

## Cereals in Scottish antiquity

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### Summary

A catalogue of records of charred and waterlogged cereal remains from archaeological sites in Scotland is presented, together with some comments on the distribution of the evidence in space and time.

### Introduction

The author has, until recently, been compiling a catalogue of references to the presence of cereal fossils (excluding pollen, for which see, for example, Edwards and Hirons 1984) occurring in Scottish archaeological contexts. However since I have now moved to Australia, it is unlikely that the compilation of this catalogue will continue for the foreseeable future. It seems unhelpful to file this information away, and publication of the basic information contained in the catalogue will be of use to those beginning or continuing research in the field of Scottish environmental archaeology. The catalogue, while being moderately complete up to 1986, is undoubtedly not exhaustive; in particular the files of the Scottish Development Department (Historic Buildings and Monuments) are likely to contain unpublished data of relevance to this catalogue.

### Sites and references

The following is a list of Scottish sites for which there are fossil records of cereals. The number(s) in brackets following each site indicate the publication details listed below. The county names are those used prior to 1974.

Neolithic: Easterton, Roseisle, Burghhead (1); Eday, Orkney (1); Isbister, Shetland (2); Knap of Howar, Papa Westray, Orkney (3); Townhead, Rothesay, Bute (1, 4, 5); Unstan, Orkney (1).

Bronze Age: Archerfield, Haddington (1); Ardnave, Islay (6); Arniston, Edinburgh (1); Balbirnie, Fife (1); Barvas Machair, Lewis (7); Baskerfield, Glenluce, Wigtownshire (1); Brackmont Mill, Leuchars, Fife (1, 8); Buckie, Banffshire (1); Cadder, Lanarkshire (1); Carmylie, Forfar (1); Chapel of Gariock, Aberdeenshire (1); Chrichie, Aberdeenshire (1); Craigentiny, Edinburgh (1); Culbin Sands, Wigtownshire (1, 4); Dalmore, Lewis (9); Daviot, Aberdeenshire (10); Dean Bridge, Edinburgh (1); Donne Castle, Forfar (1); Drymmiewood, Balbirnie, Fife (1); Gambrie, Gardenstown, Banffshire (1); Glenballoch, New Rattray, Perthshire (1); Glenluce, Wigtownshire (1); Glenluce Sands, Wigtownshire (1);

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Greenoakhill, Mount Vernon, Glasgow (1, 10); Jarlshof, Shetland (1, 10); Largs, Ayrshire (1); Leuchars, Fife (1, 10, 11); Lintlaw, Bunkle, Berwick (1); Magdalen Bridge, Edinburgh (1); Musselburgh (1); Myrehead, Falkirk (12, 13); Newlands, Longside, Glasgow (1); Ness of Gruting, Shetland (14, 15); North Berwick (1); Outerston Hill, Edinburgh (1); Point of Buckquoy, Mainland, Orkney (16); Rosinish, Benbecula (17); Spottiswood, Berwick (1); Strathblane, Stirlingshire (1); Torrs, Luce, Wigtownshire (1); Turriff, Aberdeenshire (1); Tusculum, North Berwick (5, 18); Upper Boynlie, Tyrie, Aberdeenshire (1); Unknown locality, Aberdeenshire (1); West Kilbride, Ayrshire (1); Westwood, Newport, Fife (1); Wetherhill, Muirkirk, Ayrshire (1); Windyhall, Rothesay, Bute (1).

Iron Age: Balloch Hill, Kintyre (19); Baleshare, Uist (59); Borness Cave, Kirkcudbrightshire (1, 10, 20, 21); Broch of Burrian, North Ronaldsay, Orkney (22); Broch of Gurness, Orkney (7); Bu Broch, Orkney (7); Camelon, Falkirk (23); Crosskirk, Caithness (24); Dun Beag, Struan, Skye (22, 25); Dun Cul Bhuirg, Iona (26); Dun Mor Vault, Tiree (27, 28); Erskine Ferry, Old Kilpatrick, Dumbartonshire (10); Fairy Knowe, Buchlyvie, Stirlingshire (29); Hornish Point, Uist (59); Howe of Howe, Orkney (7); Leckie Dun, Stirlingshire (7); Lingraw Broch, Orkney (30); Machrins, Colonsay (7); Road Broch, Keiss, Caithness (10, 31); Sheils, Govan, Renfrewshire (32); Stenness, Orkney (33).

Roman: Bearsden, Dumbartonshire (7, 34, 35, 36); Birrens, Dumfriesshire (1, 37); Castlecary, Stirlingshire (1, 7, 11, 36); Forth and Clyde Canal, Stirlingshire (1); Kintore, Aberdeenshire (38); Newstead, Melrose, Roxburghshire (39); Westerwood, Stirlingshire (40); Yorkhill, Glasgow (1).

Dark Age, Viking, Pictish: Barhapple Loch, Wigtownshire (1); Barvas Machair, Lewis (7); Bay of Birsay, Orkney (16); Dalladies, Perthshire (41); Dunadd, Argyllshire (42); Dundurn, St Fillans, Perthshire (43); Freswick Castle, Caithness (44); Freswick Links, Caithness (45); Machrins, Colonsay (46); Saevar Howe, Orkney (47); Sandwick, Unst, Shetland (48).

Medieval and post-medieval: Aberdeen (49); Camphill, Glasgow (1, 10, 50); Castlehill of Strachan, Kincardine and Deeside (51, 52); Elgin (49); High St., Glasgow (53); Machrins, Colonsay (54); Nethermills Farm, Banchory, Deeside (52, 55); Perth (49, 56, 57); St Andrews (57).

Unknown age: Old Kilpatrick, Erskine, Dumbartonshire (1, 4); Wemyss, Fife (10, 58).

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(1) Jessen and Helbaek (1944); (2) A. Lynch, in Hedges (1983a); (3) C. A. Dickson, in Ritchie (1984); (4) Callander (1929); (5) Curwen (1938); (6) C. A. Dickson, in Ritchie and Welfare (1984); (7) C. A. Dickson, unpublished reports; (8) Mears (1937); (9) Ponting and Ponting (1984); (10) Kilbride-Jones and Mitchell (1933); (11) Percival (1934); (12) Barclay (1983); (13) Barclay and Fairweather (1984); (14) H. Helbaek, in Calder (1950); (15) A. Milles, unpublished; (16) Donaldson et al. (1981); (17) Shepherd and Tuckwell (1979); (18) Cree (1908); (19) C. A. Dickson, in Peltenburg (1982); (20) Corrie et al. (1875); (21) Callander (1911); (22) MacGregor (1975); (23) G. W. Dimbleby and J. Sheldon, in Proudfoot (1980); (24) Dickson (1979); (25) Callander (1921); (26) C. A. Dickson, in Ritchie and Lane (1981); (27) J. M. Renfrew, in MacKie (1974); (28) MacKie (1969); (29) Boyd (1982-83); (30) Petrie (1873); (31) Anderson (1901); (32) Robinson (1983); (33) C. MacLean, in Ritchie (1978); (34) Dickson et al. (1979); (35) Knights et al. (1983); (36) Dickson and Dickson (forthcoming); (37) Wilson (1975); (38) W. E. Boyd, unpublished

report; (39) Tagg, in Curle (1911); (40) MacDonald (1933); (41) Watkins (1981); (42) A. Milles, in A. Lane, unpublished reports; (43) C. A. Dickson, in L. Alcock, unpublished report; (44) A. Donaldson, in Batey et al. (1984); (45) Rackham et al. (1984); (46) C. A. Dickson, in Ritchie (1981); (47) C. A. Dickson, in Hedges (1983b); (48) G. E. M. Jones, unpublished report; (49) Fraser (1981); (50) Fairhurst and Scott (1953); (51) W. E. Boyd, in Yeoman (1984); (52) Boyd (1986a); (53) W. E. Boyd (1986b) and (in press); (54) C. A. Dickson, in Ritchie (1981); (55) Boyd (1986c); (56) D. E. Robinson, in Blanchard (forthcoming); (57) W. E. Boyd, unpublished reports; (58) Simpson (1875), quoted in (10); (59) Jones, unpublished report.

### Discussion

Even given the increase in the amount of available data on cereals in antiquity, it is doubtful that there is yet sufficient resolution in terms of spatial and temporal distribution of sites in Scotland to update Jessen and Helbaek's (1944) early distribution maps in order to recognise a complete expression of the spread and use of cereals in ancient Scotland. This problem stems from several basic facts. Firstly, the distribution of excavated sites providing botanical evidence is uneven and, to a degree, geographically constrained. There are, for example, concentrations of sites of different ages in certain areas, such as the Northern Isles (neolithic) and, naturally, some urban settings (medieval). Furthermore, a relatively small proportion of the known archaeological sites provide palaeobotanical evidence; thus, for example, the several hundreds of neolithic artefact and monument sites in Scotland (e.g. Smith 1974, figs 12, 14-16; Henshall 1977, figs 19, 20) contrast with the six catalogued neolithic sites at which fossil cereal remains are recorded. A related factor is that not all sites necessarily provide the botanical material required for the comprehensive and rigorous study of past cereal distribution and use. Most of the Bronze Age sites recorded by Jessen and Helbaek (1944), for example, represent records of single or few grains, and many sites throughout Scottish antiquity provide similarly small fossil assemblages. Not only is it unclear, therefore, whether the full range of cereals associated with former human activity at these sites is represented, but also there is minimal potential for further detailed analysis based upon various approaches such as those of Hillman (1981; 1984 a, b) and G. E. M. Jones (1984) or of M. Jones (1984; 1985). These factors, of course, do not merely constrain research advances in archaeology-based palaeobotany, but in many other archaeological fields.

The situation described above contrasts with that generally pertaining in Quaternary palaeobotany, in which it is now possible to represent the early Flandrian spread of many major plants at a continental level (e.g. Huntley and Birks 1983; Delcourt and Delcourt 1985) and, in some cases, at a macro-regional level (e.g. Godwin 1975; Birks 1980; Bennett 1984). This success reflects the intrinsic differences between Quaternary palaeoenvironmental studies and much of environmental archaeology; in the former long temporal sequences can be studied, whereas in the latter, sites tend to represent small numbers (often only one) of discrete temporal units. Likewise, the effort required to extract equivalent palynological and plant macrofossil assemblages differs considerably, and equivalent interpretation is frustrated by the considerable differences in the influence and effects of differing taphonomic processes in the two types of study. In general, the degree of data resolution available to plant macrofossil analysis is lower than in palynological studies, and consequently, efforts to summarise trends in spatial and temporal distributions of, for example, cereals must be conducted, in most cases and for the time being, at a moderately high level of generalisation (see, for example, Godwin 1975, figs 139-41; Hubbard 1976; 1980).

Although it is not the primary purpose of this paper to discuss cereal distributions in Scottish antiquity in detail, it is possible, on the basis of this catalogue to make some general points which may illustrate the difficulties outlined above. These comments must be regarded, in some cases, as tentative, since future or continuing research will undoubtedly clarify or alter some of the ideas.

Of the six neolithic sites, four are from the Northern Isles, and only one (Townhead, Rothesay) from southern Scotland. At all sites, the few cereal remains are of six-row barley (Hordeum vulgare), where identifiable to species level; the grain at Townhead was originally recorded as probable wheat (Triticum sp.) but has been subsequently re-identified as Hordeum (C. A. Dickson pers. comm.).

The Bronze Age provides the greatest number of cereal sites in Scotland although, since these are largely finds of grain impressions in pottery, it is debatable whether local cereal use and cultivation is reflected. In general, Hordeum is most common, although at many of the coastal dune sites - Culbin Sands, Glenluce, Rosinish and Leuchars - Triticum (mainly emmer, T. dicoccum) is present, perhaps reflecting the arrival of pottery from further south into these coastal areas, or the greater suitability of the drier sandy soils for wheat cultivation. One notable site is the inland site of Myrehead, Falkirk, where finds of rye (Secale cereale) are recorded. These, however, are regarded as intrusive weeds rather than a reflection of deliberate cultivation (Barclay and Fairweather 1984). In terms of site distribution, Bronze Age cereal sites tend to be in outlying northern and southern areas and along the eastern seaboard; there is a notable paucity of sites throughout the west and northwest of Scotland.

The Iron Age likewise is poorly represented; sites where cereals have been recorded typically occur in the northern and western islands and highlands. Hordeum vulgare again is predominant, although at Baleshare and Hornish Point (Uist), Balloch Hill (Kintyre), Fairy Knowe (Forth Valley) and Bu Broch (Orkney) Triticum (probably all T. dicoccum) is recorded as a secondary cereal. Oats, Avena, appears for the first time in Scotland and, where grains are identifiable to species level, A. strigosa appears to be the commonly cultivated oat. In general, the Iron Age sites provide small and inadequate assemblages although at Fairy Knowe analysis following Hillman (1981) was possible, and provided, for the first time in Scotland, evidence for the cultivation (rather than merely the presence) of cereals at an Iron Age site (Boyd 1982-83). The arrival of the Romans saw a major change, with Triticum (both T. dicoccum and bread/club wheat, T. compactum/aestivum) being more commonly represented than Hordeum at archaeological sites. It is probable, however, that Triticum and Secale (as at the Castlecary and Forth and Clyde Canal sites) were imported rather than grown locally for Roman military consumption (Helbaek 1971; Godwin 1975, 414). Avena (not only A. strigosa but also A. sativa) is present at some sites. Again, the total number of Roman sites where cereals have been recorded is low in comparison with all the known sites of this date (see, for example, Breeze 1979), and the extent to which interaction between Roman trade and supply and local cultivation existed has not yet been examined fully.

During the Dark Ages (*sensu lato*) Hordeum (where identifiable, H. vulgare) returns to prominence at Viking, Pictish and other sites. Triticum dicoccum occurs at the south-west Scottish Dark Age sites of Barhapple Loch and Dunadd, and Avena (either A. strigosa or the weed A. fatua) occurs at most sites. Again, however, the paucity and uneven distribution of sites precludes any detailed spatial analysis.

Sites of medieval and post-medieval age are also sparse and unevenly distributed in Scotland with, in this case, the predominant emphasis upon large and well-excavated urban sites (notably in Perth, but also in Glasgow, St Andrews, Elgin and Aberdeen), where Hordeum (often H. vulgare), Avena strigosa and/or sativa and Triticum (mainly T. compactum/aestivum) are recorded. At St Andrews, Secale cereale and Triticum dicoccum have also been recorded, probably reflecting the optimal agricultural conditions which exist along a narrow coastal strip in central eastern Scotland. Only three rural sites are recorded and the data from these are minimal (Boyd, in press).

In conclusion, the overall picture is one of sparse and unevenly-distributed sites. Cultivation and use of six-row barley (Hordeum vulgare) predominates throughout Scottish antiquity, with a middle period in which emmer (Triticum dicoccum) appears. The balance of species recorded alters substantially during the Roman period, largely reflecting the intrusive nature of the Roman occupation of southern Scotland, and the most convincing period of wheat cultivation in Scotland appears to be the medieval and post-medieval period, in which bread wheat (T. compactum/aestivum) was widely grown and used. Likewise, the cultivated oat (Avena sativa) appears to be a moderately recent addition, with the bristle or black oat (A. strigosa) having a slightly longer history in Scotland but, by comparison with barley or emmer, A. strigosa can hardly be regarded as an ancient Scottish cereal. The last main northern European cereal, rye (Secale cereale), occurs only as a 'fringe' cereal, possibly only having been cultivated on the eastern seaboard during the medieval period. Despite this relatively recent increase in diversity, Hordeum vulgare has, until modern times, remained the principal cereal crop to be cultivated in Scotland (Bland 1977).

#### Post-script

In late stages of preparing this text, Annie Milles informed me of her work in the early agricultural settlement at Scord of Brouster, Shetland, which is contained in her 1984 M.Sc. thesis (Milles 1984) and is being prepared for full publication in the excavation report (Whittle forthcoming).

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(Editors' Note: Many of the references to papers in Proceedings of the Society of Antiquaries of Scotland are given with both the year of printing and the 'year(s) for which' they were published; bound copies usually bear the latter date(s) on the spine but they are not strictly speaking the date of publication.)

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