DYFED ARCHAEOLOGICAL TRUST LTD

A PILOT ASSESSMENT OF BURNT MOUNDS IN DYFED

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REPORT

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INTRODUCTION

THE RECORD AND ITS PROBLEMS

Burnt mounds - mounds of fire cracked stones and charcoal - are common in Dyfed as they are in other areas of western and northern Britain. The Dyfed examples were largely reported from limited areas in the south of the County (Fig.1) in the early Twentieth century by the geological surveyors T. C. Cantrill with O. T. Jones (Cantrill and Jones 1906 and 1911). More recent workers (largely OS field inspectors but including some Trust employees) have either failed to find these mounds or have failed to accept them as *bona fide* burnt mounds. But, reading the field reports of the OS inspectors, one suspects a certain prejudice against the sites in general and against Cantrill, as a fieldworker, in particular. (Furthermore, the DAT SMR's location of the Cantrill mounds have been derived second hand from Cantrill's original maps (via various intermediaries and the OS) and inaccuracies in location may have been introduced.

AIMS AND OBJECTIVES OF SURVEY

The survey was intended to carry out a desk top assessment of all burnt mounds if Dyfed. On the basis of this the aim was to assess Cantrill's mounds in selected sample areas; and, on the basis of these sample areas and following field visits to other selected sites (likely *bona fide* burnt mounds) suggest sites for scheduling. To the last end formal criteria for scheduling were adopted.

ADOPTION OF CRITERIA TOWARDS SCHEDULING

Basic criteria were adopted (and adapted) toward the scheduling of Dyfed burnt mounds from English Heritage's Monuments Protection Programme Single Monument Class Description for Burnt Mounds, in particular sections 9 (weighted discrimination criteria), 10 (professional judgment) and 11 (management assessment). The English Heritage document can be read in conjunction with the following gloss which is of particular relevance to the situation in Dyfed and where slightly different criteria have been adopted. Cadw's general criteria for the scheduling of ancient monuments have also been taken into consideration. Also, following the drawing up of the English Heritage document, two further important collections of papers on burnt mounds have appeared (Buckley 1990 and Hodder and Barfield 1991) and have been taken into consideration. The scheduling criteria were modified as the project developed and differ from those set out in an interim report[1].

ADDITIONAL NOTES TO THE ENGLISH HERITAGE PAPER

1 DEFINITION

Burnt mounds are the debris of 'hot stone technology'. Recent work suggests that they may result from a variety of functions and were possibly associated with a variety of types of site. Functions may vary from cooking operations to metalworking, bathing to birthing: an element of ritual may be involved. The mounds may vary from very small examples, possibly representing very limited and temporary activity, to large mounds associated with more extended activity. Settlement associations may vary from temporary camps to permanent settlements. Apparently isolated burnt mounds, *fulachta fiadh*, form the typical burnt mound in most areas of Britain. While burnt mounds associated with well defined settlements are increasingly being recognised these may belong to a different tradition.

The majority of the Dyfed mounds (Williams 1990) are apparently isolated although some have been discovered during the excavation of other settlements (Stackpole Warren and Dan-y-Coed, Llawhaden).

2 DATE

Recent work suggests that *fulachta fiadh* in Britain generally tend to be Early/Middle Bronze Age, but with some early Mediaeval examples and even some Mesolithic examples.

The dated Dyfed *fulachta fiadh* are of second millennium BC (uncal) date with one early Mediaeval example - Morfa Mawr. The Dyfed mounds associated with settlements tend to be first millennium BC (uncal).

3 GENERAL DESCRIPTION

The mounds recorded by Cantrill and those included in the present survey were typical *fulachta fiadh*. The morphology of the latter will be described below. Artefacts recorded by Cantrill were very rare as were structural features: the latter comprising one possible trough, two possible pits, two possible hearths and one kerb. During more recent excavations, pits have been discovered in association with *fulachta fiadh* at Carne: artefacts, food debris, cooking structures and buildings have been commonly associated with burnt mounds on settlement sites although, as mentioned, these may form a different class of site to *fulachta fiadh*.

4 DISTRIBUTION AND REGIONAL VARIATION

Cantrill and Jones worked in certain areas of Southern Dyfed only which is reflected in the distribution of burnt mounds in the County.

The Dyfed mounds are found most commonly on the scrubby margins of streams or on farmland.

5 RARITY

There are some 350 recorded burnt mounds in Dyfed[2]. They potentially represent a significant contribution to the Bronze Age settlement pattern. As mentioned, such high densities are common in other areas of western and northern Britain and contrast with England where burnt mounds are rare.

6 SURVIVAL AND POTENTIAL

In the present survey only three mounds were manifest mainly in section: the rest were actual mounds (and many of the other Dyfed mounds recorded by Cantrill and others survived as actual mounds). PRNs 557, 3032, 4053 and 14235 were overlain, in whole or part, by colluvium. Undisturbed mounds, as in other areas, generally have a thin soil cover rendering them vulnerable. The English Heritage document picks out the example of the Dyfed mounds as having suffered later destruction. This can now be seen as an exaggeration. Damage to the Dyfed mounds seems to have varied from area to area. Particular threats to the Dyfed mounds may be ploughing and, in South Pembrokeshire, the construction of irrigation ponds. A further potential threat is the clearance of the scrubby margins of streams. Only three mounds, PRNs 808, 1205 and 4067, have suffered from the canalising of streams. Surprisingly, erosion by streams, anticipated as a major threat, was found not to be. The relationship of the majority of the mounds to streams suggests that the latter have, over the last 3-4,000 years, remained quite stable.

It is extremely important to recognise that the burnt mound may be one element only in a settlement complex, surviving as below ground archaeology. Concentrating on the mounds themselves is 'like focusing on slag heaps rather than the processes or places which generated them' (pers comm R. Kelly). Many Dyfed mounds lie on uncultivated land. These may have increased potential for the preservation of any such associated settlement evidence. Mounds in boggy areas may couple this potential with a high potential for the survival of palaeobotanical evidence.

7 ASSOCIATION

Groups of burnt mounds are relatively common in Dyfed. These may be indicative of extensive settlements and/or use of the mounds over some period of time. The association of burnt mounds with settlements at Stackpole and Dan-y-Coed has been mentioned. Association of burnt mound with other classes of monument is not common but associations with standing stones are known at Ffynnon Druidion (PRN 9922 below), Glandy Cross (Williams forthcoming), Great Hill (PRN 3199 below) and Cwm yr Esgryn (PRNs 14220-3 below).

8 CHARACTERISATION CRITERIA

Period. The majority of mounds can be assumed to be of Early/Middle Bronze Age date. Few of the Dyfed mounds have been dated. As mentioned, those that have been dated have produced second millennium BC (uncal) dates, exceptions being burnt mounds at Morfa Mawr (Early Mediaeval) and Stackpole Warren and Dan-y-Coed, Pembs. (Late Bronze Age and Iron Age). The mounds at Carne were multi-phase and one may have been in use over a long period of time.

Rarity. A large number of burnt mounds are known but in a limited area reflecting limited fieldwork.

Diversity. A variety of forms are now known but with few associated structures (excluding excavated examples).

9 DISCRIMINATION CRITERIA

The following are the criteria adopted by English Heritage, with comments as they relate to or have been adapted to Dyfed: because of different circumstances the criteria are applies slightly differently than in England. Again the Dyfed mounds are scored high, medium and low.

Group value (association). There are few associations of burnt mounds with classes of broadly contemporary monument. As in England, sites with one association (up to 250m away) would score medium, sites with two or more such associations would score high and sites with no recorded associations would score low.

Survival/condition. English sites are scored according to the percentage of the mound which has been destroyed. A somewhat different criterion is adopted in Dyfed because the extent to which the mound has been destroyed is often difficult to estimate and damage is often more subtle.

The mounds vary from the obviously damaged or eroded to the apparently well preserved. However, the extent to which a burnt mound may have been eroded laterally may sometimes be difficult to assess. Also, the extent to which a ploughed burnt mound may have been eroded vertically may often be difficult to assess: judging by well preserved mounds in un-

ploughed areas it is clear that burnt mounds originally come in a variety of heights.

Also, augering has revealed that many apparently well preserved mounds are in fact plough damaged: the burnt debris is mixed in with humic soil. In some cases (PRNs 898, 3178, 3178, 2010 and 2012) it is clear from augering that damage to the mound has been total - in the case of 898 this was observed in section. In others the depth of such damage was not determinable and PRNs 3014 and 3032 stand as a warning because sections showed that apparent damage was superficial. Nevertheless, in the majority of the cases the mounds must be assumed to be damaged.

Sites which are not plough damaged and where other forms of damage appear minimal are scored high. Plough damaged sites or sites where other forms of damage appear moderate score medium. Sites which have been severely damaged score low.

Documentation (archaeological). The majority of mounds have a written record by Cantrill (very brief) and by the OS (usually brief and dismissive) and in a few instances there are 1:2,500 plans by the OS. There are also brief accounts of the burnt mounds in the St. Dogmaels area by D. Maynard. More detailed or recent accounts by the Trust are rare. Only three burnt mounds or groups of burnt mounds which still in part survive have been excavated in Dyfed - On Stackpole Warren, Morfa Mawr and Troedrhiwgwiniau. The Dyfed sites are again scored differently from the English. Sites with old or brief accounts or excavated sites where less than 40% of the monument survives would score low, sites with more detailed and recent accounts (excluding the present survey) or excavated sites where 40 -70% of the monument survives would score medium, excavated sites where more than 70% the monument survives. (Excavation is taken to include the recording of exposed sections).

Group value (clustering). English Heritage recognise sites as clustered which are less than 1 km from their nearest neighbour. Sites in Dyfed sometimes occur in much closer groupings than this, sometimes a matter of metres. Sites above 1 km from their nearest neighbour are scored 'low'; sites less than 1 km are scored 'medium' (these sites possibly providing information on contemporaneity of individual mounds); closely grouped sites (under 100m from their nearest neighbour) are scored 'high' (these possibly representing settlement complexes or the use of mounds over a considerable period of time). When scheduling the latter, the complete group of monuments, including associated land, should be included.

Potential. This criterion, which relates to the survival of features and buried land surfaces below the mound, is also difficult to assess. In general it will echo survival/condition as these criteria are applied in Dyfed: any serious damage to the mound by ploughing or erosion will usually expose, threaten or damage the buried land surface. The inclusion of this criterion weights the criteria as a whole in favour of the condition of the mounds themselves. Nevertheless it seems valid and has been included. It is here characterised as potential (immediate).

Diversity (features). Such is the rarity of associated features in Dyfed that all instances where these occur should be scored 'high'.

Amenity value. This is not seen as appropriate to apply in the case of the Dyfed mounds.

Other criteria than those adopted by English heritage can be suggested.

Potential (environment). In addition to the site itself, the surrounding area can be scored for its potential for the survival of associated settlement and/or environmental evidence (For similar reasons, when scheduling an area around the mound should be included in the scheduled area). A low score is given to sites on cultivated land, a medium score to sites on land where cultivation has not apparently been intensive or where part of the area around the mound is uncultivated and a high score to sites which actually lie on land which apparently has never been cultivated. In the case of sites adjacent to streams the areas adjacent to the side of the stream on which the mound lies is assumed to be the site of any settlement and to have the greatest potential.

Period. On the whole, one cannot differentiate between burnt mounds of different periods (and weight the scoring accordingly). As mentioned, the majority of mounds can be assumed to be of Bronze Age date. The rare exceptions which have been proven to post-date the Bronze Age merit a high score.

Diversity (form and location). During the preparation of the interim report it was thought that a selection of mounds of different shape, size and location would be chosen for scheduling. Particular weight might be given to rare forms, less weight to common forms. Following the survey, and given the variety is size and plan of the Dyfed mounds, it was not thought appropriate to weight the diversity in this manner. However, location away from a source of water was so rare as to merit a high score.

Fragility/Vulnerability. Well preserved sites where there is no apparent threat score low. Sites which are suffering ongoing, gradual damage (e.g. ploughing) score medium. Sites with a serious immediate threat e.g. erosion, opencast mining, score high.

10 PROFESSIONAL JUDGMENT

Environmental potential has been incorporated more formally into the above discrimination criteria.

11 MANAGEMENT CRITERIA
(No further comments. Relevant comments on vulnerability etc. have been made above)

THE SURVEY

SURVEY METHODOLOGY

Various attributes of the mounds were recorded, some from desk top assessment, some in the field, from which the discrimination criteria were derived. The field record took the form of a free description, to allow compatibility with the sites and monuments record, but included certain clearly defined attributes. This information was stored in a data base. Following the survey there was further refinement of the discrimination criteria. Table 1 shows the relationship of attributes to the discrimination criteria.

Field assessment included, in addition to the written record, a sketch plan of the mounds where appropriate. In most cases this was confined to an outline although in the more complex, crescentic examples sketch hachured plans were made. At an early stage it was decided not to carry out a photographic record as burnt mounds, as a class, are remarkably unphotogenic. Auguring of the mounds using a scotch auger was carried out on the recommendation of Brian Williams, Dept. of the Environment for Northern Ireland, and proved essential, both in distinguishing genuine mounds from natural features and in allowing an assessment of the disturbance by ploughing of the burnt debris: the survey in its present form could not have been carried out without this tool.

THE SURVEY

Following desk top assessment of all the known burnt mounds in Dyfed two sample areas were chosen: the area to the north of Milford Haven (Fig 2), where there is a large concentration of 'Cantrill mounds' largely dismissed by the OS inspectors: the area of south-east (Fig 3) Carmarthenshire where the OS have been more liberal in the recognition of mounds but still had many reservations as to their nature. Following the fieldwork in these sample areas selected sites in more northern areas of Dyfed were visited.

Correlation of the DAT record maps and Cantrill and Jones' originals (in the British Geological Survey, Aberystwyth) was carried out for the sample areas and showed that the DAT record maps are, in general, accurate[3].

Of the 111 sites visited, some 59 proved to be genuine burnt mounds. The dismissal of many of the mounds by the OS inspectors was clearly wrong, although to be fair to the OS there was differential survival and differential size of the mounds between the northern Haven area and south-east Carmarthenshire. 27 are recommended for scheduling without reservation, based on good survival of the mounds and their environs. A further 6 mounds are recommended for scheduling with some reservations. Remedial action can be suggested in 11 cases.

Northern Haven

On the northern shores of the Haven 59 mounds were reported by Cantrill. 57 were visited or visits were attempted (Fig 2). (It appeared from OS reports that two mounds, PRNs 3019 and 3145, had definitely been destroyed and these were omitted from the survey: the fate of 3145 is now less certain. Also in the case of a particularly interesting example of four closely adjacent mounds, PRNs 3339-3341, permission to visit was refused). Of the remaining 53 mounds 3 were considered doubtful or spurious and over half (31) were not located: in some instances (10 mounds) they had clearly been destroyed but in other instances (21 mounds) the areas of the mounds were obscured by thick (and usually permanent) vegetation. 19 mounds were located and considered genuine. 1 doubtful example was discovered during fieldwork. The mounds were generally small, low and of variations on oval or sub-circular plans - only one was crescentic (Fig 4). In the majority of cases they had obviously been damaged by ploughing (11) - the burnt debris was disturbed and mixed in with humic material and the mounds (and their environs) had been heavily ploughed. In some instances the mounds were reduced to a ghost of pre-mound soil, protected by the mound from plough erosion which had otherwise removed both the mound itself in this area and the pre-mound soil beyond the original limits of the mound. In only 7 cases was preservation of the mound and its environs sufficiently good to recommend scheduling without reservation. In 1 instance scheduling is on balance recommended but with some reservation. In 4 instances remedial action is recommended.

South-east Carmarthenshire

In south-east Carmarthenshire there is a very different picture. 37 mounds were reported by Cantrill and 2 were reported by other workers. All were visited or visits were attempted (Fig 3). In two instances access was not gained (although coincidentally there is a good recent report on these by DAT, one of a limited number of reports on burnt mounds by the trust). Of the remaining 37 mounds 2 were considered spurious, 4 had been destroyed, 5 were not located or were considered not to be genuine, 26 were located and

considered genuine (and 1 additional burnt mound was discovered). The mounds are larger than the northern Haven examples (up to 2m high), well preserved and a number were, or probably had been, of classic crescentic shape (Figs 5, 6 and 8). The environs are also better preserved also than in the northern Haven area. 14 are suggested for scheduling without reservation. In 4 cases scheduling is on balance recommended but with some reservation. In 6 cases remedial action is recommended.

Other areas

It was originally hoped that, following these initial surveys, the comparison of information gained with existing records would allow selection of the best remaining 'Cantrill mounds' for assessment for scheduling. It is, however, clear that early field reports, by both Cantrill and the OS (and some reports by Trust personnel), do not reflect the situation on the ground. At best large or crescentic mounds would be selected for assessment - atypical mounds not representative of the total population of 'Cantrill mounds'. There is no substitute for total survey of the remaining 'Cantrill mounds'.

The records of mounds in more northern areas of Dyfed were then examined in more detail. While some were 'Cantrill mounds' many had been discovered and described in modern times. It was relatively easy, therefore, to select the 'best of the rest' for scheduling assessment.

21 mounds were selected (Fig 1). These included a selection of an important group of mounds in the St. Dogmaels area, discovered by D Maynard (1993) where selection and fieldwork was carried out in conjunction with Mr. Maynard. Of these 21 mounds, 1 was considered spurious, 2 had been destroyed, 4 were not found, 14 were located and considered genuine. (1 further mound was discovered during fieldwork and 2 further mounds were reported of which 1 one was (fruitlessly) visited). 3 were crescentic mounds. 6 are recommended for scheduling without reservation, 1 is recommended for scheduling with some reservation, 1 is recommended for remedial action (Fig 7).

GENERAL ARCHAEOLOGY

In assessing Cantrill's fieldwork, it is clear that in the majority of cases his identification of the sites as burnt mounds was correct. But his fieldwork was not perfect[4]. Some examples can be given. One of his mounds, PRN 2990, is probably recent: PRN 2973 is apparently not a burnt mound and PRN 636 is possibly natural (although 636 was reported by a colleague and possibly not visited by Cantrill himself).

Cantrill describes the mounds as usually low, varying from 6-50 ft. across. 'The shape of the heaps is more or less irregular: there is no definite rising toward the centre, nor is there any special attempt at a circular outline, though this is the form approximately obtained'. Horseshoe-shaped examples were rare. It is clear from the present survey that, in south-east Carmarthenshire, a number were substantial and here and in the area north of the Haven many of the mounds seem regular and many are oval (see below). It is also curious that crescentic mounds PRNs 803, 885, 4066 and 7805 in south-east Carmarthenshire were not described as such by Cantrill although others are so described in the same survey. There are also apparent mistakes in the description of the sizes of the mounds in the vase of PRNs 557 and 3188.

One also suspects confusion by Cantrill in the case of PRNs 838-840 and 9740: there is confusion between the written description and map location in the case of PRNs 840 and 7579 and possibly PRN 823.

A number of points can be made regarding the mounds as a whole. In three instances, PRNs 3032, 3185 and 14235 the mounds are only or largely exposed in stream sections. Otherwise they are manifest as actual mounds.

These show a number of recurrent characteristics, which form a polythetic group. The majority lie close to streams. Proximity to water is a well known characteristic of burnt mounds in other areas. However, in Dyfed, this association may, in some part, be a function of Cantrill's fieldwork which, of necessity, would have sought out geological exposures in stream beds. It may be that burnt mounds remain to be discovered in other contexts. Also of relevance is the fact that numbers may be completely hidden by colluvium. Burnt mounds may be far more common than we suppose (pers comm R. Kelly).

Shapes are variable, the majority being variations on oval and sub-circular forms and truncated variations of these, a minority being crescentic. (Figs 4-7 show comparative plans of the majority of the extant sites: Fig 8 shows hachure plans of the more complex examples. All are based on sketch plans). Amongst the latter it is perhaps possible to distinguish true crescentic burnt mounds (PRNs 648, 803, 885, 1975, 3197, 4066, 7805, 13990 and perhaps 557 and 4061) and kidney shaped examples (PRNs 2011, 9740 and 29904 and perhaps 800 and 3209). These correspond to the main forms of burnt mound seen elsewhere (e.g. as recognised in the English Heritage paper). The crescentic mounds tend to be the most substantial. In many instances the mounds seem very regular, symmetrical in plan and of a regular height - this being most marked in the case of the crescentic mounds. Although mounds of debris they are not untidy or haphazard: some care has gone into their construction.

The mounds may lie some distance from the stream, although the majority lie adjacent to the stream bank: in the case of oval mounds they may aligned along or at right angles to the stream, in the case of crescentic or kidney-shaped mounds the horns are generally directed toward the streams (although this is not so in the case of PRNs 648 and 7805 and perhaps 3209).

As mentioned, in a number of instances there is a close grouping of mounds (a phenomenon noted by Cantrill and Maynard). Some examples can be given. PRNs 3345-8 and 3351 (Johnston/Tier's Cross area) and 14220-3 (Cwm yr Esgryn) are strung out along a stream or the side of a valley. PRNs 795-8 form a grouping of very similar mounds aligned alongside streams running down the side of the Cennen valley (Cantrill and Jones 1906, 26 Nos 20-24) (in a slightly different manner PRNs 3197-9 each occupy the side of streams in adjacent parallel valleys (Cantrill and Jones 1911, 278 Nos 206-209). Boltonhill (PRNs 3339-3341: Cantrill and Jones 1911, 281 Nos 180-182), Connermoor Bridge (PRNs 3134-6), Glan y Mor (PRNs 11761, 14227 and 14228) and Morfa Mawr (group PRN 9792: Williams 1985) form even closer groupings: the Connermoor Bridge sites also being strung out along a stream. PRNs 803, 7524 and 7525, PRNs 13990 and 29904 and perhaps PRNs 2010 and 2011 involve crescentic mounds with smaller, 'satellite' mounds.

PRNs 2010 and 2011 may be paired mounds. There is perhaps a broad tendency to pairing within 2 or 300m of each other in the northern Haven area (e.g. PRNs 3343 and 3344: PRNs 3345 and 3346: PRNs 3349 and 3350 in the Johnston/Tier's Cross area). This may merely be a variation in the grouping of mounds noted above but elsewhere very close pairings occur. This is clearly the case with PRNs 4011-2 (4m apart: Fig 6) and something similar may be represented by PRN 9061 and particularly PRN 4010 (Fig 6), which involve two concentrations within a wider spread of debris (4010 is situated very close to 4011-2).

A new type of burnt mound has also been recognised - possibly involving the use of a natural, glacial mound for cooking or whatever activity gave rise to the burnt debris, the debris being dumped variously on part of the top, over the side and beyond the base of the mound (PRNs 1982, 2920, 2989, 9724, 9725 and possibly 14220: 1412 possibly also incorporates a natural mound: 3345 also occupies a tongue of land). In the case of PRNs 1982, 2920 and 2989 the mounds were probably selected because they provided dry ground elevated above surrounding boggy areas: this does not seem to have been the case with PRNs 9724, 9725 and 14220. In some at least of these cases the whole natural mound has been mistaken for a burnt mound.

In this respect, an admission can be made in the case of one of the author's published excavations - Morfa Mawr (Williams 1985). Salvage excavation on this group of mounds was carried out during road building. Mound 3, PRN XX had been partly cut away and appeared in section to consist of burnt debris. The remainder of the mound was assumed to be a burnt mound; auguring was not considered. Auguring during the recent survey has shown that the bulk of the mound is natural; the burnt debris seen in section must have been dumped over the edge of a natural mound, as described above.

A fundamental question concerns the reason for the differences between the mounds in the two study areas. In the case of south-east Carmarthenshire it may be that the poor soils of the coalfield and other upland areas are less suitable for cultivation than those of the fertile areas north of Haven leading to differential survival. But this cannot entirely explain the differences, particularly the increase in size and in number of crescentic mounds in south-east Carmarthenshire. Possibly the mounds were used longer in the latter area. If so, why? The answer may also lie partly in geological differences - the resistance of stones to fire cracking could lead to smaller mounds (ref.). Unfortunately, in most cases, it is impossible to assess the geology of the mounds' components without excavation. However it is clear that, although Cantrill states hard rocks were preferred, in some instances in south-east Carmarthenshire limestone as well as sandstone was used.

In a number of cases - PRNs 768, 4067, 9922 (during an earlier watching brief) and 14235 - sections revealed buried soils below the mounds. Admittedly fairly cursory examination of these have revealed largely podsolic soils from which the A horizons appear to be missing. A similar situation has been noted on excavated burnt mounds in Dyfed.

RECOMMENDATIONS FOR SCHEDULING

The scoring procedure

The sites were scored as indicated above. Scoring was expressed numerically. This was done on a simple basis, different criteria were not differentially weighted: low = 0, medium = 1, high = 2. On examining the totals it became obvious that sites scoring 4 and below were damaged sites often in damaged environments. Sites scoring 7 and over were generally well preserved sites in well preserved environments and were recommended for scheduling (although there were a number of exceptions where damaged mounds had high scores because of other factors and professional judgment was exercised in these cases). Sites scoring 5 and 6 were borderline cases and again professional judgment was exercised as to whether these did or did not merit scheduling.

LIST OF MOUNDS RECOMMENDED FOR SCHEDULING

North of Milford Haven.

Sites recommended for scheduling without reservation

PRNs 2920, 3014, 3166, 3197, 3199, 3343, 3348.

Sites recommended for scheduling with reservations

PRN 3032.

South-east Carmarthenshire

Sites recommended for scheduling without reservation

PRNs 795, 803, 808, 838, 839, 885, 4011, 4012, 4053, 4066, 7805, 7524, 7525, 9740.

Sites recommended for scheduling with reservations

PRNs 648, 797, 798, 4010.

Other areas

Sites recommended for scheduling without reservation

PRNs 1975, 1982, 9922, 9961, 14221, 14223.

Sites recommended for scheduling with reservations

PRN 14235

COMMENTS AND ALTERNATIVES

It may be that the selection criteria for scheduling, although adhered to in this project, are over complicated. On a simple *ad hoc* basis the following grouping can be arrived at for the mounds, which echoes the more complex selection process, and includes the vast majority of the mounds.

A) Not found.
B) Destroyed.
C) Very damaged, usually by ploughing which usually including the environs of the mounds. No action.
D) Damaged mounds with environmental potential - borderline case for scheduling.
E) Well preserved mounds, with environs damaged, usually by ploughing - borderline case for scheduling.
F) Well preserved mounds, with well preserved or moderately well preserved environs, recommended for scheduling.

RECOMMENDATIONS FOR FURTHER WORK

The development of the methodology for scheduling criteria was not included in the original project proposal, accepted by CADW, and was adopted later. This part of the project took an additional three weeks. As a result, only some 114 mounds, have been looked at, as compared to 150 suggested in the proposal. In addition, landowner liaison, particularly tracking down the owner of the mounds, has taken far longer than envisaged.

Now that the methodology has been developed, and expertise acquired, it seems wasteful not to apply this to other areas of Dyfed (and beyond). Some 15-20 mounds a week could be visited, some 12-18 weeks in all for the remaining Dyfed mounds (240 mounds). The survey could perhaps be extended to other areas of Wales.

An excavation programme can also be recommended. Some of the ostensibly plough damaged mounds (group C) should be assessed by excavation to determine how had the apparent damage is, both to the mounds and their environs.

It is also clear that a number of mounds are threatened, largely by erosion, and excavation or some other form of remedial action can be recommended (PRNs 808 and 1691 and perhaps 557, 796, 1205, 2989, 3014, 3166, 3190, 4067 and 9824). Even without excavation some of the sections exposed by drainage etc. (PRNs 798, 1205 and 4067) could be drawn and possibly samples collected for radiocarbon dating - a cheap and effective way of increasing the amount of dating evidence.

The 'best' mounds, the 'classic' crescentic examples in south-east Carmarthenshire and the closely grouped mounds, would benefit from detailed survey. A geophysical survey of the important Morfa Mawr area can be suggested: the area has produced burnt mounds including one with an Early Mediaeval radiocarbon date but none appear to be visible as surface features.

NOTES

1. The introductory sections of the present paper are a modification of the interim report (Williams 1994).

2. Following the survey 357 sites are or have been classified as burnt mounds. However, of the 111 mounds included in the present survey, 6 can be considered to be doubtful examples. Presumably a proportion of those not included in the survey will also prove to be doubtful.

3. Cantrill's record maps, note books and an index to the latter were examined.

On the record maps archaeological features are marked in red. Burnt mounds are usually marked hearth. In some instances there are additional annotations, more rarely annotations only. There is some attempt to show the shape and size of the mound.

The correlation between Cantrill's and the OS's maps is generally good. There are one or two major errors on the part of the OS and cases where Cantrill but not the OS shows the mound. This is understandable. But in some instances (840 and 7579) the OS seem more accurate than Cantrill's map (although in agreement with his written location). This is more difficult to explain as the OS were presumably working from copies of Cantrill's maps. The OS maps seem to have been plotted from various sources but the bulk of the sites were plotted by W F Grimes presumably from Cantrill's originals or copies of these (OS card SS 09 NW 6). Not only may errors have crept in but Grimes may have improved on Cantrill's originals in some cases. Site locations have been corrected where necessary. Where recent fieldwork has not located the mound OS locations have been corrected to agree with those of Cantrill

A perusal of an index to Cantrill's notebooks reveal no mention of burnt mounds in Dyfed although at least one mound outside Dyfed is referred to. A brief search through the notebooks confirmed there are no references to burnt mounds in Dyfed.

4. Cantrill's published accounts have been compared with the sites as revealed by the present survey. The annotations to Cantrill's plans were copied (copy in archive) but time has not allowed systematic correlation with the present survey.

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I am grateful to Mr. D G Benson and E Morgan for collaboration in the design and setting up of the recording system and to Mr. D Maynard for his co-operation in the survey of the burnt mounds in the St. Dogmaels area: over the years I have benefited from useful conversations with Mr. Maynard concerning burnt mounds. I am also particularly grateful to Mr. Herbert, Penlan, Gwynfe for drawing my attention to unrecorded burnt mounds 29906 and 29907.
Mr. R Kelly and Mr. G Smith of the Gwynedd Archaeological Trust made helpful comments on an interim report. Desk Top Publishing performed by Phillip Wait of the Trust's Heritage Promotion Section

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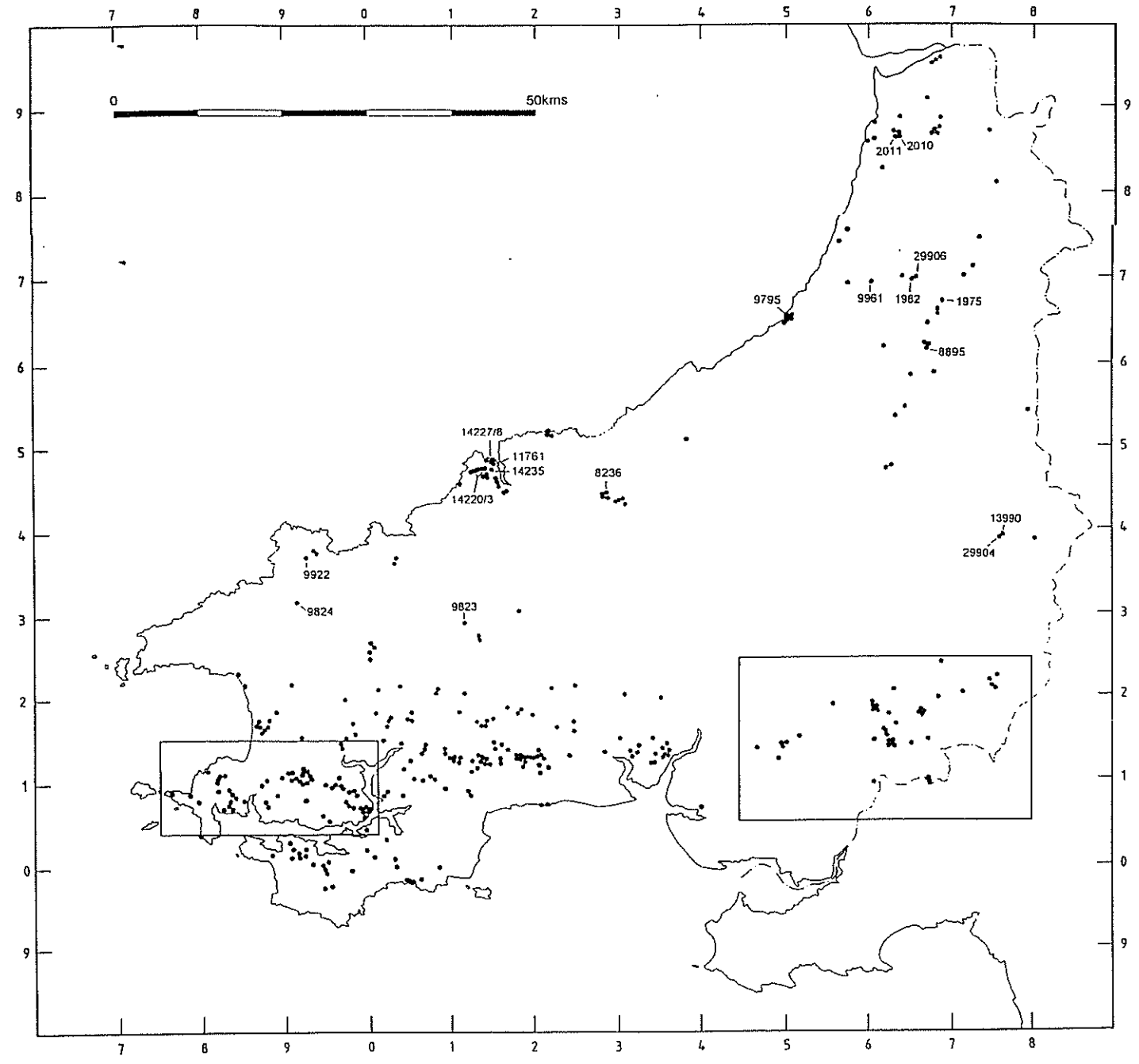


Fig. 1 Isolated burnt mounds (fulachta fiadh) in Dyfed.

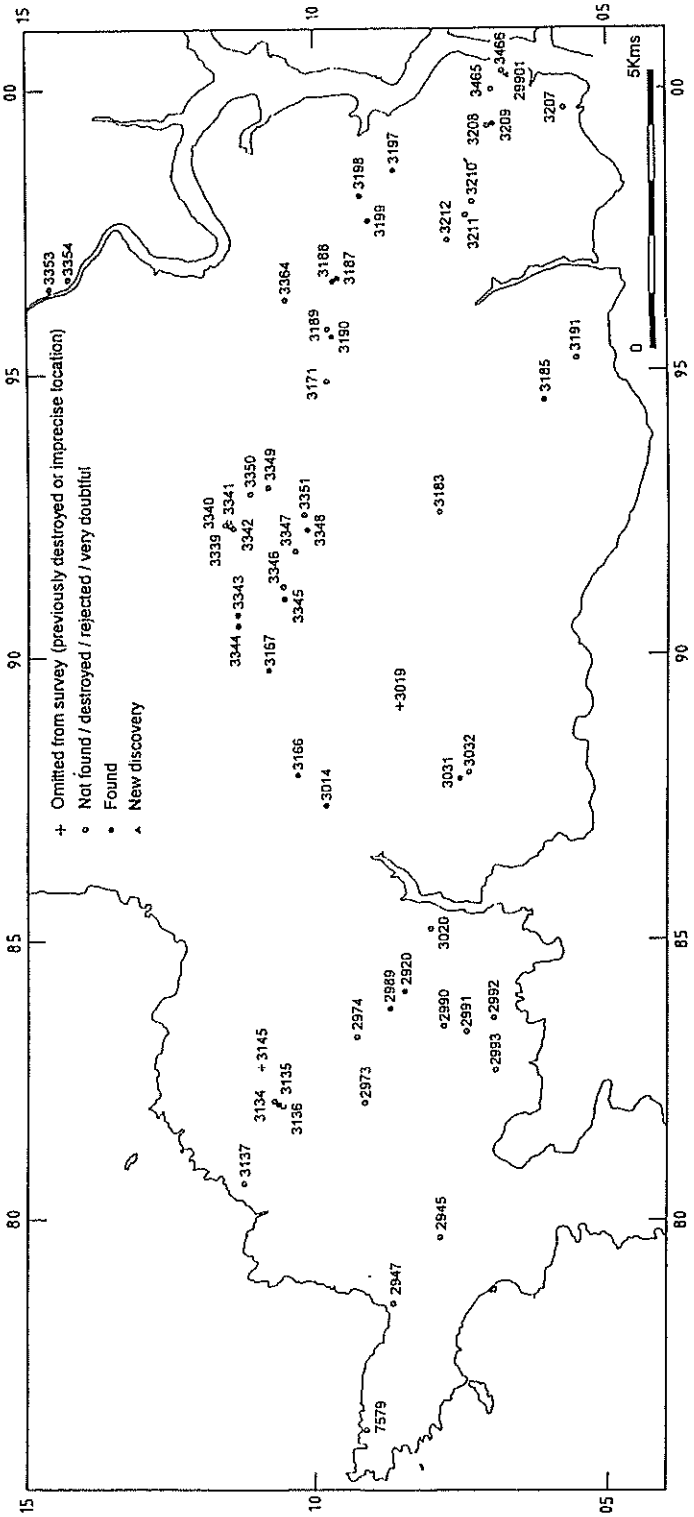


Fig. 2. Distribution of burnt mounds in the area north of Milford Haven

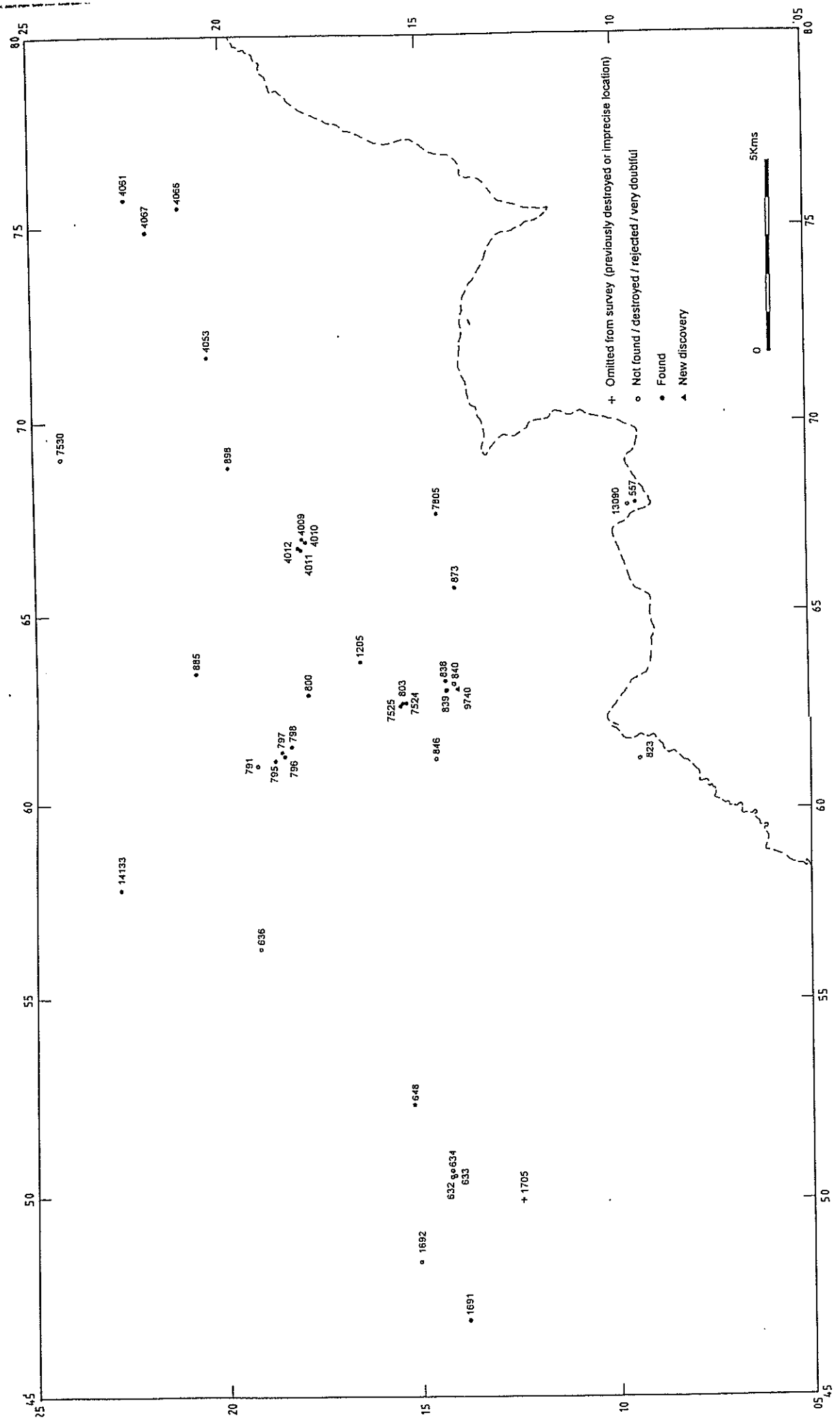
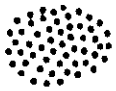
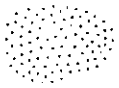


Fig. 3. Distribution of burnt mounds in the South-East Carmarthenshire area

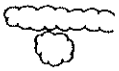
Key to Figures 4 - 7



Burnt mound showing as surface feature



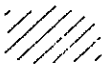
Burnt debris below soil, no surface trace



Vegetation

Stream

Natural slope



Disturbance

Fig. 4. Plans of burnt mounds in the area north of Milford Haven.

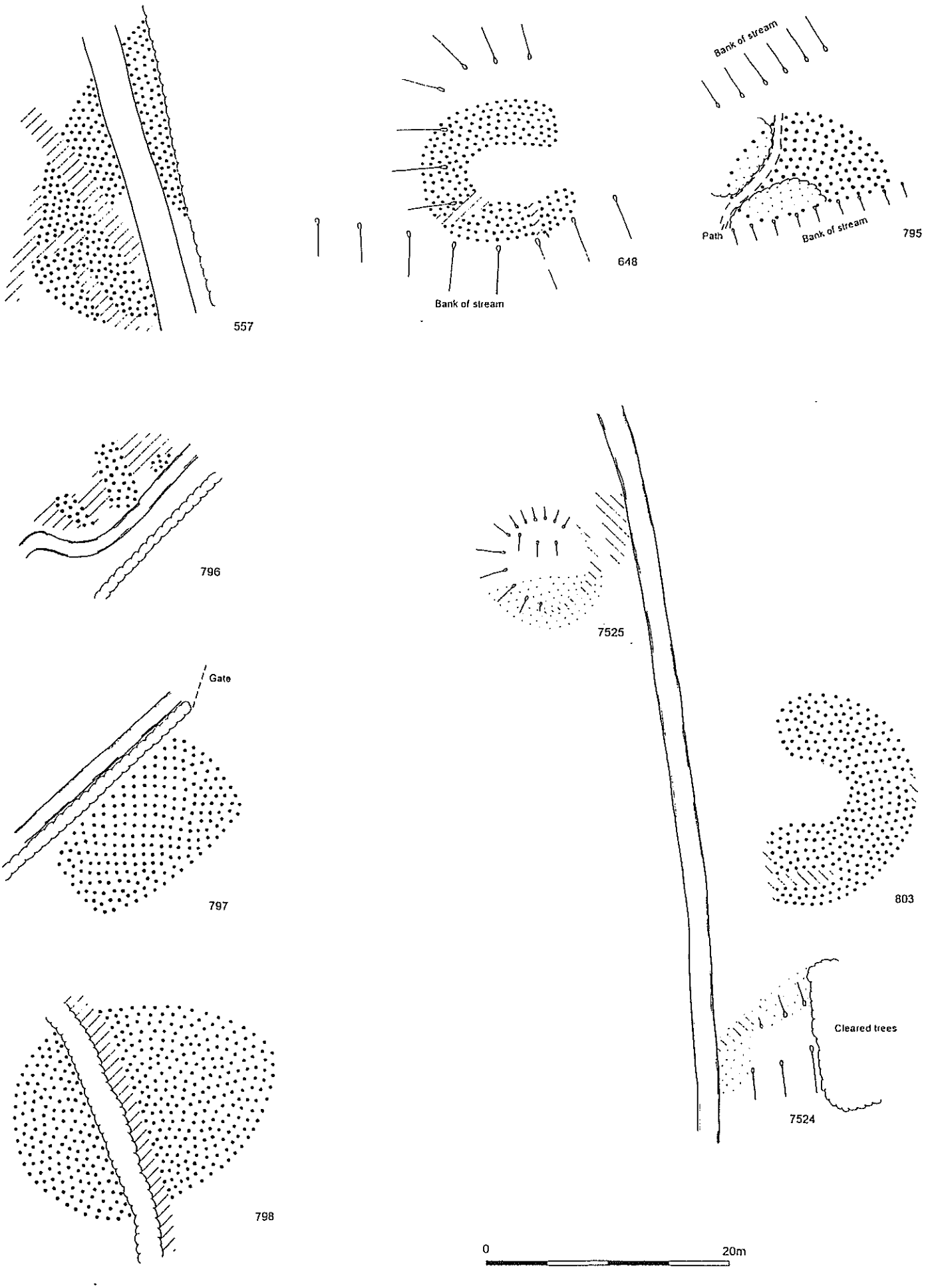


Fig.5. Plans of burnt mounds in the South-East Carmarthenshire area

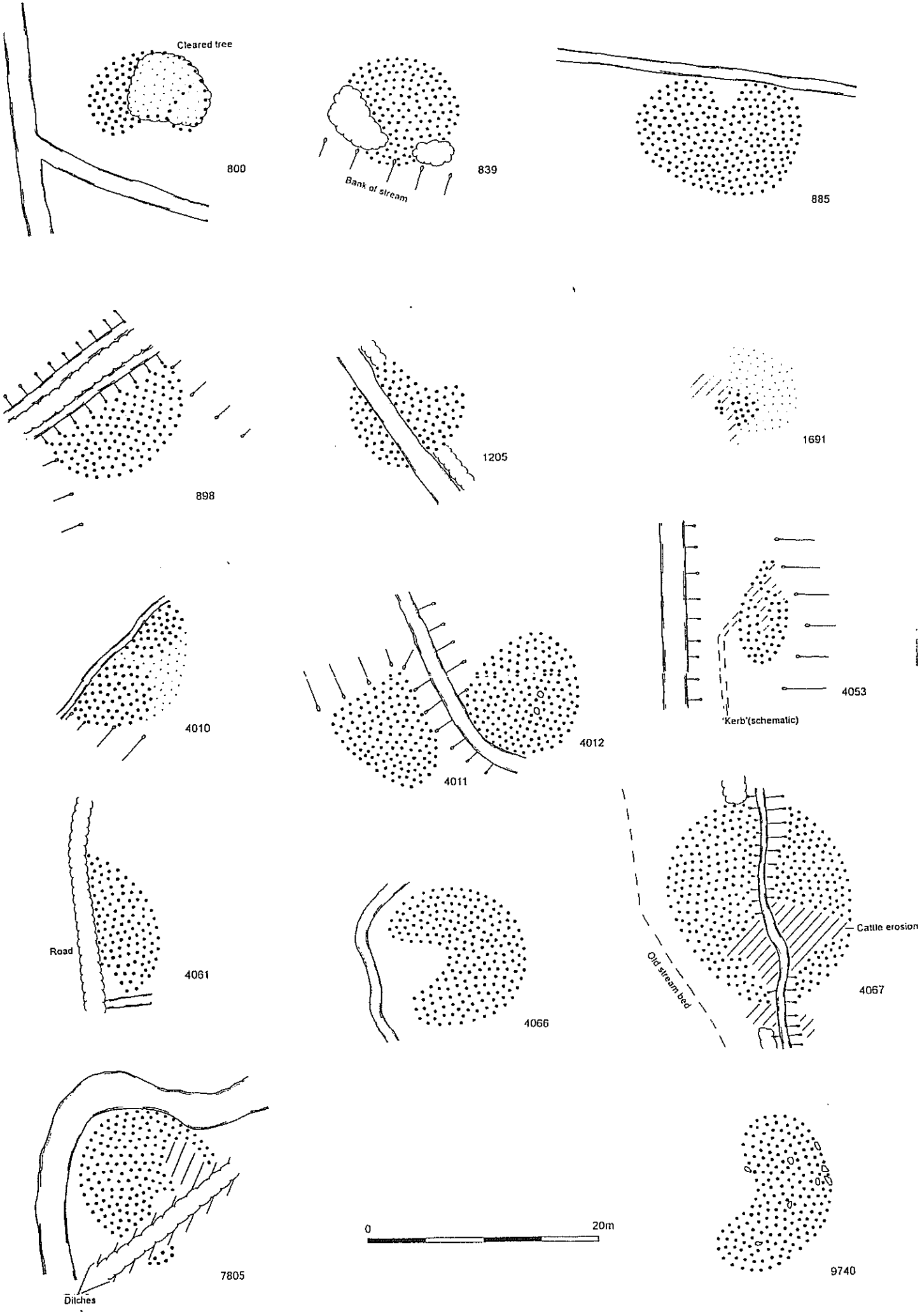


Fig.6. Plans of burnt mounds in the South-East Carmarthenshire area

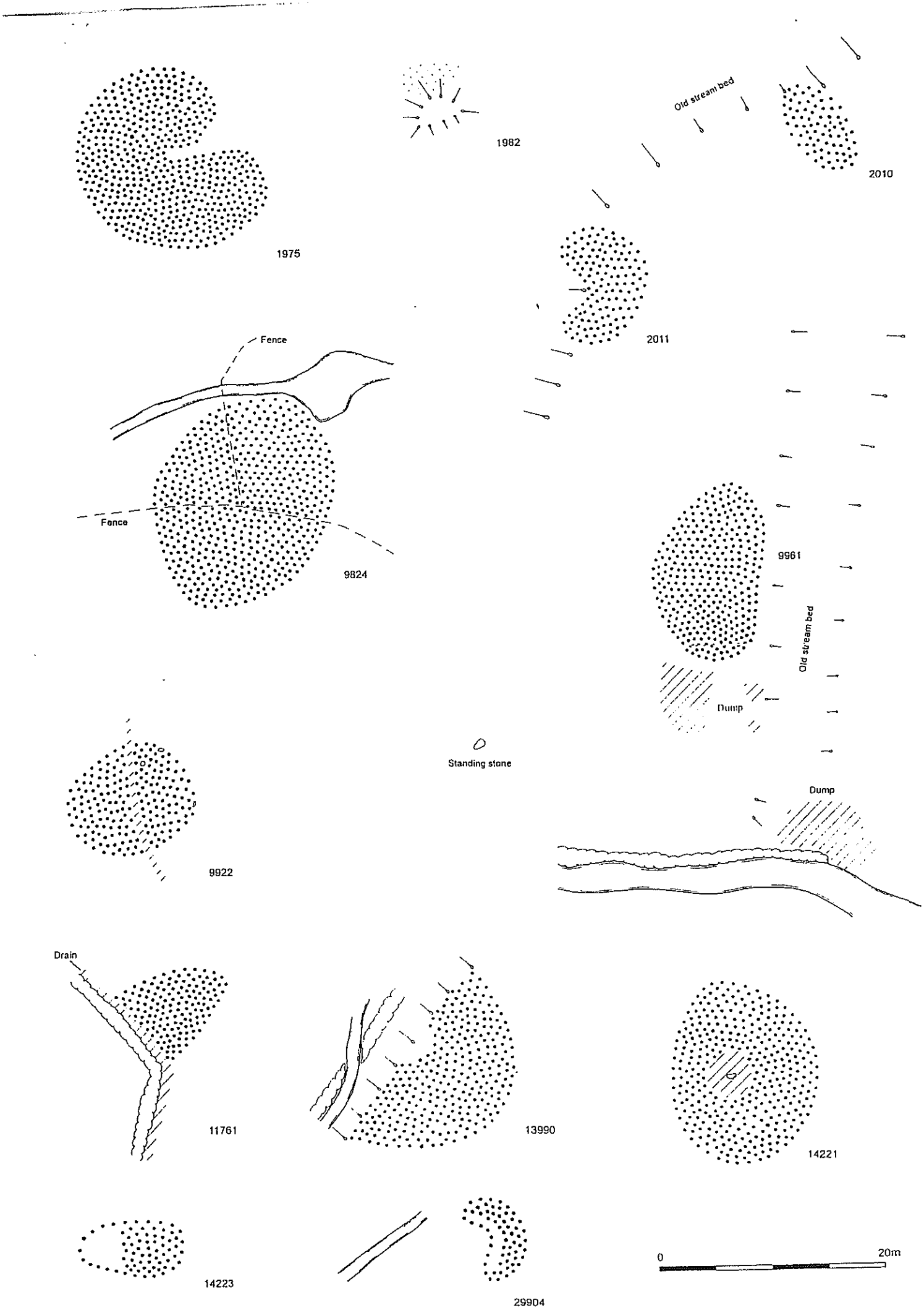


Fig.7. Plans of burnt mounds in other areas of Dyfed

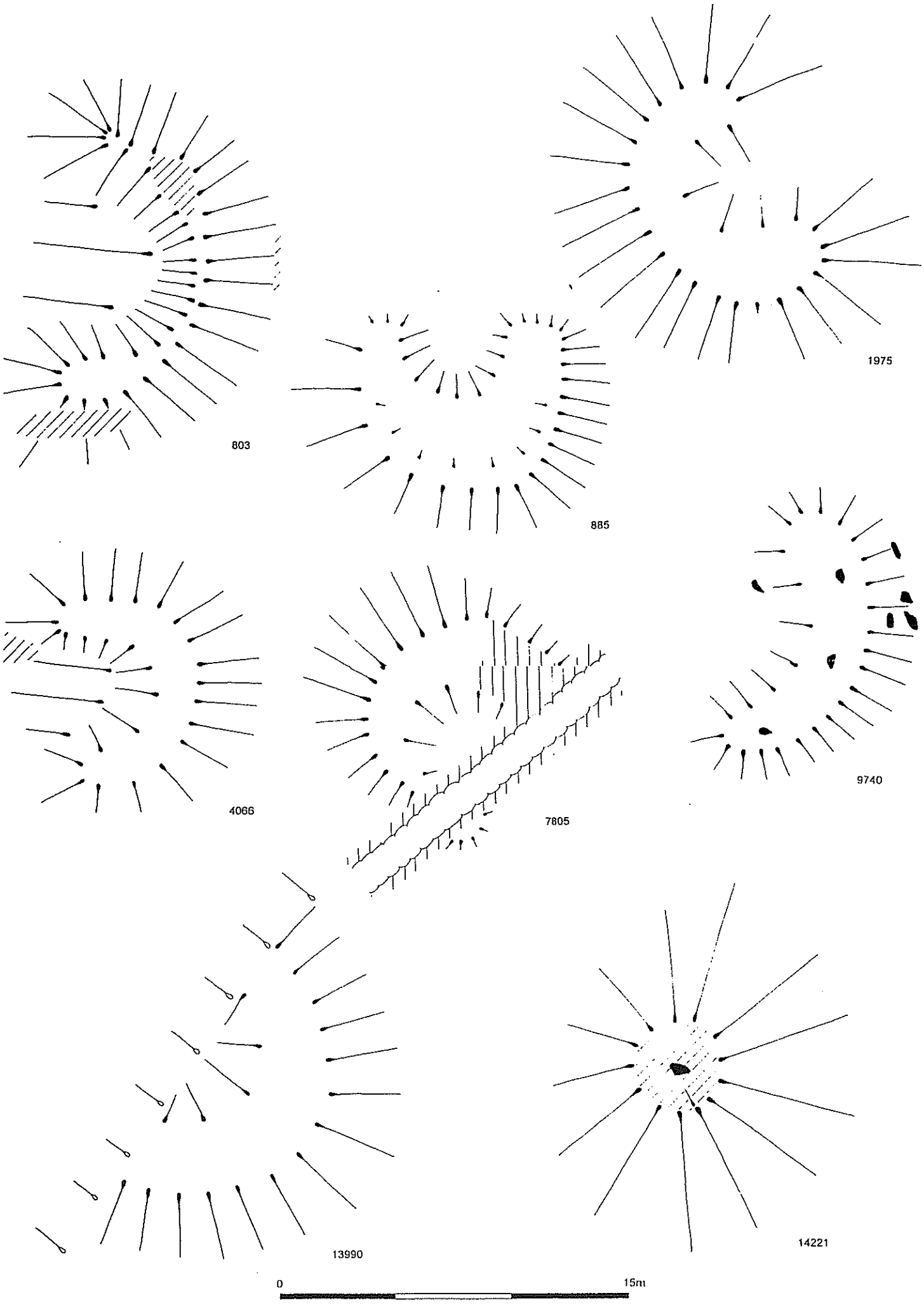


Fig. 8. Hachure plans of the more complex burnt mounds.

PRN	203	NAME	CASTELL Y GRAIG;TIR DAFYDD
QUARTER SHEET	SN61NW	GRID REFERENCE	SN60341556
COMMUNITY	Llandybie		
FORM & CONDITION	Earthwork/B	DESCRIPTIVE TYPE	Mound-oval
ALTITUDE	152	LAND USE	Pasture

ASSOCIATION (other types)

ASSOCIATION (burnt mounds) In an area of burnt mound concentration. PRN 946 1,100m to S.

PRIMARY SOURCES Cant 30. OS SN61NW9. Excav rept, DAT, SNR.

GROUP VALUE (association)	0	DIVERSITY OF FEATURES	0
SURVIVAL/CONDITION	2	POTENTIAL (environment)	1
DOCUMENTATION	2	PERIOD	0
GROUP VALUE (clustering)	0	DIVERSITY OF FORM	0
POTENTIAL (immediate)	2	FRAGILITY/VULNERABILITY	2

RECOMMENDATIONS A high score, 9. Recommended for scheduling. Total excavation of the mound and environs in advance of opencast mining is recommended.

DESCRIPTION The site lies on the north-east side of a former stream channel, on ground falling to the south-west. The mound is crossed by a hedge and the stream has been re-channelled against the south-west side of the hedge cutting the mound. To the south-west of the stream is uncultivated ground on the edge of a pasture field. The area of the mound here is overgrown with rushes and nettles. On the north-east of the hedge is a pasture field, obviously formerly ploughed as there is a substantial lynchet which overlies the mound.

The mound appears oval measuring 6.5 x 11.5m. South-west of the stream and hedge it is some 0.5m high. North-east of the hedge it is overlain by the lynchet with very little rise, some 0.2m.

Trial excavations as part of a field evaluation programme in advance of proposed opencast mining of the area were carried out by the Dyfed Archaeological Trust (Phillips and Benson 1993, 9-10). These included an investigation of the mound where this was exposed in the drainage ditch which revealed a typical core of fire cracked stones. The excavations also established the extent of the mound and revealed the fact that burnt stone continued 2.5m to the north-east of the mound.