layer codes appear below and individual differences are described separately with the section drawings. These descriptions were prepared by Miss Ashbrook on the basis of her field descriptions, which appear on the original drawings.

1. Peat. 1.0 Fibrous peat; 1.1 Fibrous peat broken by rhyzomes: 1.2 Basal peat: black, greasy, amorphous; 1.3 Buried peat.

2. Buried podzol profiles - developed podzols preserved under banks.

2.0 The Ao horizon: black, greasy feel, may represent buried turf or the bottom of the A horizon.

2.1 The A_2 or A_e horizon: light grey or white in colour, due to leaching; often containing many small stones and often compacted or cemented to give an extremely firm consistency. Unburied A_2 horizons are not generally compacted.

2.2 The B (iron-enriched) horizon: found ubiquitously under all sections; generally of uniform orange colour, although appearing mottled in some cases. The consistency of the soil was usually soft, particularly under iron pans and the texture was that of sandy loam.

3. Buried humose silty loam: unleached; medium brown silty loam. It appears to be a buried plough soil.

4. Gleyed horizon: appeared more variable than many of the other layers with the colour ranging from light grey to blue/grey to medium grey brown. The layer often contained many small decaying stones. The consistency was generally firm, but not compacted; the colour and occasional mottling are thought to be due to waterlogging.

5. Relict podzol: distinguished from the buried podzol because here it appears that a developed podzol was at a later stage subjected to waterlogging, which resulted in further alteration of the profile. Iron pans, which do not respect soil horizons, may also be formed during this period, when fluctuating water table is in existence.

6. Humose silty loam: mixed and aerated medium brown silty loam topsoil, with grass as the dominant vegetation.

7. Modern redeposited soil: the upcast soil from the road cutting, which was of a very heterogeneous nature, and included soil from all horizons, worm-turned

throughout.

8. Heavily mottled gleyed layer: often found under 4 heavily mottled with iron staining; the mottling is due to the fluctuating water table which causes constant changes in reducing and oxidizing conditions. This is rendered as 8.1 where it occurs around large earthfast stones and boulders.

9. (See Section 6). This appears to be a pre-bank, man-made feature.

10, 11, and 12. Bank fills: varied in colour and consistency. There were two main types of fill; in some cases, the soil between the stones was loose and crumbly (Sections 2 and 4), and probably infiltrated the stones after the banks were built. In certain Sections (10 and 14), the loose consistency was accentuated, or possibly caused, by the infiltration of plant roots or rhyzomes, particularly those of bracken. The second type of fill was very firm, and was probably an original part of the bank (Sections 5, 6, part of 7, and 16).

14. Run-off from bank (see descriptions of individual bank fills).

15. Plough soil: moderately friable medium brown silty loam; in general appeared as well-mixed and in some cases aerated by earthworms.