

## **BOTANICAL REMAINS OF EDIBLE PLANTS FROM IRON AGE BROCH, FAIRY KNOWE, BUCHLYVIE, STIRLING**

W. E. Boyd  
University of Glasgow

### **INTRODUCTION**

In 1978, Lorna Main reported in these pages on the archaeological excavation at Fairy Knowe, Buchlyvie. I helped in this as a student and have since, as a specialist, had the opportunity to study the botanical remains collected during the excavation. Some of the main findings of this research are presented here, although fuller details will be published. (Main, in preparation).

### **THE SITE**

The site (National Grid reference NS 586 943) consists of the remains of a broch situated on a small boulder-clay mound ("Fairy Knowe") overlooking the flat carselands of the Forth Valley. Although there were two phases of construction (an early timber roundhouse and a later stone-built broch), occupation was probably continuous, the roundhouse being occupied during the first century AD and the broch, constructed in the latter half of that century, being occupied until about 200 AD.

### **THE BOTANICAL REMAINS**

Almost all of the botanical remains have survived due to being charred, and were recovered mainly from occupation levels (floor composed of soil, charcoal and other debris) and hearths. To fully interpret the significance of these plant remains, several things need to be known apart from their identification. First, their modern ecology is important, although it must be remembered that the behaviour of plants may change with time. Secondly, it is useful to know how these plants were used in the past in Britain and, in some cases at present, in other societies. This forms the "ethnographic record" to which reference will be made later. Finally, the plant remains must be considered as an assemblage rather than as individual species. In the discussion which follows, the plants represented at Fairy Knowe are described briefly, and some aspects of their past and present ecology and use will be discussed. The details of identification will be published in the full excavation report. Plant nomenclature used follows Clapham et al (1981) and Hubbard (1968).

## THE CEREALS

By far the most abundant remains are those of barley (*Hordeum*) mostly being caryopses (grains). The remains are probably lax-eared six-row barley (*H.vulgare*), a primitive barley representing "bere" barley and formerly known by the misnomer "four-row barley". Most of the barley remains at Buchlyvie occur in features associated with the broch, the bulk being from one sample. There are also a few remains from the pre-broch roundhouse stage. Several other cereals are also present, all from the broch, and all in very small quantities. They are emmer wheat (*Triticum dicoccum*) a primitive wheat no longer cultivated in Britain, club or bread wheat (*T.compactum* or *aestivum*), bristle or black oat (*Avena strigosa*) and the common wild oat (*A.fatua*) a possible weed.

Barley is an early-maturing grain, well suited to the cool wet climate of north and west Britain (Bland 1971), and is better adapted than other cereals to grow at the fringes of agriculture (Harlan 1976). Bere barley grows on poorer soils and at higher elevations than any other barley variety. It was previously cultivated throughout the uplands of Wales and Scotland, but at present is only cultivated on some western and northern Isles. In contrast, wheat cultivation in Scotland is limited by the climate, only the east coast providing the adequate conditions of lower rainfall and higher sunshine, and by the distribution of suitably fertile soils.

Of the oats present at Fairy Knowe, bristle oat is a cultivated oat, grown extensively in marginal sites on the poorest soil during historical times throughout Scotland and Wales. It is now grown as a crop only in the northern and western Isles. Where it still occurs on the Scottish mainland, it grows as a weed, often in barley crops. Wild oat, on the other hand, has probably never been cultivated in Britain. It is a common, and often troublesome, weed of cereal crops. Interestingly, in California where the wild oat has successfully naturalised during the last few centuries, Indians collect the grain to use as bread corn (Sturtevant 1919). The wild oat may possibly have been an acceptable weed in Iron Age Britain.

## THE WEEDS

A limited range of weed fruits and seeds were recorded, mostly in the barley-rich sample. These were fat hen (*Chenopodium album*), black bindweed (*Fallopia convolvulus*), goosegrass (*Galium aprine*), knotgrass (*Polygonum aviculare* agg.), pale persicaria (*P. lapathifolium*), wild radish (*Raphanus raphanistrum*), sheep's sorrel (*Rumex acetosella*), red-veined dock (*R. sanguineus*), chickweed (*Stellaria media*) and

stinging nettle (*Urtica dioica*). The majority of these are common weeds of cultivated or waste ground, and where they are found in archaeological remains, are generally regarded as weed contaminants of cereal crops. The seeds of *Raphanus raphanistrum* are enclosed in pod segments which, being similar in size to cereal grains, are frequently not removed by sieving or winnowing of cereal crops. The others tend to be small seeds, and although hand sorting of grain can be efficient (Hillman 1981), they may have easily been missed. Many of these weeds have in the past been cultivated or collected from the wild throughout the world and used as pot-herbs, salad or green vegetables, or as food flavouring, (Sturtevant 1919). It is possible that these weeds were used as food in Iron Age Britain.

#### INTERPRETATION OF THE CEREAL AND WEED REMAINS

Although 25 samples from various types of features at the site were examined, only one had sufficient grain, seeds and other remains for detailed analysis. To understand the full range of the agricultural pattern at an archaeological site, it is necessary to examine botanical samples from as many structures and periods represented at the site as possible (Hillman 1981). Nevertheless, some detail of the agricultural patterns at Fairy Knowe can be deduced from the evidence available.

The large amounts of barley, together with the relative scarcity of other cereals, suggests that barley was an important, if not principal crop used by the broch occupants. The small amount of wheat remains suggests that it was a minor crop or contaminant of local barley fields. Likewise, the remains of bristle and common wild oat may represent weeds of barley, but given the former widespread cultivation of bristle oat in Scotland, it is possible that the grain represents the cultivation of bristle oat at Fairy Knowe.

Perhaps the most important outcome of this analysis is that beyond merely providing a species list of cultivated plants and their weeds at an Iron Age site, it is possible to make certain comments regarding the processing of these cultivated plants. Most of the plant remains are from only one grain-rich sample, and therefore only represent one event, such as an accidental burning of grain during processing. Hillman (1981) has recorded the details of cereal cultivation and processing in Turkey, paying particular attention to the possible archaeological record resulting from the various stages involved. He studied an area in which the cereals grown and the tools and methods used are either the same or similar to those known for the Iron Age in Britain and Europe. His ethnographic model for cereal processing is most useful in the interpretation of fossil

plant remains. Comparison of the range in the grain-rich sample at Fairy Knowe with assemblages recorded from various stages during the processing of free-threshing cereals such as barley (Hillman 1981 figure 6), suggests that the sample represents a stage after threshing and winnowing. This could be either between the first sieving, in which a medium-coarse sieve is used to remove large fragments such as straw nodes and weed heads, and the second sieving, in which a finer 'wheat sieve' is used to remove fine material such as immature grain and most weed seeds, or after both sievings. Such a stage occurs immediately prior to kiln-drying, when the grain is dried to avoid spoilage during bulk grain storage, and the sample analysed probably represents the accidental burning of grain during kiln drying.

The presence of an assemblage representing this stage suggests that the grain was locally processed, and therefore, probably cultivated nearby, and was not imported to this site. This conclusion is important since, although it is entirely reasonable to expect both on social and ecological grounds that the local Iron Age communities were growing and processing their own cereals, there has been little direct evidence for this happening in central Scotland (Boyd forthcoming). Although fossil cereal evidence from other Iron Age and Roman sites in central Scotland (Dickson and Dickson forthcoming, Jessen and Helbaek 1944, Dimpleby and Sheldon 1977-78, Robinson 1983) shows that various cereals were present at these sites, it does not indicate that they were necessarily grown and processed locally. Indeed, at some sites e.g. Bearsden Roman fort (Dickson and Dickson forthcoming) cereal grain was probably imported, possibly from other regions of Britain.

#### THE ARCHAEOLOGICAL RECORD OF CEREALS

How do these records of cereals and their weeds fit into the present archaeological record? Barley is the most commonly occurring cereal at Scottish Iron Age sites, and six-row barley is recorded at Iron Age sites throughout Scotland. Four sites in central Scotland are of particular interest. At the nearby broch of Leckie Dun (NS 688 956), several hundred grains were recorded together with a range of weeds seeds similar to that recorded at Fairy Knowe (Dickson, forthcoming a, and pers. comm.). At the native Iron Age site at Camelon, Falkirk (NS 863 812), grain is found which probably all represents bere barley (Dimpleby and Sheldon 1977-78). Further afield, six-row barley is recorded in a small quantity at Balloch hillfort, Kintyre (NR 677 176) (Dickson in press) and a larger amount at Dun Mor Vaul, Tiree (NM 046 493) (MacKie 1974).

The prehistoric status of wheat in Scotland is somewhat less clear. Since many of the early records of wheat are associated with Roman sites (Jessen and Helbaek 1944) there may be some doubt as to whether wheat was grown in Scotland or imported. However, there is sufficient evidence for the presence of emmer bread and club wheat at various sites throughout Scotland since at least the Bronze Age, and given the widespread past presence of wheat in Scotland, and past climatic differences, it is possible that wheat was grown during the Scottish Iron Age, albeit as a minor crop.

Oats present another problem. Despite its former widespread historical presence in Scotland, bristle oat is poorly represented in the archaeological record, the only definite native Iron Age record being on Orkney (Dickson forthcoming b). There are also two records from Roman sites of the Antonine Wall, in one of which identification is uncertain (Jessen and Helbaek 1944). The common wild oat is likewise poorly represented, the only definite Iron Age record being from a broch in Caithness (Dickson 1979).

#### OTHER EDIBLE PLANTS

Another edible plant represented at Fairy Knowe is hazel (*Corylus avellana*). The distinctive nut fragments are, with the exception of barley and oat remains, the most abundant plant remains. They are found associated with both broch and pre-broch remains and hazel nuts may therefore have been an important food source throughout this site's occupation. The kernels provide a convenient food, which can either be eaten raw or ground into a flour for baking, and have been used to provide edible oil (Sturtevant 1919). Although hazel nuts are commonly found at archaeological sites throughout Britain and probably have been an important food source from the earliest times, there are few other records of hazel nuts at Scottish Iron Age sites. At Fairy Knowe, it is probable that the nuts were collected in the wild, and although it is unlikely that hazel was deliberately planted to provide food, it is possible that it was managed by burning or coppicing, to provide increases in the crop of nuts.

One final plant to be discussed is *Allium ursinum* (ramsons or wild garlic). Several carbonized bulbous roots of this plant were found together in an occupation layer. Ramsons has an historical record from Europe and northern Asia of use as a food, both as a green and salad vegetable and as a food flavouring, and its relative *A. sativum* (garlic) has a long folk history of use in medicine and religion, as well as a food (Sturtevant 1919). The ramsons bulbs at Fairy Knowe may therefore have represented food collected in the wild, either being waste from the

use of its leaves, or more probably, the accidental loss of bulbs prior to use. It might be speculated that these local plants may have been used as a substitute for garlic (which does not grow naturally in the wild in this area) in some medicinal or religious activity.

### CONCLUSION

The results indicate that, even with relatively sparse evidence, there is much to be learned from the study of botanical remains from archaeological sites. In this case it is possible to recognise elements of the agriculture practice at the site, and to illustrate the probable presence of wild plants in the Iron Age diet. The conclusions reached provide only a fraction of the entire picture reflecting a small and possibly unrepresentative part of the complex, but vitally important, system of food production which supported the life of the Iron Age inhabitants of Fairy Knowe.

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