

Messages from the past: Iron Age signalling in Argyll

Peter Lamont, Isle of Luing, February 2010

"10 ships, three leagues, heading north", so the terse message flashed from the SW lookout on the coast. The Chief Watcher on the ridge, with all points of the compass to cover, missed the first part of the message but seconds after, it was repeated from the relay signaller stationed on Ben Furachail. The Chief Watcher signalled the fort and then followed with the general alarm aimed at all those out working in the fields. Within ten minutes of the first signal the word was spreading rapidly around the island by shouts and horns and the population was making its way to the fort at Ardinamir. This could have been the scene on the Isle of Luing some 2000 years ago. At that time in the Iron Age slave raiding was a common practice. The Roman Empire in particular depended on slaves for the basis of its economy and - in a few short decades - the Romans were coming.

Scottish prehistory of this period has been difficult to elucidate in the absence of a written tradition. In particular the proliferation of similar defence structures as those on Luing, collectively described as forts, duns and brochs, has posed an enigma and spawned much speculation about their origin and purpose (Martlew 1982). Despite the number of these remains (over 500) there are very, very few which can be dated with any confidence and many have had valuable stratigraphy destroyed in 19th century excavations. There are two on Luing. The northernmost is called Ballycastle Dun at Ardinamir (Fig. 1) and the other, not far to the south, Dun Leccamore (Fig. 2).



Fig. 1 Ballycastle looking N



Fig. 2 Dun Leccamore looking N

Both of these are obviously for defensive purposes. An offensive purpose, for greater control of the general area, would have been better served by siting fortifications near the present ferry crossing at the narrow seaway of Cuan Sound, to control marine traffic and limit easy access to the island. Also on Luing are two coastal earthworks. One is on the SW and one on the SE of the island (Fig. 3).

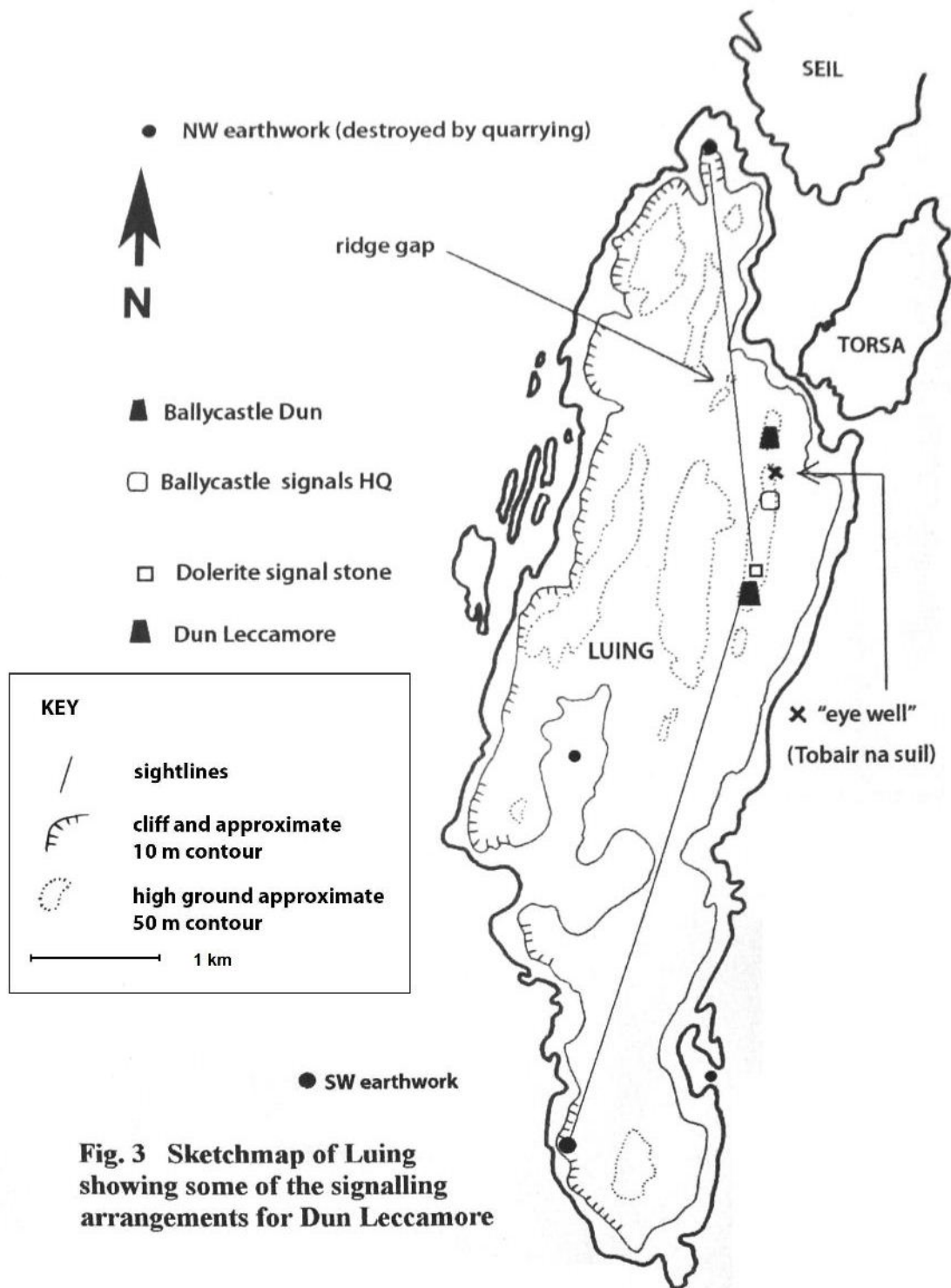


Fig. 3 Sketchmap of Luings showing some of the signalling arrangements for Dun Leccamore

There is general agreement amongst historians that slave raiding must have had an impact on the populations of the Scottish West Coast but the scale of the impact is difficult to assess. I believe that it may have been greater than we appreciate and that some of the discoveries related here may indicate the severity of that impact especially during the long Roman occupation of Britain. The following views and ideas are based on a limited set of physical remains with much owing to circumstantial evidence and imagination but many unexamined signal sites are amenable to excavation which could eventually provide the necessary supporting data.

Between Luing's duns and the earthworks most of the island approaches would have been covered by observers except the NW coast which is blind to all of these lookouts. The cliff edges along this part of the island have been quarried away for slate and thus for many years I assumed any earthwork would have been destroyed. It was always a puzzle about the two duns - did they both co-exist? Were there two rival tribes? Were the duns sequential? At that time we would expect the population of the island to approximate to the medieval assessments when Luing was rated at 43 Merklands indicating a possible population of between 400 and 500 (C. Hunter pers. comm.) Then in 1994 I made a critical observation from which other discoveries followed much like a line of collapsing dominoes.

It turned out that Dun Leccamore could be seen, just showing above a nearby skyline, in the view from the SW earthwork. The SW earthwork consists of a promontory of the raised beach cliff, isolated by the digging of a ditch (Fig. 4).



Fig. 4 SW earthwork, Luing looking W

In any kind of human hostilities, intelligence of one's enemy's movements and intentions is vital to successful defence. It follows that acquisition of intelligence must be efficient i.e. fast. On an island like Luing, good communications were essential and so the duns and earthworks must be in sight of each other to convey messages quickly.

Thus, the first general rule of communication is direct line of sight with all the precision that that can include. These considerations meant that wherever the lookout position(s) were on the NW coast they had to be in line of sight of one or both duns and that meant they could not lie on the quarried cliff edge north of the village of Cullipool since there were hills behind, obscuring views to the duns in the E part of Luing.

It did not take long to locate a suitable NW lookout position at the extreme N tip of the island's raised beach cliffs (NM748144). Here, there is a good view of the dun at Ballycastle. Dun Leccamore lies farther away and from that angle little masonry is visible so, at 3.5 km distance, it would not have been obvious. A ridge east of the modern road lies almost half way on the sightline to Dun Leccamore and obscures the view. At least, it would obscure the view, except

that there is a pronounced dip in the ridge about 15 metres wide (NM749125) which permits a line of sight (Fig. 5).



Fig. 5 Ridge gap on Luing above the modern road (bottom right).

The immediate conclusion was that this dip was a man made excavation specifically cut to create the line of sight and there is some evidence on the ground at the ridge to support this hypothesis.

From Dun Leccamore (assisted by stepladders to compensate for the original height of the ruined structure) the view through the ridge cutting showed a raised beach promontory some hundreds of metres to the E of the best NW position. This appeared to be negative evidence for the ridge cutting being an artefact until I remembered that the view from the NW clearly was of some part of the broad, flat ridge on which Dun Leccamore is built.

Immediately north of the dun are two defensive ditches cut across the ridge and just beyond them, about 50 metres N of the dun, is the position which allows a view to the NW position through the ridge gap. In the grass at that point is a large, square block of volcanic dolerite almost a one metre cube (Fig. 6).



Fig. 6 Leccamore 'signal' stone looking N

This type of stone is known locally as whinstone. Subsequent ground penetrating radar (GPR) measurements taken by the author in 1999 indicate that it extends about 0.45 metres into the ground.

With the ridge cutting lying almost exactly half way along the 3.5 km sightline any sideways observer movement at one end changes the view of the other end by a corresponding distance. It is therefore very important for signalling purposes to accurately fix the correct observer position at both ends but especially at Dun Leccamore since the topography there on top of the ridge is flat and less constraining. The dolerite stone serves this purpose and I think of it as the 'signal stone'. Observers would have known where to stand but, in addition, the precise viewing direction would also have had to be known for night-time signals because of the constriction of the ridge gap and that requires a 'foresight' stone much like the sight on the end of a rifle barrel. In the correct direction and lying 6.8 metres away is another large, roughly triangular stone measuring 1.26 x 0.8 metres (Fig. 7).

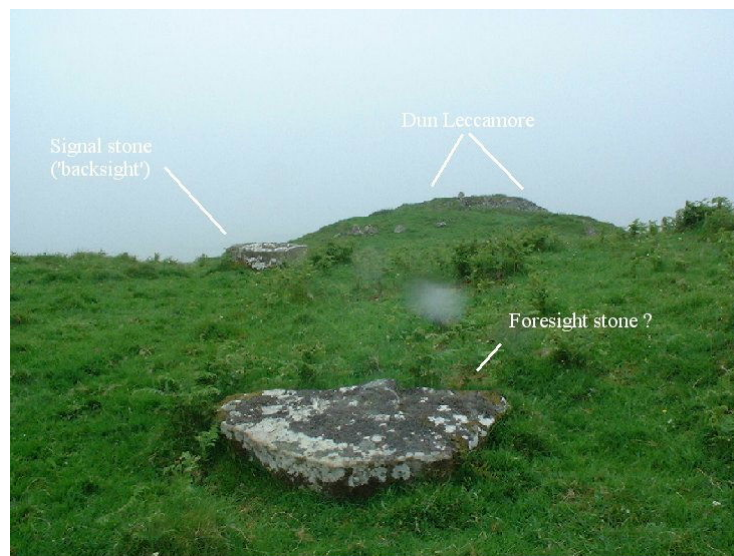


Fig. 7 Leccamore 'foresight' stone with 'signal' stone and Dun Leccamore in the background

This stone would have served perfectly as a foresight marker, in its present exact position, if it is assumed to have fallen over from an upright stance as it lines up with the ridge gap (Fig. 8).

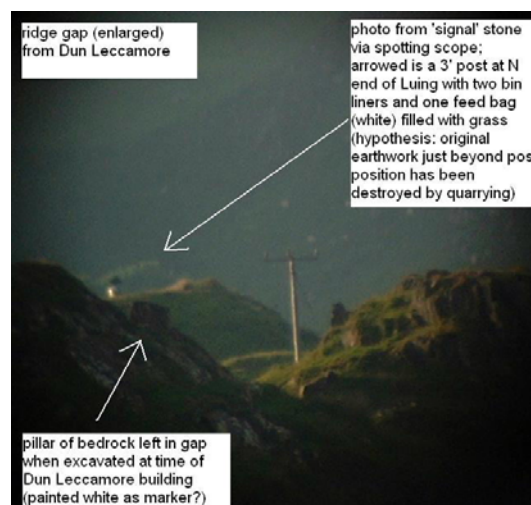


Fig. 8 View from Leccamore signal stone through ridge gap to the NW lookout taken at high magnification. The white spot is a fertilizer bag on a post to mark the NW position.

All these discoveries fitted the scenario of sequential dun construction and occupation with Dun Leccamore being constructed after Ballycastle and this is supported by the superior defensive situation and arrangement of Dun Leccamore - farther from the sea and having defensive ditches on the easily approached N side.

That seemed to complete the story of the signals arrangements for Luing for both duns. With observers at the SW and NW lookouts and a W observation post, covering all the sea approaches and all of these signalling to Ballycastle then, later in time, to Leccamore once modifications to the sightlines had been made such as the ridge cutting. However, this view of the signalling arrangements included the assumption that there could be direct transmission to Ballycastle from the SW earthwork.

This assumption was shown to be incorrect after some experimenting followed by careful measurements from a large scale map. The distance is just over 5.5 km but the sightline is interrupted by the side of a valley and in order to overlook that, the structure at Ballycastle would have had to be more than 30 metres high, clearly impossible.

This was a puzzle for a few months until a second general rule of communications was applied - efficiency in terms of co-ordination with minimum personnel. The modern analogy is the taxi company using radio where all the drivers are co-ordinated by, and route their messages through, a central office. Ballycastle dun does not have good views from the dun itself of the sea approaches. Therefore, a remote site, a signals HQ, had to have been used from where there would be a view of the SE sea approaches. Applying this general rule it soon became apparent that the equivalent of the taxi office for Ballycastle had to conform to five line of sight criteria:

View of the SE sea approaches

View of the SW earthwork

View of the NW lookout

View of a W observation post, possibly via a relay

View of Ballycastle

The only position on the island that meets these five conditions lies on a broad ridge to the south of Ballycastle. In this small area (of about 40 metres diameter) there is a rectangular pit cut into the bedrock measuring approximately 1.5 x 2 metres (Fig. 9).



Fig. 9 Bedrock pit at Ballycastle signals HQ looking S. The small rucksack provides a scale.

The soil is thin in this general area (of the order of 150 mm) and the bedrock worn smooth by glacial action. A GPR survey confirmed a spoil heap to one side of the pit and that its original depth had been no more than 0.7 m below present ground level when constructed. A GPR trace through the pit at Ballycastle signals HQ can be viewed online (Lamont 2003). There is no loose rock in this part of the island but nearby walling could have consumed earlier constructions. The pit is clearly an artefact but its purpose remained another puzzle for a few months.

The problem of the pit was solved by applying a third general rule of Iron Age signalling. When considering line of sight communications twenty four hours a day, all days of the week, the signalling situations resolve into four major atmospheric conditions. These are; night time, bright sunny day, cloudy day with white or bright clouds, cloudy day with dark clouds. For each a different visual signal was required to transmit over the distance. Fires can be used at night and mirrors when the sun shines. In those times polished bronze discs were used as mirrors. Against bright or white clouds, dark smoke would be easily visible and this colour can be obtained from burning animal fat and skins. Dark clouds require a light colour of smoke which is more difficult to produce but can be made with damp vegetation. On the ridge at that site the grass is short and the nearest long vegetation two or three hundred metres away downhill. It clearly could have introduced a fatal delay if these local valley sources were relied on. Instead, a supply of fresh vegetation was maintained in store near the signal fire and probably kept damp in the pit by overlaying with skins. Subsequently I have found similar pits at other sites obviously fulfilling the same function.

When the lessons learnt from Luing are applied elsewhere the same patterns of communication organisation are found. The nearest example is Dun Mucaig on SW Seil (NM752154). This small dun is on a rock tower formed from the raised beach cliff. Its function would have been to be a fortified lookout for the main settlement refuge on Seil at Balvicar (NM771165). To signal between these two requires an intermediate relay station as there is no direct line of sight. Suitable relay positions are very limited. At one is the remains of a low rampart five metres square (NM754149). From there towards the NW the top of Dun Mucaig is just visible

above an intervening ridge line (but today obscured by the scrub currently growing on the ridge). There is a clear view to Balvicar lying to the NE.

Just a short distance farther N is Loch Feochan. The entrance to the loch is guarded by a small dun on each side. From there is a string of duns that could easily transfer a message to the largest fort associated with the loch, Dun Iadain, which is a short distance up Glen Feochan at NM911241. One relay station is missing from the sequence and its location would have been in the area around Barrandroman farmhouse, perhaps a little above and to the SE (approximately around NM850229). The present sightlines are a bit obscured by trees, for which allowances must be made, but from this postulated relay position the dun at Ardoran (NM845242) and the dun at the head of the loch (NM868249) would have been visible.

On the Scottish west coast much farther to the N, opposite Skye, is Gleann Beag with two large brochs Dun Telve and Dun Troddan. These substantial structures are about half a kilometre apart which does not make sense until their communication abilities are examined. Dun Troddan can signal farther up the valley to the SE but has restricted possibilities for receiving signals from seaway lookouts to the W. Dun Telve, however, situated down in the flat ground of the glen near the river, to the W of Dun Troddan, is perfectly placed to communicate directly with a lookout on a ridge on Skye. Had Dun Telve been positioned one diameter farther N, towards the side of the glen, that line of sight would not be possible. The logical sequence therefore is that Dun Troddan was the first construction and Dun Telve built later in a position to make use of improved communications (i.e. more warning time). This and other sites illustrate that communications did not just run from sea to fort but ran from the forts into the hinterlands. Clearly this capability would have functioned to summon reinforcements in time of attack which must therefore have been important and leads on to a consideration of defender versus attacker strategy.

In the modern world we are all familiar with the term 'arms race'. Applying that scenario to the duns and forts it follows that, to achieve surprise and improve success, attackers would seek to neutralise the lookouts by stealth first, thus catching the main population outside the local stronghold. Defenders therefore would subsequently counter this by upgrading to fortified lookouts whose function was to withstand attack long enough to send off a signal. The next defensive measure would be to summon reinforcements as the fort defenders could easily be outnumbered by a seaborne force. For the smaller islands like Luing, Lismore and Gigha this would mean sufficient numbers of boats to get enough men across to each of these islands. There is some evidence for this near Luing.

At this point we must divert to a wider geographical picture. Another discovery was an apparent second ridge cutting on Luing. This allows for a 22 kilometre sightline which establishes communication between the south coast of Mull and Eilean an Duin at Croabh Haven on the mainland to the E of Luing. The questions that arise are; why was communication required between Mull and the mainland and second, why bother making an excavation when either end can be raised to overlook the obstruction?

The first answer becomes apparent when a small scale map is examined. W Kintyre has a view of the Sound of Jura but not seas to the W of Jura. Observers on the S coast of Mull have excellent views of the seas W of Jura and Islay but not the Sound of Jura. Communication between the two sets of observers therefore has the advantage of covering all the SW sea approaches to Mull and the Firth of Lorne.

The answer to the second question reveals another general rule of Iron Age line of sight signalling - that of elevation above sea level. When asked where is the best visual signal position, most people will think in terms of the high points like the signalling in the film of

Lord of the Rings where fires are lit on mountain tops. This is an incorrect image. It must be remembered that the signals we are concerned with here were not usually intended to be broadcast to a wide reception area. Those I have discovered were specific from sender to recipient stations. Since it is line of sight there can be considerable precision and that can have advantage in that observers out of the line may not detect a signal being transmitted at all. This could be useful if defenders did not want to alert approaching forces to their detection. Also, paradoxically, hilltops may be difficult to defend efficiently. So, if not hilltops, what factors may constrain the upper limit? Here the prime consideration that determines the parameters is reliability. The signals must be capable of being transmitted in as many different weather conditions as possible. Hilltops are therefore a disadvantage because on the Scottish west coast they can be covered in cloud much of the time. Therefore the upper limit has to be below the normal (typical) cloud base which is usually above 200 m along the S coast of Mull.

That there is a lower limit may also not at first be obvious but if, say, a small object is dropped on a patterned room carpet it can sometimes be difficult to see against the pattern looking down from standing height. From floor level however, the object will stick up from the flat surface and be easily seen, so there is some advantage to looking along the surface. At sea level an observer's horizon is limited to three or four km but increases favourably with some modest elevation. In the Firth of Lorne, S of Mull, sea mists can form easily in April and May. These mists typically are not very high, usually below 50 m in elevation. Thus we have a lower limit. Now the reason for excavating a second ridge on Luing starts to make sense. The relative distances - mainland to ridge and ridge to Mull - are such that every metre excavated on Luing lowers the receiving position on Mull by about 8 m. This had to be done to get below the cloud base on Mull and because the mainland station could not be raised since Eilean an Duin is a small island at 25-30 m depending on the height of the former structure on its summit. In good, clear weather the higher positions can be used and on Mull, corresponding to the communication line from the mainland, there are two small stones marking the precise bearing to the mainland station (Fig. 10).

Fig. 10
Signal stones on a ridge on Mull.
The stone in the foreground has a 12 cm high compact camera case resting against it. The stone in the background is immediately to the left of the foot of the standing figure on the skyline. These stones are lined up in a precise bearing for Eilean an Duin, Croabh Haven.



These lie about 50 m apart and are clearly artefacts since there are no stones of any size for a considerable radius in the immediate vicinity. They are at over 300 m elevation and would be covered in cloud on many days but a significant time saving could be made if a watcher there

received the signal directly from the mainland. When in cloud, the message would have been received in a lower valley at about 150 m elevation. Intriguingly, in the valley there is a small cluster of buildings near where a signal through the ridge gap would have been received. From here, with the upper slopes in cloud, the message would have been carried by runner to the ridge top. The ridge top watcher would have then been fresh to relay the message by running down the opposite side to the next relay for onward transmission. The elevation of 150 m gives an observable horizon at around 44 km. With good eyesight a fleet of ships could be seen at that distance and in sea mists there is also the possibility that mast tops would have been visible.

On the mainland side a signal station at a higher elevation could have been based near Eilean an Duin again avoiding an excavation on Luing - so why was this not done? Consideration of this problem brings us back to the strategy and counter-strategy 'race'. Successful repulsion of attackers by any small island population in a dun could not be indefinite and depended on reinforcements from the mainland. Attacking strategy therefore would have developed into the priority of raiding of nearby mainland with the object of destroying boats. It became essential, therefore, that any boat concentrations had to have good communications. Attacking strategy would in turn have focussed on a surprise attack on the boat concentrations after which the island duns could be laid siege to, without mainland interference.

This is what I believe happened to the island station of Eilean an Duin and here we have a first date as the major carbon from its destruction was estimated at 189 AD (dating range 40 to 373 AD; Ashmore 1997). It follows that Dun Leccamore's last habitation should also date to this same period or immediately thereafter. This sets us firmly into the Roman period. Apart from metals such as tin one of the prizes of the occupation of Britain mentioned by Tacitus was a supply of slaves. It is very likely that the tribes in the north were regarded as fair game for slaves and that traders operating under the Roman aegis would have been raiding regularly up and down the west coast from fleets since overland travel was much less efficient. The Romans finally withdrew from Britain around 407 AD so there are still most of two centuries after the destruction of Eilean an Duin for further raiding.

Considering the effects of slave raiding over more than three hundred years the broad trend that could be expected is that the Clyde Islands would be the first to be cleared followed by the Mull of Kintyre and the islands of Islay and Jura. The small islands in Lorne would also have followed but the hinterland would have been too impassable and there would have been scope for evasion so that we could expect a substantial population to have survived in the form of small groups. Slave raiding farther north would have been sporadic to start with but intensifying later in the period as the opportunities within easy reach reduced. Regarding sophistication of strongholds we would expect to see a trend of simple, 'early' designs to the south and increasing sophistication towards the north and on the mainland and this is indeed the pattern seen in the ruins today.

This whole scenario means that Kintyre and the islands of Islay and Jura and the smaller islands would have been almost clear of people by 400 AD. When the Scotti from Ireland began migrating into the area from 450 AD onwards this situation would probably not have changed much in less than two generations. The incomers would have been able to take over essentially empty farmland and maintain their cultural identity. My conclusion therefore is that the 'Scots' have the Romans to thank for being able to move into Scotland!

What of those who managed to evade the raiders? It would have become obvious that an effective defence was not tenable once the local populations fell below a significant level so that there would be no point in rebuilding forts or duns. Easy farming land would have had to be abandoned because to work it would have required living relatively close by and such

locations on the flat land areas tend to be far from the more difficult terrain into which escape is possible. The best living was to be made close to the sea to utilise both terrestrial and marine resources but proximity to the sea would have held risk too. With a reduced population a change in defence strategy to escape and evasion might have been adopted with the expectation that scattering into small groups would ensure some successful escapes. Efficient forewarning and communications with other groups would still have been very important.

In the Argyll and Bute area there are enigmatic groups of recessed hut platforms (Rennie 1997) and it is tempting to speculate that some of these may represent the tertiary defensive strategy of a severely depleted local population. One example is the group of 67 platforms on the N side of upper Loch Creran below Ben Churalain. If all were occupied at the same time it would have been a substantial community. What is odd, in common with many of the other recessed hut platforms, is that the group is on steep ground well above the shores of the loch, away from arable land and with a hinterland of easily accessed valleys leading into the hills and away from the coast.

At one platform in this group is an 'eye' well. This is a rock cut basin, presumably shaped to collect ground water (Fig. 11). On Luing there is another identical rock cut basin called "Tobair na suil" meaning well of the eye. Today on Luing this always holds water even in the driest periods. This Luing example (Fig.12) is 250 m N of the signals receiving HQ for Ballycastle (with the vegetation pit). The meaning of the well name can thus easily be seen as the 'all seeing eye' or the 'watcher's well'. One modern tradition is that these wells (there are others in Scotland) implied good eyesight for those who bathed their eyes in the water. Anyone chosen to be a watcher would have had excellent eyesight so, naturally, there would be the association with good eyesight.



Fig. 11 Creran 'eyewell'



Fig 12 Luing 'eyewell'

At upper Loch Creran the platform associated with the eyewell is the westernmost of the group and placed to both overlook the approaches to the SW and to relay any signal to two other groups of platforms beyond the upper loch to the E and SE (grid refs for these groups). One of these groups is in a small valley called Allt Beallach na-h'Innsig (Rennie Figure 1 group 57).

Tree cover restricts these sightlines today. Some dates for these platforms are available from their occupation fire hearths but many more would be required for such a group before any conclusion could be made for the first construction of the platforms. To fit the hypothesis of depopulation during Roman times the average dates for first use would be expected to cluster around 200 to 400AD. Rennie suggests the recessed platforms may have represented natives retreating in the face of Scotti immigration and this is a situation that would have been expected to develop after 400 AD given the scenario suggested here. The surviving native Picts would not have had time in two or three generations to repopulate and spread back south to reoccupy all their former lands in strength before Scotti immigration had established a significant presence.

While much of the views and ideas expressed above owe something to imagination they are based on sites found by predictive deduction. More sites can be located by applying these principles and I hope that, perhaps in time, we will be able to obtain a string of dates for the signal sites which will shed a better light on this period of Scottish prehistory.

Acknowledgements

The author is grateful for the loan of Pulse Ekko GPR equipment from the N.E.R.C. Geophysical Equipment Pool, West Mains Road, Edinburgh, GPR Training Loan No 636 / 03 99. This equipment was obtained through the encouragement of Julian Overnell and facilitated by Professor Graham Shimmield. Thanks are also due to the numerous friends who provided welcome company on tramps to obscure places - you know who you are.

References

Ashmore, P. (1997) Radiocarbon Dates from Archaeological Sites in Argyll and Arran in *The Archaeology of Argyll* ed. Graham Richie, Edinburgh University Press.

Harding, D.W. (1997) Forts, Duns, Brochs and Crannogs: Iron Age Settlements in Argyll in *The Archaeology of Argyll* ed. Graham Richie, Edinburgh University Press.

Lamont, P. (2003) Luing Hillforts part III: the 'Suil' Pit Site
http://www.glenburn.care4free.net/Hillforts/Hillforts_III.htm

Martlew, R. (1982) The typological study of the structures of the Scottish brochs
Proc Soc Antiq Scot, 112, pp254-276

Rennie, E.B. (1997) Who built the platforms? (The Recessed Platforms of the West of Scotland)
private publication printed by E&R Inglis, Dunoon