Proc Soc Antiq Scot 147 (2017), 17–28
DOI: https://doi.org/10.9750/PSAS.147.1248

Littleferry, Sutherland: an earlier prehistoric coastal site in context

Richard Bradley[1], Aaron Watson[2], Ronnie Scott[3] and Annette Jack[4]

ABSTRACT

The paper considers the significance of one of the largest collections of earlier prehistoric artefacts associated with a Scottish dune system. It came from a narrow spit, formerly an offshore island, at the mouth of Loch Fleet and was dominated by large numbers of arrowheads dating from the Early Neolithic period and the Beaker phase. They seem to have been made there, and many were unfinished. The original findspots are inaccessible today, but a programme of field walking in the surrounding area confirmed their exceptional character. Perhaps this remote location was chosen as a production site because of the specialised roles played by the artefacts made there. The results of this project are compared with similar evidence from the Culbin and Luce Sands.

INTRODUCTION

The Holocene period saw major changes to the coast of northern Britain. The land rose as it was freed of ice, and the sea retreated. Areas of silt were exposed by the water's edge and could be moved by the wind. More material was carried down the rivers and redistributed by tidal currents until these processes sometimes resulted in the formation of dunes (May & Hansom 2003).

In lowland Britain the prehistoric shoreline is submerged, but in the north, sections of the ancient coast still survive. Some of the Scottish dunes are associated with exceptional concentrations of artefacts. They include the Culbin Sands, the Luce Sands, the Stevenston Sands, and those at Tentismuir, Gullane, and Hedderwick (Bradley et al 2016). They also feature Littleferry, which is the subject of this article. In some cases, their chronology extends from the Mesolithic period to the Middle Ages, but this study focuses on the period between about 4000 and 1500 BC.

The sand dunes associated with Neolithic and Early Bronze Age material feature in articles written in the late 19th and earlier 20th centuries, but they have seldom been discussed since then. There are several reasons why this happened. Most of the artefacts were collected when the dunes were unstable and shifted in strong winds. The majority were on the surfaces exposed by storms. In most cases, these natural processes were arrested when the ground was stabilised by planting trees or establishing a protective layer of vegetation. Some of the sites are golf courses today, one is occupied by an industrial estate, and another is used for military training. In every instance the results have been the same. These places no longer produce many prehistoric artefacts and there is little prospect of excavation. The main exception was Cowie's fieldwork on the Luce Sands, which happened before the area became a bombing range (Cowie 1996). Otherwise, the available evidence was practically exhausted by 1950. Considerable numbers of poorly provenanced artefacts were held by museums – the residue of still larger assemblages dispersed through private collections – but they did not figure prominently in accounts of prehistoric Scotland.

[1] Department of Archaeology, University of Reading
[2] Department of Archaeology, Durham University
[3] ronnie.scott365@btinternet.com
[4] wajack3844@gmail.com

Little was said about the interpretation of this material, but two principal themes can be recognised. The first was favoured by Lacaille, who observed that these findspots included a mixture of diagnostic types extending from the Mesolithic period to the Bronze Age. He suggested that coastal locations were selected for their wild resources and that they were occupied by hunter gatherers after the adoption of agriculture (Lacaille 1954: 313–14).

One weakness of this interpretation is illustrated by Cowie's work on the Luce Sands, where it was obvious that artefacts of different dates had travelled down the soil profile until they came to rest on an old land surface. Only rarely did the dunes provide a reliable stratigraphic sequence and any 'association' between Mesolithic artefacts and supposedly later material would be entirely spurious. At the same time, the movement of the dunes meant that certain locations were repeatedly targeted by collectors. Cowie (1996) suggested that the concentrations of finds might be more apparent than real. They were due to the ease of recovering them.

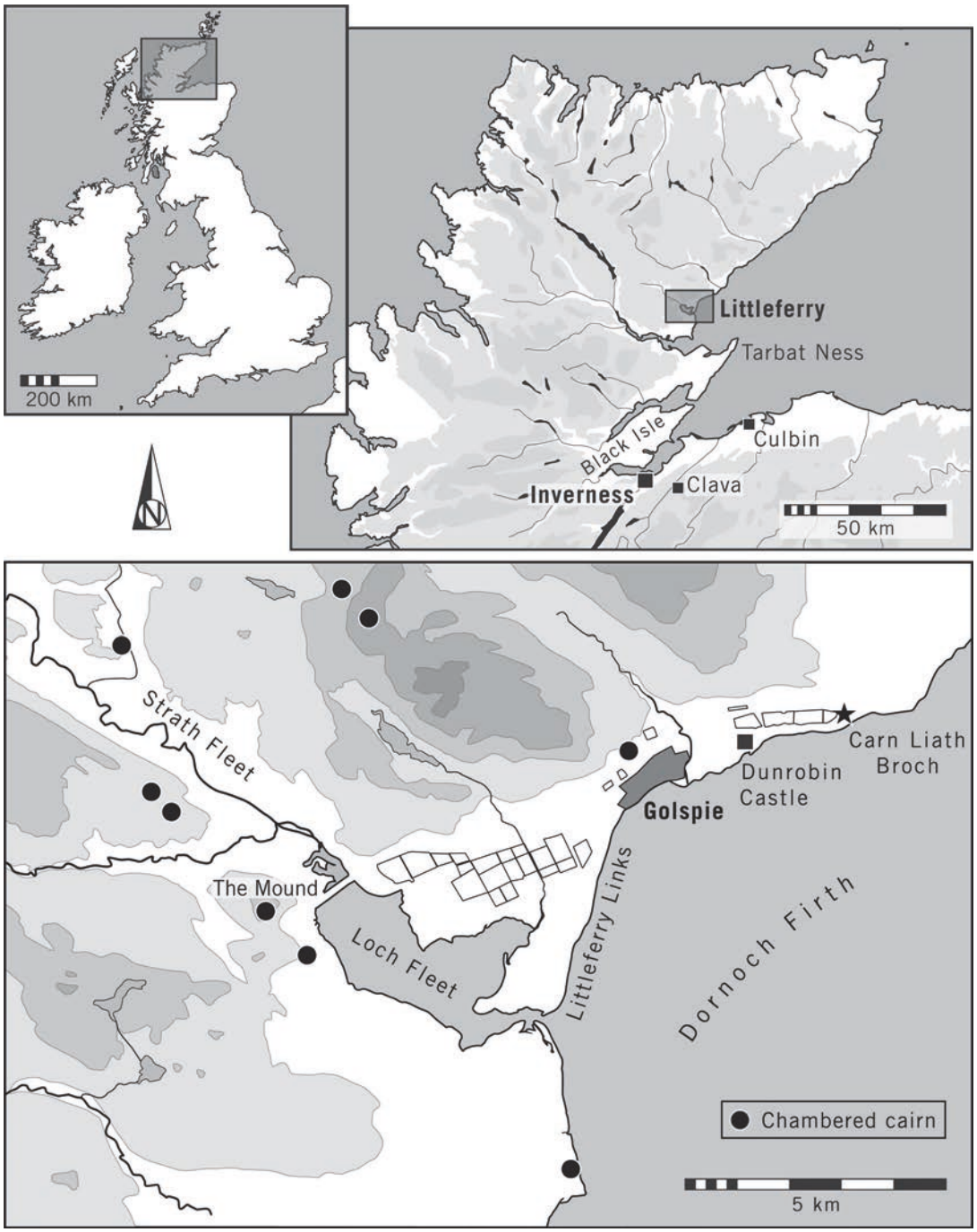
There the matter rested until David Clarke published an important article drawing attention to the enormous collections from three of the sites: Culbin, the Luce Sands and Littleferry. He argued that their presence must be explained in other ways, for there were dune systems around the Scottish coast where similar material has not been found despite the presence of later artefacts. He commented on the distinctive composition of the prehistoric assemblages which included an exceptional number of arrowheads (Clarke 2004).

There have been two developments since 2004. Diana Coles (2008) has investigated the collection from the Luce Sands. She showed how the application of heat pre-treatment would allow arrowheads to be made from pebbles on the beach. She also suggested that the dunes were associated with non-local raw materials which could have been brought by people from other regions (Bradley et al 2016: 136–9). A second development was a new analysis of the material from Culbin, supplemented by a programme of field walking close to the original findspots. It suggested that, like those from the Luce Sands, the museum collections provided evidence of large scale artefact production. It also showed that the number of finds from the dunes was at odds with their paucity on the farmland in the surrounding area. It appeared that the assemblage from the Culbin Sands really was anomalous (Bradley et al 2016: 130–6; Bradley, Watson & Scott 2016).

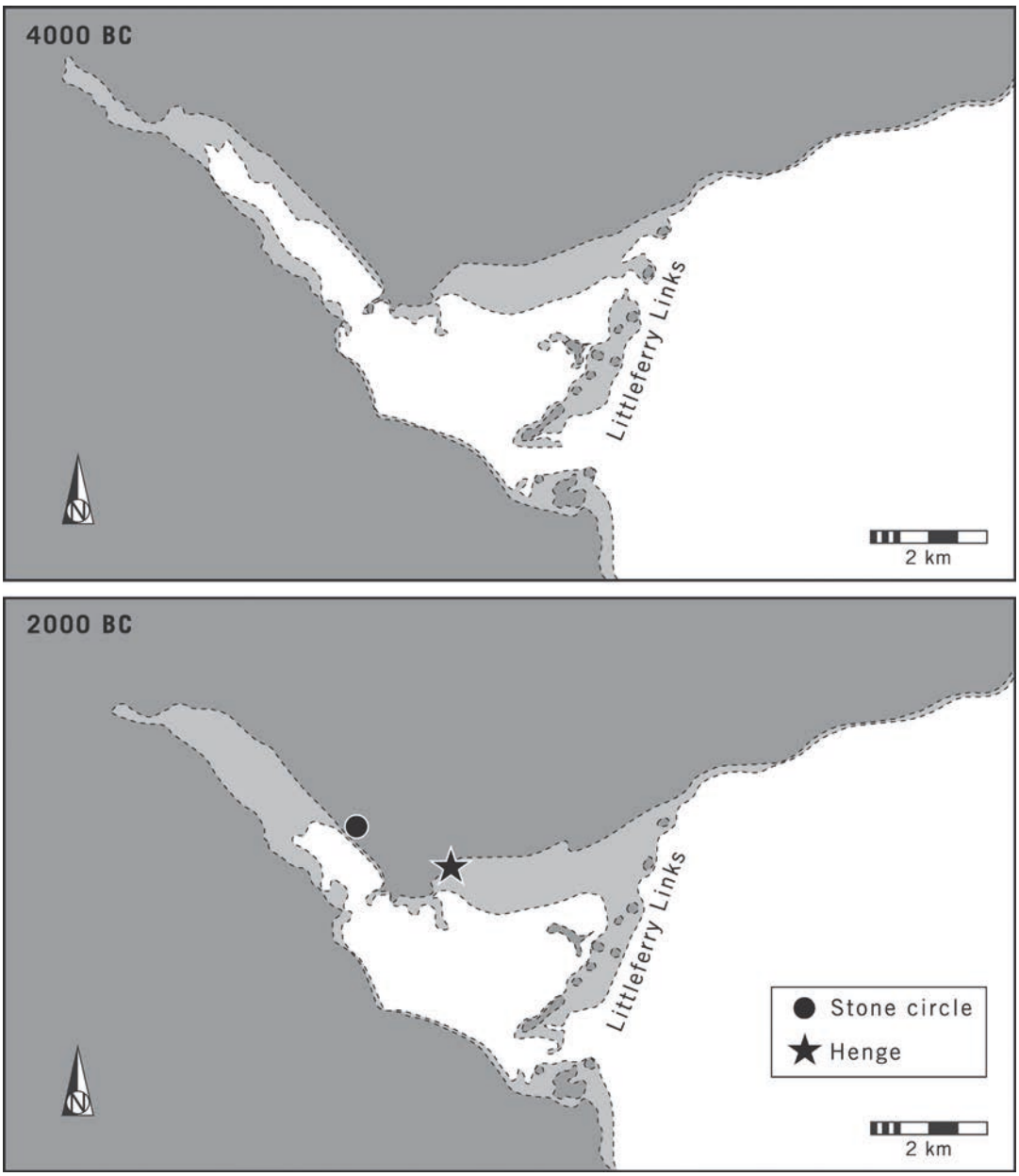
Such studies had obvious limitations as they considered two places where artefacts had been recorded in unusual quantities. Both covered large areas, and the use of the Luce Sands must have overlapped with the establishment of a monument complex at Dunragit on the opposite side of a former estuary (Thomas 2015: 8–16). It was worth investigating an area where activity might have happened on a smaller scale. For that reason, the field walking survey at Culbin was complemented by a project at Littleferry that employed the same techniques. Two questions were especially important. Following Lacaille, did the distribution of earlier prehistoric artefacts focus on the areas with wild resources? And, following Cowie, was the material in the museum collections from Littleferry any more than a sample of the artefacts distributed across the surrounding area?

LITTLEFERRY AND LOCH FLEET

The name Littleferry Links applies to a narrow spit of land extending for 3km between the town of Golspie in Sutherland and the entrance of Loch Fleet. It is bounded by the North Sea on one side and by a low-lying area of drained ground on the other. Like the places mentioned earlier, it is characterised by dunes where numerous artefacts were collected in the 19th century. Early accounts refer to urned cremations, and also to a series of shell middens whose dates and exact locations remain in doubt (Tait 1870b & 1870c; National Museum of Antiquities of Scotland 1892: 95). It is clear that many of the finds from Littleferry have been lost since their discovery, but a major collection survives at NMS and a smaller group



Illus 1 The location of the study area in relation to the places mentioned in the text. The detailed map also shows the fields surveyed in 2017 and the locations of Neolithic chambered tombs (Drawing: Aaron Watson)



Illus 2 Reconstruction of the shoreline of Loch Fleet in 4000 BC and 2000 BC, showing the positions of Littleferry links, the possible henge monument and the stone circle. The sea is unshaded and the intertidal zone is indicated in light tone. The analysis follows the reconstruction provided by Dr Fraser Sturt in Bradley et al (2016) (Drawing: Aaron Watson)

of finds is held at Dunrobin Castle. With the exception of a small area of farmland, under grass at the time of fieldwork in 2017, modern land use is divided between a golf course and an area of forestry.

Research by Fraser Sturt sheds light on the original character of the site. Using a Geographical Information System based on changing sea levels around the coast he estimates that in 4000 BC the higher part of the spit was an offshore island at the entrance to Loch Fleet (Bradley et al 2016: 143). At that time the loch was larger and included the area between the northern edge of Littleferry Links and the high ground a kilometre to the north. Today its shoreline is occupied by a railway line and a major road. His maps model the boundary between land and water in 4000 BC and 2000 BC, and show the likely extent of the intertidal zone which would have been occupied by mud flats and small areas of raised ground. As the land rose and the sea retreated, the island was joined to the mainland south of Golspie. The area is now a National Nature Reserve, celebrated for its varied ecology. There is good agricultural land near to the original shoreline, and more is found along a strip extending eastwards along the coast from Golspie. Farther inland there is upland pasture and woodland.

The entrance of Loch Fleet is easy to recognise from open water or across the Dornoch Firth from Tarbat Ness. It is located between two prominent areas of high ground which might have restricted access to inland areas. On the other hand, Strath Fleet provides an easy route to the hinterland and leads towards the important monument complex at Lairg. There are few earlier prehistoric structures, but there were six or seven chamber tombs of Orkney-Cromarty type: two on, or overlooking, the sea; another two above the loch and a further three in Strath Fleet (Henshall & Ritchie 1995). Near the head of the valley there is a small stone circle (Tait 1870a) and the crop mark of what may have been a henge (Harding 1987: 364–5). Round cairns are also recorded on the high ground. The former island at Littleferry presents a complete contrast, and no prehistoric structures have been identified there.

THE MUSEUM COLLECTIONS FROM LITTLEFERRY

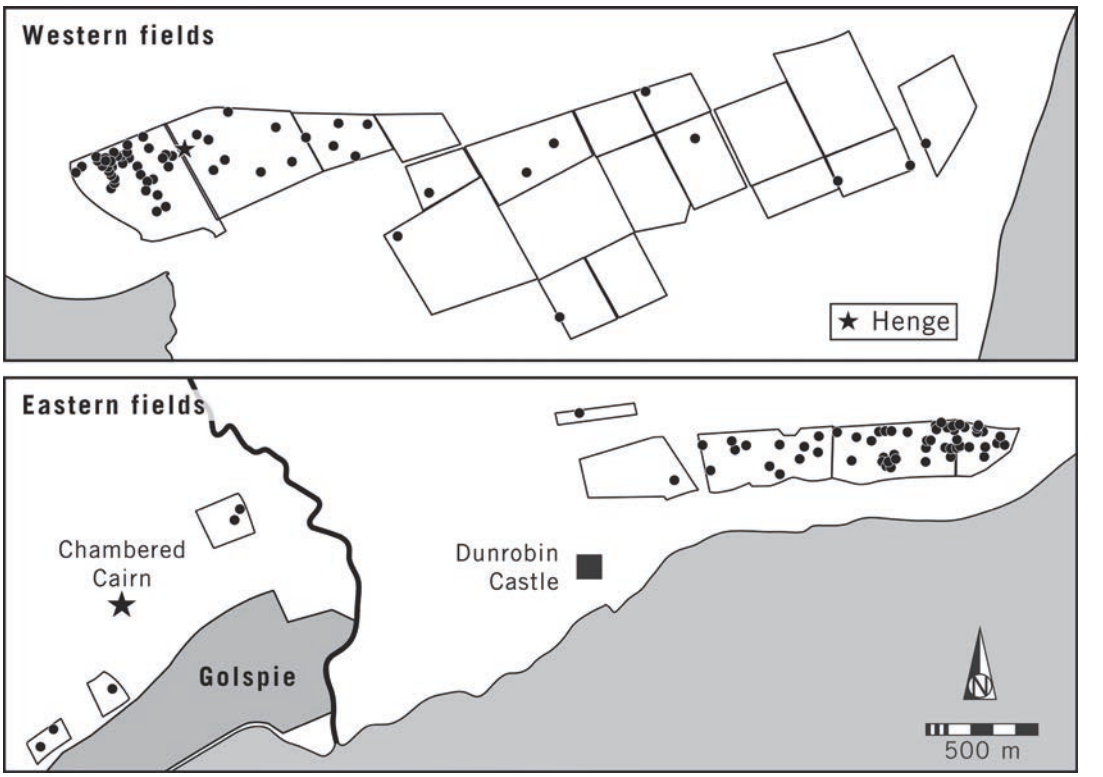
The material held at Dunrobin includes 33 arrowheads (10 leaf-shaped, 11 hollow-based and 12 barbed and tanged) as well as flint scrapers, a Mesolithic flint core, microlithic flint blades and a sherd of Impressed Ware. A second collection, now lost, was listed in 1881 as containing more than 1,500 items, again including scrapers and knives as well as 269 leaf- or lozenge-shaped arrowheads and 79 barbed and tanged arrowheads. In each case more than half of them were incomplete (Dornoch Historylinks Image Library).

The largest collection of artefacts was presented to the National Museum of Antiquities in 1887, although other discoveries had been reported as early as 1870. It has a similar composition (National Museum of Antiquities of Scotland 1892: 95). Most of the arrowheads (279) are leaf- or lozenge-shaped, half of which are incomplete. There are 12 chisel arrowheads, three oblique arrowheads, 21 of the barbed and tanged variety (10 of them incomplete), and two tanged arrowheads. There are also 700 scrapers and a number of blades, few of them of the classic Mesolithic variety. Canmore records that a further 15 leaf-shaped arrowheads are in the Cambridge University Museum of Archaeology and Anthropology, three of which are roughouts (Accession no. Z 32764).

Taking these records together, it is clear that the findspot(s) were exceptionally productive. An unknown proportion of the finds were never listed, but even those whose character is known include 558 whole or fragmentary leaf- or lozenge-shaped arrowheads, and 112 of the barbed and tanged variety. It is clear that activity at Littleferry was not limited to a single period and the area may have been used discontinuously from the Mesolithic period to the Early Bronze Age. How was it related to the occupation of the surrounding area?

FIELD SURVEY IN 2017

In common with the Culbin field survey, all the arable land was examined by walking at 20m



Illus 3 The distribution of lithic artefacts in the western and eastern study areas (Drawing: Aaron Watson)

intervals after the plough soil had weathered. Farther to the south, the same method had been employed around the Clava Cairns and on the Black Isle; much of this work involved the same people (Watson & Bradley 2000; Phillips 2002: 272–94). A few small fields on the higher ground north of Golspie were not in suitable condition when the project took place. Otherwise, the study area was examined in two continuous blocks. One extended to the south-west from the edge of the town as far as The Mound where the A9 crosses an arm of Loch Fleet. It covered the edge of the Littleferry peninsula, and the drained wetland to its north as far as the former shoreline beside the main road. The low-lying land was included because similar work at Culbin had found artefacts associated with raised areas in the wetland by the River Findhorn (Bradley, Watson & Scott 2016). To the east of the town, the topography changes and here a fossil cliff separates the present shoreline from the cultivated land. The project investigated all the ploughed fields between Dunrobin Castle and the Iron Age broch of Carn Liath: a distance of 2km.

Almost four square kilometres of ploughsoil were investigated by walking at 20m intervals, but there were virtually no finds on the small areas of raised ground within the drained wetland. The only exception was the blank for a shale arm ring of Iron Age date. Only 125 lithic artefacts were recovered. The great majority were in two concentrations. The 'south-western' group was beside the former margin of Loch Fleet and included 45 artefacts (Illus 4 and 5). An 'eastern' concentration in between Carn Liath and Dunrobin Castle contained another 69 items (Illus 6). Such low density scatters resemble those identified in similar projects on the Black Isle and at Culbin (Phillips 2002: 272–94; Bradley, Watson & Scott 2016). The same applies to the material found in the Clava field survey. In fact,

ILLUS 4 Field walking on the former beach of Loch Fleet, with the present shoreline in the background (Photograph: Aaron Watson)

the distribution of finds around the Great Moss of Petty is very like that on the former shoreline of Loch Fleet (Watson & Bradley 2000: illus 170).

Four raw materials were represented in these assemblages. There were flint pebbles, some of which show the abraded cortex typical of a beach deposit. Quartz was also used and occurs naturally throughout the study area. A cherty siliceous sandstone was represented among the lithic artefacts. Its ultimate origin was in the Middle Old Red Sandstone of the surrounding area (we are grateful to Dr Rosemary Stewart

ILLUS 5 Field walking on the former shoreline of Littleferry Links with the drained wetland in the background (Photograph: Aaron Watson)

ILLUS 6 Field walking above the fossil cliff line in the eastern study area (Photograph: Aaron Watson)

for this information). It occurred in two distinct colours: grey and orange. The grey variety can be found among the pebbles on the present shoreline of Loch Fleet, while the orange material, which has similar properties to good quality flint, came from a natural exposure on the hillside near to Carn Liath. All the flakes in this material were found close to its source.

There were few differences between the concentrations of artefacts close to Littleferry. Almost the same raw materials were represented in each group.

There were not many distinctive artefacts, and they were represented in both the groups of fields.

The few blades might be of Mesolithic or earlier Neolithic date. Otherwise, the only closely dateable artefact was a barbed and tanged arrowhead found on the edge of the northern concentration of finds, 200m from the site of the putative henge. Few of the cores assumed regular forms. The complete examples had been worked right down, but none were suitable for making blades. The scrapers were equally undiagnostic because they were made from small pebbles. The remainder of both collections consisted of flakes or spalls, most of which were found singly. There was nothing to indicate systematic artefact production.

DISCUSSION

Previous research on the collections from Scottish sand dunes had raised two questions, and the aim of this project was to view them in a wider context

TABLE 1
The use of raw materials in the assemblage recovered by field walking

	Grey cherty siliceous sandstone	*Flint*	*Quartz*	*Orange cherty siliceous sandstone*
South-western group	53%	25%	22%	–
Eastern group	57%	17%	19%	7%

TABLE 2
The diagnostic artefacts in the assemblages recovered by field walking

	Retouched flakes or chunks	*Blades or blade segments*	*Scrapers*	*Arrowhead*	*Core or core fragments*
South-western group	4	1	–	1	4
Eastern group	4	5	3	–	6

through a programme of field walking. The results were strikingly similar to those from Culbin. The original findspots contained exceptional numbers of Neolithic, Chalcolithic and Early Bronze Age artefacts, but they occurred in much lower numbers in the surrounding areas. In each case their distributions were quite extensive but did not feature any marked concentrations; although there were places where their density increased, they can hardly be characterised as 'sites'. At Littleferry, the scatters of artefacts came from two different environments – the former shoreline of Loch Fleet and the fossil cliff east of Golspie – but the only contrast between these assemblages involves the selection of lithic raw materials. Although little is known about where and how it was found, the collection from Littleferry Links is very different in its quantity and composition. It cannot be thought of as a sample – however biased – of the distribution of artefacts across the study area.

The finds recovered during recent fieldwork did not focus on the areas with productive wild resources, as Lacaille's interpretation would suggest. That argument might apply to those from the former island, but, if so, one would expect to discover similar material at other points on the original shoreline of Loch Fleet. It did not happen in the area investigated in 2017 and, unlike the situation at Culbin, there were no prehistoric artefacts on the patches of higher ground within the former wetland. It is unlikely that the concentrations of arrowheads observed in the 19th century were the result of hunting animals or birds. In fact, the greatest density of finds was on a cliff where the beach is more difficult to access. Given such striking contrasts, it is evident that the antiquarian finds from Littleferry Links represent a distinctive phenomenon and must be interpreted on their own terms.

Two features stand out: the unusual character of the assemblage preserved in the museum collections; and the location of the original findspot.

Although little is known of the circumstances in which the principal collections were formed, all three groups – those at NMS and Dunrobin Castle, and the material listed in 1881 – have the same composition. They are dominated by Early/Middle Neolithic arrowheads, a high proportion of which were recognised from the outset to be fragmentary or 'imperfect' (National Museum of Antiquities 1892: 95). There are also worked pieces of siliceous sandstone that were originally claimed as 'spearheads'. They

TABLE 3
The representation of arrowheads in the collections from Littleferry compared with those from the Luce Sands and Culbin

Arrowhead type	*Littleferry*	*Luce Sands*	*Culbin*
Leaf-/lozenge-shaped	81%	65%	29%
Transverse	3%	7%	10%
Barbed and tanged	16%	28%	61%

can be reinterpreted as unfinished roughouts for making large leaf-shaped missile points. Other items are later in date. There are a few chisel or oblique arrowheads whose currency extends into the Middle and Late Neolithic periods respectively, but barbed and tanged arrowheads of Chalcolithic/Early Bronze Age dates occur in rather higher numbers. Their distribution through time is very similar to the artefacts from the Luce Sands (Coles 2008) and completely different from the material in the large assemblage from Culbin (Bradley, Watson & Scott 2016).

At a broader level, such an enormous collection of leaf-shaped arrowheads is extremely unusual. The sheer number of finds recorded from Littleferry (between 500 and 600) is difficult to match at any excavated monument. The enclosure at Carn Brea in Cornwall, which was investigated on a large scale, included 751 examples (Mercer 1981: 122–6) and the unpublished excavation of a comparable site on Crickley Hill found almost 400 (Whittle et al 2011: 719). In both cases there were indications that these monuments had been attacked and burnt. The same happened at Hambledon Hill where there is direct evidence that people had been killed (Mercer & Healy 2008). 80% of the leaf-shaped arrowheads from Carn Brea were incomplete and 35% of them had been burnt. Only a quarter of those in the small collection from Hambledon Hill remained intact, and about half of them no longer had their points (Mercer & Healy 2008: 693–8). This would be consistent with their use as projectiles. By contrast, nearly all the 58 examples found at Etton were undamaged (Pryor 1998: 233–5), and in this case the ditched enclosure did not provide any evidence of conflict.

Although Littleferry produced many incomplete arrowheads there is an important difference – comparatively few of them were damaged at the tip. Instead of showing impact fractures they might have snapped in the course of production; the same argument applies to the large collection from the Luce Sands and to the barbed and tanged arrowheads from Culbin. It also extends to the smaller numbers of transverse arrowheads and barbed and tanged arrowheads in the collections from Littleferry.

If arrowheads and other artefacts were being made on Littleferry Links, where was the raw material obtained? The collection at NMS includes a series of partly worked pebbles and some lithic debitage. It is not known how it was selected by the original finder, but the proportions of flint and grey siliceous sandstone are similar to those in the assemblage recovered by field walking. Orange siliceous sandstone is not represented, and worked quartz is extremely rare, probably because it was not always recognised in the 1880s. The great majority of the pebbles are like those on the modern beach of Loch Fleet, but that does not apply to a few pieces of better quality flint with traces of chalk cortex, or to a small component of fine black flint which seems to have been favoured along the North Sea coast during the Late Neolithic period (Ballin 2011). A few arrowheads of all the main varieties were made of higher quality flint that might have been imported, but that was not true of the vast majority of the assemblage. The debitage in the Edinburgh collection also includes orange-coloured flint which could have come from surface deposits in Buchan, but it does not appear to have been put to any special use.

The results of field survey make it clear that almost all the raw material could have been found at other points on the shoreline, but only at Littleferry Links was it worked on a large scale. That is hard to interpret, because at the time when leaf-shaped arrowheads were made there, the production site was on an offshore island some distance away from the chamber tombs of the Neolithic period. The sheer number of scrapers recalls the finds from settlements and suggests that people may have lived there intermittently, but that would not explain why the more productive land surveyed in 2017 was not associated with many artefacts. Indeed, only a small proportion of the 125 items recovered by field walking need be contemporary with the main period of activity on Littleferry Links during the Early to Middle Neolithic period. Some of them may have been deposited during a later phase.

The use of arrows seems to have been particularly significant between the Neolithic

and the Early Bronze Age. They were used in hunting and warfare, but they were among the few items consistently deposited with the dead. It may be that some of them assumed a special importance because of the people who used them or the places where these artefacts had originated. It is a familiar argument in the case of stone axes where the raw material could be obtained at inaccessible sources in mountainous country. Others were made on offshore islands whose very remoteness protected the special character of the artefacts made there (Bradley 2017). In each case the main finds from the production sites are unfinished or imperfect artefacts as most of their products must have been taken away. Is it possible that the same argument extends to the workshop(s) where arrowheads were produced at Littleferry? Like Culbin and the sites beneath the Luce Sands, this was somewhere set apart from the normal pattern of settlement. As a vital source of lithic raw material such a distinctive location could have been used during more than one period of prehistory, and this is the implication of the collections that still survive.

At the same time, Littleferry shares another important characteristic with Culbin and the Luce Sands. Not only were they cut off from the areas around them, they were associated with sheltered harbours and readily accessible from the sea. The same applies to other sites about which rather less is known: the Stevenston Sands, and the dune systems at Tentismuir, Gullane, and Hedderwick in Scotland; Walney Island in north-west England; and Dundrum and Portstewart in Ulster (Bradley et al 2016; Bradley 2017). Most of them include non-local artefacts and raw materials, although the artefacts from Littleferry are less informative than most of the other collections. Taken together, these places have been interpreted not only as production sites but also as 'maritime havens', visited by people travelling along the coast. Here they could exchange with the local population on neutral ground set apart from the main areas of settlement. It was a role that in some cases extended into the Iron Age and post-Roman periods (Bradley et al 2016). It is unfortunate that so little is known about these places. Every opportunity should be taken to monitor any modern disturbance to the sites and to identify further examples of this distinctive phenomenon.

ACKNOWLEDGEMENTS

We would like to thank John Cormack, Ewan McCall and Hugh Murray for allowing us to work on their farms, Dorothy Lowe for her help during the field walking, and Pat Scott for her hospitality. Alison Sheridan organised analysis of the artefacts in NMS summarised in this paper and provided much valuable advice. The collections there and at Dunrobin Castle were first studied by Audrey Henshall who recognised the importance of arrowhead production at Littleferry long before the present writers.

REFERENCES

Ballin, T B 2011 *Overhowden and Airhouse, Scottish Borders: Characterisation and Interpretation of Two Spectacular Lithic Assemblages from Sites near the Overhowden Henge*. Oxford: British Archaeological Reports, British Series, 539.

Bradley, R 2017 'The beach as source and destination', *in* Shaffrey, R (ed.) *Written in Stone*, 215–28. St Andrews: Highfield Press.

Bradley, R, Rogers, A, Sturt, F & Watson, A 2016, 'Maritime havens in earlier prehistoric Britain', *Proceedings of the Prehistoric Society* 82: 125–59.

Bradley, R, Watson, A & Scott, R 2016 'The earlier prehistoric collections from the Culbin Sands: the construction of a narrative', *in* Hunter, F & Sheridan, A (eds) *Ancient Lives*, 233–43. Leiden: Sidestone Press.

Clarke, D V 2004 'The construction of narratives for Neolithic Scotland', *in* Shepherd, I & Barclay, G (eds) *Scotland in Ancient Europe*, 45–53. Edinburgh: Society of Antiquaries of Scotland.

Coles, D 2008 'Shining Water: Shining Sand. A Study of Neolithic Lithic Material from Two Sand Dune Sites in Northern Britain', unpublished PhD thesis, University of Reading.

Cowie, T 1996 'Torrs Warren, Luce Sands, Galloway', *Transactions of the Dumfriesshire and Galloway Natural History and Antiquarian Society* 71: 11–105.

Dornoch Historylinks Image Library http://historylinksarchive.org.uk/picture/number5687.asp. Accessed 9 February 2018.

Harding, A 1987 *Henge Monuments and Related Sites of the British Isles*. Oxford: British Archaeological Reports, British Series, 175.

Henshall, A & Ritchie, J N G 1995 *The Chambered Cairns of Sutherland*. Edinburgh: Edinburgh University Press.

Lacaille, A 1954 *The Stone Age in Scotland*. Oxford: Oxford University Press.

May, V J & Hansom, J 2003 *Coastal Geomorphology of Great Britain*. Peterborough: Joint Nature Conservation Committee.

Mercer, R 1981 'Excavations at Carn Brea, Illogan, Cornwall', *Cornish Archaeology* 20: 1–204.

Mercer, R & Healy, F 2008 *Hambledon Hill, Dorset. Excavation and Survey of a Neolithic Monument Complex and its Surrounding Landscape*. Swindon: English Heritage.

National Museum of Antiquities of Scotland 1892 *Catalogue of the National Museum of Antiquities of Scotland*. Edinburgh: National Museum of Antiquities of Scotland.

Phillips, T 2002 *Landscapes of the Living: Landscapes of the Dead*. Oxford: British Archaeological Report, British Series, 328.

Pryor, F 1998 *Etton. Excavations at a Neolithic Causewayed Enclosure near Maxey, Cambridgeshire*. London: English Heritage.

Tait, L 1870a 'Notes on the opening of a stone circle at Craigmore, Strathfleet, Sutherland', *Proc Soc Antiq Scot* 7: 473–5.

Tait, L 1870b 'Notes on the shell-mounds, hut-circles and kist-vaens of Sutherland', *Proc Soc Antiq Scot* 7: 525–32.

Tait, L 1870c 'Notes on the shell-mounds of Sutherland', *Proc Soc Antiq Scot* 8: 63–4.

Thomas, J 2015 *A Neolithic Ceremonial Complex in Galloway: Excavations at Dunragit and Droughduill 1999–2002*. Oxford: Oxbow Books.

Watson, A & Bradley, R 2000 'The Clava Cairns and the pattern of settlement. The results of field survey 1995–1997', *in* Bradley, R *The Good Stones. A New Investigation of the Clava Cairns*, 184–201. Edinburgh: Society of Antiquaries of Scotland.

Whittle, A, Healy, F & Bayliss, A 2011 *Gathering Time. Dating the Early Neolithic Enclosures of Southern Britain and Ireland*. Oxford: Oxbow Books.