Biggar Archaeology group

Bringing the past to the present

The erosion of archaeology within reservoirs, ploughed fields, forestry and in other circumstances in the areas of the upper Clyde and Tweed rivers

by Tam Ward, Biggar Archaeological Group

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Abstract

The experience in upland, marginal landscape archaeology gained by the Biggar Archaeology Group is presented, hopefully to be of assistance to future fieldworkers.

Introduction

This paper will deal with aspects of the landscapes of the upper Clyde and Tweed rivers, being the area of interest adopted by the Biggar Archaeology Group (BAG). (Pl 56). The data given here is the product of over thirty years of fieldwork in the district by BAG and has been gathered during their various projects there.

Erosion within reservoirs (a), arable fields (b) and forests (c).

The report given here is one of two which attempts to encourage voluntary archaeologists elsewhere to take to the fields and hills to monitor known sites and discover previously unrecorded ones. It is equally important to engage with archaeology under direct or indirect threat of destruction, either by informing relevant agencies and/or taking appropriate action themselves to salvage the knowledge of the past in whatever form it takes.

The second report (Ward 2013 [2]) will consider how best local groups may conduct fieldwork.

Erosion

One repeatedly hears and reads of the coastal erosion of archaeological sites taking placed around Scotland's shorelines, and the pleas about doing something about it; perhaps the creation of a National Strategy to deal with the fact that we loose so much of our buried and built heritage to stormy shores.

However, it is argued here that even greater disastrous erosion of the archaeological sites and monuments of Scotland, is taking place within reservoirs, ploughed fields and forests. BAG has observed this at first hand in the three circumstances discussed here, and where they have mitigated in some cases by carrying out excavation on sites under threat. Some of that work has profound significance to the story of Scotland and is produced in various reports by this writer.

The experience of BAG has been to show that it has never been more important to engage with archaeology under threat in all areas of erosion, and not just that of coastal regions.

Plate 1 Fruid Reservoir looking south

Plate 2 Talla Reservoir looking south to Gameshope

Plate 3 Talla Reservoir looking east

Reservoirs

Plate 55

BAG has engaged in rescue survey and excavation within the principal reservoirs in the area, being Talla, Fruid and Megget in Borders Region and Camps, Daer, Peden and Cowgill in South Lanarkshire. Coulter Water reservoir, also in South Lanarkshire has not been investigated by the writer.

The sylvan scenes presented by the reservoirs conceal the fact that they often cover a rich tapestry of the past below their surfaces (Pl's 1 - 3).

Each of the reservoirs lie in areas with a wealth of archaeological sites and monuments, as attested by the work of BAG over the years, and by the previous surveys of the Royal Commission for the Ancient and Historical Monuments of Scotland (RCAHMS) and also by the work of others, most recently by developer funded archaeology.

The reservoirs considered here were all built in 20th century from 1906 at Talla to 1983 at Megget. Only at Megget was any archaeological work done on the landscape before it was submerged, and that was merely for the obvious site of Cramalt Tower (Maxwell 1981). No archaeological surveys were required to be done on the land when each of the reservoirs was built.

In most cases it has been the work of BAG which has identified the plethora of archaeological sites which surround each reservoir (Ward 1992, 2004 & 2013) and it became obvious to BAG that the submerged areas ought to have similar archaeology. The programme of reservoir monitoring was set up for periods of low water levels due to dry weather conditions, and also for when maintenance works were being undertaken.

The most striking aspect of the landscapes when they once again become visible is the numerous facets of erosion and re deposition which can be seen. (Pl's 4 – 6) The hydraulic effects of wave and current are evident on the shorelines, and by repeat visits it has been demonstrated that this is a dynamic process, which depends on the water level at a particular time, linked to weather conditions, and also the topography of the landscape and the prevailing wind. The variables of these four factors dictate what happens to the submerged land and the monuments or sites which lie on it.

Plate 4 Fruid Reservoir beach lines

Plate 6 Fruid Reservoir beach lines

Plate 5 Fruid Reservoir beach lines

The purpose here is to draw attention to the need for constant vigilance regarding reservoirs where known archaeology exists, or may exist, and to determine in other reservoirs if archaeological sites survive. Each of the above reservoirs will be considered but any archaeological work which has been done (by BAG) will merely be referenced.

All of the dam walls are embanked and it appears that in each instance the banks were built using locally quarried and extracted material, and in each case this was drawn from nearby the dam itself, the use of this material considerably increased the capacity of the reservoirs.

The implication for archaeology means that large areas of the valleys were stripped and quarried, therefore any evidence of the past would be removed. Since the land was not archaeologically surveyed the loss of sites will not be known, the exception to that is at Fruid (Pl 10) where two known unenclosed platform settlements (UPS) were removed entirely from within the reservoir area, without any archaeological work being done.

One may assume that steep sided hill flanks would not have archaeological sites anyway, however, in the area of the upper Clyde and Tweed rivers there are the largest concentration of UPS sites in existence, and these all occupy rather steep slopes, sometimes accompanied by cairns of different types and sizes and by burnt mounds.

Talla

NT 110 220 OS 1: 50,000 Sheet 72, Upper Clyde Valley

Talla Reservoir (Pl's 2 & 3) was completed by 1906 and supplies water to Edinburgh, the area submerged is 300 acres. Pre historic and Post Medieval sites are located around its shores (Ward 2004) but because the reservoir was created in a narrow and steep sided valley the known archaeological sites are restricted to a narrow area of land on the north side with only a cairn and a burnt mound being known on the southern side, but these are high up on the hill face. However, a major pre historic funerary site is located at the east end, and this forms part of a large suite of pre historic monuments which now extend for an indeterminate distance below the water at that end (Pl's 7, 8, 8a & 8b)(Ward 2004 ibid, Site 203).

The two main rivers which feed the reservoir are the Talla Water which descends from Talla Linns behind the farm, and the Gamescleuch Water which flows from the valley of the same name. The river courses meet within what is now the east end of the reservoir and both have significant flows, especially when in spate. It is possible that some sites may have been affected near the confluence of the two rivers in the past and since the majority of the land surface below the water has not been seen in modern times, the archaeological potential is unknown.

The prevailing wind sweeps along the reservoir from the dam wall at the west end and along the sides of the reservoir moderate erosion of the edges and re – deposition of gravels has taken place. Little can be said about archaeological potential as even when the water level drops significantly, because of the steepness of the slopes, only a small area of land is revealed.

The east end is completely different as here the ground rises gently and evenly across the width of the reservoir from the valley floor (Pl 9). This area has been adopted, probably in the Bronze Age, as a major centre for funerary monuments, perhaps serving much of the area of the upper reaches of the River Tweed (Ward 2004 ibid).

Fortunately the erosion so far recorded within the reservoir at this end is not great, but the soil and vegetation have been washed from the stone components of the monuments; mostly being a variety of ring enclosures and cairn types and with at least one burnt mound, the latter which has been almost completely dispersed. There is a hint of Mesolithic activity in the form of a few pieces of struck radiolarian chert, although the period concerned is not confirmed.

The ground on the southern side of the area is strewn with boulders which must have been there before the dam was built, the northern half where the two rivers meet, is covered in re deposited silt which must be derived from both burns when in flood, this area has a system of stone features especially rings of various sizes but of unknown function (or date). The archaeology certainly continues beyond what has been surveyed and may be seen to extend to the west and go deeper in the water.

Erosion within Talla is moderate as far as can be seen, apart from the burnt mound which lay at the very edge and will take the full extent of wave action during normal water levels. As will be repeated throughout this paper, the danger lies when the water level is about a particular feature, and then stormy weather and larger waves may occur to batter it. Water of about 2m in depth is generally considered benign as far as sites are concerned, shallower water is definitely the danger zone for archaeology, and be it features, deposits or stray finds.

Talla receives a constant water supplement from neighbouring Fruid Reservoir via an aqueduct on the south side and because of this permanent supply Talla rarely drops very low.

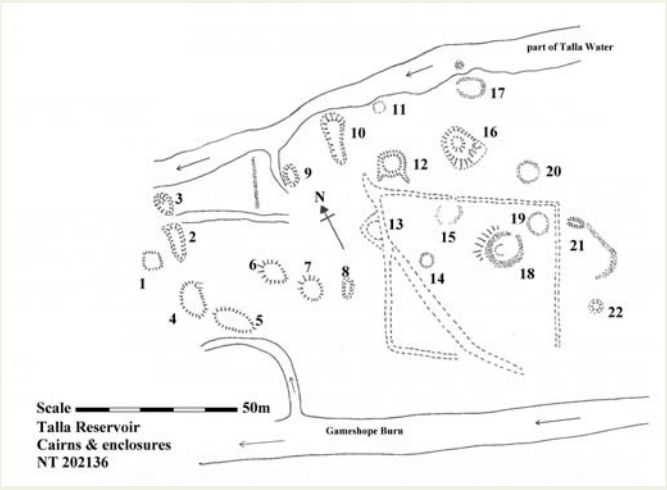


Plate 7 Talla Reservoir Site part of Site 203

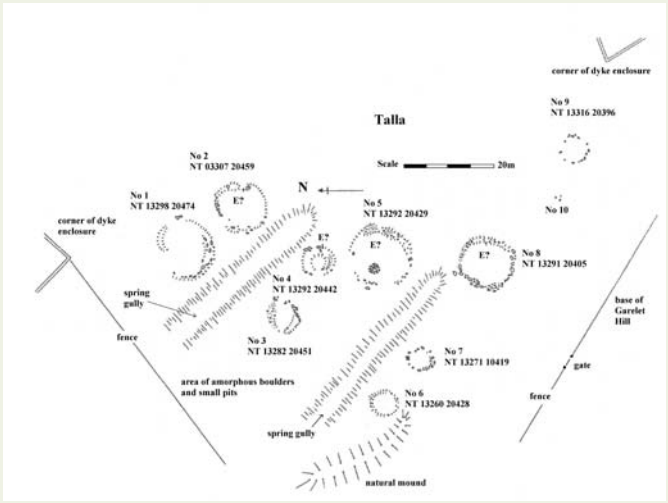


Plate 8 Talla Reservoir Site part of Site 203

Plate 8a Talla Reservoir Site part of Site 203

Plate 8b Talla Reservoir Site part of Site 203 (burial cairn)

Plate 9 Talla Reservoir looking west

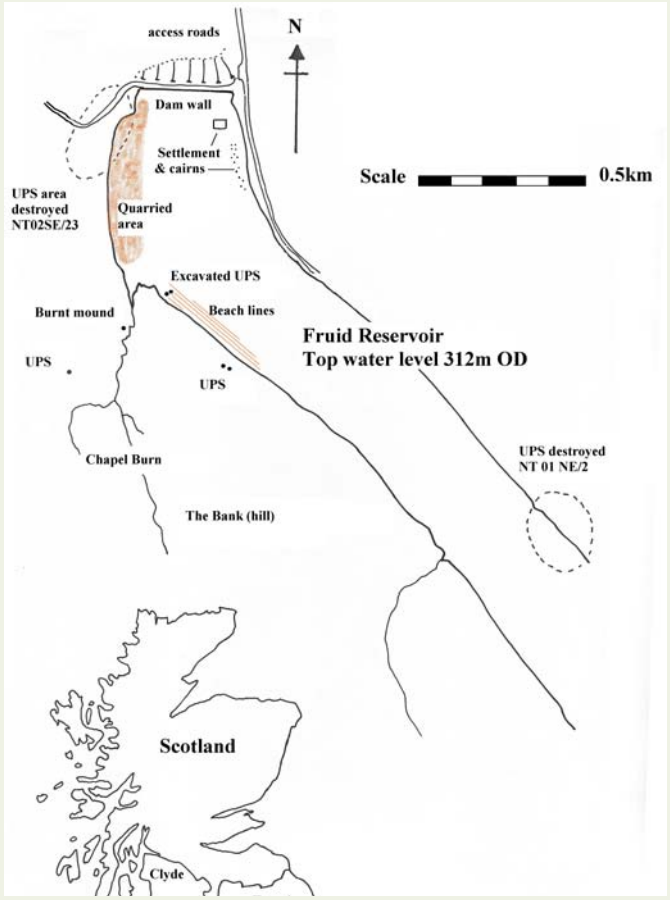


Plate 10 Fruid Reservoir plan of sites

Fruid

NT 090 200 OS 1:50,000 Sheet's No's 72 & 78; Upper Clyde Valley.

Fruid Reservoir (Pl's 1 & 10) was completed in 1968 and it covers an area of 344 acres, it supplies water direct to Talla Reservoir via an aqueduct. Pre historic and Post Medieval sites are located around its shores and similar sites have been found within the reservoir by BAG (Ward 2004 ibid).

Nearly all of the ground along the west side, from the dam overflow to Chapel Burn, has been quarried for construction materials, this is evident when the ground becomes visible and it is at this location where an entire UPS site was eradicated. On the opposite side and just below high water level a cairn group and a post medieval settlement still lie almost unaffected by the reservoir, the settlement being covered in silt and only a few of the cairns having been blasted by wave action near the high water level. A hard rock quarry was opened higher above this point and huge boulders from it are now strewn among some of the cairns, the full extent of both sites has not been witnessed. Further along the same side of the reservoir and about the mid point between the dam and Fruid Farm, another UPS was removed.

Fruid valley below the dam and the neighbouring valleys have an amazing concentration of UPS sites and examples can still be seen along the west side of the reservoir at The Bank (hill) and on the northernmost flank of Carterhope Rig.

Inside the reservoir and on the southern edge of the confluence of Chapel Burn with the reservoir two further UPS were discovered by BAG, and as these were sites under active erosion they were excavated, producing excellent plans of the round timber houses which were dated to circa 1400BC (Pl's 11 – 15) (Ward, 2013.1).

Plate 11 Fruid Reservoir unenclosed platform settlement excavation

Plate 12 Fruid Reservoir unenclosed platform settlement excavation

Plate 13 Fruid Reservoir unenclosed platform settlement excavation

Plate 14 Fruid Reservoir unenclosed platform settlement excavation

Plate 15 Fruid Reservoir unenclosed platform settlement excavation

The reservoir aligns almost N/S with the dam at the northern end, the southern end where the level rises gently across the valley floor towards the main feeder burns of Fruid and Carterhope, is an area of deep silt resulting from pre existing peat, and silt deposition from the burns. It is clear that the southern end of the reservoir is not under active erosion, the opposite being the case along the two long shorelines.

The shoreline at the NW end, south of Chapel Burn is being scoured, beach lines forming at various levels when the water has been low (Pl's 4 – 6). The effects of scouring, and re deposition of gravels is quite strikingly obvious. This is where the two excavated UPS lay.

Plate 16 Megget Reservoir showing erosion scarp at monument

Plate 17 Megget Reservoir showing erosion scarp at monument

Plate 18 Megget Reservoir showing erosion of burnt mound

Megget

NT 190 220 OS 1:50,000 Sheet's No's 72 & 73; Upper Clyde Valley.

Megget is the largest reservoir of the group being 640 acres in area; it was completed by 1983 as an additional water supply for Edinburgh.

It is likely that quarrying took place at the eastern end near the dam wall on both sides, as the ground appears to drop straight down into the water at these locations. At Megget it is the western end below Craig Head and Dead for Cauld (hills) where the ground rises from the valley floor to shelves of ground, and in the case of the extreme western end the ground rises gently towards Meggethead Farm.

It is only this area that has been investigated by BAG (Ward 2004.2) and it is known that two tower houses lie in the valley floor but which were excavated at the time of the dam construction (Maxwell ibid). Several unusual sites lie within the reservoir, these are circular stone settings (Pl 17) but despite some excavation they are indeterminate as to function. It appears that both the Bronze Age and Late Neolithic periods are involved. There are several burnt mound deposits (Pl 18) which have been partially or completely dispersed. Several cairns along the shoreline below Craig Head have been dispersed by wave action.

Somewhat surprisingly there is severe erosion taking place at the west end below Craig Head (Pl 16), despite the fact that the prevailing wind should come from that direction, certainly the beach edges below the road side plantations are being scoured severely, Late Neolithic pottery has been found here, and several lines of badly scoured ground lie below the water, it may be that southerly winds causing high waves and coming via Winterhopeburn account for that. The only time BAG have investigated the reservoir was during a prolonged period of low water levels in 2004.

Plates 16 and 17 show a circular site with the scarp against it caused by wave action at that level.

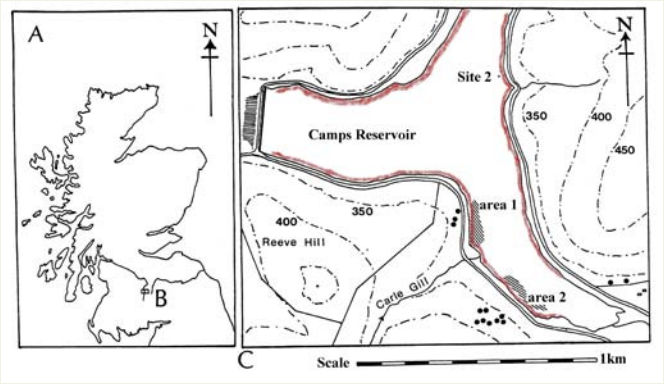


Plate 19 Camps Reservoir site plan

Plate 20 Camps Reservoir showing enclosed cremation cemetery

Plate 21 Camps Reservoir showing erosion of enclosed cremation cemetery

Camps

NT 010 220 OS 1:50,000 Sheet No 72
Upper Clyde Valley

Camps reservoir was completed by c1920 and covers 194 acres. Here again the BAG surveys recorded a series of sites around the reservoir for the first time and these included several UPS locations (Pl 19). When the water level dropped in 1992 and 1994 partially due to dry weather but also because maintenance works were in progress, BAG volunteer Libby Grieve discovered a series of stone features lying on the beach on lower east flank of Reeve Hill and below an UPS. The main feature proved to be an enclosed cremation cemetery (Pl 20) with various cairns and other features including a dispersed burnt mound. Also discovered was a spread of medieval pottery and in a subsequent operation but on the opposite side of the reservoir a further Bronze Age cremation/inhumation cemetery was discovered and excavated (Ward et al, forthcoming 2013.4). As with sites in other reservoirs it is likely that much remains to be found if ever the water levels are further reduced.

Severe erosion is taking place against the edges of the reservoir nearly everywhere (Pl 21) except for the end of the southern branch where the ground rises gently to Campshead. It would appear that the banks extending from each end of the dam wall have been quarried as the ground drops into the reservoir extremely steeply.

Re deposition of gravels forming beach lines (Pl 20) at periods of low water level and scouring down to the clayey (Pl 21) till is evident on each side of the southern branch where currently the known submerged archaeology exists. Only at the south eastern half of the southern branch are the reservoir dynamics not actively causing erosion other than the removal of vegetation.

Daer

NS 980 080 OS 1:50,000 Sheet No 78 Nithsdale and Annandale

Daer reservoir was opened by HRH the Queen in 1956 and covers an area of 495 acres. When it was built it was the largest earth dam of its type in Europe. At that time there were no visible archaeological sites in Daer valley, being ten miles long, but this has changed dramatically by the discoveries of BAG since 1990. The valley now has a profusion of archaeological sites and monuments and included in this are numerous sites within the Daer reservoir.

A large tract of the reservoir area was quarried for dam material (Pl 22) and fortunately a photograph of this survives at Biggar Museum (Pl 23). The photograph shows the excavation of the entire west face of Sweetshaw Rig and down into the valley floor and across to the east side of the reservoir. During this operation a massive volume of peat was extracted from within the reservoir area and doubtless will have scooped away archaeological deposits.

Severe erosion is taking place at the east side below Sweetshaw Farm (Pl 24) and also around the area of a natural mound at Kirkhope Burn. The edges all around the reservoir are generally subject to erosion to some extent or other as this reservoir does fluctuate in water levels in most years. The least affected areas for erosion are at the southern end of the west branch where silting takes place from the Daer Water when in flood.

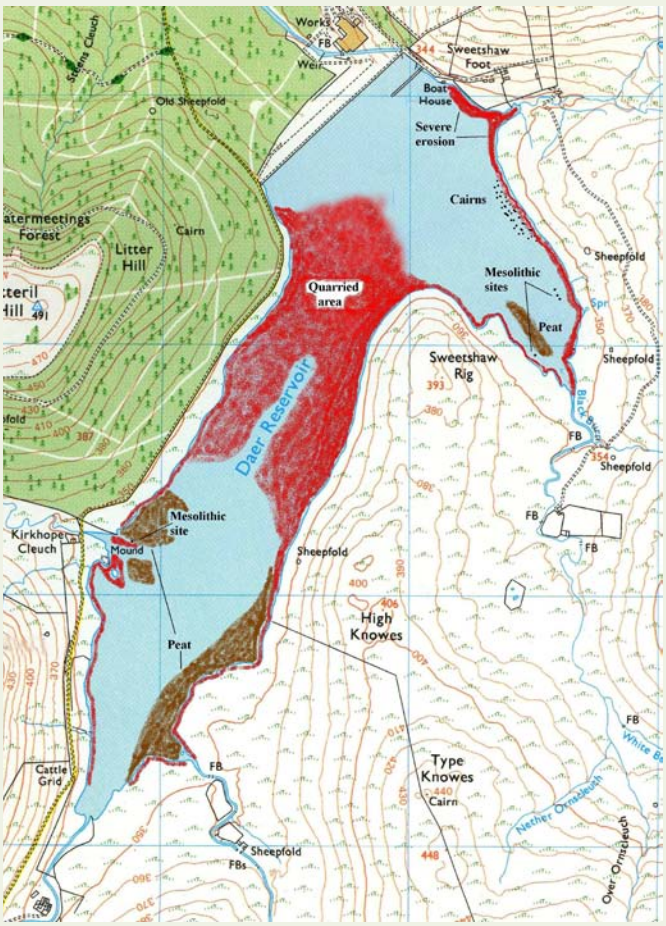


Plate 22 Daer Reservoir site and erosion plan

Plate 23 Daer Reservoir showing quarrying operations

Plate 24 Daer Reservoir showing erosion of edge

Plate 25 Daer Reservoir showing surviving peat and pre historic tree stumps

Plate 26 Daer Reservoir showing remnant peat

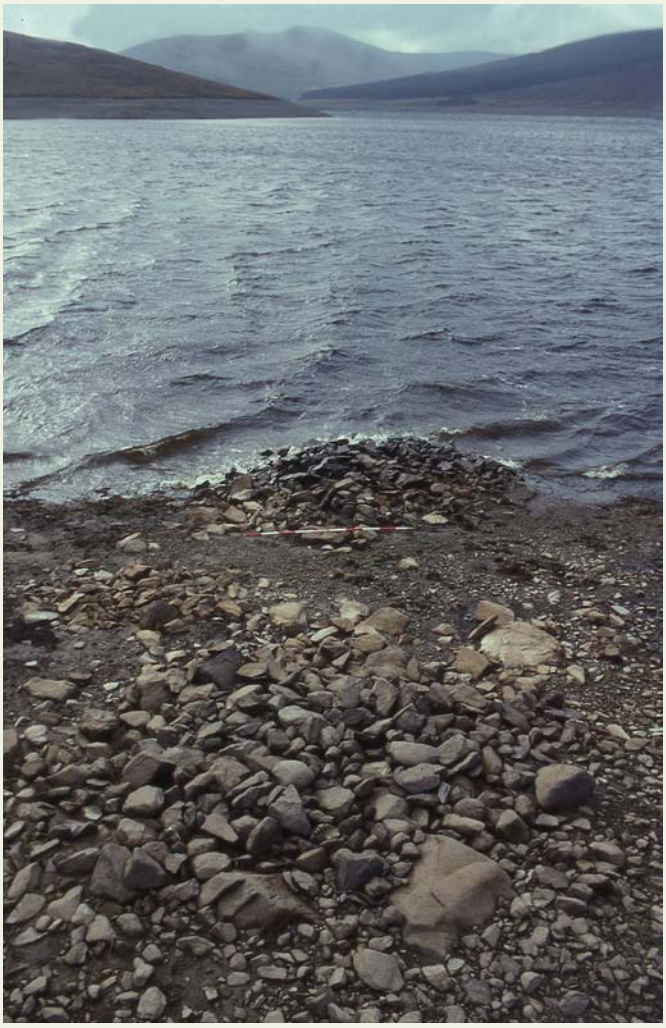


Plate 27 Daer Reservoir showing cairns below water

Plate 28 Daer reservoir Mesolithic site under excavation

Plate 29 Daer reservoir Mesolithic site under excavation

Plate 30 Daer Reservoir over spill and view of reservoir

A huge quantity of peat was removed from the reservoir area during construction, but some large patches of peat remain (Pl's 25 & 26) and these are shown on the plan (Pl 22).

The east side of the east branch has a series of cairns (Pl 27) and Mesolithic sites (Pl's 28 & 29) which for the most part are found further down slope from the reservoir edge, where the ground is constantly being cut away. Former cairns and a burnt mound along this shore have been dispersed and some damage has occurred to other cairns lower down when the water level was reduced.

The proven archaeology around most parts of Daer (Ward 2013.3) places this reservoir (Pl 30) as one of the most important for monitoring, because every visit to it by BAG, has resulted in new discoveries, showing that constant erosion is taking place, especially with the gradual removal of the remnant peat cover within the reservoir.

Peden

NS 940 120 OS 1:50,000 Sheet No 78 Nithsdale and Annandale

The tiny reservoir of Peden (Pl's 31 & 32) is no longer a public water supply. It was investigated in the 1990's by the writer during a period of maintenance and when it was empty. A small cairn group was seen but unfortunately an inadequate record was made of it. There were no erosion problems within this reservoir but the fact remains pre historic features are to found there.

Cowgill

NT 010 280 OS 1:50,000 Sheet No 72 Upper Clyde Valley

Cowgill Upper Reservoir is one of the smallest of the group under discussion, being only 30 acres, it dates to circa 1900; it was visited by the writer when it was completely drained for maintenance work in the 1980's. The area of the reservoir is steep sided apart from the southern end where it rises gently out of the water. No archaeological sites or finds were made, the area being heavily silted. Several sites lie around the reservoir and include a rig and furrow field system on its western side, a pre historic settlement at the southern end and a bastle house near the southern end, however none of these sites are affected by the reservoir.

Plate 31 Peden Reservoir when empty

Plate 32 Peden reservoir showing pre historic cairn

Coulter Water

NT 040 270 OS 1:50,000 Sheet No 72 Upper Clyde Valley

Coulter Water reservoir covers an area of 54 acres and dates to the early part of the 20th century. Only a few shielings are recorded in the vicinity of the reservoir and it has not been inspected during low water level by the writer.

Discussion

It is clear from the evidence now gathered by BAG on their various reservoir projects, that upland reservoirs have a high potential for archaeological discoveries being made, and also that sites and objects are under severe threat by the erosive effects of wave action, at whatever level the reservoir may be at.

The vagaries of topography, water level and weather conditions dictate whether sites become threatened or not. All the sites have their surface soils and vegetation removed by the hydraulic effects caused by gravity and submerged currents, and all sites are affected to some extent by their submersion.

Objects are easily displaced and in some cases may even travel over the ground, for example at Crookburn in Daer where pot sherds appeared to 'glide' off the site for up to 100m away, conveyed of the incoming burn flow, presumably when in flood.

Former surface deposits such as charcoal and burnt bone spreads are particularly vulnerable to displacement, and will be washed away losing all contexts within a site; the same may be true for small objects. Even large boulders forming cairns and other features are easily displaced under the pounding of waves which can be up to 1m in amplitude. Burnt mounds appear to be easily dispersed, they have been found in Daer, Camps, Talla and Megget – all washed away apart from basal deposits!

Features which may be cut into the till have the best potential for survival although even in some instances these are extremely vulnerable, especially if they find themselves on a beach line under stormy weather conditions. Deep water environments are best at protecting the archaeology, however, as has been shown, deep water cannot be guaranteed because water levels fluctuate especially due to weather conditions and for maintenance purposes.

The sum total of the available evidence is that archaeology within reservoirs is disappearing at a variable rate and because many of the sites and objects would otherwise not be found, and because some are of fundamental importance in understanding the past in southern Scotland, a national strategy to investigate reservoirs by monitoring and relevant rescue work ought to be evolved.

Plate 33 Fieldwalking at Weston Farm, Dunsyre

Plate 34 Fieldwalking at Carwood Farm

Arable fields

Arable fieldwalking (Pl's 33 & 34) is a worthwhile practice from which to discover archaeological artefacts and sites, and it has formed an annual part of the various activities of BAG. Attractive objects like scrapers and arrowheads and other lithic tools are regularly found (Pl 35), but it is really sites which are being sought, and BAG have discovered a remarkable series of pre historic sites dating from the Late and early Neolithic, Mesolithic and Late Upper Palaeolithic periods, the latter site (Howburn Farm) (Pl 36) being unique in Britain.

Fieldwalking is perhaps the easiest way to contribute to our knowledge of the past and it can be done by a single person but preferably by groups of people. Young and not so young may participate and all that is required is a reasonable degree of fitness. Recording techniques can be simple but equipment such as Global Positioning Satellite (GPS) recorders which are able to locate find spots with a high degree of accuracy, are becoming increasingly cheap to buy.

Prior to about sixty years ago, and before the mechanical cultivation of fields to any great extent, most ploughing was done by horse power with implements of fairly light weight. The most invasive aspect of cultivation, ploughing, was relatively benign unless previously uncultivated land was opened up for the first time.

Horse drawn ploughs turn about 6" to 8" (150mm – 200mm) of the already cultivated field soil and turf, and this must have continued for centuries with no greater depth of ground being disturbed. The 'plough soil', that zone which gets overturned at each cultivation, would seldom increase in depth and objects would obviously move throughout the plough soil constantly and over time, however objects and deposits below would be unaffected. Such movement would cause deterioration in some materials such as the abrasion of pottery and decay of ferrous metals, while lithic items would survive better but even so with possible attrition of formerly sharp edges on material such as flint.

Deposits, features and objects which lay undisturbed beneath the plough zone will have lain in good preservation conditions for thousands of years. The only disturbance to these may have been wind blown trees or burrowing animals.

Since WWII when a greater urgency was required to produce more home grown food in the face of shipping losses by enemy action, emphasis was placed on mechanised cultivation using tractors which could pull heavier implements, cultivating more ground and at a faster rate (Pl 34). The attrition of archaeological deposits has increased ever since with ever larger tractors and heavier machinery, which now penetrates much deeper into the ground. The effect is to rip up residual deposits and features.

In the case of pits and features such as charcoal deposits and spreads, once these are overturned, they are lost forever. Similarly pre historic pottery which has lain for up to 6000 years under benign conditions will dissolve back to its original clay component, since it will not survive the severe weathering effects of rain and frost for more than a few months. Even worse damage is caused by rotary equipment now used to harrow fields (Pl 37), because even stone items may be damaged or pulverised by the aggressive motion of the machinery.

Grain cultivation tends to take place over a period of a few years before the field is returned to grass. It has been noted that in second and subsequent ploughing in the series, the ploughs dig slightly deeper than the year before, this is because the ground becomes softer after each plough event, allowing the massive multiple furrow ploughs to sink deeper each time. What is witnessed by BAG in their area where plough soils are generally in upland zones and seldom deeper than 0.35m, and often shallower, is that fresh till is overturned on top of the plough soil.

When the lighter coloured till is seen, it is often at these locations where fresh archaeological deposits may be found, especially charcoal, and which often indicate that previously undisturbed deposits have been ploughed up.

The requirement of supermarkets to have unblemished potatoes on their shelves has resulted in another major problem with arable fields. Massive 18" (450mm) ploughs (Pl 37a) are used which are much larger than normal modern ploughs. They rip down past what a normal plough will do, then the entire ground mass is sieved through a machine which deposits all the stone content back on the ground first, and then overlays it with the fine soil which is left (Pl 37b). Not only does this mean that practically all archaeological deposits will have been overturned, but also that all lithic and heavier objects will then be re buried below the soil. Nothing of note will be seen (or is seen) on the surface of the ground after this process has taken place, any deposits will never be discovered and objects are most likely to be buried again, never to be seen in the foreseeable future.

The use of power harrows (Pl 37) has a similar effect where the plough soil is thrown up against a cowl; the heavier material drops first and is then covered with the finer soil. Apart from the attrition of objects in the process, searching for lithic on the surface usually proves fruitless because it has been buried below the graded soil.

For that reason all fields walked by BAG are done if possible before harrowing and rolling, this means walking over the plough ridges which offers better scope for finding objects, since a greater area of ground is visible in the furrows than on the flatter surfaces of the finished cultivation. However, the process can be ankle breaking and great care must be observed while doing it. Experience has shown that it is more comfortable to walk over the ridges rather than along them, for both safety and efficiency in finding.

Plate 35 Objects found at Weston Farm

Plate 36 Tanged points found at Howburn Farm

Plate 37 Power rotovator in action at Brownsbank Farm

Plate 37a Potato cultivation ploughs at Brownsbank Farm (note the large size)

Plate 37b Potato cultivation field at Brownsbank Farm

Most fields in the BAG area produce at least some objects, occasional stray finds of tools or arrow heads are made each year (Pl 35), but what is being sought are concentrations of objects which indicate pre historic sites or medieval midden scatters on the fields. Such discoveries have been made without fail and on an annual basis with BAG.

Other ploughing

Another aspect of ploughing has been for the improvement of grazing, many instances of this occur on ground which has never before been improved by cultivation. During WWII and in post war years much previously unimproved ground has been brought under the plough, the two main reasons for this are for grazing and for arable. BAG has discovered several important sites on upland areas where the ground has been ploughed for the first time for re grassing, in some instances old 19th century plantation areas were ploughed up.

The following brief descriptions will suffice to make the point:

Weston (Ward 2006) where a large tract of moorland ground was ploughed to re grass, it produced a significant assemblage of objects and sites dating from the Mesolithic to Early Neolithic.

Nether Hangingshaw (Ward 2003) where a hill top location was ploughed for new grass and produced a sizeable assemblage of objects of Mesolithic and Early Neolithic date, and also evidence of Early Neolithic settlement in the form of a pottery assemblage with pits.

Melbourne (Ward 1996) where the hill location was ploughed once in the 1950,s for new grass and then again in 1995 for a Xmas tree plantation and produced evidence of Early and Late Neolithic settlement in the form of scatters of objects and pits containing pottery and other artefacts. A beaker burial was also found.

Carwood Farm (Biggar Common East) (Ward 1993) where an old plantation on a hill top location was ploughed for new grass and produced evidence of Early and Late Neolithic settlement in the form of scatters of objects and sites with pits containing pottery.

A following report will deal with the methodology of the work and recording (Ward 2013.2).

Forested areas

The forested areas discussed here consist of three principal types; mature standing forests, clear felled forests and new plantation forests. In the BAG area of the Southern Uplands commercial forestry (Pl 38) is an important and extensive economic activity and land use, however occasional old woodlands may embrace archaeological sites (Pl 39).

As with reservoir and arable searches for archaeology, it is the surrounding known archaeology which will be the basis for prioritising work areas. This has been accomplished for the BAG area through several initiatives by the local group themselves, and by others; for example the RCAHMS and developer funded projects.

Mature standing commercial forests

Perhaps this is the least productive and most awkward type of forestry work as often the branches of commercial species of timber are close set and difficult to penetrate, even in broad daylight visibility is extremely limited in such forests. The best which may be hoped for, would be the discovery of mounded structures like cairns or burnt mounds, and possibly other stone features whose shapes may appear through the barren forest floor of conifer needles.

Clear felled areas

Walking across clear felled forests (Pl 40) is often fraught with difficulty and which is greatly exacerbated if the re planting has been done. Before re planting, the ground is quite visible and surface features will be detected (Pl 41), especially mounded ones. However, there will be little scope for finding deposits and objects until the ground has been disturbed again for re planting.

Plate 38 Commercial forestry near Fruid Reservoir

Plate 39 Mature broadleaf on unenclosed platform settlement at Crawford

Plate 40 Clear felling Sitka spruce at Daer Reservoir

Plate 41 Burnt mound at Daer valley

Plate 42 New drain at Coom Rig forest, Daer valley

Plate 43 New road at Coom Rig forest, Daer valley

Plate 45 Inspecting clear felled forest area, Daer valley

Plate 44 New quarry at Coom Rig forest, Daer valley

Plate 46 Excavating Mesolithic site at Coom Rig forest, Daer valley

Plate 47 Excavating Mesolithic site at Coom Rig forest, Daer valley

Plate 50 Excavating Mesolithic site at Coom Rig forest, Daer valley

Plate 48 Plough furrows and clear felled land in Daer valley

Plate 49 Plough furrows on Coom Rig forest, Daer valley

Often new drains, roads and quarries (Pl's 42 - 44) are cut and mounding for planting new trees takes place (Pl 45). This disturbance offers the possibility to find archaeological deposits, features and objects. The mounds for re planting appear to be large areas of disturbed ground, however in reality the mounds from about a 20m radius are more likely to have come from a single pit and therefore only a small patch of new ground has been disturbed. The digger simply lifts material which is mostly archaeologically sterile till, from a pit or drain and which may be over 2m deep, it then deposits the material around and within reach of the machine's position. The pit which is left is filled with tree stumps which are uprooted for the purpose and this again offers the possibility for making discoveries.

The recent work by BAG at Daer (Ward 2013.3) shows that this scenario presents very good possibilities for making important discoveries, albeit with some considerable difficulty in walking the terrain, and excavating it, however, people appear to enjoy it !! (Pl's 46 & 47).

New forestry plantations

It is to this aspect of forestation that the most prolific and important discoveries have been made, when the ground is furrow ploughed using a double sided plough, and which cuts a furrow 1m wide and down to 0.5m deep, with upcast on both sides (Pl's 48 & 49). The furrows are generally spaced 2m-3m apart therefore a large area of ground is disturbed, often for the first time and experience has shown that where this occurs there is a high possibility of making new discoveries, especially of pre historic sites and objects. The disturbance of the ground is massive being up to 33%, and generally on unimproved upland which has not been opened before.

BAG has engaged in this type of fieldwork on several occasions, and on each, significant archaeology has been produced. The first was at Corse Law in association with Lanark & District Archaeology Society (Clarke 1989), then at Biggar Common (Johnston 1997), and finally, more recently at Daer (Ward 2013.3 ibid). Each project has produced profound results for Scottish prehistoric archaeology.

The results of each of the projects cited above are testament to the upheaval of previously unknown archaeology, and the implications of a local voluntary group (enjoying themselves? (Pl 50) in monitoring the situation and engaging with it to save as much as can be possible, since statuary bodies appear to have no influence whatsoever.

New ploughed ground for forestry has been the most productive, efficient and safe type of forestry archaeology which BAG has engaged with. Methodologies are given in the Daer reports and will be repeated in the following report on 'Engaging with field archaeology' by the present writer.

Plate 51 Burnt mound deposit cut by burn at Crawford

Plate 52 Burnt mound deposit cut by land slip at Dreva Farm, River Tweed

Plate 52a Bronze Age cists exposed by land slip at Mossfennan Farm, River Tweed

Plate 53 Lead smelt site eroded by weather at Manor Valley, Peebles

Plate 54 Crawford castle under threat by falling trees

Plate 55 Bronze Age barrow at Broughton upland grazing

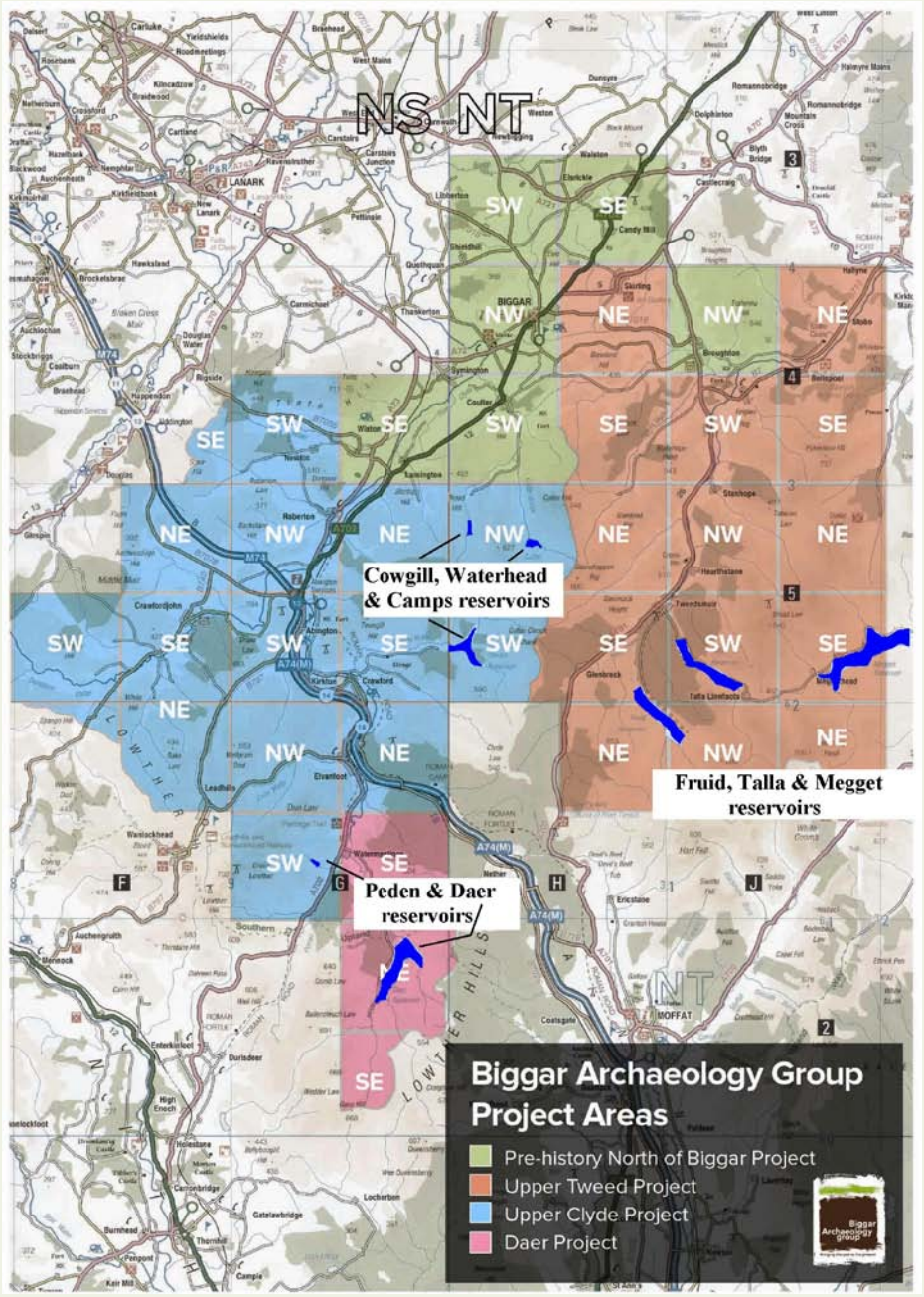
Plate 57 Paisley Crook pack horse bridge destroyed by M74 construction near Douglas

Natural erosion of monuments

While all of the above are examples of anthropogenic effects on landscapes, and indeed it can easily be argued that everything that happens on the Scottish landscape, is caused by human land use, there is an element of what may be called natural erosion.

The principal cause of such erosion in an inland context is by burn and river systems cutting through sites (Pl's 51, 52 & 52a), however, instances of the following are also observed by BAG; wind blown trees, burrowing animals such as rabbits, badgers and moles (often the first indicator that a site exists), ground exposed by other animals, principally sheep and cattle, land slide, weather erosion by wind and rain (Pl 53) and finally regarding buildings, decay and ruination caused by weather, falling trees – and neglect (Pl 54). All of these have instances where heritage sites have been affected to their detriment.

Plate 56 Plan of BAG area of interest in upper Clyde and Tweed



Sheep and heather

The best protectors of upland archaeology are sheep and heather; both have a relatively benign effect on archaeological features. Sheep graze the vegetation but generally do not disturb the sites, even subtle features like the barrow on the Broughton Heights is almost as built in the Bronze Age (Pl 55) and only if upland pasture is ploughed for improvement is damage caused. Heather may obscure features but nevertheless causes no harm to them.

Discussion

No reference has been made to the myriad of ground disturbance caused by building projects since these are usually covered by planning procedures and which the above are not. Modern pipelines of which there are many in the area under discussion, include water and petro chemical pipes, they now are included in the planning process, however in the past this was not the case, unfortunately this was when most of them were installed, especially for water supplies. The areas of ground disturbance to install such large pipes is considerable and the damage (if any) to archaeological sites is unknown.

The BAG experience is wide and varied and has been highly successful; the principal reason has been the dedication and indeed fortitude of the volunteer archaeologists involved. Having gradually adopted an area of interest, the Group have maintained a watching brief on the landscape as best they could, no mean feat considering the large size of the area (circa 36,000 square km) (Pl 56) and the variable types of landscapes involved. BAG has effectively demonstrated what can be achieved by a local group of enthusiasts.

This paper set out to make the claim that while coastal erosion of archaeological sites in Scotland is important, its scale, compared to inland erosion by the three principal causes cited here, and other causes, is actually minimal. No degree of importance is implied for individual sites, it is all equally valuable to the story of our cultural heritage, features such as a little pack horse bridge near Douglas and destroyed by the M74 Motorway in 1990 (Pl 57) are just as important as pre historic monuments; it is the numerical scale of the problem this paper tries to highlight.

If a small group of dedicated volunteer archaeologists can produce a seemingly disproportionate quantity and quality of archaeological data from an equally small part of inland Scotland, and nearly all as a consequence of archaeology under threat, imagine what the national position must be? BAG recognises that in their area they do not discover all of the archaeology under threat; some inevitably escapes them, for example in fields and forestry.

The information presented here is given as a plea to those who are empowered (and employed) in archaeology in Scotland; local, regional and national archaeological institutions, companies and bodies, to get this important aspect of our heritage on the table for serious discussion, and with a view to having it addressed at a national level. Local and national government express interest and sympathy and recognise its importance, but somehow then manage to ignore it, since such heritage matters appear to be taking serious cuts in funding.

Everywhere one reads about the importance of tourism to the Scottish economy and the importance of cultural identity, politicians heap praise on and recognise both these aspects, yet here we see, on an annual basis, the loss of our cultural heritage, the very thing which brings tourists to Scotland and embodies national pride. The calamity of it needs to be highlighted by people who can do something about it, and not by people with little clout.

It is to empowered people in all areas of society that the public at large looks to, in the hope that they will work to alleviate circumstances which bode ill for particular aspects of our society. History will judge those people in Scottish government and those in Scottish 'archaeology', for their own contributions or lack of them, in saving and preserving our national heritage for posterity.

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